Mathematica 11.3 Integration Test Results

on the problems in the test-suite directory "4 Trig functions\4.1 Sine"

Test results for the 538 problems in "4.1.0 (a sin)^m (b trg)^n.m"

- **Problem 35: Result unnecessarily involves higher level functions.**

$$\int (c\,\text{Sin}[a+b\,x])^{1/3}\,dx$$

Optimal (type 4, 517 leaves, 1 step):

$$-\frac{1}{b}3\sqrt{\frac{3}{2}\left(3-i\sqrt{3}\right)}\;c^{1/3}\,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{2}\sqrt{1-\frac{(c\,\text{Sin}[a+b\,x])^{2/3}}{c^{2/3}}}}{\sqrt{3+i\sqrt{3}}}\right],\frac{3\,i-\sqrt{3}}{3\,i+\sqrt{3}}\right]$$
$$\text{Sec}[a+b\,x]\sqrt{1-\frac{(c\,\text{Sin}[a+b\,x])^{2/3}}{c^{2/3}}}\sqrt{\frac{i+\sqrt{3}}{3\,i+\sqrt{3}}+\frac{2\,(c\,\text{Sin}[a+b\,x])^{2/3}}{\left(3-i\sqrt{3}\right)c^{2/3}}}\sqrt{\frac{i-\sqrt{3}}{3\,i-\sqrt{3}}+\frac{2\,(c\,\text{Sin}[a+b\,x])^{2/3}}{\left(3+i\sqrt{3}\right)c^{2/3}}}+$$
$$\frac{1}{2\sqrt{2}\,b}3\left(1-i\sqrt{3}\right)\sqrt{3-i\sqrt{3}}\;c^{1/3}\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{2}\sqrt{1-\frac{(c\,\text{Sin}[a+b\,x])^{2/3}}{c^{2/3}}}}{\sqrt{3-i\sqrt{3}}}\right],\frac{3\,i+\sqrt{3}}{3\,i-\sqrt{3}}\right]\text{Sec}[a+b\,x]$$
$$\sqrt{1-\frac{(c\,\text{Sin}[a+b\,x])^{2/3}}{c^{2/3}}}\sqrt{\frac{i+\sqrt{3}}{3\,i+\sqrt{3}}+\frac{2\,(c\,\text{Sin}[a+b\,x])^{2/3}}{\left(3-i\sqrt{3}\right)c^{2/3}}}\sqrt{\frac{i-\sqrt{3}}{3\,i-\sqrt{3}}+\frac{2\,(c\,\text{Sin}[a+b\,x])^{2/3}}{\left(3+i\sqrt{3}\right)c^{2/3}}}$$

Result (type 5, 59 leaves):

$$-\frac{\text{Cos}[a+b\,x]\,\text{Hypergeometric2F1}\left[\frac{1}{3},\frac{1}{2},\frac{3}{2},\text{Cos}[a+b\,x]^2\right]\text{Sin}[a+b\,x]\,(c\,\text{Sin}[a+b\,x])^{1/3}}{b\left(\text{Sin}[a+b\,x]^2\right)^{2/3}}$$

- **Problem 36: Result unnecessarily involves higher level functions.**

$$\int \frac{1}{(c\,\mathrm{Sin}[a+b\,x])^{1/3}}\,dx$$

Optimal (type 4, 252 leaves, 1 step):

$$-\frac{1}{\sqrt{2}\,b\,c^{1/3}}3\sqrt{3-i\sqrt{3}}\;\mathrm{EllipticF}\left[\mathrm{ArcSin}\left[\frac{\sqrt{2}\sqrt{1-\frac{(c\,\mathrm{Sin}[a+b\,x])^{2/3}}{c^{2/3}}}}{\sqrt{3-i\sqrt{3}}}\right],\frac{3\,i+\sqrt{3}}{3\,i-\sqrt{3}}\right]$$

$$\mathrm{Sec}[a+b\,x]\sqrt{1-\frac{(c\,\mathrm{Sin}[a+b\,x])^{2/3}}{c^{2/3}}}\sqrt{\frac{i+\sqrt{3}}{3\,i+\sqrt{3}}+\frac{2\,(c\,\mathrm{Sin}[a+b\,x])^{2/3}}{\left(3-i\sqrt{3}\right)c^{2/3}}}\sqrt{\frac{i-\sqrt{3}}{3\,i-\sqrt{3}}+\frac{2\,(c\,\mathrm{Sin}[a+b\,x])^{2/3}}{\left(3+i\sqrt{3}\right)c^{2/3}}}$$

Result (type 5, 59 leaves):

$$-\frac{\mathrm{Cos}[a+b\,x]\,\mathrm{Hypergeometric2F1}\left[\frac{1}{2},\frac{2}{3},\frac{3}{2},\mathrm{Cos}[a+b\,x]^2\right]\mathrm{Sin}[a+b\,x]}{b\,(c\,\mathrm{Sin}[a+b\,x])^{1/3}\left(\mathrm{Sin}[a+b\,x]^2\right)^{1/3}}$$

- **Problem 37: Result unnecessarily involves higher level functions.**

$$\int \frac{1}{(c\,\mathrm{Sin}[a+b\,x])^{2/3}}\,dx$$

Optimal (type 4, 271 leaves, 1 step):

$$\left(3^{3/4}\,\mathrm{EllipticF}\left[\mathrm{ArcCos}\left[\frac{c^{2/3}-\left(1-\sqrt{3}\right)(c\,\mathrm{Sin}[a+b\,x])^{2/3}}{c^{2/3}-\left(1+\sqrt{3}\right)(c\,\mathrm{Sin}[a+b\,x])^{2/3}}\right],\frac{1}{4}\left(2+\sqrt{3}\right)\right]\mathrm{Sec}[a+b\,x]\,(c\,\mathrm{Sin}[a+b\,x])^{1/3}\right.$$

$$\left.\left(c^{2/3}-(c\,\mathrm{Sin}[a+b\,x])^{2/3}\right)\sqrt{\frac{c^{4/3}\left(1+\frac{(c\,\mathrm{Sin}[a+b\,x])^{2/3}}{c^{2/3}}+\frac{(c\,\mathrm{Sin}[a+b\,x])^{4/3}}{c^{4/3}}\right)}{\left(c^{2/3}-\left(1+\sqrt{3}\right)(c\,\mathrm{Sin}[a+b\,x])^{2/3}\right)^2}}\right)\Bigg/\left(2\,b\,c^{5/3}\sqrt{-\frac{(c\,\mathrm{Sin}[a+b\,x])^{2/3}\left(c^{2/3}-(c\,\mathrm{Sin}[a+b\,x])^{2/3}\right)}{\left(c^{2/3}-\left(1+\sqrt{3}\right)(c\,\mathrm{Sin}[a+b\,x])^{2/3}\right)^2}}\right)$$

Result (type 5, 59 leaves):

$$-\frac{\mathrm{Cos}[a+b\,x]\,\mathrm{Hypergeometric2F1}\left[\frac{1}{2},\frac{5}{6},\frac{3}{2},\mathrm{Cos}[a+b\,x]^2\right]\mathrm{Sin}[a+b\,x]}{b\,(c\,\mathrm{Sin}[a+b\,x])^{2/3}\left(\mathrm{Sin}[a+b\,x]^2\right)^{1/6}}$$

- **Problem 44: Result more than twice size of optimal antiderivative.**

$$\int \mathrm{Cos}[a+b\,x]\,\mathrm{Sin}[a+b\,x]\,dx$$

Optimal (type 3, 15 leaves, 2 steps):

$$\frac{\text{Sin}[a+b x]^2}{2 b}$$

Result (type 3, 37 leaves):

$$\frac{1}{2}\left(-\frac{\text{Cos}[2 a]\,\text{Cos}[2 b x]}{2 b}+\frac{\text{Sin}[2 a]\,\text{Sin}[2 b x]}{2 b}\right)$$

Problem 62: Result more than twice size of optimal antiderivative.

$$\int \text{Sin}[a+b x]\,\text{Tan}[a+b x]\,dx$$

Optimal (type 3, 23 leaves, 3 steps):

$$\frac{\text{ArcTanh}[\text{Sin}[a+b x]]}{b}-\frac{\text{Sin}[a+b x]}{b}$$

Result (type 3, 67 leaves):

$$-\frac{\text{Log}\left[\text{Cos}\left[\frac{1}{2}(a+b x)\right]-\text{Sin}\left[\frac{1}{2}(a+b x)\right]\right]}{b}+\frac{\text{Log}\left[\text{Cos}\left[\frac{1}{2}(a+b x)\right]+\text{Sin}\left[\frac{1}{2}(a+b x)\right]\right]}{b}-\frac{\text{Sin}[a+b x]}{b}$$

Problem 63: Result more than twice size of optimal antiderivative.

$$\int \text{Sec}[a+b x]\,\text{Tan}[a+b x]^2\,dx$$

Optimal (type 3, 34 leaves, 2 steps):

$$-\frac{\text{ArcTanh}[\text{Sin}[a+b x]]}{2 b}+\frac{\text{Sec}[a+b x]\,\text{Tan}[a+b x]}{2 b}$$

Result (type 3, 69 leaves):

$$\frac{1}{2 b}\left(\text{Log}\left[\text{Cos}\left[\frac{1}{2}(a+b x)\right]-\text{Sin}\left[\frac{1}{2}(a+b x)\right]\right]-\text{Log}\left[\text{Cos}\left[\frac{1}{2}(a+b x)\right]+\text{Sin}\left[\frac{1}{2}(a+b x)\right]\right]+\text{Sec}[a+b x]\,\text{Tan}[a+b x]\right)$$

Problem 87: Result more than twice size of optimal antiderivative.

$$\int \text{Sec}[a+b x]^4\,\text{Tan}[a+b x]^4\,dx$$

Optimal (type 3, 31 leaves, 3 steps):

$$\frac{\text{Tan}[a+b x]^5}{5 b}+\frac{\text{Tan}[a+b x]^7}{7 b}$$

Result (type 3, 77 leaves):

$$\frac{2\,\text{Tan}[a+b x]}{35 b}+\frac{\text{Sec}[a+b x]^2\,\text{Tan}[a+b x]}{35 b}-\frac{8\,\text{Sec}[a+b x]^4\,\text{Tan}[a+b x]}{35 b}+\frac{\text{Sec}[a+b x]^6\,\text{Tan}[a+b x]}{7 b}$$

Problem 88: Result more than twice size of optimal antiderivative.

$$\int \mathrm{Sec}[a+b\,x]^6\,\mathrm{Tan}[a+b\,x]^4\,dx$$

Optimal (type 3, 46 leaves, 3 steps):

$$\frac{\mathrm{Tan}[a+b\,x]^5}{5\,b}+\frac{2\,\mathrm{Tan}[a+b\,x]^7}{7\,b}+\frac{\mathrm{Tan}[a+b\,x]^9}{9\,b}$$

Result (type 3, 98 leaves):

$$\frac{8\,\mathrm{Tan}[a+b\,x]}{315\,b}+\frac{4\,\mathrm{Sec}[a+b\,x]^2\,\mathrm{Tan}[a+b\,x]}{315\,b}+\frac{\mathrm{Sec}[a+b\,x]^4\,\mathrm{Tan}[a+b\,x]}{105\,b}-\frac{10\,\mathrm{Sec}[a+b\,x]^6\,\mathrm{Tan}[a+b\,x]}{63\,b}+\frac{\mathrm{Sec}[a+b\,x]^8\,\mathrm{Tan}[a+b\,x]}{9\,b}$$

Problem 93: Result more than twice size of optimal antiderivative.

$$\int \mathrm{Sin}[a+b\,x]^3\,\mathrm{Tan}[a+b\,x]\,dx$$

Optimal (type 3, 38 leaves, 4 steps):

$$\frac{\mathrm{ArcTanh}[\mathrm{Sin}[a+b\,x]]}{b}-\frac{\mathrm{Sin}[a+b\,x]}{b}-\frac{\mathrm{Sin}[a+b\,x]^3}{3\,b}$$

Result (type 3, 84 leaves):

$$-\frac{\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}\,(a+b\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}\,(a+b\,x)\right]\right]}{b}+\frac{\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}\,(a+b\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(a+b\,x)\right]\right]}{b}-\frac{5\,\mathrm{Sin}[a+b\,x]}{4\,b}+\frac{\mathrm{Sin}[3\,(a+b\,x)]}{12\,b}$$

Problem 94: Result more than twice size of optimal antiderivative.

$$\int \mathrm{Sin}[a+b\,x]\,\mathrm{Tan}[a+b\,x]^3\,dx$$

Optimal (type 3, 49 leaves, 4 steps):

$$-\frac{3\,\mathrm{ArcTanh}[\mathrm{Sin}[a+b\,x]]}{2\,b}+\frac{3\,\mathrm{Sin}[a+b\,x]}{2\,b}+\frac{\mathrm{Sin}[a+b\,x]\,\mathrm{Tan}[a+b\,x]^2}{2\,b}$$

Result (type 3, 116 leaves):

$$\frac{1}{4\,b}\left(6\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}\,(a+b\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}\,(a+b\,x)\right]\right]-6\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}\,(a+b\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(a+b\,x)\right]\right]+\right.$$
$$\left.\frac{1}{\left(\mathrm{Cos}\left[\frac{1}{2}\,(a+b\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}\,(a+b\,x)\right]\right)^2}-\frac{1}{\left(\mathrm{Cos}\left[\frac{1}{2}\,(a+b\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(a+b\,x)\right]\right)^2}+4\,\mathrm{Sin}[a+b\,x]\right)$$

Problem 126: Result more than twice size of optimal antiderivative.

$$\int \mathrm{Csc}[a+b\,x]\,\mathrm{Sec}[a+b\,x]\,dx$$

Optimal (type 3, 11 leaves, 2 steps):

$$\frac{\text{Log}[\text{Tan}[a+b x]]}{b}$$

Result (type 3, 31 leaves):

$$2\left(-\frac{\text{Log}[\text{Cos}[a+b x]]}{2 b}+\frac{\text{Log}[\text{Sin}[a+b x]]}{2 b}\right)$$

- **Problem 140: Result more than twice size of optimal antiderivative.**

$$\int \text{Csc}[a+b x]^2\,\text{Sec}[a+b x]\,dx$$

Optimal (type 3, 23 leaves, 3 steps):

$$\frac{\text{ArcTanh}[\text{Sin}[a+b x]]}{b}-\frac{\text{Csc}[a+b x]}{b}$$

Result (type 3, 90 leaves):

$$-\frac{\text{Cot}\left[\frac{1}{2}(a+b x)\right]}{2 b}-\frac{\text{Log}\left[\text{Cos}\left[\frac{1}{2}(a+b x)\right]-\text{Sin}\left[\frac{1}{2}(a+b x)\right]\right]}{b}+\frac{\text{Log}\left[\text{Cos}\left[\frac{1}{2}(a+b x)\right]+\text{Sin}\left[\frac{1}{2}(a+b x)\right]\right]}{b}-\frac{\text{Tan}\left[\frac{1}{2}(a+b x)\right]}{2 b}$$

- **Problem 142: Result more than twice size of optimal antiderivative.**

$$\int \text{Csc}[a+b x]^2\,\text{Sec}[a+b x]^3\,dx$$

Optimal (type 3, 49 leaves, 4 steps):

$$\frac{3\,\text{ArcTanh}[\text{Sin}[a+b x]]}{2 b}-\frac{3\,\text{Csc}[a+b x]}{2 b}+\frac{\text{Csc}[a+b x]\,\text{Sec}[a+b x]^2}{2 b}$$

Result (type 3, 132 leaves):

$$-\frac{1}{4 b}\left(2\,\text{Cot}\left[\frac{1}{2}(a+b x)\right]+6\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(a+b x)\right]-\text{Sin}\left[\frac{1}{2}(a+b x)\right]\right]-6\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(a+b x)\right]+\text{Sin}\left[\frac{1}{2}(a+b x)\right]\right]-\frac{1}{\left(\text{Cos}\left[\frac{1}{2}(a+b x)\right]-\text{Sin}\left[\frac{1}{2}(a+b x)\right]\right)^2}+\frac{1}{\left(\text{Cos}\left[\frac{1}{2}(a+b x)\right]+\text{Sin}\left[\frac{1}{2}(a+b x)\right]\right)^2}+2\,\text{Tan}\left[\frac{1}{2}(a+b x)\right]\right)$$

- **Problem 144: Result more than twice size of optimal antiderivative.**

$$\int \text{Csc}[a+b x]^2\,\text{Sec}[a+b x]^5\,dx$$

Optimal (type 3, 70 leaves, 5 steps):

$$\frac{15\,\text{ArcTanh}[\text{Sin}[a+b x]]}{8 b}-\frac{15\,\text{Csc}[a+b x]}{8 b}+\frac{5\,\text{Csc}[a+b x]\,\text{Sec}[a+b x]^2}{8 b}+\frac{\text{Csc}[a+b x]\,\text{Sec}[a+b x]^4}{4 b}$$

Result (type 3, 219 leaves) :

$$-\frac{\text{Cot}\left[\frac{1}{2}(a+b x)\right]}{2 b}-\frac{15 \text{Log}\left[\text{Cos}\left[\frac{1}{2}(a+b x)\right]-\text{Sin}\left[\frac{1}{2}(a+b x)\right]\right]}{8 b}+\frac{15 \text{Log}\left[\text{Cos}\left[\frac{1}{2}(a+b x)\right]+\text{Sin}\left[\frac{1}{2}(a+b x)\right]\right]}{8 b}+\frac{1}{16 b\left(\text{Cos}\left[\frac{1}{2}(a+b x)\right]-\text{Sin}\left[\frac{1}{2}(a+b x)\right]\right)^4}+\frac{7}{16 b\left(\text{Cos}\left[\frac{1}{2}(a+b x)\right]-\text{Sin}\left[\frac{1}{2}(a+b x)\right]\right)^2}-\frac{1}{16 b\left(\text{Cos}\left[\frac{1}{2}(a+b x)\right]+\text{Sin}\left[\frac{1}{2}(a+b x)\right]\right)^4}-\frac{7}{16 b\left(\text{Cos}\left[\frac{1}{2}(a+b x)\right]+\text{Sin}\left[\frac{1}{2}(a+b x)\right]\right)^2}-\frac{\text{Tan}\left[\frac{1}{2}(a+b x)\right]}{2 b}$$

- **Problem 150: Result more than twice size of optimal antiderivative.**

$$\int \text{Cot}[a+b x]^2 \,\text{Csc}[a+b x]\, dx$$

Optimal (type 3, 34 leaves, 2 steps) :

$$\frac{\text{ArcTanh}[\text{Cos}[a+b x]]}{2 b}-\frac{\text{Cot}[a+b x]\,\text{Csc}[a+b x]}{2 b}$$

Result (type 3, 75 leaves) :

$$-\frac{\text{Csc}\left[\frac{1}{2}(a+b x)\right]^2}{8 b}+\frac{\text{Log}\left[\text{Cos}\left[\frac{1}{2}(a+b x)\right]\right]}{2 b}-\frac{\text{Log}\left[\text{Sin}\left[\frac{1}{2}(a+b x)\right]\right]}{2 b}+\frac{\text{Sec}\left[\frac{1}{2}(a+b x)\right]^2}{8 b}$$

- **Problem 153: Result more than twice size of optimal antiderivative.**

$$\int \text{Csc}[a+b x]^3 \,\text{Sec}[a+b x]^2\, dx$$

Optimal (type 3, 49 leaves, 4 steps) :

$$-\frac{3 \,\text{ArcTanh}[\text{Cos}[a+b x]]}{2 b}+\frac{3 \,\text{Sec}[a+b x]}{2 b}-\frac{\text{Csc}[a+b x]^2 \,\text{Sec}[a+b x]}{2 b}$$

Result (type 3, 143 leaves) :

$$\left(\text{Csc}[a+b x]^4 \left(2-6 \,\text{Cos}[2 (a+b x)]+2 \,\text{Cos}[3 (a+b x)]+3 \,\text{Cos}[3 (a+b x)] \,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(a+b x)\right]\right]-3 \,\text{Cos}[3 (a+b x)] \,\text{Log}\left[\text{Sin}\left[\frac{1}{2}(a+b x)\right]\right]+\text{Cos}[a+b x]\left(-2-3 \,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(a+b x)\right]\right]+3 \,\text{Log}\left[\text{Sin}\left[\frac{1}{2}(a+b x)\right]\right]\right)\right)\right) \Big/ \left(2 b\left(\text{Csc}\left[\frac{1}{2}(a+b x)\right]^2-\text{Sec}\left[\frac{1}{2}(a+b x)\right]^2\right)\right)$$

- **Problem 155: Result more than twice size of optimal antiderivative.**

$$\int \text{Csc}[a+b x]^3 \,\text{Sec}[a+b x]^4\, dx$$

Optimal (type 3, 66 leaves, 5 steps) :

$$-\frac{5\,\text{ArcTanh}[\text{Cos}[a+b\,x]]}{2\,b}+\frac{5\,\text{Sec}[a+b\,x]}{2\,b}+\frac{5\,\text{Sec}[a+b\,x]^3}{6\,b}-\frac{\text{Csc}[a+b\,x]^2\,\text{Sec}[a+b\,x]^3}{2\,b}$$

Result (type 3, 205 leaves) :

$$\frac{1}{3\,b\,\left(\text{Csc}\left[\frac{1}{2}\,(a+b\,x)\right]^2-\text{Sec}\left[\frac{1}{2}\,(a+b\,x)\right]^2\right)^3}$$
$$2\,\text{Csc}[a+b\,x]^8\,\Big(22-40\,\text{Cos}[2\,(a+b\,x)]+13\,\text{Cos}[3\,(a+b\,x)]-30\,\text{Cos}[4\,(a+b\,x)]+13\,\text{Cos}[5\,(a+b\,x)]+15\,\text{Cos}[3\,(a+b\,x)]\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(a+b\,x)\right]\right]+$$
$$15\,\text{Cos}[5\,(a+b\,x)]\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(a+b\,x)\right]\right]-15\,\text{Cos}[3\,(a+b\,x)]\,\text{Log}\left[\text{Sin}\left[\frac{1}{2}\,(a+b\,x)\right]\right]-$$
$$15\,\text{Cos}[5\,(a+b\,x)]\,\text{Log}\left[\text{Sin}\left[\frac{1}{2}\,(a+b\,x)\right]\right]+\text{Cos}[a+b\,x]\,\left(-26-30\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(a+b\,x)\right]\right]+30\,\text{Log}\left[\text{Sin}\left[\frac{1}{2}\,(a+b\,x)\right]\right]\right)\Big)$$

Problem 159: Result more than twice size of optimal antiderivative.

$$\int \text{Cos}[a+b\,x]^3\,\text{Cot}[a+b\,x]^4\,dx$$

Optimal (type 3, 53 leaves, 3 steps) :

$$\frac{3\,\text{Csc}[a+b\,x]}{b}-\frac{\text{Csc}[a+b\,x]^3}{3\,b}+\frac{3\,\text{Sin}[a+b\,x]}{b}-\frac{\text{Sin}[a+b\,x]^3}{3\,b}$$

Result (type 3, 121 leaves) :

$$\frac{17\,\text{Cot}\left[\frac{1}{2}\,(a+b\,x)\right]}{12\,b}-\frac{\text{Cot}\left[\frac{1}{2}\,(a+b\,x)\right]\,\text{Csc}\left[\frac{1}{2}\,(a+b\,x)\right]^2}{24\,b}+$$
$$\frac{11\,\text{Sin}[a+b\,x]}{4\,b}+\frac{\text{Sin}[3\,(a+b\,x)]}{12\,b}+\frac{17\,\text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]}{12\,b}-\frac{\text{Sec}\left[\frac{1}{2}\,(a+b\,x)\right]^2\,\text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]}{24\,b}$$

Problem 161: Result more than twice size of optimal antiderivative.

$$\int \text{Cos}[a+b\,x]\,\text{Cot}[a+b\,x]^4\,dx$$

Optimal (type 3, 37 leaves, 3 steps) :

$$\frac{2\,\text{Csc}[a+b\,x]}{b}-\frac{\text{Csc}[a+b\,x]^3}{3\,b}+\frac{\text{Sin}[a+b\,x]}{b}$$

Result (type 3, 103 leaves) :

$$\frac{11\,\text{Cot}\left[\frac{1}{2}\,(a+b\,x)\right]}{12\,b}-\frac{\text{Cot}\left[\frac{1}{2}\,(a+b\,x)\right]\,\text{Csc}\left[\frac{1}{2}\,(a+b\,x)\right]^2}{24\,b}+\frac{\text{Sin}[a+b\,x]}{b}+\frac{11\,\text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]}{12\,b}-\frac{\text{Sec}\left[\frac{1}{2}\,(a+b\,x)\right]^2\,\text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]}{24\,b}$$

- **Problem 163: Result more than twice size of optimal antiderivative.**

$$\int \mathrm{Cot}[a+b\,x]^3\,\mathrm{Csc}[a+b\,x]\,dx$$

Optimal (type 3, 26 leaves, 2 steps):

$$\frac{\mathrm{Csc}[a+b\,x]}{b}-\frac{\mathrm{Csc}[a+b\,x]^3}{3\,b}$$

Result (type 3, 93 leaves):

$$\frac{5\,\mathrm{Cot}\left[\frac{1}{2}\,(a+b\,x)\right]}{12\,b}-\frac{\mathrm{Cot}\left[\frac{1}{2}\,(a+b\,x)\right]\mathrm{Csc}\left[\frac{1}{2}\,(a+b\,x)\right]^2}{24\,b}+\frac{5\,\mathrm{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]}{12\,b}-\frac{\mathrm{Sec}\left[\frac{1}{2}\,(a+b\,x)\right]^2\mathrm{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]}{24\,b}$$

- **Problem 166: Result more than twice size of optimal antiderivative.**

$$\int \mathrm{Csc}[a+b\,x]^4\,\mathrm{Sec}[a+b\,x]\,dx$$

Optimal (type 3, 38 leaves, 4 steps):

$$\frac{\mathrm{ArcTanh}[\mathrm{Sin}[a+b\,x]]}{b}-\frac{\mathrm{Csc}[a+b\,x]}{b}-\frac{\mathrm{Csc}[a+b\,x]^3}{3\,b}$$

Result (type 3, 148 leaves):

$$-\frac{7\,\mathrm{Cot}\left[\frac{1}{2}\,(a+b\,x)\right]}{12\,b}-\frac{\mathrm{Cot}\left[\frac{1}{2}\,(a+b\,x)\right]\mathrm{Csc}\left[\frac{1}{2}\,(a+b\,x)\right]^2}{24\,b}-\frac{\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}\,(a+b\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}\,(a+b\,x)\right]\right]}{b}+$$
$$\frac{\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}\,(a+b\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(a+b\,x)\right]\right]}{b}-\frac{7\,\mathrm{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]}{12\,b}-\frac{\mathrm{Sec}\left[\frac{1}{2}\,(a+b\,x)\right]^2\mathrm{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]}{24\,b}$$

- **Problem 168: Result more than twice size of optimal antiderivative.**

$$\int \mathrm{Csc}[a+b\,x]^4\,\mathrm{Sec}[a+b\,x]^3\,dx$$

Optimal (type 3, 66 leaves, 5 steps):

$$\frac{5\,\mathrm{ArcTanh}[\mathrm{Sin}[a+b\,x]]}{2\,b}-\frac{5\,\mathrm{Csc}[a+b\,x]}{2\,b}-\frac{5\,\mathrm{Csc}[a+b\,x]^3}{6\,b}+\frac{\mathrm{Csc}[a+b\,x]^3\,\mathrm{Sec}[a+b\,x]^2}{2\,b}$$

Result (type 3, 215 leaves):

$$-\frac{13\,\text{Cot}\left[\frac{1}{2}(a+b\,x)\right]}{12\,b}-\frac{\text{Cot}\left[\frac{1}{2}(a+b\,x)\right]\text{Csc}\left[\frac{1}{2}(a+b\,x)\right]^2}{24\,b}-\frac{5\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(a+b\,x)\right]-\text{Sin}\left[\frac{1}{2}(a+b\,x)\right]\right]}{2\,b}+\frac{5\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(a+b\,x)\right]+\text{Sin}\left[\frac{1}{2}(a+b\,x)\right]\right]}{2\,b}+\frac{1}{4\,b\left(\text{Cos}\left[\frac{1}{2}(a+b\,x)\right]-\text{Sin}\left[\frac{1}{2}(a+b\,x)\right]\right)^2}-\frac{1}{4\,b\left(\text{Cos}\left[\frac{1}{2}(a+b\,x)\right]+\text{Sin}\left[\frac{1}{2}(a+b\,x)\right]\right)^2}-\frac{13\,\text{Tan}\left[\frac{1}{2}(a+b\,x)\right]}{12\,b}-\frac{\text{Sec}\left[\frac{1}{2}(a+b\,x)\right]^2\text{Tan}\left[\frac{1}{2}(a+b\,x)\right]}{24\,b}$$

Problem 170: Result more than twice size of optimal antiderivative.

$$\int \text{Csc}[a+b\,x]^4\,\text{Sec}[a+b\,x]^5\,dx$$

Optimal (type 3, 89 leaves, 6 steps):

$$\frac{35\,\text{ArcTanh}[\text{Sin}[a+b\,x]]}{8\,b}-\frac{35\,\text{Csc}[a+b\,x]}{8\,b}-\frac{35\,\text{Csc}[a+b\,x]^3}{24\,b}+\frac{7\,\text{Csc}[a+b\,x]^3\,\text{Sec}[a+b\,x]^2}{8\,b}+\frac{\text{Csc}[a+b\,x]^3\,\text{Sec}[a+b\,x]^4}{4\,b}$$

Result (type 3, 277 leaves):

$$-\frac{19\,\text{Cot}\left[\frac{1}{2}(a+b\,x)\right]}{12\,b}-\frac{\text{Cot}\left[\frac{1}{2}(a+b\,x)\right]\text{Csc}\left[\frac{1}{2}(a+b\,x)\right]^2}{24\,b}-\frac{35\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(a+b\,x)\right]-\text{Sin}\left[\frac{1}{2}(a+b\,x)\right]\right]}{8\,b}+\frac{35\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(a+b\,x)\right]+\text{Sin}\left[\frac{1}{2}(a+b\,x)\right]\right]}{8\,b}+\frac{1}{16\,b\left(\text{Cos}\left[\frac{1}{2}(a+b\,x)\right]-\text{Sin}\left[\frac{1}{2}(a+b\,x)\right]\right)^4}+\frac{11}{16\,b\left(\text{Cos}\left[\frac{1}{2}(a+b\,x)\right]-\text{Sin}\left[\frac{1}{2}(a+b\,x)\right]\right)^2}-\frac{1}{16\,b\left(\text{Cos}\left[\frac{1}{2}(a+b\,x)\right]+\text{Sin}\left[\frac{1}{2}(a+b\,x)\right]\right)^4}-\frac{11}{16\,b\left(\text{Cos}\left[\frac{1}{2}(a+b\,x)\right]+\text{Sin}\left[\frac{1}{2}(a+b\,x)\right]\right)^2}-\frac{19\,\text{Tan}\left[\frac{1}{2}(a+b\,x)\right]}{12\,b}-\frac{\text{Sec}\left[\frac{1}{2}(a+b\,x)\right]^2\text{Tan}\left[\frac{1}{2}(a+b\,x)\right]}{24\,b}$$

Problem 176: Result more than twice size of optimal antiderivative.

$$\int \text{Cot}[a+b\,x]^4\,\text{Csc}[a+b\,x]\,dx$$

Optimal (type 3, 55 leaves, 3 steps):

$$-\frac{3\,\text{ArcTanh}[\text{Cos}[a+b\,x]]}{8\,b}+\frac{3\,\text{Cot}[a+b\,x]\,\text{Csc}[a+b\,x]}{8\,b}-\frac{\text{Cot}[a+b\,x]^3\,\text{Csc}[a+b\,x]}{4\,b}$$

Result (type 3, 113 leaves):

$$\frac{5\,\text{Csc}\left[\frac{1}{2}(a+b\,x)\right]^2}{32\,b}-\frac{\text{Csc}\left[\frac{1}{2}(a+b\,x)\right]^4}{64\,b}-\frac{3\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(a+b\,x)\right]\right]}{8\,b}+\frac{3\,\text{Log}\left[\text{Sin}\left[\frac{1}{2}(a+b\,x)\right]\right]}{8\,b}-\frac{5\,\text{Sec}\left[\frac{1}{2}(a+b\,x)\right]^2}{32\,b}+\frac{\text{Sec}\left[\frac{1}{2}(a+b\,x)\right]^4}{64\,b}$$

Problem 178: Result more than twice size of optimal antiderivative.

$$\int \cot[a+b x]^2 \csc[a+b x]^3 \, dx$$

Optimal (type 3, 55 leaves, 3 steps):

$$\frac{\text{ArcTanh}[\cos[a+b x]]}{8 b}+\frac{\cot[a+b x] \csc[a+b x]}{8 b}-\frac{\cot[a+b x] \csc[a+b x]^3}{4 b}$$

Result (type 3, 113 leaves):

$$\frac{\csc\left[\frac{1}{2}(a+b x)\right]^2}{32 b}-\frac{\csc\left[\frac{1}{2}(a+b x)\right]^4}{64 b}+\frac{\text{Log}\left[\cos\left[\frac{1}{2}(a+b x)\right]\right]}{8 b}-\frac{\text{Log}\left[\sin\left[\frac{1}{2}(a+b x)\right]\right]}{8 b}-\frac{\sec\left[\frac{1}{2}(a+b x)\right]^2}{32 b}+\frac{\sec\left[\frac{1}{2}(a+b x)\right]^4}{64 b}$$

Problem 181: Result more than twice size of optimal antiderivative.

$$\int \csc[a+b x]^5 \sec[a+b x]^2 \, dx$$

Optimal (type 3, 70 leaves, 5 steps):

$$-\frac{15 \,\text{ArcTanh}[\cos[a+b x]]}{8 b}+\frac{15 \sec[a+b x]}{8 b}-\frac{5 \csc[a+b x]^2 \sec[a+b x]}{8 b}-\frac{\csc[a+b x]^4 \sec[a+b x]}{4 b}$$

Result (type 3, 190 leaves):

$$-\frac{7 \csc\left[\frac{1}{2}(a+b x)\right]^2}{32 b}-\frac{\csc\left[\frac{1}{2}(a+b x)\right]^4}{64 b}-\frac{15 \,\text{Log}\left[\cos\left[\frac{1}{2}(a+b x)\right]\right]}{8 b}+\frac{15 \,\text{Log}\left[\sin\left[\frac{1}{2}(a+b x)\right]\right]}{8 b}+$$
$$\frac{7 \sec\left[\frac{1}{2}(a+b x)\right]^2}{32 b}+\frac{\sec\left[\frac{1}{2}(a+b x)\right]^4}{64 b}+\frac{\sin\left[\frac{1}{2}(a+b x)\right]}{b\left(\cos\left[\frac{1}{2}(a+b x)\right]-\sin\left[\frac{1}{2}(a+b x)\right]\right)}-\frac{\sin\left[\frac{1}{2}(a+b x)\right]}{b\left(\cos\left[\frac{1}{2}(a+b x)\right]+\sin\left[\frac{1}{2}(a+b x)\right]\right)}$$

Problem 183: Result more than twice size of optimal antiderivative.

$$\int \csc[a+b x]^5 \sec[a+b x]^4 \, dx$$

Optimal (type 3, 89 leaves, 6 steps):

$$-\frac{35 \,\text{ArcTanh}[\cos[a+b x]]}{8 b}+\frac{35 \sec[a+b x]}{8 b}+\frac{35 \sec[a+b x]^3}{24 b}-\frac{7 \csc[a+b x]^2 \sec[a+b x]^3}{8 b}-\frac{\csc[a+b x]^4 \sec[a+b x]^3}{4 b}$$

Result (type 3, 268 leaves):

$$-\frac{1}{24\,b\left(\mathrm{Csc}\left[\frac{1}{2}(a+b\,x)\right]^2-\mathrm{Sec}\left[\frac{1}{2}(a+b\,x)\right]^2\right)^3}$$
$$\mathrm{Csc}[a+b\,x]^{10}\left(-204+658\,\mathrm{Cos}[2(a+b\,x)]-228\,\mathrm{Cos}[3(a+b\,x)]+140\,\mathrm{Cos}[4(a+b\,x)]-76\,\mathrm{Cos}[5(a+b\,x)]-210\,\mathrm{Cos}[6(a+b\,x)]+\right.$$
$$76\,\mathrm{Cos}[7(a+b\,x)]-315\,\mathrm{Cos}[3(a+b\,x)]\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}(a+b\,x)\right]\right]-105\,\mathrm{Cos}[5(a+b\,x)]\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}(a+b\,x)\right]\right]+$$
$$105\,\mathrm{Cos}[7(a+b\,x)]\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}(a+b\,x)\right]\right]+3\,\mathrm{Cos}[a+b\,x]\left(76+105\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}(a+b\,x)\right]\right]-105\,\mathrm{Log}\left[\mathrm{Sin}\left[\frac{1}{2}(a+b\,x)\right]\right]\right)+$$
$$\left.315\,\mathrm{Cos}[3(a+b\,x)]\,\mathrm{Log}\left[\mathrm{Sin}\left[\frac{1}{2}(a+b\,x)\right]\right]+105\,\mathrm{Cos}[5(a+b\,x)]\,\mathrm{Log}\left[\mathrm{Sin}\left[\frac{1}{2}(a+b\,x)\right]\right]-105\,\mathrm{Cos}[7(a+b\,x)]\,\mathrm{Log}\left[\mathrm{Sin}\left[\frac{1}{2}(a+b\,x)\right]\right]\right)$$

- **Problem 243: Result unnecessarily involves higher level functions.**

$$\int(d\,\mathrm{Cos}[a+b\,x])^{9/2}\,\mathrm{Csc}[a+b\,x]^3\,dx$$

Optimal (type 3, 113 leaves, 7 steps):

$$-\frac{7\,d^{9/2}\,\mathrm{ArcTan}\left[\frac{\sqrt{d\,\mathrm{Cos}[a+b\,x]}}{\sqrt{d}}\right]}{4\,b}+\frac{7\,d^{9/2}\,\mathrm{ArcTanh}\left[\frac{\sqrt{d\,\mathrm{Cos}[a+b\,x]}}{\sqrt{d}}\right]}{4\,b}-\frac{7\,d^3\,(d\,\mathrm{Cos}[a+b\,x])^{3/2}}{6\,b}-\frac{d\,(d\,\mathrm{Cos}[a+b\,x])^{7/2}\,\mathrm{Csc}[a+b\,x]^2}{2\,b}$$

Result (type 5, 78 leaves):

$$\frac{1}{6\,b\,\sqrt{d\,\mathrm{Cos}[a+b\,x]}}d^5\left((-5+2\,\mathrm{Cos}[2(a+b\,x)])\,\mathrm{Cot}[a+b\,x]^2+21\left(-\mathrm{Cot}[a+b\,x]^2\right)^{1/4}\,\mathrm{Hypergeometric2F1}\left[\frac{1}{4},\frac{1}{4},\frac{5}{4},\mathrm{Csc}[a+b\,x]^2\right]\right)$$

- **Problem 245: Result unnecessarily involves higher level functions.**

$$\int(d\,\mathrm{Cos}[a+b\,x])^{5/2}\,\mathrm{Csc}[a+b\,x]^3\,dx$$

Optimal (type 3, 91 leaves, 6 steps):

$$-\frac{3\,d^{5/2}\,\mathrm{ArcTan}\left[\frac{\sqrt{d\,\mathrm{Cos}[a+b\,x]}}{\sqrt{d}}\right]}{4\,b}+\frac{3\,d^{5/2}\,\mathrm{ArcTanh}\left[\frac{\sqrt{d\,\mathrm{Cos}[a+b\,x]}}{\sqrt{d}}\right]}{4\,b}-\frac{d\,(d\,\mathrm{Cos}[a+b\,x])^{3/2}\,\mathrm{Csc}[a+b\,x]^2}{2\,b}$$

Result (type 5, 65 leaves):

$$-\frac{d^3\left(\mathrm{Cot}[a+b\,x]^2-3\left(-\mathrm{Cot}[a+b\,x]^2\right)^{1/4}\,\mathrm{Hypergeometric2F1}\left[\frac{1}{4},\frac{1}{4},\frac{5}{4},\mathrm{Csc}[a+b\,x]^2\right]\right)}{2\,b\,\sqrt{d\,\mathrm{Cos}[a+b\,x]}}$$

- **Problem 246: Result unnecessarily involves higher level functions.**

$$\int(d\,\mathrm{Cos}[a+b\,x])^{3/2}\,\mathrm{Csc}[a+b\,x]^3\,dx$$

Optimal (type 3, 91 leaves, 6 steps):

$$\frac{d^{3/2}\,\text{ArcTan}\left[\frac{\sqrt{d\,\text{Cos}[a+b\,x]}}{\sqrt{d}}\right]}{4\,b}+\frac{d^{3/2}\,\text{ArcTanh}\left[\frac{\sqrt{d\,\text{Cos}[a+b\,x]}}{\sqrt{d}}\right]}{4\,b}-\frac{d\,\sqrt{d\,\text{Cos}[a+b\,x]}\,\text{Csc}[a+b\,x]^2}{2\,b}$$

Result (type 5, 76 leaves):

$$\frac{1}{6\,b}(d\,\text{Cos}[a+b\,x])^{3/2}\left(-\text{Cot}[a+b\,x]^2\right)^{3/4}\left(3\left(-\text{Cot}[a+b\,x]^2\right)^{1/4}+\text{Hypergeometric2F1}\left[\frac{3}{4},\frac{3}{4},\frac{7}{4},\text{Csc}[a+b\,x]^2\right]\right)\text{Sec}[a+b\,x]^3$$

- **Problem 247: Result unnecessarily involves higher level functions.**

$$\int\sqrt{d\,\text{Cos}[a+b\,x]}\,\text{Csc}[a+b\,x]^3\,dx$$

Optimal (type 3, 93 leaves, 6 steps):

$$\frac{\sqrt{d}\,\text{ArcTan}\left[\frac{\sqrt{d\,\text{Cos}[a+b\,x]}}{\sqrt{d}}\right]}{4\,b}-\frac{\sqrt{d}\,\text{ArcTanh}\left[\frac{\sqrt{d\,\text{Cos}[a+b\,x]}}{\sqrt{d}}\right]}{4\,b}-\frac{(d\,\text{Cos}[a+b\,x])^{3/2}\,\text{Csc}[a+b\,x]^2}{2\,b\,d}$$

Result (type 5, 62 leaves):

$$-\frac{d\left(\text{Cot}[a+b\,x]^2+\left(-\text{Cot}[a+b\,x]^2\right)^{1/4}\,\text{Hypergeometric2F1}\left[\frac{1}{4},\frac{1}{4},\frac{5}{4},\text{Csc}[a+b\,x]^2\right]\right)}{2\,b\,\sqrt{d\,\text{Cos}[a+b\,x]}}$$

- **Problem 248: Result unnecessarily involves higher level functions.**

$$\int\frac{\text{Csc}[a+b\,x]^3}{\sqrt{d\,\text{Cos}[a+b\,x]}}\,dx$$

Optimal (type 3, 93 leaves, 6 steps):

$$-\frac{3\,\text{ArcTan}\left[\frac{\sqrt{d\,\text{Cos}[a+b\,x]}}{\sqrt{d}}\right]}{4\,b\,\sqrt{d}}-\frac{3\,\text{ArcTanh}\left[\frac{\sqrt{d\,\text{Cos}[a+b\,x]}}{\sqrt{d}}\right]}{4\,b\,\sqrt{d}}-\frac{\sqrt{d\,\text{Cos}[a+b\,x]}\,\text{Csc}[a+b\,x]^2}{2\,b\,d}$$

Result (type 5, 69 leaves):

$$\frac{d\left(-\text{Cot}[a+b\,x]^2\right)^{3/4}\left(\left(-\text{Cot}[a+b\,x]^2\right)^{1/4}-\text{Hypergeometric2F1}\left[\frac{3}{4},\frac{3}{4},\frac{7}{4},\text{Csc}[a+b\,x]^2\right]\right)}{2\,b\,(d\,\text{Cos}[a+b\,x])^{3/2}}$$

- **Problem 249: Result unnecessarily involves higher level functions.**

$$\int\frac{\text{Csc}[a+b\,x]^3}{(d\,\text{Cos}[a+b\,x])^{3/2}}\,dx$$

Optimal (type 3, 115 leaves, 7 steps):

$$\frac{5\,\text{ArcTan}\left[\frac{\sqrt{d\,\text{Cos}[a+b\,x]}}{\sqrt{d}}\right]}{4\,b\,d^{3/2}}-\frac{5\,\text{ArcTanh}\left[\frac{\sqrt{d\,\text{Cos}[a+b\,x]}}{\sqrt{d}}\right]}{4\,b\,d^{3/2}}+\frac{5}{2\,b\,d\,\sqrt{d\,\text{Cos}[a+b\,x]}}-\frac{\text{Csc}[a+b\,x]^2}{2\,b\,d\,\sqrt{d\,\text{Cos}[a+b\,x]}}$$

Result (type 5, 91 leaves) :

$$-\frac{\left(-\text{Cot}[a+b\,x]^2\right)^{3/4}\left(-4+\text{Cot}[a+b\,x]^2\right)+5\,\text{Cot}[a+b\,x]^2\,\text{Hypergeometric2F1}\left[\frac{1}{4},\frac{1}{4},\frac{5}{4},\text{Csc}[a+b\,x]^2\right]}{2\,b\,d\,\sqrt{d\,\text{Cos}[a+b\,x]}\,\left(-\text{Cot}[a+b\,x]^2\right)^{3/4}}$$

- **Problem 250: Result unnecessarily involves higher level functions.**

$$\int\frac{\text{Csc}[a+b\,x]^3}{(d\,\text{Cos}[a+b\,x])^{5/2}}\,dx$$

Optimal (type 3, 115 leaves, 7 steps) :

$$-\frac{7\,\text{ArcTan}\left[\frac{\sqrt{d\,\text{Cos}[a+b\,x]}}{\sqrt{d}}\right]}{4\,b\,d^{5/2}}-\frac{7\,\text{ArcTanh}\left[\frac{\sqrt{d\,\text{Cos}[a+b\,x]}}{\sqrt{d}}\right]}{4\,b\,d^{5/2}}+\frac{7}{6\,b\,d\,(d\,\text{Cos}[a+b\,x])^{3/2}}-\frac{\text{Csc}[a+b\,x]^2}{2\,b\,d\,(d\,\text{Cos}[a+b\,x])^{3/2}}$$

Result (type 5, 92 leaves) :

$$\frac{\left(-\text{Cot}[a+b\,x]^2\right)^{1/4}\left(4-3\,\text{Cot}[a+b\,x]^2\right)+7\,\text{Cot}[a+b\,x]^2\,\text{Hypergeometric2F1}\left[\frac{3}{4},\frac{3}{4},\frac{7}{4},\text{Csc}[a+b\,x]^2\right]}{6\,b\,d\,(d\,\text{Cos}[a+b\,x])^{3/2}\left(-\text{Cot}[a+b\,x]^2\right)^{1/4}}$$

- **Problem 251: Result unnecessarily involves higher level functions.**

$$\int\frac{\text{Csc}[a+b\,x]^3}{(d\,\text{Cos}[a+b\,x])^{7/2}}\,dx$$

Optimal (type 3, 137 leaves, 8 steps) :

$$\frac{9\,\text{ArcTan}\left[\frac{\sqrt{d\,\text{Cos}[a+b\,x]}}{\sqrt{d}}\right]}{4\,b\,d^{7/2}}-\frac{9\,\text{ArcTanh}\left[\frac{\sqrt{d\,\text{Cos}[a+b\,x]}}{\sqrt{d}}\right]}{4\,b\,d^{7/2}}+\frac{9}{10\,b\,d\,(d\,\text{Cos}[a+b\,x])^{5/2}}+\frac{9}{2\,b\,d^3\,\sqrt{d\,\text{Cos}[a+b\,x]}}-\frac{\text{Csc}[a+b\,x]^2}{2\,b\,d\,(d\,\text{Cos}[a+b\,x])^{5/2}}$$

Result (type 5, 102 leaves) :

$$\left(45\,\text{Cot}[a+b\,x]^2\,\text{Hypergeometric2F1}\left[\frac{1}{4},\frac{1}{4},\frac{5}{4},\text{Csc}[a+b\,x]^2\right]+\left(-\text{Cot}[a+b\,x]^2\right)^{3/4}\left(40-5\,\text{Cot}[a+b\,x]^2+4\,\text{Sec}[a+b\,x]^2\right)\right)\Big/$$
$$\left(10\,b\,d^3\,\sqrt{d\,\text{Cos}[a+b\,x]}\,\left(-\text{Cot}[a+b\,x]^2\right)^{3/4}\right)$$

- **Problem 257: Result unnecessarily involves higher level functions.**

$$\int(d\,\text{Cos}[a+b\,x])^{9/2}\,\sqrt{c\,\text{Sin}[a+b\,x]}\,dx$$

Optimal (type 4, 132 leaves, 4 steps) :

$$\frac{7 d^3 (d \text{Cos}[a+b x])^{3/2} (c \text{Sin}[a+b x])^{3/2}}{30 b c}+$$

$$\frac{d (d \text{Cos}[a+b x])^{7/2} (c \text{Sin}[a+b x])^{3/2}}{5 b c}+\frac{7 d^4 \sqrt{d \text{Cos}[a+b x]}\ \text{EllipticE}\left[a-\frac{\pi}{4}+b x, 2\right] \sqrt{c \text{Sin}[a+b x]}}{20 b \sqrt{\text{Sin}[2 a+2 b x]}}$$

Result (type 5, 109 leaves) :

$$\frac{1}{120 b \left(\text{Sin}[a+b x]^2\right)^{3/4}} d^4 \sqrt{d \text{Cos}[a+b x]} \sqrt{c \text{Sin}[a+b x]}$$

$$\left(-14 \text{Hypergeometric2F1}\left[\frac{1}{4}, \frac{3}{4}, \frac{7}{4}, \text{Cos}[a+b x]^2\right] \text{Sin}[2 (a+b x)]+\left(\text{Sin}[a+b x]^2\right)^{3/4} (20 \text{Sin}[2 (a+b x)]+3 \text{Sin}[4 (a+b x)])\right)$$

- **Problem 258: Result unnecessarily involves higher level functions.**

$$\int (d \text{Cos}[a+b x])^{5/2} \sqrt{c \text{Sin}[a+b x]}\, dx$$

Optimal (type 4, 95 leaves, 3 steps) :

$$\frac{d (d \text{Cos}[a+b x])^{3/2} (c \text{Sin}[a+b x])^{3/2}}{3 b c}+\frac{d^2 \sqrt{d \text{Cos}[a+b x]}\ \text{EllipticE}\left[a-\frac{\pi}{4}+b x, 2\right] \sqrt{c \text{Sin}[a+b x]}}{2 b \sqrt{\text{Sin}[2 a+2 b x]}}$$

Result (type 5, 87 leaves) :

$$\frac{1}{6 b \left(\text{Sin}[a+b x]^2\right)^{3/4}} d^2 \sqrt{d \text{Cos}[a+b x]} \sqrt{c \text{Sin}[a+b x]} \left(-\text{Hypergeometric2F1}\left[\frac{1}{4}, \frac{3}{4}, \frac{7}{4}, \text{Cos}[a+b x]^2\right]+\left(\text{Sin}[a+b x]^2\right)^{3/4}\right) \text{Sin}[2 (a+b x)]$$

- **Problem 259: Result unnecessarily involves higher level functions.**

$$\int \sqrt{d \text{Cos}[a+b x]} \sqrt{c \text{Sin}[a+b x]}\, dx$$

Optimal (type 4, 53 leaves, 2 steps) :

$$\frac{\sqrt{d \text{Cos}[a+b x]}\ \text{EllipticE}\left[a-\frac{\pi}{4}+b x, 2\right] \sqrt{c \text{Sin}[a+b x]}}{b \sqrt{\text{Sin}[2 a+2 b x]}}$$

Result (type 5, 69 leaves) :

$$-\frac{\sqrt{d \text{Cos}[a+b x]}\ \text{Hypergeometric2F1}\left[\frac{1}{4}, \frac{3}{4}, \frac{7}{4}, \text{Cos}[a+b x]^2\right] \sqrt{c \text{Sin}[a+b x]}\ \text{Sin}[2 (a+b x)]}{3 b \left(\text{Sin}[a+b x]^2\right)^{3/4}}$$

- **Problem 260: Result unnecessarily involves higher level functions.**

$$\int \frac{\sqrt{c \text{Sin}[a+b x]}}{(d \text{Cos}[a+b x])^{3/2}}\, dx$$

Optimal (type 4, 93 leaves, 3 steps):

$$\frac{2\,(c\,\text{Sin}[a+b\,x])^{3/2}}{b\,c\,d\,\sqrt{d\,\text{Cos}[a+b\,x]}}-\frac{2\,\sqrt{d\,\text{Cos}[a+b\,x]}\;\text{EllipticE}\left[a-\frac{\pi}{4}+b\,x,\,2\right]\sqrt{c\,\text{Sin}[a+b\,x]}}{b\,d^2\,\sqrt{\text{Sin}[2\,a+2\,b\,x]}}$$

Result (type 5, 92 leaves):

$$\frac{2\,(c\,\text{Sin}[a+b\,x])^{3/2}\left(2\,\text{Cos}[a+b\,x]^2\,\text{Hypergeometric2F1}\left[\frac{1}{4},\frac{3}{4},\frac{7}{4},\text{Cos}[a+b\,x]^2\right]+3\,\left(\text{Sin}[a+b\,x]^2\right)^{3/4}\right)}{3\,b\,c\,d\,\sqrt{d\,\text{Cos}[a+b\,x]}\,\left(\text{Sin}[a+b\,x]^2\right)^{3/4}}$$

- **Problem 261: Result unnecessarily involves higher level functions.**

$$\int\frac{\sqrt{c\,\text{Sin}[a+b\,x]}}{(d\,\text{Cos}[a+b\,x])^{7/2}}\,dx$$

Optimal (type 4, 134 leaves, 4 steps):

$$\frac{2\,(c\,\text{Sin}[a+b\,x])^{3/2}}{5\,b\,c\,d\,(d\,\text{Cos}[a+b\,x])^{5/2}}+\frac{4\,(c\,\text{Sin}[a+b\,x])^{3/2}}{5\,b\,c\,d^3\,\sqrt{d\,\text{Cos}[a+b\,x]}}-\frac{4\,\sqrt{d\,\text{Cos}[a+b\,x]}\;\text{EllipticE}\left[a-\frac{\pi}{4}+b\,x,\,2\right]\sqrt{c\,\text{Sin}[a+b\,x]}}{5\,b\,d^4\,\sqrt{\text{Sin}[2\,a+2\,b\,x]}}$$

Result (type 5, 110 leaves):

$$\left(2\,\sqrt{c\,\text{Sin}[a+b\,x]}\left(4\,\text{Cos}[a+b\,x]^3\,\text{Hypergeometric2F1}\left[\frac{1}{4},\frac{3}{4},\frac{7}{4},\text{Cos}[a+b\,x]^2\right]\text{Sin}[a+b\,x]+3\,\left(\text{Sin}[a+b\,x]^2\right)^{3/4}\,(\text{Sin}[2\,(a+b\,x)]+\text{Tan}[a+b\,x])\right)\right)\Big/\left(15\,b\,d^2\,(d\,\text{Cos}[a+b\,x])^{3/2}\,\left(\text{Sin}[a+b\,x]^2\right)^{3/4}\right)$$

- **Problem 262: Result unnecessarily involves higher level functions.**

$$\int(d\,\text{Cos}[a+b\,x])^{3/2}\,\sqrt{c\,\text{Sin}[a+b\,x]}\,dx$$

Optimal (type 3, 320 leaves, 11 steps):

$$-\frac{\sqrt{c}\,d^{3/2}\,\text{ArcTan}\left[1-\frac{\sqrt{2}\,\sqrt{d}\,\sqrt{c\,\text{Sin}[a+b\,x]}}{\sqrt{c}\,\sqrt{d\,\text{Cos}[a+b\,x]}}\right]}{4\,\sqrt{2}\,b}+\frac{\sqrt{c}\,d^{3/2}\,\text{ArcTan}\left[1+\frac{\sqrt{2}\,\sqrt{d}\,\sqrt{c\,\text{Sin}[a+b\,x]}}{\sqrt{c}\,\sqrt{d\,\text{Cos}[a+b\,x]}}\right]}{4\,\sqrt{2}\,b}+\frac{\sqrt{c}\,d^{3/2}\,\text{Log}\left[\sqrt{c}-\frac{\sqrt{2}\,\sqrt{d}\,\sqrt{c\,\text{Sin}[a+b\,x]}}{\sqrt{d\,\text{Cos}[a+b\,x]}}+\sqrt{c}\,\text{Tan}[a+b\,x]\right]}{8\,\sqrt{2}\,b}-\frac{\sqrt{c}\,d^{3/2}\,\text{Log}\left[\sqrt{c}+\frac{\sqrt{2}\,\sqrt{d}\,\sqrt{c\,\text{Sin}[a+b\,x]}}{\sqrt{d\,\text{Cos}[a+b\,x]}}+\sqrt{c}\,\text{Tan}[a+b\,x]\right]}{8\,\sqrt{2}\,b}+\frac{d\,\sqrt{d\,\text{Cos}[a+b\,x]}\,(c\,\text{Sin}[a+b\,x])^{3/2}}{2\,b\,c}$$

Result (type 5, 82 leaves):

$$\frac{1}{2\,b\,\left(\text{Sin}[a+b\,x]^2\right)^{3/4}}(d\,\text{Cos}[a+b\,x])^{3/2}\,\sqrt{c\,\text{Sin}[a+b\,x]}\,\left(-\text{Hypergeometric2F1}\left[\frac{1}{4},\frac{1}{4},\frac{5}{4},\text{Cos}[a+b\,x]^2\right]+\left(\text{Sin}[a+b\,x]^2\right)^{3/4}\right)\text{Tan}[a+b\,x]$$

Problem 263: Result unnecessarily involves higher level functions.

$$\int \frac{\sqrt{c \operatorname{Sin}[a+b x]}}{\sqrt{d \operatorname{Cos}[a+b x]}} \, dx$$

Optimal (type 3, 280 leaves, 10 steps):

$$-\frac{\sqrt{c}\, \operatorname{ArcTan}\left[1-\frac{\sqrt{2}\, \sqrt{d}\, \sqrt{c \operatorname{Sin}[a+b x]}}{\sqrt{c}\, \sqrt{d \operatorname{Cos}[a+b x]}}\right]}{\sqrt{2}\, b \sqrt{d}}+\frac{\sqrt{c}\, \operatorname{ArcTan}\left[1+\frac{\sqrt{2}\, \sqrt{d}\, \sqrt{c \operatorname{Sin}[a+b x]}}{\sqrt{c}\, \sqrt{d \operatorname{Cos}[a+b x]}}\right]}{\sqrt{2}\, b \sqrt{d}}+$$

$$\frac{\sqrt{c}\, \operatorname{Log}\left[\sqrt{c}-\frac{\sqrt{2}\, \sqrt{d}\, \sqrt{c \operatorname{Sin}[a+b x]}}{\sqrt{d \operatorname{Cos}[a+b x]}}+\sqrt{c}\, \operatorname{Tan}[a+b x]\right]}{2 \sqrt{2}\, b \sqrt{d}}-\frac{\sqrt{c}\, \operatorname{Log}\left[\sqrt{c}+\frac{\sqrt{2}\, \sqrt{d}\, \sqrt{c \operatorname{Sin}[a+b x]}}{\sqrt{d \operatorname{Cos}[a+b x]}}+\sqrt{c}\, \operatorname{Tan}[a+b x]\right]}{2 \sqrt{2}\, b \sqrt{d}}$$

Result (type 5, 67 leaves):

$$-\frac{\operatorname{Hypergeometric2F1}\left[\frac{1}{4}, \frac{1}{4}, \frac{5}{4}, \operatorname{Cos}[a+b x]^2\right] \sqrt{c \operatorname{Sin}[a+b x]}\, \operatorname{Sin}[2 (a+b x)]}{b \sqrt{d \operatorname{Cos}[a+b x]}\, \left(\operatorname{Sin}[a+b x]^2\right)^{3/4}}$$

Problem 267: Result unnecessarily involves higher level functions.

$$\int (d \operatorname{Cos}[a+b x])^{3/2} (c \operatorname{Sin}[a+b x])^{3/2} \, dx$$

Optimal (type 4, 131 leaves, 4 steps):

$$\frac{c d \sqrt{d \operatorname{Cos}[a+b x]}\, \sqrt{c \operatorname{Sin}[a+b x]}}{6 b}-\frac{c (d \operatorname{Cos}[a+b x])^{5/2} \sqrt{c \operatorname{Sin}[a+b x]}}{3 b d}+\frac{c^2 d^2 \operatorname{EllipticF}\left[a-\frac{\pi}{4}+b x, 2\right] \sqrt{\operatorname{Sin}[2 a+2 b x]}}{12 b \sqrt{d \operatorname{Cos}[a+b x]}\, \sqrt{c \operatorname{Sin}[a+b x]}}$$

Result (type 5, 85 leaves):

$$-\frac{1}{6 b \left(\operatorname{Sin}[a+b x]^2\right)^{1/4}} c d \sqrt{d \operatorname{Cos}[a+b x]}\, \sqrt{c \operatorname{Sin}[a+b x]} \left(\operatorname{Hypergeometric2F1}\left[\frac{1}{4}, \frac{3}{4}, \frac{5}{4}, \operatorname{Cos}[a+b x]^2\right]+\operatorname{Cos}[2 (a+b x)] \left(\operatorname{Sin}[a+b x]^2\right)^{1/4}\right)$$

Problem 268: Result unnecessarily involves higher level functions.

$$\int \frac{(c \operatorname{Sin}[a+b x])^{3/2}}{\sqrt{d \operatorname{Cos}[a+b x]}} \, dx$$

Optimal (type 4, 93 leaves, 3 steps):

$$-\frac{c \sqrt{d \operatorname{Cos}[a+b x]}\, \sqrt{c \operatorname{Sin}[a+b x]}}{b d}+\frac{c^2 \operatorname{EllipticF}\left[a-\frac{\pi}{4}+b x, 2\right] \sqrt{\operatorname{Sin}[2 a+2 b x]}}{2 b \sqrt{d \operatorname{Cos}[a+b x]}\, \sqrt{c \operatorname{Sin}[a+b x]}}$$

Result (type 5, 67 leaves):

$$-\frac{\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{4},\frac{5}{4},\text{Cos}[a+b x]^2\right](c\,\text{Sin}[a+b x])^{3/2}\,\text{Sin}[2(a+b x)]}{b\sqrt{d\,\text{Cos}[a+b x]}\left(\text{Sin}[a+b x]^2\right)^{5/4}}$$

- **Problem 269: Result unnecessarily involves higher level functions.**

$$\int\frac{(c\,\text{Sin}[a+b x])^{3/2}}{(d\,\text{Cos}[a+b x])^{5/2}}\,dx$$

Optimal (type 4, 98 leaves, 3 steps):

$$\frac{2c\sqrt{c\,\text{Sin}[a+b x]}}{3 b d\,(d\,\text{Cos}[a+b x])^{3/2}}-\frac{c^2\,\text{EllipticF}\left[a-\frac{\pi}{4}+b x,2\right]\sqrt{\text{Sin}[2a+2b x]}}{3 b d^2\sqrt{d\,\text{Cos}[a+b x]}\sqrt{c\,\text{Sin}[a+b x]}}$$

Result (type 5, 93 leaves):

$$\left(2(c\,\text{Sin}[a+b x])^{3/2}\left(2\,\text{Cot}[a+b x]^2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{4},\frac{5}{4},\text{Cos}[a+b x]^2\right]+\left(\text{Sin}[a+b x]^2\right)^{1/4}\right)\text{Tan}[a+b x]\right)\Big/\left(3 b d^2\sqrt{d\,\text{Cos}[a+b x]}\left(\text{Sin}[a+b x]^2\right)^{1/4}\right)$$

- **Problem 270: Result unnecessarily involves higher level functions.**

$$\int\frac{(c\,\text{Sin}[a+b x])^{3/2}}{(d\,\text{Cos}[a+b x])^{9/2}}\,dx$$

Optimal (type 4, 133 leaves, 4 steps):

$$\frac{2c\sqrt{c\,\text{Sin}[a+b x]}}{7 b d\,(d\,\text{Cos}[a+b x])^{7/2}}-\frac{2c\sqrt{c\,\text{Sin}[a+b x]}}{21 b d^3\,(d\,\text{Cos}[a+b x])^{3/2}}-\frac{2c^2\,\text{EllipticF}\left[a-\frac{\pi}{4}+b x,2\right]\sqrt{\text{Sin}[2a+2b x]}}{21 b d^4\sqrt{d\,\text{Cos}[a+b x]}\sqrt{c\,\text{Sin}[a+b x]}}$$

Result (type 5, 103 leaves):

$$\frac{1}{21 b d^5\left(\text{Sin}[a+b x]^2\right)^{1/4}}$$

$$2c\sqrt{d\,\text{Cos}[a+b x]}\sqrt{c\,\text{Sin}[a+b x]}\left(4\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{4},\frac{5}{4},\text{Cos}[a+b x]^2\right]+\left(-2-\text{Sec}[a+b x]^2+3\,\text{Sec}[a+b x]^4\right)\left(\text{Sin}[a+b x]^2\right)^{1/4}\right)$$

- **Problem 271: Result unnecessarily involves higher level functions.**

$$\int\sqrt{d\,\text{Cos}[a+b x]}\,(c\,\text{Sin}[a+b x])^{3/2}\,dx$$

Optimal (type 3, 320 leaves, 11 steps):

$$\frac{c^{3/2}\sqrt{d}\,\text{ArcTan}\left[1-\frac{\sqrt{2}\sqrt{c}\sqrt{d\,\text{Cos}[a+b\,x]}}{\sqrt{d}\sqrt{c\,\text{Sin}[a+b\,x]}}\right]}{4\sqrt{2}\,b}-\frac{c^{3/2}\sqrt{d}\,\text{ArcTan}\left[1+\frac{\sqrt{2}\sqrt{c}\sqrt{d\,\text{Cos}[a+b\,x]}}{\sqrt{d}\sqrt{c\,\text{Sin}[a+b\,x]}}\right]}{4\sqrt{2}\,b}-\frac{c^{3/2}\sqrt{d}\,\text{Log}\left[\sqrt{d}+\sqrt{d}\,\text{Cot}[a+b\,x]-\frac{\sqrt{2}\sqrt{c}\sqrt{d\,\text{Cos}[a+b\,x]}}{\sqrt{c\,\text{Sin}[a+b\,x]}}\right]}{8\sqrt{2}\,b}+$$

$$\frac{c^{3/2}\sqrt{d}\,\text{Log}\left[\sqrt{d}+\sqrt{d}\,\text{Cot}[a+b\,x]+\frac{\sqrt{2}\sqrt{c}\sqrt{d\,\text{Cos}[a+b\,x]}}{\sqrt{c\,\text{Sin}[a+b\,x]}}\right]}{8\sqrt{2}\,b}-\frac{c\,(d\,\text{Cos}[a+b\,x])^{3/2}\sqrt{c\,\text{Sin}[a+b\,x]}}{2\,b\,d}$$

Result (type 5, 80 leaves) :

$$-\frac{1}{6\,b\,d\,\left(\text{Sin}[a+b\,x]^2\right)^{1/4}}c\,(d\,\text{Cos}[a+b\,x])^{3/2}\sqrt{c\,\text{Sin}[a+b\,x]}\left(\text{Hypergeometric2F1}\left[\frac{3}{4},\frac{3}{4},\frac{7}{4},\text{Cos}[a+b\,x]^2\right]+3\left(\text{Sin}[a+b\,x]^2\right)^{1/4}\right)$$

- **Problem 272: Result unnecessarily involves higher level functions.**

$$\int\frac{(c\,\text{Sin}[a+b\,x])^{3/2}}{(d\,\text{Cos}[a+b\,x])^{3/2}}\,dx$$

Optimal (type 3, 313 leaves, 11 steps) :

$$-\frac{c^{3/2}\,\text{ArcTan}\left[1-\frac{\sqrt{2}\sqrt{c}\sqrt{d\,\text{Cos}[a+b\,x]}}{\sqrt{d}\sqrt{c\,\text{Sin}[a+b\,x]}}\right]}{\sqrt{2}\,b\,d^{3/2}}+\frac{c^{3/2}\,\text{ArcTan}\left[1+\frac{\sqrt{2}\sqrt{c}\sqrt{d\,\text{Cos}[a+b\,x]}}{\sqrt{d}\sqrt{c\,\text{Sin}[a+b\,x]}}\right]}{\sqrt{2}\,b\,d^{3/2}}+$$

$$\frac{c^{3/2}\,\text{Log}\left[\sqrt{d}+\sqrt{d}\,\text{Cot}[a+b\,x]-\frac{\sqrt{2}\sqrt{c}\sqrt{d\,\text{Cos}[a+b\,x]}}{\sqrt{c\,\text{Sin}[a+b\,x]}}\right]}{2\sqrt{2}\,b\,d^{3/2}}-\frac{c^{3/2}\,\text{Log}\left[\sqrt{d}+\sqrt{d}\,\text{Cot}[a+b\,x]+\frac{\sqrt{2}\sqrt{c}\sqrt{d\,\text{Cos}[a+b\,x]}}{\sqrt{c\,\text{Sin}[a+b\,x]}}\right]}{2\sqrt{2}\,b\,d^{3/2}}+\frac{2\,c\sqrt{c\,\text{Sin}[a+b\,x]}}{b\,d\sqrt{d\,\text{Cos}[a+b\,x]}}$$

Result (type 5, 89 leaves) :

$$\frac{2\,c\sqrt{c\,\text{Sin}[a+b\,x]}\left(\text{Cos}[a+b\,x]^2\,\text{Hypergeometric2F1}\left[\frac{3}{4},\frac{3}{4},\frac{7}{4},\text{Cos}[a+b\,x]^2\right]+3\left(\text{Sin}[a+b\,x]^2\right)^{1/4}\right)}{3\,b\,d\sqrt{d\,\text{Cos}[a+b\,x]}\left(\text{Sin}[a+b\,x]^2\right)^{1/4}}$$

- **Problem 276: Result unnecessarily involves higher level functions.**

$$\int(d\,\text{Cos}[a+b\,x])^{9/2}\,(c\,\text{Sin}[a+b\,x])^{5/2}\,dx$$

Optimal (type 4, 166 leaves, 5 steps) :

$$\frac{c\,d^3\,(d\,\text{Cos}[a+b\,x])^{3/2}\,(c\,\text{Sin}[a+b\,x])^{3/2}}{20\,b}+\frac{3\,c\,d\,(d\,\text{Cos}[a+b\,x])^{7/2}\,(c\,\text{Sin}[a+b\,x])^{3/2}}{70\,b}-$$

$$\frac{c\,(d\,\text{Cos}[a+b\,x])^{11/2}\,(c\,\text{Sin}[a+b\,x])^{3/2}}{7\,b\,d}+\frac{3\,c^2\,d^4\sqrt{d\,\text{Cos}[a+b\,x]}\,\text{EllipticE}\left[a-\frac{\pi}{4}+b\,x,2\right]\sqrt{c\,\text{Sin}[a+b\,x]}}{40\,b\sqrt{\text{Sin}[2\,a+2\,b\,x]}}$$

Result (type 5, 122 leaves) :

$$-\frac{1}{1120\, b\, \left(\text{Sin}[a+b\, x]^2\right)^{3/4}} c^2\, d^4\, \sqrt{d\, \text{Cos}[a+b\, x]}\, \sqrt{c\, \text{Sin}[a+b\, x]}\, \left(28\, \text{Hypergeometric2F1}\left[\frac{1}{4}, \frac{3}{4}, \frac{7}{4}, \text{Cos}[a+b\, x]^2\right] \text{Sin}[2\, (a+b\, x)] + \left(\text{Sin}[a+b\, x]^2\right)^{3/4} (-15\, \text{Sin}[2\, (a+b\, x)] + 14\, \text{Sin}[4\, (a+b\, x)] + 5\, \text{Sin}[6\, (a+b\, x)])\right)$$

- **Problem 277: Result unnecessarily involves higher level functions.**

$$\int (d\, \text{Cos}[a+b\, x])^{5/2}\, (c\, \text{Sin}[a+b\, x])^{5/2}\, dx$$

Optimal (type 4, 131 leaves, 4 steps):

$$\frac{c\, d\, (d\, \text{Cos}[a+b\, x])^{3/2}\, (c\, \text{Sin}[a+b\, x])^{3/2}}{10\, b} - \frac{c\, (d\, \text{Cos}[a+b\, x])^{7/2}\, (c\, \text{Sin}[a+b\, x])^{3/2}}{5\, b\, d} + \frac{3\, c^2\, d^2\, \sqrt{d\, \text{Cos}[a+b\, x]}\, \text{EllipticE}\left[a-\frac{\pi}{4}+b\, x, 2\right] \sqrt{c\, \text{Sin}[a+b\, x]}}{20\, b\, \sqrt{\text{Sin}[2\, a+2\, b\, x]}}$$

Result (type 5, 99 leaves):

$$-\frac{1}{40\, b\, \left(\text{Sin}[a+b\, x]^2\right)^{3/4}} c^2\, d^2\, \sqrt{d\, \text{Cos}[a+b\, x]}\, \sqrt{c\, \text{Sin}[a+b\, x]}\, \left(2\, \text{Hypergeometric2F1}\left[\frac{1}{4}, \frac{3}{4}, \frac{7}{4}, \text{Cos}[a+b\, x]^2\right] \text{Sin}[2\, (a+b\, x)] + \left(\text{Sin}[a+b\, x]^2\right)^{3/4} \text{Sin}[4\, (a+b\, x)]\right)$$

- **Problem 278: Result unnecessarily involves higher level functions.**

$$\int \sqrt{d\, \text{Cos}[a+b\, x]}\, (c\, \text{Sin}[a+b\, x])^{5/2}\, dx$$

Optimal (type 4, 95 leaves, 3 steps):

$$-\frac{c\, (d\, \text{Cos}[a+b\, x])^{3/2}\, (c\, \text{Sin}[a+b\, x])^{3/2}}{3\, b\, d} + \frac{c^2\, \sqrt{d\, \text{Cos}[a+b\, x]}\, \text{EllipticE}\left[a-\frac{\pi}{4}+b\, x, 2\right] \sqrt{c\, \text{Sin}[a+b\, x]}}{2\, b\, \sqrt{\text{Sin}[2\, a+2\, b\, x]}}$$

Result (type 5, 85 leaves):

$$-\frac{1}{6\, b\, \left(\text{Sin}[a+b\, x]^2\right)^{3/4}} c^2\, \sqrt{d\, \text{Cos}[a+b\, x]}\, \sqrt{c\, \text{Sin}[a+b\, x]}\, \left(\text{Hypergeometric2F1}\left[\frac{1}{4}, \frac{3}{4}, \frac{7}{4}, \text{Cos}[a+b\, x]^2\right] + \left(\text{Sin}[a+b\, x]^2\right)^{3/4}\right) \text{Sin}[2\, (a+b\, x)]$$

- **Problem 279: Result unnecessarily involves higher level functions.**

$$\int \frac{(c\, \text{Sin}[a+b\, x])^{5/2}}{(d\, \text{Cos}[a+b\, x])^{3/2}}\, dx$$

Optimal (type 4, 94 leaves, 3 steps):

$$\frac{2 c (c \operatorname{Sin}[a+b x])^{3/2}}{b d \sqrt{d \operatorname{Cos}[a+b x]}}-\frac{3 c^2 \sqrt{d \operatorname{Cos}[a+b x]}\ \operatorname{EllipticE}\left[a-\frac{\pi}{4}+b x, 2\right] \sqrt{c \operatorname{Sin}[a+b x]}}{b d^2 \sqrt{\operatorname{Sin}[2 a+2 b x]}}$$

Result (type 5, 85 leaves):

$$\frac{2 c (c \operatorname{Sin}[a+b x])^{3/2} \left(\operatorname{Cos}[a+b x]^2 \operatorname{Hypergeometric2F1}\left[\frac{1}{4}, \frac{3}{4}, \frac{7}{4}, \operatorname{Cos}[a+b x]^2\right]+\left(\operatorname{Sin}[a+b x]^2\right)^{3/4}\right)}{b d \sqrt{d \operatorname{Cos}[a+b x]} \left(\operatorname{Sin}[a+b x]^2\right)^{3/4}}$$

■ Problem 280: Result unnecessarily involves higher level functions.

$$\int \frac{(c \operatorname{Sin}[a+b x])^{5/2}}{(d \operatorname{Cos}[a+b x])^{7/2}} \, dx$$

Optimal (type 4, 133 leaves, 4 steps):

$$\frac{2 c (c \operatorname{Sin}[a+b x])^{3/2}}{5 b d (d \operatorname{Cos}[a+b x])^{5/2}}-\frac{6 c (c \operatorname{Sin}[a+b x])^{3/2}}{5 b d^3 \sqrt{d \operatorname{Cos}[a+b x]}}+\frac{6 c^2 \sqrt{d \operatorname{Cos}[a+b x]}\ \operatorname{EllipticE}\left[a-\frac{\pi}{4}+b x, 2\right] \sqrt{c \operatorname{Sin}[a+b x]}}{5 b d^4 \sqrt{\operatorname{Sin}[2 a+2 b x]}}$$

Result (type 5, 111 leaves):

$$-\left(2 c^3 \left(2 \operatorname{Cos}[a+b x]^4 \operatorname{Hypergeometric2F1}\left[\frac{1}{4}, \frac{3}{4}, \frac{7}{4}, \operatorname{Cos}[a+b x]^2\right]+\left(-1+3 \operatorname{Cos}[a+b x]^2\right) \left(\operatorname{Sin}[a+b x]^2\right)^{3/4}\right) \operatorname{Tan}[a+b x]^2\right) \Big/ \left(5 b d^3 \sqrt{d \operatorname{Cos}[a+b x]} \sqrt{c \operatorname{Sin}[a+b x]} \left(\operatorname{Sin}[a+b x]^2\right)^{3/4}\right)$$

■ Problem 281: Result unnecessarily involves higher level functions.

$$\int \frac{(c \operatorname{Sin}[a+b x])^{5/2}}{(d \operatorname{Cos}[a+b x])^{11/2}} \, dx$$

Optimal (type 4, 168 leaves, 5 steps):

$$\frac{2 c (c \operatorname{Sin}[a+b x])^{3/2}}{9 b d (d \operatorname{Cos}[a+b x])^{9/2}}-\frac{2 c (c \operatorname{Sin}[a+b x])^{3/2}}{15 b d^3 (d \operatorname{Cos}[a+b x])^{5/2}}-\frac{4 c (c \operatorname{Sin}[a+b x])^{3/2}}{15 b d^5 \sqrt{d \operatorname{Cos}[a+b x]}}+\frac{4 c^2 \sqrt{d \operatorname{Cos}[a+b x]}\ \operatorname{EllipticE}\left[a-\frac{\pi}{4}+b x, 2\right] \sqrt{c \operatorname{Sin}[a+b x]}}{15 b d^6 \sqrt{\operatorname{Sin}[2 a+2 b x]}}$$

Result (type 5, 119 leaves):

$$-\frac{1}{45 b d^6 \left(\operatorname{Sin}[a+b x]^2\right)^{3/4}} 2 c \sqrt{d \operatorname{Cos}[a+b x]} \operatorname{Sec}[a+b x]^5 (c \operatorname{Sin}[a+b x])^{3/2} \left(4 \operatorname{Cos}[a+b x]^6 \operatorname{Hypergeometric2F1}\left[\frac{1}{4}, \frac{3}{4}, \frac{7}{4}, \operatorname{Cos}[a+b x]^2\right]+\left(-5+3 \operatorname{Cos}[a+b x]^2+6 \operatorname{Cos}[a+b x]^4\right) \left(\operatorname{Sin}[a+b x]^2\right)^{3/4}\right)$$

■ Problem 282: Result unnecessarily involves higher level functions.

$$\int \frac{(c \operatorname{Sin}[a+b x])^{5/2}}{\sqrt{d \operatorname{Cos}[a+b x]}} \, dx$$

Optimal (type 3, 320 leaves, 11 steps):

$$-\frac{3 c^{5/2} \text{ArcTan}\left[1-\frac{\sqrt{2} \sqrt{d} \sqrt{c \text{Sin}[a+b x]}}{\sqrt{c} \sqrt{d \text{Cos}[a+b x]}}\right]}{4 \sqrt{2} b \sqrt{d}}+\frac{3 c^{5/2} \text{ArcTan}\left[1+\frac{\sqrt{2} \sqrt{d} \sqrt{c \text{Sin}[a+b x]}}{\sqrt{c} \sqrt{d \text{Cos}[a+b x]}}\right]}{4 \sqrt{2} b \sqrt{d}}+\frac{3 c^{5/2} \text{Log}\left[\sqrt{c}-\frac{\sqrt{2} \sqrt{d} \sqrt{c \text{Sin}[a+b x]}}{\sqrt{d \text{Cos}[a+b x]}}+\sqrt{c} \text{Tan}[a+b x]\right]}{8 \sqrt{2} b \sqrt{d}}-\frac{3 c^{5/2} \text{Log}\left[\sqrt{c}+\frac{\sqrt{2} \sqrt{d} \sqrt{c \text{Sin}[a+b x]}}{\sqrt{d \text{Cos}[a+b x]}}+\sqrt{c} \text{Tan}[a+b x]\right]}{8 \sqrt{2} b \sqrt{d}}-\frac{c \sqrt{d \text{Cos}[a+b x]} (c \text{Sin}[a+b x])^{3/2}}{2 b d}$$

Result (type 5, 82 leaves):

$$-\frac{\text{Cot}[a+b x] (c \text{Sin}[a+b x])^{5/2} \left(3 \text{Hypergeometric2F1}\left[\frac{1}{4},\frac{1}{4},\frac{5}{4},\text{Cos}[a+b x]^2\right]+\left(\text{Sin}[a+b x]^2\right)^{3/4}\right)}{2 b \sqrt{d \text{Cos}[a+b x]} \left(\text{Sin}[a+b x]^2\right)^{3/4}}$$

Problem 283: Result unnecessarily involves higher level functions.

$$\int \frac{(c \text{Sin}[a+b x])^{5/2}}{(d \text{Cos}[a+b x])^{5/2}} \, dx$$

Optimal (type 3, 315 leaves, 11 steps):

$$\frac{c^{5/2} \text{ArcTan}\left[1-\frac{\sqrt{2} \sqrt{d} \sqrt{c \text{Sin}[a+b x]}}{\sqrt{c} \sqrt{d \text{Cos}[a+b x]}}\right]}{\sqrt{2} b d^{5/2}}-\frac{c^{5/2} \text{ArcTan}\left[1+\frac{\sqrt{2} \sqrt{d} \sqrt{c \text{Sin}[a+b x]}}{\sqrt{c} \sqrt{d \text{Cos}[a+b x]}}\right]}{\sqrt{2} b d^{5/2}}-\frac{c^{5/2} \text{Log}\left[\sqrt{c}-\frac{\sqrt{2} \sqrt{d} \sqrt{c \text{Sin}[a+b x]}}{\sqrt{d \text{Cos}[a+b x]}}+\sqrt{c} \text{Tan}[a+b x]\right]}{2 \sqrt{2} b d^{5/2}}+\frac{c^{5/2} \text{Log}\left[\sqrt{c}+\frac{\sqrt{2} \sqrt{d} \sqrt{c \text{Sin}[a+b x]}}{\sqrt{d \text{Cos}[a+b x]}}+\sqrt{c} \text{Tan}[a+b x]\right]}{2 \sqrt{2} b d^{5/2}}+\frac{2 c (c \text{Sin}[a+b x])^{3/2}}{3 b d (d \text{Cos}[a+b x])^{3/2}}$$

Result (type 5, 88 leaves):

$$\frac{2 c (c \text{Sin}[a+b x])^{3/2} \left(3 \text{Cos}[a+b x]^2 \text{Hypergeometric2F1}\left[\frac{1}{4},\frac{1}{4},\frac{5}{4},\text{Cos}[a+b x]^2\right]+\left(\text{Sin}[a+b x]^2\right)^{3/4}\right)}{3 b d (d \text{Cos}[a+b x])^{3/2} \left(\text{Sin}[a+b x]^2\right)^{3/4}}$$

Problem 287: Result unnecessarily involves higher level functions.

$$\int \frac{\text{Sin}[a+b x]^{7/2}}{\text{Cos}[a+b x]^{7/2}} \, dx$$

Optimal (type 3, 226 leaves, 12 steps):

$$\frac{\text{ArcTan}\left[1-\frac{\sqrt{2} \sqrt{\text{Cos}[a+b x]}}{\sqrt{\text{Sin}[a+b x]}}\right]}{\sqrt{2} b}-\frac{\text{ArcTan}\left[1+\frac{\sqrt{2} \sqrt{\text{Cos}[a+b x]}}{\sqrt{\text{Sin}[a+b x]}}\right]}{\sqrt{2} b}-\frac{\text{Log}\left[1+\text{Cot}[a+b x]-\frac{\sqrt{2} \sqrt{\text{Cos}[a+b x]}}{\sqrt{\text{Sin}[a+b x]}}\right]}{2 \sqrt{2} b}+\frac{\text{Log}\left[1+\text{Cot}[a+b x]+\frac{\sqrt{2} \sqrt{\text{Cos}[a+b x]}}{\sqrt{\text{Sin}[a+b x]}}\right]}{2 \sqrt{2} b}-\frac{2 \sqrt{\text{Sin}[a+b x]}}{b \sqrt{\text{Cos}[a+b x]}}+\frac{2 \text{Sin}[a+b x]^{5/2}}{5 b \text{Cos}[a+b x]^{5/2}}$$

Result (type 5, 94 leaves) :

$$-\left(2\sqrt{\text{Sin}[a+b\,x]}\left(5\,\text{Cos}[a+b\,x]^4\,\text{Hypergeometric2F1}\left[\frac{3}{4},\frac{3}{4},\frac{7}{4},\text{Cos}[a+b\,x]^2\right]+3\,(2+3\,\text{Cos}[2\,(a+b\,x)])\,\left(\text{Sin}[a+b\,x]^2\right)^{1/4}\right)\right)\Big/\left(15\,b\,\text{Cos}[a+b\,x]^{5/2}\,\left(\text{Sin}[a+b\,x]^2\right)^{1/4}\right)$$

- **Problem 289: Result unnecessarily involves higher level functions.**

$$\int \frac{\sqrt{\text{Sin}[x]}}{\sqrt{\text{Cos}[x]}}\,dx$$

Optimal (type 3, 122 leaves, 10 steps) :

$$-\frac{\text{ArcTan}\left[1-\frac{\sqrt{2}\,\sqrt{\text{Sin}[x]}}{\sqrt{\text{Cos}[x]}}\right]}{\sqrt{2}}+\frac{\text{ArcTan}\left[1+\frac{\sqrt{2}\,\sqrt{\text{Sin}[x]}}{\sqrt{\text{Cos}[x]}}\right]}{\sqrt{2}}+\frac{\text{Log}\left[1-\frac{\sqrt{2}\,\sqrt{\text{Sin}[x]}}{\sqrt{\text{Cos}[x]}}+\text{Tan}[x]\right]}{2\,\sqrt{2}}-\frac{\text{Log}\left[1+\frac{\sqrt{2}\,\sqrt{\text{Sin}[x]}}{\sqrt{\text{Cos}[x]}}+\text{Tan}[x]\right]}{2\,\sqrt{2}}$$

Result (type 5, 36 leaves) :

$$-\frac{2\,\sqrt{\text{Cos}[x]}\,\text{Hypergeometric2F1}\left[\frac{1}{4},\frac{1}{4},\frac{5}{4},\text{Cos}[x]^2\right]\,\text{Sin}[x]^{3/2}}{\left(\text{Sin}[x]^2\right)^{3/4}}$$

- **Problem 290: Result unnecessarily involves higher level functions.**

$$\int \frac{\text{Sin}[x]^{5/2}}{\sqrt{\text{Cos}[x]}}\,dx$$

Optimal (type 3, 143 leaves, 11 steps) :

$$-\frac{3\,\text{ArcTan}\left[1-\frac{\sqrt{2}\,\sqrt{\text{Sin}[x]}}{\sqrt{\text{Cos}[x]}}\right]}{4\,\sqrt{2}}+\frac{3\,\text{ArcTan}\left[1+\frac{\sqrt{2}\,\sqrt{\text{Sin}[x]}}{\sqrt{\text{Cos}[x]}}\right]}{4\,\sqrt{2}}+\frac{3\,\text{Log}\left[1-\frac{\sqrt{2}\,\sqrt{\text{Sin}[x]}}{\sqrt{\text{Cos}[x]}}+\text{Tan}[x]\right]}{8\,\sqrt{2}}-\frac{3\,\text{Log}\left[1+\frac{\sqrt{2}\,\sqrt{\text{Sin}[x]}}{\sqrt{\text{Cos}[x]}}+\text{Tan}[x]\right]}{8\,\sqrt{2}}-\frac{1}{2}\,\sqrt{\text{Cos}[x]}\,\text{Sin}[x]^{3/2}$$

Result (type 5, 49 leaves) :

$$-\frac{\sqrt{\text{Cos}[x]}\,\text{Sin}[x]^{3/2}\,\left(3\,\text{Hypergeometric2F1}\left[\frac{1}{4},\frac{1}{4},\frac{5}{4},\text{Cos}[x]^2\right]+\left(\text{Sin}[x]^2\right)^{3/4}\right)}{2\,\left(\text{Sin}[x]^2\right)^{3/4}}$$

- **Problem 291: Result unnecessarily involves higher level functions.**

$$\int \frac{(d\,\text{Cos}[a+b\,x])^{7/2}}{\sqrt{c\,\text{Sin}[a+b\,x]}}\,dx$$

Optimal (type 4, 132 leaves, 4 steps) :

$$\frac{5\,d^3\,\sqrt{d\,\text{Cos}[a+b\,x]}\,\sqrt{c\,\text{Sin}[a+b\,x]}}{6\,b\,c}+\frac{d\,(d\,\text{Cos}[a+b\,x])^{5/2}\,\sqrt{c\,\text{Sin}[a+b\,x]}}{3\,b\,c}+\frac{5\,d^4\,\text{EllipticF}\left[a-\frac{\pi}{4}+b\,x,2\right]\,\sqrt{\text{Sin}[2\,a+2\,b\,x]}}{12\,b\,\sqrt{d\,\text{Cos}[a+b\,x]}\,\sqrt{c\,\text{Sin}[a+b\,x]}}$$

Result (type 5, 140 leaves) :

$$-\frac{1}{30\,b\,c\,\left(\text{Sin}[a+b\,x]^2\right)^{1/4}}d^3\sqrt{d\,\text{Cos}[a+b\,x]}\,\sqrt{c\,\text{Sin}[a+b\,x]}\,\left(-30\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{4},\frac{5}{4},\text{Cos}[a+b\,x]^2\right]+25\,\text{Hypergeometric2F1}\left[\frac{1}{4},\frac{3}{4},\frac{5}{4},\text{Cos}[a+b\,x]^2\right]+6\,\text{Cos}[a+b\,x]^2\,\text{Hypergeometric2F1}\left[\frac{3}{4},\frac{5}{4},\frac{9}{4},\text{Cos}[a+b\,x]^2\right]-5\,\text{Cos}[2\,(a+b\,x)]\,\left(\text{Sin}[a+b\,x]^2\right)^{1/4}\right)$$

- **Problem 292: Result unnecessarily involves higher level functions.**

$$\int\frac{(d\,\text{Cos}[a+b\,x])^{3/2}}{\sqrt{c\,\text{Sin}[a+b\,x]}}\,dx$$

Optimal (type 4, 92 leaves, 3 steps) :

$$\frac{d\,\sqrt{d\,\text{Cos}[a+b\,x]}\,\sqrt{c\,\text{Sin}[a+b\,x]}}{b\,c}+\frac{d^2\,\text{EllipticF}\left[a-\frac{\pi}{4}+b\,x,2\right]\,\sqrt{\text{Sin}[2\,a+2\,b\,x]}}{2\,b\,\sqrt{d\,\text{Cos}[a+b\,x]}\,\sqrt{c\,\text{Sin}[a+b\,x]}}$$

Result (type 5, 69 leaves) :

$$-\frac{(d\,\text{Cos}[a+b\,x])^{3/2}\,\text{Hypergeometric2F1}\left[\frac{3}{4},\frac{5}{4},\frac{9}{4},\text{Cos}[a+b\,x]^2\right]\,\text{Sin}[2\,(a+b\,x)]}{5\,b\,\sqrt{c\,\text{Sin}[a+b\,x]}\,\left(\text{Sin}[a+b\,x]^2\right)^{1/4}}$$

- **Problem 293: Result unnecessarily involves higher level functions.**

$$\int\frac{1}{\sqrt{d\,\text{Cos}[a+b\,x]}\,\sqrt{c\,\text{Sin}[a+b\,x]}}\,dx$$

Optimal (type 4, 53 leaves, 2 steps) :

$$\frac{\text{EllipticF}\left[a-\frac{\pi}{4}+b\,x,2\right]\,\sqrt{\text{Sin}[2\,a+2\,b\,x]}}{b\,\sqrt{d\,\text{Cos}[a+b\,x]}\,\sqrt{c\,\text{Sin}[a+b\,x]}}$$

Result (type 5, 67 leaves) :

$$-\frac{\text{Hypergeometric2F1}\left[\frac{1}{4},\frac{3}{4},\frac{5}{4},\text{Cos}[a+b\,x]^2\right]\,\text{Sin}[2\,(a+b\,x)]}{b\,\sqrt{d\,\text{Cos}[a+b\,x]}\,\sqrt{c\,\text{Sin}[a+b\,x]}\,\left(\text{Sin}[a+b\,x]^2\right)^{1/4}}$$

- **Problem 294: Result unnecessarily involves higher level functions.**

$$\int\frac{1}{(d\,\text{Cos}[a+b\,x])^{5/2}\,\sqrt{c\,\text{Sin}[a+b\,x]}}\,dx$$

Optimal (type 4, 97 leaves, 3 steps) :

$$\frac{2\sqrt{c\,\mathrm{Sin}[a+b\,x]}}{3\,b\,c\,d\,(d\,\mathrm{Cos}[a+b\,x])^{3/2}}+\frac{2\,\mathrm{EllipticF}\left[a-\frac{\pi}{4}+b\,x,\,2\right]\sqrt{\mathrm{Sin}[2\,a+2\,b\,x]}}{3\,b\,d^2\sqrt{d\,\mathrm{Cos}[a+b\,x]}\,\sqrt{c\,\mathrm{Sin}[a+b\,x]}}$$

Result (type 5, 104 leaves) :

$$\left(2\left(-4\,\mathrm{Cos}[a+b\,x]^2\,\mathrm{Hypergeometric2F1}\left[-\frac{1}{4},\,\frac{1}{4},\,\frac{5}{4},\,\mathrm{Cos}[a+b\,x]^2\right]+(2+\mathrm{Cos}[2\,(a+b\,x)])\,\left(\mathrm{Sin}[a+b\,x]^2\right)^{1/4}\right)\mathrm{Tan}[a+b\,x]\right)\Big/\left(3\,b\,d^2\sqrt{d\,\mathrm{Cos}[a+b\,x]}\,\sqrt{c\,\mathrm{Sin}[a+b\,x]}\,\left(\mathrm{Sin}[a+b\,x]^2\right)^{1/4}\right)$$

- **Problem 295: Result unnecessarily involves higher level functions.**

$$\int\frac{1}{(d\,\mathrm{Cos}[a+b\,x])^{9/2}\sqrt{c\,\mathrm{Sin}[a+b\,x]}}\,dx$$

Optimal (type 4, 134 leaves, 4 steps) :

$$\frac{2\sqrt{c\,\mathrm{Sin}[a+b\,x]}}{7\,b\,c\,d\,(d\,\mathrm{Cos}[a+b\,x])^{7/2}}+\frac{4\sqrt{c\,\mathrm{Sin}[a+b\,x]}}{7\,b\,c\,d^3\,(d\,\mathrm{Cos}[a+b\,x])^{3/2}}+\frac{4\,\mathrm{EllipticF}\left[a-\frac{\pi}{4}+b\,x,\,2\right]\sqrt{\mathrm{Sin}[2\,a+2\,b\,x]}}{7\,b\,d^4\sqrt{d\,\mathrm{Cos}[a+b\,x]}\,\sqrt{c\,\mathrm{Sin}[a+b\,x]}}$$

Result (type 5, 103 leaves) :

$$\frac{1}{7\,b\,c\,d^5\,\left(\mathrm{Sin}[a+b\,x]^2\right)^{1/4}}2\sqrt{d\,\mathrm{Cos}[a+b\,x]}\,\sqrt{c\,\mathrm{Sin}[a+b\,x]}\,\left(-8\,\mathrm{Hypergeometric2F1}\left[-\frac{1}{4},\,\frac{1}{4},\,\frac{5}{4},\,\mathrm{Cos}[a+b\,x]^2\right]+\left(4+2\,\mathrm{Sec}[a+b\,x]^2+\mathrm{Sec}[a+b\,x]^4\right)\left(\mathrm{Sin}[a+b\,x]^2\right)^{1/4}\right)$$

- **Problem 296: Result unnecessarily involves higher level functions.**

$$\int\frac{\sqrt{d\,\mathrm{Cos}[a+b\,x]}}{\sqrt{c\,\mathrm{Sin}[a+b\,x]}}\,dx$$

Optimal (type 3, 280 leaves, 10 steps) :

$$\frac{\sqrt{d}\,\mathrm{ArcTan}\left[1-\frac{\sqrt{2}\sqrt{c}\sqrt{d\,\mathrm{Cos}[a+b\,x]}}{\sqrt{d}\sqrt{c\,\mathrm{Sin}[a+b\,x]}}\right]}{\sqrt{2}\,b\sqrt{c}}-\frac{\sqrt{d}\,\mathrm{ArcTan}\left[1+\frac{\sqrt{2}\sqrt{c}\sqrt{d\,\mathrm{Cos}[a+b\,x]}}{\sqrt{d}\sqrt{c\,\mathrm{Sin}[a+b\,x]}}\right]}{\sqrt{2}\,b\sqrt{c}}-\frac{\sqrt{d}\,\mathrm{Log}\left[\sqrt{d}+\sqrt{d}\,\mathrm{Cot}[a+b\,x]-\frac{\sqrt{2}\sqrt{c}\sqrt{d\,\mathrm{Cos}[a+b\,x]}}{\sqrt{c\,\mathrm{Sin}[a+b\,x]}}\right]}{2\sqrt{2}\,b\sqrt{c}}+\frac{\sqrt{d}\,\mathrm{Log}\left[\sqrt{d}+\sqrt{d}\,\mathrm{Cot}[a+b\,x]+\frac{\sqrt{2}\sqrt{c}\sqrt{d\,\mathrm{Cos}[a+b\,x]}}{\sqrt{c\,\mathrm{Sin}[a+b\,x]}}\right]}{2\sqrt{2}\,b\sqrt{c}}$$

Result (type 5, 69 leaves) :

$$-\frac{\sqrt{d\,\mathrm{Cos}[a+b\,x]}\,\mathrm{Hypergeometric2F1}\left[\frac{3}{4},\,\frac{3}{4},\,\frac{7}{4},\,\mathrm{Cos}[a+b\,x]^2\right]\mathrm{Sin}[2\,(a+b\,x)]}{3\,b\sqrt{c\,\mathrm{Sin}[a+b\,x]}\,\left(\mathrm{Sin}[a+b\,x]^2\right)^{1/4}}$$

Problem 300: Result unnecessarily involves higher level functions.

$$\int \frac{\sqrt{\text{Cos}[a+b\,x]}}{\sqrt{\text{Sin}[a+b\,x]}}\,dx$$

Optimal (type 3, 174 leaves, 10 steps):

$$\frac{\text{ArcTan}\left[1-\frac{\sqrt{2}\,\sqrt{\text{Cos}[a+b\,x]}}{\sqrt{\text{Sin}[a+b\,x]}}\right]}{\sqrt{2}\,b}-\frac{\text{ArcTan}\left[1+\frac{\sqrt{2}\,\sqrt{\text{Cos}[a+b\,x]}}{\sqrt{\text{Sin}[a+b\,x]}}\right]}{\sqrt{2}\,b}-\frac{\text{Log}\left[1+\text{Cot}[a+b\,x]-\frac{\sqrt{2}\,\sqrt{\text{Cos}[a+b\,x]}}{\sqrt{\text{Sin}[a+b\,x]}}\right]}{2\,\sqrt{2}\,b}+\frac{\text{Log}\left[1+\text{Cot}[a+b\,x]+\frac{\sqrt{2}\,\sqrt{\text{Cos}[a+b\,x]}}{\sqrt{\text{Sin}[a+b\,x]}}\right]}{2\,\sqrt{2}\,b}$$

Result (type 5, 57 leaves):

$$-\frac{2\,\text{Cos}[a+b\,x]^{3/2}\,\text{Hypergeometric2F1}\left[\frac{3}{4},\frac{3}{4},\frac{7}{4},\text{Cos}[a+b\,x]^2\right]\sqrt{\text{Sin}[a+b\,x]}}{3\,b\,\left(\text{Sin}[a+b\,x]^2\right)^{1/4}}$$

Problem 301: Result unnecessarily involves higher level functions.

$$\int \frac{\text{Cos}[a+b\,x]^{3/2}}{\text{Sin}[a+b\,x]^{3/2}}\,dx$$

Optimal (type 3, 199 leaves, 11 steps):

$$\frac{\text{ArcTan}\left[1-\frac{\sqrt{2}\,\sqrt{\text{Sin}[a+b\,x]}}{\sqrt{\text{Cos}[a+b\,x]}}\right]}{\sqrt{2}\,b}-\frac{\text{ArcTan}\left[1+\frac{\sqrt{2}\,\sqrt{\text{Sin}[a+b\,x]}}{\sqrt{\text{Cos}[a+b\,x]}}\right]}{\sqrt{2}\,b}-$$

$$\frac{\text{Log}\left[1-\frac{\sqrt{2}\,\sqrt{\text{Sin}[a+b\,x]}}{\sqrt{\text{Cos}[a+b\,x]}}+\text{Tan}[a+b\,x]\right]}{2\,\sqrt{2}\,b}+\frac{\text{Log}\left[1+\frac{\sqrt{2}\,\sqrt{\text{Sin}[a+b\,x]}}{\sqrt{\text{Cos}[a+b\,x]}}+\text{Tan}[a+b\,x]\right]}{2\,\sqrt{2}\,b}-\frac{2\,\sqrt{\text{Cos}[a+b\,x]}}{b\,\sqrt{\text{Sin}[a+b\,x]}}$$

Result (type 5, 78 leaves):

$$-\frac{2\,\sqrt{\text{Cos}[a+b\,x]}\,\left(-\text{Hypergeometric2F1}\left[\frac{1}{4},\frac{1}{4},\frac{5}{4},\text{Cos}[a+b\,x]^2\right]\text{Sin}[a+b\,x]^2+\left(\text{Sin}[a+b\,x]^2\right)^{3/4}\right)}{b\,\sqrt{\text{Sin}[a+b\,x]}\,\left(\text{Sin}[a+b\,x]^2\right)^{3/4}}$$

Problem 302: Result unnecessarily involves higher level functions.

$$\int \frac{\text{Cos}[a+b\,x]^{5/2}}{\text{Sin}[a+b\,x]^{5/2}}\,dx$$

Optimal (type 3, 201 leaves, 11 steps):

$$-\frac{\text{ArcTan}\left[1-\frac{\sqrt{2}\,\sqrt{\text{Cos}[a+b\,x]}}{\sqrt{\text{Sin}[a+b\,x]}}\right]}{\sqrt{2}\,b}+\frac{\text{ArcTan}\left[1+\frac{\sqrt{2}\,\sqrt{\text{Cos}[a+b\,x]}}{\sqrt{\text{Sin}[a+b\,x]}}\right]}{\sqrt{2}\,b}+$$
$$\frac{\text{Log}\left[1+\text{Cot}[a+b\,x]-\frac{\sqrt{2}\,\sqrt{\text{Cos}[a+b\,x]}}{\sqrt{\text{Sin}[a+b\,x]}}\right]}{2\,\sqrt{2}\,b}-\frac{\text{Log}\left[1+\text{Cot}[a+b\,x]+\frac{\sqrt{2}\,\sqrt{\text{Cos}[a+b\,x]}}{\sqrt{\text{Sin}[a+b\,x]}}\right]}{2\,\sqrt{2}\,b}-\frac{2\,\text{Cos}[a+b\,x]^{3/2}}{3\,b\,\text{Sin}[a+b\,x]^{3/2}}$$

Result (type 5, 80 leaves) :

$$-\frac{2\,\text{Cos}[a+b\,x]^{3/2}\left(-\text{Hypergeometric2F1}\left[\frac{3}{4},\frac{3}{4},\frac{7}{4},\text{Cos}[a+b\,x]^2\right]\text{Sin}[a+b\,x]^2+\left(\text{Sin}[a+b\,x]^2\right)^{1/4}\right)}{3\,b\,\text{Sin}[a+b\,x]^{3/2}\left(\text{Sin}[a+b\,x]^2\right)^{1/4}}$$

- **Problem 303: Result unnecessarily involves higher level functions.**

$$\int\frac{\text{Cos}[a+b\,x]^{7/2}}{\text{Sin}[a+b\,x]^{7/2}}\,dx$$

Optimal (type 3, 226 leaves, 12 steps) :

$$-\frac{\text{ArcTan}\left[1-\frac{\sqrt{2}\,\sqrt{\text{Sin}[a+b\,x]}}{\sqrt{\text{Cos}[a+b\,x]}}\right]}{\sqrt{2}\,b}+\frac{\text{ArcTan}\left[1+\frac{\sqrt{2}\,\sqrt{\text{Sin}[a+b\,x]}}{\sqrt{\text{Cos}[a+b\,x]}}\right]}{\sqrt{2}\,b}+$$
$$\frac{\text{Log}\left[1-\frac{\sqrt{2}\,\sqrt{\text{Sin}[a+b\,x]}}{\sqrt{\text{Cos}[a+b\,x]}}+\text{Tan}[a+b\,x]\right]}{2\,\sqrt{2}\,b}-\frac{\text{Log}\left[1+\frac{\sqrt{2}\,\sqrt{\text{Sin}[a+b\,x]}}{\sqrt{\text{Cos}[a+b\,x]}}+\text{Tan}[a+b\,x]\right]}{2\,\sqrt{2}\,b}-\frac{2\,\text{Cos}[a+b\,x]^{5/2}}{5\,b\,\text{Sin}[a+b\,x]^{5/2}}+\frac{2\,\sqrt{\text{Cos}[a+b\,x]}}{b\,\sqrt{\text{Sin}[a+b\,x]}}$$

Result (type 5, 93 leaves) :

$$-\left(2\,\sqrt{\text{Cos}[a+b\,x]}\,\left(5\,\text{Hypergeometric2F1}\left[\frac{1}{4},\frac{1}{4},\frac{5}{4},\text{Cos}[a+b\,x]^2\right]\text{Sin}[a+b\,x]^4+\left(\text{Sin}[a+b\,x]^2\right)^{3/4}\left(1-6\,\text{Sin}[a+b\,x]^2\right)\right)\right)\Big/$$
$$\left(5\,b\,\text{Sin}[a+b\,x]^{5/2}\left(\text{Sin}[a+b\,x]^2\right)^{3/4}\right)$$

- **Problem 324: Result unnecessarily involves higher level functions.**

$$\int\frac{\text{Sin}[a+b\,x]^{1/3}}{\text{Cos}[a+b\,x]^{1/3}}\,dx$$

Optimal (type 3, 128 leaves, 8 steps) :

$$-\frac{\sqrt{3}\,\text{ArcTan}\left[\frac{1-\frac{2\,\text{Sin}[a+b\,x]^{2/3}}{\text{Cos}[a+b\,x]^{2/3}}}{\sqrt{3}}\right]}{2\,b}-\frac{\text{Log}\left[1+\frac{\text{Sin}[a+b\,x]^{2/3}}{\text{Cos}[a+b\,x]^{2/3}}\right]}{2\,b}+\frac{\text{Log}\left[1-\frac{\text{Sin}[a+b\,x]^{2/3}}{\text{Cos}[a+b\,x]^{2/3}}+\frac{\text{Sin}[a+b\,x]^{4/3}}{\text{Cos}[a+b\,x]^{4/3}}\right]}{4\,b}$$

Result (type 5, 57 leaves) :

$$-\frac{3\,\text{Cos}[a+b\,x]^{2/3}\,\text{Hypergeometric2F1}\left[\frac{1}{3},\frac{1}{3},\frac{4}{3},\text{Cos}[a+b\,x]^2\right]\,\text{Sin}[a+b\,x]^{4/3}}{2\,b\,\left(\text{Sin}[a+b\,x]^2\right)^{2/3}}$$

Problem 325: Result unnecessarily involves higher level functions.

$$\int \frac{\text{Sin}[a+b\,x]^{2/3}}{\text{Cos}[a+b\,x]^{2/3}}\,dx$$

Optimal (type 3, 224 leaves, 11 steps):

$$-\frac{\text{ArcTan}\left[\sqrt{3}-\frac{2\,\text{Sin}[a+b\,x]^{1/3}}{\text{Cos}[a+b\,x]^{1/3}}\right]}{2\,b}+\frac{\text{ArcTan}\left[\sqrt{3}+\frac{2\,\text{Sin}[a+b\,x]^{1/3}}{\text{Cos}[a+b\,x]^{1/3}}\right]}{2\,b}+\frac{\text{ArcTan}\left[\frac{\text{Sin}[a+b\,x]^{1/3}}{\text{Cos}[a+b\,x]^{1/3}}\right]}{b}+\frac{\sqrt{3}\,\text{Log}\left[1-\frac{\sqrt{3}\,\text{Sin}[a+b\,x]^{1/3}}{\text{Cos}[a+b\,x]^{1/3}}+\frac{\text{Sin}[a+b\,x]^{2/3}}{\text{Cos}[a+b\,x]^{2/3}}\right]}{4\,b}-\frac{\sqrt{3}\,\text{Log}\left[1+\frac{\sqrt{3}\,\text{Sin}[a+b\,x]^{1/3}}{\text{Cos}[a+b\,x]^{1/3}}+\frac{\text{Sin}[a+b\,x]^{2/3}}{\text{Cos}[a+b\,x]^{2/3}}\right]}{4\,b}$$

Result (type 5, 55 leaves):

$$-\frac{3\,\text{Cos}[a+b\,x]^{1/3}\,\text{Hypergeometric2F1}\left[\frac{1}{6},\frac{1}{6},\frac{7}{6},\text{Cos}[a+b\,x]^2\right]\,\text{Sin}[a+b\,x]^{5/3}}{b\,\left(\text{Sin}[a+b\,x]^2\right)^{5/6}}$$

Problem 326: Result unnecessarily involves higher level functions.

$$\int \frac{\text{Sin}[a+b\,x]^{4/3}}{\text{Cos}[a+b\,x]^{4/3}}\,dx$$

Optimal (type 3, 249 leaves, 12 steps):

$$-\frac{\text{ArcTan}\left[\sqrt{3}-\frac{2\,\text{Cos}[a+b\,x]^{1/3}}{\text{Sin}[a+b\,x]^{1/3}}\right]}{2\,b}+\frac{\text{ArcTan}\left[\sqrt{3}+\frac{2\,\text{Cos}[a+b\,x]^{1/3}}{\text{Sin}[a+b\,x]^{1/3}}\right]}{2\,b}+\frac{\text{ArcTan}\left[\frac{\text{Cos}[a+b\,x]^{1/3}}{\text{Sin}[a+b\,x]^{1/3}}\right]}{b}+\frac{\sqrt{3}\,\text{Log}\left[1+\frac{\text{Cos}[a+b\,x]^{2/3}}{\text{Sin}[a+b\,x]^{2/3}}-\frac{\sqrt{3}\,\text{Cos}[a+b\,x]^{1/3}}{\text{Sin}[a+b\,x]^{1/3}}\right]}{4\,b}-\frac{\sqrt{3}\,\text{Log}\left[1+\frac{\text{Cos}[a+b\,x]^{2/3}}{\text{Sin}[a+b\,x]^{2/3}}+\frac{\sqrt{3}\,\text{Cos}[a+b\,x]^{1/3}}{\text{Sin}[a+b\,x]^{1/3}}\right]}{4\,b}+\frac{3\,\text{Sin}[a+b\,x]^{1/3}}{b\,\text{Cos}[a+b\,x]^{1/3}}$$

Result (type 5, 83 leaves):

$$\frac{3\,\text{Sin}[a+b\,x]^{1/3}}{b\,\text{Cos}[a+b\,x]^{1/3}}+\frac{3\,\text{Cos}[a+b\,x]^{5/3}\,\text{Hypergeometric2F1}\left[\frac{5}{6},\frac{5}{6},\frac{11}{6},\text{Cos}[a+b\,x]^2\right]\,\text{Sin}[a+b\,x]^{1/3}}{5\,b\,\left(\text{Sin}[a+b\,x]^2\right)^{1/6}}$$

Problem 327: Result unnecessarily involves higher level functions.

$$\int \frac{\text{Sin}[a+b\,x]^{5/3}}{\text{Cos}[a+b\,x]^{5/3}}\,dx$$

Optimal (type 3, 155 leaves, 9 steps):

$$-\frac{\sqrt{3}\,\text{ArcTan}\left[\frac{1-\frac{2\,\text{Cos}[a+b\,x]^{2/3}}{\text{Sin}[a+b\,x]^{2/3}}}{\sqrt{3}}\right]}{2\,b}+\frac{\text{Log}\left[1+\frac{\text{Cos}[a+b\,x]^{4/3}}{\text{Sin}[a+b\,x]^{4/3}}-\frac{\text{Cos}[a+b\,x]^{2/3}}{\text{Sin}[a+b\,x]^{2/3}}\right]}{4\,b}-\frac{\text{Log}\left[1+\frac{\text{Cos}[a+b\,x]^{2/3}}{\text{Sin}[a+b\,x]^{2/3}}\right]}{2\,b}+\frac{3\,\text{Sin}[a+b\,x]^{2/3}}{2\,b\,\text{Cos}[a+b\,x]^{2/3}}$$

Result (type 5, 81 leaves):

$$\frac{3\,\text{Sin}[a+b\,x]^{2/3}\left(\text{Cos}[a+b\,x]^2\,\text{Hypergeometric2F1}\left[\frac{2}{3},\frac{2}{3},\frac{5}{3},\text{Cos}[a+b\,x]^2\right]+2\left(\text{Sin}[a+b\,x]^2\right)^{1/3}\right)}{4\,b\,\text{Cos}[a+b\,x]^{2/3}\left(\text{Sin}[a+b\,x]^2\right)^{1/3}}$$

- **Problem 328: Result unnecessarily involves higher level functions.**

$$\int\frac{\text{Sin}[a+b\,x]^{7/3}}{\text{Cos}[a+b\,x]^{7/3}}\,dx$$

Optimal (type 3, 155 leaves, 9 steps):

$$\frac{\sqrt{3}\,\text{ArcTan}\left[\frac{1-\frac{2\,\text{Sin}[a+b\,x]^{2/3}}{\text{Cos}[a+b\,x]^{2/3}}}{\sqrt{3}}\right]}{2\,b}+\frac{\text{Log}\left[1+\frac{\text{Sin}[a+b\,x]^{2/3}}{\text{Cos}[a+b\,x]^{2/3}}\right]}{2\,b}-\frac{\text{Log}\left[1-\frac{\text{Sin}[a+b\,x]^{2/3}}{\text{Cos}[a+b\,x]^{2/3}}+\frac{\text{Sin}[a+b\,x]^{4/3}}{\text{Cos}[a+b\,x]^{4/3}}\right]}{4\,b}+\frac{3\,\text{Sin}[a+b\,x]^{4/3}}{4\,b\,\text{Cos}[a+b\,x]^{4/3}}$$

Result (type 5, 80 leaves):

$$\frac{3\,\text{Sin}[a+b\,x]^{4/3}\left(2\,\text{Cos}[a+b\,x]^2\,\text{Hypergeometric2F1}\left[\frac{1}{3},\frac{1}{3},\frac{4}{3},\text{Cos}[a+b\,x]^2\right]+\left(\text{Sin}[a+b\,x]^2\right)^{2/3}\right)}{4\,b\,\text{Cos}[a+b\,x]^{4/3}\left(\text{Sin}[a+b\,x]^2\right)^{2/3}}$$

- **Problem 329: Result unnecessarily involves higher level functions.**

$$\int\frac{\text{Cos}[a+b\,x]^{1/3}}{\text{Sin}[a+b\,x]^{1/3}}\,dx$$

Optimal (type 3, 128 leaves, 8 steps):

$$\frac{\sqrt{3}\,\text{ArcTan}\left[\frac{1-\frac{2\,\text{Cos}[a+b\,x]^{2/3}}{\text{Sin}[a+b\,x]^{2/3}}}{\sqrt{3}}\right]}{2\,b}-\frac{\text{Log}\left[1+\frac{\text{Cos}[a+b\,x]^{4/3}}{\text{Sin}[a+b\,x]^{4/3}}-\frac{\text{Cos}[a+b\,x]^{2/3}}{\text{Sin}[a+b\,x]^{2/3}}\right]}{4\,b}+\frac{\text{Log}\left[1+\frac{\text{Cos}[a+b\,x]^{2/3}}{\text{Sin}[a+b\,x]^{2/3}}\right]}{2\,b}$$

Result (type 5, 57 leaves):

$$-\frac{3\,\text{Cos}[a+b\,x]^{4/3}\,\text{Hypergeometric2F1}\left[\frac{2}{3},\frac{2}{3},\frac{5}{3},\text{Cos}[a+b\,x]^2\right]\,\text{Sin}[a+b\,x]^{2/3}}{4\,b\left(\text{Sin}[a+b\,x]^2\right)^{1/3}}$$

- **Problem 330: Result unnecessarily involves higher level functions.**

$$\int\frac{\text{Cos}[a+b\,x]^{2/3}}{\text{Sin}[a+b\,x]^{2/3}}\,dx$$

Optimal (type 3, 225 leaves, 11 steps):

$$\frac{\text{ArcTan}\left[\sqrt{3}-\frac{2\,\text{Cos}[a+b\,x]^{1/3}}{\text{Sin}[a+b\,x]^{1/3}}\right]}{2\,b}-\frac{\text{ArcTan}\left[\sqrt{3}+\frac{2\,\text{Cos}[a+b\,x]^{1/3}}{\text{Sin}[a+b\,x]^{1/3}}\right]}{2\,b}-\frac{\text{ArcTan}\left[\frac{\text{Cos}[a+b\,x]^{1/3}}{\text{Sin}[a+b\,x]^{1/3}}\right]}{b}-\frac{\sqrt{3}\,\text{Log}\left[1+\frac{\text{Cos}[a+b\,x]^{2/3}}{\text{Sin}[a+b\,x]^{2/3}}-\frac{\sqrt{3}\,\text{Cos}[a+b\,x]^{1/3}}{\text{Sin}[a+b\,x]^{1/3}}\right]}{4\,b}+\frac{\sqrt{3}\,\text{Log}\left[1+\frac{\text{Cos}[a+b\,x]^{2/3}}{\text{Sin}[a+b\,x]^{2/3}}+\frac{\sqrt{3}\,\text{Cos}[a+b\,x]^{1/3}}{\text{Sin}[a+b\,x]^{1/3}}\right]}{4\,b}$$

Result (type 5, 57 leaves):

$$-\frac{3\,\text{Cos}[a+b\,x]^{5/3}\,\text{Hypergeometric2F1}\left[\frac{5}{6},\frac{5}{6},\frac{11}{6},\text{Cos}[a+b\,x]^2\right]\,\text{Sin}[a+b\,x]^{1/3}}{5\,b\,\left(\text{Sin}[a+b\,x]^2\right)^{1/6}}$$

Problem 331: Result unnecessarily involves higher level functions.

$$\int\frac{\text{Cos}[a+b\,x]^{4/3}}{\text{Sin}[a+b\,x]^{4/3}}\,dx$$

Optimal (type 3, 250 leaves, 12 steps):

$$\frac{\text{ArcTan}\left[\sqrt{3}-\frac{2\,\text{Sin}[a+b\,x]^{1/3}}{\text{Cos}[a+b\,x]^{1/3}}\right]}{2\,b}-\frac{\text{ArcTan}\left[\sqrt{3}+\frac{2\,\text{Sin}[a+b\,x]^{1/3}}{\text{Cos}[a+b\,x]^{1/3}}\right]}{2\,b}-\frac{\text{ArcTan}\left[\frac{\text{Sin}[a+b\,x]^{1/3}}{\text{Cos}[a+b\,x]^{1/3}}\right]}{b}-\frac{\sqrt{3}\,\text{Log}\left[1-\frac{\sqrt{3}\,\text{Sin}[a+b\,x]^{1/3}}{\text{Cos}[a+b\,x]^{1/3}}+\frac{\text{Sin}[a+b\,x]^{2/3}}{\text{Cos}[a+b\,x]^{2/3}}\right]}{4\,b}+\frac{\sqrt{3}\,\text{Log}\left[1+\frac{\sqrt{3}\,\text{Sin}[a+b\,x]^{1/3}}{\text{Cos}[a+b\,x]^{1/3}}+\frac{\text{Sin}[a+b\,x]^{2/3}}{\text{Cos}[a+b\,x]^{2/3}}\right]}{4\,b}-\frac{3\,\text{Cos}[a+b\,x]^{1/3}}{b\,\text{Sin}[a+b\,x]^{1/3}}$$

Result (type 5, 78 leaves):

$$-\frac{3\,\text{Cos}[a+b\,x]^{1/3}\,\left(-\text{Hypergeometric2F1}\left[\frac{1}{6},\frac{1}{6},\frac{7}{6},\text{Cos}[a+b\,x]^2\right]\,\text{Sin}[a+b\,x]^2+\left(\text{Sin}[a+b\,x]^2\right)^{5/6}\right)}{b\,\text{Sin}[a+b\,x]^{1/3}\,\left(\text{Sin}[a+b\,x]^2\right)^{5/6}}$$

Problem 332: Result unnecessarily involves higher level functions.

$$\int\frac{\text{Cos}[a+b\,x]^{5/3}}{\text{Sin}[a+b\,x]^{5/3}}\,dx$$

Optimal (type 3, 155 leaves, 9 steps):

$$\frac{\sqrt{3}\,\text{ArcTan}\left[\frac{1-\frac{2\,\text{Sin}[a+b\,x]^{2/3}}{\text{Cos}[a+b\,x]^{2/3}}}{\sqrt{3}}\right]}{2\,b}+\frac{\text{Log}\left[1+\frac{\text{Sin}[a+b\,x]^{2/3}}{\text{Cos}[a+b\,x]^{2/3}}\right]}{2\,b}-\frac{\text{Log}\left[1-\frac{\text{Sin}[a+b\,x]^{2/3}}{\text{Cos}[a+b\,x]^{2/3}}+\frac{\text{Sin}[a+b\,x]^{4/3}}{\text{Cos}[a+b\,x]^{4/3}}\right]}{4\,b}-\frac{3\,\text{Cos}[a+b\,x]^{2/3}}{2\,b\,\text{Sin}[a+b\,x]^{2/3}}$$

Result (type 5, 80 leaves):

$$-\frac{3\,\text{Cos}[a+b\,x]^{2/3}\,\left(-\text{Hypergeometric2F1}\left[\frac{1}{3},\frac{1}{3},\frac{4}{3},\text{Cos}[a+b\,x]^2\right]\,\text{Sin}[a+b\,x]^2+\left(\text{Sin}[a+b\,x]^2\right)^{2/3}\right)}{2\,b\,\text{Sin}[a+b\,x]^{2/3}\,\left(\text{Sin}[a+b\,x]^2\right)^{2/3}}$$

Problem 333: Result unnecessarily involves higher level functions.

$$\int \frac{\text{Cos}[a+b x]^{7/3}}{\text{Sin}[a+b x]^{7/3}} \, dx$$

Optimal (type 3, 155 leaves, 9 steps):

$$-\frac{\sqrt{3}\,\text{ArcTan}\left[\frac{1-\frac{2\,\text{Cos}[a+b x]^{2/3}}{\text{Sin}[a+b x]^{2/3}}}{\sqrt{3}}\right]}{2 b}+\frac{\text{Log}\left[1+\frac{\text{Cos}[a+b x]^{4/3}}{\text{Sin}[a+b x]^{4/3}}-\frac{\text{Cos}[a+b x]^{2/3}}{\text{Sin}[a+b x]^{2/3}}\right]}{4 b}-\frac{\text{Log}\left[1+\frac{\text{Cos}[a+b x]^{2/3}}{\text{Sin}[a+b x]^{2/3}}\right]}{2 b}-\frac{3\,\text{Cos}[a+b x]^{4/3}}{4 b\,\text{Sin}[a+b x]^{4/3}}$$

Result (type 5, 80 leaves):

$$-\frac{3\,\text{Cos}[a+b x]^{4/3}\left(-\text{Hypergeometric2F1}\left[\frac{2}{3},\frac{2}{3},\frac{5}{3},\text{Cos}[a+b x]^2\right]\text{Sin}[a+b x]^2+\left(\text{Sin}[a+b x]^2\right)^{1/3}\right)}{4 b\,\text{Sin}[a+b x]^{4/3}\left(\text{Sin}[a+b x]^2\right)^{1/3}}$$

Problem 366: Result more than twice size of optimal antiderivative.

$$\int (d\,\text{Cos}[a+b x])^n\,(c\,\text{Sin}[a+b x])^{5/2}\, dx$$

Optimal (type 5, 76 leaves, 1 step):

$$-\frac{c\,(d\,\text{Cos}[a+b x])^{1+n}\,\text{Hypergeometric2F1}\left[-\frac{3}{4},\frac{1+n}{2},\frac{3+n}{2},\text{Cos}[a+b x]^2\right](c\,\text{Sin}[a+b x])^{3/2}}{b\,d\,(1+n)\left(\text{Sin}[a+b x]^2\right)^{3/4}}$$

Result (type 5, 158 leaves):

$$\Bigg((d\,\text{Cos}[a+b x])^n\,\text{Cot}[a+b x]\Bigg(-(3+n)\,\text{Hypergeometric2F1}\left[-\frac{3}{4},\frac{1+n}{2},\frac{3+n}{2},\text{Cos}[a+b x]^2\right]-(3+n)\,\text{Hypergeometric2F1}\left[\frac{1}{4},\frac{1+n}{2},\frac{3+n}{2},\text{Cos}[a+b x]^2\right]+(1+n)\,\text{Cos}[a+b x]^2\,\text{Hypergeometric2F1}\left[\frac{1}{4},\frac{3+n}{2},\frac{5+n}{2},\text{Cos}[a+b x]^2\right]\Bigg)(c\,\text{Sin}[a+b x])^{5/2}\Bigg)\Big/\left(2 b\,(1+n)\,(3+n)\left(\text{Sin}[a+b x]^2\right)^{3/4}\right)$$

Problem 450: Result unnecessarily involves higher level functions.

$$\int \sqrt{b\,\text{Sec}[e+f x]}\,(a\,\text{Sin}[e+f x])^{9/2}\, dx$$

Optimal (type 3, 449 leaves, 13 steps):

$$-\frac{21 a^{9/2} \text{ArcTan}\left[1-\frac{\sqrt{2} \sqrt{b} \sqrt{a \text{Sin}[e+f x]}}{\sqrt{a} \sqrt{b \text{Cos}[e+f x]}}\right] \sqrt{b \text{Cos}[e+f x]} \sqrt{b \text{Sec}[e+f x]}}{32 \sqrt{2} \sqrt{b} f}+$$

$$\frac{21 a^{9/2} \text{ArcTan}\left[1+\frac{\sqrt{2} \sqrt{b} \sqrt{a \text{Sin}[e+f x]}}{\sqrt{a} \sqrt{b \text{Cos}[e+f x]}}\right] \sqrt{b \text{Cos}[e+f x]} \sqrt{b \text{Sec}[e+f x]}}{32 \sqrt{2} \sqrt{b} f}+$$

$$\frac{21 a^{9/2} \sqrt{b \text{Cos}[e+f x]} \text{Log}\left[\sqrt{a}-\frac{\sqrt{2} \sqrt{b} \sqrt{a \text{Sin}[e+f x]}}{\sqrt{b \text{Cos}[e+f x]}}+\sqrt{a} \text{Tan}[e+f x]\right] \sqrt{b \text{Sec}[e+f x]}}{64 \sqrt{2} \sqrt{b} f}-$$

$$\frac{21 a^{9/2} \sqrt{b \text{Cos}[e+f x]} \text{Log}\left[\sqrt{a}+\frac{\sqrt{2} \sqrt{b} \sqrt{a \text{Sin}[e+f x]}}{\sqrt{b \text{Cos}[e+f x]}}+\sqrt{a} \text{Tan}[e+f x]\right] \sqrt{b \text{Sec}[e+f x]}}{64 \sqrt{2} \sqrt{b} f}-\frac{7 a^3 b (a \text{Sin}[e+f x])^{3/2}}{16 f \sqrt{b \text{Sec}[e+f x]}}-\frac{a b (a \text{Sin}[e+f x])^{7/2}}{4 f \sqrt{b \text{Sec}[e+f x]}}$$

Result (type 5, 109 leaves) :

$$-\frac{1}{32 f \left(\text{Sin}[e+f x]^2\right)^{3/4}} a^4 \sqrt{b \text{Sec}[e+f x]} \sqrt{a \text{Sin}[e+f x]}$$
$$\left(21 \text{Hypergeometric2F1}\left[\frac{1}{4}, \frac{1}{4}, \frac{5}{4}, \text{Cos}[e+f x]^2\right] \text{Sin}[2 (e+f x)]+\left(\text{Sin}[e+f x]^2\right)^{3/4} (9 \text{Sin}[2 (e+f x)]-\text{Sin}[4 (e+f x)])\right)$$

- **Problem 451: Result unnecessarily involves higher level functions.**

$$\int \sqrt{b \text{Sec}[e+f x]} (a \text{Sin}[e+f x])^{5/2} \, dx$$

Optimal (type 3, 414 leaves, 12 steps) :

$$-\frac{3 a^{5/2} \text{ArcTan}\left[1-\frac{\sqrt{2} \sqrt{b} \sqrt{a \text{Sin}[e+f x]}}{\sqrt{a} \sqrt{b \text{Cos}[e+f x]}}\right] \sqrt{b \text{Cos}[e+f x]} \sqrt{b \text{Sec}[e+f x]}}{4 \sqrt{2} \sqrt{b} f}+\frac{3 a^{5/2} \text{ArcTan}\left[1+\frac{\sqrt{2} \sqrt{b} \sqrt{a \text{Sin}[e+f x]}}{\sqrt{a} \sqrt{b \text{Cos}[e+f x]}}\right] \sqrt{b \text{Cos}[e+f x]} \sqrt{b \text{Sec}[e+f x]}}{4 \sqrt{2} \sqrt{b} f}+$$

$$\frac{3 a^{5/2} \sqrt{b \text{Cos}[e+f x]} \text{Log}\left[\sqrt{a}-\frac{\sqrt{2} \sqrt{b} \sqrt{a \text{Sin}[e+f x]}}{\sqrt{b \text{Cos}[e+f x]}}+\sqrt{a} \text{Tan}[e+f x]\right] \sqrt{b \text{Sec}[e+f x]}}{8 \sqrt{2} \sqrt{b} f}-$$

$$\frac{3 a^{5/2} \sqrt{b \text{Cos}[e+f x]} \text{Log}\left[\sqrt{a}+\frac{\sqrt{2} \sqrt{b} \sqrt{a \text{Sin}[e+f x]}}{\sqrt{b \text{Cos}[e+f x]}}+\sqrt{a} \text{Tan}[e+f x]\right] \sqrt{b \text{Sec}[e+f x]}}{8 \sqrt{2} \sqrt{b} f}-\frac{a b (a \text{Sin}[e+f x])^{3/2}}{2 f \sqrt{b \text{Sec}[e+f x]}}$$

Result (type 5, 87 leaves) :

$$-\frac{1}{4 f \left(\text{Sin}[e+f x]^2\right)^{3/4}} a^2 \sqrt{b \text{Sec}[e+f x]} \sqrt{a \text{Sin}[e+f x]} \left(3 \text{Hypergeometric2F1}\left[\frac{1}{4}, \frac{1}{4}, \frac{5}{4}, \text{Cos}[e+f x]^2\right]+\left(\text{Sin}[e+f x]^2\right)^{3/4}\right) \text{Sin}[2 (e+f x)]$$

Problem 452: Result unnecessarily involves higher level functions.

$$\int \sqrt{b \operatorname{Sec}[e+f x]} \sqrt{a \operatorname{Sin}[e+f x]} \, dx$$

Optimal (type 3, 376 leaves, 11 steps):

$$-\frac{\sqrt{a} \operatorname{ArcTan}\left[1-\frac{\sqrt{2} \sqrt{b} \sqrt{a \operatorname{Sin}[e+f x]}}{\sqrt{a} \sqrt{b \operatorname{Cos}[e+f x]}}\right] \sqrt{b \operatorname{Cos}[e+f x]} \sqrt{b \operatorname{Sec}[e+f x]}}{\sqrt{2} \sqrt{b} f}+\frac{\sqrt{a} \operatorname{ArcTan}\left[1+\frac{\sqrt{2} \sqrt{b} \sqrt{a \operatorname{Sin}[e+f x]}}{\sqrt{a} \sqrt{b \operatorname{Cos}[e+f x]}}\right] \sqrt{b \operatorname{Cos}[e+f x]} \sqrt{b \operatorname{Sec}[e+f x]}}{\sqrt{2} \sqrt{b} f}+$$
$$\frac{\sqrt{a} \sqrt{b \operatorname{Cos}[e+f x]} \operatorname{Log}\left[\sqrt{a}-\frac{\sqrt{2} \sqrt{b} \sqrt{a \operatorname{Sin}[e+f x]}}{\sqrt{b \operatorname{Cos}[e+f x]}}+\sqrt{a} \operatorname{Tan}[e+f x]\right] \sqrt{b \operatorname{Sec}[e+f x]}}{2 \sqrt{2} \sqrt{b} f}-$$
$$\frac{\sqrt{a} \sqrt{b \operatorname{Cos}[e+f x]} \operatorname{Log}\left[\sqrt{a}+\frac{\sqrt{2} \sqrt{b} \sqrt{a \operatorname{Sin}[e+f x]}}{\sqrt{b \operatorname{Cos}[e+f x]}}+\sqrt{a} \operatorname{Tan}[e+f x]\right] \sqrt{b \operatorname{Sec}[e+f x]}}{2 \sqrt{2} \sqrt{b} f}$$

Result (type 5, 67 leaves):

$$-\frac{\operatorname{Hypergeometric2F1}\left[\frac{1}{4}, \frac{1}{4}, \frac{5}{4}, \operatorname{Cos}[e+f x]^2\right] \sqrt{b \operatorname{Sec}[e+f x]} \sqrt{a \operatorname{Sin}[e+f x]} \operatorname{Sin}[2 (e+f x)]}{f \left(\operatorname{Sin}[e+f x]^2\right)^{3/4}}$$

Problem 456: Result unnecessarily involves higher level functions.

$$\int \sqrt{b \operatorname{Sec}[e+f x]} (a \operatorname{Sin}[e+f x])^{7/2} \, dx$$

Optimal (type 4, 128 leaves, 5 steps):

$$-\frac{5 a^3 b \sqrt{a \operatorname{Sin}[e+f x]}}{6 f \sqrt{b \operatorname{Sec}[e+f x]}}-\frac{a b (a \operatorname{Sin}[e+f x])^{5/2}}{3 f \sqrt{b \operatorname{Sec}[e+f x]}}+\frac{5 a^4 \operatorname{EllipticF}\left[e-\frac{\pi}{4}+f x, 2\right] \sqrt{b \operatorname{Sec}[e+f x]} \sqrt{\operatorname{Sin}[2 e+2 f x]}}{12 f \sqrt{a \operatorname{Sin}[e+f x]}}$$

Result (type 5, 90 leaves):

$$\frac{1}{12 f \sqrt{b \operatorname{Sec}[e+f x]}}$$
$$a^3 b \sqrt{a \operatorname{Sin}[e+f x]} \left(2 (-6+\operatorname{Cos}[2 (e+f x)])+5 \operatorname{Csc}[e+f x]^2 \operatorname{Hypergeometric2F1}\left[\frac{1}{2}, \frac{3}{4}, \frac{3}{2}, \operatorname{Sec}[e+f x]^2\right] \left(-\operatorname{Tan}[e+f x]^2\right)^{3/4}\right)$$

Problem 457: Result unnecessarily involves higher level functions.

$$\int \sqrt{b \operatorname{Sec}[e+f x]} (a \operatorname{Sin}[e+f x])^{3/2} \, dx$$

Optimal (type 4, 91 leaves, 4 steps):

$$-\frac{a\,b\,\sqrt{a\,\text{Sin}[e+f\,x]}}{f\,\sqrt{b\,\text{Sec}[e+f\,x]}}+\frac{a^2\,\text{EllipticF}\left[e-\frac{\pi}{4}+f\,x,\,2\right]\,\sqrt{b\,\text{Sec}[e+f\,x]}\,\sqrt{\text{Sin}[2\,e+2\,f\,x]}}{2\,f\,\sqrt{a\,\text{Sin}[e+f\,x]}}$$

Result (type 5, 83 leaves) :

$$\frac{1}{2\,f\,\sqrt{b\,\text{Sec}[e+f\,x]}}b\,\text{Csc}[e+f\,x]^3\,(a\,\text{Sin}[e+f\,x])^{3/2}\left(-1+\text{Cos}[2\,(e+f\,x)]+\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{3}{2},\text{Sec}[e+f\,x]^2\right]\left(-\text{Tan}[e+f\,x]^2\right)^{3/4}\right)$$

Problem 458: Result unnecessarily involves higher level functions.

$$\int\frac{\sqrt{b\,\text{Sec}[e+f\,x]}}{\sqrt{a\,\text{Sin}[e+f\,x]}}\,dx$$

Optimal (type 4, 53 leaves, 3 steps) :

$$\frac{\text{EllipticF}\left[e-\frac{\pi}{4}+f\,x,\,2\right]\,\sqrt{b\,\text{Sec}[e+f\,x]}\,\sqrt{\text{Sin}[2\,e+2\,f\,x]}}{f\,\sqrt{a\,\text{Sin}[e+f\,x]}}$$

Result (type 5, 66 leaves) :

$$\frac{\text{Cot}[e+f\,x]\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{3}{2},\text{Sec}[e+f\,x]^2\right]\,\sqrt{b\,\text{Sec}[e+f\,x]}\,\left(-\text{Tan}[e+f\,x]^2\right)^{3/4}}{f\,\sqrt{a\,\text{Sin}[e+f\,x]}}$$

Problem 459: Result unnecessarily involves higher level functions.

$$\int\frac{\sqrt{b\,\text{Sec}[e+f\,x]}}{(a\,\text{Sin}[e+f\,x])^{5/2}}\,dx$$

Optimal (type 4, 95 leaves, 4 steps) :

$$-\frac{2\,b}{3\,a\,f\,\sqrt{b\,\text{Sec}[e+f\,x]}\,(a\,\text{Sin}[e+f\,x])^{3/2}}+\frac{2\,\text{EllipticF}\left[e-\frac{\pi}{4}+f\,x,\,2\right]\,\sqrt{b\,\text{Sec}[e+f\,x]}\,\sqrt{\text{Sin}[2\,e+2\,f\,x]}}{3\,a^2\,f\,\sqrt{a\,\text{Sin}[e+f\,x]}}$$

Result (type 5, 75 leaves) :

$$\frac{2\,\text{Cot}[e+f\,x]\,\sqrt{b\,\text{Sec}[e+f\,x]}\,\left(-1+\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{3}{2},\text{Sec}[e+f\,x]^2\right]\,\left(-\text{Tan}[e+f\,x]^2\right)^{3/4}\right)}{3\,a^2\,f\,\sqrt{a\,\text{Sin}[e+f\,x]}}$$

Problem 460: Result unnecessarily involves higher level functions.

$$\int\frac{\sqrt{b\,\text{Sec}[e+f\,x]}}{(a\,\text{Sin}[e+f\,x])^{9/2}}\,dx$$

Optimal (type 4, 130 leaves, 5 steps) :

$$-\frac{2\,b}{7\,a\,f\,\sqrt{b\,\mathrm{Sec}[e+f\,x]}\,\left(a\,\mathrm{Sin}[e+f\,x]\right)^{7/2}}-\frac{4\,b}{7\,a^3\,f\,\sqrt{b\,\mathrm{Sec}[e+f\,x]}\,\left(a\,\mathrm{Sin}[e+f\,x]\right)^{3/2}}+\frac{4\,\mathrm{EllipticF}\left[e-\frac{\pi}{4}+f\,x,\,2\right]\,\sqrt{b\,\mathrm{Sec}[e+f\,x]}\,\sqrt{\mathrm{Sin}[2\,e+2\,f\,x]}}{7\,a^4\,f\,\sqrt{a\,\mathrm{Sin}[e+f\,x]}}$$

Result (type 5, 111 leaves):

$$-\left(2\,\mathrm{Cos}[2\,(e+f\,x)]\,\left(b\,\mathrm{Sec}[e+f\,x]\right)^{3/2}\left(\left(-2+\mathrm{Cos}[2\,(e+f\,x)]\right)\mathrm{Csc}[e+f\,x]^2+2\,\mathrm{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{3}{2},\mathrm{Sec}[e+f\,x]^2\right]\left(-\mathrm{Tan}[e+f\,x]^2\right)^{3/4}\right)\right)\Big/\left(7\,a^3\,b\,f\,\left(-2+\mathrm{Sec}[e+f\,x]^2\right)\left(a\,\mathrm{Sin}[e+f\,x]\right)^{3/2}\right)$$

- **Problem 461: Result unnecessarily involves higher level functions.**

$$\int\frac{\mathrm{Sin}[e+f\,x]^{9/2}}{\sqrt{b\,\mathrm{Sec}[e+f\,x]}}\,dx$$

Optimal (type 4, 115 leaves, 5 steps):

$$-\frac{7\,b\,\mathrm{Sin}[e+f\,x]^{3/2}}{30\,f\,\left(b\,\mathrm{Sec}[e+f\,x]\right)^{3/2}}-\frac{b\,\mathrm{Sin}[e+f\,x]^{7/2}}{5\,f\,\left(b\,\mathrm{Sec}[e+f\,x]\right)^{3/2}}+\frac{7\,\mathrm{EllipticE}\left[e-\frac{\pi}{4}+f\,x,\,2\right]\,\sqrt{\mathrm{Sin}[e+f\,x]}}{20\,f\,\sqrt{b\,\mathrm{Sec}[e+f\,x]}\,\sqrt{\mathrm{Sin}[2\,e+2\,f\,x]}}$$

Result (type 5, 99 leaves):

$$\frac{1}{480\,b\,f\,\sqrt{\mathrm{Sin}[e+f\,x]}}\sqrt{b\,\mathrm{Sec}[e+f\,x]}\left(4\,\left(25-14\,\mathrm{Cos}[2\,(e+f\,x)]+3\,\mathrm{Cos}[4\,(e+f\,x)]\right)\mathrm{Sin}[e+f\,x]^2-84\,\mathrm{Hypergeometric2F1}\left[\frac{1}{4},\frac{1}{2},\frac{3}{2},\mathrm{Sec}[e+f\,x]^2\right]\left(-\mathrm{Tan}[e+f\,x]^2\right)^{1/4}\right)$$

- **Problem 462: Result unnecessarily involves higher level functions.**

$$\int\frac{\mathrm{Sin}[e+f\,x]^{5/2}}{\sqrt{b\,\mathrm{Sec}[e+f\,x]}}\,dx$$

Optimal (type 4, 85 leaves, 4 steps):

$$-\frac{b\,\mathrm{Sin}[e+f\,x]^{3/2}}{3\,f\,\left(b\,\mathrm{Sec}[e+f\,x]\right)^{3/2}}+\frac{\mathrm{EllipticE}\left[e-\frac{\pi}{4}+f\,x,\,2\right]\,\sqrt{\mathrm{Sin}[e+f\,x]}}{2\,f\,\sqrt{b\,\mathrm{Sec}[e+f\,x]}\,\sqrt{\mathrm{Sin}[2\,e+2\,f\,x]}}$$

Result (type 5, 86 leaves):

$$\frac{1}{24\,b\,f\,\sqrt{\mathrm{Sin}[e+f\,x]}}\sqrt{b\,\mathrm{Sec}[e+f\,x]}\,\left(5-6\,\mathrm{Cos}[2\,(e+f\,x)]+\mathrm{Cos}[4\,(e+f\,x)]-6\,\mathrm{Hypergeometric2F1}\left[\frac{1}{4},\frac{1}{2},\frac{3}{2},\mathrm{Sec}[e+f\,x]^2\right]\left(-\mathrm{Tan}[e+f\,x]^2\right)^{1/4}\right)$$

Problem 463: Result unnecessarily involves higher level functions.

$$\int \frac{\sqrt{\text{Sin}[e+f x]}}{\sqrt{b\,\text{Sec}[e+f x]}}\,dx$$

Optimal (type 4, 51 leaves, 3 steps):

$$\frac{\text{EllipticE}\left[e-\frac{\pi}{4}+f x,2\right]\sqrt{\text{Sin}[e+f x]}}{f\sqrt{b\,\text{Sec}[e+f x]}\,\sqrt{\text{Sin}[2 e+2 f x]}}$$

Result (type 5, 75 leaves):

$$-\frac{1}{2 b f\sqrt{\text{Sin}[e+f x]}}\sqrt{b\,\text{Sec}[e+f x]}\left(-1+\text{Cos}[2 (e+f x)]+\text{Hypergeometric2F1}\left[\frac{1}{4},\frac{1}{2},\frac{3}{2},\text{Sec}[e+f x]^2\right]\left(-\text{Tan}[e+f x]^2\right)^{1/4}\right)$$

Problem 464: Result unnecessarily involves higher level functions.

$$\int \frac{1}{\sqrt{b\,\text{Sec}[e+f x]}\,\text{Sin}[e+f x]^{3/2}}\,dx$$

Optimal (type 4, 81 leaves, 4 steps):

$$-\frac{2 b}{f (b\,\text{Sec}[e+f x])^{3/2}\sqrt{\text{Sin}[e+f x]}}-\frac{2\,\text{EllipticE}\left[e-\frac{\pi}{4}+f x,2\right]\sqrt{\text{Sin}[e+f x]}}{f\sqrt{b\,\text{Sec}[e+f x]}\,\sqrt{\text{Sin}[2 e+2 f x]}}$$

Result (type 5, 64 leaves):

$$\frac{\sqrt{b\,\text{Sec}[e+f x]}\left(-2+\text{Hypergeometric2F1}\left[\frac{1}{4},\frac{1}{2},\frac{3}{2},\text{Sec}[e+f x]^2\right]\left(-\text{Tan}[e+f x]^2\right)^{1/4}\right)}{b f\sqrt{\text{Sin}[e+f x]}}$$

Problem 465: Result unnecessarily involves higher level functions.

$$\int \frac{1}{\sqrt{b\,\text{Sec}[e+f x]}\,\text{Sin}[e+f x]^{7/2}}\,dx$$

Optimal (type 4, 115 leaves, 5 steps):

$$-\frac{2 b}{5 f (b\,\text{Sec}[e+f x])^{3/2}\,\text{Sin}[e+f x]^{5/2}}-\frac{4 b}{5 f (b\,\text{Sec}[e+f x])^{3/2}\sqrt{\text{Sin}[e+f x]}}-\frac{4\,\text{EllipticE}\left[e-\frac{\pi}{4}+f x,2\right]\sqrt{\text{Sin}[e+f x]}}{5 f\sqrt{b\,\text{Sec}[e+f x]}\,\sqrt{\text{Sin}[2 e+2 f x]}}$$

Result (type 5, 84 leaves):

$$\frac{1}{5 b f\,\text{Sin}[e+f x]^{5/2}}\sqrt{b\,\text{Sec}[e+f x]}\left(-3+\text{Cos}[2 (e+f x)]+2\,\text{Hypergeometric2F1}\left[\frac{1}{4},\frac{1}{2},\frac{3}{2},\text{Sec}[e+f x]^2\right]\text{Sin}[e+f x]^2\left(-\text{Tan}[e+f x]^2\right)^{1/4}\right)$$

Problem 466: Result unnecessarily involves higher level functions.

$$\int \frac{\mathrm{Sin}[e+f x]^{3/2}}{\sqrt{b\,\mathrm{Sec}[e+f x]}}\, dx$$

Optimal (type 3, 363 leaves, 12 steps):

$$\frac{\sqrt{b}\,\mathrm{ArcTan}\left[1-\frac{\sqrt{2}\,\sqrt{b\,\mathrm{Cos}[e+f x]}}{\sqrt{b}\,\sqrt{\mathrm{Sin}[e+f x]}}\right]}{4\sqrt{2}\,f\,\sqrt{b\,\mathrm{Cos}[e+f x]}\,\sqrt{b\,\mathrm{Sec}[e+f x]}}-\frac{\sqrt{b}\,\mathrm{ArcTan}\left[1+\frac{\sqrt{2}\,\sqrt{b\,\mathrm{Cos}[e+f x]}}{\sqrt{b}\,\sqrt{\mathrm{Sin}[e+f x]}}\right]}{4\sqrt{2}\,f\,\sqrt{b\,\mathrm{Cos}[e+f x]}\,\sqrt{b\,\mathrm{Sec}[e+f x]}}-$$
$$\frac{\sqrt{b}\,\mathrm{Log}\left[\sqrt{b}+\sqrt{b}\,\mathrm{Cot}[e+f x]-\frac{\sqrt{2}\,\sqrt{b\,\mathrm{Cos}[e+f x]}}{\sqrt{\mathrm{Sin}[e+f x]}}\right]}{8\sqrt{2}\,f\,\sqrt{b\,\mathrm{Cos}[e+f x]}\,\sqrt{b\,\mathrm{Sec}[e+f x]}}+\frac{\sqrt{b}\,\mathrm{Log}\left[\sqrt{b}+\sqrt{b}\,\mathrm{Cot}[e+f x]+\frac{\sqrt{2}\,\sqrt{b\,\mathrm{Cos}[e+f x]}}{\sqrt{\mathrm{Sin}[e+f x]}}\right]}{8\sqrt{2}\,f\,\sqrt{b\,\mathrm{Cos}[e+f x]}\,\sqrt{b\,\mathrm{Sec}[e+f x]}}-\frac{b\,\sqrt{\mathrm{Sin}[e+f x]}}{2 f\,(b\,\mathrm{Sec}[e+f x])^{3/2}}$$

Result (type 5, 75 leaves):

$$-\frac{b\,\sqrt{\mathrm{Sin}[e+f x]}\,\left(\mathrm{Hypergeometric2F1}\left[\frac{3}{4},\frac{3}{4},\frac{7}{4},\mathrm{Cos}[e+f x]^2\right]+3\left(\mathrm{Sin}[e+f x]^2\right)^{1/4}\right)}{6 f\,(b\,\mathrm{Sec}[e+f x])^{3/2}\left(\mathrm{Sin}[e+f x]^2\right)^{1/4}}$$

Problem 467: Result unnecessarily involves higher level functions.

$$\int \frac{1}{\sqrt{b\,\mathrm{Sec}[e+f x]}\,\sqrt{\mathrm{Sin}[e+f x]}}\, dx$$

Optimal (type 3, 328 leaves, 11 steps):

$$\frac{\sqrt{b}\,\mathrm{ArcTan}\left[1-\frac{\sqrt{2}\,\sqrt{b\,\mathrm{Cos}[e+f x]}}{\sqrt{b}\,\sqrt{\mathrm{Sin}[e+f x]}}\right]}{\sqrt{2}\,f\,\sqrt{b\,\mathrm{Cos}[e+f x]}\,\sqrt{b\,\mathrm{Sec}[e+f x]}}-\frac{\sqrt{b}\,\mathrm{ArcTan}\left[1+\frac{\sqrt{2}\,\sqrt{b\,\mathrm{Cos}[e+f x]}}{\sqrt{b}\,\sqrt{\mathrm{Sin}[e+f x]}}\right]}{\sqrt{2}\,f\,\sqrt{b\,\mathrm{Cos}[e+f x]}\,\sqrt{b\,\mathrm{Sec}[e+f x]}}-$$
$$\frac{\sqrt{b}\,\mathrm{Log}\left[\sqrt{b}+\sqrt{b}\,\mathrm{Cot}[e+f x]-\frac{\sqrt{2}\,\sqrt{b\,\mathrm{Cos}[e+f x]}}{\sqrt{\mathrm{Sin}[e+f x]}}\right]}{2\sqrt{2}\,f\,\sqrt{b\,\mathrm{Cos}[e+f x]}\,\sqrt{b\,\mathrm{Sec}[e+f x]}}+\frac{\sqrt{b}\,\mathrm{Log}\left[\sqrt{b}+\sqrt{b}\,\mathrm{Cot}[e+f x]+\frac{\sqrt{2}\,\sqrt{b\,\mathrm{Cos}[e+f x]}}{\sqrt{\mathrm{Sin}[e+f x]}}\right]}{2\sqrt{2}\,f\,\sqrt{b\,\mathrm{Cos}[e+f x]}\,\sqrt{b\,\mathrm{Sec}[e+f x]}}$$

Result (type 5, 60 leaves):

$$-\frac{2\,b\,\mathrm{Hypergeometric2F1}\left[\frac{3}{4},\frac{3}{4},\frac{7}{4},\mathrm{Cos}[e+f x]^2\right]\sqrt{\mathrm{Sin}[e+f x]}}{3 f\,(b\,\mathrm{Sec}[e+f x])^{3/2}\left(\mathrm{Sin}[e+f x]^2\right)^{1/4}}$$

Problem 472: Result unnecessarily involves higher level functions.

$$\int \frac{(a\,\mathrm{Sin}[e+f x])^{9/2}}{(b\,\mathrm{Sec}[e+f x])^{3/2}}\, dx$$

Optimal (type 3, 490 leaves, 14 steps):

$$-\frac{7 a^{9/2} \text{ArcTan}\left[1-\frac{\sqrt{2}\sqrt{b}\sqrt{a \text{Sin}[e+f x]}}{\sqrt{a}\sqrt{b \text{Cos}[e+f x]}}\right]\sqrt{b \text{Cos}[e+f x]}\sqrt{b \text{Sec}[e+f x]}}{128\sqrt{2}\, b^{5/2} f}+\frac{7 a^{9/2} \text{ArcTan}\left[1+\frac{\sqrt{2}\sqrt{b}\sqrt{a \text{Sin}[e+f x]}}{\sqrt{a}\sqrt{b \text{Cos}[e+f x]}}\right]\sqrt{b \text{Cos}[e+f x]}\sqrt{b \text{Sec}[e+f x]}}{128\sqrt{2}\, b^{5/2} f}+$$
$$\frac{7 a^{9/2}\sqrt{b \text{Cos}[e+f x]}\, \text{Log}\left[\sqrt{a}-\frac{\sqrt{2}\sqrt{b}\sqrt{a \text{Sin}[e+f x]}}{\sqrt{b \text{Cos}[e+f x]}}+\sqrt{a}\, \text{Tan}[e+f x]\right]\sqrt{b \text{Sec}[e+f x]}}{256\sqrt{2}\, b^{5/2} f}-$$
$$\frac{7 a^{9/2}\sqrt{b \text{Cos}[e+f x]}\, \text{Log}\left[\sqrt{a}+\frac{\sqrt{2}\sqrt{b}\sqrt{a \text{Sin}[e+f x]}}{\sqrt{b \text{Cos}[e+f x]}}+\sqrt{a}\, \text{Tan}[e+f x]\right]\sqrt{b \text{Sec}[e+f x]}}{256\sqrt{2}\, b^{5/2} f}-$$
$$\frac{7 a^3 (a \text{Sin}[e+f x])^{3/2}}{192\, b f\sqrt{b \text{Sec}[e+f x]}}-\frac{a (a \text{Sin}[e+f x])^{7/2}}{48\, b f\sqrt{b \text{Sec}[e+f x]}}+\frac{(a \text{Sin}[e+f x])^{11/2}}{6\, a b f\sqrt{b \text{Sec}[e+f x]}}$$

Result (type 5, 125 leaves):

$$\left(a^4 \text{Sec}[e+f x]^2\sqrt{a \text{Sin}[e+f x]}\left(-21\, \text{Hypergeometric2F1}\left[\frac{1}{4},\frac{1}{4},\frac{5}{4},\text{Cos}[e+f x]^2\right]\text{Sin}[2 (e+f x)]+\left(\text{Sin}[e+f x]^2\right)^{3/4}(\text{Sin}[2 (e+f x)]-7\, \text{Sin}[4 (e+f x)]+2\, \text{Sin}[6 (e+f x)])\right)\right)\Big/\left(384\, f\, (b \text{Sec}[e+f x])^{3/2}\left(\text{Sin}[e+f x]^2\right)^{3/4}\right)$$

Problem 473: Result unnecessarily involves higher level functions.

$$\int \frac{(a \text{Sin}[e+f x])^{5/2}}{(b \text{Sec}[e+f x])^{3/2}}\, dx$$

Optimal (type 3, 453 leaves, 13 steps):

$$-\frac{3 a^{5/2} \text{ArcTan}\left[1-\frac{\sqrt{2}\sqrt{b}\sqrt{a \text{Sin}[e+f x]}}{\sqrt{a}\sqrt{b \text{Cos}[e+f x]}}\right]\sqrt{b \text{Cos}[e+f x]}\sqrt{b \text{Sec}[e+f x]}}{32\sqrt{2}\, b^{5/2} f}+\frac{3 a^{5/2} \text{ArcTan}\left[1+\frac{\sqrt{2}\sqrt{b}\sqrt{a \text{Sin}[e+f x]}}{\sqrt{a}\sqrt{b \text{Cos}[e+f x]}}\right]\sqrt{b \text{Cos}[e+f x]}\sqrt{b \text{Sec}[e+f x]}}{32\sqrt{2}\, b^{5/2} f}+$$
$$\frac{3 a^{5/2}\sqrt{b \text{Cos}[e+f x]}\, \text{Log}\left[\sqrt{a}-\frac{\sqrt{2}\sqrt{b}\sqrt{a \text{Sin}[e+f x]}}{\sqrt{b \text{Cos}[e+f x]}}+\sqrt{a}\, \text{Tan}[e+f x]\right]\sqrt{b \text{Sec}[e+f x]}}{64\sqrt{2}\, b^{5/2} f}-$$
$$\frac{3 a^{5/2}\sqrt{b \text{Cos}[e+f x]}\, \text{Log}\left[\sqrt{a}+\frac{\sqrt{2}\sqrt{b}\sqrt{a \text{Sin}[e+f x]}}{\sqrt{b \text{Cos}[e+f x]}}+\sqrt{a}\, \text{Tan}[e+f x]\right]\sqrt{b \text{Sec}[e+f x]}}{64\sqrt{2}\, b^{5/2} f}-\frac{a (a \text{Sin}[e+f x])^{3/2}}{16\, b f\sqrt{b \text{Sec}[e+f x]}}+\frac{(a \text{Sin}[e+f x])^{7/2}}{4\, a b f\sqrt{b \text{Sec}[e+f x]}}$$

Result (type 5, 93 leaves):

$$-\left(a (a \text{Sin}[e+f x])^{3/2}\left(3\, \text{Hypergeometric2F1}\left[\frac{1}{4},\frac{1}{4},\frac{5}{4},\text{Cos}[e+f x]^2\right]+(-1+2\, \text{Cos}[2 (e+f x)])\left(\text{Sin}[e+f x]^2\right)^{3/4}\right)\right)\Big/\left(16\, b f\sqrt{b \text{Sec}[e+f x]}\left(\text{Sin}[e+f x]^2\right)^{3/4}\right)$$

Problem 474: Result unnecessarily involves higher level functions.

$$\int \frac{\sqrt{a \operatorname{Sin}[e+f x]}}{(b \operatorname{Sec}[e+f x])^{3/2}} \, dx$$

Optimal (type 3, 418 leaves, 12 steps):

$$-\frac{\sqrt{a}\ \operatorname{ArcTan}\left[1-\frac{\sqrt{2}\ \sqrt{b}\ \sqrt{a \operatorname{Sin}[e+f x]}}{\sqrt{a}\ \sqrt{b \operatorname{Cos}[e+f x]}}\right] \sqrt{b \operatorname{Cos}[e+f x]}\ \sqrt{b \operatorname{Sec}[e+f x]}}{4 \sqrt{2}\ b^{5/2} f}+\frac{\sqrt{a}\ \operatorname{ArcTan}\left[1+\frac{\sqrt{2}\ \sqrt{b}\ \sqrt{a \operatorname{Sin}[e+f x]}}{\sqrt{a}\ \sqrt{b \operatorname{Cos}[e+f x]}}\right] \sqrt{b \operatorname{Cos}[e+f x]}\ \sqrt{b \operatorname{Sec}[e+f x]}}{4 \sqrt{2}\ b^{5/2} f}+$$

$$\frac{\sqrt{a}\ \sqrt{b \operatorname{Cos}[e+f x]}\ \operatorname{Log}\left[\sqrt{a}-\frac{\sqrt{2}\ \sqrt{b}\ \sqrt{a \operatorname{Sin}[e+f x]}}{\sqrt{b \operatorname{Cos}[e+f x]}}+\sqrt{a}\ \operatorname{Tan}[e+f x]\right] \sqrt{b \operatorname{Sec}[e+f x]}}{8 \sqrt{2}\ b^{5/2} f}-$$

$$\frac{\sqrt{a}\ \sqrt{b \operatorname{Cos}[e+f x]}\ \operatorname{Log}\left[\sqrt{a}+\frac{\sqrt{2}\ \sqrt{b}\ \sqrt{a \operatorname{Sin}[e+f x]}}{\sqrt{b \operatorname{Cos}[e+f x]}}+\sqrt{a}\ \operatorname{Tan}[e+f x]\right] \sqrt{b \operatorname{Sec}[e+f x]}}{8 \sqrt{2}\ b^{5/2} f}+\frac{(a \operatorname{Sin}[e+f x])^{3/2}}{2 a b f \sqrt{b \operatorname{Sec}[e+f x]}}$$

Result (type 5, 82 leaves):

$$\frac{(a \operatorname{Sin}[e+f x])^{3/2} \left(-\operatorname{Hypergeometric2F1}\left[\frac{1}{4}, \frac{1}{4}, \frac{5}{4}, \operatorname{Cos}[e+f x]^2\right]+\left(\operatorname{Sin}[e+f x]^2\right)^{3/4}\right)}{2 a b f \sqrt{b \operatorname{Sec}[e+f x]}\ \left(\operatorname{Sin}[e+f x]^2\right)^{3/4}}$$

Problem 475: Result unnecessarily involves higher level functions.

$$\int \frac{1}{(b \operatorname{Sec}[e+f x])^{3/2} (a \operatorname{Sin}[e+f x])^{3/2}} \, dx$$

Optimal (type 3, 411 leaves, 12 steps):

$$\frac{\operatorname{ArcTan}\left[1-\frac{\sqrt{2}\ \sqrt{b}\ \sqrt{a \operatorname{Sin}[e+f x]}}{\sqrt{a}\ \sqrt{b \operatorname{Cos}[e+f x]}}\right] \sqrt{b \operatorname{Cos}[e+f x]}\ \sqrt{b \operatorname{Sec}[e+f x]}}{\sqrt{2}\ a^{3/2} b^{5/2} f}-\frac{\operatorname{ArcTan}\left[1+\frac{\sqrt{2}\ \sqrt{b}\ \sqrt{a \operatorname{Sin}[e+f x]}}{\sqrt{a}\ \sqrt{b \operatorname{Cos}[e+f x]}}\right] \sqrt{b \operatorname{Cos}[e+f x]}\ \sqrt{b \operatorname{Sec}[e+f x]}}{\sqrt{2}\ a^{3/2} b^{5/2} f}-$$

$$\frac{\sqrt{b \operatorname{Cos}[e+f x]}\ \operatorname{Log}\left[\sqrt{a}-\frac{\sqrt{2}\ \sqrt{b}\ \sqrt{a \operatorname{Sin}[e+f x]}}{\sqrt{b \operatorname{Cos}[e+f x]}}+\sqrt{a}\ \operatorname{Tan}[e+f x]\right] \sqrt{b \operatorname{Sec}[e+f x]}}{2 \sqrt{2}\ a^{3/2} b^{5/2} f}+$$

$$\frac{\sqrt{b \operatorname{Cos}[e+f x]}\ \operatorname{Log}\left[\sqrt{a}+\frac{\sqrt{2}\ \sqrt{b}\ \sqrt{a \operatorname{Sin}[e+f x]}}{\sqrt{b \operatorname{Cos}[e+f x]}}+\sqrt{a}\ \operatorname{Tan}[e+f x]\right] \sqrt{b \operatorname{Sec}[e+f x]}}{2 \sqrt{2}\ a^{3/2} b^{5/2} f}-\frac{2}{a b f \sqrt{b \operatorname{Sec}[e+f x]}\ \sqrt{a \operatorname{Sin}[e+f x]}}$$

Result (type 5, 89 leaves):

$$\frac{2 \left(\operatorname{Hypergeometric2F1}\left[\frac{1}{4}, \frac{1}{4}, \frac{5}{4}, \operatorname{Cos}[e+f x]^2\right] \operatorname{Sin}[e+f x]^2-\left(\operatorname{Sin}[e+f x]^2\right)^{3/4}\right)}{a b f \sqrt{b \operatorname{Sec}[e+f x]}\ \sqrt{a \operatorname{Sin}[e+f x]}\ \left(\operatorname{Sin}[e+f x]^2\right)^{3/4}}$$

Problem 477: Result unnecessarily involves higher level functions.

$$\int \frac{(a \operatorname{Sin}[e+f x])^{7/2}}{(b \operatorname{Sec}[e+f x])^{3/2}} \, dx$$

Optimal (type 4, 172 leaves, 6 steps):

$$-\frac{a^3 \sqrt{a \operatorname{Sin}[e+f x]}}{12 b f \sqrt{b \operatorname{Sec}[e+f x]}}-\frac{a (a \operatorname{Sin}[e+f x])^{5/2}}{30 b f \sqrt{b \operatorname{Sec}[e+f x]}}+\frac{(a \operatorname{Sin}[e+f x])^{9/2}}{5 a b f \sqrt{b \operatorname{Sec}[e+f x]}}+\frac{a^4 \operatorname{EllipticF}\left[e-\frac{\pi}{4}+f x, 2\right] \sqrt{b \operatorname{Sec}[e+f x]} \sqrt{\operatorname{Sin}[2 e+2 f x]}}{24 b^2 f \sqrt{a \operatorname{Sin}[e+f x]}}$$

Result (type 5, 103 leaves):

$$-\left(a^5 \left(-4+17 \operatorname{Cos}[2 (e+f x)]-16 \operatorname{Cos}[4 (e+f x)]+3 \operatorname{Cos}[6 (e+f x)]-20 \operatorname{Hypergeometric2F1}\left[\frac{1}{2}, \frac{3}{4}, \frac{3}{2}, \operatorname{Sec}[e+f x]^2\right] \left(-\operatorname{Tan}[e+f x]^2\right)^{3/4}\right)\right) \Big/ \left(480 b f \sqrt{b \operatorname{Sec}[e+f x]} (a \operatorname{Sin}[e+f x])^{3/2}\right)$$

Problem 478: Result unnecessarily involves higher level functions.

$$\int \frac{(a \operatorname{Sin}[e+f x])^{3/2}}{(b \operatorname{Sec}[e+f x])^{3/2}} \, dx$$

Optimal (type 4, 135 leaves, 5 steps):

$$-\frac{a \sqrt{a \operatorname{Sin}[e+f x]}}{6 b f \sqrt{b \operatorname{Sec}[e+f x]}}+\frac{(a \operatorname{Sin}[e+f x])^{5/2}}{3 a b f \sqrt{b \operatorname{Sec}[e+f x]}}+\frac{a^2 \operatorname{EllipticF}\left[e-\frac{\pi}{4}+f x, 2\right] \sqrt{b \operatorname{Sec}[e+f x]} \sqrt{\operatorname{Sin}[2 e+2 f x]}}{12 b^2 f \sqrt{a \operatorname{Sin}[e+f x]}}$$

Result (type 5, 87 leaves):

$$\frac{1}{12 b f \sqrt{b \operatorname{Sec}[e+f x]}} a \sqrt{a \operatorname{Sin}[e+f x]} \left(-2 \operatorname{Cos}[2 (e+f x)]+\operatorname{Csc}[e+f x]^2 \operatorname{Hypergeometric2F1}\left[\frac{1}{2}, \frac{3}{4}, \frac{3}{2}, \operatorname{Sec}[e+f x]^2\right] \left(-\operatorname{Tan}[e+f x]^2\right)^{3/4}\right)$$

Problem 479: Result unnecessarily involves higher level functions.

$$\int \frac{1}{(b \operatorname{Sec}[e+f x])^{3/2} \sqrt{a \operatorname{Sin}[e+f x]}} \, dx$$

Optimal (type 4, 94 leaves, 4 steps):

$$\frac{\sqrt{a \operatorname{Sin}[e+f x]}}{a b f \sqrt{b \operatorname{Sec}[e+f x]}}+\frac{\operatorname{EllipticF}\left[e-\frac{\pi}{4}+f x, 2\right] \sqrt{b \operatorname{Sec}[e+f x]} \sqrt{\operatorname{Sin}[2 e+2 f x]}}{2 b^2 f \sqrt{a \operatorname{Sin}[e+f x]}}$$

Result (type 5, 84 leaves):

$$-\frac{1}{2 b^2 f \sqrt{a \operatorname{Sin}[e+f x]}} \operatorname{Cot}[e+f x] \sqrt{b \operatorname{Sec}[e+f x]} \left(-1+\operatorname{Cos}[2 (e+f x)]-\operatorname{Hypergeometric2F1}\left[\frac{1}{2}, \frac{3}{4}, \frac{3}{2}, \operatorname{Sec}[e+f x]^2\right] \left(-\operatorname{Tan}[e+f x]^2\right)^{3/4}\right)$$

Problem 480: Result unnecessarily involves higher level functions.

$$\int \frac{1}{(b\,\text{Sec}[e+f\,x])^{3/2}\,(a\,\text{Sin}[e+f\,x])^{5/2}}\,dx$$

Optimal (type 4, 100 leaves, 4 steps):

$$-\frac{2}{3\,a\,b\,f\,\sqrt{b\,\text{Sec}[e+f\,x]}\,(a\,\text{Sin}[e+f\,x])^{3/2}}-\frac{\text{EllipticF}\left[e-\frac{\pi}{4}+f\,x,\,2\right]\sqrt{b\,\text{Sec}[e+f\,x]}\,\sqrt{\text{Sin}[2\,e+2\,f\,x]}}{3\,a^2\,b^2\,f\,\sqrt{a\,\text{Sin}[e+f\,x]}}$$

Result (type 5, 78 leaves):

$$-\frac{\text{Cot}[e+f\,x]\,\sqrt{b\,\text{Sec}[e+f\,x]}\,\left(2+\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{3}{2},\text{Sec}[e+f\,x]^2\right]\left(-\text{Tan}[e+f\,x]^2\right)^{3/4}\right)}{3\,a^2\,b^2\,f\,\sqrt{a\,\text{Sin}[e+f\,x]}}$$

Problem 481: Result unnecessarily involves higher level functions.

$$\int \frac{1}{(b\,\text{Sec}[e+f\,x])^{3/2}\,(a\,\text{Sin}[e+f\,x])^{9/2}}\,dx$$

Optimal (type 4, 137 leaves, 5 steps):

$$-\frac{2}{7\,a\,b\,f\,\sqrt{b\,\text{Sec}[e+f\,x]}\,(a\,\text{Sin}[e+f\,x])^{7/2}}+\frac{2}{21\,a^3\,b\,f\,\sqrt{b\,\text{Sec}[e+f\,x]}\,(a\,\text{Sin}[e+f\,x])^{3/2}}-\frac{2\,\text{EllipticF}\left[e-\frac{\pi}{4}+f\,x,\,2\right]\sqrt{b\,\text{Sec}[e+f\,x]}\,\sqrt{\text{Sin}[2\,e+2\,f\,x]}}{21\,a^4\,b^2\,f\,\sqrt{a\,\text{Sin}[e+f\,x]}}$$

Result (type 5, 119 leaves):

$$\left(\text{Cos}[2\,(e+f\,x)]\,\text{Csc}[e+f\,x]^4\,\sqrt{a\,\text{Sin}[e+f\,x]}\right.$$
$$\left.\left((5+\text{Cos}[2\,(e+f\,x)])\,\text{Sec}[e+f\,x]^2-2\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{3}{2},\text{Sec}[e+f\,x]^2\right]\left(-\text{Tan}[e+f\,x]^2\right)^{7/4}\right)\right)\Big/$$
$$\left(21\,a^5\,b\,f\,\sqrt{b\,\text{Sec}[e+f\,x]}\,\left(-2+\text{Sec}[e+f\,x]^2\right)\right)$$

Problem 482: Result unnecessarily involves higher level functions.

$$\int \frac{1}{(b\,\text{Sec}[e+f\,x])^{3/2}\,(a\,\text{Sin}[e+f\,x])^{13/2}}\,dx$$

Optimal (type 4, 174 leaves, 6 steps):

$$-\frac{2}{11\, a\, b\, f\, \sqrt{b\, \text{Sec}[e+f\, x]}\, (a\, \text{Sin}[e+f\, x])^{11/2}}+\frac{2}{77\, a^3\, b\, f\, \sqrt{b\, \text{Sec}[e+f\, x]}\, (a\, \text{Sin}[e+f\, x])^{7/2}}+\frac{4}{77\, a^5\, b\, f\, \sqrt{b\, \text{Sec}[e+f\, x]}\, (a\, \text{Sin}[e+f\, x])^{3/2}}-\frac{4\, \text{EllipticF}\left[e-\frac{\pi}{4}+f\, x,2\right]\, \sqrt{b\, \text{Sec}[e+f\, x]}\, \sqrt{\text{Sin}[2\, e+2\, f\, x]}}{77\, a^6\, b^2\, f\, \sqrt{a\, \text{Sin}[e+f\, x]}}$$

Result (type 5, 131 leaves):

$$\left(2\, \text{Cot}[2\, (e+f\, x)]\, \text{Csc}[2\, (e+f\, x)]\, \sqrt{a\, \text{Sin}[e+f\, x]}\, \left((23+6\, \text{Cos}[2\, (e+f\, x)]-\text{Cos}[4\, (e+f\, x)])\, \text{Csc}[e+f\, x]^4+8\, \text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{3}{2},\text{Sec}[e+f\, x]^2\right]\, \left(-\text{Tan}[e+f\, x]^2\right)^{3/4}\right)\right)\Big/\left(77\, a^7\, b\, f\, \sqrt{b\, \text{Sec}[e+f\, x]}\, \left(-2+\text{Sec}[e+f\, x]^2\right)\right)$$

- **Problem 488: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int \text{Sec}[e+f\, x]^n\, \text{Sin}[e+f\, x]^m\, dx$$

Optimal (type 5, 86 leaves, 2 steps):

$$-\frac{\text{Hypergeometric2F1}\left[\frac{1-m}{2},\frac{1-n}{2},\frac{3-n}{2},\text{Cos}[e+f\, x]^2\right]\, \text{Sec}[e+f\, x]^{-1+n}\, \text{Sin}[e+f\, x]^{-1+m}\, \left(\text{Sin}[e+f\, x]^2\right)^{\frac{1-m}{2}}}{f\, (1-n)}$$

Result (type 6, 2938 leaves):

$$\left(2\, (3+m)\, \text{AppellF1}\left[\frac{1+m}{2},n,1+m-n,\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}\, (e+f\, x)\right]^2,-\text{Tan}\left[\frac{1}{2}\, (e+f\, x)\right]^2\right]\right.$$
$$\left.\left(\text{Sec}\left[\frac{1}{2}\, (e+f\, x)\right]^2\right)^{-1+n}\, \text{Sec}[e+f\, x]^n\, \left(\text{Cos}\left[\frac{1}{2}\, (e+f\, x)\right]^2\, \text{Sec}[e+f\, x]\right)^n\, \text{Sin}[e+f\, x]^{2\, m}\, \text{Tan}\left[\frac{1}{2}\, (e+f\, x)\right]\right)\Big/$$
$$\left(f\, (1+m)\, \left((3+m)\, \text{AppellF1}\left[\frac{1+m}{2},n,1+m-n,\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}\, (e+f\, x)\right]^2,-\text{Tan}\left[\frac{1}{2}\, (e+f\, x)\right]^2\right]-\right.\right.$$
$$2\, \left((1+m-n)\, \text{AppellF1}\left[\frac{3+m}{2},n,2+m-n,\frac{5+m}{2},\text{Tan}\left[\frac{1}{2}\, (e+f\, x)\right]^2,-\text{Tan}\left[\frac{1}{2}\, (e+f\, x)\right]^2\right]-\right.$$
$$\left.\left.n\, \text{AppellF1}\left[\frac{3+m}{2},1+n,1+m-n,\frac{5+m}{2},\text{Tan}\left[\frac{1}{2}\, (e+f\, x)\right]^2,-\text{Tan}\left[\frac{1}{2}\, (e+f\, x)\right]^2\right]\right)\, \text{Tan}\left[\frac{1}{2}\, (e+f\, x)\right]^2\right)$$
$$\left(\left((3+m)\, \text{AppellF1}\left[\frac{1+m}{2},n,1+m-n,\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}\, (e+f\, x)\right]^2,-\text{Tan}\left[\frac{1}{2}\, (e+f\, x)\right]^2\right]\, \left(\text{Sec}\left[\frac{1}{2}\, (e+f\, x)\right]^2\right)^n\, \left(\text{Cos}\left[\frac{1}{2}\, (e+f\, x)\right]^2\, \text{Sec}[e+f\, x]\right)^n\right.\right.$$
$$\left.\text{Sin}[e+f\, x]^m\right)\Big/\left((1+m)\, \left((3+m)\, \text{AppellF1}\left[\frac{1+m}{2},n,1+m-n,\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}\, (e+f\, x)\right]^2,-\text{Tan}\left[\frac{1}{2}\, (e+f\, x)\right]^2\right]-\right.\right.$$
$$2\, \left((1+m-n)\, \text{AppellF1}\left[\frac{3+m}{2},n,2+m-n,\frac{5+m}{2},\text{Tan}\left[\frac{1}{2}\, (e+f\, x)\right]^2,-\text{Tan}\left[\frac{1}{2}\, (e+f\, x)\right]^2\right]-\right.$$

$$n\,\text{AppellF1}\left[\frac{3+m}{2},1+n,1+m-n,\frac{5+m}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\Bigg)\,\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\Bigg)\Bigg)+$$

$$\Bigg(2m(3+m)\,\text{AppellF1}\left[\frac{1+m}{2},n,1+m-n,\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\text{Cos}[e+fx]\left(\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2\right)^{-1+n}$$

$$\left(\text{Cos}\left[\frac{1}{2}(e+fx)\right]^2\text{Sec}[e+fx]\right)^n\text{Sin}[e+fx]^{-1+m}\,\text{Tan}\left[\frac{1}{2}(e+fx)\right]\Bigg)\Bigg/$$

$$\Bigg((1+m)\Bigg((3+m)\,\text{AppellF1}\left[\frac{1+m}{2},n,1+m-n,\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]-$$

$$2\Bigg((1+m-n)\,\text{AppellF1}\left[\frac{3+m}{2},n,2+m-n,\frac{5+m}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]-$$

$$n\,\text{AppellF1}\left[\frac{3+m}{2},1+n,1+m-n,\frac{5+m}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\Bigg)\,\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\Bigg)\Bigg)+$$

$$\Bigg(2(3+m)(-1+n)\,\text{AppellF1}\left[\frac{1+m}{2},n,1+m-n,\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\left(\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2\right)^{-1+n}$$

$$\left(\text{Cos}\left[\frac{1}{2}(e+fx)\right]^2\text{Sec}[e+fx]\right)^n\text{Sin}[e+fx]^m\,\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\Bigg)\Bigg/$$

$$\Bigg((1+m)\Bigg((3+m)\,\text{AppellF1}\left[\frac{1+m}{2},n,1+m-n,\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]-$$

$$2\Bigg((1+m-n)\,\text{AppellF1}\left[\frac{3+m}{2},n,2+m-n,\frac{5+m}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]-$$

$$n\,\text{AppellF1}\left[\frac{3+m}{2},1+n,1+m-n,\frac{5+m}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\Bigg)\,\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\Bigg)\Bigg)+$$

$$\Bigg(2(3+m)\left(\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2\right)^{-1+n}\left(\text{Cos}\left[\frac{1}{2}(e+fx)\right]^2\text{Sec}[e+fx]\right)^n\text{Sin}[e+fx]^m\,\text{Tan}\left[\frac{1}{2}(e+fx)\right]\Bigg(-1/(3+m)(1+m)(1+m-n)\,\text{AppellF1}\Bigg[$$

$$1+\frac{1+m}{2},n,2+m-n,1+\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\Bigg]\,\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2\text{Tan}\left[\frac{1}{2}(e+fx)\right]+1/(3+m)(1+m)\,n$$

$$\text{AppellF1}\left[1+\frac{1+m}{2},1+n,1+m-n,1+\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2\text{Tan}\left[\frac{1}{2}(e+fx)\right]\Bigg)\Bigg)\Bigg/$$

$$\Bigg((1+m)\Bigg((3+m)\,\text{AppellF1}\left[\frac{1+m}{2},n,1+m-n,\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]-$$

$$2\Bigg((1+m-n)\,\text{AppellF1}\left[\frac{3+m}{2},n,2+m-n,\frac{5+m}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]-$$

$$n\,\text{AppellF1}\left[\frac{3+m}{2},1+n,1+m-n,\frac{5+m}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\Bigg)\,\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\Bigg)\Bigg)-$$

$$\Bigg(2(3+m)\,\text{AppellF1}\left[\frac{1+m}{2},n,1+m-n,\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\left(\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2\right)^{-1+n}$$

$$\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]^2 \text{Sec}[e+f x]\right)^n \text{Sin}[e+f x]^m \text{Tan}\left[\frac{1}{2}(e+f x)\right]$$

$$\left(-2\left((1+m-n)\,\text{AppellF1}\left[\frac{3+m}{2}, n, 2+m-n, \frac{5+m}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] -\right.\right.$$

$$\left. n\,\text{AppellF1}\left[\frac{3+m}{2}, 1+n, 1+m-n, \frac{5+m}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right) \text{Sec}\left[\frac{1}{2}(e+f x)\right]^2 \text{Tan}\left[\frac{1}{2}(e+f x)\right] +$$

$$(3+m)\left(-\frac{1}{3+m}(1+m)(1+m-n)\,\text{AppellF1}\left[1+\frac{1+m}{2}, n, 2+m-n, 1+\frac{3+m}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right.$$

$$\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2 \text{Tan}\left[\frac{1}{2}(e+f x)\right] + \frac{1}{3+m}(1+m)\,n\,\text{AppellF1}\left[1+\frac{1+m}{2}, 1+n, 1+m-n, 1+\right.$$

$$\left.\left.\frac{3+m}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] \text{Sec}\left[\frac{1}{2}(e+f x)\right]^2 \text{Tan}\left[\frac{1}{2}(e+f x)\right]\right) - 2\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2$$

$$\left((1+m-n)\left(-\frac{1}{5+m}(3+m)(2+m-n)\,\text{AppellF1}\left[1+\frac{3+m}{2}, n, 3+m-n, 1+\frac{5+m}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right.\right.$$

$$\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2 \text{Tan}\left[\frac{1}{2}(e+f x)\right] + \frac{1}{5+m}(3+m)\,n\,\text{AppellF1}\left[1+\frac{3+m}{2}, 1+n, 2+m-n, 1+\frac{5+m}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\right.$$

$$\left.\left.-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] \text{Sec}\left[\frac{1}{2}(e+f x)\right]^2 \text{Tan}\left[\frac{1}{2}(e+f x)\right]\right) - n\left(-\frac{1}{5+m}(3+m)(1+m-n)\,\text{AppellF1}\left[1+\frac{3+m}{2}, 1+n, 2+m-n,\right.\right.$$

$$1+\frac{5+m}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big] \text{Sec}\left[\frac{1}{2}(e+f x)\right]^2 \text{Tan}\left[\frac{1}{2}(e+f x)\right] + \frac{1}{5+m}(3+m)(1+n)\,\text{AppellF1}\Big[$$

$$\left.\left.\left.\left.1+\frac{3+m}{2}, 2+n, 1+m-n, 1+\frac{5+m}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] \text{Sec}\left[\frac{1}{2}(e+f x)\right]^2 \text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\right)\right)\right) \Big/$$

$$\left((1+m)\left((3+m)\,\text{AppellF1}\left[\frac{1+m}{2}, n, 1+m-n, \frac{3+m}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] -\right.\right.$$

$$2\left((1+m-n)\,\text{AppellF1}\left[\frac{3+m}{2}, n, 2+m-n, \frac{5+m}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] - n\right.$$

$$\left.\left.\left.\text{AppellF1}\left[\frac{3+m}{2}, 1+n, 1+m-n, \frac{5+m}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right) \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)^2\right) +$$

$$\left(2(3+m)\,n\,\text{AppellF1}\left[\frac{1+m}{2}, n, 1+m-n, \frac{3+m}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] \left(\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\right)^{-1+n}\right.$$

$$\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]^2 \text{Sec}[e+f x]\right)^{-1+n} \text{Sin}[e+f x]^m \text{Tan}\left[\frac{1}{2}(e+f x)\right]$$

$$\left.\left(-\text{Cos}\left[\frac{1}{2}(e+f x)\right] \text{Sec}[e+f x]\,\text{Sin}\left[\frac{1}{2}(e+f x)\right] + \text{Cos}\left[\frac{1}{2}(e+f x)\right]^2 \text{Sec}[e+f x]\,\text{Tan}[e+f x]\right)\right) \Big/$$

$$\left((1+m)\left((3+m)\,\text{AppellF1}\left[\frac{1+m}{2}, n, 1+m-n, \frac{3+m}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] -\right.\right.$$

$$2\left((1+m-n)\,\text{AppellF1}\left[\frac{3+m}{2},n,2+m-n,\frac{5+m}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]-\right.$$
$$\left.\left.\left.\left. n\,\text{AppellF1}\left[\frac{3+m}{2},1+n,1+m-n,\frac{5+m}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)\right)\right)\right)$$

- **Problem 489: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int \text{Sec}[e+f x]^n\,(a\,\text{Sin}[e+f x])^m\,dx$$

Optimal (type 5, 89 leaves, 2 steps):

$$-\frac{1}{f(1-n)}a\,\text{Hypergeometric2F1}\left[\frac{1-m}{2},\frac{1-n}{2},\frac{3-n}{2},\text{Cos}[e+f x]^2\right]\text{Sec}[e+f x]^{-1+n}\,(a\,\text{Sin}[e+f x])^{-1+m}\left(\text{Sin}[e+f x]^2\right)^{\frac{1-m}{2}}$$

Result (type 6, 2946 leaves):

$$\left(2(3+m)\,\text{AppellF1}\left[\frac{1+m}{2},n,1+m-n,\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right.$$
$$\left.\left(\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\right)^{-1+n}\text{Sec}[e+f x]^n\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]^2\text{Sec}[e+f x]\right)^n\text{Sin}[e+f x]^m\,(a\,\text{Sin}[e+f x])^m\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\Big/$$
$$\left(f(1+m)\left((3+m)\,\text{AppellF1}\left[\frac{1+m}{2},n,1+m-n,\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]-\right.\right.$$
$$2\left((1+m-n)\,\text{AppellF1}\left[\frac{3+m}{2},n,2+m-n,\frac{5+m}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]-\right.$$
$$\left.\left. n\,\text{AppellF1}\left[\frac{3+m}{2},1+n,1+m-n,\frac{5+m}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)$$
$$\left(\left((3+m)\,\text{AppellF1}\left[\frac{1+m}{2},n,1+m-n,\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\left(\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\right)^n\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]^2\text{Sec}[e+f x]\right)^n\right.\right.$$
$$\left.\text{Sin}[e+f x]^m\right)\Big/\left((1+m)\left((3+m)\,\text{AppellF1}\left[\frac{1+m}{2},n,1+m-n,\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]-\right.\right.$$
$$2\left((1+m-n)\,\text{AppellF1}\left[\frac{3+m}{2},n,2+m-n,\frac{5+m}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]-\right.$$
$$\left.\left.\left. n\,\text{AppellF1}\left[\frac{3+m}{2},1+n,1+m-n,\frac{5+m}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)\right)+$$
$$\left(2m(3+m)\,\text{AppellF1}\left[\frac{1+m}{2},n,1+m-n,\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Cos}[e+f x]\left(\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\right)^{-1+n}\right.$$
$$\left.\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]^2\text{Sec}[e+f x]\right)^n\text{Sin}[e+f x]^{-1+m}\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\Big/$$
$$\left((1+m)\left((3+m)\,\text{AppellF1}\left[\frac{1+m}{2},n,1+m-n,\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]-\right.\right.$$

$$2\left((1+m-n)\,\text{AppellF1}\left[\frac{3+m}{2},n,2+m-n,\frac{5+m}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]-\right.$$

$$\left.\left.n\,\text{AppellF1}\left[\frac{3+m}{2},1+n,1+m-n,\frac{5+m}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right)\right)+$$

$$\left(2\,(3+m)\,(-1+n)\,\text{AppellF1}\left[\frac{1+m}{2},n,1+m-n,\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\left(\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2\right)^{-1+n}\right.$$

$$\left.\left(\text{Cos}\left[\frac{1}{2}(e+fx)\right]^2\text{Sec}[e+fx]\right)^n\text{Sin}[e+fx]^m\,\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right)\Big/$$

$$\left((1+m)\left((3+m)\,\text{AppellF1}\left[\frac{1+m}{2},n,1+m-n,\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]-\right.\right.$$

$$2\left((1+m-n)\,\text{AppellF1}\left[\frac{3+m}{2},n,2+m-n,\frac{5+m}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]-\right.$$

$$\left.\left.\left.n\,\text{AppellF1}\left[\frac{3+m}{2},1+n,1+m-n,\frac{5+m}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right)\right)+$$

$$\left(2\,(3+m)\left(\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2\right)^{-1+n}\left(\text{Cos}\left[\frac{1}{2}(e+fx)\right]^2\text{Sec}[e+fx]\right)^n\text{Sin}[e+fx]^m\,\text{Tan}\left[\frac{1}{2}(e+fx)\right]\left(-1/(3+m)(1+m)\,(1+m-n)\,\text{AppellF1}\left[\right.\right.\right.$$

$$1+\frac{1+m}{2},n,2+m-n,1+\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\Big]\,\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2\text{Tan}\left[\frac{1}{2}(e+fx)\right]+1/(3+m)(1+m)\,n$$

$$\left.\left.\text{AppellF1}\left[1+\frac{1+m}{2},1+n,1+m-n,1+\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2\text{Tan}\left[\frac{1}{2}(e+fx)\right]\right)\right)\Big/$$

$$\left((1+m)\left((3+m)\,\text{AppellF1}\left[\frac{1+m}{2},n,1+m-n,\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]-\right.\right.$$

$$2\left((1+m-n)\,\text{AppellF1}\left[\frac{3+m}{2},n,2+m-n,\frac{5+m}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]-\right.$$

$$\left.\left.\left.n\,\text{AppellF1}\left[\frac{3+m}{2},1+n,1+m-n,\frac{5+m}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right)\right)-$$

$$\left(2\,(3+m)\,\text{AppellF1}\left[\frac{1+m}{2},n,1+m-n,\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\left(\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2\right)^{-1+n}\right.$$

$$\left(\text{Cos}\left[\frac{1}{2}(e+fx)\right]^2\text{Sec}[e+fx]\right)^n\text{Sin}[e+fx]^m\,\text{Tan}\left[\frac{1}{2}(e+fx)\right]$$

$$\left(-2\left((1+m-n)\,\text{AppellF1}\left[\frac{3+m}{2},n,2+m-n,\frac{5+m}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]-\right.\right.$$

$$\left.n\,\text{AppellF1}\left[\frac{3+m}{2},1+n,1+m-n,\frac{5+m}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\right)\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2\text{Tan}\left[\frac{1}{2}(e+fx)\right]+$$

$$(3+m)\left(-\frac{1}{3+m}(1+m)\,(1+m-n)\,\text{AppellF1}\left[1+\frac{1+m}{2},n,2+m-n,1+\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\right.$$

$$\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2 \text{Tan}\left[\frac{1}{2}(e+f x)\right]+\frac{1}{3+m}(1+m)\, n\, \text{AppellF1}\Big[1+\frac{1+m}{2}, 1+n, 1+m-n, 1+$$

$$\frac{3+m}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big]\, \text{Sec}\left[\frac{1}{2}(e+f x)\right]^2 \text{Tan}\left[\frac{1}{2}(e+f x)\right]\Big)-2\, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2$$

$$\Big((1+m-n)\Big(-\frac{1}{5+m}(3+m)(2+m-n)\, \text{AppellF1}\Big[1+\frac{3+m}{2}, n, 3+m-n, 1+\frac{5+m}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big]$$

$$\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2 \text{Tan}\left[\frac{1}{2}(e+f x)\right]+\frac{1}{5+m}(3+m)\, n\, \text{AppellF1}\Big[1+\frac{3+m}{2}, 1+n, 2+m-n, 1+\frac{5+m}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,$$

$$-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big]\, \text{Sec}\left[\frac{1}{2}(e+f x)\right]^2 \text{Tan}\left[\frac{1}{2}(e+f x)\right]\Big)-n\Big(-\frac{1}{5+m}(3+m)(1+m-n)\, \text{AppellF1}\Big[1+\frac{3+m}{2}, 1+n, 2+m-n,$$

$$1+\frac{5+m}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big]\, \text{Sec}\left[\frac{1}{2}(e+f x)\right]^2 \text{Tan}\left[\frac{1}{2}(e+f x)\right]+\frac{1}{5+m}(3+m)(1+n)\, \text{AppellF1}\Big[$$

$$1+\frac{3+m}{2}, 2+n, 1+m-n, 1+\frac{5+m}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big]\, \text{Sec}\left[\frac{1}{2}(e+f x)\right]^2 \text{Tan}\left[\frac{1}{2}(e+f x)\right]\Big)\Big)\Big)\Big)\Big/$$

$$\Big((1+m)\Big((3+m)\, \text{AppellF1}\Big[\frac{1+m}{2}, n, 1+m-n, \frac{3+m}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big]-$$

$$2\Big((1+m-n)\, \text{AppellF1}\Big[\frac{3+m}{2}, n, 2+m-n, \frac{5+m}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big]-n$$

$$\text{AppellF1}\Big[\frac{3+m}{2}, 1+n, 1+m-n, \frac{5+m}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big]\Big)\, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big)^2\Big)+$$

$$\Big(2(3+m)\, n\, \text{AppellF1}\Big[\frac{1+m}{2}, n, 1+m-n, \frac{3+m}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big]\left(\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\right)^{-1+n}$$

$$\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]^2 \text{Sec}[e+f x]\right)^{-1+n} \text{Sin}[e+f x]^m\, \text{Tan}\left[\frac{1}{2}(e+f x)\right]$$

$$\Big(-\text{Cos}\left[\frac{1}{2}(e+f x)\right] \text{Sec}[e+f x]\, \text{Sin}\left[\frac{1}{2}(e+f x)\right]+\text{Cos}\left[\frac{1}{2}(e+f x)\right]^2 \text{Sec}[e+f x]\, \text{Tan}[e+f x]\Big)\Big)\Big/$$

$$\Big((1+m)\Big((3+m)\, \text{AppellF1}\Big[\frac{1+m}{2}, n, 1+m-n, \frac{3+m}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big]-$$

$$2\Big((1+m-n)\, \text{AppellF1}\Big[\frac{3+m}{2}, n, 2+m-n, \frac{5+m}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big]-$$

$$n\, \text{AppellF1}\Big[\frac{3+m}{2}, 1+n, 1+m-n, \frac{5+m}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big]\Big)\, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big)\Big)\Big)$$

- **Problem 490: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int (b\, \text{Sec}[e+f x])^n\, \text{Sin}[e+f x]^m\, dx$$

Optimal (type 5, 89 leaves, 2 steps) :

$$-\frac{1}{f\,(1-n)}b\,\text{Hypergeometric2F1}\Big[\frac{1-m}{2},\,\frac{1-n}{2},\,\frac{3-n}{2},\,\text{Cos}[e+f\,x]^2\Big]\,(b\,\text{Sec}[e+f\,x])^{-1+n}\,\text{Sin}[e+f\,x]^{-1+m}\,\big(\text{Sin}[e+f\,x]^2\big)^{\frac{1-m}{2}}$$

Result (type 6, 2940 leaves) :

$$\Big(2\,(3+m)\,\text{AppellF1}\Big[\frac{1+m}{2},\,n,\,1+m-n,\,\frac{3+m}{2},\,\text{Tan}\Big[\frac{1}{2}\,(e+f\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(e+f\,x)\Big]^2\Big]$$

$$\Big(\text{Sec}\Big[\frac{1}{2}\,(e+f\,x)\Big]^2\Big)^{-1+n}\,(b\,\text{Sec}[e+f\,x])^n\,\Big(\text{Cos}\Big[\frac{1}{2}\,(e+f\,x)\Big]^2\,\text{Sec}[e+f\,x]\Big)^n\,\text{Sin}[e+f\,x]^{2\,m}\,\text{Tan}\Big[\frac{1}{2}\,(e+f\,x)\Big]\Big)\Big/$$

$$\Big(f\,(1+m)\,\Big((3+m)\,\text{AppellF1}\Big[\frac{1+m}{2},\,n,\,1+m-n,\,\frac{3+m}{2},\,\text{Tan}\Big[\frac{1}{2}\,(e+f\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(e+f\,x)\Big]^2\Big]-$$

$$2\,\Big((1+m-n)\,\text{AppellF1}\Big[\frac{3+m}{2},\,n,\,2+m-n,\,\frac{5+m}{2},\,\text{Tan}\Big[\frac{1}{2}\,(e+f\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(e+f\,x)\Big]^2\Big]-$$

$$n\,\text{AppellF1}\Big[\frac{3+m}{2},\,1+n,\,1+m-n,\,\frac{5+m}{2},\,\text{Tan}\Big[\frac{1}{2}\,(e+f\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(e+f\,x)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{2}\,(e+f\,x)\Big]^2\Big)$$

$$\Big(\Big((3+m)\,\text{AppellF1}\Big[\frac{1+m}{2},\,n,\,1+m-n,\,\frac{3+m}{2},\,\text{Tan}\Big[\frac{1}{2}\,(e+f\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(e+f\,x)\Big]^2\Big]\,\Big(\text{Sec}\Big[\frac{1}{2}\,(e+f\,x)\Big]^2\Big)^n\,\Big(\text{Cos}\Big[\frac{1}{2}\,(e+f\,x)\Big]^2\,\text{Sec}[e+f\,x]\Big)^n$$

$$\text{Sin}[e+f\,x]^m\Big)\Big/\Big((1+m)\,\Big((3+m)\,\text{AppellF1}\Big[\frac{1+m}{2},\,n,\,1+m-n,\,\frac{3+m}{2},\,\text{Tan}\Big[\frac{1}{2}\,(e+f\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(e+f\,x)\Big]^2\Big]-$$

$$2\,\Big((1+m-n)\,\text{AppellF1}\Big[\frac{3+m}{2},\,n,\,2+m-n,\,\frac{5+m}{2},\,\text{Tan}\Big[\frac{1}{2}\,(e+f\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(e+f\,x)\Big]^2\Big]-$$

$$n\,\text{AppellF1}\Big[\frac{3+m}{2},\,1+n,\,1+m-n,\,\frac{5+m}{2},\,\text{Tan}\Big[\frac{1}{2}\,(e+f\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(e+f\,x)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{2}\,(e+f\,x)\Big]^2\Big)\Big)+$$

$$\Big(2\,m\,(3+m)\,\text{AppellF1}\Big[\frac{1+m}{2},\,n,\,1+m-n,\,\frac{3+m}{2},\,\text{Tan}\Big[\frac{1}{2}\,(e+f\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(e+f\,x)\Big]^2\Big]\,\text{Cos}[e+f\,x]\,\Big(\text{Sec}\Big[\frac{1}{2}\,(e+f\,x)\Big]^2\Big)^{-1+n}$$

$$\Big(\text{Cos}\Big[\frac{1}{2}\,(e+f\,x)\Big]^2\,\text{Sec}[e+f\,x]\Big)^n\,\text{Sin}[e+f\,x]^{-1+m}\,\text{Tan}\Big[\frac{1}{2}\,(e+f\,x)\Big]\Big)\Big/$$

$$\Big((1+m)\,\Big((3+m)\,\text{AppellF1}\Big[\frac{1+m}{2},\,n,\,1+m-n,\,\frac{3+m}{2},\,\text{Tan}\Big[\frac{1}{2}\,(e+f\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(e+f\,x)\Big]^2\Big]-$$

$$2\,\Big((1+m-n)\,\text{AppellF1}\Big[\frac{3+m}{2},\,n,\,2+m-n,\,\frac{5+m}{2},\,\text{Tan}\Big[\frac{1}{2}\,(e+f\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(e+f\,x)\Big]^2\Big]-$$

$$n\,\text{AppellF1}\Big[\frac{3+m}{2},\,1+n,\,1+m-n,\,\frac{5+m}{2},\,\text{Tan}\Big[\frac{1}{2}\,(e+f\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(e+f\,x)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{2}\,(e+f\,x)\Big]^2\Big)\Big)+$$

$$\Big(2\,(3+m)\,(-1+n)\,\text{AppellF1}\Big[\frac{1+m}{2},\,n,\,1+m-n,\,\frac{3+m}{2},\,\text{Tan}\Big[\frac{1}{2}\,(e+f\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(e+f\,x)\Big]^2\Big]\,\Big(\text{Sec}\Big[\frac{1}{2}\,(e+f\,x)\Big]^2\Big)^{-1+n}$$

$$\Big(\text{Cos}\Big[\frac{1}{2}\,(e+f\,x)\Big]^2\,\text{Sec}[e+f\,x]\Big)^n\,\text{Sin}[e+f\,x]^m\,\text{Tan}\Big[\frac{1}{2}\,(e+f\,x)\Big]^2\Big)\Big/$$

$$\left((1+m)\left((3+m)\,\text{AppellF1}\left[\frac{1+m}{2},n,1+m-n,\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]-\right.\right.$$
$$2\left((1+m-n)\,\text{AppellF1}\left[\frac{3+m}{2},n,2+m-n,\frac{5+m}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]-\right.$$
$$\left.\left.\left.n\,\text{AppellF1}\left[\frac{3+m}{2},1+n,1+m-n,\frac{5+m}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right)\right)+$$
$$\left(2(3+m)\left(\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2\right)^{-1+n}\left(\text{Cos}\left[\frac{1}{2}(e+fx)\right]^2\text{Sec}[e+fx]\right)^n\text{Sin}[e+fx]^m\,\text{Tan}\left[\frac{1}{2}(e+fx)\right]\left(-1/(3+m)(1+m)(1+m-n)\,\text{AppellF1}\right[\right.\right.$$
$$1+\frac{1+m}{2},n,2+m-n,1+\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\Big]\,\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2\text{Tan}\left[\frac{1}{2}(e+fx)\right]+1/(3+m)(1+m)\,n$$
$$\left.\left.\text{AppellF1}\left[1+\frac{1+m}{2},1+n,1+m-n,1+\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2\text{Tan}\left[\frac{1}{2}(e+fx)\right]\right)\right)\Big/$$
$$\left((1+m)\left((3+m)\,\text{AppellF1}\left[\frac{1+m}{2},n,1+m-n,\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]-\right.\right.$$
$$2\left((1+m-n)\,\text{AppellF1}\left[\frac{3+m}{2},n,2+m-n,\frac{5+m}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]-\right.$$
$$\left.\left.\left.n\,\text{AppellF1}\left[\frac{3+m}{2},1+n,1+m-n,\frac{5+m}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right)\right)-$$
$$\left(2(3+m)\,\text{AppellF1}\left[\frac{1+m}{2},n,1+m-n,\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\left(\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2\right)^{-1+n}\right.$$
$$\left(\text{Cos}\left[\frac{1}{2}(e+fx)\right]^2\text{Sec}[e+fx]\right)^n\text{Sin}[e+fx]^m\,\text{Tan}\left[\frac{1}{2}(e+fx)\right]$$
$$\left(-2\left((1+m-n)\,\text{AppellF1}\left[\frac{3+m}{2},n,2+m-n,\frac{5+m}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]-\right.\right.$$
$$\left.n\,\text{AppellF1}\left[\frac{3+m}{2},1+n,1+m-n,\frac{5+m}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\right)\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2\text{Tan}\left[\frac{1}{2}(e+fx)\right]+$$
$$(3+m)\left(-\frac{1}{3+m}(1+m)(1+m-n)\,\text{AppellF1}\left[1+\frac{1+m}{2},n,2+m-n,1+\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\right.$$
$$\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2\text{Tan}\left[\frac{1}{2}(e+fx)\right]+\frac{1}{3+m}(1+m)\,n\,\text{AppellF1}\Big[1+\frac{1+m}{2},1+n,1+m-n,1+$$
$$\left.\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\Big]\,\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2\text{Tan}\left[\frac{1}{2}(e+fx)\right]\right)-2\,\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2$$
$$\left((1+m-n)\left(-\frac{1}{5+m}(3+m)(2+m-n)\,\text{AppellF1}\left[1+\frac{3+m}{2},n,3+m-n,1+\frac{5+m}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\right.\right.$$
$$\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2\text{Tan}\left[\frac{1}{2}(e+fx)\right]+\frac{1}{5+m}(3+m)\,n\,\text{AppellF1}\Big[1+\frac{3+m}{2},1+n,2+m-n,1+\frac{5+m}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,$$

$$-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] \text{Sec}\left[\frac{1}{2}(e+f x)\right]^2 \text{Tan}\left[\frac{1}{2}(e+f x)\right]\Bigg) - n\left(-\frac{1}{5+m}(3+m)(1+m-n)\,\text{AppellF1}\left[1+\frac{3+m}{2}, 1+n, 2+m-n,\right.\right.$$

$$1+\frac{5+m}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] \text{Sec}\left[\frac{1}{2}(e+f x)\right]^2 \text{Tan}\left[\frac{1}{2}(e+f x)\right] + \frac{1}{5+m}(3+m)(1+n)\,\text{AppellF1}\Big[$$

$$1+\frac{3+m}{2}, 2+n, 1+m-n, 1+\frac{5+m}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] \text{Sec}\left[\frac{1}{2}(e+f x)\right]^2 \text{Tan}\left[\frac{1}{2}(e+f x)\right]\Bigg)\Bigg)\Bigg)\Bigg) \Big/$$

$$\left((1+m)\left((3+m)\,\text{AppellF1}\left[\frac{1+m}{2}, n, 1+m-n, \frac{3+m}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] -\right.\right.$$

$$2\left((1+m-n)\,\text{AppellF1}\left[\frac{3+m}{2}, n, 2+m-n, \frac{5+m}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] - n\right.$$

$$\left.\left.\left.\text{AppellF1}\left[\frac{3+m}{2}, 1+n, 1+m-n, \frac{5+m}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right) \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)^2\right) +$$

$$\left(2(3+m)\,n\,\text{AppellF1}\left[\frac{1+m}{2}, n, 1+m-n, \frac{3+m}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] \left(\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\right)^{-1+n}\right.$$

$$\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]^2 \text{Sec}[e+f x]\right)^{-1+n} \text{Sin}[e+f x]^m\, \text{Tan}\left[\frac{1}{2}(e+f x)\right]$$

$$\left.\left(-\text{Cos}\left[\frac{1}{2}(e+f x)\right] \text{Sec}[e+f x]\, \text{Sin}\left[\frac{1}{2}(e+f x)\right] + \text{Cos}\left[\frac{1}{2}(e+f x)\right]^2 \text{Sec}[e+f x]\, \text{Tan}[e+f x]\right)\right) \Big/$$

$$\left((1+m)\left((3+m)\,\text{AppellF1}\left[\frac{1+m}{2}, n, 1+m-n, \frac{3+m}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] -\right.\right.$$

$$2\left((1+m-n)\,\text{AppellF1}\left[\frac{3+m}{2}, n, 2+m-n, \frac{5+m}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] -\right.$$

$$\left.\left.\left.n\,\text{AppellF1}\left[\frac{3+m}{2}, 1+n, 1+m-n, \frac{5+m}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right) \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)\right)\right)\right)$$

- **Problem 491: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int (b\,\text{Sec}[e+f x])^n (a\,\text{Sin}[e+f x])^m \, dx$$

Optimal (type 5, 92 leaves, 2 steps):

$$-\frac{1}{f(1-n)} a\, b\, \text{Hypergeometric2F1}\left[\frac{1-m}{2}, \frac{1-n}{2}, \frac{3-n}{2}, \text{Cos}[e+f x]^2\right] (b\,\text{Sec}[e+f x])^{-1+n} (a\,\text{Sin}[e+f x])^{-1+m} \left(\text{Sin}[e+f x]^2\right)^{\frac{1-m}{2}}$$

Result (type 6, 2948 leaves):

$$\left(2(3+m)\,\text{AppellF1}\left[\frac{1+m}{2}, n, 1+m-n, \frac{3+m}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right.$$

$$\left.\left(\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\right)^{-1+n} (b\,\text{Sec}[e+f x])^n \left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]^2 \text{Sec}[e+f x]\right)^n \text{Sin}[e+f x]^m (a\,\text{Sin}[e+f x])^m\, \text{Tan}\left[\frac{1}{2}(e+f x)\right]\right) \Big/$$

$$\left(f\,(1+m)\,\left((3+m)\,\text{AppellF1}\left[\frac{1+m}{2},n,1+m-n,\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]-\right.\right.$$
$$2\left((1+m-n)\,\text{AppellF1}\left[\frac{3+m}{2},n,2+m-n,\frac{5+m}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]-\right.$$
$$\left.\left.\left.n\,\text{AppellF1}\left[\frac{3+m}{2},1+n,1+m-n,\frac{5+m}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)\right)$$
$$\left(\left((3+m)\,\text{AppellF1}\left[\frac{1+m}{2},n,1+m-n,\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\left(\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\right)^n\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]^2\text{Sec}[e+f x]\right)^n\right.\right.$$
$$\left.\text{Sin}[e+f x]^m\right)\Big/\left((1+m)\,\left((3+m)\,\text{AppellF1}\left[\frac{1+m}{2},n,1+m-n,\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]-\right.\right.$$
$$2\left((1+m-n)\,\text{AppellF1}\left[\frac{3+m}{2},n,2+m-n,\frac{5+m}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]-\right.$$
$$\left.\left.\left.n\,\text{AppellF1}\left[\frac{3+m}{2},1+n,1+m-n,\frac{5+m}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)\right)+$$
$$\left(2\,m\,(3+m)\,\text{AppellF1}\left[\frac{1+m}{2},n,1+m-n,\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Cos}[e+f x]\left(\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\right)^{-1+n}\right.$$
$$\left.\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]^2\text{Sec}[e+f x]\right)^n\text{Sin}[e+f x]^{-1+m}\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\Big/$$
$$\left((1+m)\,\left((3+m)\,\text{AppellF1}\left[\frac{1+m}{2},n,1+m-n,\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]-\right.\right.$$
$$2\left((1+m-n)\,\text{AppellF1}\left[\frac{3+m}{2},n,2+m-n,\frac{5+m}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]-\right.$$
$$\left.\left.\left.n\,\text{AppellF1}\left[\frac{3+m}{2},1+n,1+m-n,\frac{5+m}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)\right)+$$
$$\left(2\,(3+m)\,(-1+n)\,\text{AppellF1}\left[\frac{1+m}{2},n,1+m-n,\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\left(\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\right)^{-1+n}\right.$$
$$\left.\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]^2\text{Sec}[e+f x]\right)^n\text{Sin}[e+f x]^m\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)\Big/$$
$$\left((1+m)\,\left((3+m)\,\text{AppellF1}\left[\frac{1+m}{2},n,1+m-n,\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]-\right.\right.$$
$$2\left((1+m-n)\,\text{AppellF1}\left[\frac{3+m}{2},n,2+m-n,\frac{5+m}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]-\right.$$
$$\left.\left.\left.n\,\text{AppellF1}\left[\frac{3+m}{2},1+n,1+m-n,\frac{5+m}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)\right)+$$
$$\left(2\,(3+m)\,\left(\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\right)^{-1+n}\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]^2\text{Sec}[e+f x]\right)^n\text{Sin}[e+f x]^m\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]\left(-1/(3+m)\,(1+m)\,(1+m-n)\,\text{AppellF1}\left[\right.\right.\right.$$

$$1+\frac{1+m}{2},\ n,\ 2+m-n,\ 1+\frac{3+m}{2},\ \text{Tan}[\tfrac{1}{2}(e+f x)]^2,\ -\text{Tan}[\tfrac{1}{2}(e+f x)]^2]\ \text{Sec}[\tfrac{1}{2}(e+f x)]^2\ \text{Tan}[\tfrac{1}{2}(e+f x)]+1/(3+m)(1+m)\ n$$

$$\text{AppellF1}[1+\frac{1+m}{2},\ 1+n,\ 1+m-n,\ 1+\frac{3+m}{2},\ \text{Tan}[\tfrac{1}{2}(e+f x)]^2,\ -\text{Tan}[\tfrac{1}{2}(e+f x)]^2]\ \text{Sec}[\tfrac{1}{2}(e+f x)]^2\ \text{Tan}[\tfrac{1}{2}(e+f x)]])\Big)\Big/$$

$$\Big((1+m)\ \Big((3+m)\ \text{AppellF1}[\frac{1+m}{2},\ n,\ 1+m-n,\ \frac{3+m}{2},\ \text{Tan}[\tfrac{1}{2}(e+f x)]^2,\ -\text{Tan}[\tfrac{1}{2}(e+f x)]^2]-$$

$$2\ \Big((1+m-n)\ \text{AppellF1}[\frac{3+m}{2},\ n,\ 2+m-n,\ \frac{5+m}{2},\ \text{Tan}[\tfrac{1}{2}(e+f x)]^2,\ -\text{Tan}[\tfrac{1}{2}(e+f x)]^2]-$$

$$n\ \text{AppellF1}[\frac{3+m}{2},\ 1+n,\ 1+m-n,\ \frac{5+m}{2},\ \text{Tan}[\tfrac{1}{2}(e+f x)]^2,\ -\text{Tan}[\tfrac{1}{2}(e+f x)]^2]\Big)\ \text{Tan}[\tfrac{1}{2}(e+f x)]^2\Big)\Big)-$$

$$\Big(2\ (3+m)\ \text{AppellF1}[\frac{1+m}{2},\ n,\ 1+m-n,\ \frac{3+m}{2},\ \text{Tan}[\tfrac{1}{2}(e+f x)]^2,\ -\text{Tan}[\tfrac{1}{2}(e+f x)]^2]\ \Big(\text{Sec}[\tfrac{1}{2}(e+f x)]^2\Big)^{-1+n}$$

$$\Big(\text{Cos}[\tfrac{1}{2}(e+f x)]^2\ \text{Sec}[e+f x]\Big)^n\ \text{Sin}[e+f x]^m\ \text{Tan}[\tfrac{1}{2}(e+f x)]$$

$$\Big(-2\ \Big((1+m-n)\ \text{AppellF1}[\frac{3+m}{2},\ n,\ 2+m-n,\ \frac{5+m}{2},\ \text{Tan}[\tfrac{1}{2}(e+f x)]^2,\ -\text{Tan}[\tfrac{1}{2}(e+f x)]^2]-$$

$$n\ \text{AppellF1}[\frac{3+m}{2},\ 1+n,\ 1+m-n,\ \frac{5+m}{2},\ \text{Tan}[\tfrac{1}{2}(e+f x)]^2,\ -\text{Tan}[\tfrac{1}{2}(e+f x)]^2]\Big)\ \text{Sec}[\tfrac{1}{2}(e+f x)]^2\ \text{Tan}[\tfrac{1}{2}(e+f x)]+$$

$$(3+m)\ \Big(-\frac{1}{3+m}(1+m)\ (1+m-n)\ \text{AppellF1}[1+\frac{1+m}{2},\ n,\ 2+m-n,\ 1+\frac{3+m}{2},\ \text{Tan}[\tfrac{1}{2}(e+f x)]^2,\ -\text{Tan}[\tfrac{1}{2}(e+f x)]^2]$$

$$\text{Sec}[\tfrac{1}{2}(e+f x)]^2\ \text{Tan}[\tfrac{1}{2}(e+f x)]+\frac{1}{3+m}(1+m)\ n\ \text{AppellF1}[1+\frac{1+m}{2},\ 1+n,\ 1+m-n,\ 1+$$

$$\frac{3+m}{2},\ \text{Tan}[\tfrac{1}{2}(e+f x)]^2,\ -\text{Tan}[\tfrac{1}{2}(e+f x)]^2]\ \text{Sec}[\tfrac{1}{2}(e+f x)]^2\ \text{Tan}[\tfrac{1}{2}(e+f x)]]\Big)-2\ \text{Tan}[\tfrac{1}{2}(e+f x)]^2$$

$$\Big((1+m-n)\ \Big(-\frac{1}{5+m}(3+m)\ (2+m-n)\ \text{AppellF1}[1+\frac{3+m}{2},\ n,\ 3+m-n,\ 1+\frac{5+m}{2},\ \text{Tan}[\tfrac{1}{2}(e+f x)]^2,\ -\text{Tan}[\tfrac{1}{2}(e+f x)]^2]$$

$$\text{Sec}[\tfrac{1}{2}(e+f x)]^2\ \text{Tan}[\tfrac{1}{2}(e+f x)]+\frac{1}{5+m}(3+m)\ n\ \text{AppellF1}[1+\frac{3+m}{2},\ 1+n,\ 2+m-n,\ 1+\frac{5+m}{2},\ \text{Tan}[\tfrac{1}{2}(e+f x)]^2,$$

$$-\text{Tan}[\tfrac{1}{2}(e+f x)]^2]\ \text{Sec}[\tfrac{1}{2}(e+f x)]^2\ \text{Tan}[\tfrac{1}{2}(e+f x)]]\Big)-n\ \Big(-\frac{1}{5+m}(3+m)\ (1+m-n)\ \text{AppellF1}[1+\frac{3+m}{2},\ 1+n,\ 2+m-n,$$

$$1+\frac{5+m}{2},\ \text{Tan}[\tfrac{1}{2}(e+f x)]^2,\ -\text{Tan}[\tfrac{1}{2}(e+f x)]^2]\ \text{Sec}[\tfrac{1}{2}(e+f x)]^2\ \text{Tan}[\tfrac{1}{2}(e+f x)]+\frac{1}{5+m}(3+m)\ (1+n)\ \text{AppellF1}[$$

$$1+\frac{3+m}{2},\ 2+n,\ 1+m-n,\ 1+\frac{5+m}{2},\ \text{Tan}[\tfrac{1}{2}(e+f x)]^2,\ -\text{Tan}[\tfrac{1}{2}(e+f x)]^2]\ \text{Sec}[\tfrac{1}{2}(e+f x)]^2\ \text{Tan}[\tfrac{1}{2}(e+f x)]]\Big)\Big)\Big)\Big)\Big/$$

$$\Big((1+m)\ \Big((3+m)\ \text{AppellF1}[\frac{1+m}{2},\ n,\ 1+m-n,\ \frac{3+m}{2},\ \text{Tan}[\tfrac{1}{2}(e+f x)]^2,\ -\text{Tan}[\tfrac{1}{2}(e+f x)]^2]-$$

$$2\left((1+m-n)\,\text{AppellF1}\left[\frac{3+m}{2},\,n,\,2+m-n,\,\frac{5+m}{2},\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]-n\right.$$

$$\left.\left.\text{AppellF1}\left[\frac{3+m}{2},\,1+n,\,1+m-n,\,\frac{5+m}{2},\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)^2+$$

$$\left(2\,(3+m)\,n\,\text{AppellF1}\left[\frac{1+m}{2},\,n,\,1+m-n,\,\frac{3+m}{2},\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\left(\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\right)^{-1+n}\right.$$

$$\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]^2\text{Sec}[e+f x]\right)^{-1+n}\text{Sin}[e+f x]^m\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]$$

$$\left.\left(-\text{Cos}\left[\frac{1}{2}(e+f x)\right]\text{Sec}[e+f x]\,\text{Sin}\left[\frac{1}{2}(e+f x)\right]+\text{Cos}\left[\frac{1}{2}(e+f x)\right]^2\text{Sec}[e+f x]\,\text{Tan}[e+f x]\right)\right)\Big/$$

$$\left((1+m)\left((3+m)\,\text{AppellF1}\left[\frac{1+m}{2},\,n,\,1+m-n,\,\frac{3+m}{2},\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]-\right.\right.$$

$$2\left((1+m-n)\,\text{AppellF1}\left[\frac{3+m}{2},\,n,\,2+m-n,\,\frac{5+m}{2},\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]-\right.$$

$$\left.\left.\left.n\,\text{AppellF1}\left[\frac{3+m}{2},\,1+n,\,1+m-n,\,\frac{5+m}{2},\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)\right)\right)$$

- **Problem 495: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int \text{Csc}[e+f x]\,(b\,\text{Sec}[e+f x])^n\,dx$$

Optimal (type 5, 49 leaves, 2 steps):

$$-\frac{\text{Hypergeometric2F1}\left[1,\,\frac{1+n}{2},\,\frac{3+n}{2},\,\text{Sec}[e+f x]^2\right](b\,\text{Sec}[e+f x])^{1+n}}{b\,f\,(1+n)}$$

Result (type 6, 2658 leaves):

$$\left((-2+n)\,\text{AppellF1}\left[1-n,\,-n,\,1,\,2-n,\,\frac{1}{2}\text{Cos}[e+f x]\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2,\,\text{Cos}[e+f x]\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\right]\right.$$

$$\left.\text{Cot}\left[\frac{1}{2}(e+f x)\right]^2\text{Csc}[e+f x]\,\text{Sec}[e+f x]^{-1+n}\,(b\,\text{Sec}[e+f x])^n\right)\Big/$$

$$\left(f\,(-1+n)\left(2\,(-2+n)\,\text{AppellF1}\left[1-n,\,-n,\,1,\,2-n,\,\frac{1}{2}\text{Cos}[e+f x]\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2,\,\text{Cos}[e+f x]\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Cos}\left[\frac{1}{2}(e+f x)\right]^2+\right.\right.$$

$$\left(n\,\text{AppellF1}\left[2-n,\,1-n,\,1,\,3-n,\,\frac{1}{2}\text{Cos}[e+f x]\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2,\,\text{Cos}[e+f x]\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\right]-\right.$$

$$\left.2\,\text{AppellF1}\left[2-n,\,-n,\,2,\,3-n,\,\frac{1}{2}\text{Cos}[e+f x]\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2,\,\text{Cos}[e+f x]\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\right]\right)\text{Cos}[e+f x]\Bigg)$$

$$\left(-\left(\left((-2+n)\,\text{AppellF1}\left[1-n,\,-n,\,1,\,2-n,\,\frac{1}{2}\text{Cos}[e+f x]\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2,\,\text{Cos}[e+f x]\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\right]\right.\right.\right.$$

$$\text{Cot}\left[\frac{1}{2}(e+f x)\right] \text{Csc}\left[\frac{1}{2}(e+f x)\right]^2 \text{Sec}[e+f x]^{-1+n}\Bigg) \Bigg/$$

$$\Bigg((-1+n)\Bigg(2(-2+n)\,\text{AppellF1}\left[1-n,-n,1,2-n,\frac{1}{2}\text{Cos}[e+f x]\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2,\text{Cos}[e+f x]\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Cos}\left[\frac{1}{2}(e+f x)\right]^2+$$

$$\Bigg(n\,\text{AppellF1}\left[2-n,1-n,1,3-n,\frac{1}{2}\text{Cos}[e+f x]\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2,\text{Cos}[e+f x]\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\right]-2$$

$$\text{AppellF1}\left[2-n,-n,2,3-n,\frac{1}{2}\text{Cos}[e+f x]\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2,\text{Cos}[e+f x]\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\right]\Bigg)\text{Cos}[e+f x]\Bigg)\Bigg)+$$

$$\Bigg((-2+n)\,\text{AppellF1}\left[1-n,-n,1,2-n,\frac{1}{2}\text{Cos}[e+f x]\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2,\text{Cos}[e+f x]\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\right]$$

$$\text{Cot}\left[\frac{1}{2}(e+f x)\right]^2\text{Sec}[e+f x]^n\,\text{Sin}[e+f x]\Bigg)\Bigg/$$

$$\Bigg(2(-2+n)\,\text{AppellF1}\left[1-n,-n,1,2-n,\frac{1}{2}\text{Cos}[e+f x]\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2,\text{Cos}[e+f x]\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Cos}\left[\frac{1}{2}(e+f x)\right]^2+$$

$$\Bigg(n\,\text{AppellF1}\left[2-n,1-n,1,3-n,\frac{1}{2}\text{Cos}[e+f x]\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2,\text{Cos}[e+f x]\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\right]-$$

$$2\,\text{AppellF1}\left[2-n,-n,2,3-n,\frac{1}{2}\text{Cos}[e+f x]\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2,\text{Cos}[e+f x]\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\right]\Bigg)\text{Cos}[e+f x]\Bigg)+$$

$$\Bigg((-2+n)\,\text{Cot}\left[\frac{1}{2}(e+f x)\right]^2\text{Sec}[e+f x]^{-1+n}\Bigg(-\frac{1}{2-n}(1-n)\,n\,\text{AppellF1}\left[2-n,1-n,1,3-n,\frac{1}{2}\text{Cos}[e+f x]\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2,\right.$$

$$\left.\text{Cos}[e+f x]\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\right]\left(-\frac{1}{2}\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Sin}[e+f x]+\frac{1}{2}\text{Cos}[e+f x]\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)+$$

$$\frac{1}{2-n}(1-n)\,\text{AppellF1}\left[2-n,-n,2,3-n,\frac{1}{2}\text{Cos}[e+f x]\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2,\text{Cos}[e+f x]\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\right]$$

$$\left(-\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Sin}[e+f x]+\text{Cos}[e+f x]\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\Bigg)\Bigg)\Bigg/$$

$$\Bigg((-1+n)\Bigg(2(-2+n)\,\text{AppellF1}\left[1-n,-n,1,2-n,\frac{1}{2}\text{Cos}[e+f x]\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2,\text{Cos}[e+f x]\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Cos}\left[\frac{1}{2}(e+f x)\right]^2+$$

$$\Bigg(n\,\text{AppellF1}\left[2-n,1-n,1,3-n,\frac{1}{2}\text{Cos}[e+f x]\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2,\text{Cos}[e+f x]\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\right]-$$

$$2\,\text{AppellF1}\left[2-n,-n,2,3-n,\frac{1}{2}\text{Cos}[e+f x]\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2,\text{Cos}[e+f x]\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\right]\Bigg)\text{Cos}[e+f x]\Bigg)\Bigg)-$$

$$\Bigg((-2+n)\,\text{AppellF1}\left[1-n,-n,1,2-n,\frac{1}{2}\text{Cos}[e+f x]\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2,\text{Cos}[e+f x]\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Cot}\left[\frac{1}{2}(e+f x)\right]^2\text{Sec}[e+f x]^{-1+n}$$

$$\Bigg(-2(-2+n)\,\text{AppellF1}\left[1-n,-n,1,2-n,\frac{1}{2}\text{Cos}[e+f x]\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2,\text{Cos}[e+f x]\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Cos}\left[\frac{1}{2}(e+f x)\right]$$

$$\text{Sin}[\frac{1}{2}(e+f x)] - (n\,\text{AppellF1}[2-n, 1-n, 1, 3-n, \frac{1}{2}\text{Cos}[e+f x]\,\text{Sec}[\frac{1}{2}(e+f x)]^2, \text{Cos}[e+f x]\,\text{Sec}[\frac{1}{2}(e+f x)]^2] -$$

$$2\,\text{AppellF1}[2-n, -n, 2, 3-n, \frac{1}{2}\text{Cos}[e+f x]\,\text{Sec}[\frac{1}{2}(e+f x)]^2, \text{Cos}[e+f x]\,\text{Sec}[\frac{1}{2}(e+f x)]^2])\,\text{Sin}[e+f x] +$$

$$2(-2+n)\,\text{Cos}[\frac{1}{2}(e+f x)]^2\,(-\frac{1}{2-n}(1-n)\,n\,\text{AppellF1}[2-n, 1-n, 1, 3-n, \frac{1}{2}\text{Cos}[e+f x]\,\text{Sec}[\frac{1}{2}(e+f x)]^2,$$

$$\text{Cos}[e+f x]\,\text{Sec}[\frac{1}{2}(e+f x)]^2]\,(-\frac{1}{2}\text{Sec}[\frac{1}{2}(e+f x)]^2\,\text{Sin}[e+f x] + \frac{1}{2}\text{Cos}[e+f x]\,\text{Sec}[\frac{1}{2}(e+f x)]^2\,\text{Tan}[\frac{1}{2}(e+f x)]) +$$

$$\frac{1}{2-n}(1-n)\,\text{AppellF1}[2-n, -n, 2, 3-n, \frac{1}{2}\text{Cos}[e+f x]\,\text{Sec}[\frac{1}{2}(e+f x)]^2, \text{Cos}[e+f x]\,\text{Sec}[\frac{1}{2}(e+f x)]^2]$$

$$(-\text{Sec}[\frac{1}{2}(e+f x)]^2\,\text{Sin}[e+f x] + \text{Cos}[e+f x]\,\text{Sec}[\frac{1}{2}(e+f x)]^2\,\text{Tan}[\frac{1}{2}(e+f x)])) +$$

$$\text{Cos}[e+f x]\,(n\,(\frac{1}{3-n}(1-n)(2-n)\,\text{AppellF1}[3-n, 2-n, 1, 4-n, \frac{1}{2}\text{Cos}[e+f x]\,\text{Sec}[\frac{1}{2}(e+f x)]^2, \text{Cos}[e+f x]\,\text{Sec}[\frac{1}{2}(e+f x)]^2]$$

$$(-\frac{1}{2}\text{Sec}[\frac{1}{2}(e+f x)]^2\,\text{Sin}[e+f x] + \frac{1}{2}\text{Cos}[e+f x]\,\text{Sec}[\frac{1}{2}(e+f x)]^2\,\text{Tan}[\frac{1}{2}(e+f x)]) + \frac{1}{3-n}(2-n)\,\text{AppellF1}[3-n, 1-n,$$

$$2, 4-n, \frac{1}{2}\text{Cos}[e+f x]\,\text{Sec}[\frac{1}{2}(e+f x)]^2, \text{Cos}[e+f x]\,\text{Sec}[\frac{1}{2}(e+f x)]^2]\,(-\text{Sec}[\frac{1}{2}(e+f x)]^2\,\text{Sin}[e+f x] + \text{Cos}[e+f x]$$

$$\text{Sec}[\frac{1}{2}(e+f x)]^2\,\text{Tan}[\frac{1}{2}(e+f x)])) - 2\,(-\frac{1}{3-n}(2-n)\,n\,\text{AppellF1}[3-n, 1-n, 2, 4-n, \frac{1}{2}\text{Cos}[e+f x]\,\text{Sec}[\frac{1}{2}(e+f x)]^2,$$

$$\text{Cos}[e+f x]\,\text{Sec}[\frac{1}{2}(e+f x)]^2]\,(-\frac{1}{2}\text{Sec}[\frac{1}{2}(e+f x)]^2\,\text{Sin}[e+f x] + \frac{1}{2}\text{Cos}[e+f x]\,\text{Sec}[\frac{1}{2}(e+f x)]^2\,\text{Tan}[\frac{1}{2}(e+f x)]) +$$

$$\frac{1}{3-n}2\,(2-n)\,\text{AppellF1}[3-n, -n, 3, 4-n, \frac{1}{2}\text{Cos}[e+f x]\,\text{Sec}[\frac{1}{2}(e+f x)]^2, \text{Cos}[e+f x]\,\text{Sec}[\frac{1}{2}(e+f x)]^2]$$

$$(-\text{Sec}[\frac{1}{2}(e+f x)]^2\,\text{Sin}[e+f x] + \text{Cos}[e+f x]\,\text{Sec}[\frac{1}{2}(e+f x)]^2\,\text{Tan}[\frac{1}{2}(e+f x)]))))))\Big/$$

$$((-1+n)\,(2(-2+n)\,\text{AppellF1}[1-n, -n, 1, 2-n, \frac{1}{2}\text{Cos}[e+f x]\,\text{Sec}[\frac{1}{2}(e+f x)]^2, \text{Cos}[e+f x]\,\text{Sec}[\frac{1}{2}(e+f x)]^2]\,\text{Cos}[\frac{1}{2}(e+f x)]^2 +$$

$$(n\,\text{AppellF1}[2-n, 1-n, 1, 3-n, \frac{1}{2}\text{Cos}[e+f x]\,\text{Sec}[\frac{1}{2}(e+f x)]^2, \text{Cos}[e+f x]\,\text{Sec}[\frac{1}{2}(e+f x)]^2] - 2$$

$$\text{AppellF1}[2-n, -n, 2, 3-n, \frac{1}{2}\text{Cos}[e+f x]\,\text{Sec}[\frac{1}{2}(e+f x)]^2, \text{Cos}[e+f x]\,\text{Sec}[\frac{1}{2}(e+f x)]^2])\,\text{Cos}[e+f x])^2)))$$

- **Problem 496: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int \text{Csc}[e+f x]^3\,(b\,\text{Sec}[e+f x])^n\,dx$$

Optimal (type 5, 48 leaves, 2 steps):

$$\frac{\text{Hypergeometric2F1}\left[2,\frac{3+n}{2},\frac{5+n}{2},\text{Sec}[e+f x]^2\right](b\,\text{Sec}[e+f x])^{3+n}}{b^3 f(3+n)}$$

Result (type 6, 5198 leaves):

$$\left(\text{Csc}[e+f x]^3(b\,\text{Sec}[e+f x])^n\left(\frac{1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}{1-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}\right)^n\right.$$

$$\left(-\text{AppellF1}\left[1,n,-n,2,\text{Cot}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Cot}\left[\frac{1}{2}(e+f x)\right]^2\right]\Big/\left(n\left(\text{AppellF1}\left[2,n,1-n,3,\text{Cot}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Cot}\left[\frac{1}{2}(e+f x)\right]^2\right]+\right.\right.\right.$$

$$\left.\text{AppellF1}\left[2,1+n,-n,3,\text{Cot}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Cot}\left[\frac{1}{2}(e+f x)\right]^2\right]\right)+$$

$$\left.2\,\text{AppellF1}\left[1,n,-n,2,\text{Cot}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Cot}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)+$$

$$\left(\text{AppellF1}\left[1,n,-n,2,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)\Big/$$

$$\left(2\,\text{AppellF1}\left[1,n,-n,2,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+n\left(\text{AppellF1}\left[2,n,1-n,3,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+\right.\right.$$

$$\left.\left.\text{AppellF1}\left[2,1+n,-n,3,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)+$$

$$\left(2(-2+n)\,\text{AppellF1}\left[1-n,-n,1,2-n,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right),1-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Cot}\left[\frac{1}{2}(e+f x)\right]^2\left(-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)\right)\Big/$$

$$\left((-1+n)\left(-2(-2+n)\,\text{AppellF1}\left[1-n,-n,1,2-n,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right),1-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+\right.\right.$$

$$\left(n\,\text{AppellF1}\left[2-n,1-n,1,3-n,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right),1-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]-\right.$$

$$\left.\left.\left.\left.2\,\text{AppellF1}\left[2-n,-n,2,3-n,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right),1-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right)\left(-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)\right)\right)\right)\right)\Big/$$

$$\left(4f\left(\frac{1}{4}n\left(\frac{1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}{1-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}\right)^{-1+n}\left(\frac{\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{1-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}+\frac{\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)}{\left(1-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)^2}\right)\right.\right.$$

$$\left(-\text{AppellF1}\left[1,n,-n,2,\text{Cot}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Cot}\left[\frac{1}{2}(e+f x)\right]^2\right]\Big/\right.$$

$$\left(n\left(\text{AppellF1}\left[2,n,1-n,3,\text{Cot}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Cot}\left[\frac{1}{2}(e+f x)\right]^2\right]+\text{AppellF1}\left[2,1+n,-n,3,\text{Cot}\left[\frac{1}{2}(e+f x)\right]^2,\right.\right.\right.$$

$$\left.\left.\left.-\text{Cot}\left[\frac{1}{2}(e+f x)\right]^2\right]\right)+2\,\text{AppellF1}\left[1,n,-n,2,\text{Cot}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Cot}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)+$$

$$\left(\text{AppellF1}\left[1,n,-n,2,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)\Big/$$

$$\left(2\,\text{AppellF1}\left[1,n,-n,2,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+n\left(\text{AppellF1}\left[2,n,1-n,3,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\right.\right.\right.$$

$$\left.\left.\left.-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+\text{AppellF1}\left[2,1+n,-n,3,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)+$$

$$\left(2(-2+n)\,\text{AppellF1}\left[1-n,-n,1,2-n,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right),1-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Cot}\left[\frac{1}{2}(e+f x)\right]^2\left(-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)\right)\Big/$$

$$\left((-1+n)\left(-2(-2+n)\,\text{AppellF1}\left[1-n,-n,1,2-n,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right),1-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+\right.\right.$$

$$\left(n\,\text{AppellF1}\left[2-n,1-n,1,3-n,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right),1-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]-\right.$$

$$\left.\left.\left.2\,\text{AppellF1}\left[2-n,-n,2,3-n,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right),1-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right)\left(-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)\right)\right)+$$

$$\frac{1}{4}\left(\frac{1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}{1-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}\right)^n\left(-\left(-\frac{1}{2}n\,\text{AppellF1}\left[2,n,1-n,3,\text{Cot}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Cot}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Cot}\left[\frac{1}{2}(e+f x)\right]\text{Csc}\left[\frac{1}{2}(e+f x)\right]^2-\right.\right.$$

$$\left.\frac{1}{2}n\,\text{AppellF1}\left[2,1+n,-n,3,\text{Cot}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Cot}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Cot}\left[\frac{1}{2}(e+f x)\right]\text{Csc}\left[\frac{1}{2}(e+f x)\right]^2\right)\Big/$$

$$\left(n\left(\text{AppellF1}\left[2,n,1-n,3,\text{Cot}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Cot}\left[\frac{1}{2}(e+f x)\right]^2\right]+\text{AppellF1}\left[2,1+n,-n,3,\text{Cot}\left[\frac{1}{2}(e+f x)\right]^2,\right.\right.\right.$$

$$\left.\left.\left.-\text{Cot}\left[\frac{1}{2}(e+f x)\right]^2\right]\right)+2\,\text{AppellF1}\left[1,n,-n,2,\text{Cot}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Cot}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)+$$

$$\left(\text{AppellF1}\left[1,n,-n,2,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\Big/$$

$$\left(2\,\text{AppellF1}\left[1,n,-n,2,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+n\left(\text{AppellF1}\left[2,n,1-n,3,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\right.\right.\right.$$

$$\left.\left.\left.-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+\text{AppellF1}\left[2,1+n,-n,3,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)+$$

$$\left(\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\left(\frac{1}{2}n\,\text{AppellF1}\left[2,n,1-n,3,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]+\right.\right.$$

$$\left.\left.\frac{1}{2}n\,\text{AppellF1}\left[2,1+n,-n,3,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\right)\Big/$$

$$\left(2\,\text{AppellF1}\left[1,n,-n,2,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+n\left(\text{AppellF1}\left[2,n,1-n,3,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\right.\right.\right.$$

$$-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+\text{AppellF1}\left[2,1+n,-n,3,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)+$$

$$\left(\text{AppellF1}\left[1,n,-n,2,\text{Cot}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Cot}\left[\frac{1}{2}(e+f x)\right]^2\right]\left(n\left(\frac{2}{3}(1-n)\,\text{AppellF1}\left[3,n,2-n,4,\right.\right.\right.\right.$$

$$\text{Cot}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Cot}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Cot}\left[\frac{1}{2}(e+f x)\right]\text{Csc}\left[\frac{1}{2}(e+f x)\right]^2-$$

$$\frac{4}{3}n\,\text{AppellF1}\left[3,1+n,1-n,4,\text{Cot}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Cot}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Cot}\left[\frac{1}{2}(e+f x)\right]\text{Csc}\left[\frac{1}{2}(e+f x)\right]^2-$$

$$\frac{2}{3}(1+n)\,\text{AppellF1}\left[3,2+n,-n,4,\text{Cot}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Cot}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Cot}\left[\frac{1}{2}(e+f x)\right]\text{Csc}\left[\frac{1}{2}(e+f x)\right]^2\right)+$$

$$2\,\text{AppellF1}\left[1,n,-n,2,\text{Cot}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Cot}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]+$$

$$2\left(-\frac{1}{2}n\,\text{AppellF1}\left[2,n,1-n,3,\text{Cot}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Cot}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Cot}\left[\frac{1}{2}(e+f x)\right]\text{Csc}\left[\frac{1}{2}(e+f x)\right]^2-\frac{1}{2}n\right.$$

$$\left.\text{AppellF1}\left[2,1+n,-n,3,\text{Cot}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Cot}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Cot}\left[\frac{1}{2}(e+f x)\right]\text{Csc}\left[\frac{1}{2}(e+f x)\right]^2\right)\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)\right)\Big/$$

$$\left(n\left(\text{AppellF1}\left[2,n,1-n,3,\text{Cot}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Cot}\left[\frac{1}{2}(e+f x)\right]^2\right]+\text{AppellF1}\left[2,1+n,-n,3,\text{Cot}\left[\frac{1}{2}(e+f x)\right]^2,\right.\right.\right.$$

$$\left.\left.-\text{Cot}\left[\frac{1}{2}(e+f x)\right]^2\right]\right)+2\,\text{AppellF1}\left[1,n,-n,2,\text{Cot}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Cot}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)^2-$$

$$\left(\text{AppellF1}\left[1,n,-n,2,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\left(n\left(\text{AppellF1}\left[2,n,1-n,3,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\right.\right.\right.\right.$$

$$\left.-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+\text{AppellF1}\left[2,1+n,-n,3,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right)\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]+$$

$$2\left(\frac{1}{2}n\,\text{AppellF1}\left[2,n,1-n,3,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]+\right.$$

$$\left.\frac{1}{2}n\,\text{AppellF1}\left[2,1+n,-n,3,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)+n\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2$$

$$\left(-\frac{2}{3}(1-n)\,\text{AppellF1}\left[3,n,2-n,4,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]+\right.$$

$$\frac{4}{3}n\,\text{AppellF1}\left[3,1+n,1-n,4,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]+$$

$$\left.\left.\left.\frac{2}{3}(1+n)\,\text{AppellF1}\left[3,2+n,-n,4,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\right)\right)\Big/$$

$$\left(2\,\text{AppellF1}\left[1,n,-n,2,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+n\left(\text{AppellF1}\left[2,n,1-n,3,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\right.\right.\right.$$

$$-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big]+\text{AppellF1}\left[2,1+n,-n,3,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\Big)\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big)^2+$$

$$\Big(2(-2+n)\,\text{AppellF1}\left[1-n,-n,1,2-n,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right),1-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Csc}\left[\frac{1}{2}(e+f x)\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]\Big)\Big/$$

$$\Big((-1+n)\Big(-2(-2+n)\,\text{AppellF1}\left[1-n,-n,1,2-n,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right),1-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+$$

$$\Big(n\,\text{AppellF1}\left[2-n,1-n,1,3-n,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right),1-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]-$$

$$2\,\text{AppellF1}\left[2-n,-n,2,3-n,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right),1-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\Big)\left(-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)\Big)\Big)-$$

$$\Big(2(-2+n)\,\text{AppellF1}\left[1-n,-n,1,2-n,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right),1-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Cot}\left[\frac{1}{2}(e+f x)\right]\text{Csc}\left[\frac{1}{2}(e+f x)\right]^2$$

$$\left(-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)\Big)\Big/\Big((-1+n)\Big(-2(-2+n)\,\text{AppellF1}\left[1-n,-n,1,2-n,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right),1-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+$$

$$\Big(n\,\text{AppellF1}\left[2-n,1-n,1,3-n,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right),1-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]-$$

$$2\,\text{AppellF1}\left[2-n,-n,2,3-n,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right),1-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\Big)\left(-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)\Big)\Big)+$$

$$\Big(2(-2+n)\,\text{Cot}\left[\frac{1}{2}(e+f x)\right]^2\Big(\frac{1}{2(2-n)}(1-n)\,n\,\text{AppellF1}\left[2-n,1-n,1,3-n,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right),1-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]-\frac{1}{2-n}(1-n)\,\text{AppellF1}\left[2-n,-n,2,3-n,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right),1-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]\Big)\left(-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)\Big)\Big/$$

$$\Big((-1+n)\Big(-2(-2+n)\,\text{AppellF1}\left[1-n,-n,1,2-n,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right),1-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+$$

$$\Big(n\,\text{AppellF1}\left[2-n,1-n,1,3-n,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right),1-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]-$$

$$2\,\text{AppellF1}\left[2-n,-n,2,3-n,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right),1-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\Big)\left(-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)\Big)\Big)-$$

$$\Big(2(-2+n)\,\text{AppellF1}\left[1-n,-n,1,2-n,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right),1-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Cot}\left[\frac{1}{2}(e+f x)\right]^2$$

$$\left(-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)\Big(\Big(n\,\text{AppellF1}\left[2-n,1-n,1,3-n,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right),1-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]-2\,\text{AppellF1}\Big[2-n,-n,$$

$$2,3-n,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right),1-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big]\Big)\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]-2(-2+n)\Big(\frac{1}{2(2-n)}(1-n)\,n$$

$$\text{AppellF1}\left[2-n,1-n,1,3-n,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right),1-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2\text{Tan}\left[\frac{1}{2}(e+fx)\right]-\frac{1}{2-n}$$

$$(1-n)\,\text{AppellF1}\left[2-n,-n,2,3-n,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right),1-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2\text{Tan}\left[\frac{1}{2}(e+fx)\right]\Bigg)+$$

$$\left(-1+\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right)\left(n\left(-\frac{1}{3-n}(2-n)\,\text{AppellF1}\left[3-n,1-n,2,4-n,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right),1-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\right.\right.$$

$$\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2\text{Tan}\left[\frac{1}{2}(e+fx)\right]-\frac{1}{2(3-n)}(1-n)(2-n)\,\text{AppellF1}\left[3-n,2-n,1,4-n,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right),\right.$$

$$\left.1-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2\text{Tan}\left[\frac{1}{2}(e+fx)\right]\Bigg)-2\left(\frac{1}{2(3-n)}(2-n)\,n\,\text{AppellF1}\left[3-n,1-n,2,\right.\right.$$

$$4-n,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right),1-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2\text{Tan}\left[\frac{1}{2}(e+fx)\right]-\frac{1}{3-n}2(2-n)$$

$$\text{AppellF1}\left[3-n,-n,3,4-n,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right),1-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2\text{Tan}\left[\frac{1}{2}(e+fx)\right]\Bigg)\Bigg)\Bigg)\Bigg)\Bigg/$$

$$\left((-1+n)\left(-2(-2+n)\,\text{AppellF1}\left[1-n,-n,1,2-n,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right),1-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]+\right.\right.$$

$$\left(n\,\text{AppellF1}\left[2-n,1-n,1,3-n,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right),1-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]-\right.$$

$$\left.\left.\left.2\,\text{AppellF1}\left[2-n,-n,2,3-n,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right),1-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\right)\left(-1+\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right)\right)^2\right)\Bigg)\Bigg)$$

- **Problem 497: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int (b\,\text{Sec}[e+fx])^n\,\text{Sin}[e+fx]^6\,dx$$

Optimal (type 5, 73 leaves, 2 steps):

$$-\frac{b\,\text{Hypergeometric2F1}\left[-\frac{5}{2},\frac{1-n}{2},\frac{3-n}{2},\text{Cos}[e+fx]^2\right](b\,\text{Sec}[e+fx])^{-1+n}\,\text{Sin}[e+fx]}{f(1-n)\sqrt{\text{Sin}[e+fx]^2}}$$

Result (type 6, 8327 leaves):

$$\left(384\,(b\,\text{Sec}[e+fx])^n\,\text{Sin}[e+fx]^6\,\text{Tan}\left[\frac{1}{2}(e+fx)\right]\left(\frac{1}{1-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2}\right)^n\right.$$

$$\left(1+\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right)^{-7+n}\left(\left(\text{AppellF1}\left[\frac{1}{2},n,4-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right)^3\right)\right/$$

$$\left(3\,\text{AppellF1}\left[\frac{1}{2},n,4-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]+2\left((-4+n)\,\text{AppellF1}\left[\frac{3}{2},n,5-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,\right.\right.\right.$$

$$-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+n\,\text{AppellF1}\left[\frac{3}{2},1+n,4-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)-$$

$$\left(3\,\text{AppellF1}\left[\frac{1}{2},n,5-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)^2\right)\Big/$$

$$\left(3\,\text{AppellF1}\left[\frac{1}{2},n,5-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+2\left((-5+n)\,\text{AppellF1}\left[\frac{3}{2},n,6-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\right.\right.\right.$$

$$-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+n\,\text{AppellF1}\left[\frac{3}{2},1+n,5-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)+$$

$$\left(3\,\text{AppellF1}\left[\frac{1}{2},n,6-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)\right)\Big/$$

$$\left(3\,\text{AppellF1}\left[\frac{1}{2},n,6-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+2\left((-6+n)\,\text{AppellF1}\left[\frac{3}{2},n,7-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\right.\right.\right.$$

$$-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+n\,\text{AppellF1}\left[\frac{3}{2},1+n,6-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)-$$

$$\text{AppellF1}\left[\frac{1}{2},n,7-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\Big/\left(3\,\text{AppellF1}\left[\frac{1}{2},n,7-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+\right.$$

$$2\left((-7+n)\,\text{AppellF1}\left[\frac{3}{2},n,8-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+\right.$$

$$\left.\left.n\,\text{AppellF1}\left[\frac{3}{2},1+n,7-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)\right)\Big/$$

$$\left(f\left(384\,(-7+n)\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\left(\frac{1}{1-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}\right)^n\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)^{-8+n}\right.\right.$$

$$\left(\left(\text{AppellF1}\left[\frac{1}{2},n,4-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)^3\right)\Big/\right.$$

$$\left(3\,\text{AppellF1}\left[\frac{1}{2},n,4-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+2\left((-4+n)\,\text{AppellF1}\left[\frac{3}{2},n,5-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\right.\right.\right.$$

$$-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+n\,\text{AppellF1}\left[\frac{3}{2},1+n,4-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)-$$

$$\left(3\,\text{AppellF1}\left[\frac{1}{2},n,5-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)^2\right)\Big/$$

$$\left(3\,\text{AppellF1}\left[\frac{1}{2},n,5-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+2\left((-5+n)\,\text{AppellF1}\left[\frac{3}{2},n,6-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\right.\right.\right.$$

$$-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+n\,\text{AppellF1}\left[\frac{3}{2},1+n,5-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)+$$

$$\left(3\,\text{AppellF1}\left[\frac{1}{2}, n, 6-n, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)\right)\Big/$$

$$\Bigg(3\,\text{AppellF1}\left[\frac{1}{2}, n, 6-n, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+2\,\Bigg((-6+n)\,\text{AppellF1}\left[\frac{3}{2}, n, 7-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\right.$$

$$\left.-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+n\,\text{AppellF1}\left[\frac{3}{2}, 1+n, 6-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\Bigg)\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Bigg)-$$

$$\text{AppellF1}\left[\frac{1}{2}, n, 7-n, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\Big/\Bigg(3\,\text{AppellF1}\left[\frac{1}{2}, n, 7-n, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\right.$$

$$\left.-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+2\,\Bigg((-7+n)\,\text{AppellF1}\left[\frac{3}{2}, n, 8-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+n\,\text{AppellF1}\left[\frac{3}{2}, 1+n,\right.$$

$$\left.7-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\Bigg)\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Bigg)\Bigg)+192\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\left(\frac{1}{1-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}\right)^n$$

$$\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)^{-7+n}\Bigg(\Bigg(\text{AppellF1}\left[\frac{1}{2}, n, 4-n, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)^3\Bigg)\Big/$$

$$\Bigg(3\,\text{AppellF1}\left[\frac{1}{2}, n, 4-n, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+2\,\Bigg((-4+n)\,\text{AppellF1}\left[\frac{3}{2}, n, 5-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\right.$$

$$\left.-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+n\,\text{AppellF1}\left[\frac{3}{2}, 1+n, 4-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\Bigg)\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Bigg)-$$

$$\left(3\,\text{AppellF1}\left[\frac{1}{2}, n, 5-n, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)^2\right)\Big/$$

$$\Bigg(3\,\text{AppellF1}\left[\frac{1}{2}, n, 5-n, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+2\,\Bigg((-5+n)\,\text{AppellF1}\left[\frac{3}{2}, n, 6-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\right.$$

$$\left.-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+n\,\text{AppellF1}\left[\frac{3}{2}, 1+n, 5-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\Bigg)\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Bigg)+$$

$$\left(3\,\text{AppellF1}\left[\frac{1}{2}, n, 6-n, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)\right)\Big/$$

$$\Bigg(3\,\text{AppellF1}\left[\frac{1}{2}, n, 6-n, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+2\,\Bigg((-6+n)\,\text{AppellF1}\left[\frac{3}{2}, n, 7-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\right.$$

$$\left.-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+n\,\text{AppellF1}\left[\frac{3}{2}, 1+n, 6-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\Bigg)\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Bigg)-$$

$$\text{AppellF1}\left[\frac{1}{2}, n, 7-n, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\Big/\Bigg(3\,\text{AppellF1}\left[\frac{1}{2}, n, 7-n, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\right.$$

$$\left.-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+2\,\Bigg((-7+n)\,\text{AppellF1}\left[\frac{3}{2}, n, 8-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+$$

$$n\,\text{AppellF1}\Big[\frac{3}{2},\,1+n,\,7-n,\,\frac{5}{2},\,\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2\Big)\Big)+$$

$$384\,n\,\text{Sec}\Big[\frac{1}{2}(e+f x)\Big]^2\,\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2\left(\frac{1}{1-\text{Tan}\big[\frac{1}{2}(e+f x)\big]^2}\right)^{1+n}\Big(1+\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2\Big)^{-7+n}$$

$$\Big(\Big(\text{AppellF1}\Big[\frac{1}{2},\,n,\,4-n,\,\frac{3}{2},\,\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2\Big]\Big(1+\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2\Big)^3\Big)\Big/$$

$$\Big(3\,\text{AppellF1}\Big[\frac{1}{2},\,n,\,4-n,\,\frac{3}{2},\,\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2\Big]+2\Big((-4+n)\,\text{AppellF1}\Big[\frac{3}{2},\,n,\,5-n,\,\frac{5}{2},\,\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2,$$

$$-\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2\Big]+n\,\text{AppellF1}\Big[\frac{3}{2},\,1+n,\,4-n,\,\frac{5}{2},\,\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2\Big)-$$

$$\Big(3\,\text{AppellF1}\Big[\frac{1}{2},\,n,\,5-n,\,\frac{3}{2},\,\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2\Big]\Big(1+\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2\Big)^2\Big)\Big/$$

$$\Big(3\,\text{AppellF1}\Big[\frac{1}{2},\,n,\,5-n,\,\frac{3}{2},\,\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2\Big]+2\Big((-5+n)\,\text{AppellF1}\Big[\frac{3}{2},\,n,\,6-n,\,\frac{5}{2},\,\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2,$$

$$-\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2\Big]+n\,\text{AppellF1}\Big[\frac{3}{2},\,1+n,\,5-n,\,\frac{5}{2},\,\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2\Big)+$$

$$\Big(3\,\text{AppellF1}\Big[\frac{1}{2},\,n,\,6-n,\,\frac{3}{2},\,\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2\Big]\Big(1+\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2\Big)\Big)\Big/$$

$$\Big(3\,\text{AppellF1}\Big[\frac{1}{2},\,n,\,6-n,\,\frac{3}{2},\,\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2\Big]+2\Big((-6+n)\,\text{AppellF1}\Big[\frac{3}{2},\,n,\,7-n,\,\frac{5}{2},\,\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2,$$

$$-\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2\Big]+n\,\text{AppellF1}\Big[\frac{3}{2},\,1+n,\,6-n,\,\frac{5}{2},\,\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2\Big)-$$

$$\text{AppellF1}\Big[\frac{1}{2},\,n,\,7-n,\,\frac{3}{2},\,\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2\Big]\Big/\Big(3\,\text{AppellF1}\Big[\frac{1}{2},\,n,\,7-n,\,\frac{3}{2},\,\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2,$$

$$-\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2\Big]+2\Big((-7+n)\,\text{AppellF1}\Big[\frac{3}{2},\,n,\,8-n,\,\frac{5}{2},\,\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2\Big]+$$

$$n\,\text{AppellF1}\Big[\frac{3}{2},\,1+n,\,7-n,\,\frac{5}{2},\,\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2\Big)\Big)+$$

$$384\,\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]\left(\frac{1}{1-\text{Tan}\big[\frac{1}{2}(e+f x)\big]^2}\right)^{n}\Big(1+\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2\Big)^{-7+n}$$

$$\Big(\Big(3\,\text{AppellF1}\Big[\frac{1}{2},\,n,\,4-n,\,\frac{3}{2},\,\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{2}(e+f x)\Big]^2\,\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]\Big(1+\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2\Big)^2\Big)\Big/$$

$$\Big(3\,\text{AppellF1}\Big[\frac{1}{2},\,n,\,4-n,\,\frac{3}{2},\,\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2\Big]+2\Big((-4+n)\,\text{AppellF1}\Big[\frac{3}{2},\,n,\,5-n,\,\frac{5}{2},\,\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2,$$

$$-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\Big]+n\,\text{AppellF1}\Big[\frac{3}{2},\,1+n,\,4-n,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\Big]\Big)\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\Big)+$$

$$\Big(\Big(-\frac{1}{3}\,(4-n)\,\text{AppellF1}\Big[\frac{3}{2},\,n,\,5-n,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\Big]\,\text{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]^2\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]+\frac{1}{3}\,n\,\text{AppellF1}\Big[$$

$$\frac{3}{2},\,1+n,\,4-n,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\Big]\,\text{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]^2\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\Big)\,\left(1+\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right)^3\Big)\Big/$$

$$\Big(3\,\text{AppellF1}\Big[\frac{1}{2},\,n,\,4-n,\,\frac{3}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\Big]+2\,\Big((-4+n)\,\text{AppellF1}\Big[\frac{3}{2},\,n,\,5-n,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,$$

$$-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\Big]+n\,\text{AppellF1}\Big[\frac{3}{2},\,1+n,\,4-n,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\Big]\Big)\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\Big)-$$

$$\Big(6\,\text{AppellF1}\Big[\frac{1}{2},\,n,\,5-n,\,\frac{3}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\Big]\,\text{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]^2\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\,\left(1+\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right)\Big)\Big/$$

$$\Big(3\,\text{AppellF1}\Big[\frac{1}{2},\,n,\,5-n,\,\frac{3}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\Big]+2\,\Big((-5+n)\,\text{AppellF1}\Big[\frac{3}{2},\,n,\,6-n,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,$$

$$-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\Big]+n\,\text{AppellF1}\Big[\frac{3}{2},\,1+n,\,5-n,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\Big]\Big)\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\Big)-$$

$$\Big(3\,\Big(-\frac{1}{3}\,(5-n)\,\text{AppellF1}\Big[\frac{3}{2},\,n,\,6-n,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\Big]\,\text{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]^2\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]+\frac{1}{3}\,n\,\text{AppellF1}\Big[$$

$$\frac{3}{2},\,1+n,\,5-n,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\Big]\,\text{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]^2\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\Big)\,\left(1+\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right)^2\Big)\Big/$$

$$\Big(3\,\text{AppellF1}\Big[\frac{1}{2},\,n,\,5-n,\,\frac{3}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\Big]+2\,\Big((-5+n)\,\text{AppellF1}\Big[\frac{3}{2},\,n,\,6-n,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,$$

$$-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\Big]+n\,\text{AppellF1}\Big[\frac{3}{2},\,1+n,\,5-n,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\Big]\Big)\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\Big)+$$

$$\Big(3\,\text{AppellF1}\Big[\frac{1}{2},\,n,\,6-n,\,\frac{3}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\Big]\,\text{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]^2\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\Big)\Big/$$

$$\Big(3\,\text{AppellF1}\Big[\frac{1}{2},\,n,\,6-n,\,\frac{3}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\Big]+2\,\Big((-6+n)\,\text{AppellF1}\Big[\frac{3}{2},\,n,\,7-n,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,$$

$$-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\Big]+n\,\text{AppellF1}\Big[\frac{3}{2},\,1+n,\,6-n,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\Big]\Big)\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\Big)+$$

$$\Big(3\,\Big(-\frac{1}{3}\,(6-n)\,\text{AppellF1}\Big[\frac{3}{2},\,n,\,7-n,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\Big]\,\text{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]^2\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]+\frac{1}{3}\,n\,\text{AppellF1}\Big[$$

$$\frac{3}{2},\,1+n,\,6-n,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\Big]\,\text{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]^2\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\Big)\,\left(1+\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right)\Big)\Big/$$

$$\Big(3\,\text{AppellF1}\Big[\frac{1}{2},\,n,\,6-n,\,\frac{3}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\Big]+2\,\Big((-6+n)\,\text{AppellF1}\Big[\frac{3}{2},\,n,\,7-n,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,$$

$$-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big]+n\,\text{AppellF1}\left[\frac{3}{2},1+n,6-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\Big)\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big)-$$

$$\Big(-\frac{1}{3}(7-n)\,\text{AppellF1}\left[\frac{3}{2},n,8-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]+$$

$$\frac{1}{3}n\,\text{AppellF1}\left[\frac{3}{2},1+n,7-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]\Big)\Big/$$

$$\Big(3\,\text{AppellF1}\left[\frac{1}{2},n,7-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+2\,\Big((-7+n)\,\text{AppellF1}\Big[\frac{3}{2},n,8-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,$$

$$-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big]+n\,\text{AppellF1}\left[\frac{3}{2},1+n,7-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\Big)\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big)-$$

$$\Big(\text{AppellF1}\left[\frac{1}{2},n,4-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)^3$$

$$\Big(2\,\Big((-4+n)\,\text{AppellF1}\left[\frac{3}{2},n,5-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+$$

$$n\,\text{AppellF1}\left[\frac{3}{2},1+n,4-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\Big)\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]+$$

$$3\,\Big(-\frac{1}{3}(4-n)\,\text{AppellF1}\left[\frac{3}{2},n,5-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]+\frac{1}{3}n\,\text{AppellF1}\Big[$$

$$\frac{3}{2},1+n,4-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]\Big)+2\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2$$

$$\Big((-4+n)\,\Big(-\frac{3}{5}(5-n)\,\text{AppellF1}\left[\frac{5}{2},n,6-n,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]+$$

$$\frac{3}{5}n\,\text{AppellF1}\left[\frac{5}{2},1+n,5-n,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]\Big)+$$

$$n\,\Big(-\frac{3}{5}(4-n)\,\text{AppellF1}\left[\frac{5}{2},1+n,5-n,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]+$$

$$\frac{3}{5}(1+n)\,\text{AppellF1}\left[\frac{5}{2},2+n,4-n,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]\Big)\Big)\Big)\Big)\Big/$$

$$\Big(3\,\text{AppellF1}\left[\frac{1}{2},n,4-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+2\,\Big((-4+n)\,\text{AppellF1}\Big[\frac{3}{2},n,5-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,$$

$$-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big]+n\,\text{AppellF1}\left[\frac{3}{2},1+n,4-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\Big)\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big)^2+$$

$$\Big(3\,\text{AppellF1}\left[\frac{1}{2},n,5-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)^2$$

$$\Big(2\,\Big((-5+n)\,\text{AppellF1}\left[\frac{3}{2},n,6-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+$$

$$n\,\text{AppellF1}\left[\frac{3}{2},1+n,5-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right)\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]+$$

$$3\left(-\frac{1}{3}(5-n)\,\text{AppellF1}\left[\frac{3}{2},n,6-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]+\frac{1}{3}n\,\text{AppellF1}\right[$$

$$\frac{3}{2},1+n,5-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)+2\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2$$

$$\left((-5+n)\left(-\frac{3}{5}(6-n)\,\text{AppellF1}\left[\frac{5}{2},n,7-n,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]+\right.\right.$$

$$\left.\frac{3}{5}n\,\text{AppellF1}\left[\frac{5}{2},1+n,6-n,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)+$$

$$n\left(-\frac{3}{5}(5-n)\,\text{AppellF1}\left[\frac{5}{2},1+n,6-n,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]+\right.$$

$$\left.\left.\left.\left.\frac{3}{5}(1+n)\,\text{AppellF1}\left[\frac{5}{2},2+n,5-n,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\right)\right)\right)\Big/$$

$$\left(3\,\text{AppellF1}\left[\frac{1}{2},n,5-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+2\left((-5+n)\,\text{AppellF1}\left[\frac{3}{2},n,6-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\right.\right.\right.$$

$$\left.\left.\left.-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+n\,\text{AppellF1}\left[\frac{3}{2},1+n,5-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)^2-$$

$$\left(3\,\text{AppellF1}\left[\frac{1}{2},n,6-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)\right.$$

$$\left(2\left((-6+n)\,\text{AppellF1}\left[\frac{3}{2},n,7-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+\right.\right.$$

$$\left.n\,\text{AppellF1}\left[\frac{3}{2},1+n,6-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right)\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]+$$

$$3\left(-\frac{1}{3}(6-n)\,\text{AppellF1}\left[\frac{3}{2},n,7-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]+\frac{1}{3}n\,\text{AppellF1}\right[$$

$$\frac{3}{2},1+n,6-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)+2\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2$$

$$\left((-6+n)\left(-\frac{3}{5}(7-n)\,\text{AppellF1}\left[\frac{5}{2},n,8-n,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]+\right.\right.$$

$$\left.\frac{3}{5}n\,\text{AppellF1}\left[\frac{5}{2},1+n,7-n,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)+$$

$$n\left(-\frac{3}{5}(6-n)\,\text{AppellF1}\left[\frac{5}{2},1+n,7-n,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]+\right.$$

$$\left.\left.\left.\left.\frac{3}{5}(1+n)\,\text{AppellF1}\left[\frac{5}{2},2+n,6-n,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\right)\right)\right)\Big/$$

$$\left(3\,\text{AppellF1}\left[\frac{1}{2},\,n,\,6-n,\,\frac{3}{2},\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+2\left((-6+n)\,\text{AppellF1}\left[\frac{3}{2},\,n,\,7-n,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\right.\right.\right.$$

$$\left.\left.\left.-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+n\,\text{AppellF1}\left[\frac{3}{2},\,1+n,\,6-n,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)^2+$$

$$\left(\text{AppellF1}\left[\frac{1}{2},\,n,\,7-n,\,\frac{3}{2},\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\left(2\left((-7+n)\,\text{AppellF1}\left[\frac{3}{2},\,n,\,8-n,\,\frac{5}{2},\right.\right.\right.\right.$$

$$\left.\left.\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+n\,\text{AppellF1}\left[\frac{3}{2},\,1+n,\,7-n,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right)$$

$$\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]+3\left(-\frac{1}{3}(7-n)\,\text{AppellF1}\left[\frac{3}{2},\,n,\,8-n,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right.$$

$$\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]+\frac{1}{3}n\,\text{AppellF1}\left[\frac{3}{2},\,1+n,\,7-n,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\right.$$

$$\left.\left.-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\right)+2\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2$$

$$\left((-7+n)\left(-\frac{3}{5}(8-n)\,\text{AppellF1}\left[\frac{5}{2},\,n,\,9-n,\,\frac{7}{2},\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]+\right.\right.$$

$$\left.\frac{3}{5}n\,\text{AppellF1}\left[\frac{5}{2},\,1+n,\,8-n,\,\frac{7}{2},\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)+$$

$$n\left(-\frac{3}{5}(7-n)\,\text{AppellF1}\left[\frac{5}{2},\,1+n,\,8-n,\,\frac{7}{2},\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]+\right.$$

$$\left.\left.\left.\left.\frac{3}{5}(1+n)\,\text{AppellF1}\left[\frac{5}{2},\,2+n,\,7-n,\,\frac{7}{2},\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\right)\right)\right)\Big/$$

$$\left(3\,\text{AppellF1}\left[\frac{1}{2},\,n,\,7-n,\,\frac{3}{2},\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+2\left((-7+n)\,\text{AppellF1}\left[\frac{3}{2},\,n,\,8-n,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\right.\right.\right.$$

$$\left.\left.\left.\left.-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+n\,\text{AppellF1}\left[\frac{3}{2},\,1+n,\,7-n,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)^2\right)\right)$$

- **Problem 498: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int(b\,\text{Sec}[e+f x])^n\,\text{Sin}[e+f x]^4\,dx$$

Optimal (type 5, 73 leaves, 2 steps):

$$-\frac{b\,\text{Hypergeometric2F1}\left[-\frac{3}{2},\,\frac{1-n}{2},\,\frac{3-n}{2},\,\text{Cos}[e+f x]^2\right](b\,\text{Sec}[e+f x])^{-1+n}\,\text{Sin}[e+f x]}{f\,(1-n)\sqrt{\text{Sin}[e+f x]^2}}$$

Result (type 6, 6231 leaves):

$$\left(96\,(b\,\mathrm{Sec}[e+f\,x])^n\,\mathrm{Sin}[e+f\,x]^4\,\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\left(\frac{1}{1-\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2}\right)^n\right.$$

$$\left(1+\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right)^{-5+n}\left(\left(\mathrm{AppellF1}\left[\frac{1}{2},\,n,\,3-n,\,\frac{3}{2},\,\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]\left(1+\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right)^2\right)\right/$$

$$\left(3\,\mathrm{AppellF1}\left[\frac{1}{2},\,n,\,3-n,\,\frac{3}{2},\,\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]+2\left((-3+n)\,\mathrm{AppellF1}\left[\frac{3}{2},\,n,\,4-n,\,\frac{5}{2},\,\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\right.\right.\right.$$

$$\left.\left.\left.-\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]+n\,\mathrm{AppellF1}\left[\frac{3}{2},\,1+n,\,3-n,\,\frac{5}{2},\,\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]\right)\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right)-$$

$$\left(2\,\mathrm{AppellF1}\left[\frac{1}{2},\,n,\,4-n,\,\frac{3}{2},\,\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]\left(1+\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right)\right)\right/$$

$$\left(3\,\mathrm{AppellF1}\left[\frac{1}{2},\,n,\,4-n,\,\frac{3}{2},\,\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]+2\left((-4+n)\,\mathrm{AppellF1}\left[\frac{3}{2},\,n,\,5-n,\,\frac{5}{2},\,\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\right.\right.\right.$$

$$\left.\left.\left.-\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]+n\,\mathrm{AppellF1}\left[\frac{3}{2},\,1+n,\,4-n,\,\frac{5}{2},\,\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]\right)\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right)+$$

$$\mathrm{AppellF1}\left[\frac{1}{2},\,n,\,5-n,\,\frac{3}{2},\,\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]\Big/\left(3\,\mathrm{AppellF1}\left[\frac{1}{2},\,n,\,5-n,\,\frac{3}{2},\,\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]+\right.$$

$$2\left((-5+n)\,\mathrm{AppellF1}\left[\frac{3}{2},\,n,\,6-n,\,\frac{5}{2},\,\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]+\right.$$

$$\left.\left.\left.n\,\mathrm{AppellF1}\left[\frac{3}{2},\,1+n,\,5-n,\,\frac{5}{2},\,\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]\right)\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right)\right)\right/$$

$$\left(f\left(96\,(-5+n)\,\mathrm{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]^2\,\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\left(\frac{1}{1-\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2}\right)^n\left(1+\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right)^{-6+n}\right.\right.$$

$$\left(\left(\mathrm{AppellF1}\left[\frac{1}{2},\,n,\,3-n,\,\frac{3}{2},\,\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]\left(1+\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right)^2\right)\right/$$

$$\left(3\,\mathrm{AppellF1}\left[\frac{1}{2},\,n,\,3-n,\,\frac{3}{2},\,\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]+2\left((-3+n)\,\mathrm{AppellF1}\left[\frac{3}{2},\,n,\,4-n,\,\frac{5}{2},\,\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\right.\right.\right.$$

$$\left.\left.\left.-\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]+n\,\mathrm{AppellF1}\left[\frac{3}{2},\,1+n,\,3-n,\,\frac{5}{2},\,\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]\right)\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right)-$$

$$\left(2\,\mathrm{AppellF1}\left[\frac{1}{2},\,n,\,4-n,\,\frac{3}{2},\,\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]\left(1+\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right)\right)\right/$$

$$\left(3\,\mathrm{AppellF1}\left[\frac{1}{2},\,n,\,4-n,\,\frac{3}{2},\,\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]+2\left((-4+n)\,\mathrm{AppellF1}\left[\frac{3}{2},\,n,\,5-n,\,\frac{5}{2},\,\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\right.\right.\right.$$

$$-\text{Tan}[\frac{1}{2}(e+f x)]^2] + n\,\text{AppellF1}[\frac{3}{2}, 1+n, 4-n, \frac{5}{2}, \text{Tan}[\frac{1}{2}(e+f x)]^2, -\text{Tan}[\frac{1}{2}(e+f x)]^2])\ \text{Tan}[\frac{1}{2}(e+f x)]^2) +$$

$$\text{AppellF1}[\frac{1}{2}, n, 5-n, \frac{3}{2}, \text{Tan}[\frac{1}{2}(e+f x)]^2, -\text{Tan}[\frac{1}{2}(e+f x)]^2] \Big/ (3\,\text{AppellF1}[\frac{1}{2}, n, 5-n, \frac{3}{2}, \text{Tan}[\frac{1}{2}(e+f x)]^2,$$

$$-\text{Tan}[\frac{1}{2}(e+f x)]^2] + 2\,((-5+n)\,\text{AppellF1}[\frac{3}{2}, n, 6-n, \frac{5}{2}, \text{Tan}[\frac{1}{2}(e+f x)]^2, -\text{Tan}[\frac{1}{2}(e+f x)]^2] + n\,\text{AppellF1}[\frac{3}{2}, 1+n,$$

$$5-n, \frac{5}{2}, \text{Tan}[\frac{1}{2}(e+f x)]^2, -\text{Tan}[\frac{1}{2}(e+f x)]^2])\ \text{Tan}[\frac{1}{2}(e+f x)]^2)) + 48\,\text{Sec}[\frac{1}{2}(e+f x)]^2 \left(\frac{1}{1-\text{Tan}[\frac{1}{2}(e+f x)]^2}\right)^n$$

$$(1+\text{Tan}[\frac{1}{2}(e+f x)]^2)^{-5+n}\ ((\text{AppellF1}[\frac{1}{2}, n, 3-n, \frac{3}{2}, \text{Tan}[\frac{1}{2}(e+f x)]^2, -\text{Tan}[\frac{1}{2}(e+f x)]^2]\ (1+\text{Tan}[\frac{1}{2}(e+f x)]^2)^2) \Big/$$

$$(3\,\text{AppellF1}[\frac{1}{2}, n, 3-n, \frac{3}{2}, \text{Tan}[\frac{1}{2}(e+f x)]^2, -\text{Tan}[\frac{1}{2}(e+f x)]^2] + 2\,((-3+n)\,\text{AppellF1}[\frac{3}{2}, n, 4-n, \frac{5}{2}, \text{Tan}[\frac{1}{2}(e+f x)]^2,$$

$$-\text{Tan}[\frac{1}{2}(e+f x)]^2] + n\,\text{AppellF1}[\frac{3}{2}, 1+n, 3-n, \frac{5}{2}, \text{Tan}[\frac{1}{2}(e+f x)]^2, -\text{Tan}[\frac{1}{2}(e+f x)]^2])\ \text{Tan}[\frac{1}{2}(e+f x)]^2) -$$

$$(2\,\text{AppellF1}[\frac{1}{2}, n, 4-n, \frac{3}{2}, \text{Tan}[\frac{1}{2}(e+f x)]^2, -\text{Tan}[\frac{1}{2}(e+f x)]^2]\ (1+\text{Tan}[\frac{1}{2}(e+f x)]^2)) \Big/$$

$$(3\,\text{AppellF1}[\frac{1}{2}, n, 4-n, \frac{3}{2}, \text{Tan}[\frac{1}{2}(e+f x)]^2, -\text{Tan}[\frac{1}{2}(e+f x)]^2] + 2\,((-4+n)\,\text{AppellF1}[\frac{3}{2}, n, 5-n, \frac{5}{2}, \text{Tan}[\frac{1}{2}(e+f x)]^2,$$

$$-\text{Tan}[\frac{1}{2}(e+f x)]^2] + n\,\text{AppellF1}[\frac{3}{2}, 1+n, 4-n, \frac{5}{2}, \text{Tan}[\frac{1}{2}(e+f x)]^2, -\text{Tan}[\frac{1}{2}(e+f x)]^2])\ \text{Tan}[\frac{1}{2}(e+f x)]^2) +$$

$$\text{AppellF1}[\frac{1}{2}, n, 5-n, \frac{3}{2}, \text{Tan}[\frac{1}{2}(e+f x)]^2, -\text{Tan}[\frac{1}{2}(e+f x)]^2] \Big/ (3\,\text{AppellF1}[\frac{1}{2}, n, 5-n, \frac{3}{2}, \text{Tan}[\frac{1}{2}(e+f x)]^2,$$

$$-\text{Tan}[\frac{1}{2}(e+f x)]^2] + 2\,((-5+n)\,\text{AppellF1}[\frac{3}{2}, n, 6-n, \frac{5}{2}, \text{Tan}[\frac{1}{2}(e+f x)]^2, -\text{Tan}[\frac{1}{2}(e+f x)]^2] +$$

$$n\,\text{AppellF1}[\frac{3}{2}, 1+n, 5-n, \frac{5}{2}, \text{Tan}[\frac{1}{2}(e+f x)]^2, -\text{Tan}[\frac{1}{2}(e+f x)]^2])\ \text{Tan}[\frac{1}{2}(e+f x)]^2)) +$$

$$96\,n\,\text{Sec}[\frac{1}{2}(e+f x)]^2\ \text{Tan}[\frac{1}{2}(e+f x)]^2 \left(\frac{1}{1-\text{Tan}[\frac{1}{2}(e+f x)]^2}\right)^{1+n} (1+\text{Tan}[\frac{1}{2}(e+f x)]^2)^{-5+n}$$

$$((\text{AppellF1}[\frac{1}{2}, n, 3-n, \frac{3}{2}, \text{Tan}[\frac{1}{2}(e+f x)]^2, -\text{Tan}[\frac{1}{2}(e+f x)]^2]\ (1+\text{Tan}[\frac{1}{2}(e+f x)]^2)^2) \Big/$$

$$(3\,\text{AppellF1}[\frac{1}{2}, n, 3-n, \frac{3}{2}, \text{Tan}[\frac{1}{2}(e+f x)]^2, -\text{Tan}[\frac{1}{2}(e+f x)]^2] + 2\,((-3+n)\,\text{AppellF1}[\frac{3}{2}, n, 4-n, \frac{5}{2}, \text{Tan}[\frac{1}{2}(e+f x)]^2,$$

$$-\text{Tan}[\frac{1}{2}(e+f x)]^2] + n\,\text{AppellF1}[\frac{3}{2}, 1+n, 3-n, \frac{5}{2}, \text{Tan}[\frac{1}{2}(e+f x)]^2, -\text{Tan}[\frac{1}{2}(e+f x)]^2])\ \text{Tan}[\frac{1}{2}(e+f x)]^2) -$$

$$\left(2\,\text{AppellF1}\left[\frac{1}{2},n,4-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right)\right)\Big/$$

$$\left(3\,\text{AppellF1}\left[\frac{1}{2},n,4-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]+2\left((-4+n)\,\text{AppellF1}\left[\frac{3}{2},n,5-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,\right.\right.\right.$$

$$\left.\left.\left.-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]+n\,\text{AppellF1}\left[\frac{3}{2},1+n,4-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right)+$$

$$\text{AppellF1}\left[\frac{1}{2},n,5-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\Big/\left(3\,\text{AppellF1}\left[\frac{1}{2},n,5-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,\right.\right.$$

$$\left.-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]+2\left((-5+n)\,\text{AppellF1}\left[\frac{3}{2},n,6-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]+\right.$$

$$\left.\left.\left.n\,\text{AppellF1}\left[\frac{3}{2},1+n,5-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right)\right)+$$

$$96\,\text{Tan}\left[\frac{1}{2}(e+fx)\right]\left(\frac{1}{1-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2}\right)^n\left(1+\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right)^{-5+n}$$

$$\left(\left(2\,\text{AppellF1}\left[\frac{1}{2},n,3-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2\text{Tan}\left[\frac{1}{2}(e+fx)\right]\left(1+\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right)\right)\Big/\right.$$

$$\left(3\,\text{AppellF1}\left[\frac{1}{2},n,3-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]+2\left((-3+n)\,\text{AppellF1}\left[\frac{3}{2},n,4-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,\right.\right.\right.$$

$$\left.\left.\left.-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]+n\,\text{AppellF1}\left[\frac{3}{2},1+n,3-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right)+$$

$$\left(\left(-\frac{1}{3}(3-n)\,\text{AppellF1}\left[\frac{3}{2},n,4-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2\text{Tan}\left[\frac{1}{2}(e+fx)\right]+\frac{1}{3}n\,\text{AppellF1}\left[\right.\right.\right.$$

$$\left.\left.\left.\frac{3}{2},1+n,3-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2\text{Tan}\left[\frac{1}{2}(e+fx)\right]\right)\left(1+\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right)^2\right)\Big/$$

$$\left(3\,\text{AppellF1}\left[\frac{1}{2},n,3-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]+2\left((-3+n)\,\text{AppellF1}\left[\frac{3}{2},n,4-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,\right.\right.\right.$$

$$\left.\left.\left.-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]+n\,\text{AppellF1}\left[\frac{3}{2},1+n,3-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right)-$$

$$\left(2\,\text{AppellF1}\left[\frac{1}{2},n,4-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2\text{Tan}\left[\frac{1}{2}(e+fx)\right]\right)\Big/$$

$$\left(3\,\text{AppellF1}\left[\frac{1}{2},n,4-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]+2\left((-4+n)\,\text{AppellF1}\left[\frac{3}{2},n,5-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,\right.\right.\right.$$

$$\left.\left.\left.-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]+n\,\text{AppellF1}\left[\frac{3}{2},1+n,4-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right)-$$

$$\Big(2\,\Big(-\frac{1}{3}(4-n)\,\text{AppellF1}[\frac{3}{2},n,5-n,\frac{5}{2},\text{Tan}[\frac{1}{2}(e+f x)]^2,-\text{Tan}[\frac{1}{2}(e+f x)]^2]\,\text{Sec}[\frac{1}{2}(e+f x)]^2\,\text{Tan}[\frac{1}{2}(e+f x)]+\frac{1}{3}n\,\text{AppellF1}[$$

$$\frac{3}{2},1+n,4-n,\frac{5}{2},\text{Tan}[\frac{1}{2}(e+f x)]^2,-\text{Tan}[\frac{1}{2}(e+f x)]^2]\,\text{Sec}[\frac{1}{2}(e+f x)]^2\,\text{Tan}[\frac{1}{2}(e+f x)]\Big)\,\Big(1+\text{Tan}[\frac{1}{2}(e+f x)]^2\Big)\Big)\Big/$$

$$\Big(3\,\text{AppellF1}[\frac{1}{2},n,4-n,\frac{3}{2},\text{Tan}[\frac{1}{2}(e+f x)]^2,-\text{Tan}[\frac{1}{2}(e+f x)]^2]+2\,\Big((-4+n)\,\text{AppellF1}[\frac{3}{2},n,5-n,\frac{5}{2},\text{Tan}[\frac{1}{2}(e+f x)]^2,$$

$$-\text{Tan}[\frac{1}{2}(e+f x)]^2]+n\,\text{AppellF1}[\frac{3}{2},1+n,4-n,\frac{5}{2},\text{Tan}[\frac{1}{2}(e+f x)]^2,-\text{Tan}[\frac{1}{2}(e+f x)]^2]\Big)\,\text{Tan}[\frac{1}{2}(e+f x)]^2\Big)+$$

$$\Big(-\frac{1}{3}(5-n)\,\text{AppellF1}[\frac{3}{2},n,6-n,\frac{5}{2},\text{Tan}[\frac{1}{2}(e+f x)]^2,-\text{Tan}[\frac{1}{2}(e+f x)]^2]\,\text{Sec}[\frac{1}{2}(e+f x)]^2\,\text{Tan}[\frac{1}{2}(e+f x)]+$$

$$\frac{1}{3}n\,\text{AppellF1}[\frac{3}{2},1+n,5-n,\frac{5}{2},\text{Tan}[\frac{1}{2}(e+f x)]^2,-\text{Tan}[\frac{1}{2}(e+f x)]^2]\,\text{Sec}[\frac{1}{2}(e+f x)]^2\,\text{Tan}[\frac{1}{2}(e+f x)]\Big)\Big/$$

$$\Big(3\,\text{AppellF1}[\frac{1}{2},n,5-n,\frac{3}{2},\text{Tan}[\frac{1}{2}(e+f x)]^2,-\text{Tan}[\frac{1}{2}(e+f x)]^2]+2\,\Big((-5+n)\,\text{AppellF1}[\frac{3}{2},n,6-n,\frac{5}{2},\text{Tan}[\frac{1}{2}(e+f x)]^2,$$

$$-\text{Tan}[\frac{1}{2}(e+f x)]^2]+n\,\text{AppellF1}[\frac{3}{2},1+n,5-n,\frac{5}{2},\text{Tan}[\frac{1}{2}(e+f x)]^2,-\text{Tan}[\frac{1}{2}(e+f x)]^2]\Big)\,\text{Tan}[\frac{1}{2}(e+f x)]^2\Big)-$$

$$\Big(\text{AppellF1}[\frac{1}{2},n,3-n,\frac{3}{2},\text{Tan}[\frac{1}{2}(e+f x)]^2,-\text{Tan}[\frac{1}{2}(e+f x)]^2]\,\Big(1+\text{Tan}[\frac{1}{2}(e+f x)]^2\Big)^2$$

$$\Big(2\,\Big((-3+n)\,\text{AppellF1}[\frac{3}{2},n,4-n,\frac{5}{2},\text{Tan}[\frac{1}{2}(e+f x)]^2,-\text{Tan}[\frac{1}{2}(e+f x)]^2]+$$

$$n\,\text{AppellF1}[\frac{3}{2},1+n,3-n,\frac{5}{2},\text{Tan}[\frac{1}{2}(e+f x)]^2,-\text{Tan}[\frac{1}{2}(e+f x)]^2]\Big)\,\text{Sec}[\frac{1}{2}(e+f x)]^2\,\text{Tan}[\frac{1}{2}(e+f x)]+$$

$$3\,\Big(-\frac{1}{3}(3-n)\,\text{AppellF1}[\frac{3}{2},n,4-n,\frac{5}{2},\text{Tan}[\frac{1}{2}(e+f x)]^2,-\text{Tan}[\frac{1}{2}(e+f x)]^2]\,\text{Sec}[\frac{1}{2}(e+f x)]^2\,\text{Tan}[\frac{1}{2}(e+f x)]+\frac{1}{3}n\,\text{AppellF1}[$$

$$\frac{3}{2},1+n,3-n,\frac{5}{2},\text{Tan}[\frac{1}{2}(e+f x)]^2,-\text{Tan}[\frac{1}{2}(e+f x)]^2]\,\text{Sec}[\frac{1}{2}(e+f x)]^2\,\text{Tan}[\frac{1}{2}(e+f x)]\Big)+2\,\text{Tan}[\frac{1}{2}(e+f x)]^2$$

$$\Big((-3+n)\,\Big(-\frac{3}{5}(4-n)\,\text{AppellF1}[\frac{5}{2},n,5-n,\frac{7}{2},\text{Tan}[\frac{1}{2}(e+f x)]^2,-\text{Tan}[\frac{1}{2}(e+f x)]^2]\,\text{Sec}[\frac{1}{2}(e+f x)]^2\,\text{Tan}[\frac{1}{2}(e+f x)]+$$

$$\frac{3}{5}n\,\text{AppellF1}[\frac{5}{2},1+n,4-n,\frac{7}{2},\text{Tan}[\frac{1}{2}(e+f x)]^2,-\text{Tan}[\frac{1}{2}(e+f x)]^2]\,\text{Sec}[\frac{1}{2}(e+f x)]^2\,\text{Tan}[\frac{1}{2}(e+f x)]\Big)+$$

$$n\,\Big(-\frac{3}{5}(3-n)\,\text{AppellF1}[\frac{5}{2},1+n,4-n,\frac{7}{2},\text{Tan}[\frac{1}{2}(e+f x)]^2,-\text{Tan}[\frac{1}{2}(e+f x)]^2]\,\text{Sec}[\frac{1}{2}(e+f x)]^2\,\text{Tan}[\frac{1}{2}(e+f x)]+$$

$$\frac{3}{5}(1+n)\,\text{AppellF1}[\frac{5}{2},2+n,3-n,\frac{7}{2},\text{Tan}[\frac{1}{2}(e+f x)]^2,-\text{Tan}[\frac{1}{2}(e+f x)]^2]\,\text{Sec}[\frac{1}{2}(e+f x)]^2\,\text{Tan}[\frac{1}{2}(e+f x)]\Big)\Big)\Big)\Big)\Big)\Big/$$

$$\Big(3\,\text{AppellF1}[\frac{1}{2},n,3-n,\frac{3}{2},\text{Tan}[\frac{1}{2}(e+f x)]^2,-\text{Tan}[\frac{1}{2}(e+f x)]^2]+2\,\Big((-3+n)\,\text{AppellF1}[\frac{3}{2},n,4-n,\frac{5}{2},\text{Tan}[\frac{1}{2}(e+f x)]^2,$$

$$-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big] + n\,\text{AppellF1}\Big[\frac{3}{2}, 1+n, 3-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big]\Big)\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big)^2 +$$

$$\Big(2\,\text{AppellF1}\Big[\frac{1}{2}, n, 4-n, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big]\,\Big(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big)$$

$$\Big(2\,\Big((-4+n)\,\text{AppellF1}\Big[\frac{3}{2}, n, 5-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big] +$$

$$n\,\text{AppellF1}\Big[\frac{3}{2}, 1+n, 4-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big]\Big)\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right] +$$

$$3\,\Big(-\frac{1}{3}(4-n)\,\text{AppellF1}\Big[\frac{3}{2}, n, 5-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big]\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right] + \frac{1}{3}n\,\text{AppellF1}\Big[$$

$$\frac{3}{2}, 1+n, 4-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big]\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]\Big) + 2\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2$$

$$\Big((-4+n)\,\Big(-\frac{3}{5}(5-n)\,\text{AppellF1}\Big[\frac{5}{2}, n, 6-n, \frac{7}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big]\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right] +$$

$$\frac{3}{5}n\,\text{AppellF1}\Big[\frac{5}{2}, 1+n, 5-n, \frac{7}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big]\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]\Big) +$$

$$n\,\Big(-\frac{3}{5}(4-n)\,\text{AppellF1}\Big[\frac{5}{2}, 1+n, 5-n, \frac{7}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big]\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right] +$$

$$\frac{3}{5}(1+n)\,\text{AppellF1}\Big[\frac{5}{2}, 2+n, 4-n, \frac{7}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big]\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]\Big)\Big)\Big)\Big)\Big)\Big/$$

$$\Big(3\,\text{AppellF1}\Big[\frac{1}{2}, n, 4-n, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big] + 2\,\Big((-4+n)\,\text{AppellF1}\Big[\frac{3}{2}, n, 5-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,$$

$$-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big] + n\,\text{AppellF1}\Big[\frac{3}{2}, 1+n, 4-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big]\Big)\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big)^2 -$$

$$\Big(\text{AppellF1}\Big[\frac{1}{2}, n, 5-n, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big]\,\Big(2\,\Big((-5+n)\,\text{AppellF1}\Big[\frac{3}{2}, n, 6-n, \frac{5}{2},$$

$$\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big] + n\,\text{AppellF1}\Big[\frac{3}{2}, 1+n, 5-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big]\Big)$$

$$\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right] + 3\,\Big(-\frac{1}{3}(5-n)\,\text{AppellF1}\Big[\frac{3}{2}, n, 6-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big]$$

$$\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right] + \frac{1}{3}n\,\text{AppellF1}\Big[\frac{3}{2}, 1+n, 5-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,$$

$$-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big]\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]\Big) + 2\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2$$

$$\Big((-5+n)\,\Big(-\frac{3}{5}(6-n)\,\text{AppellF1}\Big[\frac{5}{2}, n, 7-n, \frac{7}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big]\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right] +$$

$$\frac{3}{5} n \text{AppellF1}\left[\frac{5}{2}, 1+n, 6-n, \frac{7}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] \text{Sec}\left[\frac{1}{2}(e+f x)\right]^2 \text{Tan}\left[\frac{1}{2}(e+f x)\right]\Bigg) +$$

$$n\left(-\frac{3}{5}(5-n) \text{AppellF1}\left[\frac{5}{2}, 1+n, 6-n, \frac{7}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] \text{Sec}\left[\frac{1}{2}(e+f x)\right]^2 \text{Tan}\left[\frac{1}{2}(e+f x)\right] +\right.$$

$$\left.\frac{3}{5}(1+n) \text{AppellF1}\left[\frac{5}{2}, 2+n, 5-n, \frac{7}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] \text{Sec}\left[\frac{1}{2}(e+f x)\right]^2 \text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\Bigg)\Bigg)\Bigg) \Big/$$

$$\Bigg(3 \text{AppellF1}\left[\frac{1}{2}, n, 5-n, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] + 2\Bigg((-5+n) \text{AppellF1}\left[\frac{3}{2}, n, 6-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\right.$$

$$\left.-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] + n \text{AppellF1}\left[\frac{3}{2}, 1+n, 5-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\Bigg) \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Bigg)^2\Bigg)\Bigg)$$

- **Problem 499: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int (b \text{Sec}[e+f x])^n \text{Sin}[e+f x]^2 \, dx$$

Optimal (type 5, 73 leaves, 2 steps):

$$-\frac{b \text{Hypergeometric2F1}\left[-\frac{1}{2}, \frac{1-n}{2}, \frac{3-n}{2}, \text{Cos}[e+f x]^2\right] (b \text{Sec}[e+f x])^{-1+n} \text{Sin}[e+f x]}{f (1-n) \sqrt{\text{Sin}[e+f x]^2}}$$

Result (type 6, 4143 leaves):

$$\Bigg(24 \left(\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\right)^{-3+n} (b \text{Sec}[e+f x])^n \left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]^2 \text{Sec}[e+f x]\right)^n \text{Sin}[e+f x]^2$$

$$\text{Tan}\left[\frac{1}{2}(e+f x)\right] \Bigg(\Bigg(\text{AppellF1}\left[\frac{1}{2}, n, 2-n, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] \text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\Bigg) \Big/$$

$$\Bigg(3 \text{AppellF1}\left[\frac{1}{2}, n, 2-n, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] + 2\Bigg((-2+n) \text{AppellF1}\left[\frac{3}{2}, n, 3-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\right.$$

$$\left.-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] + n \text{AppellF1}\left[\frac{3}{2}, 1+n, 2-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\Bigg) \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Bigg) -$$

$$\text{AppellF1}\left[\frac{1}{2}, n, 3-n, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] \Big/ \Bigg(3 \text{AppellF1}\left[\frac{1}{2}, n, 3-n, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] +$$

$$2\Bigg((-3+n) \text{AppellF1}\left[\frac{3}{2}, n, 4-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] +$$

$$n \text{AppellF1}\left[\frac{3}{2}, 1+n, 3-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\Bigg) \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Bigg)\Bigg)\Bigg) \Big/$$

$$\Bigg(f \Bigg(12 \left(\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\right)^{-2+n} \left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]^2 \text{Sec}[e+f x]\right)^n \Bigg(\Bigg(\text{AppellF1}\left[\frac{1}{2}, n, 2-n, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\Big) \Big/ \Big(3\,\text{AppellF1}\left[\frac{1}{2}, n, 2-n, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] +$$

$$2\left((-2+n)\,\text{AppellF1}\left[\frac{3}{2}, n, 3-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] + n\,\text{AppellF1}\left[\frac{3}{2}, 1+n, 2-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\right.\right.$$

$$\left.\left.-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big) - \text{AppellF1}\left[\frac{1}{2}, n, 3-n, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] \Big/$$

$$\Big(3\,\text{AppellF1}\left[\frac{1}{2}, n, 3-n, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] + 2\left((-3+n)\,\text{AppellF1}\left[\frac{3}{2}, n, 4-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\right.\right.$$

$$\left.\left.-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] + n\,\text{AppellF1}\left[\frac{3}{2}, 1+n, 3-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big)\Big) +$$

$$24(-3+n)\left(\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\right)^{-3+n}\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]^2\text{Sec}[e+f x]\right)^n\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2$$

$$\Big(\Big(\text{AppellF1}\left[\frac{1}{2}, n, 2-n, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\Big) \Big/$$

$$\Big(3\,\text{AppellF1}\left[\frac{1}{2}, n, 2-n, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] + 2\left((-2+n)\,\text{AppellF1}\left[\frac{3}{2}, n, 3-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\right.\right.$$

$$\left.\left.-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] + n\,\text{AppellF1}\left[\frac{3}{2}, 1+n, 2-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big) -$$

$$\text{AppellF1}\left[\frac{1}{2}, n, 3-n, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] \Big/ \Big(3\,\text{AppellF1}\left[\frac{1}{2}, n, 3-n, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\right.$$

$$\left.-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] + 2\left((-3+n)\,\text{AppellF1}\left[\frac{3}{2}, n, 4-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] +\right.$$

$$\left.n\,\text{AppellF1}\left[\frac{3}{2}, 1+n, 3-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big)\Big) +$$

$$24\left(\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\right)^{-3+n}\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]^2\text{Sec}[e+f x]\right)^n\text{Tan}\left[\frac{1}{2}(e+f x)\right]$$

$$\Big(\Big(\text{AppellF1}\left[\frac{1}{2}, n, 2-n, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]\Big) \Big/$$

$$\Big(3\,\text{AppellF1}\left[\frac{1}{2}, n, 2-n, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] + 2\left((-2+n)\,\text{AppellF1}\left[\frac{3}{2}, n, 3-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\right.\right.$$

$$\left.\left.-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] + n\,\text{AppellF1}\left[\frac{3}{2}, 1+n, 2-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big) +$$

$$\Big(\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\Big(-\frac{1}{3}(2-n)\,\text{AppellF1}\left[\frac{3}{2}, n, 3-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right] +$$

$$\frac{1}{3}n\,\text{AppellF1}\left[\frac{3}{2}, 1+n, 2-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]\Big)\Big)\Big/$$

$$\Big(3\,\text{AppellF1}[\tfrac{1}{2}, n, 2-n, \tfrac{3}{2}, \text{Tan}[\tfrac{1}{2}(e+f x)]^2, -\text{Tan}[\tfrac{1}{2}(e+f x)]^2] + 2\,\Big((-2+n)\,\text{AppellF1}[\tfrac{3}{2}, n, 3-n, \tfrac{5}{2}, \text{Tan}[\tfrac{1}{2}(e+f x)]^2,$$

$$-\text{Tan}[\tfrac{1}{2}(e+f x)]^2] + n\,\text{AppellF1}[\tfrac{3}{2}, 1+n, 2-n, \tfrac{5}{2}, \text{Tan}[\tfrac{1}{2}(e+f x)]^2, -\text{Tan}[\tfrac{1}{2}(e+f x)]^2]\Big)\,\text{Tan}[\tfrac{1}{2}(e+f x)]^2\Big) -$$

$$\Big(-\tfrac{1}{3}(3-n)\,\text{AppellF1}[\tfrac{3}{2}, n, 4-n, \tfrac{5}{2}, \text{Tan}[\tfrac{1}{2}(e+f x)]^2, -\text{Tan}[\tfrac{1}{2}(e+f x)]^2]\,\text{Sec}[\tfrac{1}{2}(e+f x)]^2\,\text{Tan}[\tfrac{1}{2}(e+f x)] +$$

$$\tfrac{1}{3}n\,\text{AppellF1}[\tfrac{3}{2}, 1+n, 3-n, \tfrac{5}{2}, \text{Tan}[\tfrac{1}{2}(e+f x)]^2, -\text{Tan}[\tfrac{1}{2}(e+f x)]^2]\,\text{Sec}[\tfrac{1}{2}(e+f x)]^2\,\text{Tan}[\tfrac{1}{2}(e+f x)]\Big)\Big/$$

$$\Big(3\,\text{AppellF1}[\tfrac{1}{2}, n, 3-n, \tfrac{3}{2}, \text{Tan}[\tfrac{1}{2}(e+f x)]^2, -\text{Tan}[\tfrac{1}{2}(e+f x)]^2] + 2\,\Big((-3+n)\,\text{AppellF1}[\tfrac{3}{2}, n, 4-n, \tfrac{5}{2}, \text{Tan}[\tfrac{1}{2}(e+f x)]^2,$$

$$-\text{Tan}[\tfrac{1}{2}(e+f x)]^2] + n\,\text{AppellF1}[\tfrac{3}{2}, 1+n, 3-n, \tfrac{5}{2}, \text{Tan}[\tfrac{1}{2}(e+f x)]^2, -\text{Tan}[\tfrac{1}{2}(e+f x)]^2]\Big)\,\text{Tan}[\tfrac{1}{2}(e+f x)]^2\Big) -$$

$$\Big(\text{AppellF1}[\tfrac{1}{2}, n, 2-n, \tfrac{3}{2}, \text{Tan}[\tfrac{1}{2}(e+f x)]^2, -\text{Tan}[\tfrac{1}{2}(e+f x)]^2]\,\text{Sec}[\tfrac{1}{2}(e+f x)]^2$$

$$\Big(2\,\Big((-2+n)\,\text{AppellF1}[\tfrac{3}{2}, n, 3-n, \tfrac{5}{2}, \text{Tan}[\tfrac{1}{2}(e+f x)]^2, -\text{Tan}[\tfrac{1}{2}(e+f x)]^2] +$$

$$n\,\text{AppellF1}[\tfrac{3}{2}, 1+n, 2-n, \tfrac{5}{2}, \text{Tan}[\tfrac{1}{2}(e+f x)]^2, -\text{Tan}[\tfrac{1}{2}(e+f x)]^2]\Big)\,\text{Sec}[\tfrac{1}{2}(e+f x)]^2\,\text{Tan}[\tfrac{1}{2}(e+f x)] +$$

$$3\,\Big(-\tfrac{1}{3}(2-n)\,\text{AppellF1}[\tfrac{3}{2}, n, 3-n, \tfrac{5}{2}, \text{Tan}[\tfrac{1}{2}(e+f x)]^2, -\text{Tan}[\tfrac{1}{2}(e+f x)]^2]\,\text{Sec}[\tfrac{1}{2}(e+f x)]^2\,\text{Tan}[\tfrac{1}{2}(e+f x)] + \tfrac{1}{3}n\,\text{AppellF1}[$$

$$\tfrac{3}{2}, 1+n, 2-n, \tfrac{5}{2}, \text{Tan}[\tfrac{1}{2}(e+f x)]^2, -\text{Tan}[\tfrac{1}{2}(e+f x)]^2]\,\text{Sec}[\tfrac{1}{2}(e+f x)]^2\,\text{Tan}[\tfrac{1}{2}(e+f x)]\Big) + 2\,\text{Tan}[\tfrac{1}{2}(e+f x)]^2$$

$$\Big((-2+n)\,\Big(-\tfrac{3}{5}(3-n)\,\text{AppellF1}[\tfrac{5}{2}, n, 4-n, \tfrac{7}{2}, \text{Tan}[\tfrac{1}{2}(e+f x)]^2, -\text{Tan}[\tfrac{1}{2}(e+f x)]^2]\,\text{Sec}[\tfrac{1}{2}(e+f x)]^2\,\text{Tan}[\tfrac{1}{2}(e+f x)] +$$

$$\tfrac{3}{5}n\,\text{AppellF1}[\tfrac{5}{2}, 1+n, 3-n, \tfrac{7}{2}, \text{Tan}[\tfrac{1}{2}(e+f x)]^2, -\text{Tan}[\tfrac{1}{2}(e+f x)]^2]\,\text{Sec}[\tfrac{1}{2}(e+f x)]^2\,\text{Tan}[\tfrac{1}{2}(e+f x)]\Big) +$$

$$n\,\Big(-\tfrac{3}{5}(2-n)\,\text{AppellF1}[\tfrac{5}{2}, 1+n, 3-n, \tfrac{7}{2}, \text{Tan}[\tfrac{1}{2}(e+f x)]^2, -\text{Tan}[\tfrac{1}{2}(e+f x)]^2]\,\text{Sec}[\tfrac{1}{2}(e+f x)]^2\,\text{Tan}[\tfrac{1}{2}(e+f x)] +$$

$$\tfrac{3}{5}(1+n)\,\text{AppellF1}[\tfrac{5}{2}, 2+n, 2-n, \tfrac{7}{2}, \text{Tan}[\tfrac{1}{2}(e+f x)]^2, -\text{Tan}[\tfrac{1}{2}(e+f x)]^2]\,\text{Sec}[\tfrac{1}{2}(e+f x)]^2\,\text{Tan}[\tfrac{1}{2}(e+f x)]\Big)\Big)\Big)\Big)\Big/$$

$$\Big(3\,\text{AppellF1}[\tfrac{1}{2}, n, 2-n, \tfrac{3}{2}, \text{Tan}[\tfrac{1}{2}(e+f x)]^2, -\text{Tan}[\tfrac{1}{2}(e+f x)]^2] + 2\,\Big((-2+n)\,\text{AppellF1}[\tfrac{3}{2}, n, 3-n, \tfrac{5}{2}, \text{Tan}[\tfrac{1}{2}(e+f x)]^2,$$

$$-\text{Tan}[\tfrac{1}{2}(e+f x)]^2] + n\,\text{AppellF1}[\tfrac{3}{2}, 1+n, 2-n, \tfrac{5}{2}, \text{Tan}[\tfrac{1}{2}(e+f x)]^2, -\text{Tan}[\tfrac{1}{2}(e+f x)]^2]\Big)\,\text{Tan}[\tfrac{1}{2}(e+f x)]^2\Big)^2 +$$

$$\Big(\text{AppellF1}[\tfrac{1}{2}, n, 3-n, \tfrac{3}{2}, \text{Tan}[\tfrac{1}{2}(e+f x)]^2, -\text{Tan}[\tfrac{1}{2}(e+f x)]^2]\,\Big(2\,\Big((-3+n)\,\text{AppellF1}[\tfrac{3}{2}, n, 4-n, \tfrac{5}{2},$$

$$\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] + n\,\text{AppellF1}\left[\frac{3}{2}, 1+n, 3-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\Big)$$

$$\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2 \text{Tan}\left[\frac{1}{2}(e+f x)\right] + 3\left(-\frac{1}{3}(3-n)\,\text{AppellF1}\left[\frac{3}{2}, n, 4-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right.$$

$$\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2 \text{Tan}\left[\frac{1}{2}(e+f x)\right] + \frac{1}{3} n\,\text{AppellF1}\left[\frac{3}{2}, 1+n, 3-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\right.$$

$$\left.\left.-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] \text{Sec}\left[\frac{1}{2}(e+f x)\right]^2 \text{Tan}\left[\frac{1}{2}(e+f x)\right]\right) + 2\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2$$

$$\left((-3+n)\left(-\frac{3}{5}(4-n)\,\text{AppellF1}\left[\frac{5}{2}, n, 5-n, \frac{7}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] \text{Sec}\left[\frac{1}{2}(e+f x)\right]^2 \text{Tan}\left[\frac{1}{2}(e+f x)\right] + \right.\right.$$

$$\left.\frac{3}{5} n\,\text{AppellF1}\left[\frac{5}{2}, 1+n, 4-n, \frac{7}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] \text{Sec}\left[\frac{1}{2}(e+f x)\right]^2 \text{Tan}\left[\frac{1}{2}(e+f x)\right]\right) +$$

$$n\left(-\frac{3}{5}(3-n)\,\text{AppellF1}\left[\frac{5}{2}, 1+n, 4-n, \frac{7}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] \text{Sec}\left[\frac{1}{2}(e+f x)\right]^2 \text{Tan}\left[\frac{1}{2}(e+f x)\right] + \right.$$

$$\left.\left.\left.\left.\left.\frac{3}{5}(1+n)\,\text{AppellF1}\left[\frac{5}{2}, 2+n, 3-n, \frac{7}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] \text{Sec}\left[\frac{1}{2}(e+f x)\right]^2 \text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\right)\right)\right)\Big/$$

$$\left(3\,\text{AppellF1}\left[\frac{1}{2}, n, 3-n, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] + 2\left((-3+n)\,\text{AppellF1}\left[\frac{3}{2}, n, 4-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\right.\right.\right.$$

$$\left.\left.\left.-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] + n\,\text{AppellF1}\left[\frac{3}{2}, 1+n, 3-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right) \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)^2\right) +$$

$$24 n\left(\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\right)^{-3+n} \left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]^2 \text{Sec}[e+f x]\right)^{-1+n} \text{Tan}\left[\frac{1}{2}(e+f x)\right]$$

$$\left(\left(\text{AppellF1}\left[\frac{1}{2}, n, 2-n, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] \text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\right)\Big/\right.$$

$$\left(3\,\text{AppellF1}\left[\frac{1}{2}, n, 2-n, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] + 2\left((-2+n)\,\text{AppellF1}\left[\frac{3}{2}, n, 3-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\right.\right.$$

$$\left.\left.-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] + n\,\text{AppellF1}\left[\frac{3}{2}, 1+n, 2-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right) \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right) -$$

$$\text{AppellF1}\left[\frac{1}{2}, n, 3-n, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\Big/\left(3\,\text{AppellF1}\left[\frac{1}{2}, n, 3-n, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\right.\right.$$

$$-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] + 2\left((-3+n)\,\text{AppellF1}\left[\frac{3}{2}, n, 4-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] + \right.$$

$$\left.\left.n\,\text{AppellF1}\left[\frac{3}{2}, 1+n, 3-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right) \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)\right)$$

$$\left.\left.\left(-\text{Cos}\left[\frac{1}{2}(e+f x)\right] \text{Sec}[e+f x]\,\text{Sin}\left[\frac{1}{2}(e+f x)\right] + \text{Cos}\left[\frac{1}{2}(e+f x)\right]^2 \text{Sec}[e+f x]\,\text{Tan}[e+f x]\right)\right)\right)$$

Problem 501: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \mathrm{Csc}[e+f x]^2\, (b\,\mathrm{Sec}[e+f x])^n\, dx$$

Optimal (type 5, 73 leaves, 2 steps):

$$-\frac{b\,\mathrm{Csc}[e+f x]\,\mathrm{Hypergeometric2F1}\left[\frac{3}{2},\frac{1-n}{2},\frac{3-n}{2},\mathrm{Cos}[e+f x]^2\right]\,(b\,\mathrm{Sec}[e+f x])^{-1+n}\,\sqrt{\mathrm{Sin}[e+f x]^2}}{f\,(1-n)}$$

Result (type 6, 3228 leaves):

$$\Bigg(\mathrm{Cot}\left[\frac{1}{2}(e+f x)\right]\mathrm{Csc}[e+f x]^2\,\mathrm{Sec}[e+f x]^n\,(b\,\mathrm{Sec}[e+f x])^n$$
$$\left(-\mathrm{AppellF1}\left[-\frac{1}{2},n,-n,\frac{1}{2},\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\Big/\left(\mathrm{AppellF1}\left[-\frac{1}{2},n,-n,\frac{1}{2},\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+\right.\right.$$
$$2n\left(\mathrm{AppellF1}\left[\frac{1}{2},n,1-n,\frac{3}{2},\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+\right.$$
$$\left.\left.\mathrm{AppellF1}\left[\frac{1}{2},1+n,-n,\frac{3}{2},\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right)\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)+$$
$$\left(3\,\mathrm{AppellF1}\left[\frac{1}{2},n,-n,\frac{3}{2},\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)\Big/$$
$$\left(3\,\mathrm{AppellF1}\left[\frac{1}{2},n,-n,\frac{3}{2},\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+2n\left(\mathrm{AppellF1}\left[\frac{3}{2},n,1-n,\frac{5}{2},\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\right.\right.\right.$$
$$\left.\left.\left.\left.-\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+\mathrm{AppellF1}\left[\frac{3}{2},1+n,-n,\frac{5}{2},\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right)\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)\right)\right)\Big/$$
$$\left(2f\left(-\frac{1}{4}\mathrm{Csc}\left[\frac{1}{2}(e+f x)\right]^2\mathrm{Sec}[e+f x]^n\left(-\mathrm{AppellF1}\left[-\frac{1}{2},n,-n,\frac{1}{2},\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\Big/\right.\right.\right.$$
$$\left(\mathrm{AppellF1}\left[-\frac{1}{2},n,-n,\frac{1}{2},\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+2n\left(\mathrm{AppellF1}\left[\frac{1}{2},n,1-n,\frac{3}{2},\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\right.\right.\right.$$
$$\left.\left.\left.-\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+\mathrm{AppellF1}\left[\frac{1}{2},1+n,-n,\frac{3}{2},\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right)\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)+$$
$$\left(3\,\mathrm{AppellF1}\left[\frac{1}{2},n,-n,\frac{3}{2},\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)\Big/$$
$$\left(3\,\mathrm{AppellF1}\left[\frac{1}{2},n,-n,\frac{3}{2},\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+2n\left(\mathrm{AppellF1}\left[\frac{3}{2},n,1-n,\frac{5}{2},\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\right.\right.\right.$$
$$\left.\left.\left.\left.-\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+\mathrm{AppellF1}\left[\frac{3}{2},1+n,-n,\frac{5}{2},\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right)\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)\right)+$$
$$\frac{1}{2}n\,\mathrm{Cot}\left[\frac{1}{2}(e+f x)\right]\mathrm{Sec}[e+f x]^{1+n}\,\mathrm{Sin}[e+f x]\left(-\mathrm{AppellF1}\left[-\frac{1}{2},n,-n,\frac{1}{2},\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\Big/\right.$$

$$\left(\text{AppellF1}\left[-\frac{1}{2}, n, -n, \frac{1}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] + 2 n \left(\text{AppellF1}\left[\frac{1}{2}, n, 1-n, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\right.\right.\right.$$

$$\left.\left.\left.-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] + \text{AppellF1}\left[\frac{1}{2}, 1+n, -n, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right) \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right) +$$

$$\left(3 \text{AppellF1}\left[\frac{1}{2}, n, -n, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right) \Big/$$

$$\left(3 \text{AppellF1}\left[\frac{1}{2}, n, -n, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] + 2 n \left(\text{AppellF1}\left[\frac{3}{2}, n, 1-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\right.\right.\right.$$

$$\left.\left.\left.-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] + \text{AppellF1}\left[\frac{3}{2}, 1+n, -n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right) \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)\right) +$$

$$\frac{1}{2} \text{Cot}\left[\frac{1}{2}(e+f x)\right] \text{Sec}[e+f x]^n \left(-\left(-n \text{AppellF1}\left[\frac{1}{2}, n, 1-n, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] \text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\right.\right.$$

$$\left.\text{Tan}\left[\frac{1}{2}(e+f x)\right] - n \text{AppellF1}\left[\frac{1}{2}, 1+n, -n, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] \text{Sec}\left[\frac{1}{2}(e+f x)\right]^2 \text{Tan}\left[\frac{1}{2}(e+f x)\right]\right) \Big/$$

$$\left(\text{AppellF1}\left[-\frac{1}{2}, n, -n, \frac{1}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] + 2 n \left(\text{AppellF1}\left[\frac{1}{2}, n, 1-n, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\right.\right.\right.$$

$$\left.\left.\left.-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] + \text{AppellF1}\left[\frac{1}{2}, 1+n, -n, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right) \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right) +$$

$$\left(3 \text{AppellF1}\left[\frac{1}{2}, n, -n, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] \text{Sec}\left[\frac{1}{2}(e+f x)\right]^2 \text{Tan}\left[\frac{1}{2}(e+f x)\right]\right) \Big/$$

$$\left(3 \text{AppellF1}\left[\frac{1}{2}, n, -n, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] + 2 n \left(\text{AppellF1}\left[\frac{3}{2}, n, 1-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\right.\right.\right.$$

$$\left.\left.\left.-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] + \text{AppellF1}\left[\frac{3}{2}, 1+n, -n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right) \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right) +$$

$$\left(3 \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2 \left(\frac{1}{3} n \text{AppellF1}\left[\frac{3}{2}, n, 1-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] \text{Sec}\left[\frac{1}{2}(e+f x)\right]^2 \text{Tan}\left[\frac{1}{2}(e+f x)\right] +\right.\right.$$

$$\left.\left.\frac{1}{3} n \text{AppellF1}\left[\frac{3}{2}, 1+n, -n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] \text{Sec}\left[\frac{1}{2}(e+f x)\right]^2 \text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\right) \Big/$$

$$\left(3 \text{AppellF1}\left[\frac{1}{2}, n, -n, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] + 2 n \left(\text{AppellF1}\left[\frac{3}{2}, n, 1-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\right.\right.\right.$$

$$\left.\left.\left.-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] + \text{AppellF1}\left[\frac{3}{2}, 1+n, -n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right) \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right) +$$

$$\left(\text{AppellF1}\left[-\frac{1}{2}, n, -n, \frac{1}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] \left(-n \text{AppellF1}\left[\frac{1}{2}, n, 1-n, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\right.\right.\right.$$

$$-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] \text{Sec}\left[\frac{1}{2}(e+f x)\right]^2 \text{Tan}\left[\frac{1}{2}(e+f x)\right] - n \text{AppellF1}\left[\frac{1}{2}, 1+n, -n, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]$$

$$\text{Sec}[\tfrac{1}{2}(e+f x)]^2\,\text{Tan}[\tfrac{1}{2}(e+f x)]+2 n\,(\text{AppellF1}[\tfrac{1}{2},n,1-n,\tfrac{3}{2},\text{Tan}[\tfrac{1}{2}(e+f x)]^2,-\text{Tan}[\tfrac{1}{2}(e+f x)]^2]+$$

$$\text{AppellF1}[\tfrac{1}{2},1+n,-n,\tfrac{3}{2},\text{Tan}[\tfrac{1}{2}(e+f x)]^2,-\text{Tan}[\tfrac{1}{2}(e+f x)]^2])\,\text{Sec}[\tfrac{1}{2}(e+f x)]^2\,\text{Tan}[\tfrac{1}{2}(e+f x)]+2 n\,\text{Tan}[\tfrac{1}{2}(e+f x)]^2$$

$$(-\tfrac{1}{3}(1-n)\,\text{AppellF1}[\tfrac{3}{2},n,2-n,\tfrac{5}{2},\text{Tan}[\tfrac{1}{2}(e+f x)]^2,-\text{Tan}[\tfrac{1}{2}(e+f x)]^2]\,\text{Sec}[\tfrac{1}{2}(e+f x)]^2\,\text{Tan}[\tfrac{1}{2}(e+f x)]+$$

$$\tfrac{2}{3} n\,\text{AppellF1}[\tfrac{3}{2},1+n,1-n,\tfrac{5}{2},\text{Tan}[\tfrac{1}{2}(e+f x)]^2,-\text{Tan}[\tfrac{1}{2}(e+f x)]^2]\,\text{Sec}[\tfrac{1}{2}(e+f x)]^2\,\text{Tan}[\tfrac{1}{2}(e+f x)]+$$

$$\tfrac{1}{3}(1+n)\,\text{AppellF1}[\tfrac{3}{2},2+n,-n,\tfrac{5}{2},\text{Tan}[\tfrac{1}{2}(e+f x)]^2,-\text{Tan}[\tfrac{1}{2}(e+f x)]^2]\,\text{Sec}[\tfrac{1}{2}(e+f x)]^2\,\text{Tan}[\tfrac{1}{2}(e+f x)]))))\Big/$$

$$(\text{AppellF1}[-\tfrac{1}{2},n,-n,\tfrac{1}{2},\text{Tan}[\tfrac{1}{2}(e+f x)]^2,-\text{Tan}[\tfrac{1}{2}(e+f x)]^2]+2 n\,(\text{AppellF1}[\tfrac{1}{2},n,1-n,\tfrac{3}{2},\text{Tan}[\tfrac{1}{2}(e+f x)]^2,$$

$$-\text{Tan}[\tfrac{1}{2}(e+f x)]^2]+\text{AppellF1}[\tfrac{1}{2},1+n,-n,\tfrac{3}{2},\text{Tan}[\tfrac{1}{2}(e+f x)]^2,-\text{Tan}[\tfrac{1}{2}(e+f x)]^2])\,\text{Tan}[\tfrac{1}{2}(e+f x)]^2)^2-$$

$$(3\,\text{AppellF1}[\tfrac{1}{2},n,-n,\tfrac{3}{2},\text{Tan}[\tfrac{1}{2}(e+f x)]^2,-\text{Tan}[\tfrac{1}{2}(e+f x)]^2]\,\text{Tan}[\tfrac{1}{2}(e+f x)]^2\,(2 n\,(\text{AppellF1}[\tfrac{3}{2},n,1-n,\tfrac{5}{2},\text{Tan}[\tfrac{1}{2}(e+f x)]^2,$$

$$-\text{Tan}[\tfrac{1}{2}(e+f x)]^2]+\text{AppellF1}[\tfrac{3}{2},1+n,-n,\tfrac{5}{2},\text{Tan}[\tfrac{1}{2}(e+f x)]^2,-\text{Tan}[\tfrac{1}{2}(e+f x)]^2])\,\text{Sec}[\tfrac{1}{2}(e+f x)]^2$$

$$\text{Tan}[\tfrac{1}{2}(e+f x)]+3\,(\tfrac{1}{3} n\,\text{AppellF1}[\tfrac{3}{2},n,1-n,\tfrac{5}{2},\text{Tan}[\tfrac{1}{2}(e+f x)]^2,-\text{Tan}[\tfrac{1}{2}(e+f x)]^2]\,\text{Sec}[\tfrac{1}{2}(e+f x)]^2\,\text{Tan}[\tfrac{1}{2}(e+f x)]+$$

$$\tfrac{1}{3} n\,\text{AppellF1}[\tfrac{3}{2},1+n,-n,\tfrac{5}{2},\text{Tan}[\tfrac{1}{2}(e+f x)]^2,-\text{Tan}[\tfrac{1}{2}(e+f x)]^2]\,\text{Sec}[\tfrac{1}{2}(e+f x)]^2\,\text{Tan}[\tfrac{1}{2}(e+f x)])+$$

$$2 n\,\text{Tan}[\tfrac{1}{2}(e+f x)]^2\,(-\tfrac{3}{5}(1-n)\,\text{AppellF1}[\tfrac{5}{2},n,2-n,\tfrac{7}{2},\text{Tan}[\tfrac{1}{2}(e+f x)]^2,-\text{Tan}[\tfrac{1}{2}(e+f x)]^2]\,\text{Sec}[\tfrac{1}{2}(e+f x)]^2\,\text{Tan}[$$

$$\tfrac{1}{2}(e+f x)]+\tfrac{6}{5} n\,\text{AppellF1}[\tfrac{5}{2},1+n,1-n,\tfrac{7}{2},\text{Tan}[\tfrac{1}{2}(e+f x)]^2,-\text{Tan}[\tfrac{1}{2}(e+f x)]^2]\,\text{Sec}[\tfrac{1}{2}(e+f x)]^2\,\text{Tan}[\tfrac{1}{2}(e+f x)]+$$

$$\tfrac{3}{5}(1+n)\,\text{AppellF1}[\tfrac{5}{2},2+n,-n,\tfrac{7}{2},\text{Tan}[\tfrac{1}{2}(e+f x)]^2,-\text{Tan}[\tfrac{1}{2}(e+f x)]^2]\,\text{Sec}[\tfrac{1}{2}(e+f x)]^2\,\text{Tan}[\tfrac{1}{2}(e+f x)]))))\Big/$$

$$(3\,\text{AppellF1}[\tfrac{1}{2},n,-n,\tfrac{3}{2},\text{Tan}[\tfrac{1}{2}(e+f x)]^2,-\text{Tan}[\tfrac{1}{2}(e+f x)]^2]+2 n\,(\text{AppellF1}[\tfrac{3}{2},n,1-n,\tfrac{5}{2},\text{Tan}[\tfrac{1}{2}(e+f x)]^2,$$

$$-\text{Tan}[\tfrac{1}{2}(e+f x)]^2]+\text{AppellF1}[\tfrac{3}{2},1+n,-n,\tfrac{5}{2},\text{Tan}[\tfrac{1}{2}(e+f x)]^2,-\text{Tan}[\tfrac{1}{2}(e+f x)]^2])\,\text{Tan}[\tfrac{1}{2}(e+f x)]^2)^2)))$$

- **Problem 502: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int \text{Csc}[e+f x]^4\,(b\,\text{Sec}[e+f x])^n\,dx$$

Optimal (type 5, 73 leaves, 2 steps) :

$$-\frac{b\,\text{Csc}[e+f x]\,\text{Hypergeometric2F1}\left[\frac{5}{2},\frac{1-n}{2},\frac{3-n}{2},\text{Cos}[e+f x]^2\right](b\,\text{Sec}[e+f x])^{-1+n}\sqrt{\text{Sin}[e+f x]^2}}{f\,(1-n)}$$

Result (type 6, 6799 leaves):

$$\left(\text{Cot}\left[\frac{1}{2}(e+f x)\right]^3 \text{Csc}[e+f x]^4 (b\,\text{Sec}[e+f x])^n \left(\frac{1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}{1-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}\right)^n\right.$$

$$\left(-\text{AppellF1}\left[-\frac{3}{2},n,-n,-\frac{1}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\Big/\left(\text{AppellF1}\left[-\frac{3}{2},n,-n,-\frac{1}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]-\right.\right.$$

$$2 n\left(\text{AppellF1}\left[-\frac{1}{2},n,1-n,\frac{1}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+\right.$$

$$\left.\left.\text{AppellF1}\left[-\frac{1}{2},1+n,-n,\frac{1}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)-$$

$$\left(9\,\text{AppellF1}\left[-\frac{1}{2},n,-n,\frac{1}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)\Big/$$

$$\left(\text{AppellF1}\left[-\frac{1}{2},n,-n,\frac{1}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+2 n\left(\text{AppellF1}\left[\frac{1}{2},n,1-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\right.\right.\right.$$

$$\left.\left.\left.-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+\text{AppellF1}\left[\frac{1}{2},1+n,-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)+$$

$$\left(27\,\text{AppellF1}\left[\frac{1}{2},n,-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Tan}\left[\frac{1}{2}(e+f x)\right]^4\right)\Big/$$

$$\left(3\,\text{AppellF1}\left[\frac{1}{2},n,-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+2 n\left(\text{AppellF1}\left[\frac{3}{2},n,1-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\right.\right.\right.$$

$$\left.\left.\left.-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+\text{AppellF1}\left[\frac{3}{2},1+n,-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)+$$

$$\left(5\,\text{AppellF1}\left[\frac{3}{2},n,-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Tan}\left[\frac{1}{2}(e+f x)\right]^6\right)\Big/$$

$$\left(5\,\text{AppellF1}\left[\frac{3}{2},n,-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+2 n\left(\text{AppellF1}\left[\frac{5}{2},n,1-n,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\right.\right.\right.$$

$$\left.\left.\left.\left.\left.-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+\text{AppellF1}\left[\frac{5}{2},1+n,-n,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)\right)\right)\Big/$$

$$\left(24 f\left(-\frac{1}{16}\text{Cot}\left[\frac{1}{2}(e+f x)\right]^2\text{Csc}\left[\frac{1}{2}(e+f x)\right]^2\left(\frac{1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}{1-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}\right)^n\left(-\text{AppellF1}\left[-\frac{3}{2},n,-n,-\frac{1}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\Big/\right.\right.\right.$$

$$\left(\text{AppellF1}\left[-\frac{3}{2}, n, -n, -\frac{1}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] - 2 n \left(\text{AppellF1}\left[-\frac{1}{2}, n, 1-n, \frac{1}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] + \text{AppellF1}\left[-\frac{1}{2}, 1+n, -n, \frac{1}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right) \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right) -$$

$$\left(9\,\text{AppellF1}\left[-\frac{1}{2}, n, -n, \frac{1}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right) \Big/$$

$$\left(\text{AppellF1}\left[-\frac{1}{2}, n, -n, \frac{1}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] + 2 n \left(\text{AppellF1}\left[\frac{1}{2}, n, 1-n, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] + \text{AppellF1}\left[\frac{1}{2}, 1+n, -n, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right) \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right) +$$

$$\left(27\,\text{AppellF1}\left[\frac{1}{2}, n, -n, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] \text{Tan}\left[\frac{1}{2}(e+f x)\right]^4\right) \Big/$$

$$\left(3\,\text{AppellF1}\left[\frac{1}{2}, n, -n, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] + 2 n \left(\text{AppellF1}\left[\frac{3}{2}, n, 1-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] + \text{AppellF1}\left[\frac{3}{2}, 1+n, -n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right) \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right) +$$

$$\left(5\,\text{AppellF1}\left[\frac{3}{2}, n, -n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] \text{Tan}\left[\frac{1}{2}(e+f x)\right]^6\right) \Big/ \left(5\,\text{AppellF1}\left[\frac{3}{2}, n, -n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] + 2 n \left(\text{AppellF1}\left[\frac{5}{2}, n, 1-n, \frac{7}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] + \text{AppellF1}\left[\frac{5}{2}, 1+n, -n, \frac{7}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right) \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)\right) + \frac{1}{24} n\,\text{Cot}\left[\frac{1}{2}(e+f x)\right]^3$$

$$\left(\frac{1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}{1-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}\right)^{-1+n} \left(\frac{\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2 \text{Tan}\left[\frac{1}{2}(e+f x)\right]}{1-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2} + \frac{\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2 \text{Tan}\left[\frac{1}{2}(e+f x)\right] \left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)}{\left(1-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)^2}\right)$$

$$\left(-\text{AppellF1}\left[-\frac{3}{2}, n, -n, -\frac{1}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] \Big/\right.$$

$$\left(\text{AppellF1}\left[-\frac{3}{2}, n, -n, -\frac{1}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] - 2 n \left(\text{AppellF1}\left[-\frac{1}{2}, n, 1-n, \frac{1}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] + \text{AppellF1}\left[-\frac{1}{2}, 1+n, -n, \frac{1}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right) \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right) -$$

$$\left(9\,\text{AppellF1}\left[-\frac{1}{2}, n, -n, \frac{1}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right) \Big/$$

$$\left(\text{AppellF1}\left[-\frac{1}{2}, n, -n, \frac{1}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] + 2 n \left(\text{AppellF1}\left[\frac{1}{2}, n, 1-n, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\right.\right.$$

$$-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big]+\text{AppellF1}\Big[\frac{1}{2},1+n,-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big]\Big)\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big)+$$

$$\Big(27\,\text{AppellF1}\Big[\frac{1}{2},n,-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big]\text{Tan}\left[\frac{1}{2}(e+f x)\right]^4\Big)\Big/$$

$$\Big(3\,\text{AppellF1}\Big[\frac{1}{2},n,-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big]+2\,n\,\Big(\text{AppellF1}\Big[\frac{3}{2},n,1-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,$$

$$-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big]+\text{AppellF1}\Big[\frac{3}{2},1+n,-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big]\Big)\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big)+$$

$$\Big(5\,\text{AppellF1}\Big[\frac{3}{2},n,-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big]\text{Tan}\left[\frac{1}{2}(e+f x)\right]^6\Big)\Big/$$

$$\Big(5\,\text{AppellF1}\Big[\frac{3}{2},n,-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big]+2\,n\,\Big(\text{AppellF1}\Big[\frac{5}{2},n,1-n,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,$$

$$-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big]+\text{AppellF1}\Big[\frac{5}{2},1+n,-n,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big]\Big)\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big)\Big)+$$

$$\frac{1}{24}\text{Cot}\left[\frac{1}{2}(e+f x)\right]^3\left(\frac{1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}{1-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}\right)^n\Big(-\Big(3\,n\,\text{AppellF1}\Big[-\frac{1}{2},n,1-n,\frac{1}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2$$

$$\text{Tan}\left[\frac{1}{2}(e+f x)\right]+3\,n\,\text{AppellF1}\Big[-\frac{1}{2},1+n,-n,\frac{1}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]\Big)\Big/$$

$$\Big(\text{AppellF1}\Big[-\frac{3}{2},n,-n,-\frac{1}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big]-2\,n\,\Big(\text{AppellF1}\Big[-\frac{1}{2},n,1-n,\frac{1}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,$$

$$-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big]+\text{AppellF1}\Big[-\frac{1}{2},1+n,-n,\frac{1}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big]\Big)\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big)-$$

$$\Big(9\,\text{AppellF1}\Big[-\frac{1}{2},n,-n,\frac{1}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]\Big)\Big/$$

$$\Big(\text{AppellF1}\Big[-\frac{1}{2},n,-n,\frac{1}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big]+2\,n\,\Big(\text{AppellF1}\Big[\frac{1}{2},n,1-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,$$

$$-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big]+\text{AppellF1}\Big[\frac{1}{2},1+n,-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big]\Big)\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big)-$$

$$\Big(9\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big(-n\,\text{AppellF1}\Big[\frac{1}{2},n,1-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]-$$

$$n\,\text{AppellF1}\Big[\frac{1}{2},1+n,-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]\Big)\Big)\Big/$$

$$\Big(\text{AppellF1}\Big[-\frac{1}{2},n,-n,\frac{1}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big]+2\,n\,\Big(\text{AppellF1}\Big[\frac{1}{2},n,1-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,$$

$$-\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2\Big]+\text{AppellF1}\Big[\frac{1}{2},1+n,-n,\frac{3}{2},\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2\Big)+$$

$$\Big(54\,\text{AppellF1}\Big[\frac{1}{2},n,-n,\frac{3}{2},\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{2}(e+f x)\Big]^2\,\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^3\Big)\Big/$$

$$\Big(3\,\text{AppellF1}\Big[\frac{1}{2},n,-n,\frac{3}{2},\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2\Big]+2\,n\,\Big(\text{AppellF1}\Big[\frac{3}{2},n,1-n,\frac{5}{2},\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2,$$

$$-\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2\Big]+\text{AppellF1}\Big[\frac{3}{2},1+n,-n,\frac{5}{2},\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2\Big)+$$

$$\Big(27\,\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^4\,\Big(\frac{1}{3}\,n\,\text{AppellF1}\Big[\frac{3}{2},n,1-n,\frac{5}{2},\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{2}(e+f x)\Big]^2\,\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]+$$

$$\frac{1}{3}\,n\,\text{AppellF1}\Big[\frac{3}{2},1+n,-n,\frac{5}{2},\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{2}(e+f x)\Big]^2\,\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]\Big)\Big)\Big/$$

$$\Big(3\,\text{AppellF1}\Big[\frac{1}{2},n,-n,\frac{3}{2},\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2\Big]+2\,n\,\Big(\text{AppellF1}\Big[\frac{3}{2},n,1-n,\frac{5}{2},\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2,$$

$$-\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2\Big]+\text{AppellF1}\Big[\frac{3}{2},1+n,-n,\frac{5}{2},\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2\Big)+$$

$$\Big(15\,\text{AppellF1}\Big[\frac{3}{2},n,-n,\frac{5}{2},\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{2}(e+f x)\Big]^2\,\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^5\Big)\Big/$$

$$\Big(5\,\text{AppellF1}\Big[\frac{3}{2},n,-n,\frac{5}{2},\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2\Big]+2\,n\,\Big(\text{AppellF1}\Big[\frac{5}{2},n,1-n,\frac{7}{2},\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2,$$

$$-\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2\Big]+\text{AppellF1}\Big[\frac{5}{2},1+n,-n,\frac{7}{2},\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2\Big)+$$

$$\Big(5\,\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^6\,\Big(\frac{3}{5}\,n\,\text{AppellF1}\Big[\frac{5}{2},n,1-n,\frac{7}{2},\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{2}(e+f x)\Big]^2\,\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]+$$

$$\frac{3}{5}\,n\,\text{AppellF1}\Big[\frac{5}{2},1+n,-n,\frac{7}{2},\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{2}(e+f x)\Big]^2\,\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]\Big)\Big)\Big/$$

$$\Big(5\,\text{AppellF1}\Big[\frac{3}{2},n,-n,\frac{5}{2},\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2\Big]+2\,n\,\Big(\text{AppellF1}\Big[\frac{5}{2},n,1-n,\frac{7}{2},\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2,$$

$$-\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2\Big]+\text{AppellF1}\Big[\frac{5}{2},1+n,-n,\frac{7}{2},\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2\Big)+$$

$$\Big(\text{AppellF1}\Big[-\frac{3}{2},n,-n,-\frac{1}{2},\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2\Big]\,\Big(3\,n\,\text{AppellF1}\Big[-\frac{1}{2},n,1-n,\frac{1}{2},\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2,-\text{Tan}\Big[$$

$$\frac{1}{2}(e+f x)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{2}(e+f x)\Big]^2\,\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]+3\,n\,\text{AppellF1}\Big[-\frac{1}{2},1+n,-n,\frac{1}{2},\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2\Big]$$

$$\text{Sec}\Big[\frac{1}{2}(e+f x)\Big]^2\,\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]-2\,n\,\Big(\text{AppellF1}\Big[-\frac{1}{2},n,1-n,\frac{1}{2},\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2\Big]+$$

$$\text{AppellF1}\left[-\frac{1}{2}, 1+n, -n, \frac{1}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\Bigg) \text{Sec}\left[\frac{1}{2}(e+f x)\right]^2 \text{Tan}\left[\frac{1}{2}(e+f x)\right] -$$

$$2 n \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2 \Bigg((1-n) \text{AppellF1}\left[\frac{1}{2}, n, 2-n, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] \text{Sec}\left[\frac{1}{2}(e+f x)\right]^2 \text{Tan}\Big[$$

$$\frac{1}{2}(e+f x)\Big] - 2 n \text{AppellF1}\left[\frac{1}{2}, 1+n, 1-n, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] \text{Sec}\left[\frac{1}{2}(e+f x)\right]^2 \text{Tan}\left[\frac{1}{2}(e+f x)\right] -$$

$$(1+n) \text{AppellF1}\left[\frac{1}{2}, 2+n, -n, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] \text{Sec}\left[\frac{1}{2}(e+f x)\right]^2 \text{Tan}\left[\frac{1}{2}(e+f x)\right]\Bigg)\Bigg)\Bigg)\Bigg) \Big/$$

$$\Bigg(\text{AppellF1}\left[-\frac{3}{2}, n, -n, -\frac{1}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] - 2 n \Bigg(\text{AppellF1}\left[-\frac{1}{2}, n, 1-n, \frac{1}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\right.$$

$$\left.-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] + \text{AppellF1}\left[-\frac{1}{2}, 1+n, -n, \frac{1}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\Bigg) \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Bigg)^2 +$$

$$\Bigg(9 \text{AppellF1}\left[-\frac{1}{2}, n, -n, \frac{1}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2 \Bigg(-n \text{AppellF1}\Big[\frac{1}{2}, n, 1-n, \frac{3}{2},$$

$$\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big] \text{Sec}\left[\frac{1}{2}(e+f x)\right]^2 \text{Tan}\left[\frac{1}{2}(e+f x)\right] - n \text{AppellF1}\Big[\frac{1}{2}, 1+n, -n, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,$$

$$-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big] \text{Sec}\left[\frac{1}{2}(e+f x)\right]^2 \text{Tan}\left[\frac{1}{2}(e+f x)\right] + 2 n \Bigg(\text{AppellF1}\left[\frac{1}{2}, n, 1-n, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] +$$

$$\text{AppellF1}\left[\frac{1}{2}, 1+n, -n, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\Bigg) \text{Sec}\left[\frac{1}{2}(e+f x)\right]^2 \text{Tan}\left[\frac{1}{2}(e+f x)\right] + 2 n \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2$$

$$\Bigg(-\frac{1}{3}(1-n) \text{AppellF1}\left[\frac{3}{2}, n, 2-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] \text{Sec}\left[\frac{1}{2}(e+f x)\right]^2 \text{Tan}\left[\frac{1}{2}(e+f x)\right] +$$

$$\frac{2}{3} n \text{AppellF1}\left[\frac{3}{2}, 1+n, 1-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] \text{Sec}\left[\frac{1}{2}(e+f x)\right]^2 \text{Tan}\left[\frac{1}{2}(e+f x)\right] +$$

$$\frac{1}{3}(1+n) \text{AppellF1}\left[\frac{3}{2}, 2+n, -n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] \text{Sec}\left[\frac{1}{2}(e+f x)\right]^2 \text{Tan}\left[\frac{1}{2}(e+f x)\right]\Bigg)\Bigg)\Bigg)\Bigg) \Big/$$

$$\Bigg(\text{AppellF1}\left[-\frac{1}{2}, n, -n, \frac{1}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] + 2 n \Bigg(\text{AppellF1}\left[\frac{1}{2}, n, 1-n, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\right.$$

$$\left.-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] + \text{AppellF1}\left[\frac{1}{2}, 1+n, -n, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\Bigg) \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Bigg)^2 -$$

$$\Bigg(27 \text{AppellF1}\left[\frac{1}{2}, n, -n, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] \text{Tan}\left[\frac{1}{2}(e+f x)\right]^4 \Bigg(2 n \Bigg(\text{AppellF1}\left[\frac{3}{2}, n, 1-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\right.$$

$$\left.-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] + \text{AppellF1}\left[\frac{3}{2}, 1+n, -n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\Bigg) \text{Sec}\left[\frac{1}{2}(e+f x)\right]^2$$

$$\text{Tan}\left[\frac{1}{2}(e+f x)\right] + 3 \Bigg(\frac{1}{3} n \text{AppellF1}\left[\frac{3}{2}, n, 1-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] \text{Sec}\left[\frac{1}{2}(e+f x)\right]^2 \text{Tan}\left[\frac{1}{2}(e+f x)\right] +$$

$$\frac{1}{3} n \,\text{AppellF1}\left[\frac{3}{2}, 1+n, -n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] \text{Sec}\left[\frac{1}{2}(e+f x)\right]^2 \text{Tan}\left[\frac{1}{2}(e+f x)\right]\Bigg) +$$

$$2 n \,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2 \Bigg(-\frac{3}{5}(1-n)\,\text{AppellF1}\left[\frac{5}{2}, n, 2-n, \frac{7}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] \text{Sec}\left[\frac{1}{2}(e+f x)\right]^2 \text{Tan}\Big[$$

$$\frac{1}{2}(e+f x)\Big] + \frac{6}{5} n \,\text{AppellF1}\left[\frac{5}{2}, 1+n, 1-n, \frac{7}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] \text{Sec}\left[\frac{1}{2}(e+f x)\right]^2 \text{Tan}\left[\frac{1}{2}(e+f x)\right] +$$

$$\frac{3}{5}(1+n)\,\text{AppellF1}\left[\frac{5}{2}, 2+n, -n, \frac{7}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] \text{Sec}\left[\frac{1}{2}(e+f x)\right]^2 \text{Tan}\left[\frac{1}{2}(e+f x)\right]\Bigg)\Bigg)\Bigg)\Bigg) \Big/$$

$$\Bigg(3 \,\text{AppellF1}\left[\frac{1}{2}, n, -n, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] + 2 n \Bigg(\text{AppellF1}\left[\frac{3}{2}, n, 1-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\right.$$

$$\left.-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] + \text{AppellF1}\left[\frac{3}{2}, 1+n, -n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\Bigg) \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Bigg)^2 -$$

$$\Bigg(5 \,\text{AppellF1}\left[\frac{3}{2}, n, -n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] \text{Tan}\left[\frac{1}{2}(e+f x)\right]^6 \Bigg(2 n \Bigg(\text{AppellF1}\left[\frac{5}{2}, n, 1-n, \frac{7}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\right.$$

$$\left.-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] + \text{AppellF1}\left[\frac{5}{2}, 1+n, -n, \frac{7}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\Bigg) \text{Sec}\left[\frac{1}{2}(e+f x)\right]^2$$

$$\text{Tan}\left[\frac{1}{2}(e+f x)\right] + 5 \Bigg(\frac{3}{5} n \,\text{AppellF1}\left[\frac{5}{2}, n, 1-n, \frac{7}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] \text{Sec}\left[\frac{1}{2}(e+f x)\right]^2 \text{Tan}\left[\frac{1}{2}(e+f x)\right] +$$

$$\frac{3}{5} n \,\text{AppellF1}\left[\frac{5}{2}, 1+n, -n, \frac{7}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] \text{Sec}\left[\frac{1}{2}(e+f x)\right]^2 \text{Tan}\left[\frac{1}{2}(e+f x)\right]\Bigg) +$$

$$2 n \,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2 \Bigg(-\frac{5}{7}(1-n)\,\text{AppellF1}\left[\frac{7}{2}, n, 2-n, \frac{9}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] \text{Sec}\left[\frac{1}{2}(e+f x)\right]^2 \text{Tan}\Big[$$

$$\frac{1}{2}(e+f x)\Big] + \frac{10}{7} n \,\text{AppellF1}\left[\frac{7}{2}, 1+n, 1-n, \frac{9}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] \text{Sec}\left[\frac{1}{2}(e+f x)\right]^2 \text{Tan}\left[\frac{1}{2}(e+f x)\right] +$$

$$\frac{5}{7}(1+n)\,\text{AppellF1}\left[\frac{7}{2}, 2+n, -n, \frac{9}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] \text{Sec}\left[\frac{1}{2}(e+f x)\right]^2 \text{Tan}\left[\frac{1}{2}(e+f x)\right]\Bigg)\Bigg)\Bigg)\Bigg) \Big/$$

$$\Bigg(5 \,\text{AppellF1}\left[\frac{3}{2}, n, -n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] + 2 n \Bigg(\text{AppellF1}\left[\frac{5}{2}, n, 1-n, \frac{7}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\right.$$

$$\left.-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] + \text{AppellF1}\left[\frac{5}{2}, 1+n, -n, \frac{7}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\Bigg) \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Bigg)^2\Bigg)\Bigg)\Bigg)$$

Test results for the 348 problems in "4.1.10 (c+d x)^m (a+b sin)^n.m"

- **Problem 28: Result more than twice size of optimal antiderivative.**

$$\int (c+d x)^3 \operatorname{Csc}[a+b x]^2 \, dx$$

Optimal (type 4, 113 leaves, 6 steps):

$$-\frac{i (c+d x)^3}{b}-\frac{(c+d x)^3 \operatorname{Cot}[a+b x]}{b}+\frac{3 d (c+d x)^2 \operatorname{Log}\left[1-e^{2 i (a+b x)}\right]}{b^2}-\frac{3 i d^2 (c+d x) \operatorname{PolyLog}\left[2, e^{2 i (a+b x)}\right]}{b^3}+\frac{3 d^3 \operatorname{PolyLog}\left[3, e^{2 i (a+b x)}\right]}{2 b^4}$$

Result (type 4, 384 leaves):

$$-\frac{1}{4 b^4} d^3 e^{-i a} \operatorname{Csc}[a] \left(2 b^2 x^2 \left(2 b e^{2 i a} x+3 i \left(-1+e^{2 i a}\right) \operatorname{Log}\left[1-e^{2 i (a+b x)}\right]\right)+6 b \left(-1+e^{2 i a}\right) x \operatorname{PolyLog}\left[2, e^{2 i (a+b x)}\right]+3 i \left(-1+e^{2 i a}\right) \operatorname{PolyLog}\left[3, e^{2 i (a+b x)}\right]\right)+$$
$$\frac{3 c^2 d \operatorname{Csc}[a] (-b x \operatorname{Cos}[a]+\operatorname{Log}[\operatorname{Cos}[b x] \operatorname{Sin}[a]+\operatorname{Cos}[a] \operatorname{Sin}[b x]] \operatorname{Sin}[a])}{b^2 \left(\operatorname{Cos}[a]^2+\operatorname{Sin}[a]^2\right)}+$$
$$\frac{\operatorname{Csc}[a] \operatorname{Csc}[a+b x] \left(c^3 \operatorname{Sin}[b x]+3 c^2 d x \operatorname{Sin}[b x]+3 c d^2 x^2 \operatorname{Sin}[b x]+d^3 x^3 \operatorname{Sin}[b x]\right)}{b}-$$
$$\left(3 c d^2 \operatorname{Csc}[a] \operatorname{Sec}[a] \left(b^2 e^{i \operatorname{ArcTan}[\operatorname{Tan}[a]]} x^2+1 \Big/ \left(\sqrt{1+\operatorname{Tan}[a]^2}\right) \left(i b x (-\pi+2 \operatorname{ArcTan}[\operatorname{Tan}[a]])-\pi \operatorname{Log}\left[1+e^{-2 i b x}\right]-\right.\right.\right.$$
$$2 (b x+\operatorname{ArcTan}[\operatorname{Tan}[a]]) \operatorname{Log}\left[1-e^{2 i (b x+\operatorname{ArcTan}[\operatorname{Tan}[a]])}\right]+\pi \operatorname{Log}[\operatorname{Cos}[b x]]+2 \operatorname{ArcTan}[\operatorname{Tan}[a]] \operatorname{Log}[\operatorname{Sin}[b x+\operatorname{ArcTan}[\operatorname{Tan}[a]]]]+$$
$$\left.\left.\left. i \operatorname{PolyLog}\left[2, e^{2 i (b x+\operatorname{ArcTan}[\operatorname{Tan}[a]])}\right]\right) \operatorname{Tan}[a]\right)\right) \Big/ \left(b^3 \sqrt{\operatorname{Sec}[a]^2 \left(\operatorname{Cos}[a]^2+\operatorname{Sin}[a]^2\right)}\right)$$

- **Problem 29: Result more than twice size of optimal antiderivative.**

$$\int (c+d x)^2 \operatorname{Csc}[a+b x]^2 \, dx$$

Optimal (type 4, 83 leaves, 5 steps):

$$-\frac{i (c+d x)^2}{b}-\frac{(c+d x)^2 \operatorname{Cot}[a+b x]}{b}+\frac{2 d (c+d x) \operatorname{Log}\left[1-e^{2 i (a+b x)}\right]}{b^2}-\frac{i d^2 \operatorname{PolyLog}\left[2, e^{2 i (a+b x)}\right]}{b^3}$$

Result (type 4, 245 leaves):

$$\frac{2 c d \operatorname{Csc}[a] (-b x \operatorname{Cos}[a]+\operatorname{Log}[\operatorname{Cos}[b x] \operatorname{Sin}[a]+\operatorname{Cos}[a] \operatorname{Sin}[b x]] \operatorname{Sin}[a])}{b^2 \left(\operatorname{Cos}[a]^2+\operatorname{Sin}[a]^2\right)}+\frac{\operatorname{Csc}[a] \operatorname{Csc}[a+b x] \left(c^2 \operatorname{Sin}[b x]+2 c d x \operatorname{Sin}[b x]+d^2 x^2 \operatorname{Sin}[b x]\right)}{b}-$$
$$\left(d^2 \operatorname{Csc}[a] \operatorname{Sec}[a] \left(b^2 e^{i \operatorname{ArcTan}[\operatorname{Tan}[a]]} x^2+1 \Big/ \left(\sqrt{1+\operatorname{Tan}[a]^2}\right) \left(i b x (-\pi+2 \operatorname{ArcTan}[\operatorname{Tan}[a]])-\pi \operatorname{Log}\left[1+e^{-2 i b x}\right]-\right.\right.\right.$$
$$2 (b x+\operatorname{ArcTan}[\operatorname{Tan}[a]]) \operatorname{Log}\left[1-e^{2 i (b x+\operatorname{ArcTan}[\operatorname{Tan}[a]])}\right]+\pi \operatorname{Log}[\operatorname{Cos}[b x]]+2 \operatorname{ArcTan}[\operatorname{Tan}[a]] \operatorname{Log}[\operatorname{Sin}[b x+\operatorname{ArcTan}[\operatorname{Tan}[a]]]]+$$
$$\left.\left.\left. i \operatorname{PolyLog}\left[2, e^{2 i (b x+\operatorname{ArcTan}[\operatorname{Tan}[a]])}\right]\right) \operatorname{Tan}[a]\right)\right) \Big/ \left(b^3 \sqrt{\operatorname{Sec}[a]^2 \left(\operatorname{Cos}[a]^2+\operatorname{Sin}[a]^2\right)}\right)$$

- **Problem 34: Result more than twice size of optimal antiderivative.**

$$\int (c+d x)^2 \operatorname{Csc}[a+b x]^3 \, dx$$

Optimal (type 4, 180 leaves, 9 steps):

$$-\frac{(c+dx)^2 \text{ArcTanh}[e^{i(a+bx)}]}{b}-\frac{d^2 \text{ArcTanh}[\text{Cos}[a+bx]]}{b^3}-\frac{d(c+dx)\text{Csc}[a+bx]}{b^2}-\frac{(c+dx)^2 \text{Cot}[a+bx]\text{Csc}[a+bx]}{2b}+\frac{i d(c+dx)\text{PolyLog}[2,-e^{i(a+bx)}]}{b^2}-\frac{i d(c+dx)\text{PolyLog}[2,e^{i(a+bx)}]}{b^2}-\frac{d^2 \text{PolyLog}[3,-e^{i(a+bx)}]}{b^3}+\frac{d^2 \text{PolyLog}[3,e^{i(a+bx)}]}{b^3}$$

Result (type 4, 471 leaves):

$$-\frac{d(c+dx)\text{Csc}[a]}{b^2}+\frac{(-c^2-2cdx-d^2x^2)\text{Csc}[\frac{a}{2}+\frac{bx}{2}]^2}{8b}+\frac{1}{2b^3}\Big(b^2c^2\text{Log}[1-e^{i(a+bx)}]+2d^2\text{Log}[1-e^{i(a+bx)}]+2b^2cdx\text{Log}[1-e^{i(a+bx)}]+b^2d^2x^2\text{Log}[1-e^{i(a+bx)}]-b^2c^2\text{Log}[1+e^{i(a+bx)}]-2d^2\text{Log}[1+e^{i(a+bx)}]-2b^2cdx\text{Log}[1+e^{i(a+bx)}]-b^2d^2x^2\text{Log}[1+e^{i(a+bx)}]+2ibd(c+dx)\text{PolyLog}[2,-e^{i(a+bx)}]-2ibd(c+dx)\text{PolyLog}[2,e^{i(a+bx)}]-2d^2\text{PolyLog}[3,-e^{i(a+bx)}]+2d^2\text{PolyLog}[3,e^{i(a+bx)}]\Big)+\frac{(c^2+2cdx+d^2x^2)\text{Sec}[\frac{a}{2}+\frac{bx}{2}]^2}{8b}+\frac{\text{Sec}[\frac{a}{2}]\text{Sec}[\frac{a}{2}+\frac{bx}{2}](-cd\text{Sin}[\frac{bx}{2}]-d^2x\text{Sin}[\frac{bx}{2}])}{2b^2}+\frac{\text{Csc}[\frac{a}{2}]\text{Csc}[\frac{a}{2}+\frac{bx}{2}](cd\text{Sin}[\frac{bx}{2}]+d^2x\text{Sin}[\frac{bx}{2}])}{2b^2}$$

Problem 35: Result more than twice size of optimal antiderivative.

$$\int (c+dx)\text{Csc}[a+bx]^3\,dx$$

Optimal (type 4, 109 leaves, 6 steps):

$$-\frac{(c+dx)\text{ArcTanh}[e^{i(a+bx)}]}{b}-\frac{d\,\text{Csc}[a+bx]}{2b^2}-\frac{(c+dx)\text{Cot}[a+bx]\text{Csc}[a+bx]}{2b}+\frac{i d\,\text{PolyLog}[2,-e^{i(a+bx)}]}{2b^2}-\frac{i d\,\text{PolyLog}[2,e^{i(a+bx)}]}{2b^2}$$

Result (type 4, 292 leaves):

$$-\frac{dx\,\text{Csc}[\frac{a}{2}+\frac{bx}{2}]^2}{8b}-\frac{c\,\text{Csc}[\frac{1}{2}(a+bx)]^2}{8b}-\frac{c\,\text{Log}[\text{Cos}[\frac{1}{2}(a+bx)]]}{2b}+\frac{c\,\text{Log}[\text{Sin}[\frac{1}{2}(a+bx)]]}{2b}+\frac{1}{2b^2}d\left((a+bx)(\text{Log}[1-e^{i(a+bx)}]-\text{Log}[1+e^{i(a+bx)}])-a\,\text{Log}[\text{Tan}[\frac{1}{2}(a+bx)]]+i(\text{PolyLog}[2,-e^{i(a+bx)}]-\text{PolyLog}[2,e^{i(a+bx)}])\right)+\frac{dx\,\text{Sec}[\frac{a}{2}+\frac{bx}{2}]^2}{8b}+\frac{c\,\text{Sec}[\frac{1}{2}(a+bx)]^2}{8b}+\frac{d\,\text{Csc}[\frac{a}{2}]\text{Csc}[\frac{a}{2}+\frac{bx}{2}]\text{Sin}[\frac{bx}{2}]}{4b^2}-\frac{d\,\text{Sec}[\frac{a}{2}]\text{Sec}[\frac{a}{2}+\frac{bx}{2}]\text{Sin}[\frac{bx}{2}]}{4b^2}$$

Problem 52: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Sin}[a+bx]^2}{(c+dx)^{9/2}}\,dx$$

Optimal (type 4, 247 leaves, 11 steps) :

$$-\frac{16\,b^2}{105\,d^3\,(c+d\,x)^{3/2}}-\frac{128\,b^{7/2}\,\sqrt{\pi}\,\mathrm{Cos}\left[2\,a-\frac{2\,b\,c}{d}\right]\,\mathrm{FresnelC}\left[\frac{2\,\sqrt{b}\,\sqrt{c+d\,x}}{\sqrt{d}\,\sqrt{\pi}}\right]}{105\,d^{9/2}}+\frac{128\,b^{7/2}\,\sqrt{\pi}\,\mathrm{FresnelS}\left[\frac{2\,\sqrt{b}\,\sqrt{c+d\,x}}{\sqrt{d}\,\sqrt{\pi}}\right]\,\mathrm{Sin}\left[2\,a-\frac{2\,b\,c}{d}\right]}{105\,d^{9/2}}-\frac{8\,b\,\mathrm{Cos}[a+b\,x]\,\mathrm{Sin}[a+b\,x]}{35\,d^2\,(c+d\,x)^{5/2}}+\frac{128\,b^3\,\mathrm{Cos}[a+b\,x]\,\mathrm{Sin}[a+b\,x]}{105\,d^4\,\sqrt{c+d\,x}}-\frac{2\,\mathrm{Sin}[a+b\,x]^2}{7\,d\,(c+d\,x)^{7/2}}+\frac{32\,b^2\,\mathrm{Sin}[a+b\,x]^2}{105\,d^3\,(c+d\,x)^{3/2}}$$

Result (type 4, 988 leaves) :

$$-\frac{1}{7 d (c+d x)^{7/2}}+$$

$$\frac{1}{2}\Bigg(-\text{Cos}[2 a]\Bigg(-\frac{1}{7 d}32\sqrt{2}\left(\frac{b}{d}\right)^{7/2}\text{Cos}\left[\frac{b c}{d}\right]\text{Sin}\left[\frac{b c}{d}\right]\Bigg(\frac{\text{Sin}\left[\frac{2 b (c+d x)}{d}\right]}{8\sqrt{2}\left(\frac{b}{d}\right)^{7/2}(c+d x)^{7/2}}+\frac{2}{5}\Bigg(\frac{\text{Cos}\left[\frac{2 b (c+d x)}{d}\right]}{4\sqrt{2}\left(\frac{b}{d}\right)^{5/2}(c+d x)^{5/2}}-\frac{2}{3}\Bigg(2\Bigg(\frac{\text{Cos}\left[\frac{2 b (c+d x)}{d}\right]}{\sqrt{2}\sqrt{\frac{b}{d}}\sqrt{c+d x}}+\sqrt{2\pi}$$

$$\text{FresnelS}\left[\frac{2\sqrt{\frac{b}{d}}\sqrt{c+d x}}{\sqrt{\pi}}\right]\Bigg)+\frac{\text{Sin}\left[\frac{2 b (c+d x)}{d}\right]}{2\sqrt{2}\left(\frac{b}{d}\right)^{3/2}(c+d x)^{3/2}}\Bigg)\Bigg)\Bigg)-\frac{1}{7 d}16\sqrt{2}\left(\frac{b}{d}\right)^{7/2}\text{Cos}\left[\frac{2 b c}{d}\right]\Bigg(\frac{\text{Cos}\left[\frac{2 b (c+d x)}{d}\right]}{8\sqrt{2}\left(\frac{b}{d}\right)^{7/2}(c+d x)^{7/2}}-$$

$$\frac{2}{5}\Bigg(\frac{\text{Sin}\left[\frac{2 b (c+d x)}{d}\right]}{4\sqrt{2}\left(\frac{b}{d}\right)^{5/2}(c+d x)^{5/2}}+\frac{2}{3}\Bigg(\frac{\text{Cos}\left[\frac{2 b (c+d x)}{d}\right]}{2\sqrt{2}\left(\frac{b}{d}\right)^{3/2}(c+d x)^{3/2}}-2\Bigg(-\sqrt{2\pi}\,\text{FresnelC}\left[\frac{2\sqrt{\frac{b}{d}}\sqrt{c+d x}}{\sqrt{\pi}}\right]+\frac{\text{Sin}\left[\frac{2 b (c+d x)}{d}\right]}{\sqrt{2}\sqrt{\frac{b}{d}}\sqrt{c+d x}}\Bigg)\Bigg)\Bigg)\Bigg)\Bigg)+$$

$$2\,\text{Cos}[a]\,\text{Sin}[a]\Bigg(-\frac{1}{7 d}16\sqrt{2}\left(\frac{b}{d}\right)^{7/2}\left(\text{Cos}\left[\frac{b c}{d}\right]-\text{Sin}\left[\frac{b c}{d}\right]\right)\left(\text{Cos}\left[\frac{b c}{d}\right]+\text{Sin}\left[\frac{b c}{d}\right]\right)\Bigg(\frac{\text{Sin}\left[\frac{2 b (c+d x)}{d}\right]}{8\sqrt{2}\left(\frac{b}{d}\right)^{7/2}(c+d x)^{7/2}}+$$

$$\frac{2}{5}\Bigg(\frac{\text{Cos}\left[\frac{2 b (c+d x)}{d}\right]}{4\sqrt{2}\left(\frac{b}{d}\right)^{5/2}(c+d x)^{5/2}}-\frac{2}{3}\Bigg(2\Bigg(\frac{\text{Cos}\left[\frac{2 b (c+d x)}{d}\right]}{\sqrt{2}\sqrt{\frac{b}{d}}\sqrt{c+d x}}+\sqrt{2\pi}\,\text{FresnelS}\left[\frac{2\sqrt{\frac{b}{d}}\sqrt{c+d x}}{\sqrt{\pi}}\right]\Bigg)+\frac{\text{Sin}\left[\frac{2 b (c+d x)}{d}\right]}{2\sqrt{2}\left(\frac{b}{d}\right)^{3/2}(c+d x)^{3/2}}\Bigg)\Bigg)\Bigg)+$$

$$\frac{1}{7 d}16\sqrt{2}\left(\frac{b}{d}\right)^{7/2}\text{Sin}\left[\frac{2 b c}{d}\right]\Bigg(\frac{\text{Cos}\left[\frac{2 b (c+d x)}{d}\right]}{8\sqrt{2}\left(\frac{b}{d}\right)^{7/2}(c+d x)^{7/2}}-\frac{2}{5}\Bigg(\frac{\text{Sin}\left[\frac{2 b (c+d x)}{d}\right]}{4\sqrt{2}\left(\frac{b}{d}\right)^{5/2}(c+d x)^{5/2}}+$$

$$\frac{2}{3}\Bigg(\frac{\text{Cos}\left[\frac{2 b (c+d x)}{d}\right]}{2\sqrt{2}\left(\frac{b}{d}\right)^{3/2}(c+d x)^{3/2}}-2\Bigg(-\sqrt{2\pi}\,\text{FresnelC}\left[\frac{2\sqrt{\frac{b}{d}}\sqrt{c+d x}}{\sqrt{\pi}}\right]+\frac{\text{Sin}\left[\frac{2 b (c+d x)}{d}\right]}{\sqrt{2}\sqrt{\frac{b}{d}}\sqrt{c+d x}}\Bigg)\Bigg)\Bigg)\Bigg)\Bigg)\Bigg)$$

Problem 59: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Sin}[a+b\,x]^3}{(c+d\,x)^{7/2}}\,dx$$

Optimal (type 4, 356 leaves, 19 steps):

$$-\frac{2\,b^{5/2}\sqrt{2\pi}\,\text{Cos}\left[a-\frac{b\,c}{d}\right]\text{FresnelC}\left[\frac{\sqrt{b}\,\sqrt{\frac{2}{\pi}}\,\sqrt{c+d\,x}}{\sqrt{d}}\right]}{5\,d^{7/2}}+\frac{6\,b^{5/2}\sqrt{6\pi}\,\text{Cos}\left[3\,a-\frac{3\,b\,c}{d}\right]\text{FresnelC}\left[\frac{\sqrt{b}\,\sqrt{\frac{6}{\pi}}\,\sqrt{c+d\,x}}{\sqrt{d}}\right]}{5\,d^{7/2}}-\frac{6\,b^{5/2}\sqrt{6\pi}\,\text{FresnelS}\left[\frac{\sqrt{b}\,\sqrt{\frac{6}{\pi}}\,\sqrt{c+d\,x}}{\sqrt{d}}\right]\text{Sin}\left[3\,a-\frac{3\,b\,c}{d}\right]}{5\,d^{7/2}}+\frac{2\,b^{5/2}\sqrt{2\pi}\,\text{FresnelS}\left[\frac{\sqrt{b}\,\sqrt{\frac{2}{\pi}}\,\sqrt{c+d\,x}}{\sqrt{d}}\right]\text{Sin}\left[a-\frac{b\,c}{d}\right]}{5\,d^{7/2}}-\frac{16\,b^2\,\text{Sin}[a+b\,x]}{5\,d^3\sqrt{c+d\,x}}-\frac{4\,b\,\text{Cos}[a+b\,x]\,\text{Sin}[a+b\,x]^2}{5\,d^2\,(c+d\,x)^{3/2}}-\frac{2\,\text{Sin}[a+b\,x]^3}{5\,d\,(c+d\,x)^{5/2}}+\frac{24\,b^2\,\text{Sin}[a+b\,x]^3}{5\,d^3\sqrt{c+d\,x}}$$

Result (type 4, 1429 leaves):

$$\frac{3}{4}\left(\text{Cos}[a]\left(\frac{1}{5\,d}2\left(\frac{b}{d}\right)^{5/2}\text{Sin}\left[\frac{b\,c}{d}\right]\left(\frac{\text{Cos}\left[\frac{b\,(c+d\,x)}{d}\right]}{\left(\frac{b}{d}\right)^{5/2}(c+d\,x)^{5/2}}-\frac{2}{3}\left(2\left(\frac{\text{Cos}\left[\frac{b\,(c+d\,x)}{d}\right]}{\sqrt{\frac{b}{d}}\,\sqrt{c+d\,x}}+\sqrt{2\pi}\,\text{FresnelS}\left[\sqrt{\frac{b}{d}}\,\sqrt{\frac{2}{\pi}}\,\sqrt{c+d\,x}\right]\right)+\frac{\text{Sin}\left[\frac{b\,(c+d\,x)}{d}\right]}{\left(\frac{b}{d}\right)^{3/2}(c+d\,x)^{3/2}}\right)\right)-\frac{1}{5\,d}\right.\right.$$

$$2\left(\frac{b}{d}\right)^{5/2}\text{Cos}\left[\frac{b\,c}{d}\right]\left(\frac{\text{Sin}\left[\frac{b\,(c+d\,x)}{d}\right]}{\left(\frac{b}{d}\right)^{5/2}(c+d\,x)^{5/2}}+\frac{2}{3}\left(\frac{\text{Cos}\left[\frac{b\,(c+d\,x)}{d}\right]}{\left(\frac{b}{d}\right)^{3/2}(c+d\,x)^{3/2}}-2\left(-\sqrt{2\pi}\,\text{FresnelC}\left[\sqrt{\frac{b}{d}}\,\sqrt{\frac{2}{\pi}}\,\sqrt{c+d\,x}\right]+\frac{\text{Sin}\left[\frac{b\,(c+d\,x)}{d}\right]}{\sqrt{\frac{b}{d}}\,\sqrt{c+d\,x}}\right)\right)\right)\right)+$$

$$\text{Sin}[a]\left(-\frac{1}{5\,d}2\left(\frac{b}{d}\right)^{5/2}\text{Cos}\left[\frac{b\,c}{d}\right]\left(\frac{\text{Cos}\left[\frac{b\,(c+d\,x)}{d}\right]}{\left(\frac{b}{d}\right)^{5/2}(c+d\,x)^{5/2}}-\frac{2}{3}\left(2\left(\frac{\text{Cos}\left[\frac{b\,(c+d\,x)}{d}\right]}{\sqrt{\frac{b}{d}}\,\sqrt{c+d\,x}}+\sqrt{2\pi}\,\text{FresnelS}\left[\sqrt{\frac{b}{d}}\,\sqrt{\frac{2}{\pi}}\,\sqrt{c+d\,x}\right]\right)+\frac{\text{Sin}\left[\frac{b\,(c+d\,x)}{d}\right]}{\left(\frac{b}{d}\right)^{3/2}(c+d\,x)^{3/2}}\right)\right)-\right.$$

$$\left.\left.\frac{1}{5\,d}2\left(\frac{b}{d}\right)^{5/2}\text{Sin}\left[\frac{b\,c}{d}\right]\left(\frac{\text{Sin}\left[\frac{b\,(c+d\,x)}{d}\right]}{\left(\frac{b}{d}\right)^{5/2}(c+d\,x)^{5/2}}+\frac{2}{3}\left(\frac{\text{Cos}\left[\frac{b\,(c+d\,x)}{d}\right]}{\left(\frac{b}{d}\right)^{3/2}(c+d\,x)^{3/2}}-2\left(-\sqrt{2\pi}\,\text{FresnelC}\left[\sqrt{\frac{b}{d}}\,\sqrt{\frac{2}{\pi}}\,\sqrt{c+d\,x}\right]+\frac{\text{Sin}\left[\frac{b\,(c+d\,x)}{d}\right]}{\sqrt{\frac{b}{d}}\,\sqrt{c+d\,x}}\right)\right)\right)\right)\right)+$$

$$\frac{1}{4}\left(-\text{Cos}[3\,a]\left(\frac{1}{5\,d}18\,\sqrt{3}\,\left(\frac{b}{d}\right)^{5/2}\,\text{Sin}\left[\frac{3\,b\,c}{d}\right]\left(\frac{\text{Cos}\left[\frac{3\,b\,(c+d\,x)}{d}\right]}{9\,\sqrt{3}\,\left(\frac{b}{d}\right)^{5/2}\,(c+d\,x)^{5/2}}-\right.\right.\right.$$

$$\left.\left.\frac{2}{3}\left(2\left(\frac{\text{Cos}\left[\frac{3\,b\,(c+d\,x)}{d}\right]}{\sqrt{3}\,\sqrt{\frac{b}{d}}\,\sqrt{c+d\,x}}+\sqrt{2\,\pi}\,\text{FresnelS}\left[\sqrt{\frac{b}{d}}\,\sqrt{\frac{6}{\pi}}\,\sqrt{c+d\,x}\right]\right)+\frac{\text{Sin}\left[\frac{3\,b\,(c+d\,x)}{d}\right]}{3\,\sqrt{3}\,\left(\frac{b}{d}\right)^{3/2}\,(c+d\,x)^{3/2}}\right)\right)\right)-\frac{1}{5\,d}18\,\sqrt{3}\,\left(\frac{b}{d}\right)^{5/2}\,\text{Cos}\left[\frac{3\,b\,c}{d}\right]$$

$$\left.\left.\left(\frac{\text{Sin}\left[\frac{3\,b\,(c+d\,x)}{d}\right]}{9\,\sqrt{3}\,\left(\frac{b}{d}\right)^{5/2}\,(c+d\,x)^{5/2}}+\frac{2}{3}\left(\frac{\text{Cos}\left[\frac{3\,b\,(c+d\,x)}{d}\right]}{3\,\sqrt{3}\,\left(\frac{b}{d}\right)^{3/2}\,(c+d\,x)^{3/2}}-2\left(-\sqrt{2\,\pi}\,\text{FresnelC}\left[\sqrt{\frac{b}{d}}\,\sqrt{\frac{6}{\pi}}\,\sqrt{c+d\,x}\right]+\frac{\text{Sin}\left[\frac{3\,b\,(c+d\,x)}{d}\right]}{\sqrt{3}\,\sqrt{\frac{b}{d}}\,\sqrt{c+d\,x}}\right)\right)\right)\right)\right)-$$

$$\text{Sin}[3\,a]\left(-\frac{1}{5\,d}18\,\sqrt{3}\,\left(\frac{b}{d}\right)^{5/2}\,\text{Cos}\left[\frac{3\,b\,c}{d}\right]\left(\frac{\text{Cos}\left[\frac{3\,b\,(c+d\,x)}{d}\right]}{9\,\sqrt{3}\,\left(\frac{b}{d}\right)^{5/2}\,(c+d\,x)^{5/2}}-\right.\right.$$

$$\left.\frac{2}{3}\left(2\left(\frac{\text{Cos}\left[\frac{3\,b\,(c+d\,x)}{d}\right]}{\sqrt{3}\,\sqrt{\frac{b}{d}}\,\sqrt{c+d\,x}}+\sqrt{2\,\pi}\,\text{FresnelS}\left[\sqrt{\frac{b}{d}}\,\sqrt{\frac{6}{\pi}}\,\sqrt{c+d\,x}\right]\right)+\frac{\text{Sin}\left[\frac{3\,b\,(c+d\,x)}{d}\right]}{3\,\sqrt{3}\,\left(\frac{b}{d}\right)^{3/2}\,(c+d\,x)^{3/2}}\right)\right)-\frac{1}{5\,d}18\,\sqrt{3}\,\left(\frac{b}{d}\right)^{5/2}\,\text{Sin}\left[\frac{3\,b\,c}{d}\right]$$

$$\left.\left.\left(\frac{\text{Sin}\left[\frac{3\,b\,(c+d\,x)}{d}\right]}{9\,\sqrt{3}\,\left(\frac{b}{d}\right)^{5/2}\,(c+d\,x)^{5/2}}+\frac{2}{3}\left(\frac{\text{Cos}\left[\frac{3\,b\,(c+d\,x)}{d}\right]}{3\,\sqrt{3}\,\left(\frac{b}{d}\right)^{3/2}\,(c+d\,x)^{3/2}}-2\left(-\sqrt{2\,\pi}\,\text{FresnelC}\left[\sqrt{\frac{b}{d}}\,\sqrt{\frac{6}{\pi}}\,\sqrt{c+d\,x}\right]+\frac{\text{Sin}\left[\frac{3\,b\,(c+d\,x)}{d}\right]}{\sqrt{3}\,\sqrt{\frac{b}{d}}\,\sqrt{c+d\,x}}\right)\right)\right)\right)\right)\right)$$

- **Problem 68: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int\left(\frac{x^2}{\text{Sin}[e+f\,x]^{3/2}}+x^2\,\sqrt{\text{Sin}[e+f\,x]}\right)dx$$

Optimal (type 4, 62 leaves, 3 steps):

$$-\frac{16\,\text{EllipticE}\left[\frac{1}{2}\left(e-\frac{\pi}{2}+f\,x\right),\,2\right]}{f^3}-\frac{2\,x^2\,\text{Cos}[e+f\,x]}{f\,\sqrt{\text{Sin}[e+f\,x]}}+\frac{8\,x\,\sqrt{\text{Sin}[e+f\,x]}}{f^2}$$

Result (type 5, 185 leaves) :

$$\left(8\,e^{-i f x}\sqrt{2-2\,e^{2 i (e+f x)}}\left(3\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},e^{2 i (e+f x)}\right]+e^{2 i f x}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{3}{4},\frac{7}{4},e^{2 i (e+f x)}\right]\right)\text{Sec}[e]\right)\Big/\left(3\sqrt{-i\,e^{-i (e+f x)}\left(-1+e^{2 i (e+f x)}\right)}\,f^3\right)-\frac{\text{Sec}[e]\left(\left(8+f^2 x^2\right)\text{Cos}[f x]+\left(-8+f^2 x^2\right)\text{Cos}[2 e+f x]-8 f x\,\text{Cos}[e]\,\text{Sin}[e+f x]\right)}{f^3\sqrt{\text{Sin}[e+f x]}}$$

- **Problem 109: Result more than twice size of optimal antiderivative.**

$$\int\frac{c+d x}{a+a\,\text{Sin}[e+f x]}\,dx$$

Optimal (type 3, 60 leaves, 3 steps) :

$$-\frac{(c+d x)\,\text{Cot}\left[\frac{e}{2}+\frac{\pi}{4}+\frac{f x}{2}\right]}{a f}+\frac{2 d\,\text{Log}\left[\text{Sin}\left[\frac{e}{2}+\frac{\pi}{4}+\frac{f x}{2}\right]\right]}{a f^2}$$

Result (type 3, 148 leaves) :

$$\left(-d f x\,\text{Cos}\left[e+\frac{f x}{2}\right]+2 d\,\text{Cos}\left[\frac{f x}{2}\right]\text{Log}\left[\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right]+2 c f\,\text{Sin}\left[\frac{f x}{2}\right]+d f x\,\text{Sin}\left[\frac{f x}{2}\right]+2 d\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right]\text{Sin}\left[e+\frac{f x}{2}\right]\right)\Big/\left(a f^2\left(\text{Cos}\left[\frac{e}{2}\right]+\text{Sin}\left[\frac{e}{2}\right]\right)\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)\right)$$

- **Problem 112: Result more than twice size of optimal antiderivative.**

$$\int\frac{(c+d x)^3}{(a+a\,\text{Sin}[e+f x])^2}\,dx$$

Optimal (type 4, 309 leaves, 10 steps) :

$$-\frac{i (c+d x)^3}{3 a^2 f}-\frac{2 d^2 (c+d x)\,\text{Cot}\left[\frac{e}{2}+\frac{\pi}{4}+\frac{f x}{2}\right]}{a^2 f^3}-\frac{(c+d x)^3\,\text{Cot}\left[\frac{e}{2}+\frac{\pi}{4}+\frac{f x}{2}\right]}{3 a^2 f}-\frac{d (c+d x)^2\,\text{Csc}\left[\frac{e}{2}+\frac{\pi}{4}+\frac{f x}{2}\right]^2}{2 a^2 f^2}-\frac{(c+d x)^3\,\text{Cot}\left[\frac{e}{2}+\frac{\pi}{4}+\frac{f x}{2}\right]\text{Csc}\left[\frac{e}{2}+\frac{\pi}{4}+\frac{f x}{2}\right]^2}{6 a^2 f}+\frac{2 d (c+d x)^2\,\text{Log}\left[1-i\,e^{i (e+f x)}\right]}{a^2 f^2}+\frac{4 d^3\,\text{Log}\left[\text{Sin}\left[\frac{e}{2}+\frac{\pi}{4}+\frac{f x}{2}\right]\right]}{a^2 f^4}-\frac{4 i d^2 (c+d x)\,\text{PolyLog}\left[2,i\,e^{i (e+f x)}\right]}{a^2 f^3}+\frac{4 d^3\,\text{PolyLog}\left[3,i\,e^{i (e+f x)}\right]}{a^2 f^4}$$

Result (type 4, 867 leaves) :

$$-\frac{1}{a^2 f^3 (\text{Cos}[e]+i (1+\text{Sin}[e]))} 2 d (\text{Cos}[e]+i \text{Sin}[e]) \Big(2 i d^2 x+i c^2 f^2 x+c d f^2 x^2 \text{Cos}[e]+ \frac{1}{3} d^2 f^2 x^3 (\text{Cos}[e]-i \text{Sin}[e])-i c d f^2 x^2 \text{Sin}[e]+\left(2 d^2+c^2 f^2\right) x (\text{Cos}[e]-i \text{Sin}[e]) (1-i \text{Cos}[e]+\text{Sin}[e])+\frac{1}{f} d^2 (2 f x+2 \text{ArcTan}[\text{Cos}[e+f x]+i \text{Sin}[e+f x]]+i \text{Log}[1+\text{Cos}[2 (e+f x)]+i \text{Sin}[2 (e+f x)]]) (i \text{Cos}[e]+\text{Sin}[e]) (\text{Cos}[e]+i (1+\text{Sin}[e]))+\frac{1}{2} c^2 f (2 f x+2 \text{ArcTan}[\text{Cos}[e+f x]+i \text{Sin}[e+f x]]+i \text{Log}[1+\text{Cos}[2 (e+f x)]+i \text{Sin}[2 (e+f x)]]) (i \text{Cos}[e]+\text{Sin}[e]) (\text{Cos}[e]+i (1+\text{Sin}[e]))+ c d (f x (f x+2 i \text{Log}[1-i \text{Cos}[e+f x]+\text{Sin}[e+f x]])+2 \text{PolyLog}[2, i \text{Cos}[e+f x]-\text{Sin}[e+f x]]) (i \text{Cos}[e]+\text{Sin}[e]) (\text{Cos}[e]+i (1+\text{Sin}[e]))+\frac{1}{3 f} d^2 \left(f^2 x^2 (f x+3 i \text{Log}[1-i \text{Cos}[e+f x]+\text{Sin}[e+f x]])+6 f x \text{PolyLog}[2, i \text{Cos}[e+f x]-\text{Sin}[e+f x]]+ 6 i \text{PolyLog}[3, i \text{Cos}[e+f x]-\text{Sin}[e+f x]]\right) (i \text{Cos}[e]+\text{Sin}[e]) (\text{Cos}[e]+i (1+\text{Sin}[e]))\Big)+$$

$$\frac{1}{3 a^2 f^3 \left(\text{Cos}\left[\frac{e}{2}\right]+\text{Sin}\left[\frac{e}{2}\right]\right) \left(\text{Cos}\left[\frac{e}{2}+\frac{f x}{2}\right]+\text{Sin}\left[\frac{e}{2}+\frac{f x}{2}\right]\right)^3} \Big(-3 c^2 d f \text{Cos}\left[\frac{f x}{2}\right]-6 c d^2 f x \text{Cos}\left[\frac{f x}{2}\right]-3 d^3 f x^2 \text{Cos}\left[\frac{f x}{2}\right]+ 6 c d^2 \text{Cos}\left[e+\frac{f x}{2}\right]+6 d^3 x \text{Cos}\left[e+\frac{f x}{2}\right]-6 c d^2 \text{Cos}\left[e+\frac{3 f x}{2}\right]-c^3 f^2 \text{Cos}\left[e+\frac{3 f x}{2}\right]- 6 d^3 x \text{Cos}\left[e+\frac{3 f x}{2}\right]-3 c^2 d f^2 x \text{Cos}\left[e+\frac{3 f x}{2}\right]-3 c d^2 f^2 x^2 \text{Cos}\left[e+\frac{3 f x}{2}\right]-d^3 f^2 x^3 \text{Cos}\left[e+\frac{3 f x}{2}\right]+ 12 c d^2 \text{Sin}\left[\frac{f x}{2}\right]+3 c^3 f^2 \text{Sin}\left[\frac{f x}{2}\right]+12 d^3 x \text{Sin}\left[\frac{f x}{2}\right]+9 c^2 d f^2 x \text{Sin}\left[\frac{f x}{2}\right]+9 c d^2 f^2 x^2 \text{Sin}\left[\frac{f x}{2}\right]+ 3 d^3 f^2 x^3 \text{Sin}\left[\frac{f x}{2}\right]-3 c^2 d f \text{Sin}\left[e+\frac{f x}{2}\right]-6 c d^2 f x \text{Sin}\left[e+\frac{f x}{2}\right]-3 d^3 f x^2 \text{Sin}\left[e+\frac{f x}{2}\right]\Big)$$

- **Problem 119: Result more than twice size of optimal antiderivative.**

$$\int \frac{c+d x}{a-a \text{Sin}[e+f x]} \, dx$$

Optimal (type 3, 59 leaves, 3 steps):

$$\frac{2 d \text{Log}\left[\text{Cos}\left[\frac{e}{2}+\frac{\pi}{4}+\frac{f x}{2}\right]\right]}{a f^2}+\frac{(c+d x) \text{Tan}\left[\frac{e}{2}+\frac{\pi}{4}+\frac{f x}{2}\right]}{a f}$$

Result (type 3, 155 leaves):

$$\left(d f x \text{Cos}\left[e+\frac{f x}{2}\right]+2 d \text{Cos}\left[\frac{f x}{2}\right] \text{Log}\left[\text{Cos}\left[\frac{1}{2} (e+f x)\right]-\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right]+2 c f \text{Sin}\left[\frac{f x}{2}\right]+d f x \text{Sin}\left[\frac{f x}{2}\right]- 2 d \text{Log}\left[\text{Cos}\left[\frac{1}{2} (e+f x)\right]-\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right] \text{Sin}\left[e+\frac{f x}{2}\right]\right) \Big/ \left(a f^2 \left(\text{Cos}\left[\frac{e}{2}\right]-\text{Sin}\left[\frac{e}{2}\right]\right) \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]-\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)\right)$$

Problem 132: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{(a + a \operatorname{Sin}[e + f x])^{3/2}}{x^2} \, dx$$

Optimal (type 4, 263 leaves, 9 steps):

$$-\frac{3}{4} a f \operatorname{CosIntegral}\left[\frac{f x}{2}\right] \operatorname{Csc}\left[\frac{e}{2} + \frac{\pi}{4} + \frac{f x}{2}\right] \operatorname{Sin}\left[\frac{1}{4}(2 e - \pi)\right] \sqrt{a + a \operatorname{Sin}[e + f x]} + \frac{3}{4} a f \operatorname{CosIntegral}\left[\frac{3 f x}{2}\right] \operatorname{Csc}\left[\frac{e}{2} + \frac{\pi}{4} + \frac{f x}{2}\right] \operatorname{Sin}\left[\frac{1}{4}(6 e + \pi)\right] \sqrt{a + a \operatorname{Sin}[e + f x]} - \frac{2 a \operatorname{Sin}\left[\frac{e}{2} + \frac{\pi}{4} + \frac{f x}{2}\right]^2 \sqrt{a + a \operatorname{Sin}[e + f x]}}{x} - \frac{3}{4} a f \operatorname{Csc}\left[\frac{e}{2} + \frac{\pi}{4} + \frac{f x}{2}\right] \operatorname{Sin}\left[\frac{1}{4}(2 e + \pi)\right] \sqrt{a + a \operatorname{Sin}[e + f x]} \operatorname{SinIntegral}\left[\frac{f x}{2}\right] + \frac{3}{4} a f \operatorname{Cos}\left[\frac{1}{4}(6 e + \pi)\right] \operatorname{Csc}\left[\frac{e}{2} + \frac{\pi}{4} + \frac{f x}{2}\right] \sqrt{a + a \operatorname{Sin}[e + f x]} \operatorname{SinIntegral}\left[\frac{3 f x}{2}\right]$$

Result (type 4, 226 leaves):

$$\frac{1}{4 \sqrt{2} \left(i + e^{i (e+f x)}\right)^3 x} i \left(-i a e^{-i (e+f x)} \left(i + e^{i (e+f x)}\right)^2\right)^{3/2} \left(2 - 6 i e^{i (e+f x)} - 6 e^{2 i (e+f x)} + 2 i e^{3 i (e+f x)} + 3 e^{i e+\frac{3 i f x}{2}} f x \operatorname{ExpIntegralEi}\left[-\frac{1}{2} i f x\right] + 3 i e^{2 i e+\frac{3 i f x}{2}} f x \operatorname{ExpIntegralEi}\left[\frac{i f x}{2}\right] + 3 i e^{\frac{3 i f x}{2}} f x \operatorname{ExpIntegralEi}\left[-\frac{3}{2} i f x\right] + 3 e^{\frac{3}{2} i (2 e+f x)} f x \operatorname{ExpIntegralEi}\left[\frac{3 i f x}{2}\right]\right)$$

Problem 133: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{(a + a \operatorname{Sin}[e + f x])^{3/2}}{x^3} \, dx$$

Optimal (type 4, 332 leaves, 13 steps):

$$-\frac{9}{16} a f^2 \operatorname{Cos}\left[\frac{3}{4}(2 e - \pi)\right] \operatorname{CosIntegral}\left[\frac{3 f x}{2}\right] \operatorname{Csc}\left[\frac{e}{2} + \frac{\pi}{4} + \frac{f x}{2}\right] \sqrt{a + a \operatorname{Sin}[e + f x]} - \frac{3}{16} a f^2 \operatorname{CosIntegral}\left[\frac{f x}{2}\right] \operatorname{Csc}\left[\frac{e}{2} + \frac{\pi}{4} + \frac{f x}{2}\right] \operatorname{Sin}\left[\frac{1}{4}(2 e + \pi)\right] \sqrt{a + a \operatorname{Sin}[e + f x]} - \frac{3 a f \operatorname{Cos}\left[\frac{e}{2} + \frac{\pi}{4} + \frac{f x}{2}\right] \operatorname{Sin}\left[\frac{e}{2} + \frac{\pi}{4} + \frac{f x}{2}\right] \sqrt{a + a \operatorname{Sin}[e + f x]}}{2 x} - \frac{a \operatorname{Sin}\left[\frac{e}{2} + \frac{\pi}{4} + \frac{f x}{2}\right]^2 \sqrt{a + a \operatorname{Sin}[e + f x]}}{x^2} - \frac{3}{16} a f^2 \operatorname{Cos}\left[\frac{1}{4}(2 e + \pi)\right] \operatorname{Csc}\left[\frac{e}{2} + \frac{\pi}{4} + \frac{f x}{2}\right] \sqrt{a + a \operatorname{Sin}[e + f x]} \operatorname{SinIntegral}\left[\frac{f x}{2}\right] + \frac{9}{16} a f^2 \operatorname{Csc}\left[\frac{e}{2} + \frac{\pi}{4} + \frac{f x}{2}\right] \operatorname{Sin}\left[\frac{3}{4}(2 e - \pi)\right] \sqrt{a + a \operatorname{Sin}[e + f x]} \operatorname{SinIntegral}\left[\frac{3 f x}{2}\right]$$

Result (type 4, 295 leaves):

$$-\frac{1}{16\sqrt{2}\left(i+e^{i(e+fx)}\right)^3 x^2}$$
$$i\left(-i a e^{-i(e+fx)}\left(i+e^{i(e+fx)}\right)^2\right)^{3/2}\left(-4+12 i e^{i(e+fx)}+12 e^{2i(e+fx)}-4 i e^{3i(e+fx)}+6 i f x+6 e^{i(e+fx)} f x+6 i e^{2i(e+fx)} f x+\right.$$
$$6 e^{3i(e+fx)} f x+3 i e^{i e+\frac{3ifx}{2}} f^2 x^2 \text{ExpIntegralEi}\left[-\frac{1}{2} i f x\right]+3 e^{2ie+\frac{3ifx}{2}} f^2 x^2 \text{ExpIntegralEi}\left[\frac{i f x}{2}\right]-$$
$$\left.9 e^{\frac{3ifx}{2}} f^2 x^2 \text{ExpIntegralEi}\left[-\frac{3}{2} i f x\right]-9 i e^{\frac{3}{2}i(2e+fx)} f^2 x^2 \text{ExpIntegralEi}\left[\frac{3 i f x}{2}\right]\right)$$

Problem 163: Result more than twice size of optimal antiderivative.

$$\int \frac{(c+dx)^3}{a+b\,\text{Sin}[e+fx]}\,dx$$

Optimal (type 4, 495 leaves, 12 steps):

$$-\frac{i(c+dx)^3 \text{Log}\left[1-\frac{i b e^{i(e+fx)}}{a-\sqrt{a^2-b^2}}\right]}{\sqrt{a^2-b^2}\, f}+\frac{i(c+dx)^3 \text{Log}\left[1-\frac{i b e^{i(e+fx)}}{a+\sqrt{a^2-b^2}}\right]}{\sqrt{a^2-b^2}\, f}-\frac{3d(c+dx)^2 \text{PolyLog}\left[2,\frac{i b e^{i(e+fx)}}{a-\sqrt{a^2-b^2}}\right]}{\sqrt{a^2-b^2}\, f^2}+\frac{3d(c+dx)^2 \text{PolyLog}\left[2,\frac{i b e^{i(e+fx)}}{a+\sqrt{a^2-b^2}}\right]}{\sqrt{a^2-b^2}\, f^2}-$$
$$\frac{6 i d^2(c+dx) \text{PolyLog}\left[3,\frac{i b e^{i(e+fx)}}{a-\sqrt{a^2-b^2}}\right]}{\sqrt{a^2-b^2}\, f^3}+\frac{6 i d^2(c+dx) \text{PolyLog}\left[3,\frac{i b e^{i(e+fx)}}{a+\sqrt{a^2-b^2}}\right]}{\sqrt{a^2-b^2}\, f^3}+\frac{6 d^3 \text{PolyLog}\left[4,\frac{i b e^{i(e+fx)}}{a-\sqrt{a^2-b^2}}\right]}{\sqrt{a^2-b^2}\, f^4}-\frac{6 d^3 \text{PolyLog}\left[4,\frac{i b e^{i(e+fx)}}{a+\sqrt{a^2-b^2}}\right]}{\sqrt{a^2-b^2}\, f^4}$$

Result (type 4, 1486 leaves):

$$\frac{1}{\sqrt{a^2-b^2}\, f^4 \sqrt{(-a^2+b^2)(\text{Cos}[2e]+i\,\text{Sin}[2e])}}$$
$$i\left(3 i\sqrt{a^2-b^2}\, c^2 d f^3 x \text{Log}\left[1+\frac{b(\text{Cos}[2e+fx]+i\,\text{Sin}[2e+fx])}{i a \text{Cos}[e]+\sqrt{(-a^2+b^2)(\text{Cos}[e]+i\,\text{Sin}[e])^2}-a\,\text{Sin}[e]}\right](\text{Cos}[e]+i\,\text{Sin}[e])+\right.$$
$$3 i\sqrt{a^2-b^2}\, c d^2 f^3 x^2 \text{Log}\left[1+\frac{b(\text{Cos}[2e+fx]+i\,\text{Sin}[2e+fx])}{i a \text{Cos}[e]+\sqrt{(-a^2+b^2)(\text{Cos}[e]+i\,\text{Sin}[e])^2}-a\,\text{Sin}[e]}\right](\text{Cos}[e]+i\,\text{Sin}[e])+$$
$$i\sqrt{a^2-b^2}\, d^3 f^3 x^3 \text{Log}\left[1+\frac{b(\text{Cos}[2e+fx]+i\,\text{Sin}[2e+fx])}{i a \text{Cos}[e]+\sqrt{(-a^2+b^2)(\text{Cos}[e]+i\,\text{Sin}[e])^2}-a\,\text{Sin}[e]}\right](\text{Cos}[e]+i\,\text{Sin}[e])+$$
$$3\sqrt{a^2-b^2}\, d f^2 (c+dx)^2 \text{PolyLog}\left[2,-\frac{b(\text{Cos}[2e+fx]+i\,\text{Sin}[2e+fx])}{i a \text{Cos}[e]+\sqrt{(-a^2+b^2)(\text{Cos}[e]+i\,\text{Sin}[e])^2}-a\,\text{Sin}[e]}\right](\text{Cos}[e]+i\,\text{Sin}[e])-$$

$$3\sqrt{a^2-b^2}\,d\,f^2\,(c+d\,x)^2\,\text{PolyLog}\left[2,\frac{b\,(\text{Cos}[2\,e+f\,x]+i\,\text{Sin}[2\,e+f\,x])}{-i\,a\,\text{Cos}[e]+\sqrt{(-a^2+b^2)\,(\text{Cos}[e]+i\,\text{Sin}[e])^2}+a\,\text{Sin}[e]}\right](\text{Cos}[e]+i\,\text{Sin}[e])+$$

$$6\,i\sqrt{a^2-b^2}\,c\,d^2\,f\,\text{PolyLog}\left[3,-\frac{b\,(\text{Cos}[2\,e+f\,x]+i\,\text{Sin}[2\,e+f\,x])}{i\,a\,\text{Cos}[e]+\sqrt{(-a^2+b^2)\,(\text{Cos}[e]+i\,\text{Sin}[e])^2}-a\,\text{Sin}[e]}\right](\text{Cos}[e]+i\,\text{Sin}[e])+$$

$$6\,i\sqrt{a^2-b^2}\,d^3\,f\,x\,\text{PolyLog}\left[3,-\frac{b\,(\text{Cos}[2\,e+f\,x]+i\,\text{Sin}[2\,e+f\,x])}{i\,a\,\text{Cos}[e]+\sqrt{(-a^2+b^2)\,(\text{Cos}[e]+i\,\text{Sin}[e])^2}-a\,\text{Sin}[e]}\right](\text{Cos}[e]+i\,\text{Sin}[e])-$$

$$6\sqrt{a^2-b^2}\,d^3\,\text{PolyLog}\left[4,-\frac{b\,(\text{Cos}[2\,e+f\,x]+i\,\text{Sin}[2\,e+f\,x])}{i\,a\,\text{Cos}[e]+\sqrt{(-a^2+b^2)\,(\text{Cos}[e]+i\,\text{Sin}[e])^2}-a\,\text{Sin}[e]}\right](\text{Cos}[e]+i\,\text{Sin}[e])+$$

$$6\sqrt{a^2-b^2}\,d^3\,\text{PolyLog}\left[4,\frac{b\,(\text{Cos}[2\,e+f\,x]+i\,\text{Sin}[2\,e+f\,x])}{-i\,a\,\text{Cos}[e]+\sqrt{(-a^2+b^2)\,(\text{Cos}[e]+i\,\text{Sin}[e])^2}+a\,\text{Sin}[e]}\right](\text{Cos}[e]+i\,\text{Sin}[e])+$$

$$3\sqrt{a^2-b^2}\,c^2\,d\,f^3\,x\,\text{Log}\left[1-\frac{b\,(\text{Cos}[2\,e+f\,x]+i\,\text{Sin}[2\,e+f\,x])}{-i\,a\,\text{Cos}[e]+\sqrt{(-a^2+b^2)\,(\text{Cos}[e]+i\,\text{Sin}[e])^2}+a\,\text{Sin}[e]}\right](-i\,\text{Cos}[e]+\text{Sin}[e])+$$

$$3\sqrt{a^2-b^2}\,c\,d^2\,f^3\,x^2\,\text{Log}\left[1-\frac{b\,(\text{Cos}[2\,e+f\,x]+i\,\text{Sin}[2\,e+f\,x])}{-i\,a\,\text{Cos}[e]+\sqrt{(-a^2+b^2)\,(\text{Cos}[e]+i\,\text{Sin}[e])^2}+a\,\text{Sin}[e]}\right](-i\,\text{Cos}[e]+\text{Sin}[e])+$$

$$\sqrt{a^2-b^2}\,d^3\,f^3\,x^3\,\text{Log}\left[1-\frac{b\,(\text{Cos}[2\,e+f\,x]+i\,\text{Sin}[2\,e+f\,x])}{-i\,a\,\text{Cos}[e]+\sqrt{(-a^2+b^2)\,(\text{Cos}[e]+i\,\text{Sin}[e])^2}+a\,\text{Sin}[e]}\right](-i\,\text{Cos}[e]+\text{Sin}[e])+$$

$$6\sqrt{a^2-b^2}\,c\,d^2\,f\,\text{PolyLog}\left[3,\frac{b\,(\text{Cos}[2\,e+f\,x]+i\,\text{Sin}[2\,e+f\,x])}{-i\,a\,\text{Cos}[e]+\sqrt{(-a^2+b^2)\,(\text{Cos}[e]+i\,\text{Sin}[e])^2}+a\,\text{Sin}[e]}\right](-i\,\text{Cos}[e]+\text{Sin}[e])+$$

$$6\sqrt{a^2-b^2}\,d^3\,f\,x\,\text{PolyLog}\left[3,\frac{b\,(\text{Cos}[2\,e+f\,x]+i\,\text{Sin}[2\,e+f\,x])}{-i\,a\,\text{Cos}[e]+\sqrt{(-a^2+b^2)\,(\text{Cos}[e]+i\,\text{Sin}[e])^2}+a\,\text{Sin}[e]}\right](-i\,\text{Cos}[e]+\text{Sin}[e])-$$

$$\left.2\,i\,c^3\,f^3\,\text{ArcTan}\left[\frac{b\,\text{Cos}[e+f\,x]+i\,(a+b\,\text{Sin}[e+f\,x])}{\sqrt{a^2-b^2}}\right]\sqrt{(-a^2+b^2)\,(\text{Cos}[2\,e]+i\,\text{Sin}[2\,e])}\right)$$

- **Problem 168: Result more than twice size of optimal antiderivative.**

$$\int\frac{(c+d\,x)^3}{(a+b\,\text{Sin}[e+f\,x])^2}\,dx$$

Optimal (type 4, 925 leaves, 22 steps):

$$\frac{i\,(c+d\,x)^3}{(a^2-b^2)\,f}-\frac{3\,d\,(c+d\,x)^2\,\text{Log}\left[1-\frac{i\,b\,e^{i\,(e+f\,x)}}{a-\sqrt{a^2-b^2}}\right]}{(a^2-b^2)\,f^2}-\frac{i\,a\,(c+d\,x)^3\,\text{Log}\left[1-\frac{i\,b\,e^{i\,(e+f\,x)}}{a-\sqrt{a^2-b^2}}\right]}{(a^2-b^2)^{3/2}\,f}-\frac{3\,d\,(c+d\,x)^2\,\text{Log}\left[1-\frac{i\,b\,e^{i\,(e+f\,x)}}{a+\sqrt{a^2-b^2}}\right]}{(a^2-b^2)\,f^2}+\frac{i\,a\,(c+d\,x)^3\,\text{Log}\left[1-\frac{i\,b\,e^{i\,(e+f\,x)}}{a+\sqrt{a^2-b^2}}\right]}{(a^2-b^2)^{3/2}\,f}+$$

$$\frac{6\,i\,d^2\,(c+d\,x)\,\text{PolyLog}\left[2,\frac{i\,b\,e^{i\,(e+f\,x)}}{a-\sqrt{a^2-b^2}}\right]}{(a^2-b^2)\,f^3}-\frac{3\,a\,d\,(c+d\,x)^2\,\text{PolyLog}\left[2,\frac{i\,b\,e^{i\,(e+f\,x)}}{a-\sqrt{a^2-b^2}}\right]}{(a^2-b^2)^{3/2}\,f^2}+\frac{6\,i\,d^2\,(c+d\,x)\,\text{PolyLog}\left[2,\frac{i\,b\,e^{i\,(e+f\,x)}}{a+\sqrt{a^2-b^2}}\right]}{(a^2-b^2)\,f^3}+$$

$$\frac{3\,a\,d\,(c+d\,x)^2\,\text{PolyLog}\left[2,\frac{i\,b\,e^{i\,(e+f\,x)}}{a+\sqrt{a^2-b^2}}\right]}{(a^2-b^2)^{3/2}\,f^2}-\frac{6\,d^3\,\text{PolyLog}\left[3,\frac{i\,b\,e^{i\,(e+f\,x)}}{a-\sqrt{a^2-b^2}}\right]}{(a^2-b^2)\,f^4}-\frac{6\,i\,a\,d^2\,(c+d\,x)\,\text{PolyLog}\left[3,\frac{i\,b\,e^{i\,(e+f\,x)}}{a-\sqrt{a^2-b^2}}\right]}{(a^2-b^2)^{3/2}\,f^3}-\frac{6\,d^3\,\text{PolyLog}\left[3,\frac{i\,b\,e^{i\,(e+f\,x)}}{a+\sqrt{a^2-b^2}}\right]}{(a^2-b^2)\,f^4}+$$

$$\frac{6\,i\,a\,d^2\,(c+d\,x)\,\text{PolyLog}\left[3,\frac{i\,b\,e^{i\,(e+f\,x)}}{a+\sqrt{a^2-b^2}}\right]}{(a^2-b^2)^{3/2}\,f^3}+\frac{6\,a\,d^3\,\text{PolyLog}\left[4,\frac{i\,b\,e^{i\,(e+f\,x)}}{a-\sqrt{a^2-b^2}}\right]}{(a^2-b^2)^{3/2}\,f^4}-\frac{6\,a\,d^3\,\text{PolyLog}\left[4,\frac{i\,b\,e^{i\,(e+f\,x)}}{a+\sqrt{a^2-b^2}}\right]}{(a^2-b^2)^{3/2}\,f^4}+\frac{b\,(c+d\,x)^3\,\text{Cos}[e+f\,x]}{(a^2-b^2)\,f\,(a+b\,\text{Sin}[e+f\,x])}$$

Result (type 4, 7006 leaves):

$$\frac{1}{(a^2-b^2)\,f^2}\,3\,a\,c^2\,d\left(\frac{\pi\,\text{ArcTan}\left[\frac{b+a\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]}{\sqrt{a^2-b^2}}\right]}{\sqrt{a^2-b^2}}+\right.$$

$$\frac{1}{\sqrt{-a^2+b^2}}\left(2\left(-e+\frac{\pi}{2}-f\,x\right)\text{ArcTanh}\left[\frac{(a+b)\,\text{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]}{\sqrt{-a^2+b^2}}\right]-2\left(-e+\text{ArcCos}\left[-\frac{a}{b}\right]\right)\text{ArcTanh}\left[\frac{(-a+b)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]}{\sqrt{-a^2+b^2}}\right]+\right.$$

$$\left(\text{ArcCos}\left[-\frac{a}{b}\right]-2\,i\left(\text{ArcTanh}\left[\frac{(a+b)\,\text{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]}{\sqrt{-a^2+b^2}}\right]-\text{ArcTanh}\left[\frac{(-a+b)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]}{\sqrt{-a^2+b^2}}\right]\right)\right)$$

$$\text{Log}\left[\frac{\sqrt{-a^2+b^2}\,e^{-\frac{1}{2}\,i\,\left(-e+\frac{\pi}{2}-f\,x\right)}}{\sqrt{2}\,\sqrt{b}\,\sqrt{a+b\,\text{Sin}[e+f\,x]}}\right]+\left(\text{ArcCos}\left[-\frac{a}{b}\right]+\right.$$

$$\left.2\,i\left(\text{ArcTanh}\left[\frac{(a+b)\,\text{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]}{\sqrt{-a^2+b^2}}\right]-\text{ArcTanh}\left[\frac{(-a+b)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]}{\sqrt{-a^2+b^2}}\right]\right)\right)\text{Log}\left[\frac{\sqrt{-a^2+b^2}\,e^{\frac{1}{2}\,i\,\left(-e+\frac{\pi}{2}-f\,x\right)}}{\sqrt{2}\,\sqrt{b}\,\sqrt{a+b\,\text{Sin}[e+f\,x]}}\right]-$$

$$\left(\text{ArcCos}\left[-\frac{a}{b}\right]+2\,i\,\text{ArcTanh}\left[\frac{(-a+b)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]}{\sqrt{-a^2+b^2}}\right]\right)\text{Log}\left[1-\frac{\left(a-i\,\sqrt{-a^2+b^2}\right)\left(a+b-\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\right)}{b\left(a+b+\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\right)}\right]+$$

$$\left(-\text{ArcCos}\left[-\frac{a}{b}\right]+2\,i\,\text{ArcTanh}\left[\frac{(-a+b)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]}{\sqrt{-a^2+b^2}}\right]\right)\text{Log}\left[1-\frac{\left(a+i\sqrt{-a^2+b^2}\right)\left(a+b-\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\right)}{b\left(a+b+\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\right)}\right]+$$

$$i\left(\text{PolyLog}\left[2,\frac{\left(a-i\sqrt{-a^2+b^2}\right)\left(a+b-\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\right)}{b\left(a+b+\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\right)}\right]-\right.$$

$$\left.\left.\left.\text{PolyLog}\left[2,\frac{\left(a+i\sqrt{-a^2+b^2}\right)\left(a+b-\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\right)}{b\left(a+b+\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\right)}\right]\right)\right)\right)+$$

$$\frac{1}{\left(a^2-b^2\right)f^3}6\,a\,c\,d^2\,\text{Cot}[e]\left(\frac{\pi\,\text{ArcTan}\left[\frac{b+a\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]}{\sqrt{a^2-b^2}}\right]}{\sqrt{a^2-b^2}}+\frac{1}{\sqrt{-a^2+b^2}}\left(2\left(-e+\frac{\pi}{2}-f\,x\right)\text{ArcTanh}\left[\frac{(a+b)\,\text{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]}{\sqrt{-a^2+b^2}}\right]-\right.\right.$$

$$2\left(-e+\text{ArcCos}\left[-\frac{a}{b}\right]\right)\text{ArcTanh}\left[\frac{(-a+b)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]}{\sqrt{-a^2+b^2}}\right]+$$

$$\left(\text{ArcCos}\left[-\frac{a}{b}\right]-2\,i\left(\text{ArcTanh}\left[\frac{(a+b)\,\text{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]}{\sqrt{-a^2+b^2}}\right]-\text{ArcTanh}\left[\frac{(-a+b)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]}{\sqrt{-a^2+b^2}}\right]\right)\right)$$

$$\text{Log}\left[\frac{\sqrt{-a^2+b^2}\,e^{-\frac{1}{2}i\left(-e+\frac{\pi}{2}-f\,x\right)}}{\sqrt{2}\,\sqrt{b}\,\sqrt{a+b\,\text{Sin}[e+f\,x]}}\right]+\left(\text{ArcCos}\left[-\frac{a}{b}\right]+\right.$$

$$\left.2\,i\left(\text{ArcTanh}\left[\frac{(a+b)\,\text{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]}{\sqrt{-a^2+b^2}}\right]-\text{ArcTanh}\left[\frac{(-a+b)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]}{\sqrt{-a^2+b^2}}\right]\right)\right)\text{Log}\left[\frac{\sqrt{-a^2+b^2}\,e^{\frac{1}{2}i\left(-e+\frac{\pi}{2}-f\,x\right)}}{\sqrt{2}\,\sqrt{b}\,\sqrt{a+b\,\text{Sin}[e+f\,x]}}\right]-$$

$$\left(\text{ArcCos}\left[-\frac{a}{b}\right]+2\,i\,\text{ArcTanh}\left[\frac{(-a+b)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]}{\sqrt{-a^2+b^2}}\right]\right)\text{Log}\left[1-\frac{\left(a-i\sqrt{-a^2+b^2}\right)\left(a+b-\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\right)}{b\left(a+b+\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\right)}\right]+$$

$$\left(-\text{ArcCos}\left[-\frac{a}{b}\right]+2\,i\,\text{ArcTanh}\left[\frac{(-a+b)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]}{\sqrt{-a^2+b^2}}\right]\right)\text{Log}\left[1-\frac{\left(a+i\sqrt{-a^2+b^2}\right)\left(a+b-\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\right)}{b\left(a+b+\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\right)}\right]+$$

$$i\left(\text{PolyLog}\left[2,\frac{\left(a-i\sqrt{-a^2+b^2}\right)\left(a+b-\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\right)}{b\left(a+b+\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\right)}\right]-\right.$$

$$\left.\left.\left.\text{PolyLog}\left[2,\frac{\left(a+i\sqrt{-a^2+b^2}\right)\left(a+b-\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\right)}{b\left(a+b+\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\right)}\right]\right)\right)\right)+$$

$$\left(3\,a\,c\,d^2\,e^{i\,e}\left(f^2\,x^2\,\text{Log}\left[1+\frac{b\,e^{i\,(2\,e+f\,x)}}{i\,a\,e^{i\,e}-\sqrt{\left(-a^2+b^2\right)e^{2\,i\,e}}}\right]-f^2\,x^2\,\text{Log}\left[1+\frac{b\,e^{i\,(2\,e+f\,x)}}{i\,a\,e^{i\,e}+\sqrt{\left(-a^2+b^2\right)e^{2\,i\,e}}}\right]-\right.\right.$$

$$2\,i\,f\,x\,\text{PolyLog}\left[2,\frac{i\,b\,e^{i\,(2\,e+f\,x)}}{a\,e^{i\,e}+i\sqrt{\left(-a^2+b^2\right)e^{2\,i\,e}}}\right]+$$

$$2\,i\,f\,x\,\text{PolyLog}\left[2,-\frac{b\,e^{i\,(2\,e+f\,x)}}{i\,a\,e^{i\,e}+\sqrt{\left(-a^2+b^2\right)e^{2\,i\,e}}}\right]+2\,\text{PolyLog}\left[3,\frac{i\,b\,e^{i\,(2\,e+f\,x)}}{a\,e^{i\,e}+i\sqrt{\left(-a^2+b^2\right)e^{2\,i\,e}}}\right]-$$

$$\left.\left.2\,\text{PolyLog}\left[3,-\frac{b\,e^{i\,(2\,e+f\,x)}}{i\,a\,e^{i\,e}+\sqrt{\left(-a^2+b^2\right)e^{2\,i\,e}}}\right]\right)\right)\Big/\left(\left(a^2-b^2\right)\sqrt{\left(-a^2+b^2\right)e^{2\,i\,e}}\,f^3\right)+$$

$$\left(3\,a\,d^3\,e^{i\,e}\,\text{Cot}[e]\left(f^2\,x^2\,\text{Log}\left[1+\frac{b\,e^{i\,(2\,e+f\,x)}}{i\,a\,e^{i\,e}-\sqrt{\left(-a^2+b^2\right)e^{2\,i\,e}}}\right]-f^2\,x^2\,\text{Log}\left[1+\frac{b\,e^{i\,(2\,e+f\,x)}}{i\,a\,e^{i\,e}+\sqrt{\left(-a^2+b^2\right)e^{2\,i\,e}}}\right]-\right.\right.$$

$$2\,i\,f\,x\,\text{PolyLog}\left[2,\frac{i\,b\,e^{i\,(2\,e+f\,x)}}{a\,e^{i\,e}+i\sqrt{\left(-a^2+b^2\right)e^{2\,i\,e}}}\right]+2\,i\,f\,x\,\text{PolyLog}\left[2,-\frac{b\,e^{i\,(2\,e+f\,x)}}{i\,a\,e^{i\,e}+\sqrt{\left(-a^2+b^2\right)e^{2\,i\,e}}}\right]+$$

$$\left.\left.2\,\text{PolyLog}\left[3,\frac{i\,b\,e^{i\,(2\,e+f\,x)}}{a\,e^{i\,e}+i\sqrt{\left(-a^2+b^2\right)e^{2\,i\,e}}}\right]-2\,\text{PolyLog}\left[3,-\frac{b\,e^{i\,(2\,e+f\,x)}}{i\,a\,e^{i\,e}+\sqrt{\left(-a^2+b^2\right)e^{2\,i\,e}}}\right]\right)\right)\Big/$$

$$\left(\left(a^2-b^2\right)\sqrt{\left(-a^2+b^2\right)e^{2\,i\,e}}\,f^4\right)+\frac{1}{2\left(a^2-b^2\right)\sqrt{\left(-a^2+b^2\right)e^{2\,i\,e}}\,f^4}$$

$$d^3$$

$$e^{-i e}$$

$$\text{Csc}[e]$$

$$\Bigg(2 e^{2 i e} \sqrt{(-a^2+b^2) e^{2 i e}} f^3 x^3 - 3 a e^{i e} f^2 x^2 \text{Log}\left[1+\frac{b e^{i (2 e+f x)}}{i a e^{i e}-\sqrt{(-a^2+b^2) e^{2 i e}}}\right] -$$

$$3 a e^{3 i e} f^2 x^2 \text{Log}\left[1+\frac{b e^{i (2 e+f x)}}{i a e^{i e}-\sqrt{(-a^2+b^2) e^{2 i e}}}\right] - 3 i \sqrt{(-a^2+b^2) e^{2 i e}} f^2 x^2 \text{Log}\left[1+\frac{b e^{i (2 e+f x)}}{i a e^{i e}-\sqrt{(-a^2+b^2) e^{2 i e}}}\right] +$$

$$3 i e^{2 i e} \sqrt{(-a^2+b^2) e^{2 i e}} f^2 x^2 \text{Log}\left[1+\frac{b e^{i (2 e+f x)}}{i a e^{i e}-\sqrt{(-a^2+b^2) e^{2 i e}}}\right] +$$

$$3 a e^{i e} f^2 x^2 \text{Log}\left[1+\frac{b e^{i (2 e+f x)}}{i a e^{i e}+\sqrt{(-a^2+b^2) e^{2 i e}}}\right] + 3 a e^{3 i e} f^2 x^2 \text{Log}\left[1+\frac{b e^{i (2 e+f x)}}{i a e^{i e}+\sqrt{(-a^2+b^2) e^{2 i e}}}\right] -$$

$$3 i \sqrt{(-a^2+b^2) e^{2 i e}} f^2 x^2 \text{Log}\left[1+\frac{b e^{i (2 e+f x)}}{i a e^{i e}+\sqrt{(-a^2+b^2) e^{2 i e}}}\right] +$$

$$3 i e^{2 i e} \sqrt{(-a^2+b^2) e^{2 i e}} f^2 x^2 \text{Log}\left[1+\frac{b e^{i (2 e+f x)}}{i a e^{i e}+\sqrt{(-a^2+b^2) e^{2 i e}}}\right] +$$

$$6 \left(\sqrt{(-a^2+b^2) e^{2 i e}} \left(-1+e^{2 i e}\right) + i a e^{i e} \left(1+e^{2 i e}\right)\right) f x \text{PolyLog}\left[2, \frac{i b e^{i (2 e+f x)}}{a e^{i e}+i \sqrt{(-a^2+b^2) e^{2 i e}}}\right] +$$

$$6 \left(\sqrt{(-a^2+b^2) e^{2 i e}} \left(-1+e^{2 i e}\right) - i a e^{i e} \left(1+e^{2 i e}\right)\right) f x \text{PolyLog}\left[2, -\frac{b e^{i (2 e+f x)}}{i a e^{i e}+\sqrt{(-a^2+b^2) e^{2 i e}}}\right] -$$

$$6 a e^{i e} \text{PolyLog}\left[3, \frac{i b e^{i (2 e+f x)}}{a e^{i e}+i \sqrt{(-a^2+b^2) e^{2 i e}}}\right] - 6 a e^{3 i e} \text{PolyLog}\left[3, \frac{i b e^{i (2 e+f x)}}{a e^{i e}+i \sqrt{(-a^2+b^2) e^{2 i e}}}\right] -$$

$$6 i \sqrt{(-a^2+b^2) e^{2 i e}} \text{PolyLog}\left[3, \frac{i b e^{i (2 e+f x)}}{a e^{i e}+i \sqrt{(-a^2+b^2) e^{2 i e}}}\right] +$$

$$6 i e^{2 i e} \sqrt{(-a^2+b^2) e^{2 i e}} \text{PolyLog}\left[3, \frac{i b e^{i (2 e+f x)}}{a e^{i e}+i \sqrt{(-a^2+b^2) e^{2 i e}}}\right] + 6 a e^{i e} \text{PolyLog}\left[3, -\frac{b e^{i (2 e+f x)}}{i a e^{i e}+\sqrt{(-a^2+b^2) e^{2 i e}}}\right] +$$

$$6 a e^{3 i e} \text{PolyLog}\left[3, -\frac{b e^{i (2 e+f x)}}{i a e^{i e}+\sqrt{(-a^2+b^2) e^{2 i e}}}\right] - 6 i \sqrt{(-a^2+b^2) e^{2 i e}} \text{PolyLog}\left[3, -\frac{b e^{i (2 e+f x)}}{i a e^{i e}+\sqrt{(-a^2+b^2) e^{2 i e}}}\right] +$$

$$6\,i\,e^{2ie}\sqrt{\left(-a^2+b^2\right)e^{2ie}}\,\text{PolyLog}\left[3,-\frac{b\,e^{i(2e+fx)}}{i\,a\,e^{ie}+\sqrt{\left(-a^2+b^2\right)e^{2ie}}}\right]\Bigg)+$$

$$\frac{1}{\left(a^2-b^2\right)\sqrt{\left(-a^2+b^2\right)e^{2ie}}\,f^4}\,a\,d^3\,e^{ie}\Bigg(f^3x^3\,\text{Log}\left[1+\frac{b\,e^{i(2e+fx)}}{i\,a\,e^{ie}-\sqrt{\left(-a^2+b^2\right)e^{2ie}}}\right]-f^3x^3\,\text{Log}\left[1+\frac{b\,e^{i(2e+fx)}}{i\,a\,e^{ie}+\sqrt{\left(-a^2+b^2\right)e^{2ie}}}\right]-$$

$$3\,i\,f^2x^2\,\text{PolyLog}\left[2,\frac{i\,b\,e^{i(2e+fx)}}{a\,e^{ie}+i\sqrt{\left(-a^2+b^2\right)e^{2ie}}}\right]+3\,i\,f^2x^2\,\text{PolyLog}\left[2,-\frac{b\,e^{i(2e+fx)}}{i\,a\,e^{ie}+\sqrt{\left(-a^2+b^2\right)e^{2ie}}}\right]+$$

$$6\,f\,x\,\text{PolyLog}\left[3,\frac{i\,b\,e^{i(2e+fx)}}{a\,e^{ie}+i\sqrt{\left(-a^2+b^2\right)e^{2ie}}}\right]-6\,f\,x\,\text{PolyLog}\left[3,-\frac{b\,e^{i(2e+fx)}}{i\,a\,e^{ie}+\sqrt{\left(-a^2+b^2\right)e^{2ie}}}\right]+$$

$$6\,i\,\text{PolyLog}\left[4,\frac{i\,b\,e^{i(2e+fx)}}{a\,e^{ie}+i\sqrt{\left(-a^2+b^2\right)e^{2ie}}}\right]-6\,i\,\text{PolyLog}\left[4,-\frac{b\,e^{i(2e+fx)}}{i\,a\,e^{ie}+\sqrt{\left(-a^2+b^2\right)e^{2ie}}}\right]\Bigg)+$$

$$\frac{2\,i\,a\,c^3\,\text{ArcTan}\left[\frac{i\,b\,\text{Cos}[e]-i\,(-a+b\,\text{Sin}[e])\,\text{Tan}\left[\frac{fx}{2}\right]}{\sqrt{-a^2+b^2\,\text{Cos}[e]^2+b^2\,\text{Sin}[e]^2}}\right]}{\left(a^2-b^2\right)f\sqrt{-a^2+b^2\,\text{Cos}[e]^2+b^2\,\text{Sin}[e]^2}}+\frac{6\,i\,a\,c^2\,d\,\text{ArcTan}\left[\frac{i\,b\,\text{Cos}[e]-i\,(-a+b\,\text{Sin}[e])\,\text{Tan}\left[\frac{fx}{2}\right]}{\sqrt{-a^2+b^2\,\text{Cos}[e]^2+b^2\,\text{Sin}[e]^2}}\right]\text{Cot}[e]}{\left(a^2-b^2\right)f^2\sqrt{-a^2+b^2\,\text{Cos}[e]^2+b^2\,\text{Sin}[e]^2}}+$$

$$\frac{1}{\left(a^2-b^2\right)f}$$

6
b
c
d^2
Csc[e]

$$\left(-\frac{x^2\,\text{Cos}[e]}{2\,b}+\frac{1}{b\,f}\right.$$

$$x\left(f\,x\,\text{Cos}[e]-\frac{2\,a\,\text{ArcTan}\left[\frac{\text{Sec}\left[\frac{fx}{2}\right]\,(\text{Cos}[e]-i\,\text{Sin}[e])\,\left(b\,\text{Cos}\left[e+\frac{fx}{2}\right]+a\,\text{Sin}\left[\frac{fx}{2}\right]\right)}{\sqrt{a^2-b^2}\,\sqrt{(\text{Cos}[e]-i\,\text{Sin}[e])^2}}\right]\text{Cos}[e]\,(\text{Cos}[e]-i\,\text{Sin}[e])}{\sqrt{a^2-b^2}\,\sqrt{(\text{Cos}[e]-i\,\text{Sin}[e])^2}}-\text{Log}[a+b\,\text{Sin}[e+f\,x]]\,\text{Sin}[e]\right)+$$

$$\frac{1}{b\,f}\left(-\frac{1}{f}a\,\mathrm{Cos}[e]\left(\frac{\pi\,\mathrm{ArcTan}\left[\frac{b+a\,\mathrm{Tan}\left[\frac{1}{2}(e+f\,x)\right]}{\sqrt{a^2-b^2}}\right]}{\sqrt{a^2-b^2}}+\frac{1}{\sqrt{-a^2+b^2}}\left(2\left(e-\mathrm{ArcCos}\left[-\frac{a}{b}\right]\right)\mathrm{ArcTanh}\left[\frac{(a-b)\,\mathrm{Tan}\left[\frac{1}{4}(2\,e-\pi+2\,f\,x)\right]}{\sqrt{-a^2+b^2}}\right]+\right.\right.\right.$$

$$(-2\,e+\pi-2\,f\,x)\,\mathrm{ArcTanh}\left[\frac{(a+b)\,\mathrm{Tan}\left[\frac{1}{4}(2\,e+\pi+2\,f\,x)\right]}{\sqrt{-a^2+b^2}}\right]-\left(\mathrm{ArcCos}\left[-\frac{a}{b}\right]-2\,i\,\mathrm{ArcTanh}\left[\frac{(a-b)\,\mathrm{Tan}\left[\frac{1}{4}(2\,e-\pi+2\,f\,x)\right]}{\sqrt{-a^2+b^2}}\right]\right)\mathrm{Log}\Big[$$

$$\frac{(a+b)\left(-a+b-i\sqrt{-a^2+b^2}\right)\left(1+i\,\mathrm{Cot}\left[\frac{1}{4}(2\,e+\pi+2\,f\,x)\right]\right)}{b\left(a+b+\sqrt{-a^2+b^2}\,\mathrm{Cot}\left[\frac{1}{4}(2\,e+\pi+2\,f\,x)\right]\right)}\Big]-\left(\mathrm{ArcCos}\left[-\frac{a}{b}\right]+2\,i\,\mathrm{ArcTanh}\left[\frac{(a-b)\,\mathrm{Tan}\left[\frac{1}{4}(2\,e-\pi+2\,f\,x)\right]}{\sqrt{-a^2+b^2}}\right]\right)$$

$$\mathrm{Log}\left[\frac{(a+b)\left(i\,a-i\,b+\sqrt{-a^2+b^2}\right)\left(i+\mathrm{Cot}\left[\frac{1}{4}(2\,e+\pi+2\,f\,x)\right]\right)}{b\left(a+b+\sqrt{-a^2+b^2}\,\mathrm{Cot}\left[\frac{1}{4}(2\,e+\pi+2\,f\,x)\right]\right)}\right]+\left(\mathrm{ArcCos}\left[-\frac{a}{b}\right]+2\,i\left(-\mathrm{ArcTanh}\Big[\right.\right.$$

$$\left.\left.\frac{(a-b)\,\mathrm{Tan}\left[\frac{1}{4}(2\,e-\pi+2\,f\,x)\right]}{\sqrt{-a^2+b^2}}\Big]+\mathrm{ArcTanh}\left[\frac{(a+b)\,\mathrm{Tan}\left[\frac{1}{4}(2\,e+\pi+2\,f\,x)\right]}{\sqrt{-a^2+b^2}}\right]\right)\right)\mathrm{Log}\left[\frac{\sqrt{-a^2+b^2}\;e^{\frac{1}{4}i(-2\,e+\pi-2\,f\,x)}}{\sqrt{2}\,\sqrt{b}\,\sqrt{a+b\,\mathrm{Sin}[e+f\,x]}}\right]+$$

$$\left(\mathrm{ArcCos}\left[-\frac{a}{b}\right]+2\,i\,\mathrm{ArcTanh}\left[\frac{(a-b)\,\mathrm{Tan}\left[\frac{1}{4}(2\,e-\pi+2\,f\,x)\right]}{\sqrt{-a^2+b^2}}\right]-2\,i\,\mathrm{ArcTanh}\left[\frac{(a+b)\,\mathrm{Tan}\left[\frac{1}{4}(2\,e+\pi+2\,f\,x)\right]}{\sqrt{-a^2+b^2}}\right]\right)$$

$$\mathrm{Log}\left[\frac{\sqrt{-a^2+b^2}\;e^{\frac{1}{4}i(2\,e-\pi+2\,f\,x)}}{\sqrt{2}\,\sqrt{b}\,\sqrt{a+b\,\mathrm{Sin}[e+f\,x]}}\right]+i\left(\mathrm{PolyLog}\left[2,\frac{\left(a-i\sqrt{-a^2+b^2}\right)\left(a+b+\sqrt{-a^2+b^2}\,\mathrm{Tan}\left[\frac{1}{4}(2\,e-\pi+2\,f\,x)\right]\right)}{b\left(a+b+\sqrt{-a^2+b^2}\,\mathrm{Cot}\left[\frac{1}{4}(2\,e+\pi+2\,f\,x)\right]\right)}\right]-\right.$$

$$\left.\left.\left.\mathrm{PolyLog}\left[2,\frac{\left(a+i\sqrt{-a^2+b^2}\right)\left(a+b+\sqrt{-a^2+b^2}\,\mathrm{Tan}\left[\frac{1}{4}(2\,e-\pi+2\,f\,x)\right]\right)}{b\left(a+b+\sqrt{-a^2+b^2}\,\mathrm{Cot}\left[\frac{1}{4}(2\,e+\pi+2\,f\,x)\right]\right)}\right]\right)\right)\right)+$$

$$\frac{2\,a\,x\,\mathrm{ArcTan}\left[\frac{\mathrm{Sec}\left[\frac{f\,x}{2}\right](\mathrm{Cos}[e]-i\,\mathrm{Sin}[e])\left(b\,\mathrm{Cos}\left[e+\frac{f\,x}{2}\right]+a\,\mathrm{Sin}\left[\frac{f\,x}{2}\right]\right)}{\sqrt{a^2-b^2}\,\sqrt{(\mathrm{Cos}[e]-i\,\mathrm{Sin}[e])^2}}\right]\mathrm{Cos}[e]\,(\mathrm{Cos}[e]-i\,\mathrm{Sin}[e])}{\sqrt{a^2-b^2}\,\sqrt{(\mathrm{Cos}[e]-i\,\mathrm{Sin}[e])^2}}+\frac{(e+f\,x)\,\mathrm{Log}[a+b\,\mathrm{Sin}[e+f\,x]]\,\mathrm{Sin}[e]}{f}-$$

$$\frac{1}{f}b\left(\frac{(e+f x)\,\text{Log}[a+b\,\text{Sin}[e+f x]]}{b}-1/b\left(-\frac{1}{2}\,i\left(-e+\frac{\pi}{2}-f x\right)^2+4\,i\,\text{ArcSin}\left[\frac{\sqrt{\frac{a+b}{b}}}{\sqrt{2}}\right]\text{ArcTan}\left[\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}{\sqrt{a^2-b^2}}\right]+\right.\right.$$

$$\left(-e+\frac{\pi}{2}-f x+2\,\text{ArcSin}\left[\frac{\sqrt{\frac{a+b}{b}}}{\sqrt{2}}\right]\right)\text{Log}\left[1+\frac{\left(a-\sqrt{a^2-b^2}\right)e^{i\left(-e+\frac{\pi}{2}-f x\right)}}{b}\right]+$$

$$\left(-e+\frac{\pi}{2}-f x-2\,\text{ArcSin}\left[\frac{\sqrt{\frac{a+b}{b}}}{\sqrt{2}}\right]\right)\text{Log}\left[1+\frac{\left(a+\sqrt{a^2-b^2}\right)e^{i\left(-e+\frac{\pi}{2}-f x\right)}}{b}\right]-\left(-e+\frac{\pi}{2}-f x\right)\text{Log}[a+b\,\text{Sin}[e+f x]]-$$

$$\left.\left.i\left(\text{PolyLog}\left[2,-\frac{\left(a-\sqrt{a^2-b^2}\right)e^{i\left(-e+\frac{\pi}{2}-f x\right)}}{b}\right]+\text{PolyLog}\left[2,-\frac{\left(a+\sqrt{a^2-b^2}\right)e^{i\left(-e+\frac{\pi}{2}-f x\right)}}{b}\right]\right)\right)\text{Sin}[e]\right)-$$

$$\left(3\,b\,c^2\,d\,\text{Csc}[e]\left(-b\,f\,x\,\text{Cos}[e]+b\,\text{Log}[a+b\,\text{Cos}[f x]\,\text{Sin}[e]+b\,\text{Cos}[e]\,\text{Sin}[f x]]\,\text{Sin}[e]+\frac{2\,i\,a\,b\,\text{ArcTan}\left[\frac{i\,b\,\text{Cos}[e]-i\,(-a+b\,\text{Sin}[e])\,\text{Tan}\left[\frac{f x}{2}\right]}{\sqrt{-a^2+b^2\,\text{Cos}[e]^2+b^2\,\text{Sin}[e]^2}}\right]\text{Cos}[e]}{\sqrt{-a^2+b^2\,\text{Cos}[e]^2+b^2\,\text{Sin}[e]^2}}\right)\right)\Big/$$

$$\left(\left(a^2-b^2\right)f^2\left(b^2\,\text{Cos}[e]^2+b^2\,\text{Sin}[e]^2\right)\right)+$$

$$\left(\text{Csc}\left[\frac{e}{2}\right]\text{Sec}\left[\frac{e}{2}\right]\left(-a\,c^3\,\text{Cos}[e]-3\,a\,c^2\,d\,x\,\text{Cos}[e]-3\,a\,c\,d^2\,x^2\,\text{Cos}[e]-a\,d^3\,x^3\,\text{Cos}[e]-b\,c^3\,\text{Sin}[f x]-\right.\right.$$

$$\left.\left.3\,b\,c^2\,d\,x\,\text{Sin}[f x]-3\,b\,c\,d^2\,x^2\,\text{Sin}[f x]-b\,d^3\,x^3\,\text{Sin}[f x]\right)\right)\Big/\left(2\,(a-b)\,(a+b)\,f\,(a+b\,\text{Sin}[e+f x])\right)$$

- **Problem 169: Result more than twice size of optimal antiderivative.**

$$\int\frac{(c+d\,x)^2}{(a+b\,\text{Sin}[e+f x])^2}\,dx$$

Optimal (type 4, 671 leaves, 18 steps):

$$\frac{i\,(c+d\,x)^2}{(a^2-b^2)\,f}-\frac{2\,d\,(c+d\,x)\,\text{Log}\left[1-\frac{i\,b\,e^{i\,(e+f\,x)}}{a-\sqrt{a^2-b^2}}\right]}{(a^2-b^2)\,f^2}-\frac{i\,a\,(c+d\,x)^2\,\text{Log}\left[1-\frac{i\,b\,e^{i\,(e+f\,x)}}{a-\sqrt{a^2-b^2}}\right]}{(a^2-b^2)^{3/2}\,f}-\frac{2\,d\,(c+d\,x)\,\text{Log}\left[1-\frac{i\,b\,e^{i\,(e+f\,x)}}{a+\sqrt{a^2-b^2}}\right]}{(a^2-b^2)\,f^2}+$$

$$\frac{i\,a\,(c+d\,x)^2\,\text{Log}\left[1-\frac{i\,b\,e^{i\,(e+f\,x)}}{a+\sqrt{a^2-b^2}}\right]}{(a^2-b^2)^{3/2}\,f}+\frac{2\,i\,d^2\,\text{PolyLog}\left[2,\frac{i\,b\,e^{i\,(e+f\,x)}}{a-\sqrt{a^2-b^2}}\right]}{(a^2-b^2)\,f^3}-\frac{2\,a\,d\,(c+d\,x)\,\text{PolyLog}\left[2,\frac{i\,b\,e^{i\,(e+f\,x)}}{a-\sqrt{a^2-b^2}}\right]}{(a^2-b^2)^{3/2}\,f^2}+\frac{2\,i\,d^2\,\text{PolyLog}\left[2,\frac{i\,b\,e^{i\,(e+f\,x)}}{a+\sqrt{a^2-b^2}}\right]}{(a^2-b^2)\,f^3}+$$

$$\frac{2\,a\,d\,(c+d\,x)\,\text{PolyLog}\left[2,\frac{i\,b\,e^{i\,(e+f\,x)}}{a+\sqrt{a^2-b^2}}\right]}{(a^2-b^2)^{3/2}\,f^2}-\frac{2\,i\,a\,d^2\,\text{PolyLog}\left[3,\frac{i\,b\,e^{i\,(e+f\,x)}}{a-\sqrt{a^2-b^2}}\right]}{(a^2-b^2)^{3/2}\,f^3}+\frac{2\,i\,a\,d^2\,\text{PolyLog}\left[3,\frac{i\,b\,e^{i\,(e+f\,x)}}{a+\sqrt{a^2-b^2}}\right]}{(a^2-b^2)^{3/2}\,f^3}+\frac{b\,(c+d\,x)^2\,\text{Cos}[e+f\,x]}{(a^2-b^2)\,f\,(a+b\,\text{Sin}[e+f\,x])}$$

Result (type 4, 8893 leaves) :

$$\frac{1}{(a^2-b^2)\,f\,(-1+\text{Cos}[2\,e]+i\,\text{Sin}[2\,e])}$$

$$2\,i\,(\text{Cos}[e]+i\,\text{Sin}[e])\left(2\,c\,d\,x\,\text{Cos}[e]+d^2\,x^2\,\text{Cos}[e]+\frac{i\,a\,c^2\,\text{ArcTan}\left[\frac{i\,a+b\,\text{Cos}[e+f\,x]+i\,b\,\text{Sin}[e+f\,x]}{\sqrt{a^2-b^2}}\right]\,(\text{Cos}[e]-i\,\text{Sin}[e])}{\sqrt{a^2-b^2}}-\right.$$

$$\frac{2\,a\,c\,d\,\text{ArcTan}\left[\frac{i\,a+b\,\text{Cos}[e+f\,x]+i\,b\,\text{Sin}[e+f\,x]}{\sqrt{a^2-b^2}}\right]\,(\text{Cos}[e]-i\,\text{Sin}[e])}{\sqrt{a^2-b^2}\,f}+\frac{1}{2\,\sqrt{a^2-b^2}\,f}$$

$$c\,d\left(-4\,\sqrt{a^2-b^2}\,f\,x+4\,a\,\text{ArcTan}\left[\frac{i\,a+b\,\text{Cos}[e+f\,x]+i\,b\,\text{Sin}[e+f\,x]}{\sqrt{a^2-b^2}}\right]+2\,\sqrt{a^2-b^2}\,\text{ArcTan}\left[\frac{2\,a\,(\text{Cos}[e+f\,x]+i\,\text{Sin}[e+f\,x])}{b\,(-1+\text{Cos}[2\,e+2\,f\,x]+i\,\text{Sin}[2\,e+2\,f\,x])}\right]-\right.$$

$$\left.i\,\sqrt{a^2-b^2}\,\text{Log}\left[4\,a^2\,\text{Cos}[2\,e+2\,f\,x]+b^2\,(-1+\text{Cos}[2\,e+2\,f\,x]+i\,\text{Sin}[2\,e+2\,f\,x])^2+4\,i\,a^2\,\text{Sin}[2\,e+2\,f\,x]\right]\right)\,(\text{Cos}[e]-i\,\text{Sin}[e])-$$

$$\frac{i\,a\,c^2\,\text{ArcTan}\left[\frac{i\,a+b\,\text{Cos}[e+f\,x]+i\,b\,\text{Sin}[e+f\,x]}{\sqrt{a^2-b^2}}\right]\,(\text{Cos}[e]+i\,\text{Sin}[e])}{\sqrt{a^2-b^2}}+\frac{2\,a\,c\,d\,\text{ArcTan}\left[\frac{i\,a+b\,\text{Cos}[e+f\,x]+i\,b\,\text{Sin}[e+f\,x]}{\sqrt{a^2-b^2}}\right]\,(\text{Cos}[e]+i\,\text{Sin}[e])}{\sqrt{a^2-b^2}\,f}-$$

$$\frac{1}{2\,f}\,c\,d\left(-4\,f\,x+\frac{4\,a\,\text{ArcTan}\left[\frac{i\,a+b\,\text{Cos}[e+f\,x]+i\,b\,\text{Sin}[e+f\,x]}{\sqrt{a^2-b^2}}\right]}{\sqrt{a^2-b^2}}+2\,\text{ArcTan}\left[\frac{2\,a\,(\text{Cos}[e+f\,x]+i\,\text{Sin}[e+f\,x])}{b\,(-1+\text{Cos}[2\,e+2\,f\,x]+i\,\text{Sin}[2\,e+2\,f\,x])}\right]-\right.$$

$$i\,\text{Log}\left[4 a^2 \text{Cos}[2 e+2 f x]+b^2 (-1+\text{Cos}[2 e+2 f x]+i\,\text{Sin}[2 e+2 f x])^2+4 i a^2 \text{Sin}[2 e+2 f x]\right]\Bigg) (\text{Cos}[e]+i\,\text{Sin}[e])+$$

$$2 i c d x \text{Sin}[e]+i d^2 x^2 \text{Sin}[e]-2 c d x (\text{Cos}[e]-i\,\text{Sin}[e]) (-1+\text{Cos}[2 e]+i\,\text{Sin}[2 e])-$$
$$d^2 x^2 (\text{Cos}[e]-i\,\text{Sin}[e]) (-1+\text{Cos}[2 e]+i\,\text{Sin}[2 e])+2 b d^2 (\text{Cos}[e]-i\,\text{Sin}[e])$$

$$\Bigg(-\Bigg(\frac{x^2}{2 \left(i a \text{Cos}[e]-a \text{Sin}[e]-\sqrt{\left(-a^2+b^2\right) (\text{Cos}[2 e]+i\,\text{Sin}[2 e])}\right)}+\frac{i x \text{Log}\left[1+\frac{b (\text{Cos}[2 e+f x]+i\,\text{Sin}[2 e+f x])}{i a \text{Cos}[e]-a \text{Sin}[e]-\sqrt{\left(-a^2+b^2\right) (\text{Cos}[2 e]+i\,\text{Sin}[2 e])}}\right]}{f \left(i a \text{Cos}[e]-a \text{Sin}[e]-\sqrt{\left(-a^2+b^2\right) (\text{Cos}[2 e]+i\,\text{Sin}[2 e])}\right)}+$$

$$\frac{\text{PolyLog}\left[2,-\frac{b (\text{Cos}[2 e+f x]+i\,\text{Sin}[2 e+f x])}{i a \text{Cos}[e]-a \text{Sin}[e]-\sqrt{\left(-a^2+b^2\right) (\text{Cos}[2 e]+i\,\text{Sin}[2 e])}}\right]}{f^2 \left(i a \text{Cos}[e]-a \text{Sin}[e]-\sqrt{\left(-a^2+b^2\right) (\text{Cos}[2 e]+i\,\text{Sin}[2 e])}\right)}\Bigg)\Bigg/$$

$$\left(-\frac{2 \text{Cos}[2 e] \sqrt{-a^2 \text{Cos}[2 e]+b^2 \text{Cos}[2 e]-i a^2 \text{Sin}[2 e]+i b^2 \text{Sin}[2 e]}}{b}+\right.$$

$$\left.\frac{2 i \text{Sin}[2 e] \sqrt{-a^2 \text{Cos}[2 e]+b^2 \text{Cos}[2 e]-i a^2 \text{Sin}[2 e]+i b^2 \text{Sin}[2 e]}}{b}\right)+$$

$$\Bigg(\frac{x^2}{2 \left(i a \text{Cos}[e]-a \text{Sin}[e]+\sqrt{\left(-a^2+b^2\right) (\text{Cos}[2 e]+i\,\text{Sin}[2 e])}\right)}+\frac{i x \text{Log}\left[1+\frac{b (\text{Cos}[2 e+f x]+i\,\text{Sin}[2 e+f x])}{i a \text{Cos}[e]-a \text{Sin}[e]+\sqrt{\left(-a^2+b^2\right) (\text{Cos}[2 e]+i\,\text{Sin}[2 e])}}\right]}{f \left(i a \text{Cos}[e]-a \text{Sin}[e]+\sqrt{\left(-a^2+b^2\right) (\text{Cos}[2 e]+i\,\text{Sin}[2 e])}\right)}+$$

$$\frac{\text{PolyLog}\left[2,-\frac{b (\text{Cos}[2 e+f x]+i\,\text{Sin}[2 e+f x])}{i a \text{Cos}[e]-a \text{Sin}[e]+\sqrt{\left(-a^2+b^2\right) (\text{Cos}[2 e]+i\,\text{Sin}[2 e])}}\right]}{f^2 \left(i a \text{Cos}[e]-a \text{Sin}[e]+\sqrt{\left(-a^2+b^2\right) (\text{Cos}[2 e]+i\,\text{Sin}[2 e])}\right)}\Bigg)\Bigg/$$

$$\left(-\frac{2 \text{Cos}[2 e] \sqrt{-a^2 \text{Cos}[2 e]+b^2 \text{Cos}[2 e]-i a^2 \text{Sin}[2 e]+i b^2 \text{Sin}[2 e]}}{b}+\right.$$

$$\left.\frac{2 i \text{Sin}[2 e] \sqrt{-a^2 \text{Cos}[2 e]+b^2 \text{Cos}[2 e]-i a^2 \text{Sin}[2 e]+i b^2 \text{Sin}[2 e]}}{b}\right)\Bigg)-2 b d^2 (\text{Cos}[e]+i\,\text{Sin}[e])$$

$$\Bigg(-\Bigg(\frac{x^2}{2\left(i\,a\,\text{Cos}[e]-a\,\text{Sin}[e]-\sqrt{\left(-a^2+b^2\right)\,(\text{Cos}[2\,e]+i\,\text{Sin}[2\,e])}\right)}+\frac{i\,x\,\text{Log}\Big[1+\frac{b\,(\text{Cos}[2\,e+f\,x]+i\,\text{Sin}[2\,e+f\,x])}{i\,a\,\text{Cos}[e]-a\,\text{Sin}[e]-\sqrt{\left(-a^2+b^2\right)\,(\text{Cos}[2\,e]+i\,\text{Sin}[2\,e])}}\Big]}{f\left(i\,a\,\text{Cos}[e]-a\,\text{Sin}[e]-\sqrt{\left(-a^2+b^2\right)\,(\text{Cos}[2\,e]+i\,\text{Sin}[2\,e])}\right)}+$$

$$\frac{\text{PolyLog}\Big[2,-\frac{b\,(\text{Cos}[2\,e+f\,x]+i\,\text{Sin}[2\,e+f\,x])}{i\,a\,\text{Cos}[e]-a\,\text{Sin}[e]-\sqrt{\left(-a^2+b^2\right)\,(\text{Cos}[2\,e]+i\,\text{Sin}[2\,e])}}\Big]}{f^2\left(i\,a\,\text{Cos}[e]-a\,\text{Sin}[e]-\sqrt{\left(-a^2+b^2\right)\,(\text{Cos}[2\,e]+i\,\text{Sin}[2\,e])}\right)}\Bigg)\Big/$$

$$\Bigg(-\frac{2\,\text{Cos}[2\,e]\,\sqrt{-a^2\,\text{Cos}[2\,e]+b^2\,\text{Cos}[2\,e]-i\,a^2\,\text{Sin}[2\,e]+i\,b^2\,\text{Sin}[2\,e]}}{b}+$$

$$\frac{2\,i\,\text{Sin}[2\,e]\,\sqrt{-a^2\,\text{Cos}[2\,e]+b^2\,\text{Cos}[2\,e]-i\,a^2\,\text{Sin}[2\,e]+i\,b^2\,\text{Sin}[2\,e]}}{b}\Bigg)+$$

$$\Bigg(\frac{x^2}{2\left(i\,a\,\text{Cos}[e]-a\,\text{Sin}[e]+\sqrt{\left(-a^2+b^2\right)\,(\text{Cos}[2\,e]+i\,\text{Sin}[2\,e])}\right)}+\frac{i\,x\,\text{Log}\Big[1+\frac{b\,(\text{Cos}[2\,e+f\,x]+i\,\text{Sin}[2\,e+f\,x])}{i\,a\,\text{Cos}[e]-a\,\text{Sin}[e]+\sqrt{\left(-a^2+b^2\right)\,(\text{Cos}[2\,e]+i\,\text{Sin}[2\,e])}}\Big]}{f\left(i\,a\,\text{Cos}[e]-a\,\text{Sin}[e]+\sqrt{\left(-a^2+b^2\right)\,(\text{Cos}[2\,e]+i\,\text{Sin}[2\,e])}\right)}+$$

$$\frac{\text{PolyLog}\Big[2,-\frac{b\,(\text{Cos}[2\,e+f\,x]+i\,\text{Sin}[2\,e+f\,x])}{i\,a\,\text{Cos}[e]-a\,\text{Sin}[e]+\sqrt{\left(-a^2+b^2\right)\,(\text{Cos}[2\,e]+i\,\text{Sin}[2\,e])}}\Big]}{f^2\left(i\,a\,\text{Cos}[e]-a\,\text{Sin}[e]+\sqrt{\left(-a^2+b^2\right)\,(\text{Cos}[2\,e]+i\,\text{Sin}[2\,e])}\right)}\Bigg)\Big/$$

$$\Bigg(-\frac{2\,\text{Cos}[2\,e]\,\sqrt{-a^2\,\text{Cos}[2\,e]+b^2\,\text{Cos}[2\,e]-i\,a^2\,\text{Sin}[2\,e]+i\,b^2\,\text{Sin}[2\,e]}}{b}+$$

$$\frac{2\,i\,\text{Sin}[2\,e]\,\sqrt{-a^2\,\text{Cos}[2\,e]+b^2\,\text{Cos}[2\,e]-i\,a^2\,\text{Sin}[2\,e]+i\,b^2\,\text{Sin}[2\,e]}}{b}\Bigg)\Bigg)-2\,i\,a\,d^2$$

$$\Bigg(\Bigg(\Bigg(\frac{x^2}{2\left(i\,a\,\text{Cos}[e]-a\,\text{Sin}[e]+\sqrt{\left(-a^2+b^2\right)\,(\text{Cos}[2\,e]+i\,\text{Sin}[2\,e])}\right)}+\frac{i\,x\,\text{Log}\Big[1+\frac{b\,(\text{Cos}[2\,e+f\,x]+i\,\text{Sin}[2\,e+f\,x])}{i\,a\,\text{Cos}[e]-a\,\text{Sin}[e]+\sqrt{\left(-a^2+b^2\right)\,(\text{Cos}[2\,e]+i\,\text{Sin}[2\,e])}}\Big]}{f\left(i\,a\,\text{Cos}[e]-a\,\text{Sin}[e]+\sqrt{\left(-a^2+b^2\right)\,(\text{Cos}[2\,e]+i\,\text{Sin}[2\,e])}\right)}+$$

$$\frac{\text{PolyLog}\Big[2,-\frac{b\,(\text{Cos}[2\,e+f\,x]+i\,\text{Sin}[2\,e+f\,x])}{i\,a\,\text{Cos}[e]-a\,\text{Sin}[e]+\sqrt{\left(-a^2+b^2\right)\,(\text{Cos}[2\,e]+i\,\text{Sin}[2\,e])}}\Big]}{f^2\left(i\,a\,\text{Cos}[e]-a\,\text{Sin}[e]+\sqrt{\left(-a^2+b^2\right)\,(\text{Cos}[2\,e]+i\,\text{Sin}[2\,e])}\right)}\Bigg)$$

$$\left.\left(-\mathrm{i}\,a\,\mathrm{Cos}[e]-a\,\mathrm{Sin}[e]-(\mathrm{Cos}[2e]-\mathrm{i}\,\mathrm{Sin}[2e])\sqrt{-a^2\,\mathrm{Cos}[2e]+b^2\,\mathrm{Cos}[2e]-\mathrm{i}\,a^2\,\mathrm{Sin}[2e]+\mathrm{i}\,b^2\,\mathrm{Sin}[2e]}\right)\right)\Big/$$

$$\left(b\left(-\frac{2\,\mathrm{Cos}[2e]\sqrt{-a^2\,\mathrm{Cos}[2e]+b^2\,\mathrm{Cos}[2e]-\mathrm{i}\,a^2\,\mathrm{Sin}[2e]+\mathrm{i}\,b^2\,\mathrm{Sin}[2e]}}{b}+\right.\right.$$

$$\left.\left.\frac{2\,\mathrm{i}\,\mathrm{Sin}[2e]\sqrt{-a^2\,\mathrm{Cos}[2e]+b^2\,\mathrm{Cos}[2e]-\mathrm{i}\,a^2\,\mathrm{Sin}[2e]+\mathrm{i}\,b^2\,\mathrm{Sin}[2e]}}{b}\right)\right)-$$

$$\left(\left(\frac{x^2}{2\left(\mathrm{i}\,a\,\mathrm{Cos}[e]-a\,\mathrm{Sin}[e]-\sqrt{\left(-a^2+b^2\right)(\mathrm{Cos}[2e]+\mathrm{i}\,\mathrm{Sin}[2e])}\right)}+\frac{\mathrm{i}\,x\,\mathrm{Log}\left[1+\frac{b\,(\mathrm{Cos}[2e+f\,x]+\mathrm{i}\,\mathrm{Sin}[2e+f\,x])}{\mathrm{i}\,a\,\mathrm{Cos}[e]-a\,\mathrm{Sin}[e]-\sqrt{\left(-a^2+b^2\right)(\mathrm{Cos}[2e]+\mathrm{i}\,\mathrm{Sin}[2e])}}\right]}{f\left(\mathrm{i}\,a\,\mathrm{Cos}[e]-a\,\mathrm{Sin}[e]-\sqrt{\left(-a^2+b^2\right)(\mathrm{Cos}[2e]+\mathrm{i}\,\mathrm{Sin}[2e])}\right)}+\right.\right.$$

$$\left.\frac{\mathrm{PolyLog}\left[2,-\frac{b\,(\mathrm{Cos}[2e+f\,x]+\mathrm{i}\,\mathrm{Sin}[2e+f\,x])}{\mathrm{i}\,a\,\mathrm{Cos}[e]-a\,\mathrm{Sin}[e]-\sqrt{\left(-a^2+b^2\right)(\mathrm{Cos}[2e]+\mathrm{i}\,\mathrm{Sin}[2e])}}\right]}{f^2\left(\mathrm{i}\,a\,\mathrm{Cos}[e]-a\,\mathrm{Sin}[e]-\sqrt{\left(-a^2+b^2\right)(\mathrm{Cos}[2e]+\mathrm{i}\,\mathrm{Sin}[2e])}\right)}\right)$$

$$\left.\left(-\mathrm{i}\,a\,\mathrm{Cos}[e]-a\,\mathrm{Sin}[e]+(\mathrm{Cos}[2e]-\mathrm{i}\,\mathrm{Sin}[2e])\sqrt{-a^2\,\mathrm{Cos}[2e]+b^2\,\mathrm{Cos}[2e]-\mathrm{i}\,a^2\,\mathrm{Sin}[2e]+\mathrm{i}\,b^2\,\mathrm{Sin}[2e]}\right)\right)\Big/$$

$$\left(b\left(-\frac{2\,\mathrm{Cos}[2e]\sqrt{-a^2\,\mathrm{Cos}[2e]+b^2\,\mathrm{Cos}[2e]-\mathrm{i}\,a^2\,\mathrm{Sin}[2e]+\mathrm{i}\,b^2\,\mathrm{Sin}[2e]}}{b}+\right.\right.$$

$$\left.\left.\left.\frac{2\,\mathrm{i}\,\mathrm{Sin}[2e]\sqrt{-a^2\,\mathrm{Cos}[2e]+b^2\,\mathrm{Cos}[2e]-\mathrm{i}\,a^2\,\mathrm{Sin}[2e]+\mathrm{i}\,b^2\,\mathrm{Sin}[2e]}}{b}\right)\right)\right)-2\,a\,c\,d\,f$$

$$\left(\left(\left(\frac{x^2}{2\left(\mathrm{i}\,a\,\mathrm{Cos}[e]-a\,\mathrm{Sin}[e]+\sqrt{\left(-a^2+b^2\right)(\mathrm{Cos}[2e]+\mathrm{i}\,\mathrm{Sin}[2e])}\right)}+\frac{\mathrm{i}\,x\,\mathrm{Log}\left[1+\frac{b\,(\mathrm{Cos}[2e+f\,x]+\mathrm{i}\,\mathrm{Sin}[2e+f\,x])}{\mathrm{i}\,a\,\mathrm{Cos}[e]-a\,\mathrm{Sin}[e]+\sqrt{\left(-a^2+b^2\right)(\mathrm{Cos}[2e]+\mathrm{i}\,\mathrm{Sin}[2e])}}\right]}{f\left(\mathrm{i}\,a\,\mathrm{Cos}[e]-a\,\mathrm{Sin}[e]+\sqrt{\left(-a^2+b^2\right)(\mathrm{Cos}[2e]+\mathrm{i}\,\mathrm{Sin}[2e])}\right)}+\right.\right.\right.$$

$$\left.\frac{\mathrm{PolyLog}\left[2,-\frac{b\,(\mathrm{Cos}[2e+f\,x]+\mathrm{i}\,\mathrm{Sin}[2e+f\,x])}{\mathrm{i}\,a\,\mathrm{Cos}[e]-a\,\mathrm{Sin}[e]+\sqrt{\left(-a^2+b^2\right)(\mathrm{Cos}[2e]+\mathrm{i}\,\mathrm{Sin}[2e])}}\right]}{f^2\left(\mathrm{i}\,a\,\mathrm{Cos}[e]-a\,\mathrm{Sin}[e]+\sqrt{\left(-a^2+b^2\right)(\mathrm{Cos}[2e]+\mathrm{i}\,\mathrm{Sin}[2e])}\right)}\right)$$

$$\left(-\mathrm{i}\, a \,\mathrm{Cos}[e]-a\,\mathrm{Sin}[e]-(\mathrm{Cos}[2\,e]-\mathrm{i}\,\mathrm{Sin}[2\,e])\sqrt{-a^2\,\mathrm{Cos}[2\,e]+b^2\,\mathrm{Cos}[2\,e]-\mathrm{i}\,a^2\,\mathrm{Sin}[2\,e]+\mathrm{i}\,b^2\,\mathrm{Sin}[2\,e]}\right)\Bigg)\Big/$$

$$\left(b\left(-\frac{2\,\mathrm{Cos}[2\,e]\sqrt{-a^2\,\mathrm{Cos}[2\,e]+b^2\,\mathrm{Cos}[2\,e]-\mathrm{i}\,a^2\,\mathrm{Sin}[2\,e]+\mathrm{i}\,b^2\,\mathrm{Sin}[2\,e]}}{b}+\right.\right.$$

$$\left.\left.\frac{2\,\mathrm{i}\,\mathrm{Sin}[2\,e]\sqrt{-a^2\,\mathrm{Cos}[2\,e]+b^2\,\mathrm{Cos}[2\,e]-\mathrm{i}\,a^2\,\mathrm{Sin}[2\,e]+\mathrm{i}\,b^2\,\mathrm{Sin}[2\,e]}}{b}\right)\right)-$$

$$\left(\left(\frac{x^2}{2\left(\mathrm{i}\,a\,\mathrm{Cos}[e]-a\,\mathrm{Sin}[e]-\sqrt{\left(-a^2+b^2\right)(\mathrm{Cos}[2\,e]+\mathrm{i}\,\mathrm{Sin}[2\,e])}\right)}+\frac{\mathrm{i}\,x\,\mathrm{Log}\left[1+\frac{b\,(\mathrm{Cos}[2\,e+f\,x]+\mathrm{i}\,\mathrm{Sin}[2\,e+f\,x])}{\mathrm{i}\,a\,\mathrm{Cos}[e]-a\,\mathrm{Sin}[e]-\sqrt{\left(-a^2+b^2\right)(\mathrm{Cos}[2\,e]+\mathrm{i}\,\mathrm{Sin}[2\,e])}}\right]}{f\left(\mathrm{i}\,a\,\mathrm{Cos}[e]-a\,\mathrm{Sin}[e]-\sqrt{\left(-a^2+b^2\right)(\mathrm{Cos}[2\,e]+\mathrm{i}\,\mathrm{Sin}[2\,e])}\right)}+\right.\right.$$

$$\left.\frac{\mathrm{PolyLog}\left[2,-\frac{b\,(\mathrm{Cos}[2\,e+f\,x]+\mathrm{i}\,\mathrm{Sin}[2\,e+f\,x])}{\mathrm{i}\,a\,\mathrm{Cos}[e]-a\,\mathrm{Sin}[e]-\sqrt{\left(-a^2+b^2\right)(\mathrm{Cos}[2\,e]+\mathrm{i}\,\mathrm{Sin}[2\,e])}}\right]}{f^2\left(\mathrm{i}\,a\,\mathrm{Cos}[e]-a\,\mathrm{Sin}[e]-\sqrt{\left(-a^2+b^2\right)(\mathrm{Cos}[2\,e]+\mathrm{i}\,\mathrm{Sin}[2\,e])}\right)}\right)$$

$$\left(-\mathrm{i}\,a\,\mathrm{Cos}[e]-a\,\mathrm{Sin}[e]+(\mathrm{Cos}[2\,e]-\mathrm{i}\,\mathrm{Sin}[2\,e])\sqrt{-a^2\,\mathrm{Cos}[2\,e]+b^2\,\mathrm{Cos}[2\,e]-\mathrm{i}\,a^2\,\mathrm{Sin}[2\,e]+\mathrm{i}\,b^2\,\mathrm{Sin}[2\,e]}\right)\Bigg)\Big/$$

$$\left(b\left(-\frac{2\,\mathrm{Cos}[2\,e]\sqrt{-a^2\,\mathrm{Cos}[2\,e]+b^2\,\mathrm{Cos}[2\,e]-\mathrm{i}\,a^2\,\mathrm{Sin}[2\,e]+\mathrm{i}\,b^2\,\mathrm{Sin}[2\,e]}}{b}+\right.\right.$$

$$\left.\left.\frac{2\,\mathrm{i}\,\mathrm{Sin}[2\,e]\sqrt{-a^2\,\mathrm{Cos}[2\,e]+b^2\,\mathrm{Cos}[2\,e]-\mathrm{i}\,a^2\,\mathrm{Sin}[2\,e]+\mathrm{i}\,b^2\,\mathrm{Sin}[2\,e]}}{b}\right)\right)\Bigg)-$$

$$a\,d^2\,f\left(\left(\left(\frac{x^3}{3\left(\mathrm{i}\,a\,\mathrm{Cos}[e]-a\,\mathrm{Sin}[e]+\sqrt{\left(-a^2+b^2\right)(\mathrm{Cos}[2\,e]+\mathrm{i}\,\mathrm{Sin}[2\,e])}\right)}+\frac{\mathrm{i}\,x^2\,\mathrm{Log}\left[1+\frac{b\,(\mathrm{Cos}[2\,e+f\,x]+\mathrm{i}\,\mathrm{Sin}[2\,e+f\,x])}{\mathrm{i}\,a\,\mathrm{Cos}[e]-a\,\mathrm{Sin}[e]+\sqrt{\left(-a^2+b^2\right)(\mathrm{Cos}[2\,e]+\mathrm{i}\,\mathrm{Sin}[2\,e])}}\right]}{f\left(\mathrm{i}\,a\,\mathrm{Cos}[e]-a\,\mathrm{Sin}[e]+\sqrt{\left(-a^2+b^2\right)(\mathrm{Cos}[2\,e]+\mathrm{i}\,\mathrm{Sin}[2\,e])}\right)}+\right.\right.\right.$$

$$\frac{2\,x\,\mathrm{PolyLog}\left[2,-\frac{b\,(\mathrm{Cos}[2\,e+f\,x]+\mathrm{i}\,\mathrm{Sin}[2\,e+f\,x])}{\mathrm{i}\,a\,\mathrm{Cos}[e]-a\,\mathrm{Sin}[e]+\sqrt{\left(-a^2+b^2\right)(\mathrm{Cos}[2\,e]+\mathrm{i}\,\mathrm{Sin}[2\,e])}}\right]}{f^2\left(\mathrm{i}\,a\,\mathrm{Cos}[e]-a\,\mathrm{Sin}[e]+\sqrt{\left(-a^2+b^2\right)(\mathrm{Cos}[2\,e]+\mathrm{i}\,\mathrm{Sin}[2\,e])}\right)}+$$

$$\left.\frac{2\,\mathrm{i}\,\mathrm{PolyLog}\left[3,-\frac{b\,(\mathrm{Cos}[2e+fx]+\mathrm{i}\,\mathrm{Sin}[2e+fx])}{\mathrm{i}\,a\,\mathrm{Cos}[e]-a\,\mathrm{Sin}[e]+\sqrt{(-a^2+b^2)\,(\mathrm{Cos}[2e]+\mathrm{i}\,\mathrm{Sin}[2e])}}\right]}{f^3\left(\mathrm{i}\,a\,\mathrm{Cos}[e]-a\,\mathrm{Sin}[e]+\sqrt{(-a^2+b^2)\,(\mathrm{Cos}[2e]+\mathrm{i}\,\mathrm{Sin}[2e])}\right)}\right)$$

$$\left.\left(-\mathrm{i}\,a\,\mathrm{Cos}[e]-a\,\mathrm{Sin}[e]-(\mathrm{Cos}[2e]-\mathrm{i}\,\mathrm{Sin}[2e])\sqrt{-a^2\,\mathrm{Cos}[2e]+b^2\,\mathrm{Cos}[2e]-\mathrm{i}\,a^2\,\mathrm{Sin}[2e]+\mathrm{i}\,b^2\,\mathrm{Sin}[2e]}\right)\right)\Big/$$

$$\left(b\left(-\frac{2\,\mathrm{Cos}[2e]\sqrt{-a^2\,\mathrm{Cos}[2e]+b^2\,\mathrm{Cos}[2e]-\mathrm{i}\,a^2\,\mathrm{Sin}[2e]+\mathrm{i}\,b^2\,\mathrm{Sin}[2e]}}{b}+\right.\right.$$

$$\left.\left.\frac{2\,\mathrm{i}\,\mathrm{Sin}[2e]\sqrt{-a^2\,\mathrm{Cos}[2e]+b^2\,\mathrm{Cos}[2e]-\mathrm{i}\,a^2\,\mathrm{Sin}[2e]+\mathrm{i}\,b^2\,\mathrm{Sin}[2e]}}{b}\right)\right)-$$

$$\left(\left(\frac{x^3}{3\left(\mathrm{i}\,a\,\mathrm{Cos}[e]-a\,\mathrm{Sin}[e]-\sqrt{(-a^2+b^2)\,(\mathrm{Cos}[2e]+\mathrm{i}\,\mathrm{Sin}[2e])}\right)}+\frac{\mathrm{i}\,x^2\,\mathrm{Log}\left[1+\frac{b\,(\mathrm{Cos}[2e+fx]+\mathrm{i}\,\mathrm{Sin}[2e+fx])}{\mathrm{i}\,a\,\mathrm{Cos}[e]-a\,\mathrm{Sin}[e]-\sqrt{(-a^2+b^2)\,(\mathrm{Cos}[2e]+\mathrm{i}\,\mathrm{Sin}[2e])}}\right]}{f\left(\mathrm{i}\,a\,\mathrm{Cos}[e]-a\,\mathrm{Sin}[e]-\sqrt{(-a^2+b^2)\,(\mathrm{Cos}[2e]+\mathrm{i}\,\mathrm{Sin}[2e])}\right)}+\right.\right.$$

$$\frac{2\,x\,\mathrm{PolyLog}\left[2,-\frac{b\,(\mathrm{Cos}[2e+fx]+\mathrm{i}\,\mathrm{Sin}[2e+fx])}{\mathrm{i}\,a\,\mathrm{Cos}[e]-a\,\mathrm{Sin}[e]-\sqrt{(-a^2+b^2)\,(\mathrm{Cos}[2e]+\mathrm{i}\,\mathrm{Sin}[2e])}}\right]}{f^2\left(\mathrm{i}\,a\,\mathrm{Cos}[e]-a\,\mathrm{Sin}[e]-\sqrt{(-a^2+b^2)\,(\mathrm{Cos}[2e]+\mathrm{i}\,\mathrm{Sin}[2e])}\right)}+$$

$$\left.\frac{2\,\mathrm{i}\,\mathrm{PolyLog}\left[3,-\frac{b\,(\mathrm{Cos}[2e+fx]+\mathrm{i}\,\mathrm{Sin}[2e+fx])}{\mathrm{i}\,a\,\mathrm{Cos}[e]-a\,\mathrm{Sin}[e]-\sqrt{(-a^2+b^2)\,(\mathrm{Cos}[2e]+\mathrm{i}\,\mathrm{Sin}[2e])}}\right]}{f^3\left(\mathrm{i}\,a\,\mathrm{Cos}[e]-a\,\mathrm{Sin}[e]-\sqrt{(-a^2+b^2)\,(\mathrm{Cos}[2e]+\mathrm{i}\,\mathrm{Sin}[2e])}\right)}\right)$$

$$\left.\left(-\mathrm{i}\,a\,\mathrm{Cos}[e]-a\,\mathrm{Sin}[e]+(\mathrm{Cos}[2e]-\mathrm{i}\,\mathrm{Sin}[2e])\sqrt{-a^2\,\mathrm{Cos}[2e]+b^2\,\mathrm{Cos}[2e]-\mathrm{i}\,a^2\,\mathrm{Sin}[2e]+\mathrm{i}\,b^2\,\mathrm{Sin}[2e]}\right)\right)\Big/$$

$$\left(b\left(-\frac{2\,\mathrm{Cos}[2e]\sqrt{-a^2\,\mathrm{Cos}[2e]+b^2\,\mathrm{Cos}[2e]-\mathrm{i}\,a^2\,\mathrm{Sin}[2e]+\mathrm{i}\,b^2\,\mathrm{Sin}[2e]}}{b}+\right.\right.$$

$$\left.\left.\left.\frac{2\,\mathrm{i}\,\mathrm{Sin}[2e]\sqrt{-a^2\,\mathrm{Cos}[2e]+b^2\,\mathrm{Cos}[2e]-\mathrm{i}\,a^2\,\mathrm{Sin}[2e]+\mathrm{i}\,b^2\,\mathrm{Sin}[2e]}}{b}\right)\right)\right)+2\,\mathrm{i}\,a\,d^2$$

$$\left(\left(\left(\left(\frac{x^2}{2\left(i\,a\,\text{Cos}[e]-a\,\text{Sin}[e]+\sqrt{\left(-a^2+b^2\right)\,(\text{Cos}[2\,e]+i\,\text{Sin}[2\,e])}\right)}+\frac{i\,x\,\text{Log}\left[1+\frac{b\,(\text{Cos}[2\,e+f\,x]+i\,\text{Sin}[2\,e+f\,x])}{i\,a\,\text{Cos}[e]-a\,\text{Sin}[e]+\sqrt{\left(-a^2+b^2\right)\,(\text{Cos}[2\,e]+i\,\text{Sin}[2\,e])}}\right]}{f\left(i\,a\,\text{Cos}[e]-a\,\text{Sin}[e]+\sqrt{\left(-a^2+b^2\right)\,(\text{Cos}[2\,e]+i\,\text{Sin}[2\,e])}\right)}+\right.\right.\right.\right.$$

$$\left.\frac{\text{PolyLog}\left[2,-\frac{b\,(\text{Cos}[2\,e+f\,x]+i\,\text{Sin}[2\,e+f\,x])}{i\,a\,\text{Cos}[e]-a\,\text{Sin}[e]+\sqrt{\left(-a^2+b^2\right)\,(\text{Cos}[2\,e]+i\,\text{Sin}[2\,e])}}\right]}{f^2\left(i\,a\,\text{Cos}[e]-a\,\text{Sin}[e]+\sqrt{\left(-a^2+b^2\right)\,(\text{Cos}[2\,e]+i\,\text{Sin}[2\,e])}\right)}\right)\,(\text{Cos}[2\,e]+i\,\text{Sin}[2\,e])$$

$$\left.\left(-i\,a\,\text{Cos}[e]-a\,\text{Sin}[e]-(\text{Cos}[2\,e]-i\,\text{Sin}[2\,e])\,\sqrt{-a^2\,\text{Cos}[2\,e]+b^2\,\text{Cos}[2\,e]-i\,a^2\,\text{Sin}[2\,e]+i\,b^2\,\text{Sin}[2\,e]}\right)\right)\Big/$$

$$\left(b\left(-\frac{2\,\text{Cos}[2\,e]\,\sqrt{-a^2\,\text{Cos}[2\,e]+b^2\,\text{Cos}[2\,e]-i\,a^2\,\text{Sin}[2\,e]+i\,b^2\,\text{Sin}[2\,e]}}{b}+\right.\right.$$

$$\left.\left.\frac{2\,i\,\text{Sin}[2\,e]\,\sqrt{-a^2\,\text{Cos}[2\,e]+b^2\,\text{Cos}[2\,e]-i\,a^2\,\text{Sin}[2\,e]+i\,b^2\,\text{Sin}[2\,e]}}{b}\right)\right)-$$

$$\left(\left(\left(\frac{x^2}{2\left(i\,a\,\text{Cos}[e]-a\,\text{Sin}[e]-\sqrt{\left(-a^2+b^2\right)\,(\text{Cos}[2\,e]+i\,\text{Sin}[2\,e])}\right)}+\frac{i\,x\,\text{Log}\left[1+\frac{b\,(\text{Cos}[2\,e+f\,x]+i\,\text{Sin}[2\,e+f\,x])}{i\,a\,\text{Cos}[e]-a\,\text{Sin}[e]-\sqrt{\left(-a^2+b^2\right)\,(\text{Cos}[2\,e]+i\,\text{Sin}[2\,e])}}\right]}{f\left(i\,a\,\text{Cos}[e]-a\,\text{Sin}[e]-\sqrt{\left(-a^2+b^2\right)\,(\text{Cos}[2\,e]+i\,\text{Sin}[2\,e])}\right)}+\right.\right.\right.$$

$$\left.\frac{\text{PolyLog}\left[2,-\frac{b\,(\text{Cos}[2\,e+f\,x]+i\,\text{Sin}[2\,e+f\,x])}{i\,a\,\text{Cos}[e]-a\,\text{Sin}[e]-\sqrt{\left(-a^2+b^2\right)\,(\text{Cos}[2\,e]+i\,\text{Sin}[2\,e])}}\right]}{f^2\left(i\,a\,\text{Cos}[e]-a\,\text{Sin}[e]-\sqrt{\left(-a^2+b^2\right)\,(\text{Cos}[2\,e]+i\,\text{Sin}[2\,e])}\right)}\right)\,(\text{Cos}[2\,e]+i\,\text{Sin}[2\,e])$$

$$\left.\left(-i\,a\,\text{Cos}[e]-a\,\text{Sin}[e]+(\text{Cos}[2\,e]-i\,\text{Sin}[2\,e])\,\sqrt{-a^2\,\text{Cos}[2\,e]+b^2\,\text{Cos}[2\,e]-i\,a^2\,\text{Sin}[2\,e]+i\,b^2\,\text{Sin}[2\,e]}\right)\right)\Big/$$

$$\left(b\left(-\frac{2\,\text{Cos}[2\,e]\,\sqrt{-a^2\,\text{Cos}[2\,e]+b^2\,\text{Cos}[2\,e]-i\,a^2\,\text{Sin}[2\,e]+i\,b^2\,\text{Sin}[2\,e]}}{b}+\right.\right.$$

$$\left.\left.\left.\frac{2\,i\,\text{Sin}[2\,e]\,\sqrt{-a^2\,\text{Cos}[2\,e]+b^2\,\text{Cos}[2\,e]-i\,a^2\,\text{Sin}[2\,e]+i\,b^2\,\text{Sin}[2\,e]}}{b}\right)\right)\right)+2\,a\,c\,d\,f$$

$$\left(\left(\left(\left(\frac{x^2}{2\left(i\,a\,\text{Cos}[e]-a\,\text{Sin}[e]+\sqrt{\left(-a^2+b^2\right)\,(\text{Cos}[2\,e]+i\,\text{Sin}[2\,e])}\right)}+\frac{i\,x\,\text{Log}\left[1+\frac{b\,(\text{Cos}[2\,e+f\,x]+i\,\text{Sin}[2\,e+f\,x])}{i\,a\,\text{Cos}[e]-a\,\text{Sin}[e]+\sqrt{\left(-a^2+b^2\right)\,(\text{Cos}[2\,e]+i\,\text{Sin}[2\,e])}}\right]}{f\left(i\,a\,\text{Cos}[e]-a\,\text{Sin}[e]+\sqrt{\left(-a^2+b^2\right)\,(\text{Cos}[2\,e]+i\,\text{Sin}[2\,e])}\right)}+\right.\right.\right.\right.$$

$$\left.\frac{\text{PolyLog}\left[2,-\frac{b\,(\text{Cos}[2\,e+f\,x]+i\,\text{Sin}[2\,e+f\,x])}{i\,a\,\text{Cos}[e]-a\,\text{Sin}[e]+\sqrt{\left(-a^2+b^2\right)\,(\text{Cos}[2\,e]+i\,\text{Sin}[2\,e])}}\right]}{f^2\left(i\,a\,\text{Cos}[e]-a\,\text{Sin}[e]+\sqrt{\left(-a^2+b^2\right)\,(\text{Cos}[2\,e]+i\,\text{Sin}[2\,e])}\right)}\right)(\text{Cos}[2\,e]+i\,\text{Sin}[2\,e])$$

$$\left.\left(-i\,a\,\text{Cos}[e]-a\,\text{Sin}[e]-(\text{Cos}[2\,e]-i\,\text{Sin}[2\,e])\,\sqrt{-a^2\,\text{Cos}[2\,e]+b^2\,\text{Cos}[2\,e]-i\,a^2\,\text{Sin}[2\,e]+i\,b^2\,\text{Sin}[2\,e]}\right)\right)\Big/$$

$$\left(b\left(-\frac{2\,\text{Cos}[2\,e]\,\sqrt{-a^2\,\text{Cos}[2\,e]+b^2\,\text{Cos}[2\,e]-i\,a^2\,\text{Sin}[2\,e]+i\,b^2\,\text{Sin}[2\,e]}}{b}+\right.\right.$$

$$\left.\left.\frac{2\,i\,\text{Sin}[2\,e]\,\sqrt{-a^2\,\text{Cos}[2\,e]+b^2\,\text{Cos}[2\,e]-i\,a^2\,\text{Sin}[2\,e]+i\,b^2\,\text{Sin}[2\,e]}}{b}\right)\right)-$$

$$\left(\left(\left(\frac{x^2}{2\left(i\,a\,\text{Cos}[e]-a\,\text{Sin}[e]-\sqrt{\left(-a^2+b^2\right)\,(\text{Cos}[2\,e]+i\,\text{Sin}[2\,e])}\right)}+\frac{i\,x\,\text{Log}\left[1+\frac{b\,(\text{Cos}[2\,e+f\,x]+i\,\text{Sin}[2\,e+f\,x])}{i\,a\,\text{Cos}[e]-a\,\text{Sin}[e]-\sqrt{\left(-a^2+b^2\right)\,(\text{Cos}[2\,e]+i\,\text{Sin}[2\,e])}}\right]}{f\left(i\,a\,\text{Cos}[e]-a\,\text{Sin}[e]-\sqrt{\left(-a^2+b^2\right)\,(\text{Cos}[2\,e]+i\,\text{Sin}[2\,e])}\right)}+\right.\right.\right.$$

$$\left.\frac{\text{PolyLog}\left[2,-\frac{b\,(\text{Cos}[2\,e+f\,x]+i\,\text{Sin}[2\,e+f\,x])}{i\,a\,\text{Cos}[e]-a\,\text{Sin}[e]-\sqrt{\left(-a^2+b^2\right)\,(\text{Cos}[2\,e]+i\,\text{Sin}[2\,e])}}\right]}{f^2\left(i\,a\,\text{Cos}[e]-a\,\text{Sin}[e]-\sqrt{\left(-a^2+b^2\right)\,(\text{Cos}[2\,e]+i\,\text{Sin}[2\,e])}\right)}\right)(\text{Cos}[2\,e]+i\,\text{Sin}[2\,e])$$

$$\left.\left(-i\,a\,\text{Cos}[e]-a\,\text{Sin}[e]+(\text{Cos}[2\,e]-i\,\text{Sin}[2\,e])\,\sqrt{-a^2\,\text{Cos}[2\,e]+b^2\,\text{Cos}[2\,e]-i\,a^2\,\text{Sin}[2\,e]+i\,b^2\,\text{Sin}[2\,e]}\right)\right)\Big/$$

$$\left(b\left(-\frac{2\,\text{Cos}[2\,e]\,\sqrt{-a^2\,\text{Cos}[2\,e]+b^2\,\text{Cos}[2\,e]-i\,a^2\,\text{Sin}[2\,e]+i\,b^2\,\text{Sin}[2\,e]}}{b}+\right.\right.$$

$$\left.\left.\left.\frac{2\,i\,\text{Sin}[2\,e]\,\sqrt{-a^2\,\text{Cos}[2\,e]+b^2\,\text{Cos}[2\,e]-i\,a^2\,\text{Sin}[2\,e]+i\,b^2\,\text{Sin}[2\,e]}}{b}\right)\right)\right)+$$

$$a\,d^2\,f\,\Bigg(\Bigg(\Bigg(\Bigg(\frac{x^3}{3\left(i\,a\,\mathrm{Cos}[e]-a\,\mathrm{Sin}[e]+\sqrt{\left(-a^2+b^2\right)\,(\mathrm{Cos}[2\,e]+i\,\mathrm{Sin}[2\,e])}\right)}+\frac{i\,x^2\,\mathrm{Log}\left[1+\frac{b\,(\mathrm{Cos}[2\,e+f\,x]+i\,\mathrm{Sin}[2\,e+f\,x])}{i\,a\,\mathrm{Cos}[e]-a\,\mathrm{Sin}[e]+\sqrt{\left(-a^2+b^2\right)\,(\mathrm{Cos}[2\,e]+i\,\mathrm{Sin}[2\,e])}}\right]}{f\left(i\,a\,\mathrm{Cos}[e]-a\,\mathrm{Sin}[e]+\sqrt{\left(-a^2+b^2\right)\,(\mathrm{Cos}[2\,e]+i\,\mathrm{Sin}[2\,e])}\right)}+$$

$$\frac{2\,x\,\mathrm{PolyLog}\left[2,-\frac{b\,(\mathrm{Cos}[2\,e+f\,x]+i\,\mathrm{Sin}[2\,e+f\,x])}{i\,a\,\mathrm{Cos}[e]-a\,\mathrm{Sin}[e]+\sqrt{\left(-a^2+b^2\right)\,(\mathrm{Cos}[2\,e]+i\,\mathrm{Sin}[2\,e])}}\right]}{f^2\left(i\,a\,\mathrm{Cos}[e]-a\,\mathrm{Sin}[e]+\sqrt{\left(-a^2+b^2\right)\,(\mathrm{Cos}[2\,e]+i\,\mathrm{Sin}[2\,e])}\right)}+$$

$$\frac{2\,i\,\mathrm{PolyLog}\left[3,-\frac{b\,(\mathrm{Cos}[2\,e+f\,x]+i\,\mathrm{Sin}[2\,e+f\,x])}{i\,a\,\mathrm{Cos}[e]-a\,\mathrm{Sin}[e]+\sqrt{\left(-a^2+b^2\right)\,(\mathrm{Cos}[2\,e]+i\,\mathrm{Sin}[2\,e])}}\right]}{f^3\left(i\,a\,\mathrm{Cos}[e]-a\,\mathrm{Sin}[e]+\sqrt{\left(-a^2+b^2\right)\,(\mathrm{Cos}[2\,e]+i\,\mathrm{Sin}[2\,e])}\right)}\Bigg)\,(\mathrm{Cos}[2\,e]+i\,\mathrm{Sin}[2\,e])$$

$$\left(-i\,a\,\mathrm{Cos}[e]-a\,\mathrm{Sin}[e]-(\mathrm{Cos}[2\,e]-i\,\mathrm{Sin}[2\,e])\,\sqrt{-a^2\,\mathrm{Cos}[2\,e]+b^2\,\mathrm{Cos}[2\,e]-i\,a^2\,\mathrm{Sin}[2\,e]+i\,b^2\,\mathrm{Sin}[2\,e]}\right)\Bigg)\Bigg/$$

$$\Bigg(b\,\Bigg(-\frac{2\,\mathrm{Cos}[2\,e]\,\sqrt{-a^2\,\mathrm{Cos}[2\,e]+b^2\,\mathrm{Cos}[2\,e]-i\,a^2\,\mathrm{Sin}[2\,e]+i\,b^2\,\mathrm{Sin}[2\,e]}}{b}+$$

$$\frac{2\,i\,\mathrm{Sin}[2\,e]\,\sqrt{-a^2\,\mathrm{Cos}[2\,e]+b^2\,\mathrm{Cos}[2\,e]-i\,a^2\,\mathrm{Sin}[2\,e]+i\,b^2\,\mathrm{Sin}[2\,e]}}{b}\Bigg)\Bigg)-$$

$$\Bigg(\Bigg(\frac{x^3}{3\left(i\,a\,\mathrm{Cos}[e]-a\,\mathrm{Sin}[e]-\sqrt{\left(-a^2+b^2\right)\,(\mathrm{Cos}[2\,e]+i\,\mathrm{Sin}[2\,e])}\right)}+\frac{i\,x^2\,\mathrm{Log}\left[1+\frac{b\,(\mathrm{Cos}[2\,e+f\,x]+i\,\mathrm{Sin}[2\,e+f\,x])}{i\,a\,\mathrm{Cos}[e]-a\,\mathrm{Sin}[e]-\sqrt{\left(-a^2+b^2\right)\,(\mathrm{Cos}[2\,e]+i\,\mathrm{Sin}[2\,e])}}\right]}{f\left(i\,a\,\mathrm{Cos}[e]-a\,\mathrm{Sin}[e]-\sqrt{\left(-a^2+b^2\right)\,(\mathrm{Cos}[2\,e]+i\,\mathrm{Sin}[2\,e])}\right)}+$$

$$\frac{2\,x\,\mathrm{PolyLog}\left[2,-\frac{b\,(\mathrm{Cos}[2\,e+f\,x]+i\,\mathrm{Sin}[2\,e+f\,x])}{i\,a\,\mathrm{Cos}[e]-a\,\mathrm{Sin}[e]-\sqrt{\left(-a^2+b^2\right)\,(\mathrm{Cos}[2\,e]+i\,\mathrm{Sin}[2\,e])}}\right]}{f^2\left(i\,a\,\mathrm{Cos}[e]-a\,\mathrm{Sin}[e]-\sqrt{\left(-a^2+b^2\right)\,(\mathrm{Cos}[2\,e]+i\,\mathrm{Sin}[2\,e])}\right)}+$$

$$\frac{2\,i\,\mathrm{PolyLog}\left[3,-\frac{b\,(\mathrm{Cos}[2\,e+f\,x]+i\,\mathrm{Sin}[2\,e+f\,x])}{i\,a\,\mathrm{Cos}[e]-a\,\mathrm{Sin}[e]-\sqrt{\left(-a^2+b^2\right)\,(\mathrm{Cos}[2\,e]+i\,\mathrm{Sin}[2\,e])}}\right]}{f^3\left(i\,a\,\mathrm{Cos}[e]-a\,\mathrm{Sin}[e]-\sqrt{\left(-a^2+b^2\right)\,(\mathrm{Cos}[2\,e]+i\,\mathrm{Sin}[2\,e])}\right)}\Bigg)\,(\mathrm{Cos}[2\,e]+i\,\mathrm{Sin}[2\,e])$$

$$\left(-i\, a \operatorname{Cos}[e] - a \operatorname{Sin}[e] + (\operatorname{Cos}[2\,e] - i \operatorname{Sin}[2\,e]) \sqrt{-a^2 \operatorname{Cos}[2\,e] + b^2 \operatorname{Cos}[2\,e] - i\, a^2 \operatorname{Sin}[2\,e] + i\, b^2 \operatorname{Sin}[2\,e]}\right)\Bigg) \Big/$$

$$\left(b\left(-\frac{2 \operatorname{Cos}[2\,e] \sqrt{-a^2 \operatorname{Cos}[2\,e] + b^2 \operatorname{Cos}[2\,e] - i\, a^2 \operatorname{Sin}[2\,e] + i\, b^2 \operatorname{Sin}[2\,e]}}{b} + \frac{2\, i \operatorname{Sin}[2\,e] \sqrt{-a^2 \operatorname{Cos}[2\,e] + b^2 \operatorname{Cos}[2\,e] - i\, a^2 \operatorname{Sin}[2\,e] + i\, b^2 \operatorname{Sin}[2\,e]}}{b}\right)\right)\Bigg)\Bigg) +$$

$$\left(\operatorname{Csc}\left[\frac{e}{2}\right] \operatorname{Sec}\left[\frac{e}{2}\right] \left(-a\, c^2 \operatorname{Cos}[e] - 2\, a\, c\, d\, x \operatorname{Cos}[e] - a\, d^2\, x^2 \operatorname{Cos}[e] - b\, c^2 \operatorname{Sin}[f\,x] - 2\, b\, c\, d\, x \operatorname{Sin}[f\,x] - b\, d^2\, x^2 \operatorname{Sin}[f\,x]\right)\right) \Big/ \left(2\,(a - b)\,(a + b)\, f\,(a + b \operatorname{Sin}[e + f\,x])\right)$$

Problem 175: Result more than twice size of optimal antiderivative.

$$\int (c + d\,x)^m\,(a + b \operatorname{Sin}[e + f\,x])^2\, dx$$

Optimal (type 4, 318 leaves, 10 steps):

$$\frac{a^2\,(c + d\,x)^{1+m}}{d\,(1 + m)} + \frac{b^2\,(c + d\,x)^{1+m}}{2\,d\,(1 + m)} - \frac{a\, b\, e^{i\left(e - \frac{c f}{d}\right)}\,(c + d\,x)^m \left(-\frac{i\, f\,(c + d\,x)}{d}\right)^{-m} \operatorname{Gamma}\left[1 + m, -\frac{i\, f\,(c + d\,x)}{d}\right]}{f} - \frac{a\, b\, e^{-i\left(e - \frac{c f}{d}\right)}\,(c + d\,x)^m \left(\frac{i\, f\,(c + d\,x)}{d}\right)^{-m} \operatorname{Gamma}\left[1 + m, \frac{i\, f\,(c + d\,x)}{d}\right]}{f} + \frac{i\, 2^{-3-m}\, b^2\, e^{2 i\left(e - \frac{c f}{d}\right)}\,(c + d\,x)^m \left(-\frac{i\, f\,(c + d\,x)}{d}\right)^{-m} \operatorname{Gamma}\left[1 + m, -\frac{2\, i\, f\,(c + d\,x)}{d}\right]}{f} - \frac{i\, 2^{-3-m}\, b^2\, e^{-2 i\left(e - \frac{c f}{d}\right)}\,(c + d\,x)^m \left(\frac{i\, f\,(c + d\,x)}{d}\right)^{-m} \operatorname{Gamma}\left[1 + m, \frac{2\, i\, f\,(c + d\,x)}{d}\right]}{f}$$

Result (type 4, 707 leaves):

$$\frac{1}{d f (1+m)} 2^{-3-m} (c+d x)^m \left(\frac{f^2 (c+d x)^2}{d^2}\right)^{-m}$$
$$\left(2^{3+m} a^2 c f \left(\frac{f^2 (c+d x)^2}{d^2}\right)^m + 2^{2+m} b^2 c f \left(\frac{f^2 (c+d x)^2}{d^2}\right)^m + 2^{3+m} a^2 d f x \left(\frac{f^2 (c+d x)^2}{d^2}\right)^m + 2^{2+m} b^2 d f x \left(\frac{f^2 (c+d x)^2}{d^2}\right)^m + \right.$$
$$i b^2 d \left(\frac{i f (c+d x)}{d}\right)^m \text{Cos}\left[2 e - \frac{2 c f}{d}\right] \text{Gamma}\left[1+m, -\frac{2 i f (c+d x)}{d}\right] + i b^2 d m \left(\frac{i f (c+d x)}{d}\right)^m \text{Cos}\left[2 e - \frac{2 c f}{d}\right] \text{Gamma}\left[1+m, -\frac{2 i f (c+d x)}{d}\right] -$$
$$i b^2 d \left(-\frac{i f (c+d x)}{d}\right)^m \text{Cos}\left[2 e - \frac{2 c f}{d}\right] \text{Gamma}\left[1+m, \frac{2 i f (c+d x)}{d}\right] - i b^2 d m \left(-\frac{i f (c+d x)}{d}\right)^m \text{Cos}\left[2 e - \frac{2 c f}{d}\right] \text{Gamma}\left[1+m, \frac{2 i f (c+d x)}{d}\right] -$$
$$b^2 d \left(\frac{i f (c+d x)}{d}\right)^m \text{Gamma}\left[1+m, -\frac{2 i f (c+d x)}{d}\right] \text{Sin}\left[2 e - \frac{2 c f}{d}\right] - b^2 d m \left(\frac{i f (c+d x)}{d}\right)^m \text{Gamma}\left[1+m, -\frac{2 i f (c+d x)}{d}\right] \text{Sin}\left[2 e - \frac{2 c f}{d}\right] -$$
$$b^2 d \left(-\frac{i f (c+d x)}{d}\right)^m \text{Gamma}\left[1+m, \frac{2 i f (c+d x)}{d}\right] \text{Sin}\left[2 e - \frac{2 c f}{d}\right] - b^2 d m \left(-\frac{i f (c+d x)}{d}\right)^m \text{Gamma}\left[1+m, \frac{2 i f (c+d x)}{d}\right] \text{Sin}\left[2 e - \frac{2 c f}{d}\right] -$$
$$2^{3+m} a b d (1+m) \left(-\frac{i f (c+d x)}{d}\right)^m \text{Gamma}\left[1+m, \frac{i f (c+d x)}{d}\right] \left(\text{Cos}\left[e - \frac{c f}{d}\right] - i \text{Sin}\left[e - \frac{c f}{d}\right]\right) -$$
$$\left. 2^{3+m} a b d (1+m) \left(\frac{i f (c+d x)}{d}\right)^m \text{Gamma}\left[1+m, -\frac{i f (c+d x)}{d}\right] \left(\text{Cos}\left[e - \frac{c f}{d}\right] + i \text{Sin}\left[e - \frac{c f}{d}\right]\right)\right)$$

Problem 181: Result more than twice size of optimal antiderivative.

$$\int \frac{(e+f x) \text{Sin}[c+d x]}{a + a \text{Sin}[c+d x]} \, dx$$

Optimal (type 3, 76 leaves, 5 steps):

$$\frac{e x}{a} + \frac{f x^2}{2 a} + \frac{(e+f x) \text{Cot}\left[\frac{c}{2} + \frac{\pi}{4} + \frac{d x}{2}\right]}{a d} - \frac{2 f \text{Log}\left[\text{Sin}\left[\frac{c}{2} + \frac{\pi}{4} + \frac{d x}{2}\right]\right]}{a d^2}$$

Result (type 3, 199 leaves):

$$\left(2 d f x \text{Cos}\left[c + \frac{d x}{2}\right] + \text{Cos}\left[\frac{d x}{2}\right] \left(d^2 x (2 e + f x) - 4 f \text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right] + \text{Sin}\left[\frac{1}{2} (c+d x)\right]\right]\right) - 4 d e \text{Sin}\left[\frac{d x}{2}\right] - \right.$$
$$\left. 2 d f x \text{Sin}\left[\frac{d x}{2}\right] + 2 d^2 e x \text{Sin}\left[c + \frac{d x}{2}\right] + d^2 f x^2 \text{Sin}\left[c + \frac{d x}{2}\right] - 4 f \text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right] + \text{Sin}\left[\frac{1}{2} (c+d x)\right]\right] \text{Sin}\left[c + \frac{d x}{2}\right]\right) \Big/$$
$$\left(2 a d^2 \left(\text{Cos}\left[\frac{c}{2}\right] + \text{Sin}\left[\frac{c}{2}\right]\right) \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right] + \text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)\right)$$

Problem 182: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Sin}[c+d x]}{a + a \text{Sin}[c+d x]} \, dx$$

Optimal (type 3, 28 leaves, 2 steps):

$$\frac{x}{a}+\frac{\text{Cos}[c+d\,x]}{d\,(a+a\,\text{Sin}[c+d\,x])}$$

Result (type 3, 72 leaves) :

$$\frac{\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\,\left((c+d\,x)\,\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+(-2+c+d\,x)\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)}{a\,d\,(1+\text{Sin}[c+d\,x])}$$

- **Problem 185: Result more than twice size of optimal antiderivative.**

$$\int\frac{(e+f\,x)^3\,\text{Sin}[c+d\,x]^2}{a+a\,\text{Sin}[c+d\,x]}\,dx$$

Optimal (type 4, 247 leaves, 14 steps) :

$$-\frac{i\,(e+f\,x)^3}{a\,d}-\frac{(e+f\,x)^4}{4\,a\,f}+\frac{6\,f^2\,(e+f\,x)\,\text{Cos}[c+d\,x]}{a\,d^3}-\frac{(e+f\,x)^3\,\text{Cos}[c+d\,x]}{a\,d}-\frac{(e+f\,x)^3\,\text{Cot}\left[\frac{c}{2}+\frac{\pi}{4}+\frac{d\,x}{2}\right]}{a\,d}+\frac{6\,f\,(e+f\,x)^2\,\text{Log}\left[1-i\,e^{i\,(c+d\,x)}\right]}{a\,d^2}-\frac{12\,i\,f^2\,(e+f\,x)\,\text{PolyLog}\left[2,\,i\,e^{i\,(c+d\,x)}\right]}{a\,d^3}+\frac{12\,f^3\,\text{PolyLog}\left[3,\,i\,e^{i\,(c+d\,x)}\right]}{a\,d^4}-\frac{6\,f^3\,\text{Sin}[c+d\,x]}{a\,d^4}+\frac{3\,f\,(e+f\,x)^2\,\text{Sin}[c+d\,x]}{a\,d^2}$$

Result (type 4, 1378 leaves) :

$$-\frac{1}{4\,a\,d^4\left(\text{Cos}\left[\frac{c}{2}\right]+\text{Sin}\left[\frac{c}{2}\right]\right)\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)}$$

$$\left(-6\,d^2 e^2 f\,\text{Cos}\left[\frac{d\,x}{2}\right]+12\,f^3\,\text{Cos}\left[\frac{d\,x}{2}\right]+4\,d^4 e^3 x\,\text{Cos}\left[\frac{d\,x}{2}\right]+12\,\mathrm{i}\,d^3 e^2 f\,x\,\text{Cos}\left[\frac{d\,x}{2}\right]-12\,d^2 e\,f^2 x\,\text{Cos}\left[\frac{d\,x}{2}\right]+\right.$$

$$6\,d^4 e^2 f\,x^2\,\text{Cos}\left[\frac{d\,x}{2}\right]+12\,\mathrm{i}\,d^3 e\,f^2 x^2\,\text{Cos}\left[\frac{d\,x}{2}\right]-6\,d^2 f^3 x^2\,\text{Cos}\left[\frac{d\,x}{2}\right]+4\,d^4 e\,f^2 x^3\,\text{Cos}\left[\frac{d\,x}{2}\right]+4\,\mathrm{i}\,d^3 f^3 x^3\,\text{Cos}\left[\frac{d\,x}{2}\right]+$$

$$d^4 f^3 x^4\,\text{Cos}\left[\frac{d\,x}{2}\right]+2\,d^3 e^3\,\text{Cos}\left[c+\frac{d\,x}{2}\right]-12\,d\,e\,f^2\,\text{Cos}\left[c+\frac{d\,x}{2}\right]+18\,d^3 e^2 f\,x\,\text{Cos}\left[c+\frac{d\,x}{2}\right]-12\,d\,f^3 x\,\text{Cos}\left[c+\frac{d\,x}{2}\right]+$$

$$18\,d^3 e\,f^2 x^2\,\text{Cos}\left[c+\frac{d\,x}{2}\right]+6\,d^3 f^3 x^3\,\text{Cos}\left[c+\frac{d\,x}{2}\right]+2\,d^3 e^3\,\text{Cos}\left[c+\frac{3\,d\,x}{2}\right]-12\,d\,e\,f^2\,\text{Cos}\left[c+\frac{3\,d\,x}{2}\right]+6\,d^3 e^2 f\,x\,\text{Cos}\left[c+\frac{3\,d\,x}{2}\right]-$$

$$12\,d\,f^3 x\,\text{Cos}\left[c+\frac{3\,d\,x}{2}\right]+6\,d^3 e\,f^2 x^2\,\text{Cos}\left[c+\frac{3\,d\,x}{2}\right]+2\,d^3 f^3 x^3\,\text{Cos}\left[c+\frac{3\,d\,x}{2}\right]+6\,d^2 e^2 f\,\text{Cos}\left[2\,c+\frac{3\,d\,x}{2}\right]-12\,f^3\,\text{Cos}\left[2\,c+\frac{3\,d\,x}{2}\right]+$$

$$12\,d^2 e\,f^2 x\,\text{Cos}\left[2\,c+\frac{3\,d\,x}{2}\right]+6\,d^2 f^3 x^2\,\text{Cos}\left[2\,c+\frac{3\,d\,x}{2}\right]-24\,d^2 e^2 f\,\text{Cos}\left[\frac{d\,x}{2}\right]\text{Log}[1-\mathrm{i}\,\text{Cos}[c+d\,x]+\text{Sin}[c+d\,x]]-$$

$$48\,d^2 e\,f^2 x\,\text{Cos}\left[\frac{d\,x}{2}\right]\text{Log}[1-\mathrm{i}\,\text{Cos}[c+d\,x]+\text{Sin}[c+d\,x]]-24\,d^2 f^3 x^2\,\text{Cos}\left[\frac{d\,x}{2}\right]\text{Log}[1-\mathrm{i}\,\text{Cos}[c+d\,x]+\text{Sin}[c+d\,x]]-10\,d^3 e^3\,\text{Sin}\left[\frac{d\,x}{2}\right]+$$

$$12\,d\,e\,f^2\,\text{Sin}\left[\frac{d\,x}{2}\right]-18\,d^3 e^2 f\,x\,\text{Sin}\left[\frac{d\,x}{2}\right]+12\,d\,f^3 x\,\text{Sin}\left[\frac{d\,x}{2}\right]-18\,d^3 e\,f^2 x^2\,\text{Sin}\left[\frac{d\,x}{2}\right]-6\,d^3 f^3 x^3\,\text{Sin}\left[\frac{d\,x}{2}\right]-6\,d^2 e^2 f\,\text{Sin}\left[c+\frac{d\,x}{2}\right]+$$

$$12\,f^3\,\text{Sin}\left[c+\frac{d\,x}{2}\right]+4\,d^4 e^3 x\,\text{Sin}\left[c+\frac{d\,x}{2}\right]+12\,\mathrm{i}\,d^3 e^2 f\,x\,\text{Sin}\left[c+\frac{d\,x}{2}\right]-12\,d^2 e\,f^2 x\,\text{Sin}\left[c+\frac{d\,x}{2}\right]+6\,d^4 e^2 f\,x^2\,\text{Sin}\left[c+\frac{d\,x}{2}\right]+$$

$$12\,\mathrm{i}\,d^3 e\,f^2 x^2\,\text{Sin}\left[c+\frac{d\,x}{2}\right]-6\,d^2 f^3 x^2\,\text{Sin}\left[c+\frac{d\,x}{2}\right]+4\,d^4 e\,f^2 x^3\,\text{Sin}\left[c+\frac{d\,x}{2}\right]+4\,\mathrm{i}\,d^3 f^3 x^3\,\text{Sin}\left[c+\frac{d\,x}{2}\right]+d^4 f^3 x^4\,\text{Sin}\left[c+\frac{d\,x}{2}\right]-$$

$$24\,d^2 e^2 f\,\text{Log}[1-\mathrm{i}\,\text{Cos}[c+d\,x]+\text{Sin}[c+d\,x]]\,\text{Sin}\left[c+\frac{d\,x}{2}\right]-48\,d^2 e\,f^2 x\,\text{Log}[1-\mathrm{i}\,\text{Cos}[c+d\,x]+\text{Sin}[c+d\,x]]\,\text{Sin}\left[c+\frac{d\,x}{2}\right]-$$

$$24\,d^2 f^3 x^2\,\text{Log}[1-\mathrm{i}\,\text{Cos}[c+d\,x]+\text{Sin}[c+d\,x]]\,\text{Sin}\left[c+\frac{d\,x}{2}\right]-48\,f^3\,\text{PolyLog}[3,\mathrm{i}\,\text{Cos}[c+d\,x]-\text{Sin}[c+d\,x]]\left(\text{Cos}\left[\frac{d\,x}{2}\right]+\text{Sin}\left[c+\frac{d\,x}{2}\right]\right)+$$

$$48\,\mathrm{i}\,d\,f^2(e+f\,x)\,\text{PolyLog}[2,\mathrm{i}\,\text{Cos}[c+d\,x]-\text{Sin}[c+d\,x]]\left(\text{Cos}\left[\frac{c}{2}\right]+\text{Sin}\left[\frac{c}{2}\right]\right)\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)-$$

$$6\,d^2 e^2 f\,\text{Sin}\left[c+\frac{3\,d\,x}{2}\right]+12\,f^3\,\text{Sin}\left[c+\frac{3\,d\,x}{2}\right]-12\,d^2 e\,f^2 x\,\text{Sin}\left[c+\frac{3\,d\,x}{2}\right]-6\,d^2 f^3 x^2\,\text{Sin}\left[c+\frac{3\,d\,x}{2}\right]+2\,d^3 e^3\,\text{Sin}\left[2\,c+\frac{3\,d\,x}{2}\right]-$$

$$\left.12\,d\,e\,f^2\,\text{Sin}\left[2\,c+\frac{3\,d\,x}{2}\right]+6\,d^3 e^2 f\,x\,\text{Sin}\left[2\,c+\frac{3\,d\,x}{2}\right]-12\,d\,f^3 x\,\text{Sin}\left[2\,c+\frac{3\,d\,x}{2}\right]+6\,d^3 e\,f^2 x^2\,\text{Sin}\left[2\,c+\frac{3\,d\,x}{2}\right]+2\,d^3 f^3 x^3\,\text{Sin}\left[2\,c+\frac{3\,d\,x}{2}\right]\right)$$

Problem 187: Result more than twice size of optimal antiderivative.

$$\int\frac{(e+f\,x)\,\text{Sin}[c+d\,x]^2}{a+a\,\text{Sin}[c+d\,x]}\,dx$$

Optimal (type 3, 111 leaves, 8 steps):

$$-\frac{e\,x}{a}-\frac{f\,x^2}{2\,a}-\frac{(e+f\,x)\,\text{Cos}[c+d\,x]}{a\,d}-\frac{(e+f\,x)\,\text{Cot}\left[\frac{c}{2}+\frac{\pi}{4}+\frac{d\,x}{2}\right]}{a\,d}+\frac{2\,f\,\text{Log}\left[\text{Sin}\left[\frac{c}{2}+\frac{\pi}{4}+\frac{d\,x}{2}\right]\right]}{a\,d^2}+\frac{f\,\text{Sin}[c+d\,x]}{a\,d^2}$$

Result (type 3, 236 leaves):

$$-\frac{1}{2\,a\,d^2\,(1+\text{Sin}[c+d\,x])}\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\left(\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\left(-4\,d\,e+2\,c\,d\,e+2\,c\,f-c^2\,f+2\,d^2\,e\,x-2\,d\,f\,x+d^2\,f\,x^2+2\,d\,(e+f\,x)\,\text{Cos}[c+d\,x]-4\,f\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]-2\,f\,\text{Sin}[c+d\,x]\right)+\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]\left(2\,c\,d\,e+2\,c\,f-c^2\,f+2\,d^2\,e\,x+2\,d\,f\,x+d^2\,f\,x^2+2\,d\,(e+f\,x)\,\text{Cos}[c+d\,x]-4\,f\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]-2\,f\,\text{Sin}[c+d\,x]\right)\right)$$

- **Problem 191: Result more than twice size of optimal antiderivative.**

$$\int\frac{(e+f\,x)^3\,\text{Sin}[c+d\,x]^3}{a+a\,\text{Sin}[c+d\,x]}\,dx$$

Optimal (type 4, 382 leaves, 19 steps):

$$-\frac{3\,e\,f^2\,x}{4\,a\,d^2}-\frac{3\,f^3\,x^2}{8\,a\,d^2}+\frac{i\,(e+f\,x)^3}{a\,d}+\frac{3\,(e+f\,x)^4}{8\,a\,f}-\frac{6\,f^2\,(e+f\,x)\,\text{Cos}[c+d\,x]}{a\,d^3}+\frac{(e+f\,x)^3\,\text{Cos}[c+d\,x]}{a\,d}+\frac{(e+f\,x)^3\,\text{Cot}\left[\frac{c}{2}+\frac{\pi}{4}+\frac{d\,x}{2}\right]}{a\,d}-\frac{6\,f\,(e+f\,x)^2\,\text{Log}\left[1-i\,e^{i\,(c+d\,x)}\right]}{a\,d^2}+\frac{12\,i\,f^2\,(e+f\,x)\,\text{PolyLog}\left[2,\,i\,e^{i\,(c+d\,x)}\right]}{a\,d^3}-\frac{12\,f^3\,\text{PolyLog}\left[3,\,i\,e^{i\,(c+d\,x)}\right]}{a\,d^4}+\frac{6\,f^3\,\text{Sin}[c+d\,x]}{a\,d^4}-\frac{3\,f\,(e+f\,x)^2\,\text{Sin}[c+d\,x]}{a\,d^2}+\frac{3\,f^2\,(e+f\,x)\,\text{Cos}[c+d\,x]\,\text{Sin}[c+d\,x]}{4\,a\,d^3}-\frac{(e+f\,x)^3\,\text{Cos}[c+d\,x]\,\text{Sin}[c+d\,x]}{2\,a\,d}-\frac{3\,f^3\,\text{Sin}[c+d\,x]^2}{8\,a\,d^4}+\frac{3\,f\,(e+f\,x)^2\,\text{Sin}[c+d\,x]^2}{4\,a\,d^2}$$

Result (type 4, 1264 leaves):

$$\frac{3 e^3 x}{2 a}+\frac{9 e^2 f x^2}{4 a}+\frac{3 e f^2 x^3}{2 a}+\frac{3 f^3 x^4}{8 a}+\frac{1}{a d^4}$$

$$2 f \left(-3 d^2 (e+f x)^2 \text{Log}[1-i \text{Cos}[c+d x]+\text{Sin}[c+d x]]+6 i d f (e+f x) \text{PolyLog}[2, i \text{Cos}[c+d x]-\text{Sin}[c+d x]]-\right.$$

$$\left. 6 f^2 \text{PolyLog}[3, i \text{Cos}[c+d x]-\text{Sin}[c+d x]]+\frac{i d^3 x \left(3 e^2+3 e f x+f^2 x^2\right) (\text{Cos}[c]+i \text{Sin}[c])}{\text{Cos}[c]+i (1+\text{Sin}[c])}\right)+$$

$$\left(\frac{f^3 x^3 \text{Cos}[c]}{2 a d}-\frac{i f^3 x^3 \text{Sin}[c]}{2 a d}+\left(d^3 e^3-3 i d^2 e^2 f-6 d e f^2+6 i f^3\right)\left(\frac{\text{Cos}[c]}{2 a d^4}-\frac{i \text{Sin}[c]}{2 a d^4}\right)+\right.$$

$$\left.\left(d^2 e^2 f-2 i d e f^2-2 f^3\right)\left(\frac{3 x \text{Cos}[c]}{2 a d^3}-\frac{3 i x \text{Sin}[c]}{2 a d^3}\right)+\left(d e f^2-i f^3\right)\left(\frac{3 x^2 \text{Cos}[c]}{2 a d^2}-\frac{3 i x^2 \text{Sin}[c]}{2 a d^2}\right)\right)(\text{Cos}[d x]-i \text{Sin}[d x])+$$

$$\left(\frac{f^3 x^3 \text{Cos}[c]}{2 a d}+\frac{i f^3 x^3 \text{Sin}[c]}{2 a d}+\left(d^3 e^3+3 i d^2 e^2 f-6 d e f^2-6 i f^3\right)\left(\frac{\text{Cos}[c]}{2 a d^4}+\frac{i \text{Sin}[c]}{2 a d^4}\right)+\right.$$

$$\frac{3 x^2 \left(d e f^2 \text{Cos}[c]+i f^3 \text{Cos}[c]+i d e f^2 \text{Sin}[c]-f^3 \text{Sin}[c]\right)}{2 a d^2}+$$

$$\left.\frac{3 x \left(d^2 e^2 f \text{Cos}[c]+2 i d e f^2 \text{Cos}[c]-2 f^3 \text{Cos}[c]+i d^2 e^2 f \text{Sin}[c]-2 d e f^2 \text{Sin}[c]-2 i f^3 \text{Sin}[c]\right)}{2 a d^3}\right)(\text{Cos}[d x]+i \text{Sin}[d x])+$$

$$\left(-\frac{i f^3 x^3 \text{Cos}[2 c]}{8 a d}-\frac{f^3 x^3 \text{Sin}[2 c]}{8 a d}+\left(-4 i d^3 e^3-6 d^2 e^2 f+6 i d e f^2+3 f^3\right)\left(\frac{\text{Cos}[2 c]}{32 a d^4}-\frac{i \text{Sin}[2 c]}{32 a d^4}\right)+\right.$$

$$\left.\left(2 d^2 e^2 f-2 i d e f^2-f^3\right)\left(-\frac{3 i x \text{Cos}[2 c]}{16 a d^3}-\frac{3 x \text{Sin}[2 c]}{16 a d^3}\right)+\left(2 d e f^2-i f^3\right)\left(-\frac{3 i x^2 \text{Cos}[2 c]}{16 a d^2}-\frac{3 x^2 \text{Sin}[2 c]}{16 a d^2}\right)\right)(\text{Cos}[2 d x]-i \text{Sin}[2 d x])+$$

$$\left(\frac{i f^3 x^3 \text{Cos}[2 c]}{8 a d}-\frac{f^3 x^3 \text{Sin}[2 c]}{8 a d}+\left(4 i d^3 e^3-6 d^2 e^2 f-6 i d e f^2+3 f^3\right)\left(\frac{\text{Cos}[2 c]}{32 a d^4}+\frac{i \text{Sin}[2 c]}{32 a d^4}\right)+\right.$$

$$\frac{3 i x^2 \left(2 d e f^2 \text{Cos}[2 c]+i f^3 \text{Cos}[2 c]+2 i d e f^2 \text{Sin}[2 c]-f^3 \text{Sin}[2 c]\right)}{16 a d^2}+\frac{1}{16 a d^3}$$

$$\left. 3 i x \left(2 d^2 e^2 f \text{Cos}[2 c]+2 i d e f^2 \text{Cos}[2 c]-f^3 \text{Cos}[2 c]+2 i d^2 e^2 f \text{Sin}[2 c]-2 d e f^2 \text{Sin}[2 c]-i f^3 \text{Sin}[2 c]\right)\right)$$

$$(\text{Cos}[2 d x]+i \text{Sin}[2 d x])-\frac{2 \left(e^3 \text{Sin}\left[\frac{d x}{2}\right]+3 e^2 f x \text{Sin}\left[\frac{d x}{2}\right]+3 e f^2 x^2 \text{Sin}\left[\frac{d x}{2}\right]+f^3 x^3 \text{Sin}\left[\frac{d x}{2}\right]\right)}{a d \left(\text{Cos}\left[\frac{c}{2}\right]+\text{Sin}\left[\frac{c}{2}\right]\right)\left(\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right)}$$

- **Problem 192: Result more than twice size of optimal antiderivative.**

$$\int \frac{(e+f x)^2 \text{Sin}[c+d x]^3}{a+a \text{Sin}[c+d x]} \, dx$$

Optimal (type 4, 278 leaves, 17 steps):

$$-\frac{f^2 x}{4 a d^2}+\frac{i (e+f x)^2}{a d}+\frac{(e+f x)^3}{2 a f}-\frac{2 f^2 \operatorname{Cos}[c+d x]}{a d^3}+\frac{(e+f x)^2 \operatorname{Cos}[c+d x]}{a d}+\frac{(e+f x)^2 \operatorname{Cot}\left[\frac{c}{2}+\frac{\pi}{4}+\frac{d x}{2}\right]}{a d}-\frac{4 f (e+f x) \operatorname{Log}\left[1-i e^{i (c+d x)}\right]}{a d^2}+\frac{4 i f^2 \operatorname{PolyLog}\left[2, i e^{i (c+d x)}\right]}{a d^3}-\frac{2 f (e+f x) \operatorname{Sin}[c+d x]}{a d^2}+\frac{f^2 \operatorname{Cos}[c+d x] \operatorname{Sin}[c+d x]}{4 a d^3}-\frac{(e+f x)^2 \operatorname{Cos}[c+d x] \operatorname{Sin}[c+d x]}{2 a d}+\frac{f (e+f x) \operatorname{Sin}[c+d x]^2}{2 a d^2}$$

Result (type 4, 931 leaves) :

$$\frac{1}{16 a d^3 \left(\operatorname{Cos}\left[\frac{c}{2}\right]+\operatorname{Sin}\left[\frac{c}{2}\right]\right) \left(\operatorname{Cos}\left[\frac{1}{2} (c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2} (c+d x)\right]\right)}
\left(8 d^2 e^2 \operatorname{Cos}\left[c+\frac{d x}{2}\right]-16 f^2 \operatorname{Cos}\left[c+\frac{d x}{2}\right]+48 d^2 e f x \operatorname{Cos}\left[c+\frac{d x}{2}\right]+24 d^2 f^2 x^2 \operatorname{Cos}\left[c+\frac{d x}{2}\right]+6 d^2 e^2 \operatorname{Cos}\left[c+\frac{3 d x}{2}\right]-15 f^2 \operatorname{Cos}\left[c+\frac{3 d x}{2}\right]+\right.
12 d^2 e f x \operatorname{Cos}\left[c+\frac{3 d x}{2}\right]+6 d^2 f^2 x^2 \operatorname{Cos}\left[c+\frac{3 d x}{2}\right]+14 d e f \operatorname{Cos}\left[2 c+\frac{3 d x}{2}\right]+14 d f^2 x \operatorname{Cos}\left[2 c+\frac{3 d x}{2}\right]-2 d e f \operatorname{Cos}\left[2 c+\frac{5 d x}{2}\right]-
2 d f^2 x \operatorname{Cos}\left[2 c+\frac{5 d x}{2}\right]+2 d^2 e^2 \operatorname{Cos}\left[3 c+\frac{5 d x}{2}\right]-f^2 \operatorname{Cos}\left[3 c+\frac{5 d x}{2}\right]+4 d^2 e f x \operatorname{Cos}\left[3 c+\frac{5 d x}{2}\right]+2 d^2 f^2 x^2 \operatorname{Cos}\left[3 c+\frac{5 d x}{2}\right]+
8 d \operatorname{Cos}\left[\frac{d x}{2}\right] \left(3 d^2 e^2 x+f^2 x \left(-2+2 i d x+d^2 x^2\right)+e f \left(-2+4 i d x+3 d^2 x^2\right)-8 f (e+f x) \operatorname{Log}[1-i \operatorname{Cos}[c+d x]+\operatorname{Sin}[c+d x]]\right)-
40 d^2 e^2 \operatorname{Sin}\left[\frac{d x}{2}\right]+16 f^2 \operatorname{Sin}\left[\frac{d x}{2}\right]-48 d^2 e f x \operatorname{Sin}\left[\frac{d x}{2}\right]-24 d^2 f^2 x^2 \operatorname{Sin}\left[\frac{d x}{2}\right]-16 d e f \operatorname{Sin}\left[c+\frac{d x}{2}\right]+24 d^3 e^2 x \operatorname{Sin}\left[c+\frac{d x}{2}\right]+
32 i d^2 e f x \operatorname{Sin}\left[c+\frac{d x}{2}\right]-16 d f^2 x \operatorname{Sin}\left[c+\frac{d x}{2}\right]+24 d^3 e f x^2 \operatorname{Sin}\left[c+\frac{d x}{2}\right]+16 i d^2 f^2 x^2 \operatorname{Sin}\left[c+\frac{d x}{2}\right]+8 d^3 f^2 x^3 \operatorname{Sin}\left[c+\frac{d x}{2}\right]-
64 d e f \operatorname{Log}[1-i \operatorname{Cos}[c+d x]+\operatorname{Sin}[c+d x]] \operatorname{Sin}\left[c+\frac{d x}{2}\right]-64 d f^2 x \operatorname{Log}[1-i \operatorname{Cos}[c+d x]+\operatorname{Sin}[c+d x]] \operatorname{Sin}\left[c+\frac{d x}{2}\right]+
64 i f^2 \operatorname{PolyLog}[2, i \operatorname{Cos}[c+d x]-\operatorname{Sin}[c+d x]] \left(\operatorname{Cos}\left[\frac{d x}{2}\right]+\operatorname{Sin}\left[c+\frac{d x}{2}\right]\right)-14 d e f \operatorname{Sin}\left[c+\frac{3 d x}{2}\right]-14 d f^2 x \operatorname{Sin}\left[c+\frac{3 d x}{2}\right]+
6 d^2 e^2 \operatorname{Sin}\left[2 c+\frac{3 d x}{2}\right]-15 f^2 \operatorname{Sin}\left[2 c+\frac{3 d x}{2}\right]+12 d^2 e f x \operatorname{Sin}\left[2 c+\frac{3 d x}{2}\right]+6 d^2 f^2 x^2 \operatorname{Sin}\left[2 c+\frac{3 d x}{2}\right]-2 d^2 e^2 \operatorname{Sin}\left[2 c+\frac{5 d x}{2}\right]+
\left.f^2 \operatorname{Sin}\left[2 c+\frac{5 d x}{2}\right]-4 d^2 e f x \operatorname{Sin}\left[2 c+\frac{5 d x}{2}\right]-2 d^2 f^2 x^2 \operatorname{Sin}\left[2 c+\frac{5 d x}{2}\right]-2 d e f \operatorname{Sin}\left[3 c+\frac{5 d x}{2}\right]-2 d f^2 x \operatorname{Sin}\left[3 c+\frac{5 d x}{2}\right]\right)$$

Problem 199: Result more than twice size of optimal antiderivative.

$$\int \frac{(e+f x) \operatorname{Csc}[c+d x]}{a+a \operatorname{Sin}[c+d x]} \, dx$$

Optimal (type 4, 134 leaves, 9 steps) :

$$-\frac{2 (e+f x) \operatorname{ArcTanh}\left[e^{i (c+d x)}\right]}{a d}+\frac{(e+f x) \operatorname{Cot}\left[\frac{c}{2}+\frac{\pi}{4}+\frac{d x}{2}\right]}{a d}-\frac{2 f \operatorname{Log}\left[\operatorname{Sin}\left[\frac{c}{2}+\frac{\pi}{4}+\frac{d x}{2}\right]\right]}{a d^2}+\frac{i f \operatorname{PolyLog}\left[2,-e^{i (c+d x)}\right]}{a d^2}-\frac{i f \operatorname{PolyLog}\left[2, e^{i (c+d x)}\right]}{a d^2}$$

Result (type 4, 300 leaves) :

$$\frac{1}{a\, d^2\, (1+\text{Sin}[c+d\,x])}\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)\left(-2\,d\,(e+f\,x)\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]+\right.$$
$$f\,(c+d\,x)\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)-2\,f\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)+$$
$$d\,e\,\text{Log}\left[\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right]\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)-c\,f\,\text{Log}\left[\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right]\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)+$$
$$\left.f\left((c+d\,x)\left(\text{Log}\left[1-e^{i\,(c+d\,x)}\right]-\text{Log}\left[1+e^{i\,(c+d\,x)}\right]\right)+i\left(\text{PolyLog}\left[2,-e^{i\,(c+d\,x)}\right]-\text{PolyLog}\left[2,e^{i\,(c+d\,x)}\right]\right)\right)\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)\right)$$

- **Problem 200: Result more than twice size of optimal antiderivative.**

$$\int\frac{\text{Csc}[c+d\,x]}{a+a\,\text{Sin}[c+d\,x]}\,dx$$

Optimal (type 3, 38 leaves, 3 steps) :

$$-\frac{\text{ArcTanh}[\text{Cos}[c+d\,x]]}{a\,d}+\frac{\text{Cos}[c+d\,x]}{d\,(a+a\,\text{Sin}[c+d\,x])}$$

Result (type 3, 113 leaves) :

$$-\frac{1}{a\,d\,(1+\text{Sin}[c+d\,x])}\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)$$
$$\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]\left(\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]\right]-\text{Log}\left[\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]\right)+\left(2+\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]\right]-\text{Log}\left[\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]\right)\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)$$

- **Problem 203: Result more than twice size of optimal antiderivative.**

$$\int\frac{(e+f\,x)^3\,\text{Csc}[c+d\,x]^2}{a+a\,\text{Sin}[c+d\,x]}\,dx$$

Optimal (type 4, 463 leaves, 24 steps) :

$$-\frac{2\,i\,(e+f\,x)^3}{a\,d}+\frac{2\,(e+f\,x)^3\,\text{ArcTanh}\left[e^{i\,(c+d\,x)}\right]}{a\,d}-\frac{(e+f\,x)^3\,\text{Cot}\left[\frac{c}{2}+\frac{\pi}{4}+\frac{d\,x}{2}\right]}{a\,d}-\frac{(e+f\,x)^3\,\text{Cot}[c+d\,x]}{a\,d}+$$

$$\frac{6\,f\,(e+f\,x)^2\,\text{Log}\left[1-i\,e^{i\,(c+d\,x)}\right]}{a\,d^2}+\frac{3\,f\,(e+f\,x)^2\,\text{Log}\left[1-e^{2\,i\,(c+d\,x)}\right]}{a\,d^2}-\frac{3\,i\,f\,(e+f\,x)^2\,\text{PolyLog}\left[2,\,-e^{i\,(c+d\,x)}\right]}{a\,d^2}-$$

$$\frac{12\,i\,f^2\,(e+f\,x)\,\text{PolyLog}\left[2,\,i\,e^{i\,(c+d\,x)}\right]}{a\,d^3}+\frac{3\,i\,f\,(e+f\,x)^2\,\text{PolyLog}\left[2,\,e^{i\,(c+d\,x)}\right]}{a\,d^2}-\frac{3\,i\,f^2\,(e+f\,x)\,\text{PolyLog}\left[2,\,e^{2\,i\,(c+d\,x)}\right]}{a\,d^3}+$$

$$\frac{6\,f^2\,(e+f\,x)\,\text{PolyLog}\left[3,\,-e^{i\,(c+d\,x)}\right]}{a\,d^3}+\frac{12\,f^3\,\text{PolyLog}\left[3,\,i\,e^{i\,(c+d\,x)}\right]}{a\,d^4}-\frac{6\,f^2\,(e+f\,x)\,\text{PolyLog}\left[3,\,e^{i\,(c+d\,x)}\right]}{a\,d^3}+$$

$$\frac{3\,f^3\,\text{PolyLog}\left[3,\,e^{2\,i\,(c+d\,x)}\right]}{2\,a\,d^4}+\frac{6\,i\,f^3\,\text{PolyLog}\left[4,\,-e^{i\,(c+d\,x)}\right]}{a\,d^4}-\frac{6\,i\,f^3\,\text{PolyLog}\left[4,\,e^{i\,(c+d\,x)}\right]}{a\,d^4}$$

Result (type 4, 1208 leaves) :

$$-\frac{e^3\,\text{Log}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right]}{a\,d}-\frac{1}{a\,d^2}$$

$$3\,e^2\,f\left((c+d\,x)\,\left(\text{Log}\left[1-e^{i\,(c+d\,x)}\right]-\text{Log}\left[1+e^{i\,(c+d\,x)}\right]\right)-c\,\text{Log}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right]+i\,\left(\text{PolyLog}\left[2,-e^{i\,(c+d\,x)}\right]-\text{PolyLog}\left[2,e^{i\,(c+d\,x)}\right]\right)\right)-$$

$$\frac{1}{4\,a\,d^4}e^{-i\,c}\,f^3\,\text{Csc}[c]$$

$$\left(2\,d^2\,x^2\,\left(2\,d\,e^{2\,i\,c}\,x+3\,i\,\left(-1+e^{2\,i\,c}\right)\,\text{Log}\left[1-e^{2\,i\,(c+d\,x)}\right]\right)+6\,d\,\left(-1+e^{2\,i\,c}\right)\,x\,\text{PolyLog}\left[2,e^{2\,i\,(c+d\,x)}\right]+3\,i\,\left(-1+e^{2\,i\,c}\right)\,\text{PolyLog}\left[3,e^{2\,i\,(c+d\,x)}\right]\right)+$$

$$\frac{1}{a\,d^3}6\,e\,f^2\,\left(d^2\,x^2\,\text{ArcTanh}[\text{Cos}[c+d\,x]+i\,\text{Sin}[c+d\,x]]-i\,d\,x\,\text{PolyLog}[2,-\text{Cos}[c+d\,x]-i\,\text{Sin}[c+d\,x]]+\right.$$

$$\left.i\,d\,x\,\text{PolyLog}[2,\text{Cos}[c+d\,x]+i\,\text{Sin}[c+d\,x]]+\text{PolyLog}[3,-\text{Cos}[c+d\,x]-i\,\text{Sin}[c+d\,x]]-\text{PolyLog}[3,\text{Cos}[c+d\,x]+i\,\text{Sin}[c+d\,x]]\right)-$$

$$\frac{1}{a\,d^4}\,f^3\,\left(-2\,d^3\,x^3\,\text{ArcTanh}[\text{Cos}[c+d\,x]+i\,\text{Sin}[c+d\,x]]+3\,i\,d^2\,x^2\,\text{PolyLog}[2,-\text{Cos}[c+d\,x]-i\,\text{Sin}[c+d\,x]]-\right.$$

$$3\,i\,d^2\,x^2\,\text{PolyLog}[2,\text{Cos}[c+d\,x]+i\,\text{Sin}[c+d\,x]]-6\,d\,x\,\text{PolyLog}[3,-\text{Cos}[c+d\,x]-i\,\text{Sin}[c+d\,x]]+6\,d\,x$$

$$\left.\text{PolyLog}[3,\text{Cos}[c+d\,x]+i\,\text{Sin}[c+d\,x]]-6\,i\,\text{PolyLog}[4,-\text{Cos}[c+d\,x]-i\,\text{Sin}[c+d\,x]]+6\,i\,\text{PolyLog}[4,\text{Cos}[c+d\,x]+i\,\text{Sin}[c+d\,x]]\right)+$$

$$\frac{3\,e^2\,f\,\text{Csc}[c]\,(-d\,x\,\text{Cos}[c]+\text{Log}[\text{Cos}[d\,x]\,\text{Sin}[c]+\text{Cos}[c]\,\text{Sin}[d\,x]]\,\text{Sin}[c])}{a\,d^2\,\left(\text{Cos}[c]^2+\text{Sin}[c]^2\right)}+\frac{1}{a\,d^4}$$

$$2\,f\left(3\,d^2\,(e+f\,x)^2\,\text{Log}[1-i\,\text{Cos}[c+d\,x]+\text{Sin}[c+d\,x]]-6\,i\,d\,f\,(e+f\,x)\,\text{PolyLog}[2,i\,\text{Cos}[c+d\,x]-\text{Sin}[c+d\,x]]+\right.$$

$$\left.6\,f^2\,\text{PolyLog}[3,i\,\text{Cos}[c+d\,x]-\text{Sin}[c+d\,x]]+\frac{d^3\,x\,\left(3\,e^2+3\,e\,f\,x+f^2\,x^2\right)\,(-i\,\text{Cos}[c]+\text{Sin}[c])}{\text{Cos}[c]+i\,(1+\text{Sin}[c])}\right)+$$

$$\frac{\text{Csc}\left[\frac{c}{2}\right]\,\text{Csc}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\,\left(e^3\,\text{Sin}\left[\frac{d\,x}{2}\right]+3\,e^2\,f\,x\,\text{Sin}\left[\frac{d\,x}{2}\right]+3\,e\,f^2\,x^2\,\text{Sin}\left[\frac{d\,x}{2}\right]+f^3\,x^3\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)}{2\,a\,d}+$$

$$\frac{\text{Sec}\left[\frac{c}{2}\right]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\,\left(e^3\,\text{Sin}\left[\frac{d\,x}{2}\right]+3\,e^2\,f\,x\,\text{Sin}\left[\frac{d\,x}{2}\right]+3\,e\,f^2\,x^2\,\text{Sin}\left[\frac{d\,x}{2}\right]+f^3\,x^3\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)}{2\,a\,d}+$$

$$\frac{2\,\left(e^3\,\text{Sin}\left[\frac{d\,x}{2}\right]+3\,e^2\,f\,x\,\text{Sin}\left[\frac{d\,x}{2}\right]+3\,e\,f^2\,x^2\,\text{Sin}\left[\frac{d\,x}{2}\right]+f^3\,x^3\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)}{a\,d\,\left(\text{Cos}\left[\frac{c}{2}\right]+\text{Sin}\left[\frac{c}{2}\right]\right)\,\left(\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right)}-$$

$$\left(3\,e\,f^2\,\text{Csc}[c]\,\text{Sec}[c]\,\left(d^2\,e^{i\,\text{ArcTan}[\text{Tan}[c]]}\,x^2+1\middle/\left(\sqrt{1+\text{Tan}[c]^2}\right)\left(i\,d\,x\,(-\pi+2\,\text{ArcTan}[\text{Tan}[c]])-\pi\,\text{Log}\left[1+e^{-2\,i\,d\,x}\right]-\right.\right.\right.$$

$$2\,(d\,x+\text{ArcTan}[\text{Tan}[c]])\,\text{Log}\left[1-e^{2\,i\,(d\,x+\text{ArcTan}[\text{Tan}[c]])}\right]+\pi\,\text{Log}[\text{Cos}[d\,x]]+2\,\text{ArcTan}[\text{Tan}[c]]\,\text{Log}[\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]]+$$

$$\left.\left.\left.i\,\text{PolyLog}\left[2,e^{2\,i\,(d\,x+\text{ArcTan}[\text{Tan}[c]])}\right]\right)\,\text{Tan}[c]\right)\right)\middle/\left(a\,d^3\,\sqrt{\text{Sec}[c]^2\,\left(\text{Cos}[c]^2+\text{Sin}[c]^2\right)}\right)$$

- **Problem 204: Result more than twice size of optimal antiderivative.**

$$\int\frac{(e+f\,x)^2\,\text{Csc}[c+d\,x]^2}{a+a\,\text{Sin}[c+d\,x]}\,dx$$

Optimal (type 4, 327 leaves, 20 steps):

$$-\frac{2 i (e+f x)^2}{a d}+\frac{2 (e+f x)^2 \text{ArcTanh}\left[e^{i (c+d x)}\right]}{a d}-\frac{(e+f x)^2 \text{Cot}\left[\frac{c}{2}+\frac{\pi}{4}+\frac{d x}{2}\right]}{a d}-\frac{(e+f x)^2 \text{Cot}[c+d x]}{a d}+\frac{4 f (e+f x) \text{Log}\left[1-i e^{i (c+d x)}\right]}{a d^2}+\frac{2 f (e+f x) \text{Log}\left[1-e^{2 i (c+d x)}\right]}{a d^2}-\frac{2 i f (e+f x) \text{PolyLog}\left[2,-e^{i (c+d x)}\right]}{a d^2}-\frac{4 i f^2 \text{PolyLog}\left[2,i e^{i (c+d x)}\right]}{a d^3}+\frac{2 i f (e+f x) \text{PolyLog}\left[2,e^{i (c+d x)}\right]}{a d^2}-\frac{i f^2 \text{PolyLog}\left[2,e^{2 i (c+d x)}\right]}{a d^3}+\frac{2 f^2 \text{PolyLog}\left[3,-e^{i (c+d x)}\right]}{a d^3}-\frac{2 f^2 \text{PolyLog}\left[3,e^{i (c+d x)}\right]}{a d^3}$$

Result (type 4, 663 leaves):

$$\frac{1}{a d^3}\Big(-2 i d^2 e f x-i d^2 f^2 x^2+2 d^2 e^2 \text{ArcTanh}[\text{Cos}[c+d x]+i \text{Sin}[c+d x]]+4 d^2 e f x \text{ArcTanh}[\text{Cos}[c+d x]+i \text{Sin}[c+d x]]+2 d^2 f^2 x^2 \text{ArcTanh}[\text{Cos}[c+d x]+i \text{Sin}[c+d x]]-2 d^2 e f x \text{Cot}[c]-d^2 f^2 x^2 \text{Cot}[c]+2 d e f \text{Log}[1-\text{Cos}[2 (c+d x)]-i \text{Sin}[2 (c+d x)]]+2 d f^2 x \text{Log}[1-\text{Cos}[2 (c+d x)]-i \text{Sin}[2 (c+d x)]]-2 i d f (e+f x) \text{PolyLog}[2,-\text{Cos}[c+d x]-i \text{Sin}[c+d x]]+2 i d f (e+f x) \text{PolyLog}[2,\text{Cos}[c+d x]+i \text{Sin}[c+d x]]-i f^2 \text{PolyLog}[2,\text{Cos}[2 (c+d x)]+i \text{Sin}[2 (c+d x)]]+2 f^2 \text{PolyLog}[3,-\text{Cos}[c+d x]-i \text{Sin}[c+d x]]-2 f^2 \text{PolyLog}[3,\text{Cos}[c+d x]+i \text{Sin}[c+d x]]\Big)-\frac{1}{a d^3}2 i f\left(2 i d (e+f x) \text{Log}[1-i \text{Cos}[c+d x]+\text{Sin}[c+d x]]+2 f \text{PolyLog}[2,i \text{Cos}[c+d x]-\text{Sin}[c+d x]]+\frac{d^2 x (2 e+f x) (\text{Cos}[c]+i \text{Sin}[c])}{\text{Cos}[c]+i (1+\text{Sin}[c])}\right)+\frac{\text{Csc}\left[\frac{c}{2}\right] \text{Csc}\left[\frac{c}{2}+\frac{d x}{2}\right] \left(e^2 \text{Sin}\left[\frac{d x}{2}\right]+2 e f x \text{Sin}\left[\frac{d x}{2}\right]+f^2 x^2 \text{Sin}\left[\frac{d x}{2}\right]\right)}{2 a d}+\frac{\text{Sec}\left[\frac{c}{2}\right] \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right] \left(e^2 \text{Sin}\left[\frac{d x}{2}\right]+2 e f x \text{Sin}\left[\frac{d x}{2}\right]+f^2 x^2 \text{Sin}\left[\frac{d x}{2}\right]\right)}{2 a d}+\frac{2 \left(e^2 \text{Sin}\left[\frac{d x}{2}\right]+2 e f x \text{Sin}\left[\frac{d x}{2}\right]+f^2 x^2 \text{Sin}\left[\frac{d x}{2}\right]\right)}{a d \left(\text{Cos}\left[\frac{c}{2}\right]+\text{Sin}\left[\frac{c}{2}\right]\right) \left(\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right)}$$

- **Problem 205: Result more than twice size of optimal antiderivative.**

$$\int \frac{(e+f x) \text{Csc}[c+d x]^2}{a+a \text{Sin}[c+d x]} \, dx$$

Optimal (type 4, 169 leaves, 12 steps):

$$\frac{2 (e+f x) \text{ArcTanh}\left[e^{i (c+d x)}\right]}{a d}-\frac{(e+f x) \text{Cot}\left[\frac{c}{2}+\frac{\pi}{4}+\frac{d x}{2}\right]}{a d}-\frac{(e+f x) \text{Cot}[c+d x]}{a d}+\frac{2 f \text{Log}\left[\text{Sin}\left[\frac{c}{2}+\frac{\pi}{4}+\frac{d x}{2}\right]\right]}{a d^2}+\frac{f \text{Log}[\text{Sin}[c+d x]]}{a d^2}-\frac{i f \text{PolyLog}\left[2,-e^{i (c+d x)}\right]}{a d^2}+\frac{i f \text{PolyLog}\left[2,e^{i (c+d x)}\right]}{a d^2}$$

Result (type 4, 396 leaves):

$$\frac{1}{2\,a\,d^2\,(1+\text{Sin}[c+d\,x])}\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)$$
$$\left(-d\,(e+f\,x)\,\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right)+4\,d\,(e+f\,x)\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]-2\,f\,(c+d\,x)\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)+4\,f\right.$$
$$\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)+2\,f\,\text{Log}[\text{Sin}[c+d\,x]]\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)-$$
$$2\,d\,e\,\text{Log}\left[\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right]\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)+2\,c\,f\,\text{Log}\left[\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right]\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)-$$
$$2\,f\left((c+d\,x)\left(\text{Log}\left[1-e^{i\,(c+d\,x)}\right]-\text{Log}\left[1+e^{i\,(c+d\,x)}\right]\right)+i\left(\text{PolyLog}\left[2,-e^{i\,(c+d\,x)}\right]-\text{PolyLog}\left[2,e^{i\,(c+d\,x)}\right]\right)\right)$$
$$\left.\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)+d\,(e+f\,x)\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)\right)$$

- **Problem 206: Result more than twice size of optimal antiderivative.**

$$\int\frac{\text{Csc}[c+d\,x]^2}{a+a\,\text{Sin}[c+d\,x]}\,dx$$

Optimal (type 3, 51 leaves, 5 steps):

$$\frac{\text{ArcTanh}[\text{Cos}[c+d\,x]]}{a\,d}-\frac{2\,\text{Cot}[c+d\,x]}{a\,d}+\frac{\text{Cot}[c+d\,x]}{d\,(a+a\,\text{Sin}[c+d\,x])}$$

Result (type 3, 167 leaves):

$$\frac{1}{2\,a\,d\,(1+\text{Sin}[c+d\,x])}\left(-\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]^2\left(2+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]-2\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]\right]+2\,\text{Log}\left[\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]\right)+\right.$$
$$2\left(\left(3+\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]\right]-\text{Log}\left[\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]\right)\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]^2+\right.$$
$$\left.\left.\text{Csc}[c+d\,x]\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]^4+\left(1+\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]\right]-\text{Log}\left[\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]\right)\text{Sin}[c+d\,x]\right)\right)$$

- **Problem 209: Result more than twice size of optimal antiderivative.**

$$\int\frac{(e+f\,x)^3\,\text{Csc}[c+d\,x]^3}{a+a\,\text{Sin}[c+d\,x]}\,dx$$

Optimal (type 4, 600 leaves, 40 steps):

$$\frac{2 i (e+f x)^3}{a d}-\frac{6 f^2 (e+f x) \text{ArcTanh}\left[e^{i (c+d x)}\right]}{a d^3}-\frac{3 (e+f x)^3 \text{ArcTanh}\left[e^{i (c+d x)}\right]}{a d}+\frac{(e+f x)^3 \text{Cot}\left[\frac{c}{2}+\frac{\pi}{4}+\frac{d x}{2}\right]}{a d}+$$
$$\frac{(e+f x)^3 \text{Cot}[c+d x]}{a d}-\frac{3 f (e+f x)^2 \text{Csc}[c+d x]}{2 a d^2}-\frac{(e+f x)^3 \text{Cot}[c+d x] \text{Csc}[c+d x]}{2 a d}-\frac{6 f (e+f x)^2 \text{Log}\left[1-i e^{i (c+d x)}\right]}{a d^2}-$$
$$\frac{3 f (e+f x)^2 \text{Log}\left[1-e^{2 i (c+d x)}\right]}{a d^2}+\frac{3 i f^3 \text{PolyLog}\left[2,-e^{i (c+d x)}\right]}{a d^4}+\frac{9 i f (e+f x)^2 \text{PolyLog}\left[2,-e^{i (c+d x)}\right]}{2 a d^2}+$$
$$\frac{12 i f^2 (e+f x) \text{PolyLog}\left[2,i e^{i (c+d x)}\right]}{a d^3}-\frac{3 i f^3 \text{PolyLog}\left[2,e^{i (c+d x)}\right]}{a d^4}-\frac{9 i f (e+f x)^2 \text{PolyLog}\left[2,e^{i (c+d x)}\right]}{2 a d^2}+$$
$$\frac{3 i f^2 (e+f x) \text{PolyLog}\left[2,e^{2 i (c+d x)}\right]}{a d^3}-\frac{9 f^2 (e+f x) \text{PolyLog}\left[3,-e^{i (c+d x)}\right]}{a d^3}-\frac{12 f^3 \text{PolyLog}\left[3,i e^{i (c+d x)}\right]}{a d^4}+$$
$$\frac{9 f^2 (e+f x) \text{PolyLog}\left[3,e^{i (c+d x)}\right]}{a d^3}-\frac{3 f^3 \text{PolyLog}\left[3,e^{2 i (c+d x)}\right]}{2 a d^4}-\frac{9 i f^3 \text{PolyLog}\left[4,-e^{i (c+d x)}\right]}{a d^4}+\frac{9 i f^3 \text{PolyLog}\left[4,e^{i (c+d x)}\right]}{a d^4}$$

Result (type 4, 1370 leaves) :

$$\frac{3 e^3 \text{Log}\left[\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right]}{2 a d}+\frac{3 e f^2 \text{Log}\left[\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right]}{a d^3}+\frac{1}{2 a d^2}$$

$$9 e^2 f \Big((c+d x)\big(\text{Log}[1-e^{i(c+d x)}]-\text{Log}[1+e^{i(c+d x)}]\big)-c\,\text{Log}\left[\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right]+i\big(\text{PolyLog}[2,-e^{i(c+d x)}]-\text{PolyLog}[2,e^{i(c+d x)}]\big)\Big)+$$

$$\frac{1}{a d^4}3 f^3\Big((c+d x)\big(\text{Log}[1-e^{i(c+d x)}]-\text{Log}[1+e^{i(c+d x)}]\big)-c\,\text{Log}\left[\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right]+i\big(\text{PolyLog}[2,-e^{i(c+d x)}]-\text{PolyLog}[2,e^{i(c+d x)}]\big)\Big)+$$

$$\frac{1}{4 a d^4}e^{-i c} f^3 \text{Csc}[c]$$

$$\Big(2 d^2 x^2\big(2 d e^{2 i c} x+3 i(-1+e^{2 i c})\text{Log}[1-e^{2 i(c+d x)}]\big)+6 d(-1+e^{2 i c}) x\,\text{PolyLog}[2,e^{2 i(c+d x)}]+3 i(-1+e^{2 i c})\text{PolyLog}[3,e^{2 i(c+d x)}]\Big)-$$

$$\frac{1}{a d^3}9 e f^2\Big(d^2 x^2 \text{ArcTanh}[\text{Cos}[c+d x]+i \text{Sin}[c+d x]]-i d x\,\text{PolyLog}[2,-\text{Cos}[c+d x]-i \text{Sin}[c+d x]]+$$

$$i d x\,\text{PolyLog}[2,\text{Cos}[c+d x]+i \text{Sin}[c+d x]]+\text{PolyLog}[3,-\text{Cos}[c+d x]-i \text{Sin}[c+d x]]-\text{PolyLog}[3,\text{Cos}[c+d x]+i \text{Sin}[c+d x]]\Big)+$$

$$\frac{1}{2 a d^4}3 f^3\Big(-2 d^3 x^3 \text{ArcTanh}[\text{Cos}[c+d x]+i \text{Sin}[c+d x]]+3 i d^2 x^2 \text{PolyLog}[2,-\text{Cos}[c+d x]-i \text{Sin}[c+d x]]-$$

$$3 i d^2 x^2 \text{PolyLog}[2,\text{Cos}[c+d x]+i \text{Sin}[c+d x]]-6 d x\,\text{PolyLog}[3,-\text{Cos}[c+d x]-i \text{Sin}[c+d x]]+6 d x$$

$$\text{PolyLog}[3,\text{Cos}[c+d x]+i \text{Sin}[c+d x]]-6 i\,\text{PolyLog}[4,-\text{Cos}[c+d x]-i \text{Sin}[c+d x]]+6 i\,\text{PolyLog}[4,\text{Cos}[c+d x]+i \text{Sin}[c+d x]]\Big)-$$

$$\frac{3 e^2 f \text{Csc}[c](-d x \text{Cos}[c]+\text{Log}[\text{Cos}[d x]\text{Sin}[c]+\text{Cos}[c]\text{Sin}[d x]]\text{Sin}[c])}{a d^2(\text{Cos}[c]^2+\text{Sin}[c]^2)}+\frac{1}{a d^4}$$

$$2 f\Big(-3 d^2(e+f x)^2 \text{Log}[1-i \text{Cos}[c+d x]+\text{Sin}[c+d x]]+6 i d f(e+f x)\text{PolyLog}[2,i \text{Cos}[c+d x]-\text{Sin}[c+d x]]-$$

$$6 f^2 \text{PolyLog}[3,i \text{Cos}[c+d x]-\text{Sin}[c+d x]]+\frac{i d^3 x(3 e^2+3 e f x+f^2 x^2)(\text{Cos}[c]+i \text{Sin}[c])}{\text{Cos}[c]+i(1+\text{Sin}[c])}\Big)+$$

$$\frac{\text{Csc}[c]\text{Csc}[c+d x]^2(e^3 \text{Sin}[d x]+3 e^2 f x \text{Sin}[d x]+3 e f^2 x^2 \text{Sin}[d x]+f^3 x^3 \text{Sin}[d x])}{2 a d}+\frac{1}{2 a d^2}$$

$$\text{Csc}[c]\text{Csc}[c+d x]\big(-d e^3 \text{Cos}[c]-3 d e^2 f x \text{Cos}[c]-3 d e f^2 x^2 \text{Cos}[c]-d f^3 x^3 \text{Cos}[c]-3 e^2 f \text{Sin}[c]-$$

$$6 e f^2 x \text{Sin}[c]-3 f^3 x^2 \text{Sin}[c]-2 d e^3 \text{Sin}[d x]-6 d e^2 f x \text{Sin}[d x]-6 d e f^2 x^2 \text{Sin}[d x]-2 d f^3 x^3 \text{Sin}[d x]\big)-$$

$$\frac{2\left(e^3 \text{Sin}\left[\frac{d x}{2}\right]+3 e^2 f x \text{Sin}\left[\frac{d x}{2}\right]+3 e f^2 x^2 \text{Sin}\left[\frac{d x}{2}\right]+f^3 x^3 \text{Sin}\left[\frac{d x}{2}\right]\right)}{a d\left(\text{Cos}\left[\frac{c}{2}\right]+\text{Sin}\left[\frac{c}{2}\right]\right)\left(\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right)}+$$

$$\Big(3 e f^2 \text{Csc}[c]\text{Sec}[c]\Big(d^2 e^{i \text{ArcTan}[\text{Tan}[c]]} x^2+1\Big/\Big(\sqrt{1+\text{Tan}[c]^2}\Big)\big(i d x(-\pi+2 \text{ArcTan}[\text{Tan}[c]])-\pi \text{Log}[1+e^{-2 i d x}]-$$

$$2(d x+\text{ArcTan}[\text{Tan}[c]])\text{Log}[1-e^{2 i(d x+\text{ArcTan}[\text{Tan}[c]])}]+\pi \text{Log}[\text{Cos}[d x]]+2 \text{ArcTan}[\text{Tan}[c]]\text{Log}[\text{Sin}[d x+\text{ArcTan}[\text{Tan}[c]]]]+$$

$$i\,\text{PolyLog}[2,e^{2 i(d x+\text{ArcTan}[\text{Tan}[c]])}]\big)\text{Tan}[c]\Big)\Big)\Big/\Big(a d^3 \sqrt{\text{Sec}[c]^2(\text{Cos}[c]^2+\text{Sin}[c]^2)}\Big)$$

Problem 210: Result more than twice size of optimal antiderivative.

$$\int \frac{(e+f x)^2 \operatorname{Csc}[c+d x]^3}{a+a \operatorname{Sin}[c+d x]} \, dx$$

Optimal (type 4, 392 leaves, 30 steps):

$$\frac{2 i (e+f x)^2}{a d}-\frac{3 (e+f x)^2 \operatorname{ArcTanh}\left[e^{i (c+d x)}\right]}{a d}-\frac{f^2 \operatorname{ArcTanh}[\operatorname{Cos}[c+d x]]}{a d^3}+\frac{(e+f x)^2 \operatorname{Cot}\left[\frac{c}{2}+\frac{\pi}{4}+\frac{d x}{2}\right]}{a d}+$$
$$\frac{(e+f x)^2 \operatorname{Cot}[c+d x]}{a d}-\frac{f (e+f x) \operatorname{Csc}[c+d x]}{a d^2}-\frac{(e+f x)^2 \operatorname{Cot}[c+d x] \operatorname{Csc}[c+d x]}{2 a d}-\frac{4 f (e+f x) \operatorname{Log}\left[1-i e^{i (c+d x)}\right]}{a d^2}-$$
$$\frac{2 f (e+f x) \operatorname{Log}\left[1-e^{2 i (c+d x)}\right]}{a d^2}+\frac{3 i f (e+f x) \operatorname{PolyLog}\left[2,-e^{i (c+d x)}\right]}{a d^2}+\frac{4 i f^2 \operatorname{PolyLog}\left[2, i e^{i (c+d x)}\right]}{a d^3}-$$
$$\frac{3 i f (e+f x) \operatorname{PolyLog}\left[2, e^{i (c+d x)}\right]}{a d^2}+\frac{i f^2 \operatorname{PolyLog}\left[2, e^{2 i (c+d x)}\right]}{a d^3}-\frac{3 f^2 \operatorname{PolyLog}\left[3,-e^{i (c+d x)}\right]}{a d^3}+\frac{3 f^2 \operatorname{PolyLog}\left[3, e^{i (c+d x)}\right]}{a d^3}$$

Result (type 4, 1420 leaves):

$$\frac{3 e^2 \,\text{Log}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right]}{2\,a\,d}+\frac{f^2\,\text{Log}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right]}{a\,d^3}+\frac{1}{a\,d^2}$$

$$3\,e\,f\left((c+d\,x)\,\left(\text{Log}\left[1-e^{i\,(c+d\,x)}\right]-\text{Log}\left[1+e^{i\,(c+d\,x)}\right]\right)-c\,\text{Log}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right]+i\,\left(\text{PolyLog}\left[2,-e^{i\,(c+d\,x)}\right]-\text{PolyLog}\left[2,e^{i\,(c+d\,x)}\right]\right)\right)-$$

$$\frac{1}{a\,d^3}3\,f^2\,\left(d^2\,x^2\,\text{ArcTanh}[\text{Cos}[c+d\,x]+i\,\text{Sin}[c+d\,x]]-i\,d\,x\,\text{PolyLog}[2,-\text{Cos}[c+d\,x]-i\,\text{Sin}[c+d\,x]]+\right.$$
$$\left.i\,d\,x\,\text{PolyLog}[2,\text{Cos}[c+d\,x]+i\,\text{Sin}[c+d\,x]]+\text{PolyLog}[3,-\text{Cos}[c+d\,x]-i\,\text{Sin}[c+d\,x]]-\text{PolyLog}[3,\text{Cos}[c+d\,x]+i\,\text{Sin}[c+d\,x]]\right)-$$

$$\frac{2\,e\,f\,\text{Csc}[c]\,(-d\,x\,\text{Cos}[c]+\text{Log}[\text{Cos}[d\,x]\,\text{Sin}[c]+\text{Cos}[c]\,\text{Sin}[d\,x]]\,\text{Sin}[c])}{a\,d^2\,\left(\text{Cos}[c]^2+\text{Sin}[c]^2\right)}+\frac{1}{a\,d^3}$$

$$2\,i\,f\left(2\,i\,d\,(e+f\,x)\,\text{Log}[1-i\,\text{Cos}[c+d\,x]+\text{Sin}[c+d\,x]]+2\,f\,\text{PolyLog}[2,i\,\text{Cos}[c+d\,x]-\text{Sin}[c+d\,x]]+\frac{d^2\,x\,(2\,e+f\,x)\,(\text{Cos}[c]+i\,\text{Sin}[c])}{\text{Cos}[c]+i\,(1+\text{Sin}[c])}\right)+$$

$$\frac{1}{8\,a\,d^2\,\left(\text{Cos}\left[\frac{c}{2}\right]+\text{Sin}\left[\frac{c}{2}\right]\right)\,\left(\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right)}$$

$$\text{Csc}[c]\,\text{Csc}[c+d\,x]^2\left(-2\,e\,f\,\text{Cos}\left[\frac{d\,x}{2}\right]-2\,f^2\,x\,\text{Cos}\left[\frac{d\,x}{2}\right]-2\,e\,f\,\text{Cos}\left[\frac{3\,d\,x}{2}\right]-2\,f^2\,x\,\text{Cos}\left[\frac{3\,d\,x}{2}\right]-5\,d\,e^2\,\text{Cos}\left[c-\frac{d\,x}{2}\right]-10\,d\,e\,f\,x\,\text{Cos}\left[c-\frac{d\,x}{2}\right]-\right.$$
$$5\,d\,f^2\,x^2\,\text{Cos}\left[c-\frac{d\,x}{2}\right]+d\,e^2\,\text{Cos}\left[c+\frac{d\,x}{2}\right]+2\,d\,e\,f\,x\,\text{Cos}\left[c+\frac{d\,x}{2}\right]+d\,f^2\,x^2\,\text{Cos}\left[c+\frac{d\,x}{2}\right]+2\,e\,f\,\text{Cos}\left[2\,c+\frac{d\,x}{2}\right]+2\,f^2\,x\,\text{Cos}\left[2\,c+\frac{d\,x}{2}\right]-$$
$$d\,e^2\,\text{Cos}\left[c+\frac{3\,d\,x}{2}\right]-2\,d\,e\,f\,x\,\text{Cos}\left[c+\frac{3\,d\,x}{2}\right]-d\,f^2\,x^2\,\text{Cos}\left[c+\frac{3\,d\,x}{2}\right]+2\,e\,f\,\text{Cos}\left[2\,c+\frac{3\,d\,x}{2}\right]+2\,f^2\,x\,\text{Cos}\left[2\,c+\frac{3\,d\,x}{2}\right]+$$
$$3\,d\,e^2\,\text{Cos}\left[3\,c+\frac{d\,x}{2}\right]+6\,d\,e\,f\,x\,\text{Cos}\left[3\,c+\frac{d\,x}{2}\right]+3\,d\,f^2\,x^2\,\text{Cos}\left[3\,c+\frac{d\,x}{2}\right]+4\,d\,e^2\,\text{Cos}\left[c+\frac{5\,d\,x}{2}\right]+8\,d\,e\,f\,x\,\text{Cos}\left[c+\frac{5\,d\,x}{2}\right]+$$
$$4\,d\,f^2\,x^2\,\text{Cos}\left[c+\frac{5\,d\,x}{2}\right]-2\,d\,e^2\,\text{Cos}\left[3\,c+\frac{5\,d\,x}{2}\right]-4\,d\,e\,f\,x\,\text{Cos}\left[3\,c+\frac{5\,d\,x}{2}\right]-2\,d\,f^2\,x^2\,\text{Cos}\left[3\,c+\frac{5\,d\,x}{2}\right]-d\,e^2\,\text{Sin}\left[\frac{d\,x}{2}\right]-$$
$$2\,d\,e\,f\,x\,\text{Sin}\left[\frac{d\,x}{2}\right]-d\,f^2\,x^2\,\text{Sin}\left[\frac{d\,x}{2}\right]-d\,e^2\,\text{Sin}\left[\frac{3\,d\,x}{2}\right]-2\,d\,e\,f\,x\,\text{Sin}\left[\frac{3\,d\,x}{2}\right]-d\,f^2\,x^2\,\text{Sin}\left[\frac{3\,d\,x}{2}\right]-2\,e\,f\,\text{Sin}\left[c-\frac{d\,x}{2}\right]-$$
$$2\,f^2\,x\,\text{Sin}\left[c-\frac{d\,x}{2}\right]-2\,e\,f\,\text{Sin}\left[c+\frac{d\,x}{2}\right]-2\,f^2\,x\,\text{Sin}\left[c+\frac{d\,x}{2}\right]-3\,d\,e^2\,\text{Sin}\left[2\,c+\frac{d\,x}{2}\right]-6\,d\,e\,f\,x\,\text{Sin}\left[2\,c+\frac{d\,x}{2}\right]-3\,d\,f^2\,x^2\,\text{Sin}\left[2\,c+\frac{d\,x}{2}\right]-$$
$$2\,e\,f\,\text{Sin}\left[c+\frac{3\,d\,x}{2}\right]-2\,f^2\,x\,\text{Sin}\left[c+\frac{3\,d\,x}{2}\right]-d\,e^2\,\text{Sin}\left[2\,c+\frac{3\,d\,x}{2}\right]-2\,d\,e\,f\,x\,\text{Sin}\left[2\,c+\frac{3\,d\,x}{2}\right]-d\,f^2\,x^2\,\text{Sin}\left[2\,c+\frac{3\,d\,x}{2}\right]+$$
$$\left.2\,e\,f\,\text{Sin}\left[3\,c+\frac{3\,d\,x}{2}\right]+2\,f^2\,x\,\text{Sin}\left[3\,c+\frac{3\,d\,x}{2}\right]+2\,d\,e^2\,\text{Sin}\left[2\,c+\frac{5\,d\,x}{2}\right]+4\,d\,e\,f\,x\,\text{Sin}\left[2\,c+\frac{5\,d\,x}{2}\right]+2\,d\,f^2\,x^2\,\text{Sin}\left[2\,c+\frac{5\,d\,x}{2}\right]\right)+$$

$$\left(f^2\,\text{Csc}[c]\,\text{Sec}[c]\,\left(d^2\,e^{i\,\text{ArcTan}[\text{Tan}[c]]}\,x^2+1\middle/\left(\sqrt{1+\text{Tan}[c]^2}\right)\left(i\,d\,x\,(-\pi+2\,\text{ArcTan}[\text{Tan}[c]])-\pi\,\text{Log}\left[1+e^{-2\,i\,d\,x}\right]-\right.\right.\right.$$
$$2\,(d\,x+\text{ArcTan}[\text{Tan}[c]])\,\text{Log}\left[1-e^{2\,i\,(d\,x+\text{ArcTan}[\text{Tan}[c]])}\right]+\pi\,\text{Log}[\text{Cos}[d\,x]]+2\,\text{ArcTan}[\text{Tan}[c]]\,\text{Log}[\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]]+$$
$$\left.\left.\left.i\,\text{PolyLog}\left[2,e^{2\,i\,(d\,x+\text{ArcTan}[\text{Tan}[c]])}\right]\right)\,\text{Tan}[c]\right)\right)\middle/\left(a\,d^3\,\sqrt{\text{Sec}[c]^2\,\left(\text{Cos}[c]^2+\text{Sin}[c]^2\right)}\right)$$

Problem 211: Result more than twice size of optimal antiderivative.

$$\int \frac{(e+f x) \operatorname{Csc}[c+d x]^3}{a+a \operatorname{Sin}[c+d x]} \, dx$$

Optimal (type 4, 216 leaves, 19 steps):

$$-\frac{3 (e+f x) \operatorname{ArcTanh}\left[e^{i (c+d x)}\right]}{a d}+\frac{(e+f x) \operatorname{Cot}\left[\frac{c}{2}+\frac{\pi}{4}+\frac{d x}{2}\right]}{a d}+\frac{(e+f x) \operatorname{Cot}[c+d x]}{a d}-\frac{f \operatorname{Csc}[c+d x]}{2 a d^2}-\frac{(e+f x) \operatorname{Cot}[c+d x] \operatorname{Csc}[c+d x]}{2 a d}-\frac{2 f \operatorname{Log}\left[\operatorname{Sin}\left[\frac{c}{2}+\frac{\pi}{4}+\frac{d x}{2}\right]\right]}{a d^2}-\frac{f \operatorname{Log}[\operatorname{Sin}[c+d x]]}{a d^2}+\frac{3 i f \operatorname{PolyLog}\left[2,-e^{i (c+d x)}\right]}{2 a d^2}-\frac{3 i f \operatorname{PolyLog}\left[2, e^{i (c+d x)}\right]}{2 a d^2}$$

Result (type 4, 830 leaves):

$$\frac{f (c+d x) \left(\operatorname{Cos}\left[\frac{1}{2} (c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^2}{d^2 (a+a \operatorname{Sin}[c+d x])}+\frac{1}{4 d^2 (a+a \operatorname{Sin}[c+d x])}\left(2 d e \operatorname{Cos}\left[\frac{1}{2} (c+d x)\right]-f \operatorname{Cos}\left[\frac{1}{2} (c+d x)\right]-2 c f \operatorname{Cos}\left[\frac{1}{2} (c+d x)\right]+2 f (c+d x) \operatorname{Cos}\left[\frac{1}{2} (c+d x)\right]\right) \operatorname{Csc}\left[\frac{1}{2} (c+d x)\right]\left(\operatorname{Cos}\left[\frac{1}{2} (c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^2+\frac{(-d e+c f-f (c+d x)) \operatorname{Csc}\left[\frac{1}{2} (c+d x)\right]^2 \left(\operatorname{Cos}\left[\frac{1}{2} (c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^2}{8 d^2 (a+a \operatorname{Sin}[c+d x])}-\frac{2 f \operatorname{Log}\left[\operatorname{Cos}\left[\frac{1}{2} (c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2} (c+d x)\right]\right] \left(\operatorname{Cos}\left[\frac{1}{2} (c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^2}{d^2 (a+a \operatorname{Sin}[c+d x])}-\frac{f \operatorname{Log}[\operatorname{Sin}[c+d x]] \left(\operatorname{Cos}\left[\frac{1}{2} (c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^2}{d^2 (a+a \operatorname{Sin}[c+d x])}+\frac{3 e \operatorname{Log}\left[\operatorname{Tan}\left[\frac{1}{2} (c+d x)\right]\right] \left(\operatorname{Cos}\left[\frac{1}{2} (c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^2}{2 d (a+a \operatorname{Sin}[c+d x])}-\frac{3 c f \operatorname{Log}\left[\operatorname{Tan}\left[\frac{1}{2} (c+d x)\right]\right] \left(\operatorname{Cos}\left[\frac{1}{2} (c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^2}{2 d^2 (a+a \operatorname{Sin}[c+d x])}+\frac{1}{2 d^2 (a+a \operatorname{Sin}[c+d x])} 3 f \left((c+d x) \left(\operatorname{Log}\left[1-e^{i (c+d x)}\right]-\operatorname{Log}\left[1+e^{i (c+d x)}\right]\right)+i \left(\operatorname{PolyLog}\left[2,-e^{i (c+d x)}\right]-\operatorname{PolyLog}\left[2, e^{i (c+d x)}\right]\right)\right)\left(\operatorname{Cos}\left[\frac{1}{2} (c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^2+\frac{(d e-c f+f (c+d x)) \operatorname{Sec}\left[\frac{1}{2} (c+d x)\right]^2 \left(\operatorname{Cos}\left[\frac{1}{2} (c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^2}{8 d^2 (a+a \operatorname{Sin}[c+d x])}+\frac{1}{4 d^2 (a+a \operatorname{Sin}[c+d x])} \operatorname{Sec}\left[\frac{1}{2} (c+d x)\right]\left(\operatorname{Cos}\left[\frac{1}{2} (c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^2\left(-2 d e \operatorname{Sin}\left[\frac{1}{2} (c+d x)\right]-f \operatorname{Sin}\left[\frac{1}{2} (c+d x)\right]+2 c f \operatorname{Sin}\left[\frac{1}{2} (c+d x)\right]-2 f (c+d x) \operatorname{Sin}\left[\frac{1}{2} (c+d x)\right]\right)-\frac{1}{d^2 (a+a \operatorname{Sin}[c+d x])} 2\left(\operatorname{Cos}\left[\frac{1}{2} (c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2} (c+d x)\right]\right)\left(d e \operatorname{Sin}\left[\frac{1}{2} (c+d x)\right]-c f \operatorname{Sin}\left[\frac{1}{2} (c+d x)\right]+f (c+d x) \operatorname{Sin}\left[\frac{1}{2} (c+d x)\right]\right)$$

- **Problem 212: Result more than twice size of optimal antiderivative.**

$$\int \frac{\text{Csc}[c+d x]^3}{a+a \,\text{Sin}[c+d x]} \, dx$$

Optimal (type 3, 82 leaves, 6 steps):

$$-\frac{3 \,\text{ArcTanh}[\text{Cos}[c+d x]]}{2 a d}+\frac{2 \,\text{Cot}[c+d x]}{a d}-\frac{3 \,\text{Cot}[c+d x] \,\text{Csc}[c+d x]}{2 a d}+\frac{\text{Cot}[c+d x] \,\text{Csc}[c+d x]}{d (a+a \,\text{Sin}[c+d x])}$$

Result (type 3, 253 leaves):

$$-\frac{1}{8 a d (1+\text{Sin}[c+d x])}$$
$$\left(2 \,\text{Cot}\left[\frac{1}{2} (c+d x)\right]+\text{Cot}\left[\frac{1}{2} (c+d x)\right]^2-4 \,\text{Cos}\left[\frac{1}{2} (c+d x)\right]^2 \left(2+\text{Cot}\left[\frac{1}{2} (c+d x)\right]-3 \,\text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]\right]+3 \,\text{Log}\left[\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right]\right)+\right.$$
$$24 \,\text{Sin}\left[\frac{1}{2} (c+d x)\right]^2+12 \,\text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]\right] \text{Sin}\left[\frac{1}{2} (c+d x)\right]^2-12 \,\text{Log}\left[\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right] \text{Sin}\left[\frac{1}{2} (c+d x)\right]^2+$$
$$8 \,\text{Csc}[c+d x] \,\text{Sin}\left[\frac{1}{2} (c+d x)\right]^4+8 \,\text{Sin}[c+d x]+12 \,\text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]\right] \text{Sin}[c+d x]-$$
$$\left.12 \,\text{Log}\left[\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right] \text{Sin}[c+d x]-2 \,\text{Tan}\left[\frac{1}{2} (c+d x)\right]-\text{Tan}\left[\frac{1}{2} (c+d x)\right]^2\right)$$

- **Problem 214: Attempted integration timed out after 120 seconds.**

$$\int \frac{\text{Csc}[c+d x]^3}{(e+f x)^2 (a+a \,\text{Sin}[c+d x])} \, dx$$

Optimal (type 9, 30 leaves, 0 steps):

$$\text{Unintegrable}\left[\frac{\text{Csc}[c+d x]^3}{(e+f x)^2 (a+a \,\text{Sin}[c+d x])}, x\right]$$

Result (type 1, 1 leaves):

???

- **Problem 220: Result more than twice size of optimal antiderivative.**

$$\int \frac{(e+f x)^3 \,\text{Sin}[c+d x]}{a+b \,\text{Sin}[c+d x]} \, dx$$

Optimal (type 4, 544 leaves, 14 steps):

$$\frac{(e+f x)^4}{4 b f}+\frac{i a (e+f x)^3 \text{Log}\left[1-\frac{i b e^{i (c+d x)}}{a-\sqrt{a^2-b^2}}\right]}{b \sqrt{a^2-b^2} d}-\frac{i a (e+f x)^3 \text{Log}\left[1-\frac{i b e^{i (c+d x)}}{a+\sqrt{a^2-b^2}}\right]}{b \sqrt{a^2-b^2} d}+$$

$$\frac{3 a f (e+f x)^2 \text{PolyLog}\left[2,\frac{i b e^{i (c+d x)}}{a-\sqrt{a^2-b^2}}\right]}{b \sqrt{a^2-b^2} d^2}-\frac{3 a f (e+f x)^2 \text{PolyLog}\left[2,\frac{i b e^{i (c+d x)}}{a+\sqrt{a^2-b^2}}\right]}{b \sqrt{a^2-b^2} d^2}+\frac{6 i a f^2 (e+f x) \text{PolyLog}\left[3,\frac{i b e^{i (c+d x)}}{a-\sqrt{a^2-b^2}}\right]}{b \sqrt{a^2-b^2} d^3}-$$

$$\frac{6 i a f^2 (e+f x) \text{PolyLog}\left[3,\frac{i b e^{i (c+d x)}}{a+\sqrt{a^2-b^2}}\right]}{b \sqrt{a^2-b^2} d^3}-\frac{6 a f^3 \text{PolyLog}\left[4,\frac{i b e^{i (c+d x)}}{a-\sqrt{a^2-b^2}}\right]}{b \sqrt{a^2-b^2} d^4}+\frac{6 a f^3 \text{PolyLog}\left[4,\frac{i b e^{i (c+d x)}}{a+\sqrt{a^2-b^2}}\right]}{b \sqrt{a^2-b^2} d^4}$$

Result (type 4, 1528 leaves):

$$\frac{x \left(4 e^3+6 e^2 f x+4 e f^2 x^2+f^3 x^3\right)}{4 b}-\frac{1}{b \sqrt{a^2-b^2} d^4 \sqrt{\left(-a^2+b^2\right) (\text{Cos}[2 c]+i \text{Sin}[2 c])}}$$

$$i a \left(3 i \sqrt{a^2-b^2} d^3 e^2 f x \text{Log}\left[1+\frac{b (\text{Cos}[2 c+d x]+i \text{Sin}[2 c+d x])}{i a \text{Cos}[c]+\sqrt{\left(-a^2+b^2\right) (\text{Cos}[c]+i \text{Sin}[c])^2}-a \text{Sin}[c]}\right] (\text{Cos}[c]+i \text{Sin}[c])+\right.$$

$$3 i \sqrt{a^2-b^2} d^3 e f^2 x^2 \text{Log}\left[1+\frac{b (\text{Cos}[2 c+d x]+i \text{Sin}[2 c+d x])}{i a \text{Cos}[c]+\sqrt{\left(-a^2+b^2\right) (\text{Cos}[c]+i \text{Sin}[c])^2}-a \text{Sin}[c]}\right] (\text{Cos}[c]+i \text{Sin}[c])+$$

$$i \sqrt{a^2-b^2} d^3 f^3 x^3 \text{Log}\left[1+\frac{b (\text{Cos}[2 c+d x]+i \text{Sin}[2 c+d x])}{i a \text{Cos}[c]+\sqrt{\left(-a^2+b^2\right) (\text{Cos}[c]+i \text{Sin}[c])^2}-a \text{Sin}[c]}\right] (\text{Cos}[c]+i \text{Sin}[c])+$$

$$3 \sqrt{a^2-b^2} d^2 f (e+f x)^2 \text{PolyLog}\left[2,-\frac{b (\text{Cos}[2 c+d x]+i \text{Sin}[2 c+d x])}{i a \text{Cos}[c]+\sqrt{\left(-a^2+b^2\right) (\text{Cos}[c]+i \text{Sin}[c])^2}-a \text{Sin}[c]}\right] (\text{Cos}[c]+i \text{Sin}[c])-$$

$$3 \sqrt{a^2-b^2} d^2 f (e+f x)^2 \text{PolyLog}\left[2,\frac{b (\text{Cos}[2 c+d x]+i \text{Sin}[2 c+d x])}{-i a \text{Cos}[c]+\sqrt{\left(-a^2+b^2\right) (\text{Cos}[c]+i \text{Sin}[c])^2}+a \text{Sin}[c]}\right] (\text{Cos}[c]+i \text{Sin}[c])+$$

$$6 i \sqrt{a^2-b^2} d e f^2 \text{PolyLog}\left[3,-\frac{b (\text{Cos}[2 c+d x]+i \text{Sin}[2 c+d x])}{i a \text{Cos}[c]+\sqrt{\left(-a^2+b^2\right) (\text{Cos}[c]+i \text{Sin}[c])^2}-a \text{Sin}[c]}\right] (\text{Cos}[c]+i \text{Sin}[c])+$$

$$6 i \sqrt{a^2-b^2} d f^3 x \text{PolyLog}\left[3,-\frac{b (\text{Cos}[2 c+d x]+i \text{Sin}[2 c+d x])}{i a \text{Cos}[c]+\sqrt{\left(-a^2+b^2\right) (\text{Cos}[c]+i \text{Sin}[c])^2}-a \text{Sin}[c]}\right] (\text{Cos}[c]+i \text{Sin}[c])-$$

$$6 \sqrt{a^2-b^2} f^3 \text{PolyLog}\left[4,-\frac{b (\text{Cos}[2 c+d x]+i \text{Sin}[2 c+d x])}{i a \text{Cos}[c]+\sqrt{\left(-a^2+b^2\right) (\text{Cos}[c]+i \text{Sin}[c])^2}-a \text{Sin}[c]}\right] (\text{Cos}[c]+i \text{Sin}[c])+$$

$$6 \sqrt{a^2-b^2}\ f^3 \text{PolyLog}\left[4, \frac{b\ (\text{Cos}[2c+dx]+i\ \text{Sin}[2c+dx])}{-i\ a\ \text{Cos}[c]+\sqrt{(-a^2+b^2)\ (\text{Cos}[c]+i\ \text{Sin}[c])^2}+a\ \text{Sin}[c]}\right] (\text{Cos}[c]+i\ \text{Sin}[c]) +$$

$$3 \sqrt{a^2-b^2}\ d^3 e^2 f\ x\ \text{Log}\left[1-\frac{b\ (\text{Cos}[2c+dx]+i\ \text{Sin}[2c+dx])}{-i\ a\ \text{Cos}[c]+\sqrt{(-a^2+b^2)\ (\text{Cos}[c]+i\ \text{Sin}[c])^2}+a\ \text{Sin}[c]}\right] (-i\ \text{Cos}[c]+\text{Sin}[c]) +$$

$$3 \sqrt{a^2-b^2}\ d^3 e\ f^2 x^2\ \text{Log}\left[1-\frac{b\ (\text{Cos}[2c+dx]+i\ \text{Sin}[2c+dx])}{-i\ a\ \text{Cos}[c]+\sqrt{(-a^2+b^2)\ (\text{Cos}[c]+i\ \text{Sin}[c])^2}+a\ \text{Sin}[c]}\right] (-i\ \text{Cos}[c]+\text{Sin}[c]) +$$

$$\sqrt{a^2-b^2}\ d^3 f^3 x^3\ \text{Log}\left[1-\frac{b\ (\text{Cos}[2c+dx]+i\ \text{Sin}[2c+dx])}{-i\ a\ \text{Cos}[c]+\sqrt{(-a^2+b^2)\ (\text{Cos}[c]+i\ \text{Sin}[c])^2}+a\ \text{Sin}[c]}\right] (-i\ \text{Cos}[c]+\text{Sin}[c]) +$$

$$6 \sqrt{a^2-b^2}\ d\ e\ f^2 \text{PolyLog}\left[3, \frac{b\ (\text{Cos}[2c+dx]+i\ \text{Sin}[2c+dx])}{-i\ a\ \text{Cos}[c]+\sqrt{(-a^2+b^2)\ (\text{Cos}[c]+i\ \text{Sin}[c])^2}+a\ \text{Sin}[c]}\right] (-i\ \text{Cos}[c]+\text{Sin}[c]) +$$

$$6 \sqrt{a^2-b^2}\ d\ f^3 x\ \text{PolyLog}\left[3, \frac{b\ (\text{Cos}[2c+dx]+i\ \text{Sin}[2c+dx])}{-i\ a\ \text{Cos}[c]+\sqrt{(-a^2+b^2)\ (\text{Cos}[c]+i\ \text{Sin}[c])^2}+a\ \text{Sin}[c]}\right] (-i\ \text{Cos}[c]+\text{Sin}[c]) -$$

$$2\ i\ d^3 e^3 \text{ArcTan}\left[\frac{b\ \text{Cos}[c+dx]+i\ (a+b\ \text{Sin}[c+dx])}{\sqrt{a^2-b^2}}\right] \sqrt{(-a^2+b^2)\ (\text{Cos}[2c]+i\ \text{Sin}[2c])}\ \Bigg)$$

- **Problem 224: Result more than twice size of optimal antiderivative.**

$$\int \frac{(e+f x)^3 \text{Sin}[c+d x]^2}{a+b\ \text{Sin}[c+d x]} \, dx$$

Optimal (type 4, 643 leaves, 19 steps) :

$$-\frac{a\,(e+f x)^4}{4 b^2 f}+\frac{6 f^2\,(e+f x)\,\mathrm{Cos}[c+d x]}{b\,d^3}-\frac{(e+f x)^3\,\mathrm{Cos}[c+d x]}{b\,d}-\frac{i\,a^2\,(e+f x)^3\,\mathrm{Log}\left[1-\frac{i\,b\,e^{i\,(c+d x)}}{a-\sqrt{a^2-b^2}}\right]}{b^2\sqrt{a^2-b^2}\;d}+$$

$$\frac{i\,a^2\,(e+f x)^3\,\mathrm{Log}\left[1-\frac{i\,b\,e^{i\,(c+d x)}}{a+\sqrt{a^2-b^2}}\right]}{b^2\sqrt{a^2-b^2}\;d}-\frac{3 a^2 f\,(e+f x)^2\,\mathrm{PolyLog}\left[2,\frac{i\,b\,e^{i\,(c+d x)}}{a-\sqrt{a^2-b^2}}\right]}{b^2\sqrt{a^2-b^2}\;d^2}+\frac{3 a^2 f\,(e+f x)^2\,\mathrm{PolyLog}\left[2,\frac{i\,b\,e^{i\,(c+d x)}}{a+\sqrt{a^2-b^2}}\right]}{b^2\sqrt{a^2-b^2}\;d^2}-$$

$$\frac{6\,i\,a^2 f^2\,(e+f x)\,\mathrm{PolyLog}\left[3,\frac{i\,b\,e^{i\,(c+d x)}}{a-\sqrt{a^2-b^2}}\right]}{b^2\sqrt{a^2-b^2}\;d^3}+\frac{6\,i\,a^2 f^2\,(e+f x)\,\mathrm{PolyLog}\left[3,\frac{i\,b\,e^{i\,(c+d x)}}{a+\sqrt{a^2-b^2}}\right]}{b^2\sqrt{a^2-b^2}\;d^3}+$$

$$\frac{6 a^2 f^3\,\mathrm{PolyLog}\left[4,\frac{i\,b\,e^{i\,(c+d x)}}{a-\sqrt{a^2-b^2}}\right]}{b^2\sqrt{a^2-b^2}\;d^4}-\frac{6 a^2 f^3\,\mathrm{PolyLog}\left[4,\frac{i\,b\,e^{i\,(c+d x)}}{a+\sqrt{a^2-b^2}}\right]}{b^2\sqrt{a^2-b^2}\;d^4}-\frac{6 f^3\,\mathrm{Sin}[c+d x]}{b\,d^4}+\frac{3 f\,(e+f x)^2\,\mathrm{Sin}[c+d x]}{b\,d^2}$$

Result (type 4, 1590 leaves):

$$\frac{1}{4 b^2 d^4}\left(-a\,d^4\,x\,\left(4 e^3+6 e^2 f x+4 e f^2 x^2+f^3 x^3\right)-4 b\,d\,(e+f x)\,\left(-6 f^2+d^2\,(e+f x)^2\right)\mathrm{Cos}[c+d x]+\frac{1}{\sqrt{a^2-b^2}\;\sqrt{-\left(a^2-b^2\right)\,(\mathrm{Cos}[c]+i\,\mathrm{Sin}[c])^2}}\right.$$

$$4\,i\,a^2\left(3\,i\,\sqrt{a^2-b^2}\;d^3 e^2 f x\,\mathrm{Log}\left[1+\frac{b\,(\mathrm{Cos}[2 c+d x]+i\,\mathrm{Sin}[2 c+d x])}{i\,a\,\mathrm{Cos}[c]+\sqrt{\left(-a^2+b^2\right)\,(\mathrm{Cos}[c]+i\,\mathrm{Sin}[c])^2}-a\,\mathrm{Sin}[c]}\right](\mathrm{Cos}[c]+i\,\mathrm{Sin}[c])+\right.$$

$$3\,i\,\sqrt{a^2-b^2}\;d^3\,e\,f^2 x^2\,\mathrm{Log}\left[1+\frac{b\,(\mathrm{Cos}[2 c+d x]+i\,\mathrm{Sin}[2 c+d x])}{i\,a\,\mathrm{Cos}[c]+\sqrt{\left(-a^2+b^2\right)\,(\mathrm{Cos}[c]+i\,\mathrm{Sin}[c])^2}-a\,\mathrm{Sin}[c]}\right](\mathrm{Cos}[c]+i\,\mathrm{Sin}[c])+$$

$$i\,\sqrt{a^2-b^2}\;d^3 f^3 x^3\,\mathrm{Log}\left[1+\frac{b\,(\mathrm{Cos}[2 c+d x]+i\,\mathrm{Sin}[2 c+d x])}{i\,a\,\mathrm{Cos}[c]+\sqrt{\left(-a^2+b^2\right)\,(\mathrm{Cos}[c]+i\,\mathrm{Sin}[c])^2}-a\,\mathrm{Sin}[c]}\right](\mathrm{Cos}[c]+i\,\mathrm{Sin}[c])+$$

$$3\,\sqrt{a^2-b^2}\;d^2 f\,(e+f x)^2\,\mathrm{PolyLog}\left[2,-\frac{b\,(\mathrm{Cos}[2 c+d x]+i\,\mathrm{Sin}[2 c+d x])}{i\,a\,\mathrm{Cos}[c]+\sqrt{\left(-a^2+b^2\right)\,(\mathrm{Cos}[c]+i\,\mathrm{Sin}[c])^2}-a\,\mathrm{Sin}[c]}\right](\mathrm{Cos}[c]+i\,\mathrm{Sin}[c])-$$

$$3\,\sqrt{a^2-b^2}\;d^2 f\,(e+f x)^2\,\mathrm{PolyLog}\left[2,\frac{b\,(\mathrm{Cos}[2 c+d x]+i\,\mathrm{Sin}[2 c+d x])}{-i\,a\,\mathrm{Cos}[c]+\sqrt{\left(-a^2+b^2\right)\,(\mathrm{Cos}[c]+i\,\mathrm{Sin}[c])^2}+a\,\mathrm{Sin}[c]}\right](\mathrm{Cos}[c]+i\,\mathrm{Sin}[c])+$$

$$6\,i\,\sqrt{a^2-b^2}\;d\,e\,f^2\,\mathrm{PolyLog}\left[3,-\frac{b\,(\mathrm{Cos}[2 c+d x]+i\,\mathrm{Sin}[2 c+d x])}{i\,a\,\mathrm{Cos}[c]+\sqrt{\left(-a^2+b^2\right)\,(\mathrm{Cos}[c]+i\,\mathrm{Sin}[c])^2}-a\,\mathrm{Sin}[c]}\right](\mathrm{Cos}[c]+i\,\mathrm{Sin}[c])+$$

$$6\,i\,\sqrt{a^2-b^2}\;d\,f^3\,x\,\text{PolyLog}\left[3,-\frac{b\,(\text{Cos}[2\,c+d\,x]+i\,\text{Sin}[2\,c+d\,x])}{i\,a\,\text{Cos}[c]+\sqrt{(-a^2+b^2)\,(\text{Cos}[c]+i\,\text{Sin}[c])^2}-a\,\text{Sin}[c]}\right](\text{Cos}[c]+i\,\text{Sin}[c])-$$

$$6\,\sqrt{a^2-b^2}\;f^3\,\text{PolyLog}\left[4,-\frac{b\,(\text{Cos}[2\,c+d\,x]+i\,\text{Sin}[2\,c+d\,x])}{i\,a\,\text{Cos}[c]+\sqrt{(-a^2+b^2)\,(\text{Cos}[c]+i\,\text{Sin}[c])^2}-a\,\text{Sin}[c]}\right](\text{Cos}[c]+i\,\text{Sin}[c])+$$

$$6\,\sqrt{a^2-b^2}\;f^3\,\text{PolyLog}\left[4,\frac{b\,(\text{Cos}[2\,c+d\,x]+i\,\text{Sin}[2\,c+d\,x])}{-i\,a\,\text{Cos}[c]+\sqrt{(-a^2+b^2)\,(\text{Cos}[c]+i\,\text{Sin}[c])^2}+a\,\text{Sin}[c]}\right](\text{Cos}[c]+i\,\text{Sin}[c])-$$

$$2\,i\,d^3\,e^3\,\text{ArcTan}\left[\frac{b\,\text{Cos}[c+d\,x]+i\,(a+b\,\text{Sin}[c+d\,x])}{\sqrt{a^2-b^2}}\right]\sqrt{-(a^2-b^2)\,(\text{Cos}[c]+i\,\text{Sin}[c])^2}+$$

$$3\,\sqrt{a^2-b^2}\;d^3\,e^2\,f\,x\,\text{Log}\left[1-\frac{b\,(\text{Cos}[2\,c+d\,x]+i\,\text{Sin}[2\,c+d\,x])}{-i\,a\,\text{Cos}[c]+\sqrt{(-a^2+b^2)\,(\text{Cos}[c]+i\,\text{Sin}[c])^2}+a\,\text{Sin}[c]}\right](-i\,\text{Cos}[c]+\text{Sin}[c])+$$

$$3\,\sqrt{a^2-b^2}\;d^3\,e\,f^2\,x^2\,\text{Log}\left[1-\frac{b\,(\text{Cos}[2\,c+d\,x]+i\,\text{Sin}[2\,c+d\,x])}{-i\,a\,\text{Cos}[c]+\sqrt{(-a^2+b^2)\,(\text{Cos}[c]+i\,\text{Sin}[c])^2}+a\,\text{Sin}[c]}\right](-i\,\text{Cos}[c]+\text{Sin}[c])+$$

$$\sqrt{a^2-b^2}\;d^3\,f^3\,x^3\,\text{Log}\left[1-\frac{b\,(\text{Cos}[2\,c+d\,x]+i\,\text{Sin}[2\,c+d\,x])}{-i\,a\,\text{Cos}[c]+\sqrt{(-a^2+b^2)\,(\text{Cos}[c]+i\,\text{Sin}[c])^2}+a\,\text{Sin}[c]}\right](-i\,\text{Cos}[c]+\text{Sin}[c])+$$

$$6\,\sqrt{a^2-b^2}\;d\,e\,f^2\,\text{PolyLog}\left[3,\frac{b\,(\text{Cos}[2\,c+d\,x]+i\,\text{Sin}[2\,c+d\,x])}{-i\,a\,\text{Cos}[c]+\sqrt{(-a^2+b^2)\,(\text{Cos}[c]+i\,\text{Sin}[c])^2}+a\,\text{Sin}[c]}\right](-i\,\text{Cos}[c]+\text{Sin}[c])+$$

$$6\,\sqrt{a^2-b^2}\;d\,f^3\,x\,\text{PolyLog}\left[3,\frac{b\,(\text{Cos}[2\,c+d\,x]+i\,\text{Sin}[2\,c+d\,x])}{-i\,a\,\text{Cos}[c]+\sqrt{(-a^2+b^2)\,(\text{Cos}[c]+i\,\text{Sin}[c])^2}+a\,\text{Sin}[c]}\right](-i\,\text{Cos}[c]+\text{Sin}[c])\Bigg)+12\,b\,f\,\Big(-2$$

$$f^2+d^2\,(e+f\,x)^2\Big)\,\text{Sin}[c+d\,x]\Bigg)$$

- **Problem 228: Result more than twice size of optimal antiderivative.**

$$\int\frac{(e+f\,x)^3\,\text{Sin}[c+d\,x]^3}{a+b\,\text{Sin}[c+d\,x]}\,dx$$

Optimal (type 4, 802 leaves, 24 steps) :

$$-\frac{3\,e\,f^2\,x}{4\,b\,d^2}-\frac{3\,f^3\,x^2}{8\,b\,d^2}+\frac{a^2\,(e+f\,x)^4}{4\,b^3\,f}+\frac{(e+f\,x)^4}{8\,b\,f}-\frac{6\,a\,f^2\,(e+f\,x)\,\text{Cos}[c+d\,x]}{b^2\,d^3}+\frac{a\,(e+f\,x)^3\,\text{Cos}[c+d\,x]}{b^2\,d}+$$
$$\frac{i\,a^3\,(e+f\,x)^3\,\text{Log}\left[1-\frac{i\,b\,e^{i\,(c+d\,x)}}{a-\sqrt{a^2-b^2}}\right]}{b^3\,\sqrt{a^2-b^2}\,d}-\frac{i\,a^3\,(e+f\,x)^3\,\text{Log}\left[1-\frac{i\,b\,e^{i\,(c+d\,x)}}{a+\sqrt{a^2-b^2}}\right]}{b^3\,\sqrt{a^2-b^2}\,d}+\frac{3\,a^3\,f\,(e+f\,x)^2\,\text{PolyLog}\left[2,\frac{i\,b\,e^{i\,(c+d\,x)}}{a-\sqrt{a^2-b^2}}\right]}{b^3\,\sqrt{a^2-b^2}\,d^2}-$$
$$\frac{3\,a^3\,f\,(e+f\,x)^2\,\text{PolyLog}\left[2,\frac{i\,b\,e^{i\,(c+d\,x)}}{a+\sqrt{a^2-b^2}}\right]}{b^3\,\sqrt{a^2-b^2}\,d^2}+\frac{6\,i\,a^3\,f^2\,(e+f\,x)\,\text{PolyLog}\left[3,\frac{i\,b\,e^{i\,(c+d\,x)}}{a-\sqrt{a^2-b^2}}\right]}{b^3\,\sqrt{a^2-b^2}\,d^3}-\frac{6\,i\,a^3\,f^2\,(e+f\,x)\,\text{PolyLog}\left[3,\frac{i\,b\,e^{i\,(c+d\,x)}}{a+\sqrt{a^2-b^2}}\right]}{b^3\,\sqrt{a^2-b^2}\,d^3}-$$
$$\frac{6\,a^3\,f^3\,\text{PolyLog}\left[4,\frac{i\,b\,e^{i\,(c+d\,x)}}{a-\sqrt{a^2-b^2}}\right]}{b^3\,\sqrt{a^2-b^2}\,d^4}+\frac{6\,a^3\,f^3\,\text{PolyLog}\left[4,\frac{i\,b\,e^{i\,(c+d\,x)}}{a+\sqrt{a^2-b^2}}\right]}{b^3\,\sqrt{a^2-b^2}\,d^4}+\frac{6\,a\,f^3\,\text{Sin}[c+d\,x]}{b^2\,d^4}-\frac{3\,a\,f\,(e+f\,x)^2\,\text{Sin}[c+d\,x]}{b^2\,d^2}+$$
$$\frac{3\,f^2\,(e+f\,x)\,\text{Cos}[c+d\,x]\,\text{Sin}[c+d\,x]}{4\,b\,d^3}-\frac{(e+f\,x)^3\,\text{Cos}[c+d\,x]\,\text{Sin}[c+d\,x]}{2\,b\,d}-\frac{3\,f^3\,\text{Sin}[c+d\,x]^2}{8\,b\,d^4}+\frac{3\,f\,(e+f\,x)^2\,\text{Sin}[c+d\,x]^2}{4\,b\,d^2}$$

Result (type 4, 1851 leaves) :

$$\frac{1}{32\,b^3}\left(16\,\left(2\,a^2+b^2\right)\,e^3\,x+24\,\left(2\,a^2+b^2\right)\,e^2\,f\,x^2+16\,\left(2\,a^2+b^2\right)\,e\,f^2\,x^3+4\,\left(2\,a^2+b^2\right)\,f^3\,x^4-\frac{1}{\sqrt{a^2-b^2}\,d^4\,\sqrt{\left(-a^2+b^2\right)\,(\text{Cos}[2\,c]+i\,\text{Sin}[2\,c])}}\right.$$
$$32\,i\,a^3\left(3\,i\,\sqrt{a^2-b^2}\,d^3\,e^2\,f\,x\,\text{Log}\left[1+\frac{b\,(\text{Cos}[2\,c+d\,x]+i\,\text{Sin}[2\,c+d\,x])}{i\,a\,\text{Cos}[c]+\sqrt{\left(-a^2+b^2\right)\,(\text{Cos}[c]+i\,\text{Sin}[c])^2}-a\,\text{Sin}[c]}\right]\,(\text{Cos}[c]+i\,\text{Sin}[c])+\right.$$
$$3\,i\,\sqrt{a^2-b^2}\,d^3\,e\,f^2\,x^2\,\text{Log}\left[1+\frac{b\,(\text{Cos}[2\,c+d\,x]+i\,\text{Sin}[2\,c+d\,x])}{i\,a\,\text{Cos}[c]+\sqrt{\left(-a^2+b^2\right)\,(\text{Cos}[c]+i\,\text{Sin}[c])^2}-a\,\text{Sin}[c]}\right]\,(\text{Cos}[c]+i\,\text{Sin}[c])+$$
$$i\,\sqrt{a^2-b^2}\,d^3\,f^3\,x^3\,\text{Log}\left[1+\frac{b\,(\text{Cos}[2\,c+d\,x]+i\,\text{Sin}[2\,c+d\,x])}{i\,a\,\text{Cos}[c]+\sqrt{\left(-a^2+b^2\right)\,(\text{Cos}[c]+i\,\text{Sin}[c])^2}-a\,\text{Sin}[c]}\right]\,(\text{Cos}[c]+i\,\text{Sin}[c])+$$
$$3\,\sqrt{a^2-b^2}\,d^2\,f\,(e+f\,x)^2\,\text{PolyLog}\left[2,-\frac{b\,(\text{Cos}[2\,c+d\,x]+i\,\text{Sin}[2\,c+d\,x])}{i\,a\,\text{Cos}[c]+\sqrt{\left(-a^2+b^2\right)\,(\text{Cos}[c]+i\,\text{Sin}[c])^2}-a\,\text{Sin}[c]}\right]\,(\text{Cos}[c]+i\,\text{Sin}[c])-$$
$$3\,\sqrt{a^2-b^2}\,d^2\,f\,(e+f\,x)^2\,\text{PolyLog}\left[2,\frac{b\,(\text{Cos}[2\,c+d\,x]+i\,\text{Sin}[2\,c+d\,x])}{-i\,a\,\text{Cos}[c]+\sqrt{\left(-a^2+b^2\right)\,(\text{Cos}[c]+i\,\text{Sin}[c])^2}+a\,\text{Sin}[c]}\right]\,(\text{Cos}[c]+i\,\text{Sin}[c])+$$
$$6\,i\,\sqrt{a^2-b^2}\,d\,e\,f^2\,\text{PolyLog}\left[3,-\frac{b\,(\text{Cos}[2\,c+d\,x]+i\,\text{Sin}[2\,c+d\,x])}{i\,a\,\text{Cos}[c]+\sqrt{\left(-a^2+b^2\right)\,(\text{Cos}[c]+i\,\text{Sin}[c])^2}-a\,\text{Sin}[c]}\right]\,(\text{Cos}[c]+i\,\text{Sin}[c])+$$

$$6\,i\sqrt{a^2-b^2}\,d\,f^3\,x\,\text{PolyLog}\left[3,-\frac{b\,(\text{Cos}[2\,c+d\,x]+i\,\text{Sin}[2\,c+d\,x])}{i\,a\,\text{Cos}[c]+\sqrt{(-a^2+b^2)\,(\text{Cos}[c]+i\,\text{Sin}[c])^2}-a\,\text{Sin}[c]}\right](\text{Cos}[c]+i\,\text{Sin}[c])-$$

$$6\sqrt{a^2-b^2}\,f^3\,\text{PolyLog}\left[4,-\frac{b\,(\text{Cos}[2\,c+d\,x]+i\,\text{Sin}[2\,c+d\,x])}{i\,a\,\text{Cos}[c]+\sqrt{(-a^2+b^2)\,(\text{Cos}[c]+i\,\text{Sin}[c])^2}-a\,\text{Sin}[c]}\right](\text{Cos}[c]+i\,\text{Sin}[c])+$$

$$6\sqrt{a^2-b^2}\,f^3\,\text{PolyLog}\left[4,\frac{b\,(\text{Cos}[2\,c+d\,x]+i\,\text{Sin}[2\,c+d\,x])}{-i\,a\,\text{Cos}[c]+\sqrt{(-a^2+b^2)\,(\text{Cos}[c]+i\,\text{Sin}[c])^2}+a\,\text{Sin}[c]}\right](\text{Cos}[c]+i\,\text{Sin}[c])+$$

$$3\sqrt{a^2-b^2}\,d^3\,e^2\,f\,x\,\text{Log}\left[1-\frac{b\,(\text{Cos}[2\,c+d\,x]+i\,\text{Sin}[2\,c+d\,x])}{-i\,a\,\text{Cos}[c]+\sqrt{(-a^2+b^2)\,(\text{Cos}[c]+i\,\text{Sin}[c])^2}+a\,\text{Sin}[c]}\right](-i\,\text{Cos}[c]+\text{Sin}[c])+$$

$$3\sqrt{a^2-b^2}\,d^3\,e\,f^2\,x^2\,\text{Log}\left[1-\frac{b\,(\text{Cos}[2\,c+d\,x]+i\,\text{Sin}[2\,c+d\,x])}{-i\,a\,\text{Cos}[c]+\sqrt{(-a^2+b^2)\,(\text{Cos}[c]+i\,\text{Sin}[c])^2}+a\,\text{Sin}[c]}\right](-i\,\text{Cos}[c]+\text{Sin}[c])+$$

$$\sqrt{a^2-b^2}\,d^3\,f^3\,x^3\,\text{Log}\left[1-\frac{b\,(\text{Cos}[2\,c+d\,x]+i\,\text{Sin}[2\,c+d\,x])}{-i\,a\,\text{Cos}[c]+\sqrt{(-a^2+b^2)\,(\text{Cos}[c]+i\,\text{Sin}[c])^2}+a\,\text{Sin}[c]}\right](-i\,\text{Cos}[c]+\text{Sin}[c])+$$

$$6\sqrt{a^2-b^2}\,d\,e\,f^2\,\text{PolyLog}\left[3,\frac{b\,(\text{Cos}[2\,c+d\,x]+i\,\text{Sin}[2\,c+d\,x])}{-i\,a\,\text{Cos}[c]+\sqrt{(-a^2+b^2)\,(\text{Cos}[c]+i\,\text{Sin}[c])^2}+a\,\text{Sin}[c]}\right](-i\,\text{Cos}[c]+\text{Sin}[c])+$$

$$6\sqrt{a^2-b^2}\,d\,f^3\,x\,\text{PolyLog}\left[3,\frac{b\,(\text{Cos}[2\,c+d\,x]+i\,\text{Sin}[2\,c+d\,x])}{-i\,a\,\text{Cos}[c]+\sqrt{(-a^2+b^2)\,(\text{Cos}[c]+i\,\text{Sin}[c])^2}+a\,\text{Sin}[c]}\right](-i\,\text{Cos}[c]+\text{Sin}[c])-$$

$$\left.2\,i\,d^3\,e^3\,\text{ArcTan}\left[\frac{b\,\text{Cos}[c+d\,x]+i\,(a+b\,\text{Sin}[c+d\,x])}{\sqrt{a^2-b^2}}\right]\sqrt{(-a^2+b^2)\,(\text{Cos}[2\,c]+i\,\text{Sin}[2\,c])}\right)+$$

$$\frac{16\,a\,b\,\left(6\,i\,f^3-6\,d\,f^2\,(e+f\,x)-3\,i\,d^2\,f\,(e+f\,x)^2+d^3\,(e+f\,x)^3\right)(\text{Cos}[c+d\,x]-i\,\text{Sin}[c+d\,x])}{d^4}+$$

$$\frac{16\,a\,b\,\left(-6\,i\,f^3-6\,d\,f^2\,(e+f\,x)+3\,i\,d^2\,f\,(e+f\,x)^2+d^3\,(e+f\,x)^3\right)(\text{Cos}[c+d\,x]+i\,\text{Sin}[c+d\,x])}{d^4}+$$

$$\frac{b^2\left(3\,f^3+6\,i\,d\,f^2\,(e+f\,x)-6\,d^2\,f\,(e+f\,x)^2-4\,i\,d^3\,(e+f\,x)^3\right)(\text{Cos}[2\,(c+d\,x)]-i\,\text{Sin}[2\,(c+d\,x)])}{d^4}+$$

$$\left.\frac{b^2\left(3\,f^3-6\,i\,d\,f^2\,(e+f\,x)-6\,d^2\,f\,(e+f\,x)^2+4\,i\,d^3\,(e+f\,x)^3\right)(\text{Cos}[2\,(c+d\,x)]+i\,\text{Sin}[2\,(c+d\,x)])}{d^4}\right)$$

- **Problem 232: Result more than twice size of optimal antiderivative.**

$$\int \frac{(e+f x)^3 \operatorname{Csc}[c+d x]}{a+b \operatorname{Sin}[c+d x]} \, dx$$

Optimal (type 4, 732 leaves, 22 steps):

$$-\frac{2 (e+f x)^3 \operatorname{ArcTanh}\left[e^{i (c+d x)}\right]}{a d}+\frac{i b (e+f x)^3 \operatorname{Log}\left[1-\frac{i b e^{i (c+d x)}}{a-\sqrt{a^2-b^2}}\right]}{a \sqrt{a^2-b^2} d}-\frac{i b (e+f x)^3 \operatorname{Log}\left[1-\frac{i b e^{i (c+d x)}}{a+\sqrt{a^2-b^2}}\right]}{a \sqrt{a^2-b^2} d}+$$
$$\frac{3 i f (e+f x)^2 \operatorname{PolyLog}\left[2,-e^{i (c+d x)}\right]}{a d^2}-\frac{3 i f (e+f x)^2 \operatorname{PolyLog}\left[2, e^{i (c+d x)}\right]}{a d^2}+\frac{3 b f (e+f x)^2 \operatorname{PolyLog}\left[2, \frac{i b e^{i (c+d x)}}{a-\sqrt{a^2-b^2}}\right]}{a \sqrt{a^2-b^2} d^2}-$$
$$\frac{3 b f (e+f x)^2 \operatorname{PolyLog}\left[2, \frac{i b e^{i (c+d x)}}{a+\sqrt{a^2-b^2}}\right]}{a \sqrt{a^2-b^2} d^2}-\frac{6 f^2 (e+f x) \operatorname{PolyLog}\left[3,-e^{i (c+d x)}\right]}{a d^3}+\frac{6 f^2 (e+f x) \operatorname{PolyLog}\left[3, e^{i (c+d x)}\right]}{a d^3}+$$
$$\frac{6 i b f^2 (e+f x) \operatorname{PolyLog}\left[3, \frac{i b e^{i (c+d x)}}{a-\sqrt{a^2-b^2}}\right]}{a \sqrt{a^2-b^2} d^3}-\frac{6 i b f^2 (e+f x) \operatorname{PolyLog}\left[3, \frac{i b e^{i (c+d x)}}{a+\sqrt{a^2-b^2}}\right]}{a \sqrt{a^2-b^2} d^3}-\frac{6 i f^3 \operatorname{PolyLog}\left[4,-e^{i (c+d x)}\right]}{a d^4}+$$
$$\frac{6 i f^3 \operatorname{PolyLog}\left[4, e^{i (c+d x)}\right]}{a d^4}-\frac{6 b f^3 \operatorname{PolyLog}\left[4, \frac{i b e^{i (c+d x)}}{a-\sqrt{a^2-b^2}}\right]}{a \sqrt{a^2-b^2} d^4}+\frac{6 b f^3 \operatorname{PolyLog}\left[4, \frac{i b e^{i (c+d x)}}{a+\sqrt{a^2-b^2}}\right]}{a \sqrt{a^2-b^2} d^4}$$

Result (type 4, 2186 leaves):

$$\frac{1}{a d^4}\left(-2 d^3 e^3 \operatorname{ArcTanh}\left[e^{i (c+d x)}\right]+3 d^3 e^2 f x \operatorname{Log}\left[1-e^{i (c+d x)}\right]+3 d^3 e f^2 x^2 \operatorname{Log}\left[1-e^{i (c+d x)}\right]+d^3 f^3 x^3 \operatorname{Log}\left[1-e^{i (c+d x)}\right]-\right.$$
$$3 d^3 e^2 f x \operatorname{Log}\left[1+e^{i (c+d x)}\right]-3 d^3 e f^2 x^2 \operatorname{Log}\left[1+e^{i (c+d x)}\right]-d^3 f^3 x^3 \operatorname{Log}\left[1+e^{i (c+d x)}\right]+3 i d^2 f (e+f x)^2 \operatorname{PolyLog}\left[2,-e^{i (c+d x)}\right]-$$
$$3 i d^2 f (e+f x)^2 \operatorname{PolyLog}\left[2, e^{i (c+d x)}\right]-6 d e f^2 \operatorname{PolyLog}\left[3,-e^{i (c+d x)}\right]-6 d f^3 x \operatorname{PolyLog}\left[3,-e^{i (c+d x)}\right]+6 d e f^2 \operatorname{PolyLog}\left[3, e^{i (c+d x)}\right]+$$
$$\left.6 d f^3 x \operatorname{PolyLog}\left[3, e^{i (c+d x)}\right]-6 i f^3 \operatorname{PolyLog}\left[4,-e^{i (c+d x)}\right]+6 i f^3 \operatorname{PolyLog}\left[4, e^{i (c+d x)}\right]\right)+\frac{1}{a \sqrt{a^2-b^2} d^4 \sqrt{-\left(a^2-b^2\right)^2 e^{4 i c}}}$$
$$b\left(-2 d^3 e^3 \sqrt{-\left(a^2-b^2\right)^2 e^{4 i c}} \operatorname{ArcTan}\left[\frac{i a+b e^{i (c+d x)}}{\sqrt{a^2-b^2}}\right]+3 i \sqrt{a^2-b^2} d^3 e^2 e^{i c} \sqrt{\left(-a^2+b^2\right) e^{2 i c}} f x \operatorname{Log}\left[1-\frac{i b e^{i (2 c+d x)}}{a e^{i c}-\sqrt{\left(a^2-b^2\right) e^{2 i c}}}\right]+\right.$$
$$i \sqrt{a^2-b^2} d^3 e^{i c} \sqrt{\left(-a^2+b^2\right) e^{2 i c}} f^3 x^3 \operatorname{Log}\left[1-\frac{i b e^{i (2 c+d x)}}{a e^{i c}-\sqrt{\left(a^2-b^2\right) e^{2 i c}}}\right]-3 i \sqrt{a^2-b^2} d^3 e^2 e^{i c} \sqrt{\left(-a^2+b^2\right) e^{2 i c}}$$

$$f\,x\,\text{Log}\Big[1-\frac{i\,b\,e^{i\,(2\,c+d\,x)}}{a\,e^{i\,c}+\sqrt{\left(a^2-b^2\right)\,e^{2\,i\,c}}}\Big]-i\,\sqrt{a^2-b^2}\,d^3\,e^{i\,c}\,\sqrt{\left(-a^2+b^2\right)\,e^{2\,i\,c}}\,f^3\,x^3\,\text{Log}\Big[1-\frac{i\,b\,e^{i\,(2\,c+d\,x)}}{a\,e^{i\,c}+\sqrt{\left(a^2-b^2\right)\,e^{2\,i\,c}}}\Big]-$$

$$3\,\sqrt{a^2-b^2}\,d^3\,e\,e^{i\,c}\,\sqrt{\left(a^2-b^2\right)\,e^{2\,i\,c}}\,f^2\,x^2\,\text{Log}\Big[1+\frac{b\,e^{i\,(2\,c+d\,x)}}{i\,a\,e^{i\,c}-\sqrt{\left(-a^2+b^2\right)\,e^{2\,i\,c}}}\Big]+3\,\sqrt{a^2-b^2}\,d^3\,e\,e^{i\,c}\,\sqrt{\left(a^2-b^2\right)\,e^{2\,i\,c}}\,f^2\,x^2$$

$$\text{Log}\Big[1+\frac{b\,e^{i\,(2\,c+d\,x)}}{i\,a\,e^{i\,c}+\sqrt{\left(-a^2+b^2\right)\,e^{2\,i\,c}}}\Big]+3\,\sqrt{a^2-b^2}\,d^2\,e^{i\,c}\,\sqrt{\left(-a^2+b^2\right)\,e^{2\,i\,c}}\,f\,\left(e^2+f^2\,x^2\right)\,\text{PolyLog}\Big[2,\,\frac{i\,b\,e^{i\,(2\,c+d\,x)}}{a\,e^{i\,c}-\sqrt{\left(a^2-b^2\right)\,e^{2\,i\,c}}}\Big]-$$

$$3\,\sqrt{a^2-b^2}\,d^2\,e^{i\,c}\,\sqrt{\left(-a^2+b^2\right)\,e^{2\,i\,c}}\,f\,\left(e^2+f^2\,x^2\right)\,\text{PolyLog}\Big[2,\,\frac{i\,b\,e^{i\,(2\,c+d\,x)}}{a\,e^{i\,c}+\sqrt{\left(a^2-b^2\right)\,e^{2\,i\,c}}}\Big]+6\,i\,\sqrt{a^2-b^2}\,d^2\,e\,e^{i\,c}\,\sqrt{\left(a^2-b^2\right)\,e^{2\,i\,c}}$$

$$f^2\,x\,\text{PolyLog}\Big[2,\,\frac{i\,b\,e^{i\,(2\,c+d\,x)}}{a\,e^{i\,c}+i\,\sqrt{\left(-a^2+b^2\right)\,e^{2\,i\,c}}}\Big]-6\,i\,\sqrt{a^2-b^2}\,d^2\,e\,e^{i\,c}\,\sqrt{\left(a^2-b^2\right)\,e^{2\,i\,c}}\,f^2\,x\,\text{PolyLog}\Big[2,\,-\frac{b\,e^{i\,(2\,c+d\,x)}}{i\,a\,e^{i\,c}+\sqrt{\left(-a^2+b^2\right)\,e^{2\,i\,c}}}\Big]+$$

$$6\,i\,\sqrt{a^2-b^2}\,d\,e^{i\,c}\,\sqrt{\left(-a^2+b^2\right)\,e^{2\,i\,c}}\,f^3\,x\,\text{PolyLog}\Big[3,\,\frac{i\,b\,e^{i\,(2\,c+d\,x)}}{a\,e^{i\,c}-\sqrt{\left(a^2-b^2\right)\,e^{2\,i\,c}}}\Big]-6\,i\,\sqrt{a^2-b^2}\,d\,e^{i\,c}\,\sqrt{\left(-a^2+b^2\right)\,e^{2\,i\,c}}\,f^3\,x$$

$$\text{PolyLog}\Big[3,\,\frac{i\,b\,e^{i\,(2\,c+d\,x)}}{a\,e^{i\,c}+\sqrt{\left(a^2-b^2\right)\,e^{2\,i\,c}}}\Big]-6\,\sqrt{a^2-b^2}\,d\,e\,e^{i\,c}\,\sqrt{\left(a^2-b^2\right)\,e^{2\,i\,c}}\,f^2\,\text{PolyLog}\Big[3,\,\frac{i\,b\,e^{i\,(2\,c+d\,x)}}{a\,e^{i\,c}+i\,\sqrt{\left(-a^2+b^2\right)\,e^{2\,i\,c}}}\Big]+$$

$$6\,\sqrt{a^2-b^2}\,d\,e\,e^{i\,c}\,\sqrt{\left(a^2-b^2\right)\,e^{2\,i\,c}}\,f^2\,\text{PolyLog}\Big[3,\,-\frac{b\,e^{i\,(2\,c+d\,x)}}{i\,a\,e^{i\,c}+\sqrt{\left(-a^2+b^2\right)\,e^{2\,i\,c}}}\Big]-6\,\sqrt{a^2-b^2}\,e^{i\,c}\,\sqrt{\left(-a^2+b^2\right)\,e^{2\,i\,c}}\,f^3$$

$$\left.\text{PolyLog}\Big[4,\,\frac{i\,b\,e^{i\,(2\,c+d\,x)}}{a\,e^{i\,c}-\sqrt{\left(a^2-b^2\right)\,e^{2\,i\,c}}}\Big]+6\,\sqrt{a^2-b^2}\,e^{i\,c}\,\sqrt{\left(-a^2+b^2\right)\,e^{2\,i\,c}}\,f^3\,\text{PolyLog}\Big[4,\,\frac{i\,b\,e^{i\,(2\,c+d\,x)}}{a\,e^{i\,c}+\sqrt{\left(a^2-b^2\right)\,e^{2\,i\,c}}}\Big]\right)$$

- **Problem 236: Result more than twice size of optimal antiderivative.**

$$\int\frac{(e+f\,x)^3\,\text{Csc}[c+d\,x]^2}{a+b\,\text{Sin}[c+d\,x]}\,dx$$

Optimal (type 4, 882 leaves, 29 steps) :

$$-\frac{i(e+fx)^3}{ad}+\frac{2b(e+fx)^3\text{ArcTanh}\left[e^{i(c+dx)}\right]}{a^2 d}-\frac{(e+fx)^3\text{Cot}[c+dx]}{ad}-\frac{i b^2(e+fx)^3\text{Log}\left[1-\frac{i b e^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right]}{a^2\sqrt{a^2-b^2}\,d}+$$

$$\frac{i b^2(e+fx)^3\text{Log}\left[1-\frac{i b e^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right]}{a^2\sqrt{a^2-b^2}\,d}+\frac{3f(e+fx)^2\text{Log}\left[1-e^{2i(c+dx)}\right]}{ad^2}-\frac{3ibf(e+fx)^2\text{PolyLog}\left[2,-e^{i(c+dx)}\right]}{a^2d^2}+$$

$$\frac{3ibf(e+fx)^2\text{PolyLog}\left[2,e^{i(c+dx)}\right]}{a^2d^2}-\frac{3b^2f(e+fx)^2\text{PolyLog}\left[2,\frac{i b e^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right]}{a^2\sqrt{a^2-b^2}\,d^2}+\frac{3b^2f(e+fx)^2\text{PolyLog}\left[2,\frac{i b e^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right]}{a^2\sqrt{a^2-b^2}\,d^2}-$$

$$\frac{3if^2(e+fx)\text{PolyLog}\left[2,e^{2i(c+dx)}\right]}{ad^3}+\frac{6bf^2(e+fx)\text{PolyLog}\left[3,-e^{i(c+dx)}\right]}{a^2d^3}-\frac{6bf^2(e+fx)\text{PolyLog}\left[3,e^{i(c+dx)}\right]}{a^2d^3}-$$

$$\frac{6ib^2f^2(e+fx)\text{PolyLog}\left[3,\frac{i b e^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right]}{a^2\sqrt{a^2-b^2}\,d^3}+\frac{6ib^2f^2(e+fx)\text{PolyLog}\left[3,\frac{i b e^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right]}{a^2\sqrt{a^2-b^2}\,d^3}+\frac{3f^3\text{PolyLog}\left[3,e^{2i(c+dx)}\right]}{2ad^4}+$$

$$\frac{6ibf^3\text{PolyLog}\left[4,-e^{i(c+dx)}\right]}{a^2d^4}-\frac{6ibf^3\text{PolyLog}\left[4,e^{i(c+dx)}\right]}{a^2d^4}+\frac{6b^2f^3\text{PolyLog}\left[4,\frac{i b e^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right]}{a^2\sqrt{a^2-b^2}\,d^4}-\frac{6b^2f^3\text{PolyLog}\left[4,\frac{i b e^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right]}{a^2\sqrt{a^2-b^2}\,d^4}$$

Result (type 4, 2452 leaves):

$$-\frac{b e^3\text{Log}\left[\text{Tan}\left[\frac{1}{2}(c+dx)\right]\right]}{a^2 d}-\frac{1}{a^2d^2}$$

$$3be^2f\left((c+dx)\left(\text{Log}\left[1-e^{i(c+dx)}\right]-\text{Log}\left[1+e^{i(c+dx)}\right]\right)-c\,\text{Log}\left[\text{Tan}\left[\frac{1}{2}(c+dx)\right]\right]+i\left(\text{PolyLog}\left[2,-e^{i(c+dx)}\right]-\text{PolyLog}\left[2,e^{i(c+dx)}\right]\right)\right)-$$

$$\frac{1}{4ad^4}e^{-ic}f^3\text{Csc}[c]$$

$$\left(2d^2x^2\left(2de^{2ic}x+3i\left(-1+e^{2ic}\right)\text{Log}\left[1-e^{2i(c+dx)}\right]\right)+6d\left(-1+e^{2ic}\right)x\,\text{PolyLog}\left[2,e^{2i(c+dx)}\right]+3i\left(-1+e^{2ic}\right)\text{PolyLog}\left[3,e^{2i(c+dx)}\right]\right)+$$

$$\frac{1}{a^2d^3}6bef^2\left(d^2x^2\text{ArcTanh}[\text{Cos}[c+dx]+i\,\text{Sin}[c+dx]]-i\,dx\,\text{PolyLog}[2,-\text{Cos}[c+dx]-i\,\text{Sin}[c+dx]]+\right.$$

$$\left.i\,dx\,\text{PolyLog}[2,\text{Cos}[c+dx]+i\,\text{Sin}[c+dx]]+\text{PolyLog}[3,-\text{Cos}[c+dx]-i\,\text{Sin}[c+dx]]-\text{PolyLog}[3,\text{Cos}[c+dx]+i\,\text{Sin}[c+dx]]\right)-$$

$$\frac{1}{a^2d^4}bf^3\left(-2d^3x^3\text{ArcTanh}[\text{Cos}[c+dx]+i\,\text{Sin}[c+dx]]+3i\,d^2x^2\text{PolyLog}[2,-\text{Cos}[c+dx]-i\,\text{Sin}[c+dx]]-\right.$$

$$3i\,d^2x^2\text{PolyLog}[2,\text{Cos}[c+dx]+i\,\text{Sin}[c+dx]]-6dx\,\text{PolyLog}[3,-\text{Cos}[c+dx]-i\,\text{Sin}[c+dx]]+6dx$$

$$\left.\text{PolyLog}[3,\text{Cos}[c+dx]+i\,\text{Sin}[c+dx]]-6i\,\text{PolyLog}[4,-\text{Cos}[c+dx]-i\,\text{Sin}[c+dx]]+6i\,\text{PolyLog}[4,\text{Cos}[c+dx]+i\,\text{Sin}[c+dx]]\right)+$$

$$\frac{3 e^2 f \operatorname{Csc}[c] \left(-d x \operatorname{Cos}[c]+\operatorname{Log}[\operatorname{Cos}[d x] \operatorname{Sin}[c]+\operatorname{Cos}[c] \operatorname{Sin}[d x]] \operatorname{Sin}[c]\right)}{a d^2 \left(\operatorname{Cos}[c]^2+\operatorname{Sin}[c]^2\right)}+\frac{1}{a^2 \sqrt{a^2-b^2}\, d^4 \sqrt{\left(-a^2+b^2\right) (\operatorname{Cos}[2 c]+i \operatorname{Sin}[2 c])}}$$

$$i b^2 \left(3 i \sqrt{a^2-b^2}\, d^3 e^2 f x \operatorname{Log}\left[1+\frac{b (\operatorname{Cos}[2 c+d x]+i \operatorname{Sin}[2 c+d x])}{i a \operatorname{Cos}[c]+\sqrt{\left(-a^2+b^2\right) (\operatorname{Cos}[c]+i \operatorname{Sin}[c])^2}-a \operatorname{Sin}[c]}\right] (\operatorname{Cos}[c]+i \operatorname{Sin}[c])+\right.$$

$$3 i \sqrt{a^2-b^2}\, d^3 e f^2 x^2 \operatorname{Log}\left[1+\frac{b (\operatorname{Cos}[2 c+d x]+i \operatorname{Sin}[2 c+d x])}{i a \operatorname{Cos}[c]+\sqrt{\left(-a^2+b^2\right) (\operatorname{Cos}[c]+i \operatorname{Sin}[c])^2}-a \operatorname{Sin}[c]}\right] (\operatorname{Cos}[c]+i \operatorname{Sin}[c])+$$

$$i \sqrt{a^2-b^2}\, d^3 f^3 x^3 \operatorname{Log}\left[1+\frac{b (\operatorname{Cos}[2 c+d x]+i \operatorname{Sin}[2 c+d x])}{i a \operatorname{Cos}[c]+\sqrt{\left(-a^2+b^2\right) (\operatorname{Cos}[c]+i \operatorname{Sin}[c])^2}-a \operatorname{Sin}[c]}\right] (\operatorname{Cos}[c]+i \operatorname{Sin}[c])+$$

$$3 \sqrt{a^2-b^2}\, d^2 f (e+f x)^2 \operatorname{PolyLog}\left[2,-\frac{b (\operatorname{Cos}[2 c+d x]+i \operatorname{Sin}[2 c+d x])}{i a \operatorname{Cos}[c]+\sqrt{\left(-a^2+b^2\right) (\operatorname{Cos}[c]+i \operatorname{Sin}[c])^2}-a \operatorname{Sin}[c]}\right] (\operatorname{Cos}[c]+i \operatorname{Sin}[c])-$$

$$3 \sqrt{a^2-b^2}\, d^2 f (e+f x)^2 \operatorname{PolyLog}\left[2,\frac{b (\operatorname{Cos}[2 c+d x]+i \operatorname{Sin}[2 c+d x])}{-i a \operatorname{Cos}[c]+\sqrt{\left(-a^2+b^2\right) (\operatorname{Cos}[c]+i \operatorname{Sin}[c])^2}+a \operatorname{Sin}[c]}\right] (\operatorname{Cos}[c]+i \operatorname{Sin}[c])+$$

$$6 i \sqrt{a^2-b^2}\, d e f^2 \operatorname{PolyLog}\left[3,-\frac{b (\operatorname{Cos}[2 c+d x]+i \operatorname{Sin}[2 c+d x])}{i a \operatorname{Cos}[c]+\sqrt{\left(-a^2+b^2\right) (\operatorname{Cos}[c]+i \operatorname{Sin}[c])^2}-a \operatorname{Sin}[c]}\right] (\operatorname{Cos}[c]+i \operatorname{Sin}[c])+$$

$$6 i \sqrt{a^2-b^2}\, d f^3 x \operatorname{PolyLog}\left[3,-\frac{b (\operatorname{Cos}[2 c+d x]+i \operatorname{Sin}[2 c+d x])}{i a \operatorname{Cos}[c]+\sqrt{\left(-a^2+b^2\right) (\operatorname{Cos}[c]+i \operatorname{Sin}[c])^2}-a \operatorname{Sin}[c]}\right] (\operatorname{Cos}[c]+i \operatorname{Sin}[c])-$$

$$6 \sqrt{a^2-b^2}\, f^3 \operatorname{PolyLog}\left[4,-\frac{b (\operatorname{Cos}[2 c+d x]+i \operatorname{Sin}[2 c+d x])}{i a \operatorname{Cos}[c]+\sqrt{\left(-a^2+b^2\right) (\operatorname{Cos}[c]+i \operatorname{Sin}[c])^2}-a \operatorname{Sin}[c]}\right] (\operatorname{Cos}[c]+i \operatorname{Sin}[c])+$$

$$6 \sqrt{a^2-b^2}\, f^3 \operatorname{PolyLog}\left[4,\frac{b (\operatorname{Cos}[2 c+d x]+i \operatorname{Sin}[2 c+d x])}{-i a \operatorname{Cos}[c]+\sqrt{\left(-a^2+b^2\right) (\operatorname{Cos}[c]+i \operatorname{Sin}[c])^2}+a \operatorname{Sin}[c]}\right] (\operatorname{Cos}[c]+i \operatorname{Sin}[c])+$$

$$3 \sqrt{a^2-b^2}\, d^3 e^2 f x \operatorname{Log}\left[1-\frac{b (\operatorname{Cos}[2 c+d x]+i \operatorname{Sin}[2 c+d x])}{-i a \operatorname{Cos}[c]+\sqrt{\left(-a^2+b^2\right) (\operatorname{Cos}[c]+i \operatorname{Sin}[c])^2}+a \operatorname{Sin}[c]}\right] (-i \operatorname{Cos}[c]+\operatorname{Sin}[c])+$$

$$3 \sqrt{a^2-b^2}\, d^3 e f^2 x^2 \operatorname{Log}\left[1-\frac{b (\operatorname{Cos}[2 c+d x]+i \operatorname{Sin}[2 c+d x])}{-i a \operatorname{Cos}[c]+\sqrt{\left(-a^2+b^2\right) (\operatorname{Cos}[c]+i \operatorname{Sin}[c])^2}+a \operatorname{Sin}[c]}\right] (-i \operatorname{Cos}[c]+\operatorname{Sin}[c])+$$

$$\sqrt{a^2-b^2}\, d^3 f^3 x^3 \operatorname{Log}\left[1-\frac{b (\operatorname{Cos}[2 c+d x]+i \operatorname{Sin}[2 c+d x])}{-i a \operatorname{Cos}[c]+\sqrt{\left(-a^2+b^2\right) (\operatorname{Cos}[c]+i \operatorname{Sin}[c])^2}+a \operatorname{Sin}[c]}\right] (-i \operatorname{Cos}[c]+\operatorname{Sin}[c])+$$

$$6 \sqrt{a^2-b^2}\, d e f^2 \operatorname{PolyLog}\left[3,\frac{b (\operatorname{Cos}[2 c+d x]+i \operatorname{Sin}[2 c+d x])}{-i a \operatorname{Cos}[c]+\sqrt{\left(-a^2+b^2\right) (\operatorname{Cos}[c]+i \operatorname{Sin}[c])^2}+a \operatorname{Sin}[c]}\right] (-i \operatorname{Cos}[c]+\operatorname{Sin}[c])+$$

$$6\sqrt{a^2-b^2}\ d\,f^3\,x\,\text{PolyLog}\left[3,\ \frac{b\,(\text{Cos}[2c+d\,x]+i\,\text{Sin}[2c+d\,x])}{-i\,a\,\text{Cos}[c]+\sqrt{\left(-a^2+b^2\right)(\text{Cos}[c]+i\,\text{Sin}[c])^2}+a\,\text{Sin}[c]}\right](-i\,\text{Cos}[c]+\text{Sin}[c])-$$

$$2\,i\,d^3\,e^3\,\text{ArcTan}\left[\frac{b\,\text{Cos}[c+d\,x]+i\,(a+b\,\text{Sin}[c+d\,x])}{\sqrt{a^2-b^2}}\right]\sqrt{\left(-a^2+b^2\right)(\text{Cos}[2c]+i\,\text{Sin}[2c])}\Bigg)+$$

$$\frac{\text{Csc}\left[\frac{c}{2}\right]\text{Csc}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\left(e^3\,\text{Sin}\left[\frac{d\,x}{2}\right]+3\,e^2\,f\,x\,\text{Sin}\left[\frac{d\,x}{2}\right]+3\,e\,f^2\,x^2\,\text{Sin}\left[\frac{d\,x}{2}\right]+f^3\,x^3\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)}{2\,a\,d}+$$

$$\frac{\text{Sec}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\left(e^3\,\text{Sin}\left[\frac{d\,x}{2}\right]+3\,e^2\,f\,x\,\text{Sin}\left[\frac{d\,x}{2}\right]+3\,e\,f^2\,x^2\,\text{Sin}\left[\frac{d\,x}{2}\right]+f^3\,x^3\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)}{2\,a\,d}-$$

$$\Bigg(3\,e\,f^2\,\text{Csc}[c]\,\text{Sec}[c]\left(d^2\,e^{i\,\text{ArcTan}[\text{Tan}[c]]}\,x^2+1\Big/\left(\sqrt{1+\text{Tan}[c]^2}\right)\left(i\,d\,x\,(-\pi+2\,\text{ArcTan}[\text{Tan}[c]])-\pi\,\text{Log}\left[1+e^{-2\,i\,d\,x}\right]-\right.\right.$$
$$2\,(d\,x+\text{ArcTan}[\text{Tan}[c]])\,\text{Log}\left[1-e^{2\,i\,(d\,x+\text{ArcTan}[\text{Tan}[c]])}\right]+\pi\,\text{Log}[\text{Cos}[d\,x]]+2\,\text{ArcTan}[\text{Tan}[c]]\,\text{Log}[\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]]+$$
$$\left.\left.i\,\text{PolyLog}\left[2,\ e^{2\,i\,(d\,x+\text{ArcTan}[\text{Tan}[c]])}\right]\right)\text{Tan}[c]\right)\Bigg)\Big/\left(a\,d^3\,\sqrt{\text{Sec}[c]^2\left(\text{Cos}[c]^2+\text{Sin}[c]^2\right)}\right)$$

- **Problem 246: Result more than twice size of optimal antiderivative.**

$$\int \frac{(e+f\,x)^2\,\text{Sin}[c+d\,x]}{(a+b\,\text{Sin}[c+d\,x])^2}\,dx$$

Optimal (type 4, 1106 leaves, 30 steps) :

$$-\frac{i a (e+f x)^2}{b (a^2-b^2) d}+\frac{2 a f (e+f x) \text{Log}\left[1-\frac{i b e^{i (c+d x)}}{a-\sqrt{a^2-b^2}}\right]}{b (a^2-b^2) d^2}+\frac{i a^2 (e+f x)^2 \text{Log}\left[1-\frac{i b e^{i (c+d x)}}{a-\sqrt{a^2-b^2}}\right]}{b (a^2-b^2)^{3/2} d}-\frac{i (e+f x)^2 \text{Log}\left[1-\frac{i b e^{i (c+d x)}}{a-\sqrt{a^2-b^2}}\right]}{b \sqrt{a^2-b^2} d}+$$

$$\frac{2 a f (e+f x) \text{Log}\left[1-\frac{i b e^{i (c+d x)}}{a+\sqrt{a^2-b^2}}\right]}{b (a^2-b^2) d^2}-\frac{i a^2 (e+f x)^2 \text{Log}\left[1-\frac{i b e^{i (c+d x)}}{a+\sqrt{a^2-b^2}}\right]}{b (a^2-b^2)^{3/2} d}+\frac{i (e+f x)^2 \text{Log}\left[1-\frac{i b e^{i (c+d x)}}{a+\sqrt{a^2-b^2}}\right]}{b \sqrt{a^2-b^2} d}-\frac{2 i a f^2 \text{PolyLog}\left[2,\frac{i b e^{i (c+d x)}}{a-\sqrt{a^2-b^2}}\right]}{b (a^2-b^2) d^3}+$$

$$\frac{2 a^2 f (e+f x) \text{PolyLog}\left[2,\frac{i b e^{i (c+d x)}}{a-\sqrt{a^2-b^2}}\right]}{b (a^2-b^2)^{3/2} d^2}-\frac{2 f (e+f x) \text{PolyLog}\left[2,\frac{i b e^{i (c+d x)}}{a-\sqrt{a^2-b^2}}\right]}{b \sqrt{a^2-b^2} d^2}-\frac{2 i a f^2 \text{PolyLog}\left[2,\frac{i b e^{i (c+d x)}}{a+\sqrt{a^2-b^2}}\right]}{b (a^2-b^2) d^3}-$$

$$\frac{2 a^2 f (e+f x) \text{PolyLog}\left[2,\frac{i b e^{i (c+d x)}}{a+\sqrt{a^2-b^2}}\right]}{b (a^2-b^2)^{3/2} d^2}+\frac{2 f (e+f x) \text{PolyLog}\left[2,\frac{i b e^{i (c+d x)}}{a+\sqrt{a^2-b^2}}\right]}{b \sqrt{a^2-b^2} d^2}+\frac{2 i a^2 f^2 \text{PolyLog}\left[3,\frac{i b e^{i (c+d x)}}{a-\sqrt{a^2-b^2}}\right]}{b (a^2-b^2)^{3/2} d^3}-$$

$$\frac{2 i f^2 \text{PolyLog}\left[3,\frac{i b e^{i (c+d x)}}{a-\sqrt{a^2-b^2}}\right]}{b \sqrt{a^2-b^2} d^3}-\frac{2 i a^2 f^2 \text{PolyLog}\left[3,\frac{i b e^{i (c+d x)}}{a+\sqrt{a^2-b^2}}\right]}{b (a^2-b^2)^{3/2} d^3}+\frac{2 i f^2 \text{PolyLog}\left[3,\frac{i b e^{i (c+d x)}}{a+\sqrt{a^2-b^2}}\right]}{b \sqrt{a^2-b^2} d^3}-\frac{a (e+f x)^2 \text{Cos}[c+d x]}{(a^2-b^2) d (a+b \text{Sin}[c+d x])}$$

Result (type 4, 4475 leaves) :

$$\frac{1}{(-a^2+b^2) d^2} 2 b e f \left(\frac{\pi \text{ArcTan}\left[\frac{b+a \text{Tan}\left[\frac{1}{2} (c+d x)\right]}{\sqrt{a^2-b^2}}\right]}{\sqrt{a^2-b^2}}+\right.$$

$$\frac{1}{\sqrt{-a^2+b^2}}\left(2 \left(-c+\frac{\pi}{2}-d x\right) \text{ArcTanh}\left[\frac{(a+b) \text{Cot}\left[\frac{1}{2} \left(-c+\frac{\pi}{2}-d x\right)\right]}{\sqrt{-a^2+b^2}}\right]-2 \left(-c+\text{ArcCos}\left[-\frac{a}{b}\right]\right) \text{ArcTanh}\left[\frac{(-a+b) \text{Tan}\left[\frac{1}{2} \left(-c+\frac{\pi}{2}-d x\right)\right]}{\sqrt{-a^2+b^2}}\right]+\right.$$

$$\left(\text{ArcCos}\left[-\frac{a}{b}\right]-2 i \left(\text{ArcTanh}\left[\frac{(a+b) \text{Cot}\left[\frac{1}{2} \left(-c+\frac{\pi}{2}-d x\right)\right]}{\sqrt{-a^2+b^2}}\right]-\text{ArcTanh}\left[\frac{(-a+b) \text{Tan}\left[\frac{1}{2} \left(-c+\frac{\pi}{2}-d x\right)\right]}{\sqrt{-a^2+b^2}}\right]\right)\right)$$

$$\text{Log}\left[\frac{\sqrt{-a^2+b^2}\, e^{-\frac{1}{2} i \left(-c+\frac{\pi}{2}-d x\right)}}{\sqrt{2} \sqrt{b} \sqrt{a+b \text{Sin}[c+d x]}}\right]+\left(\text{ArcCos}\left[-\frac{a}{b}\right]+\right.$$

$$\left.2 i \left(\text{ArcTanh}\left[\frac{(a+b) \text{Cot}\left[\frac{1}{2} \left(-c+\frac{\pi}{2}-d x\right)\right]}{\sqrt{-a^2+b^2}}\right]-\text{ArcTanh}\left[\frac{(-a+b) \text{Tan}\left[\frac{1}{2} \left(-c+\frac{\pi}{2}-d x\right)\right]}{\sqrt{-a^2+b^2}}\right]\right)\right) \text{Log}\left[\frac{\sqrt{-a^2+b^2}\, e^{\frac{1}{2} i \left(-c+\frac{\pi}{2}-d x\right)}}{\sqrt{2} \sqrt{b} \sqrt{a+b \text{Sin}[c+d x]}}\right]-$$

$$\left(\text{ArcCos}\left[-\frac{a}{b}\right]+2\,i\,\text{ArcTanh}\left[\frac{(-a+b)\,\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}{\sqrt{-a^2+b^2}}\right]\right)\text{Log}\left[1-\frac{\left(a-i\sqrt{-a^2+b^2}\right)\left(a+b-\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\right)}{b\left(a+b+\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\right)}\right]+$$

$$\left(-\text{ArcCos}\left[-\frac{a}{b}\right]+2\,i\,\text{ArcTanh}\left[\frac{(-a+b)\,\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}{\sqrt{-a^2+b^2}}\right]\right)\text{Log}\left[1-\frac{\left(a+i\sqrt{-a^2+b^2}\right)\left(a+b-\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\right)}{b\left(a+b+\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\right)}\right]+$$

$$i\left(\text{PolyLog}\left[2,\frac{\left(a-i\sqrt{-a^2+b^2}\right)\left(a+b-\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\right)}{b\left(a+b+\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\right)}\right]-\right.$$

$$\left.\left.\left.\text{PolyLog}\left[2,\frac{\left(a+i\sqrt{-a^2+b^2}\right)\left(a+b-\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\right)}{b\left(a+b+\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\right)}\right]\right)\right)\right)+$$

$$\frac{1}{b\left(-a^2+b^2\right)d^3}\,2\,a^2\,f^2\,\text{Cot}[c]\left(\frac{\pi\,\text{ArcTan}\left[\frac{b+a\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{\sqrt{a^2-b^2}}\right]}{\sqrt{a^2-b^2}}+\frac{1}{\sqrt{-a^2+b^2}}\left(2\left(-c+\frac{\pi}{2}-d\,x\right)\text{ArcTanh}\left[\frac{(a+b)\,\text{Cot}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}{\sqrt{-a^2+b^2}}\right]-\right.\right.$$

$$2\left(-c+\text{ArcCos}\left[-\frac{a}{b}\right]\right)\text{ArcTanh}\left[\frac{(-a+b)\,\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}{\sqrt{-a^2+b^2}}\right]+$$

$$\left(\text{ArcCos}\left[-\frac{a}{b}\right]-2\,i\left(\text{ArcTanh}\left[\frac{(a+b)\,\text{Cot}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}{\sqrt{-a^2+b^2}}\right]-\text{ArcTanh}\left[\frac{(-a+b)\,\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}{\sqrt{-a^2+b^2}}\right]\right)\right)$$

$$\text{Log}\left[\frac{\sqrt{-a^2+b^2}\,e^{-\frac{1}{2}i\left(-c+\frac{\pi}{2}-d\,x\right)}}{\sqrt{2}\,\sqrt{b}\,\sqrt{a+b\,\text{Sin}[c+d\,x]}}\right]+\left(\text{ArcCos}\left[-\frac{a}{b}\right]+\right.$$

$$\left.2\,i\left(\text{ArcTanh}\left[\frac{(a+b)\,\text{Cot}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}{\sqrt{-a^2+b^2}}\right]-\text{ArcTanh}\left[\frac{(-a+b)\,\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}{\sqrt{-a^2+b^2}}\right]\right)\right)\text{Log}\left[\frac{\sqrt{-a^2+b^2}\,e^{\frac{1}{2}i\left(-c+\frac{\pi}{2}-d\,x\right)}}{\sqrt{2}\,\sqrt{b}\,\sqrt{a+b\,\text{Sin}[c+d\,x]}}\right]-$$

$$\left(\text{ArcCos}\left[-\frac{a}{b}\right]+2\,i\,\text{ArcTanh}\left[\frac{(-a+b)\,\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}{\sqrt{-a^2+b^2}}\right]\right)\text{Log}\left[1-\frac{\left(a-i\sqrt{-a^2+b^2}\right)\left(a+b-\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\right)}{b\left(a+b+\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\right)}\right]+$$

$$\left(-\text{ArcCos}\left[-\frac{a}{b}\right]+2\,i\,\text{ArcTanh}\left[\frac{(-a+b)\,\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}{\sqrt{-a^2+b^2}}\right]\right)\text{Log}\left[1-\frac{\left(a+i\sqrt{-a^2+b^2}\right)\left(a+b-\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\right)}{b\left(a+b+\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\right)}\right]+$$

$$i\left(\text{PolyLog}\left[2,\frac{\left(a-i\sqrt{-a^2+b^2}\right)\left(a+b-\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\right)}{b\left(a+b+\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\right)}\right]-\right.$$

$$\left.\text{PolyLog}\left[2,\frac{\left(a+i\sqrt{-a^2+b^2}\right)\left(a+b-\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\right)}{b\left(a+b+\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\right)}\right]\right)\Bigg)\Bigg)+$$

$$\Bigg(b\,e^{i\,c}\,f^2\left(d^2x^2\,\text{Log}\left[1+\frac{b\,e^{i\,(2\,c+d\,x)}}{i\,a\,e^{i\,c}-\sqrt{\left(-a^2+b^2\right)e^{2\,i\,c}}}\right]-d^2x^2\,\text{Log}\left[1+\frac{b\,e^{i\,(2\,c+d\,x)}}{i\,a\,e^{i\,c}+\sqrt{\left(-a^2+b^2\right)e^{2\,i\,c}}}\right]-\right.$$

$$2\,i\,d\,x\,\text{PolyLog}\left[2,\frac{i\,b\,e^{i\,(2\,c+d\,x)}}{a\,e^{i\,c}+i\sqrt{\left(-a^2+b^2\right)e^{2\,i\,c}}}\right]+2\,i\,d\,x\,\text{PolyLog}\left[2,-\frac{b\,e^{i\,(2\,c+d\,x)}}{i\,a\,e^{i\,c}+\sqrt{\left(-a^2+b^2\right)e^{2\,i\,c}}}\right]+$$

$$\left.2\,\text{PolyLog}\left[3,\frac{i\,b\,e^{i\,(2\,c+d\,x)}}{a\,e^{i\,c}+i\sqrt{\left(-a^2+b^2\right)e^{2\,i\,c}}}\right]-2\,\text{PolyLog}\left[3,-\frac{b\,e^{i\,(2\,c+d\,x)}}{i\,a\,e^{i\,c}+\sqrt{\left(-a^2+b^2\right)e^{2\,i\,c}}}\right]\right)\Bigg)\Bigg/$$

$$\left(\left(-a^2+b^2\right)d^3\sqrt{\left(-a^2+b^2\right)e^{2\,i\,c}}\right)+\frac{2\,i\,b\,e^2\,\text{ArcTan}\left[\frac{i\,b\,\text{Cos}[c]-i\,(-a+b\,\text{Sin}[c])\,\text{Tan}\left[\frac{d\,x}{2}\right]}{\sqrt{-a^2+b^2\,\text{Cos}[c]^2+b^2\,\text{Sin}[c]^2}}\right]}{\left(-a^2+b^2\right)d\sqrt{-a^2+b^2\,\text{Cos}[c]^2+b^2\,\text{Sin}[c]^2}}+$$

$$\frac{4\,i\,a^2\,e\,f\,\text{ArcTan}\left[\frac{i\,b\,\text{Cos}[c]-i\,(-a+b\,\text{Sin}[c])\,\text{Tan}\left[\frac{d\,x}{2}\right]}{\sqrt{-a^2+b^2\,\text{Cos}[c]^2+b^2\,\text{Sin}[c]^2}}\right]\text{Cot}[c]}{b\left(-a^2+b^2\right)d^2\sqrt{-a^2+b^2\,\text{Cos}[c]^2+b^2\,\text{Sin}[c]^2}}+$$

$$\frac{1}{\left(-a^2+b^2\right)d}$$

2

$$a$$

$$f^2$$

$$\mathrm{Csc}[c]$$

$$\Bigg(-\frac{x^2\,\mathrm{Cos}[c]}{2\,b}+\frac{1}{b\,d}$$

$$x\left(d\,x\,\mathrm{Cos}[c]-\frac{2\,a\,\mathrm{ArcTan}\left[\frac{\mathrm{Sec}\left[\frac{d\,x}{2}\right](\mathrm{Cos}[c]-\mathrm{i}\,\mathrm{Sin}[c])\left(b\,\mathrm{Cos}\left[c+\frac{d\,x}{2}\right]+a\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]\right)}{\sqrt{a^2-b^2}\,\sqrt{(\mathrm{Cos}[c]-\mathrm{i}\,\mathrm{Sin}[c])^2}}\right]\mathrm{Cos}[c]\,(\mathrm{Cos}[c]-\mathrm{i}\,\mathrm{Sin}[c])}{\sqrt{a^2-b^2}\,\sqrt{(\mathrm{Cos}[c]-\mathrm{i}\,\mathrm{Sin}[c])^2}}-\mathrm{Log}[a+b\,\mathrm{Sin}[c+d\,x]]\,\mathrm{Sin}[c]\right)+$$

$$\frac{1}{b\,d}\Bigg(-\frac{1}{d}\,a\,\mathrm{Cos}[c]\Bigg(\frac{\pi\,\mathrm{ArcTan}\left[\frac{b+a\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{\sqrt{a^2-b^2}}\right]}{\sqrt{a^2-b^2}}+\frac{1}{\sqrt{-a^2+b^2}}\Bigg(2\left(c-\mathrm{ArcCos}\left[-\frac{a}{b}\right]\right)\mathrm{ArcTanh}\left[\frac{(a-b)\,\mathrm{Tan}\left[\frac{1}{4}(2\,c-\pi+2\,d\,x)\right]}{\sqrt{-a^2+b^2}}\right]+$$

$$(-2\,c+\pi-2\,d\,x)\,\mathrm{ArcTanh}\left[\frac{(a+b)\,\mathrm{Tan}\left[\frac{1}{4}(2\,c+\pi+2\,d\,x)\right]}{\sqrt{-a^2+b^2}}\right]-\left(\mathrm{ArcCos}\left[-\frac{a}{b}\right]-2\,\mathrm{i}\,\mathrm{ArcTanh}\left[\frac{(a-b)\,\mathrm{Tan}\left[\frac{1}{4}(2\,c-\pi+2\,d\,x)\right]}{\sqrt{-a^2+b^2}}\right]\right)\mathrm{Log}\Bigg[$$

$$\frac{(a+b)\left(-a+b-\mathrm{i}\,\sqrt{-a^2+b^2}\right)\left(1+\mathrm{i}\,\mathrm{Cot}\left[\frac{1}{4}(2\,c+\pi+2\,d\,x)\right]\right)}{b\left(a+b+\sqrt{-a^2+b^2}\,\mathrm{Cot}\left[\frac{1}{4}(2\,c+\pi+2\,d\,x)\right]\right)}\Bigg]-\left(\mathrm{ArcCos}\left[-\frac{a}{b}\right]+2\,\mathrm{i}\,\mathrm{ArcTanh}\left[\frac{(a-b)\,\mathrm{Tan}\left[\frac{1}{4}(2\,c-\pi+2\,d\,x)\right]}{\sqrt{-a^2+b^2}}\right]\right)$$

$$\mathrm{Log}\left[\frac{(a+b)\left(\mathrm{i}\,a-\mathrm{i}\,b+\sqrt{-a^2+b^2}\right)\left(\mathrm{i}+\mathrm{Cot}\left[\frac{1}{4}(2\,c+\pi+2\,d\,x)\right]\right)}{b\left(a+b+\sqrt{-a^2+b^2}\,\mathrm{Cot}\left[\frac{1}{4}(2\,c+\pi+2\,d\,x)\right]\right)}\right]+\Bigg(\mathrm{ArcCos}\left[-\frac{a}{b}\right]+2\,\mathrm{i}\,\Bigg(-\mathrm{ArcTanh}\Bigg[$$

$$\frac{(a-b)\,\mathrm{Tan}\left[\frac{1}{4}(2\,c-\pi+2\,d\,x)\right]}{\sqrt{-a^2+b^2}}\Bigg]+\mathrm{ArcTanh}\left[\frac{(a+b)\,\mathrm{Tan}\left[\frac{1}{4}(2\,c+\pi+2\,d\,x)\right]}{\sqrt{-a^2+b^2}}\right]\Bigg)\Bigg)\,\mathrm{Log}\left[\frac{\sqrt{-a^2+b^2}\,e^{\frac{1}{4}\mathrm{i}\,(-2\,c+\pi-2\,d\,x)}}{\sqrt{2}\,\sqrt{b}\,\sqrt{a+b\,\mathrm{Sin}[c+d\,x]}}\right]+$$

$$\left(\mathrm{ArcCos}\left[-\frac{a}{b}\right]+2\,\mathrm{i}\,\mathrm{ArcTanh}\left[\frac{(a-b)\,\mathrm{Tan}\left[\frac{1}{4}(2\,c-\pi+2\,d\,x)\right]}{\sqrt{-a^2+b^2}}\right]-2\,\mathrm{i}\,\mathrm{ArcTanh}\left[\frac{(a+b)\,\mathrm{Tan}\left[\frac{1}{4}(2\,c+\pi+2\,d\,x)\right]}{\sqrt{-a^2+b^2}}\right]\right)$$

$$\text{Log}\left[\frac{\sqrt{-a^2+b^2}\ e^{\frac{1}{4}i(2c-\pi+2dx)}}{\sqrt{2}\ \sqrt{b}\ \sqrt{a+b\,\text{Sin}[c+dx]}}\right]+i\left(\text{PolyLog}\left[2,\frac{\left(a-i\sqrt{-a^2+b^2}\right)\left(a+b+\sqrt{-a^2+b^2}\ \text{Tan}\left[\frac{1}{4}(2c-\pi+2dx)\right]\right)}{b\left(a+b+\sqrt{-a^2+b^2}\ \text{Cot}\left[\frac{1}{4}(2c+\pi+2dx)\right]\right)}\right]-\right.$$

$$\left.\left.\left.\text{PolyLog}\left[2,\frac{\left(a+i\sqrt{-a^2+b^2}\right)\left(a+b+\sqrt{-a^2+b^2}\ \text{Tan}\left[\frac{1}{4}(2c-\pi+2dx)\right]\right)}{b\left(a+b+\sqrt{-a^2+b^2}\ \text{Cot}\left[\frac{1}{4}(2c+\pi+2dx)\right]\right)}\right]\right)\right)\right)+$$

$$\frac{2\,a\,x\,\text{ArcTan}\left[\frac{\text{Sec}\left[\frac{dx}{2}\right](\text{Cos}[c]-i\,\text{Sin}[c])\left(b\,\text{Cos}\left[c+\frac{dx}{2}\right]+a\,\text{Sin}\left[\frac{dx}{2}\right]\right)}{\sqrt{a^2-b^2}\ \sqrt{(\text{Cos}[c]-i\,\text{Sin}[c])^2}}\right]\text{Cos}[c]\,(\text{Cos}[c]-i\,\text{Sin}[c])}{\sqrt{a^2-b^2}\ \sqrt{(\text{Cos}[c]-i\,\text{Sin}[c])^2}}+\frac{(c+dx)\,\text{Log}[a+b\,\text{Sin}[c+dx]]\,\text{Sin}[c]}{d}-$$

$$\frac{1}{d}b\left(\frac{(c+dx)\,\text{Log}[a+b\,\text{Sin}[c+dx]]}{b}-1/b\left(-\frac{1}{2}i\left(-c+\frac{\pi}{2}-dx\right)^2+4\,i\,\text{ArcSin}\left[\frac{\sqrt{\frac{a+b}{b}}}{\sqrt{2}}\right]\text{ArcTan}\left[\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-dx\right)\right]}{\sqrt{a^2-b^2}}\right]+\right.\right.$$

$$\left(-c+\frac{\pi}{2}-dx+2\,\text{ArcSin}\left[\frac{\sqrt{\frac{a+b}{b}}}{\sqrt{2}}\right]\right)\text{Log}\left[1+\frac{\left(a-\sqrt{a^2-b^2}\right)e^{i\left(-c+\frac{\pi}{2}-dx\right)}}{b}\right]+$$

$$\left(-c+\frac{\pi}{2}-dx-2\,\text{ArcSin}\left[\frac{\sqrt{\frac{a+b}{b}}}{\sqrt{2}}\right]\right)\text{Log}\left[1+\frac{\left(a+\sqrt{a^2-b^2}\right)e^{i\left(-c+\frac{\pi}{2}-dx\right)}}{b}\right]-\left(-c+\frac{\pi}{2}-dx\right)\text{Log}[a+b\,\text{Sin}[c+dx]]-$$

$$\left.\left.\left.i\left(\text{PolyLog}\left[2,-\frac{\left(a-\sqrt{a^2-b^2}\right)e^{i\left(-c+\frac{\pi}{2}-dx\right)}}{b}\right]+\text{PolyLog}\left[2,-\frac{\left(a+\sqrt{a^2-b^2}\right)e^{i\left(-c+\frac{\pi}{2}-dx\right)}}{b}\right]\right)\right)\right)\text{Sin}[c]\right)-$$

$$\left(2\,a\,e\,f\,\text{Csc}[c]\left(-b\,d\,x\,\text{Cos}[c]+b\,\text{Log}[a+b\,\text{Cos}[dx]\,\text{Sin}[c]+b\,\text{Cos}[c]\,\text{Sin}[dx]]\,\text{Sin}[c]+\frac{2\,i\,a\,b\,\text{ArcTan}\left[\frac{i\,b\,\text{Cos}[c]-i(-a+b\,\text{Sin}[c])\,\text{Tan}\left[\frac{dx}{2}\right]}{\sqrt{-a^2+b^2\,\text{Cos}[c]^2+b^2\,\text{Sin}[c]^2}}\right]\text{Cos}[c]}{\sqrt{-a^2+b^2\,\text{Cos}[c]^2+b^2\,\text{Sin}[c]^2}}\right)\right)\Big/$$

$$\Big(\big(-a^2+b^2\big)\; d^2\; \big(b^2\,\text{Cos}[c]^2+b^2\,\text{Sin}[c]^2\big)\Big)+$$

$$\left(\text{Csc}\left[\frac{c}{2}\right]\text{Sec}\left[\frac{c}{2}\right]\left(a^2 e^2\,\text{Cos}[c]+2\,a^2\,e\,f\,x\,\text{Cos}[c]+a^2 f^2 x^2\,\text{Cos}[c]+a\,b\,e^2\,\text{Sin}[d\,x]+2\,a\,b\,e\,f\,x\,\text{Sin}[d\,x]+a\,b\,f^2 x^2\,\text{Sin}[d\,x]\right)\right)\Big/$$

$$\big(2\;(a-b)\;b\;(a+b)\;d\;(a+b\,\text{Sin}[c+d\,x])\big)$$

Problem 247: Result more than twice size of optimal antiderivative.

$$\int\frac{(e+f\,x)^3\,\text{Sin}[c+d\,x]}{(a+b\,\text{Sin}[c+d\,x])^2}\,dx$$

Optimal (type 4, 1512 leaves, 36 steps):

$$-\frac{i a (e+f x)^3}{b (a^2-b^2) d}+\frac{3 a f (e+f x)^2 \text{Log}\left[1-\frac{i b e^{i (c+d x)}}{a-\sqrt{a^2-b^2}}\right]}{b (a^2-b^2) d^2}+\frac{i a^2 (e+f x)^3 \text{Log}\left[1-\frac{i b e^{i (c+d x)}}{a-\sqrt{a^2-b^2}}\right]}{b (a^2-b^2)^{3/2} d}-\frac{i (e+f x)^3 \text{Log}\left[1-\frac{i b e^{i (c+d x)}}{a-\sqrt{a^2-b^2}}\right]}{b \sqrt{a^2-b^2} d}+$$

$$\frac{3 a f (e+f x)^2 \text{Log}\left[1-\frac{i b e^{i (c+d x)}}{a+\sqrt{a^2-b^2}}\right]}{b (a^2-b^2) d^2}-\frac{i a^2 (e+f x)^3 \text{Log}\left[1-\frac{i b e^{i (c+d x)}}{a+\sqrt{a^2-b^2}}\right]}{b (a^2-b^2)^{3/2} d}+\frac{i (e+f x)^3 \text{Log}\left[1-\frac{i b e^{i (c+d x)}}{a+\sqrt{a^2-b^2}}\right]}{b \sqrt{a^2-b^2} d}-\frac{6 i a f^2 (e+f x) \text{PolyLog}\left[2, \frac{i b e^{i (c+d x)}}{a-\sqrt{a^2-b^2}}\right]}{b (a^2-b^2) d^3}+$$

$$\frac{3 a^2 f (e+f x)^2 \text{PolyLog}\left[2, \frac{i b e^{i (c+d x)}}{a-\sqrt{a^2-b^2}}\right]}{b (a^2-b^2)^{3/2} d^2}-\frac{3 f (e+f x)^2 \text{PolyLog}\left[2, \frac{i b e^{i (c+d x)}}{a-\sqrt{a^2-b^2}}\right]}{b \sqrt{a^2-b^2} d^2}-\frac{6 i a f^2 (e+f x) \text{PolyLog}\left[2, \frac{i b e^{i (c+d x)}}{a+\sqrt{a^2-b^2}}\right]}{b (a^2-b^2) d^3}-$$

$$\frac{3 a^2 f (e+f x)^2 \text{PolyLog}\left[2, \frac{i b e^{i (c+d x)}}{a+\sqrt{a^2-b^2}}\right]}{b (a^2-b^2)^{3/2} d^2}+\frac{3 f (e+f x)^2 \text{PolyLog}\left[2, \frac{i b e^{i (c+d x)}}{a+\sqrt{a^2-b^2}}\right]}{b \sqrt{a^2-b^2} d^2}+\frac{6 a f^3 \text{PolyLog}\left[3, \frac{i b e^{i (c+d x)}}{a-\sqrt{a^2-b^2}}\right]}{b (a^2-b^2) d^4}+$$

$$\frac{6 i a^2 f^2 (e+f x) \text{PolyLog}\left[3, \frac{i b e^{i (c+d x)}}{a-\sqrt{a^2-b^2}}\right]}{b (a^2-b^2)^{3/2} d^3}-\frac{6 i f^2 (e+f x) \text{PolyLog}\left[3, \frac{i b e^{i (c+d x)}}{a-\sqrt{a^2-b^2}}\right]}{b \sqrt{a^2-b^2} d^3}+\frac{6 a f^3 \text{PolyLog}\left[3, \frac{i b e^{i (c+d x)}}{a+\sqrt{a^2-b^2}}\right]}{b (a^2-b^2) d^4}-$$

$$\frac{6 i a^2 f^2 (e+f x) \text{PolyLog}\left[3, \frac{i b e^{i (c+d x)}}{a+\sqrt{a^2-b^2}}\right]}{b (a^2-b^2)^{3/2} d^3}+\frac{6 i f^2 (e+f x) \text{PolyLog}\left[3, \frac{i b e^{i (c+d x)}}{a+\sqrt{a^2-b^2}}\right]}{b \sqrt{a^2-b^2} d^3}-\frac{6 a^2 f^3 \text{PolyLog}\left[4, \frac{i b e^{i (c+d x)}}{a-\sqrt{a^2-b^2}}\right]}{b (a^2-b^2)^{3/2} d^4}+$$

$$\frac{6 f^3 \text{PolyLog}\left[4, \frac{i b e^{i (c+d x)}}{a-\sqrt{a^2-b^2}}\right]}{b \sqrt{a^2-b^2} d^4}+\frac{6 a^2 f^3 \text{PolyLog}\left[4, \frac{i b e^{i (c+d x)}}{a+\sqrt{a^2-b^2}}\right]}{b (a^2-b^2)^{3/2} d^4}-\frac{6 f^3 \text{PolyLog}\left[4, \frac{i b e^{i (c+d x)}}{a+\sqrt{a^2-b^2}}\right]}{b \sqrt{a^2-b^2} d^4}-\frac{a (e+f x)^3 \text{Cos}[c+d x]}{(a^2-b^2) d (a+b \text{Sin}[c+d x])}$$

Result (type 4, 7026 leaves):

$$\frac{1}{(-a^2+b^2) d^2} 3 b e^2 f \left(\frac{\pi \text{ArcTan}\left[\frac{b+a \text{Tan}\left[\frac{1}{2} (c+d x)\right]}{\sqrt{a^2-b^2}}\right]}{\sqrt{a^2-b^2}}+\right.$$

$$\frac{1}{\sqrt{-a^2+b^2}} \left(2 \left(-c+\frac{\pi}{2}-d x\right) \text{ArcTanh}\left[\frac{(a+b) \text{Cot}\left[\frac{1}{2} \left(-c+\frac{\pi}{2}-d x\right)\right]}{\sqrt{-a^2+b^2}}\right]-2 \left(-c+\text{ArcCos}\left[-\frac{a}{b}\right]\right) \text{ArcTanh}\left[\frac{(-a+b) \text{Tan}\left[\frac{1}{2} \left(-c+\frac{\pi}{2}-d x\right)\right]}{\sqrt{-a^2+b^2}}\right]+\right.$$

$$\left(\text{ArcCos}\left[-\frac{a}{b}\right]-2\,i\left(\text{ArcTanh}\left[\frac{(a+b)\,\text{Cot}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}{\sqrt{-a^2+b^2}}\right]-\text{ArcTanh}\left[\frac{(-a+b)\,\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}{\sqrt{-a^2+b^2}}\right]\right)\right)$$

$$\text{Log}\left[\frac{\sqrt{-a^2+b^2}\;e^{-\frac{1}{2}\,i\left(-c+\frac{\pi}{2}-d\,x\right)}}{\sqrt{2}\,\sqrt{b}\,\sqrt{a+b\,\text{Sin}[c+d\,x]}}\right]+\left(\text{ArcCos}\left[-\frac{a}{b}\right]+\right.$$

$$\left.2\,i\left(\text{ArcTanh}\left[\frac{(a+b)\,\text{Cot}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}{\sqrt{-a^2+b^2}}\right]-\text{ArcTanh}\left[\frac{(-a+b)\,\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}{\sqrt{-a^2+b^2}}\right]\right)\right)\text{Log}\left[\frac{\sqrt{-a^2+b^2}\;e^{\frac{1}{2}\,i\left(-c+\frac{\pi}{2}-d\,x\right)}}{\sqrt{2}\,\sqrt{b}\,\sqrt{a+b\,\text{Sin}[c+d\,x]}}\right]-$$

$$\left(\text{ArcCos}\left[-\frac{a}{b}\right]+2\,i\,\text{ArcTanh}\left[\frac{(-a+b)\,\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}{\sqrt{-a^2+b^2}}\right]\right)\text{Log}\left[1-\frac{\left(a-i\sqrt{-a^2+b^2}\right)\left(a+b-\sqrt{-a^2+b^2}\;\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\right)}{b\left(a+b+\sqrt{-a^2+b^2}\;\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\right)}\right]+$$

$$\left(-\text{ArcCos}\left[-\frac{a}{b}\right]+2\,i\,\text{ArcTanh}\left[\frac{(-a+b)\,\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}{\sqrt{-a^2+b^2}}\right]\right)\text{Log}\left[1-\frac{\left(a+i\sqrt{-a^2+b^2}\right)\left(a+b-\sqrt{-a^2+b^2}\;\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\right)}{b\left(a+b+\sqrt{-a^2+b^2}\;\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\right)}\right]+$$

$$i\left(\text{PolyLog}\left[2,\frac{\left(a-i\sqrt{-a^2+b^2}\right)\left(a+b-\sqrt{-a^2+b^2}\;\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\right)}{b\left(a+b+\sqrt{-a^2+b^2}\;\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\right)}\right]-\right.$$

$$\left.\left.\left.\text{PolyLog}\left[2,\frac{\left(a+i\sqrt{-a^2+b^2}\right)\left(a+b-\sqrt{-a^2+b^2}\;\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\right)}{b\left(a+b+\sqrt{-a^2+b^2}\;\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\right)}\right]\right)\right)\right)+$$

$$\frac{1}{b\left(-a^2+b^2\right)d^3}\,6\,a^2\,e\,f^2\,\text{Cot}[c]\left(\frac{\pi\,\text{ArcTan}\left[\frac{b+a\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{\sqrt{a^2-b^2}}\right]}{\sqrt{a^2-b^2}}+\frac{1}{\sqrt{-a^2+b^2}}\left(2\left(-c+\frac{\pi}{2}-d\,x\right)\text{ArcTanh}\left[\frac{(a+b)\,\text{Cot}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}{\sqrt{-a^2+b^2}}\right]-\right.\right.$$

$$2\left(-c+\text{ArcCos}\left[-\frac{a}{b}\right]\right)\text{ArcTanh}\left[\frac{(-a+b)\,\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}{\sqrt{-a^2+b^2}}\right]+$$

$$\left(\text{ArcCos}\left[-\frac{a}{b}\right]-2\,i\left(\text{ArcTanh}\left[\frac{(a+b)\,\text{Cot}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}{\sqrt{-a^2+b^2}}\right]-\text{ArcTanh}\left[\frac{(-a+b)\,\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}{\sqrt{-a^2+b^2}}\right]\right)\right)$$

$$\text{Log}\left[\frac{\sqrt{-a^2+b^2}\,e^{-\frac{1}{2}i\left(-c+\frac{\pi}{2}-d x\right)}}{\sqrt{2}\sqrt{b}\sqrt{a+b\,\text{Sin}[c+d x]}}\right]+\left(\text{ArcCos}\left[-\frac{a}{b}\right]+\right.$$

$$2 i\left(\text{ArcTanh}\left[\frac{(a+b)\,\text{Cot}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}{\sqrt{-a^2+b^2}}\right]-\text{ArcTanh}\left[\frac{(-a+b)\,\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}{\sqrt{-a^2+b^2}}\right]\right)\left.\right)\text{Log}\left[\frac{\sqrt{-a^2+b^2}\,e^{\frac{1}{2}i\left(-c+\frac{\pi}{2}-d x\right)}}{\sqrt{2}\sqrt{b}\sqrt{a+b\,\text{Sin}[c+d x]}}\right]-$$

$$\left(\text{ArcCos}\left[-\frac{a}{b}\right]+2 i\,\text{ArcTanh}\left[\frac{(-a+b)\,\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}{\sqrt{-a^2+b^2}}\right]\right)\text{Log}\left[1-\frac{\left(a-i\sqrt{-a^2+b^2}\right)\left(a+b-\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]\right)}{b\left(a+b+\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]\right)}\right]+$$

$$\left(-\text{ArcCos}\left[-\frac{a}{b}\right]+2 i\,\text{ArcTanh}\left[\frac{(-a+b)\,\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}{\sqrt{-a^2+b^2}}\right]\right)\text{Log}\left[1-\frac{\left(a+i\sqrt{-a^2+b^2}\right)\left(a+b-\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]\right)}{b\left(a+b+\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]\right)}\right]+$$

$$i\left(\text{PolyLog}\left[2,\frac{\left(a-i\sqrt{-a^2+b^2}\right)\left(a+b-\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]\right)}{b\left(a+b+\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]\right)}\right]-\right.$$

$$\left.\left.\left.\text{PolyLog}\left[2,\frac{\left(a+i\sqrt{-a^2+b^2}\right)\left(a+b-\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]\right)}{b\left(a+b+\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]\right)}\right]\right)\right)\right)+$$

$$\left(3 b e\, e^{i c} f^2\left(d^2 x^2\,\text{Log}\left[1+\frac{b\,e^{i(2c+d x)}}{i a\,e^{i c}-\sqrt{\left(-a^2+b^2\right)e^{2 i c}}}\right]-d^2 x^2\,\text{Log}\left[1+\frac{b\,e^{i(2c+d x)}}{i a\,e^{i c}+\sqrt{\left(-a^2+b^2\right)e^{2 i c}}}\right]-\right.\right.$$

$$2 i d x\,\text{PolyLog}\left[2,\frac{i b\,e^{i(2c+d x)}}{a\,e^{i c}+i\sqrt{\left(-a^2+b^2\right)e^{2 i c}}}\right]+$$

$$2 i d x\,\text{PolyLog}\left[2,-\frac{b\,e^{i(2c+d x)}}{i a\,e^{i c}+\sqrt{\left(-a^2+b^2\right)e^{2 i c}}}\right]+2\,\text{PolyLog}\left[3,\frac{i b\,e^{i(2c+d x)}}{a\,e^{i c}+i\sqrt{\left(-a^2+b^2\right)e^{2 i c}}}\right]-$$

$$\left.\left.2\,\text{PolyLog}\left[3,-\frac{b\,e^{i(2c+d x)}}{i a\,e^{i c}+\sqrt{\left(-a^2+b^2\right)e^{2 i c}}}\right]\right)\right)\Big/\left(\left(-a^2+b^2\right)d^3\sqrt{\left(-a^2+b^2\right)e^{2 i c}}\right)+$$

$$\left(3 a^2 e^{i c} f^3 \text{Cot}[c] \left(d^2 x^2 \text{Log}\left[1+\frac{b e^{i (2 c+d x)}}{i a e^{i c}-\sqrt{\left(-a^2+b^2\right) e^{2 i c}}}\right]-d^2 x^2 \text{Log}\left[1+\frac{b e^{i (2 c+d x)}}{i a e^{i c}+\sqrt{\left(-a^2+b^2\right) e^{2 i c}}}\right]-\right.\right.$$

$$2 i d x \text{PolyLog}\left[2,\frac{i b e^{i (2 c+d x)}}{a e^{i c}+i \sqrt{\left(-a^2+b^2\right) e^{2 i c}}}\right]+2 i d x \text{PolyLog}\left[2,-\frac{b e^{i (2 c+d x)}}{i a e^{i c}+\sqrt{\left(-a^2+b^2\right) e^{2 i c}}}\right]+$$

$$\left.\left.2 \text{PolyLog}\left[3,\frac{i b e^{i (2 c+d x)}}{a e^{i c}+i \sqrt{\left(-a^2+b^2\right) e^{2 i c}}}\right]-2 \text{PolyLog}\left[3,-\frac{b e^{i (2 c+d x)}}{i a e^{i c}+\sqrt{\left(-a^2+b^2\right) e^{2 i c}}}\right]\right)\right)\Big/$$

$$\left(b \left(-a^2+b^2\right) d^4 \sqrt{\left(-a^2+b^2\right) e^{2 i c}}\right)+\frac{1}{2 b \left(-a^2+b^2\right) d^4 \sqrt{\left(-a^2+b^2\right) e^{2 i c}}}$$

$$a$$
$$e^{-i c}$$
$$f^3$$
$$\text{Csc}[c]$$

$$\left(2 d^3 e^{2 i c} \sqrt{\left(-a^2+b^2\right) e^{2 i c}} x^3-3 a d^2 e^{i c} x^2 \text{Log}\left[1+\frac{b e^{i (2 c+d x)}}{i a e^{i c}-\sqrt{\left(-a^2+b^2\right) e^{2 i c}}}\right]-\right.$$

$$3 a d^2 e^{3 i c} x^2 \text{Log}\left[1+\frac{b e^{i (2 c+d x)}}{i a e^{i c}-\sqrt{\left(-a^2+b^2\right) e^{2 i c}}}\right]-3 i d^2 \sqrt{\left(-a^2+b^2\right) e^{2 i c}} x^2 \text{Log}\left[1+\frac{b e^{i (2 c+d x)}}{i a e^{i c}-\sqrt{\left(-a^2+b^2\right) e^{2 i c}}}\right]+$$

$$3 i d^2 e^{2 i c} \sqrt{\left(-a^2+b^2\right) e^{2 i c}} x^2 \text{Log}\left[1+\frac{b e^{i (2 c+d x)}}{i a e^{i c}-\sqrt{\left(-a^2+b^2\right) e^{2 i c}}}\right]+$$

$$3 a d^2 e^{i c} x^2 \text{Log}\left[1+\frac{b e^{i (2 c+d x)}}{i a e^{i c}+\sqrt{\left(-a^2+b^2\right) e^{2 i c}}}\right]+3 a d^2 e^{3 i c} x^2 \text{Log}\left[1+\frac{b e^{i (2 c+d x)}}{i a e^{i c}+\sqrt{\left(-a^2+b^2\right) e^{2 i c}}}\right]-$$

$$3 i d^2 \sqrt{\left(-a^2+b^2\right) e^{2 i c}} x^2 \text{Log}\left[1+\frac{b e^{i (2 c+d x)}}{i a e^{i c}+\sqrt{\left(-a^2+b^2\right) e^{2 i c}}}\right]+$$

$$3 i d^2 e^{2 i c} \sqrt{\left(-a^2+b^2\right) e^{2 i c}} x^2 \text{Log}\left[1+\frac{b e^{i (2 c+d x)}}{i a e^{i c}+\sqrt{\left(-a^2+b^2\right) e^{2 i c}}}\right]+$$

$$6 d \left(\sqrt{\left(-a^2+b^2\right) e^{2 i c}} \left(-1+e^{2 i c}\right)+i a e^{i c} \left(1+e^{2 i c}\right)\right) x \text{PolyLog}\left[2,\frac{i b e^{i (2 c+d x)}}{a e^{i c}+i \sqrt{\left(-a^2+b^2\right) e^{2 i c}}}\right]+$$

$$6 d \left(\sqrt{\left(-a^2+b^2\right) e^{2 i c}} \left(-1+e^{2 i c}\right)-i a e^{i c} \left(1+e^{2 i c}\right)\right) x \text{PolyLog}\left[2,-\frac{b e^{i (2 c+d x)}}{i a e^{i c}+\sqrt{\left(-a^2+b^2\right) e^{2 i c}}}\right]-$$

$$6\, a\, e^{i c}\, \text{PolyLog}\left[3, \frac{i\, b\, e^{i(2c+dx)}}{a\, e^{i c}+i\sqrt{(-a^2+b^2)\, e^{2 i c}}}\right]-6\, a\, e^{3 i c}\, \text{PolyLog}\left[3, \frac{i\, b\, e^{i(2c+dx)}}{a\, e^{i c}+i\sqrt{(-a^2+b^2)\, e^{2 i c}}}\right]-$$

$$6\, i\sqrt{(-a^2+b^2)\, e^{2 i c}}\, \text{PolyLog}\left[3, \frac{i\, b\, e^{i(2c+dx)}}{a\, e^{i c}+i\sqrt{(-a^2+b^2)\, e^{2 i c}}}\right]+6\, i\, e^{2 i c}\sqrt{(-a^2+b^2)\, e^{2 i c}}\, \text{PolyLog}\left[3, \frac{i\, b\, e^{i(2c+dx)}}{a\, e^{i c}+i\sqrt{(-a^2+b^2)\, e^{2 i c}}}\right]+$$

$$6\, a\, e^{i c}\, \text{PolyLog}\left[3, -\frac{b\, e^{i(2c+dx)}}{i\, a\, e^{i c}+\sqrt{(-a^2+b^2)\, e^{2 i c}}}\right]+6\, a\, e^{3 i c}\, \text{PolyLog}\left[3, -\frac{b\, e^{i(2c+dx)}}{i\, a\, e^{i c}+\sqrt{(-a^2+b^2)\, e^{2 i c}}}\right]-$$

$$\left.6\, i\sqrt{(-a^2+b^2)\, e^{2 i c}}\, \text{PolyLog}\left[3, -\frac{b\, e^{i(2c+dx)}}{i\, a\, e^{i c}+\sqrt{(-a^2+b^2)\, e^{2 i c}}}\right]+6\, i\, e^{2 i c}\sqrt{(-a^2+b^2)\, e^{2 i c}}\, \text{PolyLog}\left[3, -\frac{b\, e^{i(2c+dx)}}{i\, a\, e^{i c}+\sqrt{(-a^2+b^2)\, e^{2 i c}}}\right]\right)+$$

$$\frac{1}{(-a^2+b^2)\, d^4\sqrt{(-a^2+b^2)\, e^{2 i c}}}\, b\, e^{i c}\, f^3\left(d^3 x^3\, \text{Log}\left[1+\frac{b\, e^{i(2c+dx)}}{i\, a\, e^{i c}-\sqrt{(-a^2+b^2)\, e^{2 i c}}}\right]-d^3 x^3\, \text{Log}\left[1+\frac{b\, e^{i(2c+dx)}}{i\, a\, e^{i c}+\sqrt{(-a^2+b^2)\, e^{2 i c}}}\right]-\right.$$

$$3\, i\, d^2 x^2\, \text{PolyLog}\left[2, \frac{i\, b\, e^{i(2c+dx)}}{a\, e^{i c}+i\sqrt{(-a^2+b^2)\, e^{2 i c}}}\right]+3\, i\, d^2 x^2\, \text{PolyLog}\left[2, -\frac{b\, e^{i(2c+dx)}}{i\, a\, e^{i c}+\sqrt{(-a^2+b^2)\, e^{2 i c}}}\right]+$$

$$6\, d\, x\, \text{PolyLog}\left[3, \frac{i\, b\, e^{i(2c+dx)}}{a\, e^{i c}+i\sqrt{(-a^2+b^2)\, e^{2 i c}}}\right]-6\, d\, x\, \text{PolyLog}\left[3, -\frac{b\, e^{i(2c+dx)}}{i\, a\, e^{i c}+\sqrt{(-a^2+b^2)\, e^{2 i c}}}\right]+$$

$$\left.6\, i\, \text{PolyLog}\left[4, \frac{i\, b\, e^{i(2c+dx)}}{a\, e^{i c}+i\sqrt{(-a^2+b^2)\, e^{2 i c}}}\right]-6\, i\, \text{PolyLog}\left[4, -\frac{b\, e^{i(2c+dx)}}{i\, a\, e^{i c}+\sqrt{(-a^2+b^2)\, e^{2 i c}}}\right]\right)+$$

$$\frac{2\, i\, b\, e^3\, \text{ArcTan}\left[\frac{i\, b\, \text{Cos}[c]-i\,(-a+b\, \text{Sin}[c])\, \text{Tan}\left[\frac{d x}{2}\right]}{\sqrt{-a^2+b^2\, \text{Cos}[c]^2+b^2\, \text{Sin}[c]^2}}\right]}{(-a^2+b^2)\, d\sqrt{-a^2+b^2\, \text{Cos}[c]^2+b^2\, \text{Sin}[c]^2}}+\frac{6\, i\, a^2\, e^2\, f\, \text{ArcTan}\left[\frac{i\, b\, \text{Cos}[c]-i\,(-a+b\, \text{Sin}[c])\, \text{Tan}\left[\frac{d x}{2}\right]}{\sqrt{-a^2+b^2\, \text{Cos}[c]^2+b^2\, \text{Sin}[c]^2}}\right]\, \text{Cot}[c]}{b\,(-a^2+b^2)\, d^2\sqrt{-a^2+b^2\, \text{Cos}[c]^2+b^2\, \text{Sin}[c]^2}}+$$

$$\frac{1}{(-a^2+b^2)\, d}$$

6

a

$e\, f^2$

Csc[c]

$$\left(-\frac{x^2 \operatorname{Cos}[c]}{2\,b}+\frac{1}{b\,d}\right.$$

$$x\left(d\,x\operatorname{Cos}[c]-\frac{2\,a\operatorname{ArcTan}\left[\frac{\operatorname{Sec}\left[\frac{d\,x}{2}\right]\,(\operatorname{Cos}[c]-\mathrm{i}\operatorname{Sin}[c])\,\left(b\operatorname{Cos}\left[c+\frac{d\,x}{2}\right]+a\operatorname{Sin}\left[\frac{d\,x}{2}\right]\right)}{\sqrt{a^2-b^2}\,\sqrt{(\operatorname{Cos}[c]-\mathrm{i}\operatorname{Sin}[c])^2}}\right]\operatorname{Cos}[c]\,(\operatorname{Cos}[c]-\mathrm{i}\operatorname{Sin}[c])}{\sqrt{a^2-b^2}\,\sqrt{(\operatorname{Cos}[c]-\mathrm{i}\operatorname{Sin}[c])^2}}-\operatorname{Log}[a+b\operatorname{Sin}[c+d\,x]]\operatorname{Sin}[c]\right)+$$

$$\frac{1}{b\,d}\left(-\frac{1}{d}\,a\operatorname{Cos}[c]\left(\frac{\pi\operatorname{ArcTan}\left[\frac{b+a\operatorname{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]}{\sqrt{a^2-b^2}}\right]}{\sqrt{a^2-b^2}}+\frac{1}{\sqrt{-a^2+b^2}}\left(2\left(c-\operatorname{ArcCos}\left[-\frac{a}{b}\right]\right)\operatorname{ArcTanh}\left[\frac{(a-b)\operatorname{Tan}\left[\frac{1}{4}\,(2\,c-\pi+2\,d\,x)\right]}{\sqrt{-a^2+b^2}}\right]+\right.\right.\right.$$

$$(-2\,c+\pi-2\,d\,x)\operatorname{ArcTanh}\left[\frac{(a+b)\operatorname{Tan}\left[\frac{1}{4}\,(2\,c+\pi+2\,d\,x)\right]}{\sqrt{-a^2+b^2}}\right]-\left(\operatorname{ArcCos}\left[-\frac{a}{b}\right]-2\,\mathrm{i}\operatorname{ArcTanh}\left[\frac{(a-b)\operatorname{Tan}\left[\frac{1}{4}\,(2\,c-\pi+2\,d\,x)\right]}{\sqrt{-a^2+b^2}}\right]\right)\operatorname{Log}\Big[$$

$$\frac{(a+b)\left(-a+b-\mathrm{i}\sqrt{-a^2+b^2}\right)\left(1+\mathrm{i}\operatorname{Cot}\left[\frac{1}{4}\,(2\,c+\pi+2\,d\,x)\right]\right)}{b\left(a+b+\sqrt{-a^2+b^2}\operatorname{Cot}\left[\frac{1}{4}\,(2\,c+\pi+2\,d\,x)\right]\right)}\Big]-\left(\operatorname{ArcCos}\left[-\frac{a}{b}\right]+2\,\mathrm{i}\operatorname{ArcTanh}\left[\frac{(a-b)\operatorname{Tan}\left[\frac{1}{4}\,(2\,c-\pi+2\,d\,x)\right]}{\sqrt{-a^2+b^2}}\right]\right)$$

$$\operatorname{Log}\left[\frac{(a+b)\left(\mathrm{i}\,a-\mathrm{i}\,b+\sqrt{-a^2+b^2}\right)\left(\mathrm{i}+\operatorname{Cot}\left[\frac{1}{4}\,(2\,c+\pi+2\,d\,x)\right]\right)}{b\left(a+b+\sqrt{-a^2+b^2}\operatorname{Cot}\left[\frac{1}{4}\,(2\,c+\pi+2\,d\,x)\right]\right)}\right]+\left(\operatorname{ArcCos}\left[-\frac{a}{b}\right]+2\,\mathrm{i}\left(-\operatorname{ArcTanh}\Big[\right.\right.$$

$$\left.\left.\frac{(a-b)\operatorname{Tan}\left[\frac{1}{4}\,(2\,c-\pi+2\,d\,x)\right]}{\sqrt{-a^2+b^2}}\Big]+\operatorname{ArcTanh}\left[\frac{(a+b)\operatorname{Tan}\left[\frac{1}{4}\,(2\,c+\pi+2\,d\,x)\right]}{\sqrt{-a^2+b^2}}\right]\right)\right)\operatorname{Log}\left[\frac{\sqrt{-a^2+b^2}\;e^{\frac{1}{4}\,\mathrm{i}\,(-2\,c+\pi-2\,d\,x)}}{\sqrt{2}\,\sqrt{b}\,\sqrt{a+b\operatorname{Sin}[c+d\,x]}}\right]+$$

$$\left(\operatorname{ArcCos}\left[-\frac{a}{b}\right]+2\,\mathrm{i}\operatorname{ArcTanh}\left[\frac{(a-b)\operatorname{Tan}\left[\frac{1}{4}\,(2\,c-\pi+2\,d\,x)\right]}{\sqrt{-a^2+b^2}}\right]-2\,\mathrm{i}\operatorname{ArcTanh}\left[\frac{(a+b)\operatorname{Tan}\left[\frac{1}{4}\,(2\,c+\pi+2\,d\,x)\right]}{\sqrt{-a^2+b^2}}\right]\right)$$

$$\operatorname{Log}\left[\frac{\sqrt{-a^2+b^2}\;e^{\frac{1}{4}\,\mathrm{i}\,(2\,c-\pi+2\,d\,x)}}{\sqrt{2}\,\sqrt{b}\,\sqrt{a+b\operatorname{Sin}[c+d\,x]}}\right]+\mathrm{i}\left(\operatorname{PolyLog}\left[2,\;\frac{\left(a-\mathrm{i}\sqrt{-a^2+b^2}\right)\left(a+b+\sqrt{-a^2+b^2}\operatorname{Tan}\left[\frac{1}{4}\,(2\,c-\pi+2\,d\,x)\right]\right)}{b\left(a+b+\sqrt{-a^2+b^2}\operatorname{Cot}\left[\frac{1}{4}\,(2\,c+\pi+2\,d\,x)\right]\right)}\right]-\right.$$

$$\text{PolyLog}\left[2,\ \frac{\left(a+i\sqrt{-a^2+b^2}\right)\left(a+b+\sqrt{-a^2+b^2}\ \text{Tan}\left[\frac{1}{4}\left(2c-\pi+2dx\right)\right]\right)}{b\left(a+b+\sqrt{-a^2+b^2}\ \text{Cot}\left[\frac{1}{4}\left(2c+\pi+2dx\right)\right]\right)}\right]\Bigg)\Bigg)\Bigg)\Bigg)+$$

$$\frac{2\,a\,x\,\text{ArcTan}\left[\frac{\text{Sec}\left[\frac{dx}{2}\right](\text{Cos}[c]-i\,\text{Sin}[c])\left(b\,\text{Cos}\left[c+\frac{dx}{2}\right]+a\,\text{Sin}\left[\frac{dx}{2}\right]\right)}{\sqrt{a^2-b^2}\sqrt{(\text{Cos}[c]-i\,\text{Sin}[c])^2}}\right]\text{Cos}[c]\,(\text{Cos}[c]-i\,\text{Sin}[c])}{\sqrt{a^2-b^2}\sqrt{(\text{Cos}[c]-i\,\text{Sin}[c])^2}}+\frac{(c+dx)\,\text{Log}[a+b\,\text{Sin}[c+dx]]\,\text{Sin}[c]}{d}-$$

$$\frac{1}{d}b\left(\frac{(c+dx)\,\text{Log}[a+b\,\text{Sin}[c+dx]]}{b}-1/b\left(-\frac{1}{2}i\left(-c+\frac{\pi}{2}-dx\right)^2+4\,i\,\text{ArcSin}\left[\frac{\sqrt{\frac{a+b}{b}}}{\sqrt{2}}\right]\text{ArcTan}\left[\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-dx\right)\right]}{\sqrt{a^2-b^2}}\right]+\right.\right.$$

$$\left(-c+\frac{\pi}{2}-dx+2\,\text{ArcSin}\left[\frac{\sqrt{\frac{a+b}{b}}}{\sqrt{2}}\right]\right)\text{Log}\left[1+\frac{\left(a-\sqrt{a^2-b^2}\right)e^{i\left(-c+\frac{\pi}{2}-dx\right)}}{b}\right]+$$

$$\left(-c+\frac{\pi}{2}-dx-2\,\text{ArcSin}\left[\frac{\sqrt{\frac{a+b}{b}}}{\sqrt{2}}\right]\right)\text{Log}\left[1+\frac{\left(a+\sqrt{a^2-b^2}\right)e^{i\left(-c+\frac{\pi}{2}-dx\right)}}{b}\right]-\left(-c+\frac{\pi}{2}-dx\right)\text{Log}[a+b\,\text{Sin}[c+dx]]-$$

$$\left.\left.i\left(\text{PolyLog}\left[2,-\frac{\left(a-\sqrt{a^2-b^2}\right)e^{i\left(-c+\frac{\pi}{2}-dx\right)}}{b}\right]+\text{PolyLog}\left[2,-\frac{\left(a+\sqrt{a^2-b^2}\right)e^{i\left(-c+\frac{\pi}{2}-dx\right)}}{b}\right]\right)\right)\right)\text{Sin}[c]\Bigg)\Bigg)-$$

$$\left(3\,a\,e^2 f\,\text{Csc}[c]\left(-b\,d\,x\,\text{Cos}[c]+b\,\text{Log}[a+b\,\text{Cos}[dx]\,\text{Sin}[c]+b\,\text{Cos}[c]\,\text{Sin}[dx]]\,\text{Sin}[c]+\frac{2\,i\,a\,b\,\text{ArcTan}\left[\frac{i\,b\,\text{Cos}[c]-i\,(-a+b\,\text{Sin}[c])\,\text{Tan}\left[\frac{dx}{2}\right]}{\sqrt{-a^2+b^2\,\text{Cos}[c]^2+b^2\,\text{Sin}[c]^2}}\right]\text{Cos}[c]}{\sqrt{-a^2+b^2\,\text{Cos}[c]^2+b^2\,\text{Sin}[c]^2}}\right)\right)\Big/$$

$$\left(\left(-a^2+b^2\right)d^2\left(b^2\,\text{Cos}[c]^2+b^2\,\text{Sin}[c]^2\right)\right)+$$

$$\left(\text{Csc}[c]\left(-a^2 e^3\,\text{Cos}[c]-3\,a^2 e^2 f\,x\,\text{Cos}[c]-3\,a^2 e\,f^2 x^2\,\text{Cos}[c]-a^2 f^3 x^3\,\text{Cos}[c]-a\,b\,e^3\,\text{Sin}[dx]-3\,a\,b\,e^2 f\,x\,\text{Sin}[dx]-\right.\right.$$

$$\left.\left.3\,a\,b\,e\,f^2 x^2\,\text{Sin}[dx]-a\,b\,f^3 x^3\,\text{Sin}[dx]\right)\right)\Big/\left(b\left(-a^2+b^2\right)d\,(a+b\,\text{Sin}[c+dx])\right)$$

Problem 249: Result more than twice size of optimal antiderivative.

$$\int \frac{(e+f x)^2 \operatorname{Sin}[c+d x]}{(a+b \operatorname{Sin}[c+d x])^3} \, dx$$

Optimal (type 4, 1584 leaves, 73 steps):

$$-\frac{3 i a^2 (e+f x)^2}{2 b (a^2-b^2)^2 d}+\frac{i (e+f x)^2}{b (a^2-b^2) d}+\frac{2 a f^2 \operatorname{ArcTan}\left[\frac{b+a \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]}{\sqrt{a^2-b^2}}\right]}{b (a^2-b^2)^{3/2} d^3}+\frac{3 a^2 f (e+f x) \operatorname{Log}\left[1-\frac{i b e^{i(c+d x)}}{a-\sqrt{a^2-b^2}}\right]}{b (a^2-b^2)^2 d^2}-\frac{2 f (e+f x) \operatorname{Log}\left[1-\frac{i b e^{i(c+d x)}}{a-\sqrt{a^2-b^2}}\right]}{b (a^2-b^2) d^2}+$$
$$\frac{3 i a^3 (e+f x)^2 \operatorname{Log}\left[1-\frac{i b e^{i(c+d x)}}{a-\sqrt{a^2-b^2}}\right]}{2 b (a^2-b^2)^{5/2} d}-\frac{3 i a (e+f x)^2 \operatorname{Log}\left[1-\frac{i b e^{i(c+d x)}}{a-\sqrt{a^2-b^2}}\right]}{2 b (a^2-b^2)^{3/2} d}+\frac{3 a^2 f (e+f x) \operatorname{Log}\left[1-\frac{i b e^{i(c+d x)}}{a+\sqrt{a^2-b^2}}\right]}{b (a^2-b^2)^2 d^2}-\frac{2 f (e+f x) \operatorname{Log}\left[1-\frac{i b e^{i(c+d x)}}{a+\sqrt{a^2-b^2}}\right]}{b (a^2-b^2) d^2}-$$
$$\frac{3 i a^3 (e+f x)^2 \operatorname{Log}\left[1-\frac{i b e^{i(c+d x)}}{a+\sqrt{a^2-b^2}}\right]}{2 b (a^2-b^2)^{5/2} d}+\frac{3 i a (e+f x)^2 \operatorname{Log}\left[1-\frac{i b e^{i(c+d x)}}{a+\sqrt{a^2-b^2}}\right]}{2 b (a^2-b^2)^{3/2} d}-\frac{3 i a^2 f^2 \operatorname{PolyLog}\left[2,\frac{i b e^{i(c+d x)}}{a-\sqrt{a^2-b^2}}\right]}{b (a^2-b^2)^2 d^3}+\frac{2 i f^2 \operatorname{PolyLog}\left[2,\frac{i b e^{i(c+d x)}}{a-\sqrt{a^2-b^2}}\right]}{b (a^2-b^2) d^3}+$$
$$\frac{3 a^3 f (e+f x) \operatorname{PolyLog}\left[2,\frac{i b e^{i(c+d x)}}{a-\sqrt{a^2-b^2}}\right]}{b (a^2-b^2)^{5/2} d^2}-\frac{3 a f (e+f x) \operatorname{PolyLog}\left[2,\frac{i b e^{i(c+d x)}}{a-\sqrt{a^2-b^2}}\right]}{b (a^2-b^2)^{3/2} d^2}-\frac{3 i a^2 f^2 \operatorname{PolyLog}\left[2,\frac{i b e^{i(c+d x)}}{a+\sqrt{a^2-b^2}}\right]}{b (a^2-b^2)^2 d^3}+$$
$$\frac{2 i f^2 \operatorname{PolyLog}\left[2,\frac{i b e^{i(c+d x)}}{a+\sqrt{a^2-b^2}}\right]}{b (a^2-b^2) d^3}-\frac{3 a^3 f (e+f x) \operatorname{PolyLog}\left[2,\frac{i b e^{i(c+d x)}}{a+\sqrt{a^2-b^2}}\right]}{b (a^2-b^2)^{5/2} d^2}+\frac{3 a f (e+f x) \operatorname{PolyLog}\left[2,\frac{i b e^{i(c+d x)}}{a+\sqrt{a^2-b^2}}\right]}{b (a^2-b^2)^{3/2} d^2}+$$
$$\frac{3 i a^3 f^2 \operatorname{PolyLog}\left[3,\frac{i b e^{i(c+d x)}}{a-\sqrt{a^2-b^2}}\right]}{b (a^2-b^2)^{5/2} d^3}-\frac{3 i a f^2 \operatorname{PolyLog}\left[3,\frac{i b e^{i(c+d x)}}{a-\sqrt{a^2-b^2}}\right]}{b (a^2-b^2)^{3/2} d^3}-\frac{3 i a^3 f^2 \operatorname{PolyLog}\left[3,\frac{i b e^{i(c+d x)}}{a+\sqrt{a^2-b^2}}\right]}{b (a^2-b^2)^{5/2} d^3}+\frac{3 i a f^2 \operatorname{PolyLog}\left[3,\frac{i b e^{i(c+d x)}}{a+\sqrt{a^2-b^2}}\right]}{b (a^2-b^2)^{3/2} d^3}-$$
$$\frac{a (e+f x)^2 \operatorname{Cos}[c+d x]}{2 (a^2-b^2) d (a+b \operatorname{Sin}[c+d x])^2}-\frac{a f (e+f x)}{b (a^2-b^2) d^2 (a+b \operatorname{Sin}[c+d x])}-\frac{3 a^2 (e+f x)^2 \operatorname{Cos}[c+d x]}{2 (a^2-b^2)^2 d (a+b \operatorname{Sin}[c+d x])}+\frac{(e+f x)^2 \operatorname{Cos}[c+d x]}{(a^2-b^2) d (a+b \operatorname{Sin}[c+d x])}$$

Result (type 4, 7742 leaves):

$$-\frac{1}{(-a^2+b^2)^2 d^2} 3 a b e f \left(\frac{\pi \operatorname{ArcTan}\left[\frac{b+a \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]}{\sqrt{a^2-b^2}}\right]}{\sqrt{a^2-b^2}}+\right.$$

$$\frac{1}{\sqrt{-a^2+b^2}}\left(2\left(-c+\frac{\pi}{2}-d\,x\right)\text{ArcTanh}\left[\frac{(a+b)\,\text{Cot}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}{\sqrt{-a^2+b^2}}\right]-2\left(-c+\text{ArcCos}\left[-\frac{a}{b}\right]\right)\text{ArcTanh}\left[\frac{(-a+b)\,\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}{\sqrt{-a^2+b^2}}\right]+\right.$$

$$\left(\text{ArcCos}\left[-\frac{a}{b}\right]-2\,i\left(\text{ArcTanh}\left[\frac{(a+b)\,\text{Cot}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}{\sqrt{-a^2+b^2}}\right]-\text{ArcTanh}\left[\frac{(-a+b)\,\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}{\sqrt{-a^2+b^2}}\right]\right)\right)$$

$$\text{Log}\left[\frac{\sqrt{-a^2+b^2}\;e^{-\frac{1}{2}i\left(-c+\frac{\pi}{2}-d\,x\right)}}{\sqrt{2}\,\sqrt{b}\,\sqrt{a+b\,\text{Sin}[c+d\,x]}}\right]+\left(\text{ArcCos}\left[-\frac{a}{b}\right]+\right.$$

$$\left.2\,i\left(\text{ArcTanh}\left[\frac{(a+b)\,\text{Cot}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}{\sqrt{-a^2+b^2}}\right]-\text{ArcTanh}\left[\frac{(-a+b)\,\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}{\sqrt{-a^2+b^2}}\right]\right)\right)\text{Log}\left[\frac{\sqrt{-a^2+b^2}\;e^{\frac{1}{2}i\left(-c+\frac{\pi}{2}-d\,x\right)}}{\sqrt{2}\,\sqrt{b}\,\sqrt{a+b\,\text{Sin}[c+d\,x]}}\right]-$$

$$\left(\text{ArcCos}\left[-\frac{a}{b}\right]+2\,i\,\text{ArcTanh}\left[\frac{(-a+b)\,\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}{\sqrt{-a^2+b^2}}\right]\right)\text{Log}\left[1-\frac{\left(a-i\sqrt{-a^2+b^2}\right)\left(a+b-\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\right)}{b\left(a+b+\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\right)}\right]+$$

$$\left(-\text{ArcCos}\left[-\frac{a}{b}\right]+2\,i\,\text{ArcTanh}\left[\frac{(-a+b)\,\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}{\sqrt{-a^2+b^2}}\right]\right)\text{Log}\left[1-\frac{\left(a+i\sqrt{-a^2+b^2}\right)\left(a+b-\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\right)}{b\left(a+b+\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\right)}\right]+$$

$$i\left(\text{PolyLog}\left[2,\frac{\left(a-i\sqrt{-a^2+b^2}\right)\left(a+b-\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\right)}{b\left(a+b+\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\right)}\right]-\right.$$

$$\left.\left.\text{PolyLog}\left[2,\frac{\left(a+i\sqrt{-a^2+b^2}\right)\left(a+b-\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\right)}{b\left(a+b+\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\right)}\right]\right)\right)\right)-$$

$$\frac{1}{b\left(-a^2+b^2\right)^2 d^3}\,a^3 f^2\,\text{Cot}[c]\left(\frac{\pi\,\text{ArcTan}\left[\frac{b+a\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{\sqrt{a^2-b^2}}\right]}{\sqrt{a^2-b^2}}+\frac{1}{\sqrt{-a^2+b^2}}\left(2\left(-c+\frac{\pi}{2}-d\,x\right)\text{ArcTanh}\left[\frac{(a+b)\,\text{Cot}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}{\sqrt{-a^2+b^2}}\right]-\right.\right.$$

$$2\left(-c+\text{ArcCos}\left[-\frac{a}{b}\right]\right)\text{ArcTanh}\left[\frac{(-a+b)\,\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}{\sqrt{-a^2+b^2}}\right]+$$

$$\left(\text{ArcCos}\left[-\frac{a}{b}\right]-2\,i\left(\text{ArcTanh}\left[\frac{(a+b)\,\text{Cot}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}{\sqrt{-a^2+b^2}}\right]-\text{ArcTanh}\left[\frac{(-a+b)\,\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}{\sqrt{-a^2+b^2}}\right]\right)\right)$$

$$\text{Log}\left[\frac{\sqrt{-a^2+b^2}\,e^{-\frac{1}{2}i\left(-c+\frac{\pi}{2}-d\,x\right)}}{\sqrt{2}\,\sqrt{b}\,\sqrt{a+b\,\text{Sin}[c+d\,x]}}\right]+\left(\text{ArcCos}\left[-\frac{a}{b}\right]+\right.$$

$$\left.2\,i\left(\text{ArcTanh}\left[\frac{(a+b)\,\text{Cot}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}{\sqrt{-a^2+b^2}}\right]-\text{ArcTanh}\left[\frac{(-a+b)\,\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}{\sqrt{-a^2+b^2}}\right]\right)\right)\text{Log}\left[\frac{\sqrt{-a^2+b^2}\,e^{\frac{1}{2}i\left(-c+\frac{\pi}{2}-d\,x\right)}}{\sqrt{2}\,\sqrt{b}\,\sqrt{a+b\,\text{Sin}[c+d\,x]}}\right]-$$

$$\left(\text{ArcCos}\left[-\frac{a}{b}\right]+2\,i\,\text{ArcTanh}\left[\frac{(-a+b)\,\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}{\sqrt{-a^2+b^2}}\right]\right)\text{Log}\left[1-\frac{\left(a-i\sqrt{-a^2+b^2}\right)\left(a+b-\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\right)}{b\left(a+b+\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\right)}\right]+$$

$$\left(-\text{ArcCos}\left[-\frac{a}{b}\right]+2\,i\,\text{ArcTanh}\left[\frac{(-a+b)\,\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}{\sqrt{-a^2+b^2}}\right]\right)\text{Log}\left[1-\frac{\left(a+i\sqrt{-a^2+b^2}\right)\left(a+b-\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\right)}{b\left(a+b+\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\right)}\right]+$$

$$i\left(\text{PolyLog}\left[2,\frac{\left(a-i\sqrt{-a^2+b^2}\right)\left(a+b-\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\right)}{b\left(a+b+\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\right)}\right]-\right.$$

$$\left.\left.\left.\text{PolyLog}\left[2,\frac{\left(a+i\sqrt{-a^2+b^2}\right)\left(a+b-\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\right)}{b\left(a+b+\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\right)}\right]\right)\right)\right)-$$

$$\frac{1}{\left(-a^2+b^2\right)^2 d^3}\,2\,a\,b\,f^2\,\text{Cot}[c]\left(\frac{\pi\,\text{ArcTan}\left[\frac{b+a\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{\sqrt{a^2-b^2}}\right]}{\sqrt{a^2-b^2}}+\frac{1}{\sqrt{-a^2+b^2}}\left(2\left(-c+\frac{\pi}{2}-d\,x\right)\text{ArcTanh}\left[\frac{(a+b)\,\text{Cot}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}{\sqrt{-a^2+b^2}}\right]-\right.\right.$$

$$2\left(-c+\text{ArcCos}\left[-\frac{a}{b}\right]\right)\text{ArcTanh}\left[\frac{(-a+b)\,\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}{\sqrt{-a^2+b^2}}\right]+$$

$$\left(\text{ArcCos}\left[-\frac{a}{b}\right]-2\,i\left(\text{ArcTanh}\left[\frac{(a+b)\,\text{Cot}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}{\sqrt{-a^2+b^2}}\right]-\text{ArcTanh}\left[\frac{(-a+b)\,\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}{\sqrt{-a^2+b^2}}\right]\right)\right)$$

$$\text{Log}\left[\frac{\sqrt{-a^2+b^2}\;e^{-\frac{1}{2}i\left(-c+\frac{\pi}{2}-d\,x\right)}}{\sqrt{2}\,\sqrt{b}\,\sqrt{a+b\,\text{Sin}[c+d\,x]}}\right]+\left(\text{ArcCos}\left[-\frac{a}{b}\right]+\right.$$

$$\left.2\,i\left(\text{ArcTanh}\left[\frac{(a+b)\,\text{Cot}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}{\sqrt{-a^2+b^2}}\right]-\text{ArcTanh}\left[\frac{(-a+b)\,\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}{\sqrt{-a^2+b^2}}\right]\right)\right)\text{Log}\left[\frac{\sqrt{-a^2+b^2}\;e^{\frac{1}{2}i\left(-c+\frac{\pi}{2}-d\,x\right)}}{\sqrt{2}\,\sqrt{b}\,\sqrt{a+b\,\text{Sin}[c+d\,x]}}\right]-$$

$$\left(\text{ArcCos}\left[-\frac{a}{b}\right]+2\,i\,\text{ArcTanh}\left[\frac{(-a+b)\,\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}{\sqrt{-a^2+b^2}}\right]\right)\text{Log}\left[1-\frac{\left(a-i\sqrt{-a^2+b^2}\right)\left(a+b-\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\right)}{b\left(a+b+\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\right)}\right]+$$

$$\left(-\text{ArcCos}\left[-\frac{a}{b}\right]+2\,i\,\text{ArcTanh}\left[\frac{(-a+b)\,\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}{\sqrt{-a^2+b^2}}\right]\right)\text{Log}\left[1-\frac{\left(a+i\sqrt{-a^2+b^2}\right)\left(a+b-\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\right)}{b\left(a+b+\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\right)}\right]+$$

$$i\left(\text{PolyLog}\left[2,\frac{\left(a-i\sqrt{-a^2+b^2}\right)\left(a+b-\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\right)}{b\left(a+b+\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\right)}\right]-\right.$$

$$\left.\left.\left.\text{PolyLog}\left[2,\frac{\left(a+i\sqrt{-a^2+b^2}\right)\left(a+b-\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\right)}{b\left(a+b+\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\right)}\right]\right)\right)\right)-$$

$$\left(3\,a\,b\,e^{i\,c}\,f^2\left(d^2\,x^2\,\text{Log}\left[1+\frac{b\,e^{i\,(2\,c+d\,x)}}{i\,a\,e^{i\,c}-\sqrt{\left(-a^2+b^2\right)\,e^{2\,i\,c}}}\right]-d^2\,x^2\,\text{Log}\left[1+\frac{b\,e^{i\,(2\,c+d\,x)}}{i\,a\,e^{i\,c}+\sqrt{\left(-a^2+b^2\right)\,e^{2\,i\,c}}}\right]-\right.\right.$$

$$2\,i\,d\,x\,\text{PolyLog}\left[2,\frac{i\,b\,e^{i\,(2\,c+d\,x)}}{a\,e^{i\,c}+i\sqrt{\left(-a^2+b^2\right)\,e^{2\,i\,c}}}\right]+2\,i\,d\,x\,\text{PolyLog}\left[2,-\frac{b\,e^{i\,(2\,c+d\,x)}}{i\,a\,e^{i\,c}+\sqrt{\left(-a^2+b^2\right)\,e^{2\,i\,c}}}\right]+$$

$$\left.\left.2\,\text{PolyLog}\left[3,\frac{i\,b\,e^{i\,(2\,c+d\,x)}}{a\,e^{i\,c}+i\sqrt{\left(-a^2+b^2\right)\,e^{2\,i\,c}}}\right]-2\,\text{PolyLog}\left[3,-\frac{b\,e^{i\,(2\,c+d\,x)}}{i\,a\,e^{i\,c}+\sqrt{\left(-a^2+b^2\right)\,e^{2\,i\,c}}}\right]\right)\right)\Big/$$

$$\left(2\left(-a^2+b^2\right)^2 d^3\sqrt{\left(-a^2+b^2\right)e^{2ic}}\right)-\frac{3\,i\,a\,b\,e^2\,\text{ArcTan}\left[\frac{i\,b\,\text{Cos}[c]-i\,(-a+b\,\text{Sin}[c])\,\text{Tan}\left[\frac{d\,x}{2}\right]}{\sqrt{-a^2+b^2\,\text{Cos}[c]^2+b^2\,\text{Sin}[c]^2}}\right]}{\left(-a^2+b^2\right)^2 d\sqrt{-a^2+b^2\,\text{Cos}[c]^2+b^2\,\text{Sin}[c]^2}}+$$

$$\frac{2\,i\,a^3\,f^2\,\text{ArcTan}\left[\frac{i\,b\,\text{Cos}[c]-i\,(-a+b\,\text{Sin}[c])\,\text{Tan}\left[\frac{d\,x}{2}\right]}{\sqrt{-a^2+b^2\,\text{Cos}[c]^2+b^2\,\text{Sin}[c]^2}}\right]}{b\left(-a^2+b^2\right)^2 d^3\sqrt{-a^2+b^2\,\text{Cos}[c]^2+b^2\,\text{Sin}[c]^2}}-$$

$$\frac{2\,i\,a\,b\,f^2\,\text{ArcTan}\left[\frac{i\,b\,\text{Cos}[c]-i\,(-a+b\,\text{Sin}[c])\,\text{Tan}\left[\frac{d\,x}{2}\right]}{\sqrt{-a^2+b^2\,\text{Cos}[c]^2+b^2\,\text{Sin}[c]^2}}\right]}{\left(-a^2+b^2\right)^2 d^3\sqrt{-a^2+b^2\,\text{Cos}[c]^2+b^2\,\text{Sin}[c]^2}}-$$

$$\frac{2\,i\,a^3\,e\,f\,\text{ArcTan}\left[\frac{i\,b\,\text{Cos}[c]-i\,(-a+b\,\text{Sin}[c])\,\text{Tan}\left[\frac{d\,x}{2}\right]}{\sqrt{-a^2+b^2\,\text{Cos}[c]^2+b^2\,\text{Sin}[c]^2}}\right]\text{Cot}[c]}{b\left(-a^2+b^2\right)^2 d^2\sqrt{-a^2+b^2\,\text{Cos}[c]^2+b^2\,\text{Sin}[c]^2}}-$$

$$\frac{4\,i\,a\,b\,e\,f\,\text{ArcTan}\left[\frac{i\,b\,\text{Cos}[c]-i\,(-a+b\,\text{Sin}[c])\,\text{Tan}\left[\frac{d\,x}{2}\right]}{\sqrt{-a^2+b^2\,\text{Cos}[c]^2+b^2\,\text{Sin}[c]^2}}\right]\text{Cot}[c]}{\left(-a^2+b^2\right)^2 d^2\sqrt{-a^2+b^2\,\text{Cos}[c]^2+b^2\,\text{Sin}[c]^2}}-$$

$$\frac{1}{\left(-a^2+b^2\right)^2 d}$$

$$a^2$$

$$f^2$$

$$\text{Csc}[c]$$

$$\left(-\frac{x^2\,\text{Cos}[c]}{2\,b}+\frac{1}{b\,d}\right.$$

$$x\left(d\,x\,\text{Cos}[c]-\frac{2\,a\,\text{ArcTan}\left[\frac{\text{Sec}\left[\frac{d\,x}{2}\right](\text{Cos}[c]-i\,\text{Sin}[c])\left(b\,\text{Cos}\left[c+\frac{d\,x}{2}\right]+a\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)}{\sqrt{a^2-b^2}\sqrt{(\text{Cos}[c]-i\,\text{Sin}[c])^2}}\right]\text{Cos}[c]\,(\text{Cos}[c]-i\,\text{Sin}[c])}{\sqrt{a^2-b^2}\sqrt{(\text{Cos}[c]-i\,\text{Sin}[c])^2}}-\text{Log}[a+b\,\text{Sin}[c+d\,x]]\,\text{Sin}[c]\right)+$$

$$\frac{1}{b\,d}\left(-\frac{1}{d}a\,\text{Cos}[c]\left(\frac{\pi\,\text{ArcTan}\left[\frac{b+a\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{\sqrt{a^2-b^2}}\right]}{\sqrt{a^2-b^2}}+\frac{1}{\sqrt{-a^2+b^2}}\left(2\left(c-\text{ArcCos}\left[-\frac{a}{b}\right]\right)\text{ArcTanh}\left[\frac{(a-b)\,\text{Tan}\left[\frac{1}{4}(2\,c-\pi+2\,d\,x)\right]}{\sqrt{-a^2+b^2}}\right]+\right.\right.\right.$$

$$(-2\,c+\pi-2\,d\,x)\,\text{ArcTanh}\left[\frac{(a+b)\,\text{Tan}\left[\frac{1}{4}(2\,c+\pi+2\,d\,x)\right]}{\sqrt{-a^2+b^2}}\right]-\left(\text{ArcCos}\left[-\frac{a}{b}\right]-2\,i\,\text{ArcTanh}\left[\frac{(a-b)\,\text{Tan}\left[\frac{1}{4}(2\,c-\pi+2\,d\,x)\right]}{\sqrt{-a^2+b^2}}\right]\right)\text{Log}\Big[$$

$$\frac{(a+b)\left(-a+b-i\sqrt{-a^2+b^2}\right)\left(1+i\,\text{Cot}\left[\frac{1}{4}(2\,c+\pi+2\,d\,x)\right]\right)}{b\left(a+b+\sqrt{-a^2+b^2}\,\text{Cot}\left[\frac{1}{4}(2\,c+\pi+2\,d\,x)\right]\right)}\Big]-\left(\text{ArcCos}\left[-\frac{a}{b}\right]+2\,i\,\text{ArcTanh}\left[\frac{(a-b)\,\text{Tan}\left[\frac{1}{4}(2\,c-\pi+2\,d\,x)\right]}{\sqrt{-a^2+b^2}}\right]\right)$$

$$\text{Log}\left[\frac{(a+b)\left(i\,a-i\,b+\sqrt{-a^2+b^2}\right)\left(i+\text{Cot}\left[\frac{1}{4}(2\,c+\pi+2\,d\,x)\right]\right)}{b\left(a+b+\sqrt{-a^2+b^2}\,\text{Cot}\left[\frac{1}{4}(2\,c+\pi+2\,d\,x)\right]\right)}\right]+\left(\text{ArcCos}\left[-\frac{a}{b}\right]+2\,i\left(-\text{ArcTanh}\Big[\right.\right.$$

$$\left.\left.\frac{(a-b)\,\text{Tan}\left[\frac{1}{4}(2\,c-\pi+2\,d\,x)\right]}{\sqrt{-a^2+b^2}}\Big]+\text{ArcTanh}\left[\frac{(a+b)\,\text{Tan}\left[\frac{1}{4}(2\,c+\pi+2\,d\,x)\right]}{\sqrt{-a^2+b^2}}\right]\right)\right)\text{Log}\left[\frac{\sqrt{-a^2+b^2}\;e^{\frac{1}{4}i(-2\,c+\pi-2\,d\,x)}}{\sqrt{2}\,\sqrt{b}\,\sqrt{a+b\,\text{Sin}[c+d\,x]}}\right]+$$

$$\left(\text{ArcCos}\left[-\frac{a}{b}\right]+2\,i\,\text{ArcTanh}\left[\frac{(a-b)\,\text{Tan}\left[\frac{1}{4}(2\,c-\pi+2\,d\,x)\right]}{\sqrt{-a^2+b^2}}\right]-2\,i\,\text{ArcTanh}\left[\frac{(a+b)\,\text{Tan}\left[\frac{1}{4}(2\,c+\pi+2\,d\,x)\right]}{\sqrt{-a^2+b^2}}\right]\right)$$

$$\text{Log}\left[\frac{\sqrt{-a^2+b^2}\;e^{\frac{1}{4}i(2\,c-\pi+2\,d\,x)}}{\sqrt{2}\,\sqrt{b}\,\sqrt{a+b\,\text{Sin}[c+d\,x]}}\right]+i\left(\text{PolyLog}\left[2,\frac{\left(a-i\sqrt{-a^2+b^2}\right)\left(a+b+\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{4}(2\,c-\pi+2\,d\,x)\right]\right)}{b\left(a+b+\sqrt{-a^2+b^2}\,\text{Cot}\left[\frac{1}{4}(2\,c+\pi+2\,d\,x)\right]\right)}\right]-\right.$$

$$\left.\left.\left.\left.\text{PolyLog}\left[2,\frac{\left(a+i\sqrt{-a^2+b^2}\right)\left(a+b+\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{4}(2\,c-\pi+2\,d\,x)\right]\right)}{b\left(a+b+\sqrt{-a^2+b^2}\,\text{Cot}\left[\frac{1}{4}(2\,c+\pi+2\,d\,x)\right]\right)}\right]\right)\right)\right)+\right.$$

$$\frac{2\,a\,x\,\text{ArcTan}\left[\frac{\text{Sec}\left[\frac{d\,x}{2}\right](\text{Cos}[c]-i\,\text{Sin}[c])\left(b\,\text{Cos}\left[c+\frac{d\,x}{2}\right]+a\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)}{\sqrt{a^2-b^2}\,\sqrt{(\text{Cos}[c]-i\,\text{Sin}[c])^2}}\right]\text{Cos}[c]\,(\text{Cos}[c]-i\,\text{Sin}[c])}{\sqrt{a^2-b^2}\,\sqrt{(\text{Cos}[c]-i\,\text{Sin}[c])^2}}+\frac{(c+d\,x)\,\text{Log}[a+b\,\text{Sin}[c+d\,x]]\,\text{Sin}[c]}{d}-$$

$$\frac{1}{d}b\left(\frac{(c+d\,x)\,\text{Log}[a+b\,\text{Sin}[c+d\,x]]}{b}-1/b\left(-\frac{1}{2}\,\mathbb{i}\,\left(-c+\frac{\pi}{2}-d\,x\right)^2+4\,\mathbb{i}\,\text{ArcSin}\left[\frac{\sqrt{\frac{a+b}{b}}}{\sqrt{2}}\right]\,\text{ArcTan}\left[\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}\,\left(-c+\frac{\pi}{2}-d\,x\right)\right]}{\sqrt{a^2-b^2}}\right]+\right.\right.$$

$$\left(-c+\frac{\pi}{2}-d\,x+2\,\text{ArcSin}\left[\frac{\sqrt{\frac{a+b}{b}}}{\sqrt{2}}\right]\right)\,\text{Log}\left[1+\frac{\left(a-\sqrt{a^2-b^2}\right)\,e^{\mathbb{i}\,\left(-c+\frac{\pi}{2}-d\,x\right)}}{b}\right]+$$

$$\left(-c+\frac{\pi}{2}-d\,x-2\,\text{ArcSin}\left[\frac{\sqrt{\frac{a+b}{b}}}{\sqrt{2}}\right]\right)\,\text{Log}\left[1+\frac{\left(a+\sqrt{a^2-b^2}\right)\,e^{\mathbb{i}\,\left(-c+\frac{\pi}{2}-d\,x\right)}}{b}\right]-\left(-c+\frac{\pi}{2}-d\,x\right)\,\text{Log}[a+b\,\text{Sin}[c+d\,x]]-$$

$$\left.\left.\mathbb{i}\,\left(\text{PolyLog}\left[2,-\frac{\left(a-\sqrt{a^2-b^2}\right)\,e^{\mathbb{i}\,\left(-c+\frac{\pi}{2}-d\,x\right)}}{b}\right]+\text{PolyLog}\left[2,-\frac{\left(a+\sqrt{a^2-b^2}\right)\,e^{\mathbb{i}\,\left(-c+\frac{\pi}{2}-d\,x\right)}}{b}\right]\right)\right)\,\text{Sin}[c]\right)-$$

$$\frac{1}{\left(-a^2+b^2\right)^2\,d}\,2\,b^2\,f^2\,\text{Csc}[c]\left(-\frac{x^2\,\text{Cos}[c]}{2\,b}+\frac{1}{b\,d}x\left(d\,x\,\text{Cos}[c]-\frac{2\,a\,\text{ArcTan}\left[\frac{\text{Sec}\left[\frac{d\,x}{2}\right]\,(\text{Cos}[c]-\mathbb{i}\,\text{Sin}[c])\,\left(b\,\text{Cos}\left[c+\frac{d\,x}{2}\right]+a\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)}{\sqrt{a^2-b^2}\,\sqrt{(\text{Cos}[c]-\mathbb{i}\,\text{Sin}[c])^2}}\right]\,\text{Cos}[c]\,(\text{Cos}[c]-\mathbb{i}\,\text{Sin}[c])}{\sqrt{a^2-b^2}\,\sqrt{(\text{Cos}[c]-\mathbb{i}\,\text{Sin}[c])^2}}-\right.\right.$$

$$\left.\text{Log}[a+b\,\text{Sin}[c+d\,x]]\,\text{Sin}[c]\right)+$$

$$\frac{1}{b\,d}\left(-\frac{1}{d}\,a\,\text{Cos}[c]\,\left(\frac{\pi\,\text{ArcTan}\left[\frac{b+a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]}{\sqrt{a^2-b^2}}\right]}{\sqrt{a^2-b^2}}+\frac{1}{\sqrt{-a^2+b^2}}\left(2\,\left(c-\text{ArcCos}\left[-\frac{a}{b}\right]\right)\,\text{ArcTanh}\left[\frac{(a-b)\,\text{Tan}\left[\frac{1}{4}\,(2\,c-\pi+2\,d\,x)\right]}{\sqrt{-a^2+b^2}}\right]+\right.\right.\right.$$

$$(-2c+\pi-2dx)\,\text{ArcTanh}\left[\frac{(a+b)\,\text{Tan}\left[\frac{1}{4}(2c+\pi+2dx)\right]}{\sqrt{-a^2+b^2}}\right]-\left(\text{ArcCos}\left[-\frac{a}{b}\right]-2\,i\,\text{ArcTanh}\left[\frac{(a-b)\,\text{Tan}\left[\frac{1}{4}(2c-\pi+2dx)\right]}{\sqrt{-a^2+b^2}}\right]\right)\text{Log}\Big[$$

$$\frac{(a+b)\left(-a+b-i\sqrt{-a^2+b^2}\right)\left(1+i\,\text{Cot}\left[\frac{1}{4}(2c+\pi+2dx)\right]\right)}{b\left(a+b+\sqrt{-a^2+b^2}\,\text{Cot}\left[\frac{1}{4}(2c+\pi+2dx)\right]\right)}\Big]-\left(\text{ArcCos}\left[-\frac{a}{b}\right]+2\,i\,\text{ArcTanh}\left[\frac{(a-b)\,\text{Tan}\left[\frac{1}{4}(2c-\pi+2dx)\right]}{\sqrt{-a^2+b^2}}\right]\right)$$

$$\text{Log}\left[\frac{(a+b)\left(i\,a-i\,b+\sqrt{-a^2+b^2}\right)\left(i+\text{Cot}\left[\frac{1}{4}(2c+\pi+2dx)\right]\right)}{b\left(a+b+\sqrt{-a^2+b^2}\,\text{Cot}\left[\frac{1}{4}(2c+\pi+2dx)\right]\right)}\right]+\Bigg(\text{ArcCos}\left[-\frac{a}{b}\right]+2\,i\,\Bigg(-\text{ArcTanh}\Big[$$

$$\frac{(a-b)\,\text{Tan}\left[\frac{1}{4}(2c-\pi+2dx)\right]}{\sqrt{-a^2+b^2}}\Big]+\text{ArcTanh}\left[\frac{(a+b)\,\text{Tan}\left[\frac{1}{4}(2c+\pi+2dx)\right]}{\sqrt{-a^2+b^2}}\right]\Bigg)\Bigg)\,\text{Log}\left[\frac{\sqrt{-a^2+b^2}\,e^{\frac{1}{4}i(-2c+\pi-2dx)}}{\sqrt{2}\,\sqrt{b}\,\sqrt{a+b\,\text{Sin}[c+dx]}}\right]+$$

$$\left(\text{ArcCos}\left[-\frac{a}{b}\right]+2\,i\,\text{ArcTanh}\left[\frac{(a-b)\,\text{Tan}\left[\frac{1}{4}(2c-\pi+2dx)\right]}{\sqrt{-a^2+b^2}}\right]-2\,i\,\text{ArcTanh}\left[\frac{(a+b)\,\text{Tan}\left[\frac{1}{4}(2c+\pi+2dx)\right]}{\sqrt{-a^2+b^2}}\right]\right)$$

$$\text{Log}\left[\frac{\sqrt{-a^2+b^2}\,e^{\frac{1}{4}i(2c-\pi+2dx)}}{\sqrt{2}\,\sqrt{b}\,\sqrt{a+b\,\text{Sin}[c+dx]}}\right]+i\,\Bigg(\text{PolyLog}\left[2,\frac{\left(a-i\sqrt{-a^2+b^2}\right)\left(a+b+\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{4}(2c-\pi+2dx)\right]\right)}{b\left(a+b+\sqrt{-a^2+b^2}\,\text{Cot}\left[\frac{1}{4}(2c+\pi+2dx)\right]\right)}\right]-$$

$$\text{PolyLog}\left[2,\frac{\left(a+i\sqrt{-a^2+b^2}\right)\left(a+b+\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{4}(2c-\pi+2dx)\right]\right)}{b\left(a+b+\sqrt{-a^2+b^2}\,\text{Cot}\left[\frac{1}{4}(2c+\pi+2dx)\right]\right)}\right]\Bigg)\Bigg)\Bigg)+$$

$$\frac{2\,a\,x\,\text{ArcTan}\left[\frac{\text{Sec}\left[\frac{dx}{2}\right](\text{Cos}[c]-i\,\text{Sin}[c])\left(b\,\text{Cos}\left[c+\frac{dx}{2}\right]+a\,\text{Sin}\left[\frac{dx}{2}\right]\right)}{\sqrt{a^2-b^2}\,\sqrt{(\text{Cos}[c]-i\,\text{Sin}[c])^2}}\right]\text{Cos}[c]\,(\text{Cos}[c]-i\,\text{Sin}[c])}{\sqrt{a^2-b^2}\,\sqrt{(\text{Cos}[c]-i\,\text{Sin}[c])^2}}+\frac{(c+dx)\,\text{Log}[a+b\,\text{Sin}[c+dx]]\,\text{Sin}[c]}{d}-$$

$$\frac{1}{d}b\Bigg(\frac{(c+dx)\,\text{Log}[a+b\,\text{Sin}[c+dx]]}{b}-1/b\Bigg(-\frac{1}{2}\,i\left(-c+\frac{\pi}{2}-dx\right)^2+4\,i\,\text{ArcSin}\left[\frac{\sqrt{\frac{a+b}{b}}}{\sqrt{2}}\right]\text{ArcTan}\left[\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-dx\right)\right]}{\sqrt{a^2-b^2}}\right]+$$

$$\left(-c+\frac{\pi}{2}-d\,x+2\,\text{ArcSin}\left[\frac{\sqrt{\frac{a+b}{b}}}{\sqrt{2}}\right]\right)\text{Log}\left[1+\frac{\left(a-\sqrt{a^2-b^2}\right)e^{i\left(-c+\frac{\pi}{2}-d\,x\right)}}{b}\right]+$$

$$\left(-c+\frac{\pi}{2}-d\,x-2\,\text{ArcSin}\left[\frac{\sqrt{\frac{a+b}{b}}}{\sqrt{2}}\right]\right)\text{Log}\left[1+\frac{\left(a+\sqrt{a^2-b^2}\right)e^{i\left(-c+\frac{\pi}{2}-d\,x\right)}}{b}\right]-\left(-c+\frac{\pi}{2}-d\,x\right)\text{Log}[a+b\,\text{Sin}[c+d\,x]]-$$

$$i\left(\text{PolyLog}\left[2,-\frac{\left(a-\sqrt{a^2-b^2}\right)e^{i\left(-c+\frac{\pi}{2}-d\,x\right)}}{b}\right]+\text{PolyLog}\left[2,-\frac{\left(a+\sqrt{a^2-b^2}\right)e^{i\left(-c+\frac{\pi}{2}-d\,x\right)}}{b}\right]\right)\Bigg)\Bigg)\text{Sin}[c]\Bigg)\Bigg)+$$

$$\Bigg(a^2\,e\,f\,\text{Csc}[c]\,\Bigg(-b\,d\,x\,\text{Cos}[c]+b\,\text{Log}[a+b\,\text{Cos}[d\,x]\,\text{Sin}[c]+b\,\text{Cos}[c]\,\text{Sin}[d\,x]]\,\text{Sin}[c]+$$

$$\frac{2\,i\,a\,b\,\text{ArcTan}\left[\frac{i\,b\,\text{Cos}[c]-i\,(-a+b\,\text{Sin}[c])\,\text{Tan}\left[\frac{d\,x}{2}\right]}{\sqrt{-a^2+b^2\,\text{Cos}[c]^2+b^2\,\text{Sin}[c]^2}}\right]\text{Cos}[c]}{\sqrt{-a^2+b^2\,\text{Cos}[c]^2+b^2\,\text{Sin}[c]^2}}\Bigg)\Bigg)\Big/$$

$$\left(\left(-a^2+b^2\right)^2 d^2\left(b^2\,\text{Cos}[c]^2+b^2\,\text{Sin}[c]^2\right)\right)+$$

$$\Bigg(2$$

b²
e
f
Csc[
c]

$$\left(-b\,d\,x\,\mathrm{Cos}[c]+b\,\mathrm{Log}[a+b\,\mathrm{Cos}[d\,x]\,\mathrm{Sin}[c]+b\,\mathrm{Cos}[c]\,\mathrm{Sin}[d\,x]]\,\mathrm{Sin}[c]+\right.$$

$$\left.\left.\frac{2\,i\,a\,b\,\mathrm{ArcTan}\left[\frac{i\,b\,\mathrm{Cos}[c]-i\,(-a+b\,\mathrm{Sin}[c])\,\mathrm{Tan}\left[\frac{d\,x}{2}\right]}{\sqrt{-a^2+b^2\,\mathrm{Cos}[c]^2+b^2\,\mathrm{Sin}[c]^2}}\right]\mathrm{Cos}[c]}{\sqrt{-a^2+b^2\,\mathrm{Cos}[c]^2+b^2\,\mathrm{Sin}[c]^2}}\right)\right)\Big/\left(\left(-a^2+b^2\right)^2 d^2\left(b^2\,\mathrm{Cos}[c]^2+b^2\,\mathrm{Sin}[c]^2\right)\right)-$$

$$\left(\mathrm{Csc}[c]\left(a^2\,e^2\,\mathrm{Cos}[c]+2\,a^2\,e\,f\,x\,\mathrm{Cos}[c]+a^2\,f^2\,x^2\,\mathrm{Cos}[c]+a\,b\,e^2\,\mathrm{Sin}[d\,x]+2\,a\,b\,e\,f\,x\,\mathrm{Sin}[d\,x]+a\,b\,f^2\,x^2\,\mathrm{Sin}[d\,x]\right)\right)\Big/$$

$$\left(2\;b\;\left(-a^2+b^2\right)\;d\;(a+b\,\mathrm{Sin}[c+d\,x])^2\right)+$$

$$\left(\mathrm{Csc}[c]\left(3\,a\,b^2\,d\,e^2\,\mathrm{Cos}[c]+6\,a\,b^2\,d\,e\,f\,x\,\mathrm{Cos}[c]+3\,a\,b^2\,d\,f^2\,x^2\,\mathrm{Cos}[c]-2\,a^3\,e\,f\,\mathrm{Sin}[c]+2\,a\,b^2\,e\,f\,\mathrm{Sin}[c]-\right.\right.$$

$$2\,a^3\,f^2\,x\,\mathrm{Sin}[c]+2\,a\,b^2\,f^2\,x\,\mathrm{Sin}[c]+a^2\,b\,d\,e^2\,\mathrm{Sin}[d\,x]+2\,b^3\,d\,e^2\,\mathrm{Sin}[d\,x]+$$

$$2\,a^2\,b\,d\,e\,f\,x\,\mathrm{Sin}[d\,x]+4\,b^3\,d\,e\,f\,x\,\mathrm{Sin}[d\,x]+a^2\,b\,d\,f^2\,x^2\,\mathrm{Sin}[d\,x]+$$

$$\left.\left.2\,b^3\,d\,f^2\,x^2\,\mathrm{Sin}[d\,x]\right)\right)\Big/\left(2\,b\left(-a^2+b^2\right)^2 d^2\,(a+b\,\mathrm{Sin}[c+d\,x])\right)$$

- **Problem 250: Result more than twice size of optimal antiderivative.**

$$\int\frac{(e+f\,x)^3\,\mathrm{Sin}[c+d\,x]}{(a+b\,\mathrm{Sin}[c+d\,x])^3}\,dx$$

Optimal (type 4, 2348 leaves, 92 steps) :

$$-\frac{3 i a^2 (e+f x)^3}{2 b \left(a^2-b^2\right)^2 d}+\frac{i (e+f x)^3}{b \left(a^2-b^2\right) d}-\frac{3 i a f^2 (e+f x) \text{Log}\left[1-\frac{i b e^{i (c+d x)}}{a-\sqrt{a^2-b^2}}\right]}{b \left(a^2-b^2\right)^{3/2} d^3}+\frac{9 a^2 f (e+f x)^2 \text{Log}\left[1-\frac{i b e^{i (c+d x)}}{a-\sqrt{a^2-b^2}}\right]}{2 b \left(a^2-b^2\right)^2 d^2}-\frac{3 f (e+f x)^2 \text{Log}\left[1-\frac{i b e^{i (c+d x)}}{a-\sqrt{a^2-b^2}}\right]}{b \left(a^2-b^2\right) d^2}+$$

$$\frac{3 i a^3 (e+f x)^3 \text{Log}\left[1-\frac{i b e^{i (c+d x)}}{a-\sqrt{a^2-b^2}}\right]}{2 b \left(a^2-b^2\right)^{5/2} d}-\frac{3 i a (e+f x)^3 \text{Log}\left[1-\frac{i b e^{i (c+d x)}}{a-\sqrt{a^2-b^2}}\right]}{2 b \left(a^2-b^2\right)^{3/2} d}+\frac{3 i a f^2 (e+f x) \text{Log}\left[1-\frac{i b e^{i (c+d x)}}{a+\sqrt{a^2-b^2}}\right]}{b \left(a^2-b^2\right)^{3/2} d^3}+\frac{9 a^2 f (e+f x)^2 \text{Log}\left[1-\frac{i b e^{i (c+d x)}}{a+\sqrt{a^2-b^2}}\right]}{2 b \left(a^2-b^2\right)^2 d^2}-$$

$$\frac{3 f (e+f x)^2 \text{Log}\left[1-\frac{i b e^{i (c+d x)}}{a+\sqrt{a^2-b^2}}\right]}{b \left(a^2-b^2\right) d^2}-\frac{3 i a^3 (e+f x)^3 \text{Log}\left[1-\frac{i b e^{i (c+d x)}}{a+\sqrt{a^2-b^2}}\right]}{2 b \left(a^2-b^2\right)^{5/2} d}+\frac{3 i a (e+f x)^3 \text{Log}\left[1-\frac{i b e^{i (c+d x)}}{a+\sqrt{a^2-b^2}}\right]}{2 b \left(a^2-b^2\right)^{3/2} d}-\frac{3 a f^3 \text{PolyLog}\left[2,\frac{i b e^{i (c+d x)}}{a-\sqrt{a^2-b^2}}\right]}{b \left(a^2-b^2\right)^{3/2} d^4}-$$

$$\frac{9 i a^2 f^2 (e+f x) \text{PolyLog}\left[2,\frac{i b e^{i (c+d x)}}{a-\sqrt{a^2-b^2}}\right]}{b \left(a^2-b^2\right)^2 d^3}+\frac{6 i f^2 (e+f x) \text{PolyLog}\left[2,\frac{i b e^{i (c+d x)}}{a-\sqrt{a^2-b^2}}\right]}{b \left(a^2-b^2\right) d^3}+\frac{9 a^3 f (e+f x)^2 \text{PolyLog}\left[2,\frac{i b e^{i (c+d x)}}{a-\sqrt{a^2-b^2}}\right]}{2 b \left(a^2-b^2\right)^{5/2} d^2}-$$

$$\frac{9 a f (e+f x)^2 \text{PolyLog}\left[2,\frac{i b e^{i (c+d x)}}{a-\sqrt{a^2-b^2}}\right]}{2 b \left(a^2-b^2\right)^{3/2} d^2}+\frac{3 a f^3 \text{PolyLog}\left[2,\frac{i b e^{i (c+d x)}}{a+\sqrt{a^2-b^2}}\right]}{b \left(a^2-b^2\right)^{3/2} d^4}-\frac{9 i a^2 f^2 (e+f x) \text{PolyLog}\left[2,\frac{i b e^{i (c+d x)}}{a+\sqrt{a^2-b^2}}\right]}{b \left(a^2-b^2\right)^2 d^3}+$$

$$\frac{6 i f^2 (e+f x) \text{PolyLog}\left[2,\frac{i b e^{i (c+d x)}}{a+\sqrt{a^2-b^2}}\right]}{b \left(a^2-b^2\right) d^3}-\frac{9 a^3 f (e+f x)^2 \text{PolyLog}\left[2,\frac{i b e^{i (c+d x)}}{a+\sqrt{a^2-b^2}}\right]}{2 b \left(a^2-b^2\right)^{5/2} d^2}+\frac{9 a f (e+f x)^2 \text{PolyLog}\left[2,\frac{i b e^{i (c+d x)}}{a+\sqrt{a^2-b^2}}\right]}{2 b \left(a^2-b^2\right)^{3/2} d^2}+$$

$$\frac{9 a^2 f^3 \text{PolyLog}\left[3,\frac{i b e^{i (c+d x)}}{a-\sqrt{a^2-b^2}}\right]}{b \left(a^2-b^2\right)^2 d^4}-\frac{6 f^3 \text{PolyLog}\left[3,\frac{i b e^{i (c+d x)}}{a-\sqrt{a^2-b^2}}\right]}{b \left(a^2-b^2\right) d^4}+\frac{9 i a^3 f^2 (e+f x) \text{PolyLog}\left[3,\frac{i b e^{i (c+d x)}}{a-\sqrt{a^2-b^2}}\right]}{b \left(a^2-b^2\right)^{5/2} d^3}-\frac{9 i a f^2 (e+f x) \text{PolyLog}\left[3,\frac{i b e^{i (c+d x)}}{a-\sqrt{a^2-b^2}}\right]}{b \left(a^2-b^2\right)^{3/2} d^3}+$$

$$\frac{9 a^2 f^3 \text{PolyLog}\left[3,\frac{i b e^{i (c+d x)}}{a+\sqrt{a^2-b^2}}\right]}{b \left(a^2-b^2\right)^2 d^4}-\frac{6 f^3 \text{PolyLog}\left[3,\frac{i b e^{i (c+d x)}}{a+\sqrt{a^2-b^2}}\right]}{b \left(a^2-b^2\right) d^4}-\frac{9 i a^3 f^2 (e+f x) \text{PolyLog}\left[3,\frac{i b e^{i (c+d x)}}{a+\sqrt{a^2-b^2}}\right]}{b \left(a^2-b^2\right)^{5/2} d^3}+\frac{9 i a f^2 (e+f x) \text{PolyLog}\left[3,\frac{i b e^{i (c+d x)}}{a+\sqrt{a^2-b^2}}\right]}{b \left(a^2-b^2\right)^{3/2} d^3}-$$

$$\frac{9 a^3 f^3 \text{PolyLog}\left[4,\frac{i b e^{i (c+d x)}}{a-\sqrt{a^2-b^2}}\right]}{b \left(a^2-b^2\right)^{5/2} d^4}+\frac{9 a f^3 \text{PolyLog}\left[4,\frac{i b e^{i (c+d x)}}{a-\sqrt{a^2-b^2}}\right]}{b \left(a^2-b^2\right)^{3/2} d^4}+\frac{9 a^3 f^3 \text{PolyLog}\left[4,\frac{i b e^{i (c+d x)}}{a+\sqrt{a^2-b^2}}\right]}{b \left(a^2-b^2\right)^{5/2} d^4}-\frac{9 a f^3 \text{PolyLog}\left[4,\frac{i b e^{i (c+d x)}}{a+\sqrt{a^2-b^2}}\right]}{b \left(a^2-b^2\right)^{3/2} d^4}-$$

$$\frac{a (e+f x)^3 \text{Cos}[c+d x]}{2 \left(a^2-b^2\right) d (a+b \text{Sin}[c+d x])^2}-\frac{3 a f (e+f x)^2}{2 b \left(a^2-b^2\right) d^2 (a+b \text{Sin}[c+d x])}-\frac{3 a^2 (e+f x)^3 \text{Cos}[c+d x]}{2 \left(a^2-b^2\right)^2 d (a+b \text{Sin}[c+d x])}+\frac{(e+f x)^3 \text{Cos}[c+d x]}{\left(a^2-b^2\right) d (a+b \text{Sin}[c+d x])}$$

Result (type 4, 14368 leaves):

$$-\frac{1}{2\left(-a^2+b^2\right)^2 d^2}\, 9\, a\, b\, e^2 f \left(\frac{\pi \,\text{ArcTan}\left[\frac{b+a \,\text{Tan}\left[\frac{1}{2}(c+d x)\right]}{\sqrt{a^2-b^2}}\right]}{\sqrt{a^2-b^2}}+\right.$$

$$\frac{1}{\sqrt{-a^2+b^2}}\left(2\left(-c+\frac{\pi}{2}-d x\right) \text{ArcTanh}\left[\frac{(a+b) \,\text{Cot}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}{\sqrt{-a^2+b^2}}\right]-2\left(-c+\text{ArcCos}\left[-\frac{a}{b}\right]\right) \text{ArcTanh}\left[\frac{(-a+b) \,\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}{\sqrt{-a^2+b^2}}\right]+\right.$$

$$\left(\text{ArcCos}\left[-\frac{a}{b}\right]-2\,\mathbb{i}\left(\text{ArcTanh}\left[\frac{(a+b) \,\text{Cot}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}{\sqrt{-a^2+b^2}}\right]-\text{ArcTanh}\left[\frac{(-a+b) \,\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}{\sqrt{-a^2+b^2}}\right]\right)\right)$$

$$\text{Log}\left[\frac{\sqrt{-a^2+b^2}\; \mathbb{e}^{-\frac{1}{2} \mathbb{i}\left(-c+\frac{\pi}{2}-d x\right)}}{\sqrt{2}\, \sqrt{b}\, \sqrt{a+b \,\text{Sin}[c+d x]}}\right]+\left(\text{ArcCos}\left[-\frac{a}{b}\right]+\right.$$

$$\left.2\,\mathbb{i}\left(\text{ArcTanh}\left[\frac{(a+b) \,\text{Cot}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}{\sqrt{-a^2+b^2}}\right]-\text{ArcTanh}\left[\frac{(-a+b) \,\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}{\sqrt{-a^2+b^2}}\right]\right)\right) \text{Log}\left[\frac{\sqrt{-a^2+b^2}\; \mathbb{e}^{\frac{1}{2} \mathbb{i}\left(-c+\frac{\pi}{2}-d x\right)}}{\sqrt{2}\, \sqrt{b}\, \sqrt{a+b \,\text{Sin}[c+d x]}}\right]-$$

$$\left(\text{ArcCos}\left[-\frac{a}{b}\right]+2\,\mathbb{i}\, \text{ArcTanh}\left[\frac{(-a+b) \,\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}{\sqrt{-a^2+b^2}}\right]\right) \text{Log}\left[1-\frac{\left(a-\mathbb{i} \sqrt{-a^2+b^2}\right)\left(a+b-\sqrt{-a^2+b^2}\, \text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]\right)}{b\left(a+b+\sqrt{-a^2+b^2}\, \text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]\right)}\right]+$$

$$\left(-\text{ArcCos}\left[-\frac{a}{b}\right]+2\,\mathbb{i}\, \text{ArcTanh}\left[\frac{(-a+b) \,\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}{\sqrt{-a^2+b^2}}\right]\right) \text{Log}\left[1-\frac{\left(a+\mathbb{i} \sqrt{-a^2+b^2}\right)\left(a+b-\sqrt{-a^2+b^2}\, \text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]\right)}{b\left(a+b+\sqrt{-a^2+b^2}\, \text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]\right)}\right]+$$

$$\mathbb{i}\left(\text{PolyLog}\left[2, \frac{\left(a-\mathbb{i} \sqrt{-a^2+b^2}\right)\left(a+b-\sqrt{-a^2+b^2}\, \text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]\right)}{b\left(a+b+\sqrt{-a^2+b^2}\, \text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]\right)}\right]-\right.$$

$$\left.\left.\left.\text{PolyLog}\left[2, \frac{\left(a+\mathbb{i} \sqrt{-a^2+b^2}\right)\left(a+b-\sqrt{-a^2+b^2}\, \text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]\right)}{b\left(a+b+\sqrt{-a^2+b^2}\, \text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]\right)}\right]\right)\right)\right)+$$

$$\frac{1}{b\left(-a^2+b^2\right)^2 d^4} 3 a^3 f^3 \left(\frac{\pi \operatorname{ArcTan}\left[\frac{b+a \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]}{\sqrt{a^2-b^2}}\right]}{\sqrt{a^2-b^2}}+\frac{1}{\sqrt{-a^2+b^2}}\left(2\left(-c+\frac{\pi}{2}-d x\right) \operatorname{ArcTanh}\left[\frac{(a+b) \operatorname{Cot}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}{\sqrt{-a^2+b^2}}\right]-\right.\right.$$

$$2\left(-c+\operatorname{ArcCos}\left[-\frac{a}{b}\right]\right) \operatorname{ArcTanh}\left[\frac{(-a+b) \operatorname{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}{\sqrt{-a^2+b^2}}\right]+$$

$$\left(\operatorname{ArcCos}\left[-\frac{a}{b}\right]-2 i\left(\operatorname{ArcTanh}\left[\frac{(a+b) \operatorname{Cot}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}{\sqrt{-a^2+b^2}}\right]-\operatorname{ArcTanh}\left[\frac{(-a+b) \operatorname{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}{\sqrt{-a^2+b^2}}\right]\right)\right)$$

$$\operatorname{Log}\left[\frac{\sqrt{-a^2+b^2}\, e^{-\frac{1}{2} i\left(-c+\frac{\pi}{2}-d x\right)}}{\sqrt{2} \sqrt{b} \sqrt{a+b \operatorname{Sin}[c+d x]}}\right]+\left(\operatorname{ArcCos}\left[-\frac{a}{b}\right]+\right.$$

$$\left.2 i\left(\operatorname{ArcTanh}\left[\frac{(a+b) \operatorname{Cot}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}{\sqrt{-a^2+b^2}}\right]-\operatorname{ArcTanh}\left[\frac{(-a+b) \operatorname{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}{\sqrt{-a^2+b^2}}\right]\right)\right) \operatorname{Log}\left[\frac{\sqrt{-a^2+b^2}\, e^{\frac{1}{2} i\left(-c+\frac{\pi}{2}-d x\right)}}{\sqrt{2} \sqrt{b} \sqrt{a+b \operatorname{Sin}[c+d x]}}\right]-$$

$$\left(\operatorname{ArcCos}\left[-\frac{a}{b}\right]+2 i \operatorname{ArcTanh}\left[\frac{(-a+b) \operatorname{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}{\sqrt{-a^2+b^2}}\right]\right) \operatorname{Log}\left[1-\frac{\left(a-i \sqrt{-a^2+b^2}\right)\left(a+b-\sqrt{-a^2+b^2} \operatorname{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]\right)}{b\left(a+b+\sqrt{-a^2+b^2} \operatorname{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]\right)}\right]+$$

$$\left(-\operatorname{ArcCos}\left[-\frac{a}{b}\right]+2 i \operatorname{ArcTanh}\left[\frac{(-a+b) \operatorname{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}{\sqrt{-a^2+b^2}}\right]\right) \operatorname{Log}\left[1-\frac{\left(a+i \sqrt{-a^2+b^2}\right)\left(a+b-\sqrt{-a^2+b^2} \operatorname{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]\right)}{b\left(a+b+\sqrt{-a^2+b^2} \operatorname{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]\right)}\right]+$$

$$i\left(\operatorname{PolyLog}\left[2, \frac{\left(a-i \sqrt{-a^2+b^2}\right)\left(a+b-\sqrt{-a^2+b^2} \operatorname{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]\right)}{b\left(a+b+\sqrt{-a^2+b^2} \operatorname{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]\right)}\right]-\right.$$

$$\left.\left.\left.\operatorname{PolyLog}\left[2, \frac{\left(a+i \sqrt{-a^2+b^2}\right)\left(a+b-\sqrt{-a^2+b^2} \operatorname{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]\right)}{b\left(a+b+\sqrt{-a^2+b^2} \operatorname{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]\right)}\right]\right)\right)\right)-$$

$$\frac{1}{\left(-a^2+b^2\right)^2 d^4} 3 a b f^3 \left(\frac{\pi \,\text{ArcTan}\left[\frac{b+a \,\text{Tan}\left[\frac{1}{2} (c+d x)\right]}{\sqrt{a^2-b^2}}\right]}{\sqrt{a^2-b^2}}+\frac{1}{\sqrt{-a^2+b^2}}\left(2 \left(-c+\frac{\pi}{2}-d x\right) \text{ArcTanh}\left[\frac{(a+b) \,\text{Cot}\left[\frac{1}{2} \left(-c+\frac{\pi}{2}-d x\right)\right]}{\sqrt{-a^2+b^2}}\right]-\right.\right.$$

$$2 \left(-c+\text{ArcCos}\left[-\frac{a}{b}\right]\right) \text{ArcTanh}\left[\frac{(-a+b) \,\text{Tan}\left[\frac{1}{2} \left(-c+\frac{\pi}{2}-d x\right)\right]}{\sqrt{-a^2+b^2}}\right]+$$

$$\left(\text{ArcCos}\left[-\frac{a}{b}\right]-2 i \left(\text{ArcTanh}\left[\frac{(a+b) \,\text{Cot}\left[\frac{1}{2} \left(-c+\frac{\pi}{2}-d x\right)\right]}{\sqrt{-a^2+b^2}}\right]-\text{ArcTanh}\left[\frac{(-a+b) \,\text{Tan}\left[\frac{1}{2} \left(-c+\frac{\pi}{2}-d x\right)\right]}{\sqrt{-a^2+b^2}}\right]\right)\right)$$

$$\text{Log}\left[\frac{\sqrt{-a^2+b^2}\, e^{-\frac{1}{2} i \left(-c+\frac{\pi}{2}-d x\right)}}{\sqrt{2} \sqrt{b} \sqrt{a+b \,\text{Sin}[c+d x]}}\right]+\left(\text{ArcCos}\left[-\frac{a}{b}\right]+\right.$$

$$\left.2 i \left(\text{ArcTanh}\left[\frac{(a+b) \,\text{Cot}\left[\frac{1}{2} \left(-c+\frac{\pi}{2}-d x\right)\right]}{\sqrt{-a^2+b^2}}\right]-\text{ArcTanh}\left[\frac{(-a+b) \,\text{Tan}\left[\frac{1}{2} \left(-c+\frac{\pi}{2}-d x\right)\right]}{\sqrt{-a^2+b^2}}\right]\right)\right) \text{Log}\left[\frac{\sqrt{-a^2+b^2}\, e^{\frac{1}{2} i \left(-c+\frac{\pi}{2}-d x\right)}}{\sqrt{2} \sqrt{b} \sqrt{a+b \,\text{Sin}[c+d x]}}\right]-$$

$$\left(\text{ArcCos}\left[-\frac{a}{b}\right]+2 i \,\text{ArcTanh}\left[\frac{(-a+b) \,\text{Tan}\left[\frac{1}{2} \left(-c+\frac{\pi}{2}-d x\right)\right]}{\sqrt{-a^2+b^2}}\right]\right) \text{Log}\left[1-\frac{\left(a-i \sqrt{-a^2+b^2}\right) \left(a+b-\sqrt{-a^2+b^2} \,\text{Tan}\left[\frac{1}{2} \left(-c+\frac{\pi}{2}-d x\right)\right]\right)}{b \left(a+b+\sqrt{-a^2+b^2} \,\text{Tan}\left[\frac{1}{2} \left(-c+\frac{\pi}{2}-d x\right)\right]\right)}\right]+$$

$$\left(-\text{ArcCos}\left[-\frac{a}{b}\right]+2 i \,\text{ArcTanh}\left[\frac{(-a+b) \,\text{Tan}\left[\frac{1}{2} \left(-c+\frac{\pi}{2}-d x\right)\right]}{\sqrt{-a^2+b^2}}\right]\right) \text{Log}\left[1-\frac{\left(a+i \sqrt{-a^2+b^2}\right) \left(a+b-\sqrt{-a^2+b^2} \,\text{Tan}\left[\frac{1}{2} \left(-c+\frac{\pi}{2}-d x\right)\right]\right)}{b \left(a+b+\sqrt{-a^2+b^2} \,\text{Tan}\left[\frac{1}{2} \left(-c+\frac{\pi}{2}-d x\right)\right]\right)}\right]+$$

$$i \left(\text{PolyLog}\left[2, \frac{\left(a-i \sqrt{-a^2+b^2}\right) \left(a+b-\sqrt{-a^2+b^2} \,\text{Tan}\left[\frac{1}{2} \left(-c+\frac{\pi}{2}-d x\right)\right]\right)}{b \left(a+b+\sqrt{-a^2+b^2} \,\text{Tan}\left[\frac{1}{2} \left(-c+\frac{\pi}{2}-d x\right)\right]\right)}\right]-\right.$$

$$\left.\left.\left.\text{PolyLog}\left[2, \frac{\left(a+i \sqrt{-a^2+b^2}\right) \left(a+b-\sqrt{-a^2+b^2} \,\text{Tan}\left[\frac{1}{2} \left(-c+\frac{\pi}{2}-d x\right)\right]\right)}{b \left(a+b+\sqrt{-a^2+b^2} \,\text{Tan}\left[\frac{1}{2} \left(-c+\frac{\pi}{2}-d x\right)\right]\right)}\right]\right)\right)\right)-$$

$$\frac{1}{b\left(-a^2+b^2\right)^2 d^3} 3 a^3 e f^2 \operatorname{Cot}[c] \left(\frac{\pi \operatorname{ArcTan}\left[\frac{b+a \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]}{\sqrt{a^2-b^2}}\right]}{\sqrt{a^2-b^2}}+\frac{1}{\sqrt{-a^2+b^2}}\left(2\left(-c+\frac{\pi}{2}-d x\right) \operatorname{ArcTanh}\left[\frac{(a+b) \operatorname{Cot}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}{\sqrt{-a^2+b^2}}\right]-\right.\right.$$

$$2\left(-c+\operatorname{ArcCos}\left[-\frac{a}{b}\right]\right) \operatorname{ArcTanh}\left[\frac{(-a+b) \operatorname{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}{\sqrt{-a^2+b^2}}\right]+$$

$$\left(\operatorname{ArcCos}\left[-\frac{a}{b}\right]-2 i\left(\operatorname{ArcTanh}\left[\frac{(a+b) \operatorname{Cot}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}{\sqrt{-a^2+b^2}}\right]-\operatorname{ArcTanh}\left[\frac{(-a+b) \operatorname{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}{\sqrt{-a^2+b^2}}\right]\right)\right)$$

$$\operatorname{Log}\left[\frac{\sqrt{-a^2+b^2}\, e^{-\frac{1}{2} i\left(-c+\frac{\pi}{2}-d x\right)}}{\sqrt{2} \sqrt{b} \sqrt{a+b \operatorname{Sin}[c+d x]}}\right]+\left(\operatorname{ArcCos}\left[-\frac{a}{b}\right]+\right.$$

$$\left.2 i\left(\operatorname{ArcTanh}\left[\frac{(a+b) \operatorname{Cot}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}{\sqrt{-a^2+b^2}}\right]-\operatorname{ArcTanh}\left[\frac{(-a+b) \operatorname{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}{\sqrt{-a^2+b^2}}\right]\right)\right) \operatorname{Log}\left[\frac{\sqrt{-a^2+b^2}\, e^{\frac{1}{2} i\left(-c+\frac{\pi}{2}-d x\right)}}{\sqrt{2} \sqrt{b} \sqrt{a+b \operatorname{Sin}[c+d x]}}\right]-$$

$$\left(\operatorname{ArcCos}\left[-\frac{a}{b}\right]+2 i \operatorname{ArcTanh}\left[\frac{(-a+b) \operatorname{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}{\sqrt{-a^2+b^2}}\right]\right) \operatorname{Log}\left[1-\frac{\left(a-i \sqrt{-a^2+b^2}\right)\left(a+b-\sqrt{-a^2+b^2} \operatorname{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]\right)}{b\left(a+b+\sqrt{-a^2+b^2} \operatorname{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]\right)}\right]+$$

$$\left(-\operatorname{ArcCos}\left[-\frac{a}{b}\right]+2 i \operatorname{ArcTanh}\left[\frac{(-a+b) \operatorname{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}{\sqrt{-a^2+b^2}}\right]\right) \operatorname{Log}\left[1-\frac{\left(a+i \sqrt{-a^2+b^2}\right)\left(a+b-\sqrt{-a^2+b^2} \operatorname{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]\right)}{b\left(a+b+\sqrt{-a^2+b^2} \operatorname{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]\right)}\right]+$$

$$i\left(\operatorname{PolyLog}\left[2, \frac{\left(a-i \sqrt{-a^2+b^2}\right)\left(a+b-\sqrt{-a^2+b^2} \operatorname{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]\right)}{b\left(a+b+\sqrt{-a^2+b^2} \operatorname{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]\right)}\right]-\right.$$

$$\left.\left.\left.\operatorname{PolyLog}\left[2, \frac{\left(a+i \sqrt{-a^2+b^2}\right)\left(a+b-\sqrt{-a^2+b^2} \operatorname{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]\right)}{b\left(a+b+\sqrt{-a^2+b^2} \operatorname{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]\right)}\right]\right)\right)\right)-$$

$$\frac{1}{\left(-a^2+b^2\right)^2 d^3} 6\, a\, b\, e\, f^2 \operatorname{Cot}[c] \left(\frac{\pi \operatorname{ArcTan}\left[\frac{b+a \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]}{\sqrt{a^2-b^2}}\right]}{\sqrt{a^2-b^2}}+\frac{1}{\sqrt{-a^2+b^2}}\left(2\left(-c+\frac{\pi}{2}-d x\right) \operatorname{ArcTanh}\left[\frac{(a+b) \operatorname{Cot}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}{\sqrt{-a^2+b^2}}\right]-\right.\right.$$

$$2\left(-c+\operatorname{ArcCos}\left[-\frac{a}{b}\right]\right) \operatorname{ArcTanh}\left[\frac{(-a+b) \operatorname{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}{\sqrt{-a^2+b^2}}\right]+$$

$$\left(\operatorname{ArcCos}\left[-\frac{a}{b}\right]-2\, i\left(\operatorname{ArcTanh}\left[\frac{(a+b) \operatorname{Cot}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}{\sqrt{-a^2+b^2}}\right]-\operatorname{ArcTanh}\left[\frac{(-a+b) \operatorname{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}{\sqrt{-a^2+b^2}}\right]\right)\right)$$

$$\operatorname{Log}\left[\frac{\sqrt{-a^2+b^2}\, e^{-\frac{1}{2} i\left(-c+\frac{\pi}{2}-d x\right)}}{\sqrt{2} \sqrt{b} \sqrt{a+b \operatorname{Sin}[c+d x]}}\right]+\left(\operatorname{ArcCos}\left[-\frac{a}{b}\right]+\right.$$

$$\left.2\, i\left(\operatorname{ArcTanh}\left[\frac{(a+b) \operatorname{Cot}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}{\sqrt{-a^2+b^2}}\right]-\operatorname{ArcTanh}\left[\frac{(-a+b) \operatorname{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}{\sqrt{-a^2+b^2}}\right]\right)\right) \operatorname{Log}\left[\frac{\sqrt{-a^2+b^2}\, e^{\frac{1}{2} i\left(-c+\frac{\pi}{2}-d x\right)}}{\sqrt{2} \sqrt{b} \sqrt{a+b \operatorname{Sin}[c+d x]}}\right]-$$

$$\left(\operatorname{ArcCos}\left[-\frac{a}{b}\right]+2\, i \operatorname{ArcTanh}\left[\frac{(-a+b) \operatorname{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}{\sqrt{-a^2+b^2}}\right]\right) \operatorname{Log}\left[1-\frac{\left(a-i \sqrt{-a^2+b^2}\right)\left(a+b-\sqrt{-a^2+b^2} \operatorname{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]\right)}{b\left(a+b+\sqrt{-a^2+b^2} \operatorname{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]\right)}\right]+$$

$$\left(-\operatorname{ArcCos}\left[-\frac{a}{b}\right]+2\, i \operatorname{ArcTanh}\left[\frac{(-a+b) \operatorname{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}{\sqrt{-a^2+b^2}}\right]\right) \operatorname{Log}\left[1-\frac{\left(a+i \sqrt{-a^2+b^2}\right)\left(a+b-\sqrt{-a^2+b^2} \operatorname{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]\right)}{b\left(a+b+\sqrt{-a^2+b^2} \operatorname{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]\right)}\right]+$$

$$i\left(\operatorname{PolyLog}\left[2, \frac{\left(a-i \sqrt{-a^2+b^2}\right)\left(a+b-\sqrt{-a^2+b^2} \operatorname{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]\right)}{b\left(a+b+\sqrt{-a^2+b^2} \operatorname{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]\right)}\right]-\right.$$

$$\left.\left.\left.\operatorname{PolyLog}\left[2, \frac{\left(a+i \sqrt{-a^2+b^2}\right)\left(a+b-\sqrt{-a^2+b^2} \operatorname{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]\right)}{b\left(a+b+\sqrt{-a^2+b^2} \operatorname{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]\right)}\right]\right)\right)\right)-$$

$$\left(9\, a\, b\, e\, e^{i c} f^2\left(d^2 x^2 \operatorname{Log}\left[1+\frac{b\, e^{i(2 c+d x)}}{i\, a\, e^{i c}-\sqrt{\left(-a^2+b^2\right) e^{2 i c}}}\right]-d^2 x^2 \operatorname{Log}\left[1+\frac{b\, e^{i(2 c+d x)}}{i\, a\, e^{i c}+\sqrt{\left(-a^2+b^2\right) e^{2 i c}}}\right]-\right.\right.$$

$$2\,i\,d\,x\,\text{PolyLog}\left[2,\ \frac{i\,b\,e^{i\,(2\,c+d\,x)}}{a\,e^{i\,c}+i\,\sqrt{\left(-a^2+b^2\right)\,e^{2\,i\,c}}}\right]+$$

$$2\,i\,d\,x\,\text{PolyLog}\left[2,\ -\frac{b\,e^{i\,(2\,c+d\,x)}}{i\,a\,e^{i\,c}+\sqrt{\left(-a^2+b^2\right)\,e^{2\,i\,c}}}\right]+2\,\text{PolyLog}\left[3,\ \frac{i\,b\,e^{i\,(2\,c+d\,x)}}{a\,e^{i\,c}+i\,\sqrt{\left(-a^2+b^2\right)\,e^{2\,i\,c}}}\right]-$$

$$2\,\text{PolyLog}\left[3,\ -\frac{b\,e^{i\,(2\,c+d\,x)}}{i\,a\,e^{i\,c}+\sqrt{\left(-a^2+b^2\right)\,e^{2\,i\,c}}}\right]\Bigg)\Bigg)\Bigg/\left(2\,\left(-a^2+b^2\right)^2\,d^3\,\sqrt{\left(-a^2+b^2\right)\,e^{2\,i\,c}}\right)-$$

$$\Bigg(3\,a^3\,e^{i\,c}\,f^3\,\text{Cot}[c]\,\Bigg(d^2\,x^2\,\text{Log}\left[1+\frac{b\,e^{i\,(2\,c+d\,x)}}{i\,a\,e^{i\,c}-\sqrt{\left(-a^2+b^2\right)\,e^{2\,i\,c}}}\right]-d^2\,x^2\,\text{Log}\left[1+\frac{b\,e^{i\,(2\,c+d\,x)}}{i\,a\,e^{i\,c}+\sqrt{\left(-a^2+b^2\right)\,e^{2\,i\,c}}}\right]-$$

$$2\,i\,d\,x\,\text{PolyLog}\left[2,\ \frac{i\,b\,e^{i\,(2\,c+d\,x)}}{a\,e^{i\,c}+i\,\sqrt{\left(-a^2+b^2\right)\,e^{2\,i\,c}}}\right]+$$

$$2\,i\,d\,x\,\text{PolyLog}\left[2,\ -\frac{b\,e^{i\,(2\,c+d\,x)}}{i\,a\,e^{i\,c}+\sqrt{\left(-a^2+b^2\right)\,e^{2\,i\,c}}}\right]+2\,\text{PolyLog}\left[3,\ \frac{i\,b\,e^{i\,(2\,c+d\,x)}}{a\,e^{i\,c}+i\,\sqrt{\left(-a^2+b^2\right)\,e^{2\,i\,c}}}\right]-$$

$$2\,\text{PolyLog}\left[3,\ -\frac{b\,e^{i\,(2\,c+d\,x)}}{i\,a\,e^{i\,c}+\sqrt{\left(-a^2+b^2\right)\,e^{2\,i\,c}}}\right]\Bigg)\Bigg)\Bigg/\left(2\,b\,\left(-a^2+b^2\right)^2\,d^4\,\sqrt{\left(-a^2+b^2\right)\,e^{2\,i\,c}}\right)-$$

$$\Bigg(3\,a\,b\,e^{i\,c}\,f^3\,\text{Cot}[c]\,\Bigg(d^2\,x^2\,\text{Log}\left[1+\frac{b\,e^{i\,(2\,c+d\,x)}}{i\,a\,e^{i\,c}-\sqrt{\left(-a^2+b^2\right)\,e^{2\,i\,c}}}\right]-d^2\,x^2\,\text{Log}\left[1+\frac{b\,e^{i\,(2\,c+d\,x)}}{i\,a\,e^{i\,c}+\sqrt{\left(-a^2+b^2\right)\,e^{2\,i\,c}}}\right]-$$

$$2\,i\,d\,x\,\text{PolyLog}\left[2,\ \frac{i\,b\,e^{i\,(2\,c+d\,x)}}{a\,e^{i\,c}+i\,\sqrt{\left(-a^2+b^2\right)\,e^{2\,i\,c}}}\right]+2\,i\,d\,x\,\text{PolyLog}\left[2,\ -\frac{b\,e^{i\,(2\,c+d\,x)}}{i\,a\,e^{i\,c}+\sqrt{\left(-a^2+b^2\right)\,e^{2\,i\,c}}}\right]+$$

$$2\,\text{PolyLog}\left[3,\ \frac{i\,b\,e^{i\,(2\,c+d\,x)}}{a\,e^{i\,c}+i\,\sqrt{\left(-a^2+b^2\right)\,e^{2\,i\,c}}}\right]-2\,\text{PolyLog}\left[3,\ -\frac{b\,e^{i\,(2\,c+d\,x)}}{i\,a\,e^{i\,c}+\sqrt{\left(-a^2+b^2\right)\,e^{2\,i\,c}}}\right]\Bigg)\Bigg)\Bigg/$$

$$\left(\left(-a^2+b^2\right)^2\,d^4\,\sqrt{\left(-a^2+b^2\right)\,e^{2\,i\,c}}\right)-\frac{1}{4\,b\,\left(-a^2+b^2\right)^2\,d^4\,\sqrt{\left(-a^2+b^2\right)\,e^{2\,i\,c}}}$$

$$a^2\,e^{-i\,c}\,f^3\,\text{Csc}[c]$$

$$\Bigg(2\,d^3\,e^{2ic}\sqrt{\left(-a^2+b^2\right)e^{2ic}}\;x^3-3\,a\,d^2\,e^{ic}\,x^2\,\mathrm{Log}\Big[1+\frac{b\,e^{i(2c+dx)}}{i\,a\,e^{ic}-\sqrt{\left(-a^2+b^2\right)e^{2ic}}}\Big]-$$

$$3\,a\,d^2\,e^{3ic}\,x^2\,\mathrm{Log}\Big[1+\frac{b\,e^{i(2c+dx)}}{i\,a\,e^{ic}-\sqrt{\left(-a^2+b^2\right)e^{2ic}}}\Big]-$$

$$3\,i\,d^2\sqrt{\left(-a^2+b^2\right)e^{2ic}}\;x^2\,\mathrm{Log}\Big[1+\frac{b\,e^{i(2c+dx)}}{i\,a\,e^{ic}-\sqrt{\left(-a^2+b^2\right)e^{2ic}}}\Big]+$$

$$3\,i\,d^2\,e^{2ic}\sqrt{\left(-a^2+b^2\right)e^{2ic}}\;x^2\,\mathrm{Log}\Big[1+\frac{b\,e^{i(2c+dx)}}{i\,a\,e^{ic}-\sqrt{\left(-a^2+b^2\right)e^{2ic}}}\Big]+$$

$$3\,a\,d^2\,e^{ic}\,x^2\,\mathrm{Log}\Big[1+\frac{b\,e^{i(2c+dx)}}{i\,a\,e^{ic}+\sqrt{\left(-a^2+b^2\right)e^{2ic}}}\Big]+$$

$$3\,a\,d^2\,e^{3ic}\,x^2\,\mathrm{Log}\Big[1+\frac{b\,e^{i(2c+dx)}}{i\,a\,e^{ic}+\sqrt{\left(-a^2+b^2\right)e^{2ic}}}\Big]-$$

$$3\,i\,d^2\sqrt{\left(-a^2+b^2\right)e^{2ic}}\;x^2\,\mathrm{Log}\Big[1+\frac{b\,e^{i(2c+dx)}}{i\,a\,e^{ic}+\sqrt{\left(-a^2+b^2\right)e^{2ic}}}\Big]+$$

$$3\,i\,d^2\,e^{2ic}\sqrt{\left(-a^2+b^2\right)e^{2ic}}\;x^2\,\mathrm{Log}\Big[1+\frac{b\,e^{i(2c+dx)}}{i\,a\,e^{ic}+\sqrt{\left(-a^2+b^2\right)e^{2ic}}}\Big]+$$

$$6\,d\left(\sqrt{\left(-a^2+b^2\right)e^{2ic}}\;\left(-1+e^{2ic}\right)+i\,a\,e^{ic}\left(1+e^{2ic}\right)\right)x\,\mathrm{PolyLog}\Big[2,\frac{i\,b\,e^{i(2c+dx)}}{a\,e^{ic}+i\sqrt{\left(-a^2+b^2\right)e^{2ic}}}\Big]+$$

$$6\,d\left(\sqrt{\left(-a^2+b^2\right)e^{2ic}}\;\left(-1+e^{2ic}\right)-i\,a\,e^{ic}\left(1+e^{2ic}\right)\right)x\,\mathrm{PolyLog}\Big[2,-\frac{b\,e^{i(2c+dx)}}{i\,a\,e^{ic}+\sqrt{\left(-a^2+b^2\right)e^{2ic}}}\Big]-$$

$$6\,a\,e^{ic}\,\mathrm{PolyLog}\Big[3,\frac{i\,b\,e^{i(2c+dx)}}{a\,e^{ic}+i\sqrt{\left(-a^2+b^2\right)e^{2ic}}}\Big]-6\,a\,e^{3ic}\,\mathrm{PolyLog}\Big[3,\frac{i\,b\,e^{i(2c+dx)}}{a\,e^{ic}+i\sqrt{\left(-a^2+b^2\right)e^{2ic}}}\Big]-$$

$$6\,i\sqrt{\left(-a^2+b^2\right)e^{2ic}}\;\mathrm{PolyLog}\Big[3,\frac{i\,b\,e^{i(2c+dx)}}{a\,e^{ic}+i\sqrt{\left(-a^2+b^2\right)e^{2ic}}}\Big]+$$

$$6\,i\,e^{2ic}\sqrt{\left(-a^2+b^2\right)e^{2ic}}\;\mathrm{PolyLog}\Big[3,\frac{i\,b\,e^{i(2c+dx)}}{a\,e^{ic}+i\sqrt{\left(-a^2+b^2\right)e^{2ic}}}\Big]+$$

$$6\,a\,e^{i c}\,\text{PolyLog}\left[3,-\frac{b\,e^{i(2c+dx)}}{i\,a\,e^{i c}+\sqrt{(-a^2+b^2)\,e^{2 i c}}}\right]+6\,a\,e^{3 i c}\,\text{PolyLog}\left[3,-\frac{b\,e^{i(2c+dx)}}{i\,a\,e^{i c}+\sqrt{(-a^2+b^2)\,e^{2 i c}}}\right]-$$

$$6\,i\sqrt{(-a^2+b^2)\,e^{2 i c}}\,\text{PolyLog}\left[3,-\frac{b\,e^{i(2c+dx)}}{i\,a\,e^{i c}+\sqrt{(-a^2+b^2)\,e^{2 i c}}}\right]+$$

$$6\,i\,e^{2 i c}\sqrt{(-a^2+b^2)\,e^{2 i c}}\,\text{PolyLog}\left[3,-\frac{b\,e^{i(2c+dx)}}{i\,a\,e^{i c}+\sqrt{(-a^2+b^2)\,e^{2 i c}}}\right]\Bigg)-$$

$$\frac{1}{2\,(-a^2+b^2)^2\,d^4\sqrt{(-a^2+b^2)\,e^{2 i c}}}\,b\,e^{-i c}\,f^3\,\text{Csc}[c]\,\Bigg(2\,d^3\,e^{2 i c}\sqrt{(-a^2+b^2)\,e^{2 i c}}\,x^3-3\,a\,d^2\,e^{i c}\,x^2\,\text{Log}\left[1+\frac{b\,e^{i(2c+dx)}}{i\,a\,e^{i c}-\sqrt{(-a^2+b^2)\,e^{2 i c}}}\right]-$$

$$3\,a\,d^2\,e^{3 i c}\,x^2\,\text{Log}\left[1+\frac{b\,e^{i(2c+dx)}}{i\,a\,e^{i c}-\sqrt{(-a^2+b^2)\,e^{2 i c}}}\right]-$$

$$3\,i\,d^2\sqrt{(-a^2+b^2)\,e^{2 i c}}\,x^2\,\text{Log}\left[1+\frac{b\,e^{i(2c+dx)}}{i\,a\,e^{i c}-\sqrt{(-a^2+b^2)\,e^{2 i c}}}\right]+$$

$$3\,i\,d^2\,e^{2 i c}\sqrt{(-a^2+b^2)\,e^{2 i c}}\,x^2\,\text{Log}\left[1+\frac{b\,e^{i(2c+dx)}}{i\,a\,e^{i c}-\sqrt{(-a^2+b^2)\,e^{2 i c}}}\right]+$$

$$3\,a\,d^2\,e^{i c}\,x^2\,\text{Log}\left[1+\frac{b\,e^{i(2c+dx)}}{i\,a\,e^{i c}+\sqrt{(-a^2+b^2)\,e^{2 i c}}}\right]+3\,a\,d^2\,e^{3 i c}\,x^2\,\text{Log}\left[1+\frac{b\,e^{i(2c+dx)}}{i\,a\,e^{i c}+\sqrt{(-a^2+b^2)\,e^{2 i c}}}\right]-$$

$$3\,i\,d^2\sqrt{(-a^2+b^2)\,e^{2 i c}}\,x^2\,\text{Log}\left[1+\frac{b\,e^{i(2c+dx)}}{i\,a\,e^{i c}+\sqrt{(-a^2+b^2)\,e^{2 i c}}}\right]+$$

$$3\,i\,d^2\,e^{2 i c}\sqrt{(-a^2+b^2)\,e^{2 i c}}\,x^2\,\text{Log}\left[1+\frac{b\,e^{i(2c+dx)}}{i\,a\,e^{i c}+\sqrt{(-a^2+b^2)\,e^{2 i c}}}\right]+$$

$$6\,d\left(\sqrt{(-a^2+b^2)\,e^{2 i c}}\,\left(-1+e^{2 i c}\right)+i\,a\,e^{i c}\left(1+e^{2 i c}\right)\right)x\,\text{PolyLog}\left[2,\frac{i\,b\,e^{i(2c+dx)}}{a\,e^{i c}+i\sqrt{(-a^2+b^2)\,e^{2 i c}}}\right]+$$

$$6\,d\left(\sqrt{(-a^2+b^2)\,e^{2 i c}}\,\left(-1+e^{2 i c}\right)-i\,a\,e^{i c}\left(1+e^{2 i c}\right)\right)x\,\text{PolyLog}\left[2,-\frac{b\,e^{i(2c+dx)}}{i\,a\,e^{i c}+\sqrt{(-a^2+b^2)\,e^{2 i c}}}\right]-$$

$$6\,a\,e^{i c}\,\text{PolyLog}\left[3,\frac{i\,b\,e^{i(2c+dx)}}{a\,e^{i c}+i\sqrt{(-a^2+b^2)\,e^{2 i c}}}\right]-6\,a\,e^{3 i c}\,\text{PolyLog}\left[3,\frac{i\,b\,e^{i(2c+dx)}}{a\,e^{i c}+i\sqrt{(-a^2+b^2)\,e^{2 i c}}}\right]-$$

$$6\,i\sqrt{\left(-a^2+b^2\right)e^{2ic}}\,\text{PolyLog}\left[3,\frac{i\,b\,e^{i(2c+dx)}}{a\,e^{ic}+i\sqrt{\left(-a^2+b^2\right)e^{2ic}}}\right]+$$

$$6\,i\,e^{2ic}\sqrt{\left(-a^2+b^2\right)e^{2ic}}\,\text{PolyLog}\left[3,\frac{i\,b\,e^{i(2c+dx)}}{a\,e^{ic}+i\sqrt{\left(-a^2+b^2\right)e^{2ic}}}\right]+$$

$$6\,a\,e^{ic}\,\text{PolyLog}\left[3,-\frac{b\,e^{i(2c+dx)}}{i\,a\,e^{ic}+\sqrt{\left(-a^2+b^2\right)e^{2ic}}}\right]+6\,a\,e^{3ic}\,\text{PolyLog}\left[3,-\frac{b\,e^{i(2c+dx)}}{i\,a\,e^{ic}+\sqrt{\left(-a^2+b^2\right)e^{2ic}}}\right]-$$

$$6\,i\sqrt{\left(-a^2+b^2\right)e^{2ic}}\,\text{PolyLog}\left[3,-\frac{b\,e^{i(2c+dx)}}{i\,a\,e^{ic}+\sqrt{\left(-a^2+b^2\right)e^{2ic}}}\right]+$$

$$\left.6\,i\,e^{2ic}\sqrt{\left(-a^2+b^2\right)e^{2ic}}\,\text{PolyLog}\left[3,-\frac{b\,e^{i(2c+dx)}}{i\,a\,e^{ic}+\sqrt{\left(-a^2+b^2\right)e^{2ic}}}\right]\right)-$$

$$\frac{1}{2\left(-a^2+b^2\right)^2 d^4\sqrt{\left(-a^2+b^2\right)e^{2ic}}}\,3\,a\,b\,e^{ic}\,f^3\left(d^3x^3\,\text{Log}\left[1+\frac{b\,e^{i(2c+dx)}}{i\,a\,e^{ic}-\sqrt{\left(-a^2+b^2\right)e^{2ic}}}\right]-d^3x^3\,\text{Log}\left[1+\frac{b\,e^{i(2c+dx)}}{i\,a\,e^{ic}+\sqrt{\left(-a^2+b^2\right)e^{2ic}}}\right]-\right.$$

$$3\,i\,d^2x^2\,\text{PolyLog}\left[2,\frac{i\,b\,e^{i(2c+dx)}}{a\,e^{ic}+i\sqrt{\left(-a^2+b^2\right)e^{2ic}}}\right]+3\,i\,d^2x^2\,\text{PolyLog}\left[2,-\frac{b\,e^{i(2c+dx)}}{i\,a\,e^{ic}+\sqrt{\left(-a^2+b^2\right)e^{2ic}}}\right]+$$

$$6\,d\,x\,\text{PolyLog}\left[3,\frac{i\,b\,e^{i(2c+dx)}}{a\,e^{ic}+i\sqrt{\left(-a^2+b^2\right)e^{2ic}}}\right]-6\,d\,x\,\text{PolyLog}\left[3,-\frac{b\,e^{i(2c+dx)}}{i\,a\,e^{ic}+\sqrt{\left(-a^2+b^2\right)e^{2ic}}}\right]+$$

$$\left.6\,i\,\text{PolyLog}\left[4,\frac{i\,b\,e^{i(2c+dx)}}{a\,e^{ic}+i\sqrt{\left(-a^2+b^2\right)e^{2ic}}}\right]-6\,i\,\text{PolyLog}\left[4,-\frac{b\,e^{i(2c+dx)}}{i\,a\,e^{ic}+\sqrt{\left(-a^2+b^2\right)e^{2ic}}}\right]\right)-$$

$$\frac{3\,i\,a\,b\,e^3\,\text{ArcTan}\left[\frac{i\,b\,\text{Cos}[c]-i\left(-a+b\,\text{Sin}[c]\right)\text{Tan}\left[\frac{dx}{2}\right]}{\sqrt{-a^2+b^2\,\text{Cos}[c]^2+b^2\,\text{Sin}[c]^2}}\right]}{\left(-a^2+b^2\right)^2 d\sqrt{-a^2+b^2\,\text{Cos}[c]^2+b^2\,\text{Sin}[c]^2}}+$$

$$\frac{6\,i\,a^3\,e\,f^2\,\text{ArcTan}\left[\frac{i\,b\,\text{Cos}[c]-i\left(-a+b\,\text{Sin}[c]\right)\text{Tan}\left[\frac{dx}{2}\right]}{\sqrt{-a^2+b^2\,\text{Cos}[c]^2+b^2\,\text{Sin}[c]^2}}\right]}{b\left(-a^2+b^2\right)^2 d^3\sqrt{-a^2+b^2\,\text{Cos}[c]^2+b^2\,\text{Sin}[c]^2}}-$$

$$\frac{6\,i\,a\,b\,e\,f^2\,\text{ArcTan}\left[\frac{i\,b\,\text{Cos}[c]-i\,(-a+b\,\text{Sin}[c])\,\text{Tan}\left[\frac{d\,x}{2}\right]}{\sqrt{-a^2+b^2\,\text{Cos}[c]^2+b^2\,\text{Sin}[c]^2}}\right]}{\left(-a^2+b^2\right)^2 d^3\,\sqrt{-a^2+b^2\,\text{Cos}[c]^2+b^2\,\text{Sin}[c]^2}} -$$

$$\frac{3\,i\,a^3\,e^2\,f\,\text{ArcTan}\left[\frac{i\,b\,\text{Cos}[c]-i\,(-a+b\,\text{Sin}[c])\,\text{Tan}\left[\frac{d\,x}{2}\right]}{\sqrt{-a^2+b^2\,\text{Cos}[c]^2+b^2\,\text{Sin}[c]^2}}\right]\,\text{Cot}[c]}{b\,\left(-a^2+b^2\right)^2 d^2\,\sqrt{-a^2+b^2\,\text{Cos}[c]^2+b^2\,\text{Sin}[c]^2}} -$$

$$\frac{6\,i\,a\,b\,e^2\,f\,\text{ArcTan}\left[\frac{i\,b\,\text{Cos}[c]-i\,(-a+b\,\text{Sin}[c])\,\text{Tan}\left[\frac{d\,x}{2}\right]}{\sqrt{-a^2+b^2\,\text{Cos}[c]^2+b^2\,\text{Sin}[c]^2}}\right]\,\text{Cot}[c]}{\left(-a^2+b^2\right)^2 d^2\,\sqrt{-a^2+b^2\,\text{Cos}[c]^2+b^2\,\text{Sin}[c]^2}} -$$

$$\frac{1}{\left(-a^2+b^2\right)^2 d}$$

3

a^2

e

f^2

Csc[c]

$$\left(-\frac{x^2\,\text{Cos}[c]}{2\,b}+\frac{1}{b\,d}\right.$$

$$\left.x\left(d\,x\,\text{Cos}[c]-\frac{2\,a\,\text{ArcTan}\left[\frac{\text{Sec}\left[\frac{d\,x}{2}\right]\,(\text{Cos}[c]-i\,\text{Sin}[c])\,\left(b\,\text{Cos}\left[c+\frac{d\,x}{2}\right]+a\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)}{\sqrt{a^2-b^2}\,\sqrt{(\text{Cos}[c]-i\,\text{Sin}[c])^2}}\right]\,\text{Cos}[c]\,(\text{Cos}[c]-i\,\text{Sin}[c])}{\sqrt{a^2-b^2}\,\sqrt{(\text{Cos}[c]-i\,\text{Sin}[c])^2}}-\text{Log}[a+b\,\text{Sin}[c+d\,x]]\,\text{Sin}[c]\right)+\right.$$

$$\frac{1}{b\,d}\left(-\frac{1}{d}\,a\,\text{Cos}[c]\left(\frac{\pi\,\text{ArcTan}\left[\frac{b+a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]}{\sqrt{a^2-b^2}}\right]}{\sqrt{a^2-b^2}}+\frac{1}{\sqrt{-a^2+b^2}}\left(2\left(c-\text{ArcCos}\left[-\frac{a}{b}\right]\right)\text{ArcTanh}\left[\frac{(a-b)\,\text{Tan}\left[\frac{1}{4}\,(2\,c-\pi+2\,d\,x)\right]}{\sqrt{-a^2+b^2}}\right]+\right.\right.\right.$$

$$(-2\,c+\pi-2\,d\,x)\,\text{ArcTanh}\left[\frac{(a+b)\,\text{Tan}\left[\frac{1}{4}\,(2\,c+\pi+2\,d\,x)\right]}{\sqrt{-a^2+b^2}}\right]-\left(\text{ArcCos}\left[-\frac{a}{b}\right]-2\,i\,\text{ArcTanh}\left[\frac{(a-b)\,\text{Tan}\left[\frac{1}{4}\,(2\,c-\pi+2\,d\,x)\right]}{\sqrt{-a^2+b^2}}\right]\right)\text{Log}\Big[$$

$$\frac{(a+b)\left(-a+b-i\sqrt{-a^2+b^2}\right)\left(1+i\,\text{Cot}\left[\frac{1}{4}(2c+\pi+2dx)\right]\right)}{b\left(a+b+\sqrt{-a^2+b^2}\,\text{Cot}\left[\frac{1}{4}(2c+\pi+2dx)\right]\right)}\Bigg]-\left(\text{ArcCos}\left[-\frac{a}{b}\right]+2i\,\text{ArcTanh}\left[\frac{(a-b)\,\text{Tan}\left[\frac{1}{4}(2c-\pi+2dx)\right]}{\sqrt{-a^2+b^2}}\right]\right)$$

$$\text{Log}\left[\frac{(a+b)\left(i a-i b+\sqrt{-a^2+b^2}\right)\left(i+\text{Cot}\left[\frac{1}{4}(2c+\pi+2dx)\right]\right)}{b\left(a+b+\sqrt{-a^2+b^2}\,\text{Cot}\left[\frac{1}{4}(2c+\pi+2dx)\right]\right)}\right]+\left(\text{ArcCos}\left[-\frac{a}{b}\right]+2i\left(-\text{ArcTanh}\Bigg[\right.\right.$$

$$\left.\left.\frac{(a-b)\,\text{Tan}\left[\frac{1}{4}(2c-\pi+2dx)\right]}{\sqrt{-a^2+b^2}}\Bigg]+\text{ArcTanh}\left[\frac{(a+b)\,\text{Tan}\left[\frac{1}{4}(2c+\pi+2dx)\right]}{\sqrt{-a^2+b^2}}\right]\right)\right)\text{Log}\left[\frac{\sqrt{-a^2+b^2}\,e^{\frac{1}{4}i(-2c+\pi-2dx)}}{\sqrt{2}\,\sqrt{b}\,\sqrt{a+b\,\text{Sin}[c+dx]}}\right]+$$

$$\left(\text{ArcCos}\left[-\frac{a}{b}\right]+2i\,\text{ArcTanh}\left[\frac{(a-b)\,\text{Tan}\left[\frac{1}{4}(2c-\pi+2dx)\right]}{\sqrt{-a^2+b^2}}\right]-2i\,\text{ArcTanh}\left[\frac{(a+b)\,\text{Tan}\left[\frac{1}{4}(2c+\pi+2dx)\right]}{\sqrt{-a^2+b^2}}\right]\right)$$

$$\text{Log}\left[\frac{\sqrt{-a^2+b^2}\,e^{\frac{1}{4}i(2c-\pi+2dx)}}{\sqrt{2}\,\sqrt{b}\,\sqrt{a+b\,\text{Sin}[c+dx]}}\right]+i\left(\text{PolyLog}\left[2,\frac{\left(a-i\sqrt{-a^2+b^2}\right)\left(a+b+\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{4}(2c-\pi+2dx)\right]\right)}{b\left(a+b+\sqrt{-a^2+b^2}\,\text{Cot}\left[\frac{1}{4}(2c+\pi+2dx)\right]\right)}\right]-\right.$$

$$\left.\left.\left.\text{PolyLog}\left[2,\frac{\left(a+i\sqrt{-a^2+b^2}\right)\left(a+b+\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{4}(2c-\pi+2dx)\right]\right)}{b\left(a+b+\sqrt{-a^2+b^2}\,\text{Cot}\left[\frac{1}{4}(2c+\pi+2dx)\right]\right)}\right]\right)\right)\right)+$$

$$\frac{2\,a\,x\,\text{ArcTan}\left[\frac{\text{Sec}\left[\frac{dx}{2}\right](\text{Cos}[c]-i\,\text{Sin}[c])\left(b\,\text{Cos}\left[c+\frac{dx}{2}\right]+a\,\text{Sin}\left[\frac{dx}{2}\right]\right)}{\sqrt{a^2-b^2}\,\sqrt{(\text{Cos}[c]-i\,\text{Sin}[c])^2}}\right]\text{Cos}[c]\,(\text{Cos}[c]-i\,\text{Sin}[c])}{\sqrt{a^2-b^2}\,\sqrt{(\text{Cos}[c]-i\,\text{Sin}[c])^2}}+\frac{(c+dx)\,\text{Log}[a+b\,\text{Sin}[c+dx]]\,\text{Sin}[c]}{d}-$$

$$\frac{1}{d}b\left(\frac{(c+dx)\,\text{Log}[a+b\,\text{Sin}[c+dx]]}{b}-1/b\left(-\frac{1}{2}i\left(-c+\frac{\pi}{2}-dx\right)^2+4i\,\text{ArcSin}\left[\frac{\sqrt{\frac{a+b}{b}}}{\sqrt{2}}\right]\text{ArcTan}\left[\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-dx\right)\right]}{\sqrt{a^2-b^2}}\right]+\right.\right.$$

$$\left(-c+\frac{\pi}{2}-dx+2\,\text{ArcSin}\left[\frac{\sqrt{\frac{a+b}{b}}}{\sqrt{2}}\right]\right)\text{Log}\left[1+\frac{\left(a-\sqrt{a^2-b^2}\right)e^{i\left(-c+\frac{\pi}{2}-dx\right)}}{b}\right]+$$

$$\left(-c+\frac{\pi}{2}-d\,x-2\,\text{ArcSin}\left[\frac{\sqrt{\frac{a+b}{b}}}{\sqrt{2}}\right]\right)\text{Log}\left[1+\frac{\left(a+\sqrt{a^2-b^2}\right)e^{i\left(-c+\frac{\pi}{2}-d\,x\right)}}{b}\right]-\left(-c+\frac{\pi}{2}-d\,x\right)\text{Log}[a+b\,\text{Sin}[c+d\,x]]-$$

$$i\left(\text{PolyLog}\left[2,-\frac{\left(a-\sqrt{a^2-b^2}\right)e^{i\left(-c+\frac{\pi}{2}-d\,x\right)}}{b}\right]+\text{PolyLog}\left[2,-\frac{\left(a+\sqrt{a^2-b^2}\right)e^{i\left(-c+\frac{\pi}{2}-d\,x\right)}}{b}\right]\right)\Bigg)\Bigg)\,\text{Sin}[c]\Bigg)\Bigg)-$$

$$\frac{1}{\left(-a^2+b^2\right)^2 d}6\,b^2\,e\,f^2\,\text{Csc}[c]\left(-\frac{x^2\,\text{Cos}[c]}{2\,b}+\frac{1}{b\,d}x\left(d\,x\,\text{Cos}[c]-\frac{2\,a\,\text{ArcTan}\left[\frac{\text{Sec}\left[\frac{d\,x}{2}\right](\text{Cos}[c]-i\,\text{Sin}[c])\left(b\,\text{Cos}\left[c+\frac{d\,x}{2}\right]+a\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)}{\sqrt{a^2-b^2}\sqrt{(\text{Cos}[c]-i\,\text{Sin}[c])^2}}\right]\text{Cos}[c]\,(\text{Cos}[c]-i\,\text{Sin}[c])}{\sqrt{a^2-b^2}\sqrt{(\text{Cos}[c]-i\,\text{Sin}[c])^2}}-\right.\right.$$

$$\left.\text{Log}[a+b\,\text{Sin}[c+d\,x]]\,\text{Sin}[c]\right)+$$

$$\frac{1}{b\,d}\left(-\frac{1}{d}a\,\text{Cos}[c]\left(\frac{\pi\,\text{ArcTan}\left[\frac{b+a\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{\sqrt{a^2-b^2}}\right]}{\sqrt{a^2-b^2}}+\frac{1}{\sqrt{-a^2+b^2}}\left(2\left(c-\text{ArcCos}\left[-\frac{a}{b}\right]\right)\text{ArcTanh}\left[\frac{(a-b)\,\text{Tan}\left[\frac{1}{4}(2\,c-\pi+2\,d\,x)\right]}{\sqrt{-a^2+b^2}}\right]+\right.\right.\right.$$

$$(-2\,c+\pi-2\,d\,x)\,\text{ArcTanh}\left[\frac{(a+b)\,\text{Tan}\left[\frac{1}{4}(2\,c+\pi+2\,d\,x)\right]}{\sqrt{-a^2+b^2}}\right]-\left(\text{ArcCos}\left[-\frac{a}{b}\right]-2\,i\,\text{ArcTanh}\left[\frac{(a-b)\,\text{Tan}\left[\frac{1}{4}(2\,c-\pi+2\,d\,x)\right]}{\sqrt{-a^2+b^2}}\right]\right)\text{Log}\Big[$$

$$\frac{(a+b)\left(-a+b-i\sqrt{-a^2+b^2}\right)\left(1+i\,\text{Cot}\left[\frac{1}{4}(2\,c+\pi+2\,d\,x)\right]\right)}{b\left(a+b+\sqrt{-a^2+b^2}\,\text{Cot}\left[\frac{1}{4}(2\,c+\pi+2\,d\,x)\right]\right)}\Big]-\left(\text{ArcCos}\left[-\frac{a}{b}\right]+2\,i\,\text{ArcTanh}\left[\frac{(a-b)\,\text{Tan}\left[\frac{1}{4}(2\,c-\pi+2\,d\,x)\right]}{\sqrt{-a^2+b^2}}\right]\right)$$

$$\text{Log}\left[\frac{(a+b)\left(i\,a-i\,b+\sqrt{-a^2+b^2}\right)\left(i+\text{Cot}\left[\frac{1}{4}(2\,c+\pi+2\,d\,x)\right]\right)}{b\left(a+b+\sqrt{-a^2+b^2}\,\text{Cot}\left[\frac{1}{4}(2\,c+\pi+2\,d\,x)\right]\right)}\right]+\left(\text{ArcCos}\left[-\frac{a}{b}\right]+2\,i\left(-\text{ArcTanh}\Big[\right.\right.$$

$$\frac{(a-b)\,\text{Tan}\left[\frac{1}{4}\,(2\,c-\pi+2\,d\,x)\right]}{\sqrt{-a^2+b^2}}\Bigg]+\text{ArcTanh}\left[\frac{(a+b)\,\text{Tan}\left[\frac{1}{4}\,(2\,c+\pi+2\,d\,x)\right]}{\sqrt{-a^2+b^2}}\right]\Bigg)\Bigg)\,\text{Log}\left[\frac{\sqrt{-a^2+b^2}\;e^{\frac{1}{4}\,i\,(-2\,c+\pi-2\,d\,x)}}{\sqrt{2}\,\sqrt{b}\,\sqrt{a+b\,\text{Sin}[c+d\,x]}}\right]+$$

$$\left(\text{ArcCos}\left[-\frac{a}{b}\right]+2\,i\,\text{ArcTanh}\left[\frac{(a-b)\,\text{Tan}\left[\frac{1}{4}\,(2\,c-\pi+2\,d\,x)\right]}{\sqrt{-a^2+b^2}}\right]-2\,i\,\text{ArcTanh}\left[\frac{(a+b)\,\text{Tan}\left[\frac{1}{4}\,(2\,c+\pi+2\,d\,x)\right]}{\sqrt{-a^2+b^2}}\right]\right)$$

$$\text{Log}\left[\frac{\sqrt{-a^2+b^2}\;e^{\frac{1}{4}\,i\,(2\,c-\pi+2\,d\,x)}}{\sqrt{2}\,\sqrt{b}\,\sqrt{a+b\,\text{Sin}[c+d\,x]}}\right]+i\,\Bigg(\text{PolyLog}\left[2,\,\frac{\left(a-i\,\sqrt{-a^2+b^2}\right)\left(a+b+\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{4}\,(2\,c-\pi+2\,d\,x)\right]\right)}{b\left(a+b+\sqrt{-a^2+b^2}\,\text{Cot}\left[\frac{1}{4}\,(2\,c+\pi+2\,d\,x)\right]\right)}\right]-$$

$$\text{PolyLog}\left[2,\,\frac{\left(a+i\,\sqrt{-a^2+b^2}\right)\left(a+b+\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{4}\,(2\,c-\pi+2\,d\,x)\right]\right)}{b\left(a+b+\sqrt{-a^2+b^2}\,\text{Cot}\left[\frac{1}{4}\,(2\,c+\pi+2\,d\,x)\right]\right)}\right]\Bigg)\Bigg)\Bigg)+$$

$$\frac{2\,a\,x\,\text{ArcTan}\left[\frac{\text{Sec}\left[\frac{d\,x}{2}\right]\,(\text{Cos}[c]-i\,\text{Sin}[c])\left(b\,\text{Cos}\left[c+\frac{d\,x}{2}\right]+a\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)}{\sqrt{a^2-b^2}\,\sqrt{(\text{Cos}[c]-i\,\text{Sin}[c])^2}}\right]\text{Cos}[c]\,(\text{Cos}[c]-i\,\text{Sin}[c])}{\sqrt{a^2-b^2}\,\sqrt{(\text{Cos}[c]-i\,\text{Sin}[c])^2}}+\frac{(c+d\,x)\,\text{Log}[a+b\,\text{Sin}[c+d\,x]]\,\text{Sin}[c]}{d}-$$

$$\frac{1}{d}b\left(\frac{(c+d\,x)\,\text{Log}[a+b\,\text{Sin}[c+d\,x]]}{b}-1/b\left(-\frac{1}{2}\,i\,\left(-c+\frac{\pi}{2}-d\,x\right)^2+4\,i\,\text{ArcSin}\left[\frac{\sqrt{\frac{a+b}{b}}}{\sqrt{2}}\right]\text{ArcTan}\left[\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}\,\left(-c+\frac{\pi}{2}-d\,x\right)\right]}{\sqrt{a^2-b^2}}\right]+\right.\right.$$

$$\left(-c+\frac{\pi}{2}-d\,x+2\,\text{ArcSin}\left[\frac{\sqrt{\frac{a+b}{b}}}{\sqrt{2}}\right]\right)\text{Log}\left[1+\frac{\left(a-\sqrt{a^2-b^2}\right)e^{i\left(-c+\frac{\pi}{2}-d\,x\right)}}{b}\right]+$$

$$\left(-c+\frac{\pi}{2}-d\,x-2\,\text{ArcSin}\left[\frac{\sqrt{\frac{a+b}{b}}}{\sqrt{2}}\right]\right)\text{Log}\left[1+\frac{\left(a+\sqrt{a^2-b^2}\right)e^{i\left(-c+\frac{\pi}{2}-d\,x\right)}}{b}\right]-\left(-c+\frac{\pi}{2}-d\,x\right)\text{Log}[a+b\,\text{Sin}[c+d\,x]]-$$

$$\mathrm{i}\left(\mathrm{PolyLog}\left[2,-\frac{\left(a-\sqrt{a^2-b^2}\right)e^{\mathrm{i}\left(-c+\frac{\pi}{2}-d\,x\right)}}{b}\right]+\mathrm{PolyLog}\left[2,-\frac{\left(a+\sqrt{a^2-b^2}\right)e^{\mathrm{i}\left(-c+\frac{\pi}{2}-d\,x\right)}}{b}\right]\right)\Bigg)\Bigg)\ \mathrm{Sin}[c]\Bigg)\Bigg)+$$

$$\left(3\,a^2\,e^2\,f\,\mathrm{Csc}[c]\left(-b\,d\,x\,\mathrm{Cos}[c]+b\,\mathrm{Log}[a+b\,\mathrm{Cos}[d\,x]\,\mathrm{Sin}[c]+b\,\mathrm{Cos}[c]\,\mathrm{Sin}[d\,x]]\,\mathrm{Sin}[c]+\frac{2\,\mathrm{i}\,a\,b\,\mathrm{ArcTan}\left[\frac{\mathrm{i}\,b\,\mathrm{Cos}[c]-\mathrm{i}\,(-a+b\,\mathrm{Sin}[c])\,\mathrm{Tan}\left[\frac{d\,x}{2}\right]}{\sqrt{-a^2+b^2\,\mathrm{Cos}[c]^2+b^2\,\mathrm{Sin}[c]^2}}\right]\mathrm{Cos}[c]}{\sqrt{-a^2+b^2\,\mathrm{Cos}[c]^2+b^2\,\mathrm{Sin}[c]^2}}\right)\right)\Big/$$

$$\left(2\left(-a^2+b^2\right)^2 d^2\left(b^2\,\mathrm{Cos}[c]^2+b^2\,\mathrm{Sin}[c]^2\right)\right)+$$

$$\left(3\,b^2\,e^2\,f\,\mathrm{Csc}[c]\left(-b\,d\,x\,\mathrm{Cos}[c]+b\,\mathrm{Log}[a+b\,\mathrm{Cos}[d\,x]\,\mathrm{Sin}[c]+b\,\mathrm{Cos}[c]\,\mathrm{Sin}[d\,x]]\,\mathrm{Sin}[c]+\frac{2\,\mathrm{i}\,a\,b\,\mathrm{ArcTan}\left[\frac{\mathrm{i}\,b\,\mathrm{Cos}[c]-\mathrm{i}\,(-a+b\,\mathrm{Sin}[c])\,\mathrm{Tan}\left[\frac{d\,x}{2}\right]}{\sqrt{-a^2+b^2\,\mathrm{Cos}[c]^2+b^2\,\mathrm{Sin}[c]^2}}\right]\mathrm{Cos}[c]}{\sqrt{-a^2+b^2\,\mathrm{Cos}[c]^2+b^2\,\mathrm{Sin}[c]^2}}\right)\right)\Big/$$

$$\left(\left(-a^2+b^2\right)^2 d^2\left(b^2\,\mathrm{Cos}[c]^2+b^2\,\mathrm{Sin}[c]^2\right)\right)-$$

$$\left(\mathrm{Csc}[c]\left(a^2\,e^3\,\mathrm{Cos}[c]+3\,a^2\,e^2\,f\,x\,\mathrm{Cos}[c]+3\,a^2\,e\,f^2\,x^2\,\mathrm{Cos}[c]+a^2\,f^3\,x^3\,\mathrm{Cos}[c]+a\,b\,e^3\,\mathrm{Sin}[d\,x]+3\,a\,b\,e^2\,f\,x\,\mathrm{Sin}[d\,x]+3\,a\,b\,e\,f^2\,x^2\,\mathrm{Sin}[d\,x]+a\,b\,f^3\,x^3\,\mathrm{Sin}[d\,x]\right)\right)\Big/$$

$$\left(2\,b\left(-a^2+b^2\right)d\,(a+b\,\mathrm{Sin}[c+d\,x])^2\right)+\frac{1}{2\,b\left(-a^2+b^2\right)^2 d^2\,(a+b\,\mathrm{Sin}[c+d\,x])}$$

$$\mathrm{Csc}[c]\left(3\,a\,b^2\,d\,e^3\,\mathrm{Cos}[c]+9\,a\,b^2\,d\,e^2\,f\,x\,\mathrm{Cos}[c]+9\,a\,b^2\,d\,e\,f^2\,x^2\,\mathrm{Cos}[c]+3\,a\,b^2\,d\,f^3\,x^3\,\mathrm{Cos}[c]-3\,a^3\,e^2\,f\,\mathrm{Sin}[c]+3\,a\,b^2\,e^2\,f\,\mathrm{Sin}[c]-6\,a^3\,e\,f^2\,x\,\mathrm{Sin}[c]+6\,a\,b^2\,e\,f^2\,x\,\mathrm{Sin}[c]-3\,a^3\,f^3\,x^2\,\mathrm{Sin}[c]+3\,a\,b^2\,f^3\,x^2\,\mathrm{Sin}[c]+a^2\,b\,d\,e^3\,\mathrm{Sin}[d\,x]+2\,b^3\,d\,e^3\,\mathrm{Sin}[d\,x]+3\,a^2\,b\,d\,e^2\,f\,x\,\mathrm{Sin}[d\,x]+6\,b^3\,d\,e^2\,f\,x\,\mathrm{Sin}[d\,x]+3\,a^2\,b\,d\,e\,f^2\,x^2\,\mathrm{Sin}[d\,x]+6\,b^3\,d\,e\,f^2\,x^2\,\mathrm{Sin}[d\,x]+a^2\,b\,d\,f^3\,x^3\,\mathrm{Sin}[d\,x]+2\,b^3\,d\,f^3\,x^3\,\mathrm{Sin}[d\,x]\right)$$

- **Problem 253: Result more than twice size of optimal antiderivative.**

$$\int\frac{(e+f\,x)\,\mathrm{Cos}[c+d\,x]}{a+a\,\mathrm{Sin}[c+d\,x]}\,dx$$

Optimal (type 4, 79 leaves, 4 steps) :

$$-\frac{i (e+f x)^2}{2 a f}+\frac{2 (e+f x) \text{Log}\left[1-i e^{i (c+d x)}\right]}{a d}-\frac{2 i f \text{PolyLog}\left[2, i e^{i (c+d x)}\right]}{a d^2}$$

Result (type 4, 246 leaves) :

$$\frac{1}{2 a d^2}\left(-i c^2 f+i c f \pi-2 i c d f x+i d f \pi x-i d^2 f x^2+4 f \pi \text{Log}\left[1+e^{-i (c+d x)}\right]+4 c f \text{Log}\left[1-i e^{i (c+d x)}\right]+ 2 f \pi \text{Log}\left[1-i e^{i (c+d x)}\right]+4 d f x \text{Log}\left[1-i e^{i (c+d x)}\right]-4 f \pi \text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]\right]+4 d e \text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right]- 4 c f \text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right]-2 f \pi \text{Log}\left[\text{Sin}\left[\frac{1}{4} (2 c+\pi+2 d x)\right]\right]-4 i f \text{PolyLog}\left[2, i e^{i (c+d x)}\right]\right)$$

Problem 269: Result more than twice size of optimal antiderivative.

$$\int \frac{(e+f x)^3 \text{Sec}[c+d x]}{a+a \text{Sin}[c+d x]} \, dx$$

Optimal (type 4, 502 leaves, 22 steps) :

$$-\frac{3 i f (e+f x)^2}{2 a d^2}-\frac{6 i f^2 (e+f x) \text{ArcTan}\left[e^{i (c+d x)}\right]}{a d^3}-\frac{i (e+f x)^3 \text{ArcTan}\left[e^{i (c+d x)}\right]}{a d}+\frac{3 f^2 (e+f x) \text{Log}\left[1+e^{2 i (c+d x)}\right]}{a d^3}+ \frac{3 i f^3 \text{PolyLog}\left[2, -i e^{i (c+d x)}\right]}{a d^4}+\frac{3 i f (e+f x)^2 \text{PolyLog}\left[2, -i e^{i (c+d x)}\right]}{2 a d^2}-\frac{3 i f^3 \text{PolyLog}\left[2, i e^{i (c+d x)}\right]}{a d^4}-\frac{3 i f (e+f x)^2 \text{PolyLog}\left[2, i e^{i (c+d x)}\right]}{2 a d^2}- \frac{3 i f^3 \text{PolyLog}\left[2, -e^{2 i (c+d x)}\right]}{2 a d^4}-\frac{3 f^2 (e+f x) \text{PolyLog}\left[3, -i e^{i (c+d x)}\right]}{a d^3}+\frac{3 f^2 (e+f x) \text{PolyLog}\left[3, i e^{i (c+d x)}\right]}{a d^3}-\frac{3 i f^3 \text{PolyLog}\left[4, -i e^{i (c+d x)}\right]}{a d^4}+ \frac{3 i f^3 \text{PolyLog}\left[4, i e^{i (c+d x)}\right]}{a d^4}-\frac{3 f (e+f x)^2 \text{Sec}[c+d x]}{2 a d^2}-\frac{(e+f x)^3 \text{Sec}[c+d x]^2}{2 a d}+\frac{3 f (e+f x)^2 \text{Tan}[c+d x]}{2 a d^2}+\frac{(e+f x)^3 \text{Sec}[c+d x] \text{Tan}[c+d x]}{2 a d}$$

Result (type 4, 1578 leaves) :

$$\frac{x \left(4 e^3+6 e^2 f x+4 e f^2 x^2+f^3 x^3\right)}{8 a \left(\text{Cos}\left[\frac{c}{2}\right]-\text{Sin}\left[\frac{c}{2}\right]\right) \left(\text{Cos}\left[\frac{c}{2}\right]+\text{Sin}\left[\frac{c}{2}\right]\right)}- \frac{1}{2 a (\text{Cos}[c]+i (-1+\text{Sin}[c]))}(\text{Cos}[c]+i \text{Sin}[c]) \left(-i e^3 x-\frac{3}{2} i e^2 f x^2-i e f^2 x^3-\frac{1}{4} i f^3 x^4+\frac{e^3 \text{Log}[1+i \text{Cos}[c+d x]-\text{Sin}[c+d x]]}{d}+ \frac{3 e^2 f x \text{Log}[1+i \text{Cos}[c+d x]-\text{Sin}[c+d x]]}{d}+\frac{3 e f^2 x^2 \text{Log}[1+i \text{Cos}[c+d x]-\text{Sin}[c+d x]]}{d}+\frac{f^3 x^3 \text{Log}[1+i \text{Cos}[c+d x]-\text{Sin}[c+d x]]}{d}+ \frac{6 i f^3 \text{PolyLog}[4, -i \text{Cos}[c+d x]+\text{Sin}[c+d x]]}{d^4}-\frac{i e^3 \text{Log}[1+i \text{Cos}[c+d x]-\text{Sin}[c+d x]] (\text{Cos}[c]-i \text{Sin}[c])}{d}- \frac{3 i e^2 f x \text{Log}[1+i \text{Cos}[c+d x]-\text{Sin}[c+d x]] (\text{Cos}[c]-i \text{Sin}[c])}{d}-\frac{3 i e f^2 x^2 \text{Log}[1+i \text{Cos}[c+d x]-\text{Sin}[c+d x]] (\text{Cos}[c]-i \text{Sin}[c])}{d}- \frac{i f^3 x^3 \text{Log}[1+i \text{Cos}[c+d x]-\text{Sin}[c+d x]] (\text{Cos}[c]-i \text{Sin}[c])}{d}+\frac{6 f^3 \text{PolyLog}[4, -i \text{Cos}[c+d x]+\text{Sin}[c+d x]] (\text{Cos}[c]-i \text{Sin}[c])}{d^4}+$$

$$\frac{1}{d^3}6 f^2 (e+f x) \text{PolyLog}[3, -i \text{Cos}[c+d x]+\text{Sin}[c+d x]] (\text{Cos}[c]+i (-1+\text{Sin}[c])) (\text{Cos}[c]-i \text{Sin}[c])+$$
$$\left.\frac{1}{d^2}3 f (e+f x)^2 \text{PolyLog}[2, -i \text{Cos}[c+d x]+\text{Sin}[c+d x]] (\text{Cos}[c]-i \text{Sin}[c]) (-1-i \text{Cos}[c]+\text{Sin}[c])\right)-$$
$$\frac{1}{2 a d^2 (\text{Cos}[c]+i (1+\text{Sin}[c]))} (\text{Cos}[c]+i \text{Sin}[c]) \left(i d^2 e^3 x+12 i e f^2 x+\frac{3}{2} i d^2 e^2 f x^2+6 i f^3 x^2+i d^2 e f^2 x^3+\frac{1}{4} i d^2 f^3 x^4+\right.$$
$$i d e^3 \text{ArcTan}[\text{Cos}[c+d x]+i \text{Sin}[c+d x]]+\frac{12 i e f^2 \text{ArcTan}[\text{Cos}[c+d x]+i \text{Sin}[c+d x]]}{d}-3 d e^2 f x \text{Log}[1-i \text{Cos}[c+d x]+\text{Sin}[c+d x]]-$$
$$\frac{12 f^3 x \text{Log}[1-i \text{Cos}[c+d x]+\text{Sin}[c+d x]]}{d}-3 d e f^2 x^2 \text{Log}[1-i \text{Cos}[c+d x]+\text{Sin}[c+d x]]-d f^3 x^3 \text{Log}[1-i \text{Cos}[c+d x]+\text{Sin}[c+d x]]-$$
$$\frac{1}{2} d e^3 \text{Log}[1+\text{Cos}[2 (c+d x)]+i \text{Sin}[2 (c+d x)]]-\frac{6 e f^2 \text{Log}[1+\text{Cos}[2 (c+d x)]+i \text{Sin}[2 (c+d x)]]}{d}-$$
$$\frac{6 i f^3 \text{PolyLog}[4, i \text{Cos}[c+d x]-\text{Sin}[c+d x]]}{d^2}-d e^3 \text{ArcTan}[\text{Cos}[c+d x]+i \text{Sin}[c+d x]] (\text{Cos}[c]-i \text{Sin}[c])-$$
$$\frac{12 e f^2 \text{ArcTan}[\text{Cos}[c+d x]+i \text{Sin}[c+d x]] (\text{Cos}[c]-i \text{Sin}[c])}{d}-3 i d e^2 f x \text{Log}[1-i \text{Cos}[c+d x]+\text{Sin}[c+d x]] (\text{Cos}[c]-i \text{Sin}[c])-$$
$$\frac{12 i f^3 x \text{Log}[1-i \text{Cos}[c+d x]+\text{Sin}[c+d x]] (\text{Cos}[c]-i \text{Sin}[c])}{d}-3 i d e f^2 x^2 \text{Log}[1-i \text{Cos}[c+d x]+\text{Sin}[c+d x]] (\text{Cos}[c]-i \text{Sin}[c])-$$
$$i d f^3 x^3 \text{Log}[1-i \text{Cos}[c+d x]+\text{Sin}[c+d x]] (\text{Cos}[c]-i \text{Sin}[c])-\frac{1}{2} i d e^3 \text{Log}[1+\text{Cos}[2 (c+d x)]+i \text{Sin}[2 (c+d x)]] (\text{Cos}[c]-i \text{Sin}[c])-$$
$$\frac{6 i e f^2 \text{Log}[1+\text{Cos}[2 (c+d x)]+i \text{Sin}[2 (c+d x)]] (\text{Cos}[c]-i \text{Sin}[c])}{d}+$$
$$\frac{6 f^3 \text{PolyLog}[4, i \text{Cos}[c+d x]-\text{Sin}[c+d x]] (\text{Cos}[c]-i \text{Sin}[c])}{d^2}-\frac{1}{d}$$
$$6 f^2 (e+f x) \text{PolyLog}[3, i \text{Cos}[c+d x]-\text{Sin}[c+d x]] (\text{Cos}[c]-i \text{Sin}[c]) (\text{Cos}[c]+i (1+\text{Sin}[c]))+\frac{1}{d^2}$$
$$\left.3 f \left(4 f^2+d^2 (e+f x)^2\right) \text{PolyLog}[2, i \text{Cos}[c+d x]-\text{Sin}[c+d x]] (i \text{Cos}[c]+\text{Sin}[c]) (\text{Cos}[c]+i (1+\text{Sin}[c]))\right)-$$
$$\frac{(e+f x)^3}{2 a d \left(\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right)^2}+\frac{3 \left(e^2 f \text{Sin}\left[\frac{d x}{2}\right]+2 e f^2 x \text{Sin}\left[\frac{d x}{2}\right]+f^3 x^2 \text{Sin}\left[\frac{d x}{2}\right]\right)}{a d^2 \left(\text{Cos}\left[\frac{c}{2}\right]+\text{Sin}\left[\frac{c}{2}\right]\right) \left(\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right)}$$

- **Problem 270: Result more than twice size of optimal antiderivative.**

$$\int \frac{(e+f x)^2 \text{Sec}[c+d x]}{a+a \text{Sin}[c+d x]} \, dx$$

Optimal (type 4, 278 leaves, 13 steps):

$$-\frac{i\,(e+f x)^2\,\text{ArcTan}\left[e^{i\,(c+d x)}\right]}{a\,d}+\frac{f^2\,\text{ArcTanh}[\text{Sin}[c+d x]]}{a\,d^3}+\frac{f^2\,\text{Log}[\text{Cos}[c+d x]]}{a\,d^3}+\frac{i\,f\,(e+f x)\,\text{PolyLog}\left[2,-i\,e^{i\,(c+d x)}\right]}{a\,d^2}-\frac{i\,f\,(e+f x)\,\text{PolyLog}\left[2,i\,e^{i\,(c+d x)}\right]}{a\,d^2}-\frac{f^2\,\text{PolyLog}\left[3,-i\,e^{i\,(c+d x)}\right]}{a\,d^3}+\frac{f^2\,\text{PolyLog}\left[3,i\,e^{i\,(c+d x)}\right]}{a\,d^3}-\frac{f\,(e+f x)\,\text{Sec}[c+d x]}{a\,d^2}-\frac{(e+f x)^2\,\text{Sec}[c+d x]^2}{2\,a\,d}+\frac{f\,(e+f x)\,\text{Tan}[c+d x]}{a\,d^2}+\frac{(e+f x)^2\,\text{Sec}[c+d x]\,\text{Tan}[c+d x]}{2\,a\,d}$$

Result (type 4, 811 leaves):

$$\frac{x\left(3 e^2+3 e f x+f^2 x^2\right)}{6\,a\left(\text{Cos}\left[\frac{c}{2}\right]-\text{Sin}\left[\frac{c}{2}\right]\right)\left(\text{Cos}\left[\frac{c}{2}\right]+\text{Sin}\left[\frac{c}{2}\right]\right)}+\frac{1}{6\,a\,d^3}\Bigg(-3 d^2 (e+f x)^2\,\text{Log}[1+i\,\text{Cos}[c+d x]-\text{Sin}[c+d x]]+6\,i\,d\,f\,(e+f x)\,\text{PolyLog}[2,-i\,\text{Cos}[c+d x]+\text{Sin}[c+d x]]-6 f^2\,\text{PolyLog}[3,-i\,\text{Cos}[c+d x]+\text{Sin}[c+d x]]+\frac{i\,d^3 x\left(3 e^2+3 e f x+f^2 x^2\right)(\text{Cos}[c]+i\,\text{Sin}[c])}{\text{Cos}[c]+i\,(-1+\text{Sin}[c])}\Bigg)-$$

$$\frac{1}{2\,a\,d^2\,(\text{Cos}[c]+i\,(1+\text{Sin}[c]))}(\text{Cos}[c]+i\,\text{Sin}[c])\Bigg(i\,d^2 e^2 x+4\,i\,f^2 x+d^2 e f x^2\,\text{Cos}[c]+\frac{1}{3} d^2 f^2 x^3\,(\text{Cos}[c]-i\,\text{Sin}[c])-i\,d^2 e f x^2\,\text{Sin}[c]+\left(d^2 e^2+4 f^2\right) x\,(\text{Cos}[c]-i\,\text{Sin}[c])\,(1-i\,\text{Cos}[c]+\text{Sin}[c])+$$

$$\frac{1}{2} d\,e^2\,(2 d x+2\,\text{ArcTan}[\text{Cos}[c+d x]+i\,\text{Sin}[c+d x]]+i\,\text{Log}[1+\text{Cos}[2 (c+d x)]+i\,\text{Sin}[2 (c+d x)]])\,(i\,\text{Cos}[c]+\text{Sin}[c])\,(\text{Cos}[c]+i\,(1+\text{Sin}[c]))+\frac{1}{d} 2 f^2\,(2 d x+2\,\text{ArcTan}[\text{Cos}[c+d x]+i\,\text{Sin}[c+d x]]+i\,\text{Log}[1+\text{Cos}[2 (c+d x)]+i\,\text{Sin}[2 (c+d x)]])\,(i\,\text{Cos}[c]+\text{Sin}[c])\,(\text{Cos}[c]+i\,(1+\text{Sin}[c]))+$$

$$e f\,(d x\,(d x+2\,i\,\text{Log}[1-i\,\text{Cos}[c+d x]+\text{Sin}[c+d x]])+2\,\text{PolyLog}[2,i\,\text{Cos}[c+d x]-\text{Sin}[c+d x]])\,(i\,\text{Cos}[c]+\text{Sin}[c])\,(\text{Cos}[c]+i\,(1+\text{Sin}[c]))+\frac{1}{3 d} f^2\left(d^2 x^2\,(d x+3\,i\,\text{Log}[1-i\,\text{Cos}[c+d x]+\text{Sin}[c+d x]])+6 d x\,\text{PolyLog}[2,i\,\text{Cos}[c+d x]-\text{Sin}[c+d x]]+6\,i\,\text{PolyLog}[3,i\,\text{Cos}[c+d x]-\text{Sin}[c+d x]]\right)(i\,\text{Cos}[c]+\text{Sin}[c])\,(\text{Cos}[c]+i\,(1+\text{Sin}[c]))\Bigg)-$$

$$\frac{(e+f x)^2}{2\,a\,d\left(\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right)^2}+\frac{2\left(e f\,\text{Sin}\left[\frac{d x}{2}\right]+f^2 x\,\text{Sin}\left[\frac{d x}{2}\right]\right)}{a\,d^2\left(\text{Cos}\left[\frac{c}{2}\right]+\text{Sin}\left[\frac{c}{2}\right]\right)\left(\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right)}$$

- **Problem 271: Result more than twice size of optimal antiderivative.**

$$\int \frac{(e+f x)\,\text{Sec}[c+d x]}{a+a\,\text{Sin}[c+d x]}\,dx$$

Optimal (type 4, 172 leaves, 10 steps):

$$-\frac{i\,(e+f\,x)\,\text{ArcTan}\left[e^{i\,(c+d\,x)}\right]}{a\,d}+\frac{i\,f\,\text{PolyLog}\left[2,-i\,e^{i\,(c+d\,x)}\right]}{2\,a\,d^2}-\frac{i\,f\,\text{PolyLog}\left[2,\,i\,e^{i\,(c+d\,x)}\right]}{2\,a\,d^2}-\frac{f\,\text{Sec}[c+d\,x]}{2\,a\,d^2}-\frac{(e+f\,x)\,\text{Sec}[c+d\,x]^2}{2\,a\,d}+\frac{f\,\text{Tan}[c+d\,x]}{2\,a\,d^2}+\frac{(e+f\,x)\,\text{Sec}[c+d\,x]\,\text{Tan}[c+d\,x]}{2\,a\,d}$$

Result (type 4, 655 leaves) :

$$-\frac{1}{4\,a\,d^2\,(1+\text{Sin}[c+d\,x])}\left(\left(2\,d\,(e+f\,x)-4\,f\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)+(c+d\,x)\,(c\,f-d\,(2\,e+f\,x))\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2+\right.$$
$$d\,e\left(c+d\,x+2\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\right)\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2-$$
$$c\,f\left(c+d\,x+2\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\right)\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2+$$
$$d\,e\left(c+d\,x-2\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\right)\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2-$$
$$c\,f\left(c+d\,x-2\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\right)\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2+\frac{1}{\sqrt{2}}$$
$$f\left(-(-1)^{3/4}\,(c+d\,x)^2+1\Big/\left(\sqrt{2}\right)\left(3\,i\,\pi\,(c+d\,x)+4\,\pi\,\text{Log}\left[1+e^{-i\,(c+d\,x)}\right]-2\,(-2\,c+\pi-2\,d\,x)\,\text{Log}\left[1+i\,e^{i\,(c+d\,x)}\right]-4\,\pi\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]\right]+\right.\right.$$
$$\left.\left.2\,\pi\,\text{Log}\left[\text{Sin}\left[\frac{1}{4}\,(2\,c-\pi+2\,d\,x)\right]\right]-4\,i\,\text{PolyLog}\left[2,-i\,e^{i\,(c+d\,x)}\right]\right)\right)\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2+$$
$$\frac{1}{\sqrt{2}}f\left((-1)^{1/4}\,(c+d\,x)^2+1\Big/\left(\sqrt{2}\right)\left(-i\,\pi\,(c+d\,x)-4\,\pi\,\text{Log}\left[1+e^{-i\,(c+d\,x)}\right]-2\,(2\,c+\pi+2\,d\,x)\,\text{Log}\left[1-i\,e^{i\,(c+d\,x)}\right]+\right.\right.$$
$$\left.\left.\left.4\,\pi\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]\right]+2\,\pi\,\text{Log}\left[\text{Sin}\left[\frac{1}{4}\,(2\,c+\pi+2\,d\,x)\right]\right]+4\,i\,\text{PolyLog}\left[2,\,i\,e^{i\,(c+d\,x)}\right]\right)\right)\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2\right)$$

Problem 272: Result more than twice size of optimal antiderivative.

$$\int\frac{\text{Sec}[c+d\,x]}{a+a\,\text{Sin}[c+d\,x]}\,dx$$

Optimal (type 3, 37 leaves, 4 steps) :

$$\frac{\text{ArcTanh}[\text{Sin}[c+d\,x]]}{2\,a\,d}-\frac{1}{2\,d\,(a+a\,\text{Sin}[c+d\,x])}$$

Result (type 3, 126 leaves) :

$$\frac{1}{2\,a\,d\,(1+\text{Sin}[c+d\,x])}\left(-1-\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]+\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]+\left(-\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]+\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]\right)\text{Sin}[c+d\,x]\right)$$

- **Problem 275: Result more than twice size of optimal antiderivative.**

$$\int \frac{(e+f\,x)^3\,\text{Sec}[c+d\,x]^2}{a+a\,\text{Sin}[c+d\,x]}\,dx$$

Optimal (type 4, 475 leaves, 20 steps):

$$-\frac{2\,i\,(e+f\,x)^3}{3\,a\,d}-\frac{i\,f\,(e+f\,x)^2\,\text{ArcTan}\left[e^{i\,(c+d\,x)}\right]}{a\,d^2}+\frac{f^3\,\text{ArcTanh}[\text{Sin}[c+d\,x]]}{a\,d^4}+\frac{2\,f\,(e+f\,x)^2\,\text{Log}\left[1+e^{2\,i\,(c+d\,x)}\right]}{a\,d^2}+\frac{f^3\,\text{Log}[\text{Cos}[c+d\,x]]}{a\,d^4}+\frac{i\,f^2\,(e+f\,x)\,\text{PolyLog}\left[2,-i\,e^{i\,(c+d\,x)}\right]}{a\,d^3}-\frac{i\,f^2\,(e+f\,x)\,\text{PolyLog}\left[2,i\,e^{i\,(c+d\,x)}\right]}{a\,d^3}-\frac{2\,i\,f^2\,(e+f\,x)\,\text{PolyLog}\left[2,-e^{2\,i\,(c+d\,x)}\right]}{a\,d^3}-\frac{f^3\,\text{PolyLog}\left[3,-i\,e^{i\,(c+d\,x)}\right]}{a\,d^4}+\frac{f^3\,\text{PolyLog}\left[3,i\,e^{i\,(c+d\,x)}\right]}{a\,d^4}+\frac{f^3\,\text{PolyLog}\left[3,-e^{2\,i\,(c+d\,x)}\right]}{a\,d^4}-\frac{f^2\,(e+f\,x)\,\text{Sec}[c+d\,x]}{a\,d^3}-\frac{f\,(e+f\,x)^2\,\text{Sec}[c+d\,x]^2}{2\,a\,d^2}-\frac{(e+f\,x)^3\,\text{Sec}[c+d\,x]^3}{3\,a\,d}+\frac{f^2\,(e+f\,x)\,\text{Tan}[c+d\,x]}{a\,d^3}+\frac{2\,(e+f\,x)^3\,\text{Tan}[c+d\,x]}{3\,a\,d}+\frac{f\,(e+f\,x)^2\,\text{Sec}[c+d\,x]\,\text{Tan}[c+d\,x]}{2\,a\,d^2}+\frac{(e+f\,x)^3\,\text{Sec}[c+d\,x]^2\,\text{Tan}[c+d\,x]}{3\,a\,d}$$

Result (type 4, 1253 leaves):

$$\frac{1}{2 a d^4} f \Big(3 d^2 (e+f x)^2 \text{Log}[1+i \text{Cos}[c+d x]-\text{Sin}[c+d x]]-6 i d f (e+f x) \text{PolyLog}[2,-i \text{Cos}[c+d x]+\text{Sin}[c+d x]]+ 6 f^2 \text{PolyLog}[3,-i \text{Cos}[c+d x]+\text{Sin}[c+d x]]+\frac{d^3 x \left(3 e^2+3 e f x+f^2 x^2\right) (-i \text{Cos}[c]+\text{Sin}[c])}{\text{Cos}[c]+i (-1+\text{Sin}[c])}\Big) -$$

$$\frac{1}{2 a d^3 (\text{Cos}[c]+i (1+\text{Sin}[c]))} f (\text{Cos}[c]+i \text{Sin}[c]) \Big(5 i d^2 e^2 x+4 i f^2 x+5 d^2 e f x^2 \text{Cos}[c]+\frac{5}{3} d^2 f^2 x^3 (\text{Cos}[c]-i \text{Sin}[c])- 5 i d^2 e f x^2 \text{Sin}[c]+\left(5 d^2 e^2+4 f^2\right) x (\text{Cos}[c]-i \text{Sin}[c]) (1-i \text{Cos}[c]+\text{Sin}[c])+ \frac{5}{2} d e^2 (2 d x+2 \text{ArcTan}[\text{Cos}[c+d x]+i \text{Sin}[c+d x]]+i \text{Log}[1+\text{Cos}[2 (c+d x)]+i \text{Sin}[2 (c+d x)]]) (i \text{Cos}[c]+\text{Sin}[c]) (\text{Cos}[c]+i (1+\text{Sin}[c]))+\frac{1}{d} 2 f^2 (2 d x+2 \text{ArcTan}[\text{Cos}[c+d x]+i \text{Sin}[c+d x]]+i \text{Log}[1+\text{Cos}[2 (c+d x)]+i \text{Sin}[2 (c+d x)]]) (i \text{Cos}[c]+\text{Sin}[c]) (\text{Cos}[c]+i (1+\text{Sin}[c]))+ 5 e f (d x (d x+2 i \text{Log}[1-i \text{Cos}[c+d x]+\text{Sin}[c+d x]])+2 \text{PolyLog}[2,i \text{Cos}[c+d x]-\text{Sin}[c+d x]]) (i \text{Cos}[c]+\text{Sin}[c]) (\text{Cos}[c]+i (1+\text{Sin}[c]))+\frac{1}{3 d} 5 f^2 \left(d^2 x^2 (d x+3 i \text{Log}[1-i \text{Cos}[c+d x]+\text{Sin}[c+d x]])+6 d x \text{PolyLog}[2,i \text{Cos}[c+d x]-\text{Sin}[c+d x]]+ 6 i \text{PolyLog}[3,i \text{Cos}[c+d x]-\text{Sin}[c+d x]]\right) (i \text{Cos}[c]+\text{Sin}[c]) (\text{Cos}[c]+i (1+\text{Sin}[c]))\Big)+$$

$$\frac{e^3 \text{Sin}[\frac{d x}{2}]+3 e^2 f x \text{Sin}[\frac{d x}{2}]+3 e f^2 x^2 \text{Sin}[\frac{d x}{2}]+f^3 x^3 \text{Sin}[\frac{d x}{2}]}{2 a d \left(\text{Cos}[\frac{c}{2}]-\text{Sin}[\frac{c}{2}]\right) \left(\text{Cos}[\frac{c}{2}+\frac{d x}{2}]-\text{Sin}[\frac{c}{2}+\frac{d x}{2}]\right)}+\frac{e^3 \text{Sin}[\frac{d x}{2}]+3 e^2 f x \text{Sin}[\frac{d x}{2}]+3 e f^2 x^2 \text{Sin}[\frac{d x}{2}]+f^3 x^3 \text{Sin}[\frac{d x}{2}]}{3 a d \left(\text{Cos}[\frac{c}{2}]+\text{Sin}[\frac{c}{2}]\right) \left(\text{Cos}[\frac{c}{2}+\frac{d x}{2}]+\text{Sin}[\frac{c}{2}+\frac{d x}{2}]\right)^3}+$$

$$\Big(-d e^3 \text{Cos}[\frac{c}{2}]-3 e^2 f \text{Cos}[\frac{c}{2}]-3 d e^2 f x \text{Cos}[\frac{c}{2}]-6 e f^2 x \text{Cos}[\frac{c}{2}]-3 d e f^2 x^2 \text{Cos}[\frac{c}{2}]-3 f^3 x^2 \text{Cos}[\frac{c}{2}]-d f^3 x^3 \text{Cos}[\frac{c}{2}]+ d e^3 \text{Sin}[\frac{c}{2}]-3 e^2 f \text{Sin}[\frac{c}{2}]+3 d e^2 f x \text{Sin}[\frac{c}{2}]-6 e f^2 x \text{Sin}[\frac{c}{2}]+3 d e f^2 x^2 \text{Sin}[\frac{c}{2}]-3 f^3 x^2 \text{Sin}[\frac{c}{2}]+d f^3 x^3 \text{Sin}[\frac{c}{2}]\Big) \Big/ \left(6 a d^2 \left(\text{Cos}[\frac{c}{2}]+\text{Sin}[\frac{c}{2}]\right) \left(\text{Cos}[\frac{c}{2}+\frac{d x}{2}]+\text{Sin}[\frac{c}{2}+\frac{d x}{2}]\right)^2\right)+$$

$$\Big(5 d^2 e^3 \text{Sin}[\frac{d x}{2}]+12 e f^2 \text{Sin}[\frac{d x}{2}]+15 d^2 e^2 f x \text{Sin}[\frac{d x}{2}]+12 f^3 x \text{Sin}[\frac{d x}{2}]+15 d^2 e f^2 x^2 \text{Sin}[\frac{d x}{2}]+5 d^2 f^3 x^3 \text{Sin}[\frac{d x}{2}]\Big) \Big/ \left(6 a d^3 \left(\text{Cos}[\frac{c}{2}]+\text{Sin}[\frac{c}{2}]\right) \left(\text{Cos}[\frac{c}{2}+\frac{d x}{2}]+\text{Sin}[\frac{c}{2}+\frac{d x}{2}]\right)\right)$$

- **Problem 278: Result more than twice size of optimal antiderivative.**

$$\int \frac{\text{Sec}[c+d x]^2}{a+a \text{Sin}[c+d x]} \, dx$$

Optimal (type 3, 42 leaves, 3 steps):

$$-\frac{\text{Sec}[c+d x]}{3 d (a+a \text{Sin}[c+d x])}+\frac{2 \text{Tan}[c+d x]}{3 a d}$$

Result (type 3, 103 leaves):

$$\frac{2\,\text{Cos}[c+d\,x]-4\,\text{Cos}[2\,(c+d\,x)]+8\,\text{Sin}[c+d\,x]+\text{Sin}[2\,(c+d\,x)]}{12\,a\,d\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\,(1+\text{Sin}[c+d\,x])}$$

- **Problem 281: Result more than twice size of optimal antiderivative.**

$$\int\frac{(e+f\,x)^3\,\text{Sec}[c+d\,x]^3}{a+a\,\text{Sin}[c+d\,x]}\,dx$$

Optimal (type 4, 698 leaves, 32 steps):

$$-\frac{i\,f\,(e+f\,x)^2}{2\,a\,d^2}-\frac{5\,i\,f^2\,(e+f\,x)\,\text{ArcTan}\left[e^{i\,(c+d\,x)}\right]}{a\,d^3}-\frac{3\,i\,(e+f\,x)^3\,\text{ArcTan}\left[e^{i\,(c+d\,x)}\right]}{4\,a\,d}+\frac{f^2\,(e+f\,x)\,\text{Log}\left[1+e^{2\,i\,(c+d\,x)}\right]}{a\,d^3}+$$
$$\frac{5\,i\,f^3\,\text{PolyLog}\left[2,\,-i\,e^{i\,(c+d\,x)}\right]}{2\,a\,d^4}+\frac{9\,i\,f\,(e+f\,x)^2\,\text{PolyLog}\left[2,\,-i\,e^{i\,(c+d\,x)}\right]}{8\,a\,d^2}-\frac{5\,i\,f^3\,\text{PolyLog}\left[2,\,i\,e^{i\,(c+d\,x)}\right]}{2\,a\,d^4}-\frac{9\,i\,f\,(e+f\,x)^2\,\text{PolyLog}\left[2,\,i\,e^{i\,(c+d\,x)}\right]}{8\,a\,d^2}-$$
$$\frac{i\,f^3\,\text{PolyLog}\left[2,\,-e^{2\,i\,(c+d\,x)}\right]}{2\,a\,d^4}-\frac{9\,f^2\,(e+f\,x)\,\text{PolyLog}\left[3,\,-i\,e^{i\,(c+d\,x)}\right]}{4\,a\,d^3}+\frac{9\,f^2\,(e+f\,x)\,\text{PolyLog}\left[3,\,i\,e^{i\,(c+d\,x)}\right]}{4\,a\,d^3}-$$
$$\frac{9\,i\,f^3\,\text{PolyLog}\left[4,\,-i\,e^{i\,(c+d\,x)}\right]}{4\,a\,d^4}+\frac{9\,i\,f^3\,\text{PolyLog}\left[4,\,i\,e^{i\,(c+d\,x)}\right]}{4\,a\,d^4}-\frac{f^3\,\text{Sec}[c+d\,x]}{4\,a\,d^4}-\frac{9\,f\,(e+f\,x)^2\,\text{Sec}[c+d\,x]}{8\,a\,d^2}-\frac{f^2\,(e+f\,x)\,\text{Sec}[c+d\,x]^2}{4\,a\,d^3}-$$
$$\frac{f\,(e+f\,x)^2\,\text{Sec}[c+d\,x]^3}{4\,a\,d^2}-\frac{(e+f\,x)^3\,\text{Sec}[c+d\,x]^4}{4\,a\,d}+\frac{f^3\,\text{Tan}[c+d\,x]}{4\,a\,d^4}+\frac{f\,(e+f\,x)^2\,\text{Tan}[c+d\,x]}{2\,a\,d^2}+\frac{f^2\,(e+f\,x)\,\text{Sec}[c+d\,x]\,\text{Tan}[c+d\,x]}{4\,a\,d^3}+$$
$$\frac{3\,(e+f\,x)^3\,\text{Sec}[c+d\,x]\,\text{Tan}[c+d\,x]}{8\,a\,d}+\frac{f\,(e+f\,x)^2\,\text{Sec}[c+d\,x]^2\,\text{Tan}[c+d\,x]}{4\,a\,d^2}+\frac{(e+f\,x)^3\,\text{Sec}[c+d\,x]^3\,\text{Tan}[c+d\,x]}{4\,a\,d}$$

Result (type 4, 2640 leaves):

$$-\frac{1}{8\,a\,d^2\,(\text{Cos}[c]+i\,(-1+\text{Sin}[c]))}$$
$$3\,(\text{Cos}[c]+i\,\text{Sin}[c])\,\left(-i\,d^2\,e^3\,x-4\,i\,e\,f^2\,x-\frac{3}{2}\,i\,d^2\,e^2\,f\,x^2-2\,i\,f^3\,x^2-i\,d^2\,e\,f^2\,x^3-\frac{1}{4}\,i\,d^2\,f^3\,x^4+i\,d\,e^3\,\text{ArcTan}[\text{Cos}[c+d\,x]+i\,\text{Sin}[c+d\,x]]+\right.$$
$$\frac{4\,i\,e\,f^2\,\text{ArcTan}[\text{Cos}[c+d\,x]+i\,\text{Sin}[c+d\,x]]}{d}+3\,d\,e^2\,f\,x\,\text{Log}[1+i\,\text{Cos}[c+d\,x]-\text{Sin}[c+d\,x]]+$$
$$\frac{4\,f^3\,x\,\text{Log}[1+i\,\text{Cos}[c+d\,x]-\text{Sin}[c+d\,x]]}{d}+3\,d\,e\,f^2\,x^2\,\text{Log}[1+i\,\text{Cos}[c+d\,x]-\text{Sin}[c+d\,x]]+d\,f^3\,x^3\,\text{Log}[1+i\,\text{Cos}[c+d\,x]-\text{Sin}[c+d\,x]]+$$
$$\frac{1}{2}\,d\,e^3\,\text{Log}[1+\text{Cos}[2\,(c+d\,x)]+i\,\text{Sin}[2\,(c+d\,x)]]+\frac{2\,e\,f^2\,\text{Log}[1+\text{Cos}[2\,(c+d\,x)]+i\,\text{Sin}[2\,(c+d\,x)]]}{d}+$$
$$\frac{6\,i\,f^3\,\text{PolyLog}[4,\,-i\,\text{Cos}[c+d\,x]+\text{Sin}[c+d\,x]]}{d^2}+d\,e^3\,\text{ArcTan}[\text{Cos}[c+d\,x]+i\,\text{Sin}[c+d\,x]]\,(\text{Cos}[c]-i\,\text{Sin}[c])+$$
$$\frac{4\,e\,f^2\,\text{ArcTan}[\text{Cos}[c+d\,x]+i\,\text{Sin}[c+d\,x]]\,(\text{Cos}[c]-i\,\text{Sin}[c])}{d}-3\,i\,d\,e^2\,f\,x\,\text{Log}[1+i\,\text{Cos}[c+d\,x]-\text{Sin}[c+d\,x]]\,(\text{Cos}[c]-i\,\text{Sin}[c])-$$

$$\frac{4\,i\,f^3\,x\,\text{Log}[1+i\,\text{Cos}[c+d\,x]-\text{Sin}[c+d\,x]]\,(\text{Cos}[c]-i\,\text{Sin}[c])}{d}-3\,i\,d\,e\,f^2\,x^2\,\text{Log}[1+i\,\text{Cos}[c+d\,x]-\text{Sin}[c+d\,x]]\,(\text{Cos}[c]-i\,\text{Sin}[c])-$$

$$i\,d\,f^3\,x^3\,\text{Log}[1+i\,\text{Cos}[c+d\,x]-\text{Sin}[c+d\,x]]\,(\text{Cos}[c]-i\,\text{Sin}[c])-\frac{1}{2}\,i\,d\,e^3\,\text{Log}[1+\text{Cos}[2\,(c+d\,x)]+i\,\text{Sin}[2\,(c+d\,x)]]$$

$$(\text{Cos}[c]-i\,\text{Sin}[c])-\frac{2\,i\,e\,f^2\,\text{Log}[1+\text{Cos}[2\,(c+d\,x)]+i\,\text{Sin}[2\,(c+d\,x)]]\,(\text{Cos}[c]-i\,\text{Sin}[c])}{d}+$$

$$\frac{6\,f^3\,\text{PolyLog}[4,-i\,\text{Cos}[c+d\,x]+\text{Sin}[c+d\,x]]\,(\text{Cos}[c]-i\,\text{Sin}[c])}{d^2}+\frac{1}{d}$$

$$6\,f^2\,(e+f\,x)\,\text{PolyLog}[3,-i\,\text{Cos}[c+d\,x]+\text{Sin}[c+d\,x]]\,(\text{Cos}[c]+i\,(-1+\text{Sin}[c]))\,(\text{Cos}[c]-i\,\text{Sin}[c])+\frac{1}{d^2}$$

$$f\left(4\,f^2+3\,d^2\,(e+f\,x)^2\right)\text{PolyLog}[2,-i\,\text{Cos}[c+d\,x]+\text{Sin}[c+d\,x]]\,(\text{Cos}[c]-i\,\text{Sin}[c])\,(-1-i\,\text{Cos}[c]+\text{Sin}[c])\Bigg)-$$

$$\frac{1}{8\,a\,d^2\,(\text{Cos}[c]+i\,(1+\text{Sin}[c]))}\,(\text{Cos}[c]+i\,\text{Sin}[c])\,\Bigg(3\,i\,d^2\,e^3\,x+28\,i\,e\,f^2\,x+\frac{9}{2}\,i\,d^2\,e^2\,f\,x^2+14\,i\,f^3\,x^2+3\,i\,d^2\,e\,f^2\,x^3+$$

$$\frac{3}{4}\,i\,d^2\,f^3\,x^4+3\,i\,d\,e^3\,\text{ArcTan}[\text{Cos}[c+d\,x]+i\,\text{Sin}[c+d\,x]]+\frac{28\,i\,e\,f^2\,\text{ArcTan}[\text{Cos}[c+d\,x]+i\,\text{Sin}[c+d\,x]]}{d}-$$

$$9\,d\,e^2\,f\,x\,\text{Log}[1-i\,\text{Cos}[c+d\,x]+\text{Sin}[c+d\,x]]-\frac{28\,f^3\,x\,\text{Log}[1-i\,\text{Cos}[c+d\,x]+\text{Sin}[c+d\,x]]}{d}-9\,d\,e\,f^2\,x^2\,\text{Log}[1-i\,\text{Cos}[c+d\,x]+\text{Sin}[c+d\,x]]-$$

$$3\,d\,f^3\,x^3\,\text{Log}[1-i\,\text{Cos}[c+d\,x]+\text{Sin}[c+d\,x]]-\frac{3}{2}\,d\,e^3\,\text{Log}[1+\text{Cos}[2\,(c+d\,x)]+i\,\text{Sin}[2\,(c+d\,x)]]-$$

$$\frac{14\,e\,f^2\,\text{Log}[1+\text{Cos}[2\,(c+d\,x)]+i\,\text{Sin}[2\,(c+d\,x)]]}{d}-\frac{18\,i\,f^3\,\text{PolyLog}[4,i\,\text{Cos}[c+d\,x]-\text{Sin}[c+d\,x]]}{d^2}-$$

$$3\,d\,e^3\,\text{ArcTan}[\text{Cos}[c+d\,x]+i\,\text{Sin}[c+d\,x]]\,(\text{Cos}[c]-i\,\text{Sin}[c])-\frac{28\,e\,f^2\,\text{ArcTan}[\text{Cos}[c+d\,x]+i\,\text{Sin}[c+d\,x]]\,(\text{Cos}[c]-i\,\text{Sin}[c])}{d}-$$

$$9\,i\,d\,e^2\,f\,x\,\text{Log}[1-i\,\text{Cos}[c+d\,x]+\text{Sin}[c+d\,x]]\,(\text{Cos}[c]-i\,\text{Sin}[c])-\frac{28\,i\,f^3\,x\,\text{Log}[1-i\,\text{Cos}[c+d\,x]+\text{Sin}[c+d\,x]]\,(\text{Cos}[c]-i\,\text{Sin}[c])}{d}-$$

$$9\,i\,d\,e\,f^2\,x^2\,\text{Log}[1-i\,\text{Cos}[c+d\,x]+\text{Sin}[c+d\,x]]\,(\text{Cos}[c]-i\,\text{Sin}[c])-3\,i\,d\,f^3\,x^3\,\text{Log}[1-i\,\text{Cos}[c+d\,x]+\text{Sin}[c+d\,x]]\,(\text{Cos}[c]-i\,\text{Sin}[c])-$$

$$\frac{3}{2}\,i\,d\,e^3\,\text{Log}[1+\text{Cos}[2\,(c+d\,x)]+i\,\text{Sin}[2\,(c+d\,x)]]\,(\text{Cos}[c]-i\,\text{Sin}[c])-$$

$$\frac{14\,i\,e\,f^2\,\text{Log}[1+\text{Cos}[2\,(c+d\,x)]+i\,\text{Sin}[2\,(c+d\,x)]]\,(\text{Cos}[c]-i\,\text{Sin}[c])}{d}+$$

$$\frac{18\,f^3\,\text{PolyLog}[4,i\,\text{Cos}[c+d\,x]-\text{Sin}[c+d\,x]]\,(\text{Cos}[c]-i\,\text{Sin}[c])}{d^2}-\frac{1}{d}$$

$$18\,f^2\,(e+f\,x)\,\text{PolyLog}[3,i\,\text{Cos}[c+d\,x]-\text{Sin}[c+d\,x]]\,(\text{Cos}[c]-i\,\text{Sin}[c])\,(\text{Cos}[c]+i\,(1+\text{Sin}[c]))+\frac{1}{d^2}$$

$$f\left(28\,f^2+9\,d^2\,(e+f\,x)^2\right)\text{PolyLog}[2,i\,\text{Cos}[c+d\,x]-\text{Sin}[c+d\,x]]\,(i\,\text{Cos}[c]+\text{Sin}[c])\,(\text{Cos}[c]+i\,(1+\text{Sin}[c]))\Bigg)+$$

$$\frac{\frac{3 e^3 x \operatorname{Cos}[c]}{4 a}+\frac{3 i e^3 x \operatorname{Sin}[c]}{4 a}}{1+\operatorname{Cos}[2 c]+i \operatorname{Sin}[2 c]}+\frac{\frac{9 e^2 f x^2 \operatorname{Cos}[c]}{8 a}+\frac{9 i e^2 f x^2 \operatorname{Sin}[c]}{8 a}}{1+\operatorname{Cos}[2 c]+i \operatorname{Sin}[2 c]}+$$
$$\frac{\frac{3 e f^2 x^3 \operatorname{Cos}[c]}{4 a}+\frac{3 i e f^2 x^3 \operatorname{Sin}[c]}{4 a}}{1+\operatorname{Cos}[2 c]+i \operatorname{Sin}[2 c]}+$$
$$\frac{\frac{3 f^3 x^4 \operatorname{Cos}[c]}{16 a}+\frac{3 i f^3 x^4 \operatorname{Sin}[c]}{16 a}}{1+\operatorname{Cos}[2 c]+i \operatorname{Sin}[2 c]}+$$
$$\frac{e^3+3 e^2 f x+3 e f^2 x^2+f^3 x^3}{8 a d\left(\operatorname{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]-\operatorname{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right)^2}-$$
$$\frac{3\left(e^2 f \operatorname{Sin}\left[\frac{d x}{2}\right]+2 e f^2 x \operatorname{Sin}\left[\frac{d x}{2}\right]+f^3 x^2 \operatorname{Sin}\left[\frac{d x}{2}\right]\right)}{4 a d^2\left(\operatorname{Cos}\left[\frac{c}{2}\right]-\operatorname{Sin}\left[\frac{c}{2}\right]\right)\left(\operatorname{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]-\operatorname{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right)}+$$
$$\frac{-e^3-3 e^2 f x-3 e f^2 x^2-f^3 x^3}{8 a d\left(\operatorname{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]+\operatorname{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right)^4}+$$
$$\frac{e^2 f \operatorname{Sin}\left[\frac{d x}{2}\right]+2 e f^2 x \operatorname{Sin}\left[\frac{d x}{2}\right]+f^3 x^2 \operatorname{Sin}\left[\frac{d x}{2}\right]}{4 a d^2\left(\operatorname{Cos}\left[\frac{c}{2}\right]+\operatorname{Sin}\left[\frac{c}{2}\right]\right)\left(\operatorname{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]+\operatorname{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right)^3}+$$
$$\frac{1}{8 a d^3\left(\operatorname{Cos}\left[\frac{c}{2}\right]+\operatorname{Sin}\left[\frac{c}{2}\right]\right)\left(\operatorname{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]+\operatorname{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right)^2}$$
$$\left(-2 d^2 e^3 \operatorname{Cos}\left[\frac{c}{2}\right]-d e^2 f \operatorname{Cos}\left[\frac{c}{2}\right]-2 e f^2 \operatorname{Cos}\left[\frac{c}{2}\right]-6 d^2 e^2 f x \operatorname{Cos}\left[\frac{c}{2}\right]-2 d e f^2 x \operatorname{Cos}\left[\frac{c}{2}\right]-2 f^3 x \operatorname{Cos}\left[\frac{c}{2}\right]-\right.$$
$$6 d^2 e f^2 x^2 \operatorname{Cos}\left[\frac{c}{2}\right]-d f^3 x^2 \operatorname{Cos}\left[\frac{c}{2}\right]-2 d^2 f^3 x^3 \operatorname{Cos}\left[\frac{c}{2}\right]-2 d^2 e^3 \operatorname{Sin}\left[\frac{c}{2}\right]+d e^2 f \operatorname{Sin}\left[\frac{c}{2}\right]-2 e f^2 \operatorname{Sin}\left[\frac{c}{2}\right]-$$
$$\left.6 d^2 e^2 f x \operatorname{Sin}\left[\frac{c}{2}\right]+2 d e f^2 x \operatorname{Sin}\left[\frac{c}{2}\right]-2 f^3 x \operatorname{Sin}\left[\frac{c}{2}\right]-6 d^2 e f^2 x^2 \operatorname{Sin}\left[\frac{c}{2}\right]+d f^3 x^2 \operatorname{Sin}\left[\frac{c}{2}\right]-2 d^2 f^3 x^3 \operatorname{Sin}\left[\frac{c}{2}\right]\right)+$$
$$\frac{7 d^2 e^2 f \operatorname{Sin}\left[\frac{d x}{2}\right]+2 f^3 \operatorname{Sin}\left[\frac{d x}{2}\right]+14 d^2 e f^2 x \operatorname{Sin}\left[\frac{d x}{2}\right]+7 d^2 f^3 x^2 \operatorname{Sin}\left[\frac{d x}{2}\right]}{4 a d^4\left(\operatorname{Cos}\left[\frac{c}{2}\right]+\operatorname{Sin}\left[\frac{c}{2}\right]\right)\left(\operatorname{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]+\operatorname{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right)}$$

- **Problem 282: Result more than twice size of optimal antiderivative.**

$$\int \frac{(e+f x)^2 \operatorname{Sec}[c+d x]^3}{a+a \operatorname{Sin}[c+d x]} \, dx$$

Optimal (type 4, 431 leaves, 17 steps) :

$$-\frac{3\,i\,(e+f\,x)^2\,\text{ArcTan}\left[e^{i\,(c+d\,x)}\right]}{4\,a\,d}+\frac{5\,f^2\,\text{ArcTanh}[\text{Sin}[c+d\,x]]}{6\,a\,d^3}+\frac{f^2\,\text{Log}[\text{Cos}[c+d\,x]]}{3\,a\,d^3}+\frac{3\,i\,f\,(e+f\,x)\,\text{PolyLog}\left[2,-i\,e^{i\,(c+d\,x)}\right]}{4\,a\,d^2}-\frac{3\,i\,f\,(e+f\,x)\,\text{PolyLog}\left[2,i\,e^{i\,(c+d\,x)}\right]}{4\,a\,d^2}-\frac{3\,f^2\,\text{PolyLog}\left[3,-i\,e^{i\,(c+d\,x)}\right]}{4\,a\,d^3}+\frac{3\,f^2\,\text{PolyLog}\left[3,i\,e^{i\,(c+d\,x)}\right]}{4\,a\,d^3}-\frac{3\,f\,(e+f\,x)\,\text{Sec}[c+d\,x]}{4\,a\,d^2}-\frac{f^2\,\text{Sec}[c+d\,x]^2}{12\,a\,d^3}-\frac{f\,(e+f\,x)\,\text{Sec}[c+d\,x]^3}{6\,a\,d^2}-\frac{(e+f\,x)^2\,\text{Sec}[c+d\,x]^4}{4\,a\,d}+\frac{f\,(e+f\,x)\,\text{Tan}[c+d\,x]}{3\,a\,d^2}+\frac{f^2\,\text{Sec}[c+d\,x]\,\text{Tan}[c+d\,x]}{12\,a\,d^3}+\frac{3\,(e+f\,x)^2\,\text{Sec}[c+d\,x]\,\text{Tan}[c+d\,x]}{8\,a\,d}+\frac{f\,(e+f\,x)\,\text{Sec}[c+d\,x]^2\,\text{Tan}[c+d\,x]}{6\,a\,d^2}+\frac{(e+f\,x)^2\,\text{Sec}[c+d\,x]^3\,\text{Tan}[c+d\,x]}{4\,a\,d}$$

Result (type 4, 1680 leaves) :

$$-\frac{1}{8\,a\,d^2\,(\text{Cos}[c]+i\,(-1+\text{Sin}[c]))}(\text{Cos}[c]+i\,\text{Sin}[c])\Big(-3\,i\,d^2\,e^2\,x-4\,i\,f^2\,x+3\,d^2\,e\,f\,x^2\,\text{Cos}[c]+d^2\,f^2\,x^3\,(\text{Cos}[c]-i\,\text{Sin}[c])+\left(3\,d^2\,e^2+4\,f^2\right)\,x\,(1+i\,\text{Cos}[c]-\text{Sin}[c])\,(\text{Cos}[c]-i\,\text{Sin}[c])-3\,i\,d^2\,e\,f\,x^2\,\text{Sin}[c]+\frac{3}{2}\,d\,e^2\,(2\,d\,x-2\,\text{ArcTan}[\text{Cos}[c+d\,x]+i\,\text{Sin}[c+d\,x]]+i\,\text{Log}[1+\text{Cos}[2\,(c+d\,x)]+i\,\text{Sin}[2\,(c+d\,x)]])\,(\text{Cos}[c]-i\,\text{Sin}[c])\,(-1-i\,\text{Cos}[c]+\text{Sin}[c])+\frac{1}{d}2\,f^2\,(2\,d\,x-2\,\text{ArcTan}[\text{Cos}[c+d\,x]+i\,\text{Sin}[c+d\,x]]+i\,\text{Log}[1+\text{Cos}[2\,(c+d\,x)]+i\,\text{Sin}[2\,(c+d\,x)]])\,(\text{Cos}[c]-i\,\text{Sin}[c])\,(-1-i\,\text{Cos}[c]+\text{Sin}[c])+3\,e\,f\,(d\,x\,(d\,x+2\,i\,\text{Log}[1+i\,\text{Cos}[c+d\,x]-\text{Sin}[c+d\,x]])+2\,\text{PolyLog}[2,-i\,\text{Cos}[c+d\,x]+\text{Sin}[c+d\,x]])\,(\text{Cos}[c]-i\,\text{Sin}[c])\,(-1-i\,\text{Cos}[c]+\text{Sin}[c])+\frac{1}{d}f^2\,\Big(d^2\,x^2\,(d\,x+3\,i\,\text{Log}[1+i\,\text{Cos}[c+d\,x]-\text{Sin}[c+d\,x]])+6\,d\,x\,\text{PolyLog}[2,-i\,\text{Cos}[c+d\,x]+\text{Sin}[c+d\,x]]+6\,i\,\text{PolyLog}[3,-i\,\text{Cos}[c+d\,x]+\text{Sin}[c+d\,x]]\Big)\,(\text{Cos}[c]-i\,\text{Sin}[c])\,(-1-i\,\text{Cos}[c]+\text{Sin}[c])\Big)-$$

$$\frac{1}{24\,a\,d^2\,(\text{Cos}[c]+i\,(1+\text{Sin}[c]))}(\text{Cos}[c]+i\,\text{Sin}[c])\Big(9\,i\,d^2\,e^2\,x+28\,i\,f^2\,x+9\,d^2\,e\,f\,x^2\,\text{Cos}[c]+3\,d^2\,f^2\,x^3\,\text{Cos}[c]-9\,i\,d^2\,e\,f\,x^2\,\text{Sin}[c]-3\,i\,d^2\,f^2\,x^3\,\text{Sin}[c]+\left(9\,d^2\,e^2+28\,f^2\right)\,x\,(\text{Cos}[c]-i\,\text{Sin}[c])\,(1-i\,\text{Cos}[c]+\text{Sin}[c])+\frac{9}{2}\,d\,e^2\,(2\,d\,x+2\,\text{ArcTan}[\text{Cos}[c+d\,x]+i\,\text{Sin}[c+d\,x]]+i\,\text{Log}[1+\text{Cos}[2\,(c+d\,x)]+i\,\text{Sin}[2\,(c+d\,x)]])\,(i\,\text{Cos}[c]+\text{Sin}[c])\,(\text{Cos}[c]+i\,(1+\text{Sin}[c]))+\frac{1}{d}14\,f^2\,(2\,d\,x+2\,\text{ArcTan}[\text{Cos}[c+d\,x]+i\,\text{Sin}[c+d\,x]]+i\,\text{Log}[1+\text{Cos}[2\,(c+d\,x)]+i\,\text{Sin}[2\,(c+d\,x)]])\,(i\,\text{Cos}[c]+\text{Sin}[c])\,(\text{Cos}[c]+i\,(1+\text{Sin}[c]))+9\,e\,f\,(d\,x\,(d\,x+2\,i\,\text{Log}[1-i\,\text{Cos}[c+d\,x]+\text{Sin}[c+d\,x]])+2\,\text{PolyLog}[2,i\,\text{Cos}[c+d\,x]-\text{Sin}[c+d\,x]])\,(i\,\text{Cos}[c]+\text{Sin}[c])\,(\text{Cos}[c]+i\,(1+\text{Sin}[c]))+\frac{1}{d}3\,f^2\,\Big(d^2\,x^2\,(d\,x+3\,i\,\text{Log}[1-i\,\text{Cos}[c+d\,x]+\text{Sin}[c+d\,x]])+6\,d\,x\,\text{PolyLog}[2,i\,\text{Cos}[c+d\,x]-\text{Sin}[c+d\,x]]+6\,i\,\text{PolyLog}[3,i\,\text{Cos}[c+d\,x]-\text{Sin}[c+d\,x]]\Big)\,(i\,\text{Cos}[c]+\text{Sin}[c])\,(\text{Cos}[c]+i\,(1+\text{Sin}[c]))\Big)+$$

$$\frac{\frac{3 e^2 x \cos[c]}{4 a}+\frac{3 i e^2 x \sin[c]}{4 a}}{1+\cos[2 c]+i \sin[2 c]}+\frac{\frac{3 e f x^2 \cos[c]}{4 a}+\frac{3 i e f x^2 \sin[c]}{4 a}}{1+\cos[2 c]+i \sin[2 c]}+\frac{\frac{f^2 x^3 \cos[c]}{4 a}+\frac{i f^2 x^3 \sin[c]}{4 a}}{1+\cos[2 c]+i \sin[2 c]}+$$

$$\frac{e^2+2 e f x+f^2 x^2}{8 a d \left(\cos\left[\frac{c}{2}+\frac{d x}{2}\right]-\sin\left[\frac{c}{2}+\frac{d x}{2}\right]\right)^2}+$$

$$\frac{-e f \sin\left[\frac{d x}{2}\right]-f^2 x \sin\left[\frac{d x}{2}\right]}{2 a d^2 \left(\cos\left[\frac{c}{2}\right]-\sin\left[\frac{c}{2}\right]\right) \left(\cos\left[\frac{c}{2}+\frac{d x}{2}\right]-\sin\left[\frac{c}{2}+\frac{d x}{2}\right]\right)}+$$

$$\frac{-e^2-2 e f x-f^2 x^2}{8 a d \left(\cos\left[\frac{c}{2}+\frac{d x}{2}\right]+\sin\left[\frac{c}{2}+\frac{d x}{2}\right]\right)^4}+$$

$$\frac{e f \sin\left[\frac{d x}{2}\right]+f^2 x \sin\left[\frac{d x}{2}\right]}{6 a d^2 \left(\cos\left[\frac{c}{2}\right]+\sin\left[\frac{c}{2}\right]\right) \left(\cos\left[\frac{c}{2}+\frac{d x}{2}\right]+\sin\left[\frac{c}{2}+\frac{d x}{2}\right]\right)^3}+$$

$$\left(-3 d^2 e^2 \cos\left[\frac{c}{2}\right]-d e f \cos\left[\frac{c}{2}\right]-f^2 \cos\left[\frac{c}{2}\right]-6 d^2 e f x \cos\left[\frac{c}{2}\right]-d f^2 x \cos\left[\frac{c}{2}\right]-3 d^2 f^2 x^2 \cos\left[\frac{c}{2}\right]-\right.$$
$$\left.3 d^2 e^2 \sin\left[\frac{c}{2}\right]+d e f \sin\left[\frac{c}{2}\right]-f^2 \sin\left[\frac{c}{2}\right]-6 d^2 e f x \sin\left[\frac{c}{2}\right]+d f^2 x \sin\left[\frac{c}{2}\right]-3 d^2 f^2 x^2 \sin\left[\frac{c}{2}\right]\right) \Big/$$
$$\left(12 a d^3 \left(\cos\left[\frac{c}{2}\right]+\sin\left[\frac{c}{2}\right]\right) \left(\cos\left[\frac{c}{2}+\frac{d x}{2}\right]+\sin\left[\frac{c}{2}+\frac{d x}{2}\right]\right)^2\right)+$$

$$\frac{7 \left(e f \sin\left[\frac{d x}{2}\right]+f^2 x \sin\left[\frac{d x}{2}\right]\right)}{6 a d^2 \left(\cos\left[\frac{c}{2}\right]+\sin\left[\frac{c}{2}\right]\right) \left(\cos\left[\frac{c}{2}+\frac{d x}{2}\right]+\sin\left[\frac{c}{2}+\frac{d x}{2}\right]\right)}$$

Problem 283: Result more than twice size of optimal antiderivative.

$$\int \frac{(e+f x) \sec[c+d x]^3}{a+a \sin[c+d x]} \, dx$$

Optimal (type 4, 241 leaves, 11 steps):

$$-\frac{3 i (e+f x) \operatorname{ArcTan}\left[e^{i (c+d x)}\right]}{4 a d}+\frac{3 i f \operatorname{PolyLog}\left[2,-i e^{i (c+d x)}\right]}{8 a d^2}-\frac{3 i f \operatorname{PolyLog}\left[2, i e^{i (c+d x)}\right]}{8 a d^2}-\frac{3 f \sec[c+d x]}{8 a d^2}-\frac{f \sec[c+d x]^3}{12 a d^2}-$$
$$\frac{(e+f x) \sec[c+d x]^4}{4 a d}+\frac{f \tan[c+d x]}{4 a d^2}+\frac{3 (e+f x) \sec[c+d x] \tan[c+d x]}{8 a d}+\frac{(e+f x) \sec[c+d x]^3 \tan[c+d x]}{4 a d}+\frac{f \tan[c+d x]^3}{12 a d^2}$$

Result (type 4, 1171 leaves):

$$\frac{-6\,d\,e-f+6\,c\,f-6\,f\,(c+d\,x)}{24\,d^2\,(a+a\,\mathrm{Sin}[c+d\,x])}+\frac{-d\,e+c\,f-f\,(c+d\,x)}{8\,d^2\,\left(\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2\,(a+a\,\mathrm{Sin}[c+d\,x])}+$$

$$\frac{f\,\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]}{12\,d^2\,\left(\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\,(a+a\,\mathrm{Sin}[c+d\,x])}+\frac{7\,f\,\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\,\left(\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)}{12\,d^2\,(a+a\,\mathrm{Sin}[c+d\,x])}+$$

$$\frac{3\,(c+d\,x)\,(2\,d\,e-2\,c\,f+f\,(c+d\,x))\,\left(\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}{16\,d^2\,(a+a\,\mathrm{Sin}[c+d\,x])}+$$

$$\frac{3\,e\,\left(\frac{1}{2}\,(-c-d\,x)-\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\right)\,\left(\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}{8\,d\,(a+a\,\mathrm{Sin}[c+d\,x])}-$$

$$\frac{3\,c\,f\,\left(\frac{1}{2}\,(-c-d\,x)-\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\right)\,\left(\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}{8\,d^2\,(a+a\,\mathrm{Sin}[c+d\,x])}-$$

$$\frac{3\,e\,\left(\frac{1}{2}\,(c+d\,x)-\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\right)\,\left(\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}{8\,d\,(a+a\,\mathrm{Sin}[c+d\,x])}+$$

$$\frac{3\,c\,f\,\left(\frac{1}{2}\,(c+d\,x)-\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\right)\,\left(\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}{8\,d^2\,(a+a\,\mathrm{Sin}[c+d\,x])}-$$

$$\left(3\,f\,\left(\frac{1}{4}\,e^{-\frac{i\pi}{4}}\,(c+d\,x)^2-1\Big/\left(\sqrt{2}\right)\left(-\frac{3}{4}\,i\,\pi\,(c+d\,x)-\pi\,\mathrm{Log}\left[1+e^{-i\,(c+d\,x)}\right]-2\,\left(-\frac{\pi}{4}+\frac{1}{2}\,(c+d\,x)\right)\,\mathrm{Log}\left[1-e^{2\,i\,\left(-\frac{\pi}{4}+\frac{1}{2}\,(c+d\,x)\right)}\right]+\right.\right.\right.$$
$$\left.\left.\pi\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]\right]-\frac{1}{2}\,\pi\,\mathrm{Log}\left[-\mathrm{Sin}\left[\frac{\pi}{4}+\frac{1}{2}\,(-c-d\,x)\right]\right]+i\,\mathrm{PolyLog}\left[2,\,e^{2\,i\,\left(-\frac{\pi}{4}+\frac{1}{2}\,(c+d\,x)\right)}\right]\right)\right)$$
$$\left.\left(\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2\right)\Big/\left(4\,\sqrt{2}\,d^2\,(a+a\,\mathrm{Sin}[c+d\,x])\right)-$$

$$\left(3\,f\,\left(\frac{1}{4}\,e^{\frac{i\pi}{4}}\,(c+d\,x)^2+1\Big/\left(\sqrt{2}\right)\left(-\frac{1}{4}\,i\,\pi\,(c+d\,x)-\pi\,\mathrm{Log}\left[1+e^{-i\,(c+d\,x)}\right]-2\,\left(\frac{\pi}{4}+\frac{1}{2}\,(c+d\,x)\right)\,\mathrm{Log}\left[1-e^{2\,i\,\left(\frac{\pi}{4}+\frac{1}{2}\,(c+d\,x)\right)}\right]+\pi\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]\right]+\right.\right.\right.$$
$$\left.\left.\frac{1}{2}\,\pi\,\mathrm{Log}\left[\mathrm{Sin}\left[\frac{\pi}{4}+\frac{1}{2}\,(c+d\,x)\right]\right]+i\,\mathrm{PolyLog}\left[2,\,e^{2\,i\,\left(\frac{\pi}{4}+\frac{1}{2}\,(c+d\,x)\right)}\right]\right)\right)\left.\left(\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2\right)\Big/\left(4\,\sqrt{2}\,d^2\,(a+a\,\mathrm{Sin}[c+d\,x])\right)+$$

$$\frac{(d\,e-c\,f+f\,(c+d\,x))\,\left(\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}{8\,d^2\,\left(\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2\,(a+a\,\mathrm{Sin}[c+d\,x])}-\frac{f\,\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\,\left(\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}{4\,d^2\,\left(\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\,(a+a\,\mathrm{Sin}[c+d\,x])}$$

- **Problem 284: Result more than twice size of optimal antiderivative.**

$$\int\frac{\mathrm{Sec}[c+d\,x]^3}{a+a\,\mathrm{Sin}[c+d\,x]}\,dx$$

Optimal (type 3, 77 leaves, 4 steps) :

$$\frac{3\,\text{ArcTanh}[\text{Sin}[c+d\,x]]}{8\,a\,d}+\frac{1}{8\,d\,(a-a\,\text{Sin}[c+d\,x])}-\frac{a}{8\,d\,(a+a\,\text{Sin}[c+d\,x])^2}-\frac{1}{4\,d\,(a+a\,\text{Sin}[c+d\,x])}$$

Result (type 3, 190 leaves) :

$$-\frac{1}{8\,d\,(a+a\,\text{Sin}[c+d\,x])}\left(2+\frac{1}{\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2}+3\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2-\right.$$
$$\left.3\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2-\frac{\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2}{\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2}\right)$$

- **Problem 294: Result more than twice size of optimal antiderivative.**

$$\int\frac{(e+f\,x)^3\,\text{Cos}[c+d\,x]}{a+b\,\text{Sin}[c+d\,x]}\,dx$$

Optimal (type 4, 432 leaves, 11 steps) :

$$-\frac{i\,(e+f\,x)^4}{4\,b\,f}+\frac{(e+f\,x)^3\,\text{Log}\left[1-\frac{i\,b\,e^{i\,(c+d\,x)}}{a-\sqrt{a^2-b^2}}\right]}{b\,d}+\frac{(e+f\,x)^3\,\text{Log}\left[1-\frac{i\,b\,e^{i\,(c+d\,x)}}{a+\sqrt{a^2-b^2}}\right]}{b\,d}-$$
$$\frac{3\,i\,f\,(e+f\,x)^2\,\text{PolyLog}\left[2,\frac{i\,b\,e^{i\,(c+d\,x)}}{a-\sqrt{a^2-b^2}}\right]}{b\,d^2}-\frac{3\,i\,f\,(e+f\,x)^2\,\text{PolyLog}\left[2,\frac{i\,b\,e^{i\,(c+d\,x)}}{a+\sqrt{a^2-b^2}}\right]}{b\,d^2}+\frac{6\,f^2\,(e+f\,x)\,\text{PolyLog}\left[3,\frac{i\,b\,e^{i\,(c+d\,x)}}{a-\sqrt{a^2-b^2}}\right]}{b\,d^3}+$$
$$\frac{6\,f^2\,(e+f\,x)\,\text{PolyLog}\left[3,\frac{i\,b\,e^{i\,(c+d\,x)}}{a+\sqrt{a^2-b^2}}\right]}{b\,d^3}+\frac{6\,i\,f^3\,\text{PolyLog}\left[4,\frac{i\,b\,e^{i\,(c+d\,x)}}{a-\sqrt{a^2-b^2}}\right]}{b\,d^4}+\frac{6\,i\,f^3\,\text{PolyLog}\left[4,\frac{i\,b\,e^{i\,(c+d\,x)}}{a+\sqrt{a^2-b^2}}\right]}{b\,d^4}$$

Result (type 4, 1068 leaves) :

$$-\frac{1}{4 b d^4} i \Big(4 d^4 e^3 x + 6 d^4 e^2 f x^2 + 4 d^4 e f^2 x^3 + d^4 f^3 x^4 - 4 d^3 e^3 \text{ArcTan}\Big[\frac{2 a e^{i (c+d x)}}{b \left(-1 + e^{2 i (c+d x)}\right)}\Big] + 2 i d^3 e^3 \text{Log}\Big[4 a^2 e^{2 i (c+d x)} + b^2 \left(-1 + e^{2 i (c+d x)}\right)^2\Big] +$$

$$12 i d^3 e^2 f x \text{Log}\Big[1 + \frac{b e^{i (2 c+d x)}}{i a e^{i c} - \sqrt{(-a^2 + b^2) e^{2 i c}}}\Big] + 12 i d^3 e f^2 x^2 \text{Log}\Big[1 + \frac{b e^{i (2 c+d x)}}{i a e^{i c} - \sqrt{(-a^2 + b^2) e^{2 i c}}}\Big] +$$

$$4 i d^3 f^3 x^3 \text{Log}\Big[1 + \frac{b e^{i (2 c+d x)}}{i a e^{i c} - \sqrt{(-a^2 + b^2) e^{2 i c}}}\Big] + 12 i d^3 e^2 f x \text{Log}\Big[1 + \frac{b e^{i (2 c+d x)}}{i a e^{i c} + \sqrt{(-a^2 + b^2) e^{2 i c}}}\Big] +$$

$$12 i d^3 e f^2 x^2 \text{Log}\Big[1 + \frac{b e^{i (2 c+d x)}}{i a e^{i c} + \sqrt{(-a^2 + b^2) e^{2 i c}}}\Big] + 4 i d^3 f^3 x^3 \text{Log}\Big[1 + \frac{b e^{i (2 c+d x)}}{i a e^{i c} + \sqrt{(-a^2 + b^2) e^{2 i c}}}\Big] +$$

$$12 d^2 f (e + f x)^2 \text{PolyLog}\Big[2, \frac{i b e^{i (2 c+d x)}}{a e^{i c} + i \sqrt{(-a^2 + b^2) e^{2 i c}}}\Big] + 12 d^2 f (e + f x)^2 \text{PolyLog}\Big[2, -\frac{b e^{i (2 c+d x)}}{i a e^{i c} + \sqrt{(-a^2 + b^2) e^{2 i c}}}\Big] +$$

$$24 i d e f^2 \text{PolyLog}\Big[3, \frac{i b e^{i (2 c+d x)}}{a e^{i c} + i \sqrt{(-a^2 + b^2) e^{2 i c}}}\Big] + 24 i d f^3 x \text{PolyLog}\Big[3, \frac{i b e^{i (2 c+d x)}}{a e^{i c} + i \sqrt{(-a^2 + b^2) e^{2 i c}}}\Big] +$$

$$24 i d e f^2 \text{PolyLog}\Big[3, -\frac{b e^{i (2 c+d x)}}{i a e^{i c} + \sqrt{(-a^2 + b^2) e^{2 i c}}}\Big] + 24 i d f^3 x \text{PolyLog}\Big[3, -\frac{b e^{i (2 c+d x)}}{i a e^{i c} + \sqrt{(-a^2 + b^2) e^{2 i c}}}\Big] -$$

$$24 f^3 \text{PolyLog}\Big[4, \frac{i b e^{i (2 c+d x)}}{a e^{i c} + i \sqrt{(-a^2 + b^2) e^{2 i c}}}\Big] - 24 f^3 \text{PolyLog}\Big[4, -\frac{b e^{i (2 c+d x)}}{i a e^{i c} + \sqrt{(-a^2 + b^2) e^{2 i c}}}\Big]\Big)$$

Problem 295: Result more than twice size of optimal antiderivative.

$$\int \frac{(e + f x)^2 \text{Cos}[c + d x]}{a + b \text{Sin}[c + d x]} \, dx$$

Optimal (type 4, 320 leaves, 9 steps):

$$-\frac{i (e + f x)^3}{3 b f} + \frac{(e + f x)^2 \text{Log}\Big[1 - \frac{i b e^{i (c+d x)}}{a - \sqrt{a^2 - b^2}}\Big]}{b d} + \frac{(e + f x)^2 \text{Log}\Big[1 - \frac{i b e^{i (c+d x)}}{a + \sqrt{a^2 - b^2}}\Big]}{b d} - \frac{2 i f (e + f x) \text{PolyLog}\Big[2, \frac{i b e^{i (c+d x)}}{a - \sqrt{a^2 - b^2}}\Big]}{b d^2} -$$

$$\frac{2 i f (e + f x) \text{PolyLog}\Big[2, \frac{i b e^{i (c+d x)}}{a + \sqrt{a^2 - b^2}}\Big]}{b d^2} + \frac{2 f^2 \text{PolyLog}\Big[3, \frac{i b e^{i (c+d x)}}{a - \sqrt{a^2 - b^2}}\Big]}{b d^3} + \frac{2 f^2 \text{PolyLog}\Big[3, \frac{i b e^{i (c+d x)}}{a + \sqrt{a^2 - b^2}}\Big]}{b d^3}$$

Result (type 4, 647 leaves):

$$\frac{1}{6\,b\,d^3}\left(-6\,i\,d^3 e^2 x-6\,i\,d^3 e\,f\,x^2-2\,i\,d^3 f^2 x^3+6\,i\,d^2 e^2 \text{ArcTan}\left[\frac{2\,a\,e^{i\,(c+d\,x)}}{b\,\left(-1+e^{2\,i\,(c+d\,x)}\right)}\right]+3\,d^2 e^2 \text{Log}\left[4\,a^2 e^{2\,i\,(c+d\,x)}+b^2\left(-1+e^{2\,i\,(c+d\,x)}\right)^2\right]+\right.$$
$$12\,d^2 e\,f\,x\,\text{Log}\left[1+\frac{b\,e^{i\,(2\,c+d\,x)}}{i\,a\,e^{i\,c}-\sqrt{\left(-a^2+b^2\right)e^{2\,i\,c}}}\right]+6\,d^2 f^2 x^2 \text{Log}\left[1+\frac{b\,e^{i\,(2\,c+d\,x)}}{i\,a\,e^{i\,c}-\sqrt{\left(-a^2+b^2\right)e^{2\,i\,c}}}\right]+$$
$$12\,d^2 e\,f\,x\,\text{Log}\left[1+\frac{b\,e^{i\,(2\,c+d\,x)}}{i\,a\,e^{i\,c}+\sqrt{\left(-a^2+b^2\right)e^{2\,i\,c}}}\right]+6\,d^2 f^2 x^2 \text{Log}\left[1+\frac{b\,e^{i\,(2\,c+d\,x)}}{i\,a\,e^{i\,c}+\sqrt{\left(-a^2+b^2\right)e^{2\,i\,c}}}\right]-$$
$$12\,i\,d\,f\,(e+f\,x)\,\text{PolyLog}\left[2,\frac{i\,b\,e^{i\,(2\,c+d\,x)}}{a\,e^{i\,c}+i\,\sqrt{\left(-a^2+b^2\right)e^{2\,i\,c}}}\right]-12\,i\,d\,f\,(e+f\,x)\,\text{PolyLog}\left[2,-\frac{b\,e^{i\,(2\,c+d\,x)}}{i\,a\,e^{i\,c}+\sqrt{\left(-a^2+b^2\right)e^{2\,i\,c}}}\right]+$$
$$\left.12\,f^2\,\text{PolyLog}\left[3,\frac{i\,b\,e^{i\,(2\,c+d\,x)}}{a\,e^{i\,c}+i\,\sqrt{\left(-a^2+b^2\right)e^{2\,i\,c}}}\right]+12\,f^2\,\text{PolyLog}\left[3,-\frac{b\,e^{i\,(2\,c+d\,x)}}{i\,a\,e^{i\,c}+\sqrt{\left(-a^2+b^2\right)e^{2\,i\,c}}}\right]\right)$$

- **Problem 298: Result more than twice size of optimal antiderivative.**

$$\int\frac{(e+f\,x)^3\,\text{Cos}[c+d\,x]^2}{a+b\,\text{Sin}[c+d\,x]}\,dx$$

Optimal (type 4, 618 leaves, 18 steps):

$$\frac{a\,(e+f\,x)^4}{4\,b^2 f}-\frac{6\,f^2\,(e+f\,x)\,\text{Cos}[c+d\,x]}{b\,d^3}+\frac{(e+f\,x)^3\,\text{Cos}[c+d\,x]}{b\,d}+\frac{i\,\sqrt{a^2-b^2}\,(e+f\,x)^3\,\text{Log}\left[1-\frac{i\,b\,e^{i\,(c+d\,x)}}{a-\sqrt{a^2-b^2}}\right]}{b^2\,d}-$$
$$\frac{i\,\sqrt{a^2-b^2}\,(e+f\,x)^3\,\text{Log}\left[1-\frac{i\,b\,e^{i\,(c+d\,x)}}{a+\sqrt{a^2-b^2}}\right]}{b^2\,d}+\frac{3\,\sqrt{a^2-b^2}\,f\,(e+f\,x)^2\,\text{PolyLog}\left[2,\frac{i\,b\,e^{i\,(c+d\,x)}}{a-\sqrt{a^2-b^2}}\right]}{b^2\,d^2}-\frac{3\,\sqrt{a^2-b^2}\,f\,(e+f\,x)^2\,\text{PolyLog}\left[2,\frac{i\,b\,e^{i\,(c+d\,x)}}{a+\sqrt{a^2-b^2}}\right]}{b^2\,d^2}+$$
$$\frac{6\,i\,\sqrt{a^2-b^2}\,f^2\,(e+f\,x)\,\text{PolyLog}\left[3,\frac{i\,b\,e^{i\,(c+d\,x)}}{a-\sqrt{a^2-b^2}}\right]}{b^2\,d^3}-\frac{6\,i\,\sqrt{a^2-b^2}\,f^2\,(e+f\,x)\,\text{PolyLog}\left[3,\frac{i\,b\,e^{i\,(c+d\,x)}}{a+\sqrt{a^2-b^2}}\right]}{b^2\,d^3}-$$
$$\frac{6\,\sqrt{a^2-b^2}\,f^3\,\text{PolyLog}\left[4,\frac{i\,b\,e^{i\,(c+d\,x)}}{a-\sqrt{a^2-b^2}}\right]}{b^2\,d^4}+\frac{6\,\sqrt{a^2-b^2}\,f^3\,\text{PolyLog}\left[4,\frac{i\,b\,e^{i\,(c+d\,x)}}{a+\sqrt{a^2-b^2}}\right]}{b^2\,d^4}+\frac{6\,f^3\,\text{Sin}[c+d\,x]}{b\,d^4}-\frac{3\,f\,(e+f\,x)^2\,\text{Sin}[c+d\,x]}{b\,d^2}$$

Result (type 4, 1588 leaves):

$$\frac{1}{4\,b^2\,d^4}\left(a\,d^4\,x\left(4\,e^3+6\,e^2 f\,x+4\,e\,f^2 x^2+f^3 x^3\right)+4\,b\,d\,(e+f\,x)\left(-6\,f^2+d^2\,(e+f\,x)^2\right)\text{Cos}[c+d\,x]-\frac{1}{\sqrt{\left(-a^2+b^2\right)\left(\text{Cos}[2\,c]+i\,\text{Sin}[2\,c]\right)}}\right.$$

$$4\, i \sqrt{a^2-b^2} \left(3\, i \sqrt{a^2-b^2}\; d^3 e^2 f x\, \text{Log}\left[1+\frac{b\, (\text{Cos}[2 c+d x]+i\, \text{Sin}[2 c+d x])}{i\, a\, \text{Cos}[c]+\sqrt{\left(-a^2+b^2\right) (\text{Cos}[c]+i\, \text{Sin}[c])^2}-a\, \text{Sin}[c]}\right] (\text{Cos}[c]+i\, \text{Sin}[c])+\right.$$

$$3\, i \sqrt{a^2-b^2}\; d^3 e f^2 x^2\, \text{Log}\left[1+\frac{b\, (\text{Cos}[2 c+d x]+i\, \text{Sin}[2 c+d x])}{i\, a\, \text{Cos}[c]+\sqrt{\left(-a^2+b^2\right) (\text{Cos}[c]+i\, \text{Sin}[c])^2}-a\, \text{Sin}[c]}\right] (\text{Cos}[c]+i\, \text{Sin}[c])+$$

$$i \sqrt{a^2-b^2}\; d^3 f^3 x^3\, \text{Log}\left[1+\frac{b\, (\text{Cos}[2 c+d x]+i\, \text{Sin}[2 c+d x])}{i\, a\, \text{Cos}[c]+\sqrt{\left(-a^2+b^2\right) (\text{Cos}[c]+i\, \text{Sin}[c])^2}-a\, \text{Sin}[c]}\right] (\text{Cos}[c]+i\, \text{Sin}[c])+$$

$$3 \sqrt{a^2-b^2}\; d^2 f\, (e+f x)^2\, \text{PolyLog}\left[2,-\frac{b\, (\text{Cos}[2 c+d x]+i\, \text{Sin}[2 c+d x])}{i\, a\, \text{Cos}[c]+\sqrt{\left(-a^2+b^2\right) (\text{Cos}[c]+i\, \text{Sin}[c])^2}-a\, \text{Sin}[c]}\right] (\text{Cos}[c]+i\, \text{Sin}[c])-$$

$$3 \sqrt{a^2-b^2}\; d^2 f\, (e+f x)^2\, \text{PolyLog}\left[2,\frac{b\, (\text{Cos}[2 c+d x]+i\, \text{Sin}[2 c+d x])}{-i\, a\, \text{Cos}[c]+\sqrt{\left(-a^2+b^2\right) (\text{Cos}[c]+i\, \text{Sin}[c])^2}+a\, \text{Sin}[c]}\right] (\text{Cos}[c]+i\, \text{Sin}[c])+$$

$$6\, i \sqrt{a^2-b^2}\; d e f^2\, \text{PolyLog}\left[3,-\frac{b\, (\text{Cos}[2 c+d x]+i\, \text{Sin}[2 c+d x])}{i\, a\, \text{Cos}[c]+\sqrt{\left(-a^2+b^2\right) (\text{Cos}[c]+i\, \text{Sin}[c])^2}-a\, \text{Sin}[c]}\right] (\text{Cos}[c]+i\, \text{Sin}[c])+$$

$$6\, i \sqrt{a^2-b^2}\; d f^3 x\, \text{PolyLog}\left[3,-\frac{b\, (\text{Cos}[2 c+d x]+i\, \text{Sin}[2 c+d x])}{i\, a\, \text{Cos}[c]+\sqrt{\left(-a^2+b^2\right) (\text{Cos}[c]+i\, \text{Sin}[c])^2}-a\, \text{Sin}[c]}\right] (\text{Cos}[c]+i\, \text{Sin}[c])-$$

$$6 \sqrt{a^2-b^2}\; f^3\, \text{PolyLog}\left[4,-\frac{b\, (\text{Cos}[2 c+d x]+i\, \text{Sin}[2 c+d x])}{i\, a\, \text{Cos}[c]+\sqrt{\left(-a^2+b^2\right) (\text{Cos}[c]+i\, \text{Sin}[c])^2}-a\, \text{Sin}[c]}\right] (\text{Cos}[c]+i\, \text{Sin}[c])+$$

$$6 \sqrt{a^2-b^2}\; f^3\, \text{PolyLog}\left[4,\frac{b\, (\text{Cos}[2 c+d x]+i\, \text{Sin}[2 c+d x])}{-i\, a\, \text{Cos}[c]+\sqrt{\left(-a^2+b^2\right) (\text{Cos}[c]+i\, \text{Sin}[c])^2}+a\, \text{Sin}[c]}\right] (\text{Cos}[c]+i\, \text{Sin}[c])+$$

$$3 \sqrt{a^2-b^2}\; d^3 e^2 f x\, \text{Log}\left[1-\frac{b\, (\text{Cos}[2 c+d x]+i\, \text{Sin}[2 c+d x])}{-i\, a\, \text{Cos}[c]+\sqrt{\left(-a^2+b^2\right) (\text{Cos}[c]+i\, \text{Sin}[c])^2}+a\, \text{Sin}[c]}\right] (-i\, \text{Cos}[c]+\text{Sin}[c])+$$

$$3 \sqrt{a^2-b^2}\; d^3 e f^2 x^2\, \text{Log}\left[1-\frac{b\, (\text{Cos}[2 c+d x]+i\, \text{Sin}[2 c+d x])}{-i\, a\, \text{Cos}[c]+\sqrt{\left(-a^2+b^2\right) (\text{Cos}[c]+i\, \text{Sin}[c])^2}+a\, \text{Sin}[c]}\right] (-i\, \text{Cos}[c]+\text{Sin}[c])+$$

$$\sqrt{a^2-b^2}\; d^3 f^3 x^3\, \text{Log}\left[1-\frac{b\, (\text{Cos}[2 c+d x]+i\, \text{Sin}[2 c+d x])}{-i\, a\, \text{Cos}[c]+\sqrt{\left(-a^2+b^2\right) (\text{Cos}[c]+i\, \text{Sin}[c])^2}+a\, \text{Sin}[c]}\right] (-i\, \text{Cos}[c]+\text{Sin}[c])+$$

$$6 \sqrt{a^2-b^2}\; d e f^2\, \text{PolyLog}\left[3,\frac{b\, (\text{Cos}[2 c+d x]+i\, \text{Sin}[2 c+d x])}{-i\, a\, \text{Cos}[c]+\sqrt{\left(-a^2+b^2\right) (\text{Cos}[c]+i\, \text{Sin}[c])^2}+a\, \text{Sin}[c]}\right] (-i\, \text{Cos}[c]+\text{Sin}[c])+$$

$$6 \sqrt{a^2-b^2}\; d f^3 x\, \text{PolyLog}\left[3,\frac{b\, (\text{Cos}[2 c+d x]+i\, \text{Sin}[2 c+d x])}{-i\, a\, \text{Cos}[c]+\sqrt{\left(-a^2+b^2\right) (\text{Cos}[c]+i\, \text{Sin}[c])^2}+a\, \text{Sin}[c]}\right] (-i\, \text{Cos}[c]+\text{Sin}[c])-$$

$$2\,i\,d^3 e^3 \text{ArcTan}\left[\frac{b \text{Cos}[c+d x]+i\,(a+b \text{Sin}[c+d x])}{\sqrt{a^2-b^2}}\right] \sqrt{\left(-a^2+b^2\right)\,(\text{Cos}[2 c]+i \text{Sin}[2 c])}\Bigg) - 12\,b\,f\left(-2 f^2+d^2 (e+f x)^2\right) \text{Sin}[c+d x]\Bigg)$$

Problem 302: Result more than twice size of optimal antiderivative.

$$\int \frac{(e+f x)^3 \text{Cos}[c+d x]^3}{a+b \text{Sin}[c+d x]}\,dx$$

Optimal (type 4, 737 leaves, 21 steps):

$$-\frac{3 f^3 x}{8 b d^3}+\frac{(e+f x)^3}{4 b d}+\frac{i\left(a^2-b^2\right)(e+f x)^4}{4 b^3 f}-\frac{6 a f^3 \text{Cos}[c+d x]}{b^2 d^4}+\frac{3 a f (e+f x)^2 \text{Cos}[c+d x]}{b^2 d^2}-$$
$$\frac{\left(a^2-b^2\right)(e+f x)^3 \text{Log}\left[1-\frac{i b e^{i (c+d x)}}{a-\sqrt{a^2-b^2}}\right]}{b^3 d}-\frac{\left(a^2-b^2\right)(e+f x)^3 \text{Log}\left[1-\frac{i b e^{i (c+d x)}}{a+\sqrt{a^2-b^2}}\right]}{b^3 d}+\frac{3 i\left(a^2-b^2\right) f (e+f x)^2 \text{PolyLog}\left[2,\frac{i b e^{i (c+d x)}}{a-\sqrt{a^2-b^2}}\right]}{b^3 d^2}+$$
$$\frac{3 i\left(a^2-b^2\right) f (e+f x)^2 \text{PolyLog}\left[2,\frac{i b e^{i (c+d x)}}{a+\sqrt{a^2-b^2}}\right]}{b^3 d^2}-\frac{6\left(a^2-b^2\right) f^2 (e+f x) \text{PolyLog}\left[3,\frac{i b e^{i (c+d x)}}{a-\sqrt{a^2-b^2}}\right]}{b^3 d^3}-\frac{6\left(a^2-b^2\right) f^2 (e+f x) \text{PolyLog}\left[3,\frac{i b e^{i (c+d x)}}{a+\sqrt{a^2-b^2}}\right]}{b^3 d^3}-$$
$$\frac{6 i\left(a^2-b^2\right) f^3 \text{PolyLog}\left[4,\frac{i b e^{i (c+d x)}}{a-\sqrt{a^2-b^2}}\right]}{b^3 d^4}-\frac{6 i\left(a^2-b^2\right) f^3 \text{PolyLog}\left[4,\frac{i b e^{i (c+d x)}}{a+\sqrt{a^2-b^2}}\right]}{b^3 d^4}-\frac{6 a f^2 (e+f x) \text{Sin}[c+d x]}{b^2 d^3}+\frac{a (e+f x)^3 \text{Sin}[c+d x]}{b^2 d}+$$
$$\frac{3 f^3 \text{Cos}[c+d x] \text{Sin}[c+d x]}{8 b d^4}-\frac{3 f (e+f x)^2 \text{Cos}[c+d x] \text{Sin}[c+d x]}{4 b d^2}+\frac{3 f^2 (e+f x) \text{Sin}[c+d x]^2}{4 b d^3}-\frac{(e+f x)^3 \text{Sin}[c+d x]^2}{2 b d}$$

Result (type 4, 3279 leaves):

$$\frac{1}{2 b^3 d^4\left(-1+e^{2 i c}\right)}$$
$$\left(a^2-b^2\right)\Bigg(4\,i\,d^4 e^3 e^{2 i c} x+6\,i\,d^4 e^2 e^{2 i c} f x^2+4\,i\,d^4 e\,e^{2 i c} f^2 x^3+i\,d^4 e^{2 i c} f^3 x^4+2\,i\,d^3 e^3 \text{ArcTan}\left[\frac{2 a e^{i (c+d x)}}{b\left(-1+e^{2 i (c+d x)}\right)}\right]-2\,i\,d^3 e^3 e^{2 i c}$$
$$\text{ArcTan}\left[\frac{2 a e^{i (c+d x)}}{b\left(-1+e^{2 i (c+d x)}\right)}\right]+d^3 e^3 \text{Log}\left[4 a^2 e^{2 i (c+d x)}+b^2\left(-1+e^{2 i (c+d x)}\right)^2\right]-d^3 e^3 e^{2 i c} \text{Log}\left[4 a^2 e^{2 i (c+d x)}+b^2\left(-1+e^{2 i (c+d x)}\right)^2\right]+$$
$$6 d^3 e^2 f x \text{Log}\left[1+\frac{b e^{i (2 c+d x)}}{i a e^{i c}-\sqrt{\left(-a^2+b^2\right) e^{2 i c}}}\right]-6 d^3 e^2 e^{2 i c} f x \text{Log}\left[1+\frac{b e^{i (2 c+d x)}}{i a e^{i c}-\sqrt{\left(-a^2+b^2\right) e^{2 i c}}}\right]+$$
$$6 d^3 e f^2 x^2 \text{Log}\left[1+\frac{b e^{i (2 c+d x)}}{i a e^{i c}-\sqrt{\left(-a^2+b^2\right) e^{2 i c}}}\right]-6 d^3 e\,e^{2 i c} f^2 x^2 \text{Log}\left[1+\frac{b e^{i (2 c+d x)}}{i a e^{i c}-\sqrt{\left(-a^2+b^2\right) e^{2 i c}}}\right]+$$

$$2 d^3 f^3 x^3 \text{Log}\left[1+\frac{b e^{i (2 c+d x)}}{i a e^{i c}-\sqrt{\left(-a^2+b^2\right) e^{2 i c}}}\right]-2 d^3 e^{2 i c} f^3 x^3 \text{Log}\left[1+\frac{b e^{i (2 c+d x)}}{i a e^{i c}-\sqrt{\left(-a^2+b^2\right) e^{2 i c}}}\right]+$$

$$6 d^3 e^2 f x \text{Log}\left[1+\frac{b e^{i (2 c+d x)}}{i a e^{i c}+\sqrt{\left(-a^2+b^2\right) e^{2 i c}}}\right]-6 d^3 e^2 e^{2 i c} f x \text{Log}\left[1+\frac{b e^{i (2 c+d x)}}{i a e^{i c}+\sqrt{\left(-a^2+b^2\right) e^{2 i c}}}\right]+$$

$$6 d^3 e f^2 x^2 \text{Log}\left[1+\frac{b e^{i (2 c+d x)}}{i a e^{i c}+\sqrt{\left(-a^2+b^2\right) e^{2 i c}}}\right]-6 d^3 e e^{2 i c} f^2 x^2 \text{Log}\left[1+\frac{b e^{i (2 c+d x)}}{i a e^{i c}+\sqrt{\left(-a^2+b^2\right) e^{2 i c}}}\right]+$$

$$2 d^3 f^3 x^3 \text{Log}\left[1+\frac{b e^{i (2 c+d x)}}{i a e^{i c}+\sqrt{\left(-a^2+b^2\right) e^{2 i c}}}\right]-2 d^3 e^{2 i c} f^3 x^3 \text{Log}\left[1+\frac{b e^{i (2 c+d x)}}{i a e^{i c}+\sqrt{\left(-a^2+b^2\right) e^{2 i c}}}\right]+6 i d^2 \left(-1+e^{2 i c}\right) f$$

$$(e+f x)^2 \text{PolyLog}\left[2,\frac{i b e^{i (2 c+d x)}}{a e^{i c}+i \sqrt{\left(-a^2+b^2\right) e^{2 i c}}}\right]+6 i d^2 \left(-1+e^{2 i c}\right) f (e+f x)^2 \text{PolyLog}\left[2,-\frac{b e^{i (2 c+d x)}}{i a e^{i c}+\sqrt{\left(-a^2+b^2\right) e^{2 i c}}}\right]+$$

$$12 d e f^2 \text{PolyLog}\left[3,\frac{i b e^{i (2 c+d x)}}{a e^{i c}+i \sqrt{\left(-a^2+b^2\right) e^{2 i c}}}\right]-12 d e e^{2 i c} f^2 \text{PolyLog}\left[3,\frac{i b e^{i (2 c+d x)}}{a e^{i c}+i \sqrt{\left(-a^2+b^2\right) e^{2 i c}}}\right]+$$

$$12 d f^3 x \text{PolyLog}\left[3,\frac{i b e^{i (2 c+d x)}}{a e^{i c}+i \sqrt{\left(-a^2+b^2\right) e^{2 i c}}}\right]-12 d e^{2 i c} f^3 x \text{PolyLog}\left[3,\frac{i b e^{i (2 c+d x)}}{a e^{i c}+i \sqrt{\left(-a^2+b^2\right) e^{2 i c}}}\right]+$$

$$12 d e f^2 \text{PolyLog}\left[3,-\frac{b e^{i (2 c+d x)}}{i a e^{i c}+\sqrt{\left(-a^2+b^2\right) e^{2 i c}}}\right]-12 d e e^{2 i c} f^2 \text{PolyLog}\left[3,-\frac{b e^{i (2 c+d x)}}{i a e^{i c}+\sqrt{\left(-a^2+b^2\right) e^{2 i c}}}\right]+$$

$$12 d f^3 x \text{PolyLog}\left[3,-\frac{b e^{i (2 c+d x)}}{i a e^{i c}+\sqrt{\left(-a^2+b^2\right) e^{2 i c}}}\right]-12 d e^{2 i c} f^3 x \text{PolyLog}\left[3,-\frac{b e^{i (2 c+d x)}}{i a e^{i c}+\sqrt{\left(-a^2+b^2\right) e^{2 i c}}}\right]+$$

$$12 i f^3 \text{PolyLog}\left[4,\frac{i b e^{i (2 c+d x)}}{a e^{i c}+i \sqrt{\left(-a^2+b^2\right) e^{2 i c}}}\right]-12 i e^{2 i c} f^3 \text{PolyLog}\left[4,\frac{i b e^{i (2 c+d x)}}{a e^{i c}+i \sqrt{\left(-a^2+b^2\right) e^{2 i c}}}\right]+$$

$$\left.12 i f^3 \text{PolyLog}\left[4,-\frac{b e^{i (2 c+d x)}}{i a e^{i c}+\sqrt{\left(-a^2+b^2\right) e^{2 i c}}}\right]-12 i e^{2 i c} f^3 \text{PolyLog}\left[4,-\frac{b e^{i (2 c+d x)}}{i a e^{i c}+\sqrt{\left(-a^2+b^2\right) e^{2 i c}}}\right]\right)+$$

$$\frac{i \left(-a^2+b^2\right) e^3 x (1+\text{Cos}[2 c]+i \text{Sin}[2 c])}{b^3 (-1+\text{Cos}[2 c]+i \text{Sin}[2 c])}+\frac{3 i \left(-a^2+b^2\right) e^2 f x^2 (1+\text{Cos}[2 c]+i \text{Sin}[2 c])}{2 b^3 (-1+\text{Cos}[2 c]+i \text{Sin}[2 c])}+$$

$$\frac{i \left(-a^2+b^2\right) e f^2 x^3 (1+\text{Cos}[2 c]+i \text{Sin}[2 c])}{b^3 (-1+\text{Cos}[2 c]+i \text{Sin}[2 c])}+$$

$$\frac{i \left(-a^2+b^2\right) f^3 x^4 (1+\text{Cos}[2 c]+i \text{Sin}[2 c])}{4 b^3 (-1+\text{Cos}[2 c]+i \text{Sin}[2 c])}+$$

$$\left(\frac{i\,a\,f^3\,x^3\,\mathrm{Cos}[c]}{2\,b^2\,d}+\frac{a\,f^3\,x^3\,\mathrm{Sin}[c]}{2\,b^2\,d}+\left(i\,d^3\,e^3+3\,d^2\,e^2\,f-6\,i\,d\,e\,f^2-6\,f^3\right)\left(\frac{a\,\mathrm{Cos}[c]}{2\,b^2\,d^4}-\frac{i\,a\,\mathrm{Sin}[c]}{2\,b^2\,d^4}\right)+\right.$$

$$\left.\left(a\,d^2\,e^2\,f-2\,i\,a\,d\,e\,f^2-2\,a\,f^3\right)\left(\frac{3\,i\,x\,\mathrm{Cos}[c]}{2\,b^2\,d^3}+\frac{3\,x\,\mathrm{Sin}[c]}{2\,b^2\,d^3}\right)+\left(a\,d\,e\,f^2-i\,a\,f^3\right)\left(\frac{3\,i\,x^2\,\mathrm{Cos}[c]}{2\,b^2\,d^2}+\frac{3\,x^2\,\mathrm{Sin}[c]}{2\,b^2\,d^2}\right)\right)(\mathrm{Cos}[d\,x]-i\,\mathrm{Sin}[d\,x])+$$

$$\left(-\frac{i\,a\,f^3\,x^3\,\mathrm{Cos}[c]}{2\,b^2\,d}+\frac{a\,f^3\,x^3\,\mathrm{Sin}[c]}{2\,b^2\,d}+\left(-i\,d^3\,e^3+3\,d^2\,e^2\,f+6\,i\,d\,e\,f^2-6\,f^3\right)\left(\frac{a\,\mathrm{Cos}[c]}{2\,b^2\,d^4}+\frac{i\,a\,\mathrm{Sin}[c]}{2\,b^2\,d^4}\right)-\right.$$

$$\frac{3\,i\,x^2\left(a\,d\,e\,f^2\,\mathrm{Cos}[c]+i\,a\,f^3\,\mathrm{Cos}[c]+i\,a\,d\,e\,f^2\,\mathrm{Sin}[c]-a\,f^3\,\mathrm{Sin}[c]\right)}{2\,b^2\,d^2}-\frac{1}{2\,b^2\,d^3}$$

$$\left.3\,i\,x\left(a\,d^2\,e^2\,f\,\mathrm{Cos}[c]+2\,i\,a\,d\,e\,f^2\,\mathrm{Cos}[c]-2\,a\,f^3\,\mathrm{Cos}[c]+i\,a\,d^2\,e^2\,f\,\mathrm{Sin}[c]-2\,a\,d\,e\,f^2\,\mathrm{Sin}[c]-2\,i\,a\,f^3\,\mathrm{Sin}[c]\right)\right)(\mathrm{Cos}[d\,x]+i\,\mathrm{Sin}[d\,x])+$$

$$\left(\frac{f^3\,x^3\,\mathrm{Cos}[2\,c]}{8\,b\,d}-\frac{i\,f^3\,x^3\,\mathrm{Sin}[2\,c]}{8\,b\,d}+\left(4\,d^3\,e^3-6\,i\,d^2\,e^2\,f-6\,d\,e\,f^2+3\,i\,f^3\right)\left(\frac{\mathrm{Cos}[2\,c]}{32\,b\,d^4}-\frac{i\,\mathrm{Sin}[2\,c]}{32\,b\,d^4}\right)+\right.$$

$$\left.\left(2\,d^2\,e^2\,f-2\,i\,d\,e\,f^2-f^3\right)\left(\frac{3\,x\,\mathrm{Cos}[2\,c]}{16\,b\,d^3}-\frac{3\,i\,x\,\mathrm{Sin}[2\,c]}{16\,b\,d^3}\right)+\left(2\,d\,e\,f^2-i\,f^3\right)\left(\frac{3\,x^2\,\mathrm{Cos}[2\,c]}{16\,b\,d^2}-\frac{3\,i\,x^2\,\mathrm{Sin}[2\,c]}{16\,b\,d^2}\right)\right)(\mathrm{Cos}[2\,d\,x]-i\,\mathrm{Sin}[2\,d\,x])+$$

$$\left(\frac{f^3\,x^3\,\mathrm{Cos}[2\,c]}{8\,b\,d}+\frac{i\,f^3\,x^3\,\mathrm{Sin}[2\,c]}{8\,b\,d}+\left(4\,d^3\,e^3+6\,i\,d^2\,e^2\,f-6\,d\,e\,f^2-3\,i\,f^3\right)\left(\frac{\mathrm{Cos}[2\,c]}{32\,b\,d^4}+\frac{i\,\mathrm{Sin}[2\,c]}{32\,b\,d^4}\right)+\right.$$

$$\frac{3\,x^2\left(2\,d\,e\,f^2\,\mathrm{Cos}[2\,c]+i\,f^3\,\mathrm{Cos}[2\,c]+2\,i\,d\,e\,f^2\,\mathrm{Sin}[2\,c]-f^3\,\mathrm{Sin}[2\,c]\right)}{16\,b\,d^2}+\frac{1}{16\,b\,d^3}$$

$$\left.3\,x\left(2\,d^2\,e^2\,f\,\mathrm{Cos}[2\,c]+2\,i\,d\,e\,f^2\,\mathrm{Cos}[2\,c]-f^3\,\mathrm{Cos}[2\,c]+2\,i\,d^2\,e^2\,f\,\mathrm{Sin}[2\,c]-2\,d\,e\,f^2\,\mathrm{Sin}[2\,c]-i\,f^3\,\mathrm{Sin}[2\,c]\right)\right)(\mathrm{Cos}[2\,d\,x]+i\,\mathrm{Sin}[2\,d\,x])$$

- **Problem 303: Result more than twice size of optimal antiderivative.**

$$\int\frac{(e+f\,x)^2\,\mathrm{Cos}[c+d\,x]^3}{a+b\,\mathrm{Sin}[c+d\,x]}\,dx$$

Optimal (type 4, 548 leaves, 16 steps):

$$\frac{e f x}{2 b d}+\frac{f^2 x^2}{4 b d}+\frac{i \left(a^2-b^2\right) (e+f x)^3}{3 b^3 f}+\frac{2 a f (e+f x) \text{Cos}[c+d x]}{b^2 d^2}-\frac{\left(a^2-b^2\right) (e+f x)^2 \text{Log}\left[1-\frac{i b e^{i (c+d x)}}{a-\sqrt{a^2-b^2}}\right]}{b^3 d}-$$

$$\frac{\left(a^2-b^2\right) (e+f x)^2 \text{Log}\left[1-\frac{i b e^{i (c+d x)}}{a+\sqrt{a^2-b^2}}\right]}{b^3 d}+\frac{2 i \left(a^2-b^2\right) f (e+f x) \text{PolyLog}\left[2,\frac{i b e^{i (c+d x)}}{a-\sqrt{a^2-b^2}}\right]}{b^3 d^2}+\frac{2 i \left(a^2-b^2\right) f (e+f x) \text{PolyLog}\left[2,\frac{i b e^{i (c+d x)}}{a+\sqrt{a^2-b^2}}\right]}{b^3 d^2}-$$

$$\frac{2 \left(a^2-b^2\right) f^2 \text{PolyLog}\left[3,\frac{i b e^{i (c+d x)}}{a-\sqrt{a^2-b^2}}\right]}{b^3 d^3}-\frac{2 \left(a^2-b^2\right) f^2 \text{PolyLog}\left[3,\frac{i b e^{i (c+d x)}}{a+\sqrt{a^2-b^2}}\right]}{b^3 d^3}-\frac{2 a f^2 \text{Sin}[c+d x]}{b^2 d^3}+$$

$$\frac{a (e+f x)^2 \text{Sin}[c+d x]}{b^2 d}-\frac{f (e+f x) \text{Cos}[c+d x] \text{Sin}[c+d x]}{2 b d^2}+\frac{f^2 \text{Sin}[c+d x]^2}{4 b d^3}-\frac{(e+f x)^2 \text{Sin}[c+d x]^2}{2 b d}$$

Result (type 4, 2397 leaves) :

$$\frac{1}{48 b^3 d^3}$$

$$e^{-2 i c} \Bigg(48 i a^2 d^3 e^2 e^{2 i c} x-48 i b^2 d^3 e^2 e^{2 i c} x+48 i a^2 d^3 e e^{2 i c} f x^2-48 i b^2 d^3 e e^{2 i c} f x^2+16 i a^2 d^3 e^{2 i c} f^2 x^3-16 i b^2 d^3 e^{2 i c} f^2 x^3-48 i a^2 d^2 e^2$$

$$e^{2 i c} \text{ArcTan}\left[\frac{2 a e^{i (c+d x)}}{b \left(-1+e^{2 i (c+d x)}\right)}\right]+48 i b^2 d^2 e^2 e^{2 i c} \text{ArcTan}\left[\frac{2 a e^{i (c+d x)}}{b \left(-1+e^{2 i (c+d x)}\right)}\right]+24 i a b d^2 e^2 e^{i c} \text{Cos}[d x]-24 i a b d^2 e^2 e^{3 i c} \text{Cos}[d x]+$$

$$48 a b d e e^{i c} f \text{Cos}[d x]+48 a b d e e^{3 i c} f \text{Cos}[d x]-48 i a b e^{i c} f^2 \text{Cos}[d x]+48 i a b e^{3 i c} f^2 \text{Cos}[d x]+48 i a b d^2 e e^{i c} f x \text{Cos}[d x]-$$
$$48 i a b d^2 e e^{3 i c} f x \text{Cos}[d x]+48 a b d e^{i c} f^2 x \text{Cos}[d x]+48 a b d e^{3 i c} f^2 x \text{Cos}[d x]+24 i a b d^2 e^{i c} f^2 x^2 \text{Cos}[d x]-$$
$$24 i a b d^2 e^{3 i c} f^2 x^2 \text{Cos}[d x]+6 b^2 d^2 e^2 \text{Cos}[2 d x]+6 b^2 d^2 e^2 e^{4 i c} \text{Cos}[2 d x]-6 i b^2 d e f \text{Cos}[2 d x]+6 i b^2 d e e^{4 i c} f \text{Cos}[2 d x]-$$
$$3 b^2 f^2 \text{Cos}[2 d x]-3 b^2 e^{4 i c} f^2 \text{Cos}[2 d x]+12 b^2 d^2 e f x \text{Cos}[2 d x]+12 b^2 d^2 e e^{4 i c} f x \text{Cos}[2 d x]-6 i b^2 d f^2 x \text{Cos}[2 d x]+$$
$$6 i b^2 d e^{4 i c} f^2 x \text{Cos}[2 d x]+6 b^2 d^2 f^2 x^2 \text{Cos}[2 d x]+6 b^2 d^2 e^{4 i c} f^2 x^2 \text{Cos}[2 d x]-24 a^2 d^2 e^2 e^{2 i c} \text{Log}\left[4 a^2 e^{2 i (c+d x)}+b^2 \left(-1+e^{2 i (c+d x)}\right)^2\right]+$$

$$24 b^2 d^2 e^2 e^{2 i c} \text{Log}\left[4 a^2 e^{2 i (c+d x)}+b^2 \left(-1+e^{2 i (c+d x)}\right)^2\right]-96 a^2 d^2 e e^{2 i c} f x \text{Log}\left[1+\frac{b e^{i (2 c+d x)}}{i a e^{i c}-\sqrt{\left(-a^2+b^2\right) e^{2 i c}}}\right]+$$

$$96 b^2 d^2 e e^{2 i c} f x \text{Log}\left[1+\frac{b e^{i (2 c+d x)}}{i a e^{i c}-\sqrt{\left(-a^2+b^2\right) e^{2 i c}}}\right]-48 a^2 d^2 e^{2 i c} f^2 x^2 \text{Log}\left[1+\frac{b e^{i (2 c+d x)}}{i a e^{i c}-\sqrt{\left(-a^2+b^2\right) e^{2 i c}}}\right]+$$

$$48 b^2 d^2 e^{2 i c} f^2 x^2 \text{Log}\left[1+\frac{b e^{i (2 c+d x)}}{i a e^{i c}-\sqrt{\left(-a^2+b^2\right) e^{2 i c}}}\right]-96 a^2 d^2 e e^{2 i c} f x \text{Log}\left[1+\frac{b e^{i (2 c+d x)}}{i a e^{i c}+\sqrt{\left(-a^2+b^2\right) e^{2 i c}}}\right]+$$

$$96 b^2 d^2 e e^{2 i c} f x \text{Log}\left[1+\frac{b e^{i (2 c+d x)}}{i a e^{i c}+\sqrt{\left(-a^2+b^2\right) e^{2 i c}}}\right]-48 a^2 d^2 e^{2 i c} f^2 x^2 \text{Log}\left[1+\frac{b e^{i (2 c+d x)}}{i a e^{i c}+\sqrt{\left(-a^2+b^2\right) e^{2 i c}}}\right]+$$

$$48\,b^2 d^2 e^{2 i c} f^2 x^2 \,\text{Log}\left[1+\frac{b\,e^{i(2c+dx)}}{i\,a\,e^{i c}+\sqrt{(-a^2+b^2)\,e^{2 i c}}}\right]+96\,i\,(a^2-b^2)\,d\,e^{2 i c} f\,(e+f x)\,\text{PolyLog}\left[2,\frac{i\,b\,e^{i(2c+dx)}}{a\,e^{i c}+i\sqrt{(-a^2+b^2)\,e^{2 i c}}}\right]+$$

$$96\,i\,(a^2-b^2)\,d\,e^{2 i c} f\,(e+f x)\,\text{PolyLog}\left[2,-\frac{b\,e^{i(2c+dx)}}{i\,a\,e^{i c}+\sqrt{(-a^2+b^2)\,e^{2 i c}}}\right]-96\,a^2 e^{2 i c} f^2\,\text{PolyLog}\left[3,\frac{i\,b\,e^{i(2c+dx)}}{a\,e^{i c}+i\sqrt{(-a^2+b^2)\,e^{2 i c}}}\right]+$$

$$96\,b^2 e^{2 i c} f^2\,\text{PolyLog}\left[3,\frac{i\,b\,e^{i(2c+dx)}}{a\,e^{i c}+i\sqrt{(-a^2+b^2)\,e^{2 i c}}}\right]-96\,a^2 e^{2 i c} f^2\,\text{PolyLog}\left[3,-\frac{b\,e^{i(2c+dx)}}{i\,a\,e^{i c}+\sqrt{(-a^2+b^2)\,e^{2 i c}}}\right]+$$

$$96\,b^2 e^{2 i c} f^2\,\text{PolyLog}\left[3,-\frac{b\,e^{i(2c+dx)}}{i\,a\,e^{i c}+\sqrt{(-a^2+b^2)\,e^{2 i c}}}\right]+24\,a\,b\,d^2 e^2 e^{i c}\,\text{Sin}[d x]+24\,a\,b\,d^2 e^2 e^{3 i c}\,\text{Sin}[d x]-$$

$$48\,i\,a\,b\,d\,e\,e^{i c} f\,\text{Sin}[d x]+48\,i\,a\,b\,d\,e\,e^{3 i c} f\,\text{Sin}[d x]-48\,a\,b\,e^{i c} f^2\,\text{Sin}[d x]-48\,a\,b\,e^{3 i c} f^2\,\text{Sin}[d x]+48\,a\,b\,d^2 e\,e^{i c} f\,x\,\text{Sin}[d x]+$$
$$48\,a\,b\,d^2 e\,e^{3 i c} f\,x\,\text{Sin}[d x]-48\,i\,a\,b\,d\,e^{i c} f^2 x\,\text{Sin}[d x]+48\,i\,a\,b\,d\,e^{3 i c} f^2 x\,\text{Sin}[d x]+24\,a\,b\,d^2 e^{i c} f^2 x^2\,\text{Sin}[d x]+$$
$$24\,a\,b\,d^2 e^{3 i c} f^2 x^2\,\text{Sin}[d x]-6\,i\,b^2 d^2 e^2\,\text{Sin}[2 d x]+6\,i\,b^2 d^2 e^2 e^{4 i c}\,\text{Sin}[2 d x]-6\,b^2 d\,e\,f\,\text{Sin}[2 d x]-6\,b^2 d\,e\,e^{4 i c} f\,\text{Sin}[2 d x]+$$
$$3\,i\,b^2 f^2\,\text{Sin}[2 d x]-3\,i\,b^2 e^{4 i c} f^2\,\text{Sin}[2 d x]-12\,i\,b^2 d^2 e\,f\,x\,\text{Sin}[2 d x]+12\,i\,b^2 d^2 e\,e^{4 i c} f\,x\,\text{Sin}[2 d x]-$$
$$\left.6\,b^2 d\,f^2 x\,\text{Sin}[2 d x]-6\,b^2 d\,e^{4 i c} f^2 x\,\text{Sin}[2 d x]-6\,i\,b^2 d^2 f^2 x^2\,\text{Sin}[2 d x]+6\,i\,b^2 d^2 e^{4 i c} f^2 x^2\,\text{Sin}[2 d x]\right)$$

Problem 304: Result more than twice size of optimal antiderivative.

$$\int \frac{(e+f x)\,\text{Cos}[c+d x]^3}{a+b\,\text{Sin}[c+d x]}\,dx$$

Optimal (type 4, 351 leaves, 13 steps):

$$\frac{f x}{4 b d}+\frac{i\,(a^2-b^2)\,(e+f x)^2}{2 b^3 f}+\frac{a f\,\text{Cos}[c+d x]}{b^2 d^2}-\frac{(a^2-b^2)\,(e+f x)\,\text{Log}\left[1-\frac{i\,b\,e^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right]}{b^3 d}-$$
$$\frac{(a^2-b^2)\,(e+f x)\,\text{Log}\left[1-\frac{i\,b\,e^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right]}{b^3 d}+\frac{i\,(a^2-b^2)\,f\,\text{PolyLog}\left[2,\frac{i\,b\,e^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right]}{b^3 d^2}+\frac{i\,(a^2-b^2)\,f\,\text{PolyLog}\left[2,\frac{i\,b\,e^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right]}{b^3 d^2}+$$
$$\frac{a\,(e+f x)\,\text{Sin}[c+d x]}{b^2 d}-\frac{f\,\text{Cos}[c+d x]\,\text{Sin}[c+d x]}{4 b d^2}-\frac{(e+f x)\,\text{Sin}[c+d x]^2}{2 b d}$$

Result (type 4, 816 leaves):

$$\frac{1}{8 b^3 d^2}\left(8\,a\,b\,f\,\text{Cos}[c+d x]+2\,b^2 d\,(e+f x)\,\text{Cos}[2\,(c+d x)]-8\,a^2 d\,e\,\text{Log}\left[1+\frac{b\,\text{Sin}[c+d x]}{a}\right]+\right.$$

$$8\,b^2\,d\,e\,\text{Log}\left[1+\frac{b\,\text{Sin}[c+d\,x]}{a}\right]+8\,a^2\,c\,f\,\text{Log}\left[1+\frac{b\,\text{Sin}[c+d\,x]}{a}\right]-8\,b^2\,c\,f\,\text{Log}\left[1+\frac{b\,\text{Sin}[c+d\,x]}{a}\right]-a^2\,f\left(i\,(-2\,c+\pi-2\,d\,x)^2-\right.$$

$$32\,i\,\text{ArcSin}\left[\frac{\sqrt{\frac{a+b}{b}}}{\sqrt{2}}\right]\text{ArcTan}\left[\frac{(a-b)\,\text{Cot}\left[\frac{1}{4}\,(2\,c+\pi+2\,d\,x)\right]}{\sqrt{a^2-b^2}}\right]-4\left(-2\,c+\pi-2\,d\,x+4\,\text{ArcSin}\left[\frac{\sqrt{\frac{a+b}{b}}}{\sqrt{2}}\right]\right)\text{Log}\left[1-\frac{i\left(-a+\sqrt{a^2-b^2}\right)e^{-i\,(c+d\,x)}}{b}\right]-$$

$$4\left(-2\,c+\pi-2\,d\,x-4\,\text{ArcSin}\left[\frac{\sqrt{\frac{a+b}{b}}}{\sqrt{2}}\right]\right)\text{Log}\left[1+\frac{i\left(a+\sqrt{a^2-b^2}\right)e^{-i\,(c+d\,x)}}{b}\right]+4\,(-2\,c+\pi-2\,d\,x)\,\text{Log}[a+b\,\text{Sin}[c+d\,x]]+$$

$$\left.8\,(c+d\,x)\,\text{Log}[a+b\,\text{Sin}[c+d\,x]]+8\,i\left(\text{PolyLog}\left[2,\frac{i\left(-a+\sqrt{a^2-b^2}\right)e^{-i\,(c+d\,x)}}{b}\right]+\text{PolyLog}\left[2,-\frac{i\left(a+\sqrt{a^2-b^2}\right)e^{-i\,(c+d\,x)}}{b}\right]\right)\right)+$$

$$b^2\,f\left(i\,(-2\,c+\pi-2\,d\,x)^2-32\,i\,\text{ArcSin}\left[\frac{\sqrt{\frac{a+b}{b}}}{\sqrt{2}}\right]\text{ArcTan}\left[\frac{(a-b)\,\text{Cot}\left[\frac{1}{4}\,(2\,c+\pi+2\,d\,x)\right]}{\sqrt{a^2-b^2}}\right]-\right.$$

$$4\left(-2\,c+\pi-2\,d\,x+4\,\text{ArcSin}\left[\frac{\sqrt{\frac{a+b}{b}}}{\sqrt{2}}\right]\right)\text{Log}\left[1-\frac{i\left(-a+\sqrt{a^2-b^2}\right)e^{-i\,(c+d\,x)}}{b}\right]-$$

$$4\left(-2\,c+\pi-2\,d\,x-4\,\text{ArcSin}\left[\frac{\sqrt{\frac{a+b}{b}}}{\sqrt{2}}\right]\right)\text{Log}\left[1+\frac{i\left(a+\sqrt{a^2-b^2}\right)e^{-i\,(c+d\,x)}}{b}\right]+4\,(-2\,c+\pi-2\,d\,x)\,\text{Log}[a+b\,\text{Sin}[c+d\,x]]+$$

$$8\,(c+d x)\,\mathrm{Log}[a+b\,\mathrm{Sin}[c+d x]]+8\,i\left(\mathrm{PolyLog}\left[2,\frac{i\left(-a+\sqrt{a^2-b^2}\right)e^{-i(c+d x)}}{b}\right]+\mathrm{PolyLog}\left[2,-\frac{i\left(a+\sqrt{a^2-b^2}\right)e^{-i(c+d x)}}{b}\right]\right)\Bigg)+$$

$$8\,a\,b\,d\,(e+f x)\,\mathrm{Sin}[c+d x]-b^2 f\,\mathrm{Sin}[2\,(c+d x)]\Bigg)$$

Problem 306: Result more than twice size of optimal antiderivative.

$$\int\frac{(e+f x)^3\,\mathrm{Sec}[c+d x]}{a+b\,\mathrm{Sin}[c+d x]}\,dx$$

Optimal (type 4, 937 leaves, 29 steps):

$$-\frac{2\,i\,a\,(e+f x)^3\,\mathrm{ArcTan}\left[e^{i(c+d x)}\right]}{\left(a^2-b^2\right)d}-\frac{b\,(e+f x)^3\,\mathrm{Log}\left[1-\frac{i\,b\,e^{i(c+d x)}}{a-\sqrt{a^2-b^2}}\right]}{\left(a^2-b^2\right)d}-\frac{b\,(e+f x)^3\,\mathrm{Log}\left[1-\frac{i\,b\,e^{i(c+d x)}}{a+\sqrt{a^2-b^2}}\right]}{\left(a^2-b^2\right)d}+$$

$$\frac{b\,(e+f x)^3\,\mathrm{Log}\left[1+e^{2i(c+d x)}\right]}{\left(a^2-b^2\right)d}+\frac{3\,i\,a\,f\,(e+f x)^2\,\mathrm{PolyLog}\left[2,-i\,e^{i(c+d x)}\right]}{\left(a^2-b^2\right)d^2}-\frac{3\,i\,a\,f\,(e+f x)^2\,\mathrm{PolyLog}\left[2,i\,e^{i(c+d x)}\right]}{\left(a^2-b^2\right)d^2}+$$

$$\frac{3\,i\,b\,f\,(e+f x)^2\,\mathrm{PolyLog}\left[2,\frac{i\,b\,e^{i(c+d x)}}{a-\sqrt{a^2-b^2}}\right]}{\left(a^2-b^2\right)d^2}+\frac{3\,i\,b\,f\,(e+f x)^2\,\mathrm{PolyLog}\left[2,\frac{i\,b\,e^{i(c+d x)}}{a+\sqrt{a^2-b^2}}\right]}{\left(a^2-b^2\right)d^2}-\frac{3\,i\,b\,f\,(e+f x)^2\,\mathrm{PolyLog}\left[2,-e^{2i(c+d x)}\right]}{2\left(a^2-b^2\right)d^2}-$$

$$\frac{6\,a\,f^2\,(e+f x)\,\mathrm{PolyLog}\left[3,-i\,e^{i(c+d x)}\right]}{\left(a^2-b^2\right)d^3}+\frac{6\,a\,f^2\,(e+f x)\,\mathrm{PolyLog}\left[3,i\,e^{i(c+d x)}\right]}{\left(a^2-b^2\right)d^3}-\frac{6\,b\,f^2\,(e+f x)\,\mathrm{PolyLog}\left[3,\frac{i\,b\,e^{i(c+d x)}}{a-\sqrt{a^2-b^2}}\right]}{\left(a^2-b^2\right)d^3}-$$

$$\frac{6\,b\,f^2\,(e+f x)\,\mathrm{PolyLog}\left[3,\frac{i\,b\,e^{i(c+d x)}}{a+\sqrt{a^2-b^2}}\right]}{\left(a^2-b^2\right)d^3}+\frac{3\,b\,f^2\,(e+f x)\,\mathrm{PolyLog}\left[3,-e^{2i(c+d x)}\right]}{2\left(a^2-b^2\right)d^3}-\frac{6\,i\,a\,f^3\,\mathrm{PolyLog}\left[4,-i\,e^{i(c+d x)}\right]}{\left(a^2-b^2\right)d^4}+$$

$$\frac{6\,i\,a\,f^3\,\mathrm{PolyLog}\left[4,i\,e^{i(c+d x)}\right]}{\left(a^2-b^2\right)d^4}-\frac{6\,i\,b\,f^3\,\mathrm{PolyLog}\left[4,\frac{i\,b\,e^{i(c+d x)}}{a-\sqrt{a^2-b^2}}\right]}{\left(a^2-b^2\right)d^4}-\frac{6\,i\,b\,f^3\,\mathrm{PolyLog}\left[4,\frac{i\,b\,e^{i(c+d x)}}{a+\sqrt{a^2-b^2}}\right]}{\left(a^2-b^2\right)d^4}+\frac{3\,i\,b\,f^3\,\mathrm{PolyLog}\left[4,-e^{2i(c+d x)}\right]}{4\left(a^2-b^2\right)d^4}$$

Result (type 4, 1977 leaves):

$$-\frac{1}{4\,(a-b)\,(a+b)\,d^4}$$

$$\Big(8\,\mathrm{i}\,a\,d^3\,e^3\,\text{ArcTan}\left[\mathrm{e}^{\mathrm{i}\,(c+d\,x)}\right]+4\,\mathrm{i}\,b\,d^3\,e^3\,\text{ArcTan}\left[\frac{2\,a\,\mathrm{e}^{\mathrm{i}\,(c+d\,x)}}{b\,\left(-1+\mathrm{e}^{2\,\mathrm{i}\,(c+d\,x)}\right)}\right]-12\,a\,d^3\,e^2\,f\,x\,\text{Log}\left[1-\mathrm{i}\,\mathrm{e}^{\mathrm{i}\,(c+d\,x)}\right]-12\,a\,d^3\,e\,f^2\,x^2\,\text{Log}\left[1-\mathrm{i}\,\mathrm{e}^{\mathrm{i}\,(c+d\,x)}\right]-$$

$$4\,a\,d^3\,f^3\,x^3\,\text{Log}\left[1-\mathrm{i}\,\mathrm{e}^{\mathrm{i}\,(c+d\,x)}\right]+12\,a\,d^3\,e^2\,f\,x\,\text{Log}\left[1+\mathrm{i}\,\mathrm{e}^{\mathrm{i}\,(c+d\,x)}\right]+12\,a\,d^3\,e\,f^2\,x^2\,\text{Log}\left[1+\mathrm{i}\,\mathrm{e}^{\mathrm{i}\,(c+d\,x)}\right]+4\,a\,d^3\,f^3\,x^3\,\text{Log}\left[1+\mathrm{i}\,\mathrm{e}^{\mathrm{i}\,(c+d\,x)}\right]-$$

$$4\,b\,d^3\,e^3\,\text{Log}\left[1+\mathrm{e}^{2\,\mathrm{i}\,(c+d\,x)}\right]-12\,b\,d^3\,e^2\,f\,x\,\text{Log}\left[1+\mathrm{e}^{2\,\mathrm{i}\,(c+d\,x)}\right]-12\,b\,d^3\,e\,f^2\,x^2\,\text{Log}\left[1+\mathrm{e}^{2\,\mathrm{i}\,(c+d\,x)}\right]-4\,b\,d^3\,f^3\,x^3\,\text{Log}\left[1+\mathrm{e}^{2\,\mathrm{i}\,(c+d\,x)}\right]+$$

$$2\,b\,d^3\,e^3\,\text{Log}\left[4\,a^2\,\mathrm{e}^{2\,\mathrm{i}\,(c+d\,x)}+b^2\,\left(-1+\mathrm{e}^{2\,\mathrm{i}\,(c+d\,x)}\right)^2\right]+12\,b\,d^3\,e^2\,f\,x\,\text{Log}\left[1+\frac{b\,\mathrm{e}^{\mathrm{i}\,(2\,c+d\,x)}}{\mathrm{i}\,a\,\mathrm{e}^{\mathrm{i}\,c}-\sqrt{\left(-a^2+b^2\right)\,\mathrm{e}^{2\,\mathrm{i}\,c}}}\right]+$$

$$12\,b\,d^3\,e\,f^2\,x^2\,\text{Log}\left[1+\frac{b\,\mathrm{e}^{\mathrm{i}\,(2\,c+d\,x)}}{\mathrm{i}\,a\,\mathrm{e}^{\mathrm{i}\,c}-\sqrt{\left(-a^2+b^2\right)\,\mathrm{e}^{2\,\mathrm{i}\,c}}}\right]+4\,b\,d^3\,f^3\,x^3\,\text{Log}\left[1+\frac{b\,\mathrm{e}^{\mathrm{i}\,(2\,c+d\,x)}}{\mathrm{i}\,a\,\mathrm{e}^{\mathrm{i}\,c}-\sqrt{\left(-a^2+b^2\right)\,\mathrm{e}^{2\,\mathrm{i}\,c}}}\right]+$$

$$12\,b\,d^3\,e^2\,f\,x\,\text{Log}\left[1+\frac{b\,\mathrm{e}^{\mathrm{i}\,(2\,c+d\,x)}}{\mathrm{i}\,a\,\mathrm{e}^{\mathrm{i}\,c}+\sqrt{\left(-a^2+b^2\right)\,\mathrm{e}^{2\,\mathrm{i}\,c}}}\right]+12\,b\,d^3\,e\,f^2\,x^2\,\text{Log}\left[1+\frac{b\,\mathrm{e}^{\mathrm{i}\,(2\,c+d\,x)}}{\mathrm{i}\,a\,\mathrm{e}^{\mathrm{i}\,c}+\sqrt{\left(-a^2+b^2\right)\,\mathrm{e}^{2\,\mathrm{i}\,c}}}\right]+$$

$$4\,b\,d^3\,f^3\,x^3\,\text{Log}\left[1+\frac{b\,\mathrm{e}^{\mathrm{i}\,(2\,c+d\,x)}}{\mathrm{i}\,a\,\mathrm{e}^{\mathrm{i}\,c}+\sqrt{\left(-a^2+b^2\right)\,\mathrm{e}^{2\,\mathrm{i}\,c}}}\right]-12\,\mathrm{i}\,a\,d^2\,f\,(e+f\,x)^2\,\text{PolyLog}\left[2,-\mathrm{i}\,\mathrm{e}^{\mathrm{i}\,(c+d\,x)}\right]+12\,\mathrm{i}\,a\,d^2\,f\,(e+f\,x)^2\,\text{PolyLog}\left[2,\mathrm{i}\,\mathrm{e}^{\mathrm{i}\,(c+d\,x)}\right]+$$

$$6\,\mathrm{i}\,b\,d^2\,e^2\,f\,\text{PolyLog}\left[2,-\mathrm{e}^{2\,\mathrm{i}\,(c+d\,x)}\right]+12\,\mathrm{i}\,b\,d^2\,e\,f^2\,x\,\text{PolyLog}\left[2,-\mathrm{e}^{2\,\mathrm{i}\,(c+d\,x)}\right]+6\,\mathrm{i}\,b\,d^2\,f^3\,x^2\,\text{PolyLog}\left[2,-\mathrm{e}^{2\,\mathrm{i}\,(c+d\,x)}\right]-$$

$$12\,\mathrm{i}\,b\,d^2\,e^2\,f\,\text{PolyLog}\left[2,\frac{\mathrm{i}\,b\,\mathrm{e}^{\mathrm{i}\,(2\,c+d\,x)}}{a\,\mathrm{e}^{\mathrm{i}\,c}+\mathrm{i}\,\sqrt{\left(-a^2+b^2\right)\,\mathrm{e}^{2\,\mathrm{i}\,c}}}\right]-24\,\mathrm{i}\,b\,d^2\,e\,f^2\,x\,\text{PolyLog}\left[2,\frac{\mathrm{i}\,b\,\mathrm{e}^{\mathrm{i}\,(2\,c+d\,x)}}{a\,\mathrm{e}^{\mathrm{i}\,c}+\mathrm{i}\,\sqrt{\left(-a^2+b^2\right)\,\mathrm{e}^{2\,\mathrm{i}\,c}}}\right]-$$

$$12\,\mathrm{i}\,b\,d^2\,f^3\,x^2\,\text{PolyLog}\left[2,\frac{\mathrm{i}\,b\,\mathrm{e}^{\mathrm{i}\,(2\,c+d\,x)}}{a\,\mathrm{e}^{\mathrm{i}\,c}+\mathrm{i}\,\sqrt{\left(-a^2+b^2\right)\,\mathrm{e}^{2\,\mathrm{i}\,c}}}\right]-12\,\mathrm{i}\,b\,d^2\,e^2\,f\,\text{PolyLog}\left[2,-\frac{b\,\mathrm{e}^{\mathrm{i}\,(2\,c+d\,x)}}{\mathrm{i}\,a\,\mathrm{e}^{\mathrm{i}\,c}+\sqrt{\left(-a^2+b^2\right)\,\mathrm{e}^{2\,\mathrm{i}\,c}}}\right]-$$

$$24\,\mathrm{i}\,b\,d^2\,e\,f^2\,x\,\text{PolyLog}\left[2,-\frac{b\,\mathrm{e}^{\mathrm{i}\,(2\,c+d\,x)}}{\mathrm{i}\,a\,\mathrm{e}^{\mathrm{i}\,c}+\sqrt{\left(-a^2+b^2\right)\,\mathrm{e}^{2\,\mathrm{i}\,c}}}\right]-12\,\mathrm{i}\,b\,d^2\,f^3\,x^2\,\text{PolyLog}\left[2,-\frac{b\,\mathrm{e}^{\mathrm{i}\,(2\,c+d\,x)}}{\mathrm{i}\,a\,\mathrm{e}^{\mathrm{i}\,c}+\sqrt{\left(-a^2+b^2\right)\,\mathrm{e}^{2\,\mathrm{i}\,c}}}\right]+$$

$$24\,a\,d\,e\,f^2\,\text{PolyLog}\left[3,-\mathrm{i}\,\mathrm{e}^{\mathrm{i}\,(c+d\,x)}\right]+24\,a\,d\,f^3\,x\,\text{PolyLog}\left[3,-\mathrm{i}\,\mathrm{e}^{\mathrm{i}\,(c+d\,x)}\right]-24\,a\,d\,e\,f^2\,\text{PolyLog}\left[3,\mathrm{i}\,\mathrm{e}^{\mathrm{i}\,(c+d\,x)}\right]-$$

$$24\,a\,d\,f^3\,x\,\text{PolyLog}\left[3,\mathrm{i}\,\mathrm{e}^{\mathrm{i}\,(c+d\,x)}\right]-6\,b\,d\,e\,f^2\,\text{PolyLog}\left[3,-\mathrm{e}^{2\,\mathrm{i}\,(c+d\,x)}\right]-6\,b\,d\,f^3\,x\,\text{PolyLog}\left[3,-\mathrm{e}^{2\,\mathrm{i}\,(c+d\,x)}\right]+$$

$$24\,b\,d\,e\,f^2\,\text{PolyLog}\left[3,\frac{\mathrm{i}\,b\,\mathrm{e}^{\mathrm{i}\,(2\,c+d\,x)}}{a\,\mathrm{e}^{\mathrm{i}\,c}+\mathrm{i}\,\sqrt{\left(-a^2+b^2\right)\,\mathrm{e}^{2\,\mathrm{i}\,c}}}\right]+24\,b\,d\,f^3\,x\,\text{PolyLog}\left[3,\frac{\mathrm{i}\,b\,\mathrm{e}^{\mathrm{i}\,(2\,c+d\,x)}}{a\,\mathrm{e}^{\mathrm{i}\,c}+\mathrm{i}\,\sqrt{\left(-a^2+b^2\right)\,\mathrm{e}^{2\,\mathrm{i}\,c}}}\right]+$$

$$24\,b\,d\,e\,f^2\,\text{PolyLog}\left[3,-\frac{b\,\mathrm{e}^{\mathrm{i}\,(2\,c+d\,x)}}{\mathrm{i}\,a\,\mathrm{e}^{\mathrm{i}\,c}+\sqrt{\left(-a^2+b^2\right)\,\mathrm{e}^{2\,\mathrm{i}\,c}}}\right]+24\,b\,d\,f^3\,x\,\text{PolyLog}\left[3,-\frac{b\,\mathrm{e}^{\mathrm{i}\,(2\,c+d\,x)}}{\mathrm{i}\,a\,\mathrm{e}^{\mathrm{i}\,c}+\sqrt{\left(-a^2+b^2\right)\,\mathrm{e}^{2\,\mathrm{i}\,c}}}\right]+$$

$$24\,\mathrm{i}\,a\,f^3\,\text{PolyLog}\left[4,-\mathrm{i}\,\mathrm{e}^{\mathrm{i}\,(c+d\,x)}\right]-24\,\mathrm{i}\,a\,f^3\,\text{PolyLog}\left[4,\mathrm{i}\,\mathrm{e}^{\mathrm{i}\,(c+d\,x)}\right]-3\,\mathrm{i}\,b\,f^3\,\text{PolyLog}\left[4,-\mathrm{e}^{2\,\mathrm{i}\,(c+d\,x)}\right]+$$

$$24\,\mathrm{i}\,b\,f^3\,\text{PolyLog}\left[4,\frac{\mathrm{i}\,b\,\mathrm{e}^{\mathrm{i}\,(2\,c+d\,x)}}{a\,\mathrm{e}^{\mathrm{i}\,c}+\mathrm{i}\,\sqrt{\left(-a^2+b^2\right)\,\mathrm{e}^{2\,\mathrm{i}\,c}}}\right]+24\,\mathrm{i}\,b\,f^3\,\text{PolyLog}\left[4,-\frac{b\,\mathrm{e}^{\mathrm{i}\,(2\,c+d\,x)}}{\mathrm{i}\,a\,\mathrm{e}^{\mathrm{i}\,c}+\sqrt{\left(-a^2+b^2\right)\,\mathrm{e}^{2\,\mathrm{i}\,c}}}\right]\Big)$$

- **Problem 308: Result more than twice size of optimal antiderivative.**

$$\int \frac{(e+f x) \operatorname{Sec}[c+d x]}{a+b \operatorname{Sin}[c+d x]} \, dx$$

Optimal (type 4, 413 leaves, 19 steps):

$$-\frac{2 i a (e+f x) \operatorname{ArcTan}\left[e^{i (c+d x)}\right]}{\left(a^2-b^2\right) d}-\frac{b (e+f x) \operatorname{Log}\left[1-\frac{i b e^{i (c+d x)}}{a-\sqrt{a^2-b^2}}\right]}{\left(a^2-b^2\right) d}-\frac{b (e+f x) \operatorname{Log}\left[1-\frac{i b e^{i (c+d x)}}{a+\sqrt{a^2-b^2}}\right]}{\left(a^2-b^2\right) d}+\frac{b (e+f x) \operatorname{Log}\left[1+e^{2 i (c+d x)}\right]}{\left(a^2-b^2\right) d}+\frac{i a f \operatorname{PolyLog}\left[2,-i e^{i (c+d x)}\right]}{\left(a^2-b^2\right) d^2}-\frac{i a f \operatorname{PolyLog}\left[2, i e^{i (c+d x)}\right]}{\left(a^2-b^2\right) d^2}+\frac{i b f \operatorname{PolyLog}\left[2, \frac{i b e^{i (c+d x)}}{a-\sqrt{a^2-b^2}}\right]}{\left(a^2-b^2\right) d^2}+\frac{i b f \operatorname{PolyLog}\left[2, \frac{i b e^{i (c+d x)}}{a+\sqrt{a^2-b^2}}\right]}{\left(a^2-b^2\right) d^2}-\frac{i b f \operatorname{PolyLog}\left[2,-e^{2 i (c+d x)}\right]}{2\left(a^2-b^2\right) d^2}$$

Result (type 4, 2580 leaves):

$$-\frac{b e \operatorname{Log}\left[1+\frac{b \operatorname{Sin}[c+d x]}{a}\right]}{\left(a^2-b^2\right) d}+\frac{b c f \operatorname{Log}\left[1+\frac{b \operatorname{Sin}[c+d x]}{a}\right]}{\left(a^2-b^2\right) d^2}-\frac{1}{\left(a^2-b^2\right) d^2}$$

$$b^2 f \left(\frac{(c+d x) \operatorname{Log}[a+b \operatorname{Sin}[c+d x]]}{b}-1/b \left(-\frac{1}{2} i \left(-c+\frac{\pi}{2}-d x\right)^2+4 i \operatorname{ArcSin}\left[\frac{\sqrt{\frac{a+b}{b}}}{\sqrt{2}}\right] \operatorname{ArcTan}\left[\frac{(a-b) \operatorname{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}{\sqrt{a^2-b^2}}\right]+\right.\right.$$

$$\left(-c+\frac{\pi}{2}-d x+2 \operatorname{ArcSin}\left[\frac{\sqrt{\frac{a+b}{b}}}{\sqrt{2}}\right]\right) \operatorname{Log}\left[1+\frac{\left(a-\sqrt{a^2-b^2}\right) e^{i\left(-c+\frac{\pi}{2}-d x\right)}}{b}\right]+$$

$$\left(-c+\frac{\pi}{2}-d x-2 \operatorname{ArcSin}\left[\frac{\sqrt{\frac{a+b}{b}}}{\sqrt{2}}\right]\right) \operatorname{Log}\left[1+\frac{\left(a+\sqrt{a^2-b^2}\right) e^{i\left(-c+\frac{\pi}{2}-d x\right)}}{b}\right]-\left(-c+\frac{\pi}{2}-d x\right) \operatorname{Log}[a+b \operatorname{Sin}[c+d x]]-$$

$$\left.\left.i \left(\operatorname{PolyLog}\left[2,-\frac{\left(a-\sqrt{a^2-b^2}\right) e^{i\left(-c+\frac{\pi}{2}-d x\right)}}{b}\right]+\operatorname{PolyLog}\left[2,-\frac{\left(a+\sqrt{a^2-b^2}\right) e^{i\left(-c+\frac{\pi}{2}-d x\right)}}{b}\right]\right)\right)\right)+$$

$$
\begin{aligned}
&\Big(\Big(2\,b\,(d\,e-c\,f)\,\text{Log}\big[\text{Sec}[\tfrac{1}{2}(c+d\,x)]^2\big]+2\,(a-b)\,(d\,e-c\,f)\,\text{Log}\big[1-\text{Tan}[\tfrac{1}{2}(c+d\,x)]\big]-2\,(a+b)\,(d\,e-c\,f)\,\text{Log}\big[1+\text{Tan}[\tfrac{1}{2}(c+d\,x)]\big]+\\
&\quad f\,\Big(2\,(c+d\,x)\,\Big(b\,\text{Log}\big[\text{Sec}[\tfrac{1}{2}(c+d\,x)]^2\big]+(a-b)\,\text{Log}\big[1-\text{Tan}[\tfrac{1}{2}(c+d\,x)]\big]-(a+b)\,\text{Log}\big[1+\text{Tan}[\tfrac{1}{2}(c+d\,x)]\big]\Big)+b\,\Big(-2\,(c+d\,x)\\
&\qquad\quad \text{Log}\big[\text{Sec}[\tfrac{1}{2}(c+d\,x)]^2\big]+2\,(c+d\,x)\,\text{Log}\big[-i+\text{Tan}[\tfrac{1}{2}(c+d\,x)]\big]-2\,i\,\text{Log}\big[\tfrac{1}{2}\big(1-i\,\text{Tan}[\tfrac{1}{2}(c+d\,x)]\big)\big]\,\text{Log}\big[-i+\text{Tan}[\tfrac{1}{2}(c+d\,x)]\big]+\\
&\qquad\quad i\,\text{Log}\big[-i+\text{Tan}[\tfrac{1}{2}(c+d\,x)]\big]^2+2\,(c+d\,x)\,\text{Log}\big[i+\text{Tan}[\tfrac{1}{2}(c+d\,x)]\big]+2\,i\,\text{Log}\big[\tfrac{1}{2}\big(1+i\,\text{Tan}[\tfrac{1}{2}(c+d\,x)]\big)\big]\,\text{Log}\big[i+\text{Tan}[\tfrac{1}{2}(c+d\,x)]\big]-\\
&\qquad\quad i\,\text{Log}\big[i+\text{Tan}[\tfrac{1}{2}(c+d\,x)]\big]^2+2\,i\,\text{PolyLog}\big[2,\tfrac{1}{2}\big(1-i\,\text{Tan}[\tfrac{1}{2}(c+d\,x)]\big)\big]-2\,i\,\text{PolyLog}\big[2,\tfrac{1}{2}\big(1+i\,\text{Tan}[\tfrac{1}{2}(c+d\,x)]\big)\big]\Big)+\\
&\qquad 2\,i\,(a-b)\,\Big(\text{Log}\big[1-\text{Tan}[\tfrac{1}{2}(c+d\,x)]\big]\,\Big(\text{Log}\big[\big(\tfrac{1}{2}+\tfrac{i}{2}\big)\big(-i+\text{Tan}[\tfrac{1}{2}(c+d\,x)]\big)\big]-\text{Log}\big[\tfrac{1}{2}\big((1+i)+(1-i)\,\text{Tan}[\tfrac{1}{2}(c+d\,x)]\big)\big]\Big)+\\
&\qquad\quad \text{PolyLog}\big[2,\big(-\tfrac{1}{2}-\tfrac{i}{2}\big)\big(-1+\text{Tan}[\tfrac{1}{2}(c+d\,x)]\big)\big]-\text{PolyLog}\big[2,\big(-\tfrac{1}{2}+\tfrac{i}{2}\big)\big(-1+\text{Tan}[\tfrac{1}{2}(c+d\,x)]\big)\big]\Big)+\\
&\qquad 2\,i\,(a+b)\,\Big(\Big(-\text{Log}\big[\tfrac{1}{2}\big((1+i)-(1-i)\,\text{Tan}[\tfrac{1}{2}(c+d\,x)]\big)\big]+\text{Log}\big[\big(-\tfrac{1}{2}-\tfrac{i}{2}\big)\big(i+\text{Tan}[\tfrac{1}{2}(c+d\,x)]\big)\big]\Big)\,\text{Log}\big[1+\text{Tan}[\tfrac{1}{2}(c+d\,x)]\big]-\\
&\qquad\quad \text{PolyLog}\big[2,\big(\tfrac{1}{2}-\tfrac{i}{2}\big)\big(1+\text{Tan}[\tfrac{1}{2}(c+d\,x)]\big)\big]+\text{PolyLog}\big[2,\big(\tfrac{1}{2}+\tfrac{i}{2}\big)\big(1+\text{Tan}[\tfrac{1}{2}(c+d\,x)]\big)\big]\Big)\Big)\Big)\\
&\quad\Big(\Big(\Big(\frac{a\,e}{a^2-b^2}-\frac{a\,c\,f}{(a^2-b^2)\,d}+\frac{a\,f\,(c+d\,x)}{(a^2-b^2)\,d}\Big)\,\text{Sec}[c+d\,x]+\Big(-\frac{b\,e}{a^2-b^2}+\frac{b\,c\,f}{(a^2-b^2)\,d}-\frac{b\,f\,(c+d\,x)}{(a^2-b^2)\,d}\Big)\,\text{Tan}[c+d\,x]\Big)\Big)\Big/\\
&\Big(d\,\Big(-\frac{(a-b)\,(d\,e-c\,f)\,\text{Sec}[\frac{1}{2}(c+d\,x)]^2}{1-\text{Tan}[\frac{1}{2}(c+d\,x)]}+2\,b\,(d\,e-c\,f)\,\text{Tan}[\tfrac{1}{2}(c+d\,x)]-\frac{(a+b)\,(d\,e-c\,f)\,\text{Sec}[\frac{1}{2}(c+d\,x)]^2}{1+\text{Tan}[\frac{1}{2}(c+d\,x)]}+\\
&\quad f\,\Big(2\,\Big(b\,\text{Log}\big[\text{Sec}[\tfrac{1}{2}(c+d\,x)]^2\big]+(a-b)\,\text{Log}\big[1-\text{Tan}[\tfrac{1}{2}(c+d\,x)]\big]-(a+b)\,\text{Log}\big[1+\text{Tan}[\tfrac{1}{2}(c+d\,x)]\big]\Big)+\\
&\qquad b\,\Big(-2\,\text{Log}\big[\text{Sec}[\tfrac{1}{2}(c+d\,x)]^2\big]+2\,\text{Log}\big[-i+\text{Tan}[\tfrac{1}{2}(c+d\,x)]\big]+2\,\text{Log}\big[i+\text{Tan}[\tfrac{1}{2}(c+d\,x)]\big]-\\
&\qquad\quad \frac{\text{Log}\big[1+\frac{1}{2}\big(-1+i\,\text{Tan}[\frac{1}{2}(c+d\,x)]\big)\big]\,\text{Sec}[\frac{1}{2}(c+d\,x)]^2}{1-i\,\text{Tan}[\frac{1}{2}(c+d\,x)]}-\frac{\text{Log}\big[-i+\text{Tan}[\frac{1}{2}(c+d\,x)]\big]\,\text{Sec}[\frac{1}{2}(c+d\,x)]^2}{1-i\,\text{Tan}[\frac{1}{2}(c+d\,x)]}-\\
&\qquad\quad \frac{\text{Log}\big[1+\frac{1}{2}\big(-1-i\,\text{Tan}[\frac{1}{2}(c+d\,x)]\big)\big]\,\text{Sec}[\frac{1}{2}(c+d\,x)]^2}{1+i\,\text{Tan}[\frac{1}{2}(c+d\,x)]}-\frac{\text{Log}\big[i+\text{Tan}[\frac{1}{2}(c+d\,x)]\big]\,\text{Sec}[\frac{1}{2}(c+d\,x)]^2}{1+i\,\text{Tan}[\frac{1}{2}(c+d\,x)]}-2\,(c+d\,x)\,\text{Tan}[\tfrac{1}{2}(c+d\,x)]+
\end{aligned}
$$

$$\frac{(c+d x) \operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^2}{-i+\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]}-\frac{i \operatorname{Log}\left[\frac{1}{2}\left(1-i \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]\right)\right] \operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^2}{-i+\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]}+\frac{i \operatorname{Log}\left[-i+\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]\right] \operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^2}{-i+\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]}+$$

$$\left.\frac{(c+d x) \operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^2}{i+\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]}+\frac{i \operatorname{Log}\left[\frac{1}{2}\left(1+i \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]\right)\right] \operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^2}{i+\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]}-\frac{i \operatorname{Log}\left[i+\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]\right] \operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^2}{i+\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]}\right)+$$

$$2(c+d x)\left(-\frac{(a-b) \operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^2}{2\left(1-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]\right)}+b \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]-\frac{(a+b) \operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^2}{2\left(1+\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]\right)}\right)+$$

$$2 i(a+b)\left(\left(\left(\left(-\operatorname{Log}\left[\frac{1}{2}\left((1+i)-(1-i) \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]\right)\right]+\operatorname{Log}\left[\left(-\frac{1}{2}-\frac{i}{2}\right)\left(i+\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]\right)\right]\right) \operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^2\right)\right/$$

$$\left.\left(2\left(1+\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]\right)\right)-\frac{\operatorname{Log}\left[1-\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]\right)\right] \operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^2}{2\left(1+\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]\right)}+\right.$$

$$\frac{\operatorname{Log}\left[1-\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]\right)\right] \operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^2}{2\left(1+\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]\right)}+\operatorname{Log}\left[1+\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]\right]$$

$$\left.\left(\frac{\left(\frac{1}{2}-\frac{i}{2}\right) \operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^2}{(1+i)-(1-i) \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]}+\frac{\operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^2}{2\left(i+\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]\right)}\right)\right)+2 i(a-b)\left(-\left(\left(\operatorname{Log}\left[\left(\frac{1}{2}+\frac{i}{2}\right)\left(-i+\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]\right)\right]-\right.\right.\right.$$

$$\left.\left.\left.\operatorname{Log}\left[\frac{1}{2}\left((1+i)+(1-i) \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]\right)\right]\right) \operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^2\right) \middle/ \left(2\left(1-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]\right)\right)\right)+$$

$$\frac{\operatorname{Log}\left[1+\left(\frac{1}{2}-\frac{i}{2}\right)\left(-1+\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]\right)\right] \operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^2}{2\left(-1+\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]\right)}-\frac{\operatorname{Log}\left[1+\left(\frac{1}{2}+\frac{i}{2}\right)\left(-1+\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]\right)\right] \operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^2}{2\left(-1+\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]\right)}+$$

$$\left.\left.\left.\left.\left.\operatorname{Log}\left[1-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]\right]\left(\frac{\operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^2}{2\left(-i+\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]\right)}-\frac{\left(\frac{1}{2}-\frac{i}{2}\right) \operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^2}{(1+i)+(1-i) \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]}\right)\right)\right)\right)\right)$$

- **Problem 310: Result more than twice size of optimal antiderivative.**

$$\int \frac{(e+f x)^3 \operatorname{Sec}[c+d x]^2}{a+b \operatorname{Sin}[c+d x]} \, dx$$

Optimal (type 4, 923 leaves, 29 steps):

$$-\frac{i a (e+f x)^3}{(a^2-b^2) d}-\frac{6 i b f (e+f x)^2 \text{ArcTan}\left[e^{i (c+d x)}\right]}{(a^2-b^2) d^2}+\frac{i b^2 (e+f x)^3 \text{Log}\left[1-\frac{i b e^{i (c+d x)}}{a-\sqrt{a^2-b^2}}\right]}{(a^2-b^2)^{3/2} d}-$$

$$\frac{i b^2 (e+f x)^3 \text{Log}\left[1-\frac{i b e^{i (c+d x)}}{a+\sqrt{a^2-b^2}}\right]}{(a^2-b^2)^{3/2} d}+\frac{3 a f (e+f x)^2 \text{Log}\left[1+e^{2 i (c+d x)}\right]}{(a^2-b^2) d^2}+\frac{6 i b f^2 (e+f x) \text{PolyLog}\left[2,-i e^{i (c+d x)}\right]}{(a^2-b^2) d^3}-$$

$$\frac{6 i b f^2 (e+f x) \text{PolyLog}\left[2, i e^{i (c+d x)}\right]}{(a^2-b^2) d^3}+\frac{3 b^2 f (e+f x)^2 \text{PolyLog}\left[2,\frac{i b e^{i (c+d x)}}{a-\sqrt{a^2-b^2}}\right]}{(a^2-b^2)^{3/2} d^2}-\frac{3 b^2 f (e+f x)^2 \text{PolyLog}\left[2,\frac{i b e^{i (c+d x)}}{a+\sqrt{a^2-b^2}}\right]}{(a^2-b^2)^{3/2} d^2}-$$

$$\frac{3 i a f^2 (e+f x) \text{PolyLog}\left[2,-e^{2 i (c+d x)}\right]}{(a^2-b^2) d^3}-\frac{6 b f^3 \text{PolyLog}\left[3,-i e^{i (c+d x)}\right]}{(a^2-b^2) d^4}+\frac{6 b f^3 \text{PolyLog}\left[3, i e^{i (c+d x)}\right]}{(a^2-b^2) d^4}+$$

$$\frac{6 i b^2 f^2 (e+f x) \text{PolyLog}\left[3,\frac{i b e^{i (c+d x)}}{a-\sqrt{a^2-b^2}}\right]}{(a^2-b^2)^{3/2} d^3}-\frac{6 i b^2 f^2 (e+f x) \text{PolyLog}\left[3,\frac{i b e^{i (c+d x)}}{a+\sqrt{a^2-b^2}}\right]}{(a^2-b^2)^{3/2} d^3}+\frac{3 a f^3 \text{PolyLog}\left[3,-e^{2 i (c+d x)}\right]}{2 (a^2-b^2) d^4}-$$

$$\frac{6 b^2 f^3 \text{PolyLog}\left[4,\frac{i b e^{i (c+d x)}}{a-\sqrt{a^2-b^2}}\right]}{(a^2-b^2)^{3/2} d^4}+\frac{6 b^2 f^3 \text{PolyLog}\left[4,\frac{i b e^{i (c+d x)}}{a+\sqrt{a^2-b^2}}\right]}{(a^2-b^2)^{3/2} d^4}-\frac{b (e+f x)^3 \text{Sec}[c+d x]}{(a^2-b^2) d}+\frac{a (e+f x)^3 \text{Tan}[c+d x]}{(a^2-b^2) d}$$

Result (type 4, 2241 leaves) :

$$\frac{b (e+f x)^3 \text{Sec}[c]}{(-a^2+b^2) d}-\frac{1}{(a^2-b^2)^{3/2} d^4 \sqrt{(-a^2+b^2) (\text{Cos}[2 c]+i \text{Sin}[2 c])}}$$

$$i b^2 \left(3 i \sqrt{a^2-b^2} d^3 e^2 f x \text{Log}\left[1+\frac{b (\text{Cos}[2 c+d x]+i \text{Sin}[2 c+d x])}{i a \text{Cos}[c]+\sqrt{(-a^2+b^2) (\text{Cos}[c]+i \text{Sin}[c])^2}-a \text{Sin}[c]}\right] (\text{Cos}[c]+i \text{Sin}[c])+\right.$$

$$3 i \sqrt{a^2-b^2} d^3 e f^2 x^2 \text{Log}\left[1+\frac{b (\text{Cos}[2 c+d x]+i \text{Sin}[2 c+d x])}{i a \text{Cos}[c]+\sqrt{(-a^2+b^2) (\text{Cos}[c]+i \text{Sin}[c])^2}-a \text{Sin}[c]}\right] (\text{Cos}[c]+i \text{Sin}[c])+$$

$$i \sqrt{a^2-b^2} d^3 f^3 x^3 \text{Log}\left[1+\frac{b (\text{Cos}[2 c+d x]+i \text{Sin}[2 c+d x])}{i a \text{Cos}[c]+\sqrt{(-a^2+b^2) (\text{Cos}[c]+i \text{Sin}[c])^2}-a \text{Sin}[c]}\right] (\text{Cos}[c]+i \text{Sin}[c])+$$

$$3 \sqrt{a^2-b^2} d^2 f (e+f x)^2 \text{PolyLog}\left[2,-\frac{b (\text{Cos}[2 c+d x]+i \text{Sin}[2 c+d x])}{i a \text{Cos}[c]+\sqrt{(-a^2+b^2) (\text{Cos}[c]+i \text{Sin}[c])^2}-a \text{Sin}[c]}\right] (\text{Cos}[c]+i \text{Sin}[c])-$$

$$3 \sqrt{a^2-b^2} d^2 f (e+f x)^2 \text{PolyLog}\left[2,\frac{b (\text{Cos}[2 c+d x]+i \text{Sin}[2 c+d x])}{-i a \text{Cos}[c]+\sqrt{(-a^2+b^2) (\text{Cos}[c]+i \text{Sin}[c])^2}+a \text{Sin}[c]}\right] (\text{Cos}[c]+i \text{Sin}[c])+$$

$$6\,i\,\sqrt{a^2-b^2}\;d\,e\,f^2\,\text{PolyLog}\left[3,-\frac{b\,(\text{Cos}[2\,c+d\,x]+i\,\text{Sin}[2\,c+d\,x])}{i\,a\,\text{Cos}[c]+\sqrt{\left(-a^2+b^2\right)\,(\text{Cos}[c]+i\,\text{Sin}[c])^2}-a\,\text{Sin}[c]}\right]\,(\text{Cos}[c]+i\,\text{Sin}[c])+$$

$$6\,i\,\sqrt{a^2-b^2}\;d\,f^3\,x\,\text{PolyLog}\left[3,-\frac{b\,(\text{Cos}[2\,c+d\,x]+i\,\text{Sin}[2\,c+d\,x])}{i\,a\,\text{Cos}[c]+\sqrt{\left(-a^2+b^2\right)\,(\text{Cos}[c]+i\,\text{Sin}[c])^2}-a\,\text{Sin}[c]}\right]\,(\text{Cos}[c]+i\,\text{Sin}[c])-$$

$$6\,\sqrt{a^2-b^2}\;f^3\,\text{PolyLog}\left[4,-\frac{b\,(\text{Cos}[2\,c+d\,x]+i\,\text{Sin}[2\,c+d\,x])}{i\,a\,\text{Cos}[c]+\sqrt{\left(-a^2+b^2\right)\,(\text{Cos}[c]+i\,\text{Sin}[c])^2}-a\,\text{Sin}[c]}\right]\,(\text{Cos}[c]+i\,\text{Sin}[c])+$$

$$6\,\sqrt{a^2-b^2}\;f^3\,\text{PolyLog}\left[4,\frac{b\,(\text{Cos}[2\,c+d\,x]+i\,\text{Sin}[2\,c+d\,x])}{-i\,a\,\text{Cos}[c]+\sqrt{\left(-a^2+b^2\right)\,(\text{Cos}[c]+i\,\text{Sin}[c])^2}+a\,\text{Sin}[c]}\right]\,(\text{Cos}[c]+i\,\text{Sin}[c])+$$

$$3\,\sqrt{a^2-b^2}\;d^3\,e^2\,f\,x\,\text{Log}\left[1-\frac{b\,(\text{Cos}[2\,c+d\,x]+i\,\text{Sin}[2\,c+d\,x])}{-i\,a\,\text{Cos}[c]+\sqrt{\left(-a^2+b^2\right)\,(\text{Cos}[c]+i\,\text{Sin}[c])^2}+a\,\text{Sin}[c]}\right]\,(-i\,\text{Cos}[c]+\text{Sin}[c])+$$

$$3\,\sqrt{a^2-b^2}\;d^3\,e\,f^2\,x^2\,\text{Log}\left[1-\frac{b\,(\text{Cos}[2\,c+d\,x]+i\,\text{Sin}[2\,c+d\,x])}{-i\,a\,\text{Cos}[c]+\sqrt{\left(-a^2+b^2\right)\,(\text{Cos}[c]+i\,\text{Sin}[c])^2}+a\,\text{Sin}[c]}\right]\,(-i\,\text{Cos}[c]+\text{Sin}[c])+$$

$$\sqrt{a^2-b^2}\;d^3\,f^3\,x^3\,\text{Log}\left[1-\frac{b\,(\text{Cos}[2\,c+d\,x]+i\,\text{Sin}[2\,c+d\,x])}{-i\,a\,\text{Cos}[c]+\sqrt{\left(-a^2+b^2\right)\,(\text{Cos}[c]+i\,\text{Sin}[c])^2}+a\,\text{Sin}[c]}\right]\,(-i\,\text{Cos}[c]+\text{Sin}[c])+$$

$$6\,\sqrt{a^2-b^2}\;d\,e\,f^2\,\text{PolyLog}\left[3,\frac{b\,(\text{Cos}[2\,c+d\,x]+i\,\text{Sin}[2\,c+d\,x])}{-i\,a\,\text{Cos}[c]+\sqrt{\left(-a^2+b^2\right)\,(\text{Cos}[c]+i\,\text{Sin}[c])^2}+a\,\text{Sin}[c]}\right]\,(-i\,\text{Cos}[c]+\text{Sin}[c])+$$

$$6\,\sqrt{a^2-b^2}\;d\,f^3\,x\,\text{PolyLog}\left[3,\frac{b\,(\text{Cos}[2\,c+d\,x]+i\,\text{Sin}[2\,c+d\,x])}{-i\,a\,\text{Cos}[c]+\sqrt{\left(-a^2+b^2\right)\,(\text{Cos}[c]+i\,\text{Sin}[c])^2}+a\,\text{Sin}[c]}\right]\,(-i\,\text{Cos}[c]+\text{Sin}[c])-$$

$$\left.2\,i\,d^3\,e^3\,\text{ArcTan}\left[\frac{b\,\text{Cos}[c+d\,x]+i\,(a+b\,\text{Sin}[c+d\,x])}{\sqrt{a^2-b^2}}\right]\,\sqrt{\left(-a^2+b^2\right)\,(\text{Cos}[2\,c]+i\,\text{Sin}[2\,c])}\right)+$$

$$\frac{e^3\,\text{Sin}\left[\frac{d\,x}{2}\right]+3\,e^2\,f\,x\,\text{Sin}\left[\frac{d\,x}{2}\right]+3\,e\,f^2\,x^2\,\text{Sin}\left[\frac{d\,x}{2}\right]+f^3\,x^3\,\text{Sin}\left[\frac{d\,x}{2}\right]}{(a+b)\,d\,\left(\text{Cos}\left[\frac{c}{2}\right]-\text{Sin}\left[\frac{c}{2}\right]\right)\,\left(\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]-\text{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right)}+$$

$$\frac{e^3\,\text{Sin}\left[\frac{d\,x}{2}\right]+3\,e^2\,f\,x\,\text{Sin}\left[\frac{d\,x}{2}\right]+3\,e\,f^2\,x^2\,\text{Sin}\left[\frac{d\,x}{2}\right]+f^3\,x^3\,\text{Sin}\left[\frac{d\,x}{2}\right]}{(a-b)\,d\,\left(\text{Cos}\left[\frac{c}{2}\right]+\text{Sin}\left[\frac{c}{2}\right]\right)\,\left(\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right)}+$$

$$\frac{1}{2\,\left(a^2-b^2\right)\,d^4}$$

$$f\,\big(-6\,i\,a\,d^3\,e^2\,x-6\,i\,a\,d^3\,e\,f\,x^2-2\,i\,a\,d^3\,f^2\,x^3-12\,i\,b\,d^2\,e^2\,\text{ArcTan}[\text{Cos}[c+d\,x]+i\,\text{Sin}[c+d\,x]]-$$

$$24\,i\,b\,d^2\,e\,f\,x\,\text{ArcTan}[\text{Cos}[c+d\,x]+i\,\text{Sin}[c+d\,x]]-12\,i\,b\,d^2\,f^2\,x^2\,\text{ArcTan}[\text{Cos}[c+d\,x]+i\,\text{Sin}[c+d\,x]]+$$

$$6\,a\,d^2\,e^2\,\text{Log}[1+\text{Cos}[2\,(c+d\,x)]+i\,\text{Sin}[2\,(c+d\,x)]]+12\,a\,d^2\,e\,f\,x\,\text{Log}[1+\text{Cos}[2\,(c+d\,x)]+i\,\text{Sin}[2\,(c+d\,x)]]+$$
$$6\,a\,d^2\,f^2\,x^2\,\text{Log}[1+\text{Cos}[2\,(c+d\,x)]+i\,\text{Sin}[2\,(c+d\,x)]]-12\,i\,b\,d\,f\,(e+f\,x)\,\text{PolyLog}[2,\,i\,\text{Cos}[c+d\,x]-\text{Sin}[c+d\,x]]+$$
$$12\,i\,b\,d\,f\,(e+f\,x)\,\text{PolyLog}[2,\,-i\,\text{Cos}[c+d\,x]+\text{Sin}[c+d\,x]]-6\,i\,a\,d\,e\,f\,\text{PolyLog}[2,\,-\text{Cos}[2\,(c+d\,x)]-i\,\text{Sin}[2\,(c+d\,x)]]-$$
$$6\,i\,a\,d\,f^2\,x\,\text{PolyLog}[2,\,-\text{Cos}[2\,(c+d\,x)]-i\,\text{Sin}[2\,(c+d\,x)]]+$$
$$12\,b\,f^2\,\text{PolyLog}[3,\,i\,\text{Cos}[c+d\,x]-\text{Sin}[c+d\,x]]-12\,b\,f^2\,\text{PolyLog}[3,\,-i\,\text{Cos}[c+d\,x]+\text{Sin}[c+d\,x]]+$$
$$3\,a\,f^2\,\text{PolyLog}[3,\,-\text{Cos}[2\,(c+d\,x)]-i\,\text{Sin}[2\,(c+d\,x)]]+6\,a\,d^3\,e^2\,x\,\text{Tan}[c]+6\,a\,d^3\,e\,f\,x^2\,\text{Tan}[c]+2\,a\,d^3\,f^2\,x^3\,\text{Tan}[c]\Big)$$

Problem 311: Result more than twice size of optimal antiderivative.

$$\int \frac{(e+f\,x)^2\,\text{Sec}[c+d\,x]^2}{a+b\,\text{Sin}[c+d\,x]}\,dx$$

Optimal (type 4, 659 leaves, 24 steps):

$$-\frac{i\,a\,(e+f\,x)^2}{\left(a^2-b^2\right)d}-\frac{4\,i\,b\,f\,(e+f\,x)\,\text{ArcTan}\left[e^{i\,(c+d\,x)}\right]}{\left(a^2-b^2\right)d^2}+\frac{i\,b^2\,(e+f\,x)^2\,\text{Log}\left[1-\frac{i\,b\,e^{i\,(c+d\,x)}}{a-\sqrt{a^2-b^2}}\right]}{\left(a^2-b^2\right)^{3/2}d}-\frac{i\,b^2\,(e+f\,x)^2\,\text{Log}\left[1-\frac{i\,b\,e^{i\,(c+d\,x)}}{a+\sqrt{a^2-b^2}}\right]}{\left(a^2-b^2\right)^{3/2}d}+$$
$$\frac{2\,a\,f\,(e+f\,x)\,\text{Log}\left[1+e^{2\,i\,(c+d\,x)}\right]}{\left(a^2-b^2\right)d^2}+\frac{2\,i\,b\,f^2\,\text{PolyLog}\left[2,\,-i\,e^{i\,(c+d\,x)}\right]}{\left(a^2-b^2\right)d^3}-\frac{2\,i\,b\,f^2\,\text{PolyLog}\left[2,\,i\,e^{i\,(c+d\,x)}\right]}{\left(a^2-b^2\right)d^3}+$$
$$\frac{2\,b^2\,f\,(e+f\,x)\,\text{PolyLog}\left[2,\,\frac{i\,b\,e^{i\,(c+d\,x)}}{a-\sqrt{a^2-b^2}}\right]}{\left(a^2-b^2\right)^{3/2}d^2}-\frac{2\,b^2\,f\,(e+f\,x)\,\text{PolyLog}\left[2,\,\frac{i\,b\,e^{i\,(c+d\,x)}}{a+\sqrt{a^2-b^2}}\right]}{\left(a^2-b^2\right)^{3/2}d^2}-\frac{i\,a\,f^2\,\text{PolyLog}\left[2,\,-e^{2\,i\,(c+d\,x)}\right]}{\left(a^2-b^2\right)d^3}+$$
$$\frac{2\,i\,b^2\,f^2\,\text{PolyLog}\left[3,\,\frac{i\,b\,e^{i\,(c+d\,x)}}{a-\sqrt{a^2-b^2}}\right]}{\left(a^2-b^2\right)^{3/2}d^3}-\frac{2\,i\,b^2\,f^2\,\text{PolyLog}\left[3,\,\frac{i\,b\,e^{i\,(c+d\,x)}}{a+\sqrt{a^2-b^2}}\right]}{\left(a^2-b^2\right)^{3/2}d^3}-\frac{b\,(e+f\,x)^2\,\text{Sec}[c+d\,x]}{\left(a^2-b^2\right)d}+\frac{a\,(e+f\,x)^2\,\text{Tan}[c+d\,x]}{\left(a^2-b^2\right)d}$$

Result (type 4, 1368 leaves):

$$\frac{b\,(e+f\,x)^2\,\text{Sec}[c]}{\left(-a^2+b^2\right)d}+\frac{2\,a\,e\,f\,\text{Sec}[c]\,(\text{Cos}[c]\,\text{Log}[\text{Cos}[c]\,\text{Cos}[d\,x]-\text{Sin}[c]\,\text{Sin}[d\,x]]+d\,x\,\text{Sin}[c])}{\left(a^2-b^2\right)d^2\left(\text{Cos}[c]^2+\text{Sin}[c]^2\right)}+$$
$$\frac{4\,i\,b\,e\,f\,\text{ArcTan}\left[\frac{-i\,\text{Sin}[c]-i\,\text{Cos}[c]\,\text{Tan}\left[\frac{d\,x}{2}\right]}{\sqrt{\text{Cos}[c]^2+\text{Sin}[c]^2}}\right]}{\left(a^2-b^2\right)d^2\sqrt{\text{Cos}[c]^2+\text{Sin}[c]^2}}+\Bigg(a\,f^2\,\text{Csc}[c]\,\Bigg(d^2\,e^{-i\,\text{ArcTan}[\text{Cot}[c]]}\,x^2-$$
$$1\Big/\left(\sqrt{1+\text{Cot}[c]^2}\right)\text{Cot}[c]\,\left(i\,d\,x\,(-\pi-2\,\text{ArcTan}[\text{Cot}[c]])-\pi\,\text{Log}\left[1+e^{-2\,i\,d\,x}\right]-2\,(d\,x-\text{ArcTan}[\text{Cot}[c]])\,\text{Log}\left[1-e^{2\,i\,(d\,x-\text{ArcTan}[\text{Cot}[c]])}\right]+\right.$$
$$\left.\pi\,\text{Log}[\text{Cos}[d\,x]]-2\,\text{ArcTan}[\text{Cot}[c]]\,\text{Log}[\text{Sin}[d\,x-\text{ArcTan}[\text{Cot}[c]]]]+i\,\text{PolyLog}\left[2,\,e^{2\,i\,(d\,x-\text{ArcTan}[\text{Cot}[c]])}\right]\right)\Bigg)\,\text{Sec}[c]\Bigg)\Big/$$

$$\left(\left(a^2-b^2\right) d^3 \sqrt{Csc[c]^2 \left(Cos[c]^2+Sin[c]^2\right)}\right)+\frac{1}{\left(a^2-b^2\right) d^3} 2 b f^2 \left(-1\Big/\left(\sqrt{1+Cot[c]^2}\right) Csc[c] \left((d x-ArcTan[Cot[c]])\right.\right.$$

$$\left.\left(Log\left[1-e^{i (d x-ArcTan[Cot[c]])}\right]-Log\left[1+e^{i (d x-ArcTan[Cot[c]])}\right]\right)+i \left(PolyLog\left[2,-e^{i (d x-ArcTan[Cot[c]])}\right]-PolyLog\left[2,e^{i (d x-ArcTan[Cot[c]])}\right]\right)\right)+$$

$$\left.\frac{2 ArcTan[Cot[c]] ArcTanh\left[\frac{Sin[c]+Cos[c] Tan\left[\frac{d x}{2}\right]}{\sqrt{Cos[c]^2+Sin[c]^2}}\right]}{\sqrt{Cos[c]^2+Sin[c]^2}}\right)-\frac{1}{\left(a^2-b^2\right)^{3/2} d^3 \sqrt{\left(-a^2+b^2\right) (Cos[2 c]+i Sin[2 c])}}$$

$$i b^2 \left(2 \sqrt{a^2-b^2} d f (e+f x) PolyLog\left[2,-\frac{b (Cos[2 c+d x]+i Sin[2 c+d x])}{i a Cos[c]+\sqrt{\left(-a^2+b^2\right) (Cos[c]+i Sin[c])^2}-a Sin[c]}\right] (Cos[c]+i Sin[c])-\right.$$

$$2 \sqrt{a^2-b^2} d f (e+f x) PolyLog\left[2,\frac{b (Cos[2 c+d x]+i Sin[2 c+d x])}{-i a Cos[c]+\sqrt{\left(-a^2+b^2\right) (Cos[c]+i Sin[c])^2}+a Sin[c]}\right] (Cos[c]+i Sin[c])-$$

$$i \left(-2 \sqrt{a^2-b^2} f^2 PolyLog\left[3,-\frac{b (Cos[2 c+d x]+i Sin[2 c+d x])}{i a Cos[c]+\sqrt{\left(-a^2+b^2\right) (Cos[c]+i Sin[c])^2}-a Sin[c]}\right] (Cos[c]+i Sin[c])+\right.$$

$$2 \sqrt{a^2-b^2} f^2 PolyLog\left[3,\frac{b (Cos[2 c+d x]+i Sin[2 c+d x])}{-i a Cos[c]+\sqrt{\left(-a^2+b^2\right) (Cos[c]+i Sin[c])^2}+a Sin[c]}\right] (Cos[c]+i Sin[c])+$$

$$d^2 \left(\sqrt{a^2-b^2} f x (2 e+f x) \left(-Log\left[1+\frac{b (Cos[2 c+d x]+i Sin[2 c+d x])}{i a Cos[c]+\sqrt{\left(-a^2+b^2\right) (Cos[c]+i Sin[c])^2}-a Sin[c]}\right]+\right.\right.$$

$$\left.Log\left[1-\frac{b (Cos[2 c+d x]+i Sin[2 c+d x])}{-i a Cos[c]+\sqrt{\left(-a^2+b^2\right) (Cos[c]+i Sin[c])^2}+a Sin[c]}\right]\right) (Cos[c]+i Sin[c])+$$

$$\left.\left.\left.2 e^2 ArcTan\left[\frac{b Cos[c+d x]+i (a+b Sin[c+d x])}{\sqrt{a^2-b^2}}\right] \sqrt{\left(-a^2+b^2\right) (Cos[2 c]+i Sin[2 c])}\right)\right)\right)+$$

$$\frac{e^2 Sin\left[\frac{d x}{2}\right]+2 e f x Sin\left[\frac{d x}{2}\right]+f^2 x^2 Sin\left[\frac{d x}{2}\right]}{(a+b) d \left(Cos\left[\frac{c}{2}\right]-Sin\left[\frac{c}{2}\right]\right) \left(Cos\left[\frac{c}{2}+\frac{d x}{2}\right]-Sin\left[\frac{c}{2}+\frac{d x}{2}\right]\right)}+\frac{e^2 Sin\left[\frac{d x}{2}\right]+2 e f x Sin\left[\frac{d x}{2}\right]+f^2 x^2 Sin\left[\frac{d x}{2}\right]}{(a-b) d \left(Cos\left[\frac{c}{2}\right]+Sin\left[\frac{c}{2}\right]\right) \left(Cos\left[\frac{c}{2}+\frac{d x}{2}\right]+Sin\left[\frac{c}{2}+\frac{d x}{2}\right]\right)}$$

- **Problem 317: Attempted integration timed out after 120 seconds.**

$$\int \frac{(e+f x)^m \operatorname{Sec}[c+d x]}{a+b \operatorname{Sin}[c+d x]} \, dx$$

Optimal (type 9, 28 leaves, 0 steps):

$$\text{Unintegrable}\left[\frac{(e+f x)^m \operatorname{Sec}[c+d x]}{a+b \operatorname{Sin}[c+d x]}, x\right]$$

Result (type 1, 1 leaves):

???

- **Problem 323: Result more than twice size of optimal antiderivative.**

$$\int \frac{(e+f x)^2 \operatorname{Cos}[c+d x]}{(a+b \operatorname{Sin}[c+d x])^3} \, dx$$

Optimal (type 4, 357 leaves, 12 steps):

$$-\frac{i a f (e+f x) \operatorname{Log}\left[1-\frac{i b e^{i (c+d x)}}{a-\sqrt{a^2-b^2}}\right]}{b \left(a^2-b^2\right)^{3/2} d^2}+\frac{i a f (e+f x) \operatorname{Log}\left[1-\frac{i b e^{i (c+d x)}}{a+\sqrt{a^2-b^2}}\right]}{b \left(a^2-b^2\right)^{3/2} d^2}-\frac{f^2 \operatorname{Log}[a+b \operatorname{Sin}[c+d x]]}{b \left(a^2-b^2\right) d^3}-\frac{a f^2 \operatorname{PolyLog}\left[2, \frac{i b e^{i (c+d x)}}{a-\sqrt{a^2-b^2}}\right]}{b \left(a^2-b^2\right)^{3/2} d^3}+\frac{a f^2 \operatorname{PolyLog}\left[2, \frac{i b e^{i (c+d x)}}{a+\sqrt{a^2-b^2}}\right]}{b \left(a^2-b^2\right)^{3/2} d^3}-\frac{(e+f x)^2}{2 b d (a+b \operatorname{Sin}[c+d x])^2}+\frac{f (e+f x) \operatorname{Cos}[c+d x]}{\left(a^2-b^2\right) d^2 (a+b \operatorname{Sin}[c+d x])}$$

Result (type 4, 1104 leaves):

$$\frac{f^2 x \operatorname{Cot}[c]}{b\left(-a^2+b^2\right) d^2}-\frac{1}{2 b\left(-a^2+b^2\right) d^2\left(-1+e^{2 i c}\right)} i e^{i c} f \left(4 e^{i c} f x+\frac{4 i a e e^{-i c} \operatorname{ArcTan}\left[\frac{i a+b e^{i(c+d x)}}{\sqrt{a^2-b^2}}\right]}{\sqrt{a^2-b^2}}-\frac{4 i a e e^{i c} \operatorname{ArcTan}\left[\frac{i a+b e^{i(c+d x)}}{\sqrt{a^2-b^2}}\right]}{\sqrt{a^2-b^2}}+\frac{2 e^{-i c} f \operatorname{ArcTan}\left[\frac{2 a e^{i(c+d x)}}{b\left(-1+e^{2 i(c+d x)}\right)}\right]}{d}-\frac{2 e^{i c} f \operatorname{ArcTan}\left[\frac{2 a e^{i(c+d x)}}{b\left(-1+e^{2 i(c+d x)}\right)}\right]}{d}-\right.$$
$$\frac{i e^{-i c} f \operatorname{Log}\left[4 a^2 e^{2 i(c+d x)}+b^2\left(-1+e^{2 i(c+d x)}\right)^2\right]}{d}+\frac{i e^{i c} f \operatorname{Log}\left[4 a^2 e^{2 i(c+d x)}+b^2\left(-1+e^{2 i(c+d x)}\right)^2\right]}{d}+\frac{2 i a f x \operatorname{Log}\left[1+\frac{b e^{i(2 c+d x)}}{i a e^{i c}-\sqrt{\left(-a^2+b^2\right) e^{2 i c}}}\right]}{\sqrt{\left(-a^2+b^2\right) e^{2 i c}}}-$$
$$\frac{2 i a e^{2 i c} f x \operatorname{Log}\left[1+\frac{b e^{i(2 c+d x)}}{i a e^{i c}-\sqrt{\left(-a^2+b^2\right) e^{2 i c}}}\right]}{\sqrt{\left(-a^2+b^2\right) e^{2 i c}}}-\frac{2 i a f x \operatorname{Log}\left[1+\frac{b e^{i(2 c+d x)}}{i a e^{i c}+\sqrt{\left(-a^2+b^2\right) e^{2 i c}}}\right]}{\sqrt{\left(-a^2+b^2\right) e^{2 i c}}}+\frac{2 i a e^{2 i c} f x \operatorname{Log}\left[1+\frac{b e^{i(2 c+d x)}}{i a e^{i c}+\sqrt{\left(-a^2+b^2\right) e^{2 i c}}}\right]}{\sqrt{\left(-a^2+b^2\right) e^{2 i c}}}-$$
$$\left.\frac{2 a\left(-1+e^{2 i c}\right) f \operatorname{PolyLog}\left[2, \frac{i b e^{i(2 c+d x)}}{a e^{i c}+i \sqrt{\left(-a^2+b^2\right) e^{2 i c}}}\right]}{d \sqrt{\left(-a^2+b^2\right) e^{2 i c}}}+\frac{2 a\left(-1+e^{2 i c}\right) f \operatorname{PolyLog}\left[2,-\frac{b e^{i(2 c+d x)}}{i a e^{i c}+\sqrt{\left(-a^2+b^2\right) e^{2 i c}}}\right]}{d \sqrt{\left(-a^2+b^2\right) e^{2 i c}}}\right)-$$
$$\frac{f^2 x \operatorname{Csc}\left[\frac{c}{2}\right] \operatorname{Sec}\left[\frac{c}{2}\right]\left(\operatorname{Cos}\left[\frac{c}{2}\right]-\operatorname{Sin}\left[\frac{c}{2}\right]\right)\left(\operatorname{Cos}\left[\frac{c}{2}\right]+\operatorname{Sin}\left[\frac{c}{2}\right]\right)}{2 b(-a+b)(a+b) d^2}-\frac{(e+f x)^2}{2 b d(a+b \operatorname{Sin}[c+d x])^2}+$$
$$\frac{\operatorname{Csc}\left[\frac{c}{2}\right] \operatorname{Sec}\left[\frac{c}{2}\right]\left(-a e f \operatorname{Cos}[c]-a f^2 x \operatorname{Cos}[c]-b e f \operatorname{Sin}[d x]-b f^2 x \operatorname{Sin}[d x]\right)}{2(a-b) b(a+b) d^2(a+b \operatorname{Sin}[c+d x])}$$

- **Problem 324: Result more than twice size of optimal antiderivative.**

$$\int \frac{(e+f x)^3 \operatorname{Cos}[c+d x]}{(a+b \operatorname{Sin}[c+d x])^3} \, dx$$

Optimal (type 4, 753 leaves, 19 steps):

$$\frac{3 i f (e+f x)^2}{2 b (a^2-b^2) d^2}-\frac{3 f^2 (e+f x) \text{Log}\left[1-\frac{i b e^{i (c+d x)}}{a-\sqrt{a^2-b^2}}\right]}{b (a^2-b^2) d^3}-\frac{3 i a f (e+f x)^2 \text{Log}\left[1-\frac{i b e^{i (c+d x)}}{a-\sqrt{a^2-b^2}}\right]}{2 b (a^2-b^2)^{3/2} d^2}-$$

$$\frac{3 f^2 (e+f x) \text{Log}\left[1-\frac{i b e^{i (c+d x)}}{a+\sqrt{a^2-b^2}}\right]}{b (a^2-b^2) d^3}+\frac{3 i a f (e+f x)^2 \text{Log}\left[1-\frac{i b e^{i (c+d x)}}{a+\sqrt{a^2-b^2}}\right]}{2 b (a^2-b^2)^{3/2} d^2}+\frac{3 i f^3 \text{PolyLog}\left[2,\frac{i b e^{i (c+d x)}}{a-\sqrt{a^2-b^2}}\right]}{b (a^2-b^2) d^4}-$$

$$\frac{3 a f^2 (e+f x) \text{PolyLog}\left[2,\frac{i b e^{i (c+d x)}}{a-\sqrt{a^2-b^2}}\right]}{b (a^2-b^2)^{3/2} d^3}+\frac{3 i f^3 \text{PolyLog}\left[2,\frac{i b e^{i (c+d x)}}{a+\sqrt{a^2-b^2}}\right]}{b (a^2-b^2) d^4}+\frac{3 a f^2 (e+f x) \text{PolyLog}\left[2,\frac{i b e^{i (c+d x)}}{a+\sqrt{a^2-b^2}}\right]}{b (a^2-b^2)^{3/2} d^3}-$$

$$\frac{3 i a f^3 \text{PolyLog}\left[3,\frac{i b e^{i (c+d x)}}{a-\sqrt{a^2-b^2}}\right]}{b (a^2-b^2)^{3/2} d^4}+\frac{3 i a f^3 \text{PolyLog}\left[3,\frac{i b e^{i (c+d x)}}{a+\sqrt{a^2-b^2}}\right]}{b (a^2-b^2)^{3/2} d^4}-\frac{(e+f x)^3}{2 b d (a+b \text{Sin}[c+d x])^2}+\frac{3 f (e+f x)^2 \text{Cos}[c+d x]}{2 (a^2-b^2) d^2 (a+b \text{Sin}[c+d x])}$$

Result (type 4, 8931 leaves) :

$$-\frac{1}{b (-a^2+b^2) d^2 (-1+\text{Cos}[2 c]+i \text{Sin}[2 c])}$$

$$3 i f (\text{Cos}[c]+i \text{Sin}[c]) \left(2 e f x \text{Cos}[c]+f^2 x^2 \text{Cos}[c]+\frac{i a e^2 \text{ArcTan}\left[\frac{i a+b \text{Cos}[c+d x]+i b \text{Sin}[c+d x]}{\sqrt{a^2-b^2}}\right] (\text{Cos}[c]-i \text{Sin}[c])}{\sqrt{a^2-b^2}}-\right.$$

$$\frac{2 a e f \text{ArcTan}\left[\frac{i a+b \text{Cos}[c+d x]+i b \text{Sin}[c+d x]}{\sqrt{a^2-b^2}}\right] (\text{Cos}[c]-i \text{Sin}[c])}{\sqrt{a^2-b^2} d}+\frac{1}{2 \sqrt{a^2-b^2} d}$$

$$e f \left(-4 \sqrt{a^2-b^2} d x+4 a \text{ArcTan}\left[\frac{i a+b \text{Cos}[c+d x]+i b \text{Sin}[c+d x]}{\sqrt{a^2-b^2}}\right]+2 \sqrt{a^2-b^2} \text{ArcTan}\left[\frac{2 a (\text{Cos}[c+d x]+i \text{Sin}[c+d x])}{b (-1+\text{Cos}[2 c+2 d x]+i \text{Sin}[2 c+2 d x])}\right]-\right.$$

$$\left. i \sqrt{a^2-b^2} \text{Log}\left[4 a^2 \text{Cos}[2 c+2 d x]+b^2 (-1+\text{Cos}[2 c+2 d x]+i \text{Sin}[2 c+2 d x])^2+4 i a^2 \text{Sin}[2 c+2 d x]\right]\right) (\text{Cos}[c]-i \text{Sin}[c])-$$

$$\frac{i a e^2 \text{ArcTan}\left[\frac{i a+b \text{Cos}[c+d x]+i b \text{Sin}[c+d x]}{\sqrt{a^2-b^2}}\right] (\text{Cos}[c]+i \text{Sin}[c])}{\sqrt{a^2-b^2}}+\frac{2 a e f \text{ArcTan}\left[\frac{i a+b \text{Cos}[c+d x]+i b \text{Sin}[c+d x]}{\sqrt{a^2-b^2}}\right] (\text{Cos}[c]+i \text{Sin}[c])}{\sqrt{a^2-b^2} d}-$$

$$\frac{1}{2 d} e f \left(-4 d x + \frac{4 a \text{ArcTan}\left[\frac{i a + b \text{Cos}[c+d x] + i b \text{Sin}[c+d x]}{\sqrt{a^2-b^2}}\right]}{\sqrt{a^2 - b^2}} + 2 \text{ArcTan}\left[\frac{2 a (\text{Cos}[c + d x] + i \text{Sin}[c + d x])}{b (-1 + \text{Cos}[2 c + 2 d x] + i \text{Sin}[2 c + 2 d x])}\right] - \right.$$

$$\left. i \text{Log}\left[4 a^2 \text{Cos}[2 c + 2 d x] + b^2 (-1 + \text{Cos}[2 c + 2 d x] + i \text{Sin}[2 c + 2 d x])^2 + 4 i a^2 \text{Sin}[2 c + 2 d x]\right]\right) (\text{Cos}[c] + i \text{Sin}[c]) +$$

$$2 i e f x \text{Sin}[c] + i f^2 x^2 \text{Sin}[c] - 2 e f x (\text{Cos}[c] - i \text{Sin}[c]) (-1 + \text{Cos}[2 c] + i \text{Sin}[2 c]) -$$
$$f^2 x^2 (\text{Cos}[c] - i \text{Sin}[c]) (-1 + \text{Cos}[2 c] + i \text{Sin}[2 c]) + 2 b f^2 (\text{Cos}[c] - i \text{Sin}[c])$$

$$\left(-\left(\frac{x^2}{2 \left(i a \text{Cos}[c] - a \text{Sin}[c] - \sqrt{(-a^2 + b^2) (\text{Cos}[2 c] + i \text{Sin}[2 c])}\right)} + \frac{i x \text{Log}\left[1 + \frac{b (\text{Cos}[2 c+d x]+i \text{Sin}[2 c+d x])}{i a \text{Cos}[c]-a \text{Sin}[c]-\sqrt{(-a^2+b^2) (\text{Cos}[2 c]+i \text{Sin}[2 c])}}\right]}{d \left(i a \text{Cos}[c] - a \text{Sin}[c] - \sqrt{(-a^2 + b^2) (\text{Cos}[2 c] + i \text{Sin}[2 c])}\right)} + \right.\right.$$

$$\left.\frac{\text{PolyLog}\left[2, -\frac{b (\text{Cos}[2 c+d x]+i \text{Sin}[2 c+d x])}{i a \text{Cos}[c]-a \text{Sin}[c]-\sqrt{(-a^2+b^2) (\text{Cos}[2 c]+i \text{Sin}[2 c])}}\right]}{d^2 \left(i a \text{Cos}[c] - a \text{Sin}[c] - \sqrt{(-a^2 + b^2) (\text{Cos}[2 c] + i \text{Sin}[2 c])}\right)}\right) \Big/$$

$$\left(-\frac{2 \text{Cos}[2 c] \sqrt{-a^2 \text{Cos}[2 c] + b^2 \text{Cos}[2 c] - i a^2 \text{Sin}[2 c] + i b^2 \text{Sin}[2 c]}}{b} + \right.$$

$$\left.\frac{2 i \text{Sin}[2 c] \sqrt{-a^2 \text{Cos}[2 c] + b^2 \text{Cos}[2 c] - i a^2 \text{Sin}[2 c] + i b^2 \text{Sin}[2 c]}}{b}\right) +$$

$$\left(\frac{x^2}{2 \left(i a \text{Cos}[c] - a \text{Sin}[c] + \sqrt{(-a^2 + b^2) (\text{Cos}[2 c] + i \text{Sin}[2 c])}\right)} + \frac{i x \text{Log}\left[1 + \frac{b (\text{Cos}[2 c+d x]+i \text{Sin}[2 c+d x])}{i a \text{Cos}[c]-a \text{Sin}[c]+\sqrt{(-a^2+b^2) (\text{Cos}[2 c]+i \text{Sin}[2 c])}}\right]}{d \left(i a \text{Cos}[c] - a \text{Sin}[c] + \sqrt{(-a^2 + b^2) (\text{Cos}[2 c] + i \text{Sin}[2 c])}\right)} + \right.$$

$$\left.\frac{\text{PolyLog}\left[2, -\frac{b (\text{Cos}[2 c+d x]+i \text{Sin}[2 c+d x])}{i a \text{Cos}[c]-a \text{Sin}[c]+\sqrt{(-a^2+b^2) (\text{Cos}[2 c]+i \text{Sin}[2 c])}}\right]}{d^2 \left(i a \text{Cos}[c] - a \text{Sin}[c] + \sqrt{(-a^2 + b^2) (\text{Cos}[2 c] + i \text{Sin}[2 c])}\right)}\right) \Big/$$

$$\left(-\frac{2 \text{Cos}[2 c] \sqrt{-a^2 \text{Cos}[2 c] + b^2 \text{Cos}[2 c] - i a^2 \text{Sin}[2 c] + i b^2 \text{Sin}[2 c]}}{b} + \right.$$

$$\left.\left.\frac{2\,\mathrm{i}\,\mathrm{Sin}[2\,c]\,\sqrt{-a^2\,\mathrm{Cos}[2\,c]+b^2\,\mathrm{Cos}[2\,c]-\mathrm{i}\,a^2\,\mathrm{Sin}[2\,c]+\mathrm{i}\,b^2\,\mathrm{Sin}[2\,c]}}{b}\right)\right)-2\,b\,f^2\,(\mathrm{Cos}[c]+\mathrm{i}\,\mathrm{Sin}[c])$$

$$\left(-\left(\frac{x^2}{2\left(\mathrm{i}\,a\,\mathrm{Cos}[c]-a\,\mathrm{Sin}[c]-\sqrt{\left(-a^2+b^2\right)\,(\mathrm{Cos}[2\,c]+\mathrm{i}\,\mathrm{Sin}[2\,c])}\right)}+\frac{\mathrm{i}\,x\,\mathrm{Log}\left[1+\frac{b\,(\mathrm{Cos}[2\,c+d\,x]+\mathrm{i}\,\mathrm{Sin}[2\,c+d\,x])}{\mathrm{i}\,a\,\mathrm{Cos}[c]-a\,\mathrm{Sin}[c]-\sqrt{\left(-a^2+b^2\right)\,(\mathrm{Cos}[2\,c]+\mathrm{i}\,\mathrm{Sin}[2\,c])}}\right]}{d\left(\mathrm{i}\,a\,\mathrm{Cos}[c]-a\,\mathrm{Sin}[c]-\sqrt{\left(-a^2+b^2\right)\,(\mathrm{Cos}[2\,c]+\mathrm{i}\,\mathrm{Sin}[2\,c])}\right)}+\right.\right.$$

$$\left.\frac{\mathrm{PolyLog}\left[2,-\frac{b\,(\mathrm{Cos}[2\,c+d\,x]+\mathrm{i}\,\mathrm{Sin}[2\,c+d\,x])}{\mathrm{i}\,a\,\mathrm{Cos}[c]-a\,\mathrm{Sin}[c]-\sqrt{\left(-a^2+b^2\right)\,(\mathrm{Cos}[2\,c]+\mathrm{i}\,\mathrm{Sin}[2\,c])}}\right]}{d^2\left(\mathrm{i}\,a\,\mathrm{Cos}[c]-a\,\mathrm{Sin}[c]-\sqrt{\left(-a^2+b^2\right)\,(\mathrm{Cos}[2\,c]+\mathrm{i}\,\mathrm{Sin}[2\,c])}\right)}\right)\Big/$$

$$\left(-\frac{2\,\mathrm{Cos}[2\,c]\,\sqrt{-a^2\,\mathrm{Cos}[2\,c]+b^2\,\mathrm{Cos}[2\,c]-\mathrm{i}\,a^2\,\mathrm{Sin}[2\,c]+\mathrm{i}\,b^2\,\mathrm{Sin}[2\,c]}}{b}+\right.$$

$$\left.\frac{2\,\mathrm{i}\,\mathrm{Sin}[2\,c]\,\sqrt{-a^2\,\mathrm{Cos}[2\,c]+b^2\,\mathrm{Cos}[2\,c]-\mathrm{i}\,a^2\,\mathrm{Sin}[2\,c]+\mathrm{i}\,b^2\,\mathrm{Sin}[2\,c]}}{b}\right)+$$

$$\left(\frac{x^2}{2\left(\mathrm{i}\,a\,\mathrm{Cos}[c]-a\,\mathrm{Sin}[c]+\sqrt{\left(-a^2+b^2\right)\,(\mathrm{Cos}[2\,c]+\mathrm{i}\,\mathrm{Sin}[2\,c])}\right)}+\frac{\mathrm{i}\,x\,\mathrm{Log}\left[1+\frac{b\,(\mathrm{Cos}[2\,c+d\,x]+\mathrm{i}\,\mathrm{Sin}[2\,c+d\,x])}{\mathrm{i}\,a\,\mathrm{Cos}[c]-a\,\mathrm{Sin}[c]+\sqrt{\left(-a^2+b^2\right)\,(\mathrm{Cos}[2\,c]+\mathrm{i}\,\mathrm{Sin}[2\,c])}}\right]}{d\left(\mathrm{i}\,a\,\mathrm{Cos}[c]-a\,\mathrm{Sin}[c]+\sqrt{\left(-a^2+b^2\right)\,(\mathrm{Cos}[2\,c]+\mathrm{i}\,\mathrm{Sin}[2\,c])}\right)}+\right.$$

$$\left.\frac{\mathrm{PolyLog}\left[2,-\frac{b\,(\mathrm{Cos}[2\,c+d\,x]+\mathrm{i}\,\mathrm{Sin}[2\,c+d\,x])}{\mathrm{i}\,a\,\mathrm{Cos}[c]-a\,\mathrm{Sin}[c]+\sqrt{\left(-a^2+b^2\right)\,(\mathrm{Cos}[2\,c]+\mathrm{i}\,\mathrm{Sin}[2\,c])}}\right]}{d^2\left(\mathrm{i}\,a\,\mathrm{Cos}[c]-a\,\mathrm{Sin}[c]+\sqrt{\left(-a^2+b^2\right)\,(\mathrm{Cos}[2\,c]+\mathrm{i}\,\mathrm{Sin}[2\,c])}\right)}\right)\Big/$$

$$\left(-\frac{2\,\mathrm{Cos}[2\,c]\,\sqrt{-a^2\,\mathrm{Cos}[2\,c]+b^2\,\mathrm{Cos}[2\,c]-\mathrm{i}\,a^2\,\mathrm{Sin}[2\,c]+\mathrm{i}\,b^2\,\mathrm{Sin}[2\,c]}}{b}+\right.$$

$$\left.\left.\frac{2\,\mathrm{i}\,\mathrm{Sin}[2\,c]\,\sqrt{-a^2\,\mathrm{Cos}[2\,c]+b^2\,\mathrm{Cos}[2\,c]-\mathrm{i}\,a^2\,\mathrm{Sin}[2\,c]+\mathrm{i}\,b^2\,\mathrm{Sin}[2\,c]}}{b}\right)\right)-2\,a\,d\,e\,f$$

$$\left(\left(\left(\frac{x^2}{2\left(\mathrm{i}\,a\,\mathrm{Cos}[c]-a\,\mathrm{Sin}[c]+\sqrt{\left(-a^2+b^2\right)\,(\mathrm{Cos}[2\,c]+\mathrm{i}\,\mathrm{Sin}[2\,c])}\right)}+\frac{\mathrm{i}\,x\,\mathrm{Log}\left[1+\frac{b\,(\mathrm{Cos}[2\,c+d\,x]+\mathrm{i}\,\mathrm{Sin}[2\,c+d\,x])}{\mathrm{i}\,a\,\mathrm{Cos}[c]-a\,\mathrm{Sin}[c]+\sqrt{\left(-a^2+b^2\right)\,(\mathrm{Cos}[2\,c]+\mathrm{i}\,\mathrm{Sin}[2\,c])}}\right]}{d\left(\mathrm{i}\,a\,\mathrm{Cos}[c]-a\,\mathrm{Sin}[c]+\sqrt{\left(-a^2+b^2\right)\,(\mathrm{Cos}[2\,c]+\mathrm{i}\,\mathrm{Sin}[2\,c])}\right)}+\right.\right.\right.$$

$$\left.\frac{\text{PolyLog}\left[2,-\frac{b\,(\text{Cos}[2c+dx]+i\,\text{Sin}[2c+dx])}{i\,a\,\text{Cos}[c]-a\,\text{Sin}[c]+\sqrt{(-a^2+b^2)\,(\text{Cos}[2c]+i\,\text{Sin}[2c])}}\right]}{d^2\left(i\,a\,\text{Cos}[c]-a\,\text{Sin}[c]+\sqrt{(-a^2+b^2)\,(\text{Cos}[2c]+i\,\text{Sin}[2c])}\right)}\right)$$

$$\left(-i\,a\,\text{Cos}[c]-a\,\text{Sin}[c]-(\text{Cos}[2c]-i\,\text{Sin}[2c])\sqrt{-a^2\,\text{Cos}[2c]+b^2\,\text{Cos}[2c]-i\,a^2\,\text{Sin}[2c]+i\,b^2\,\text{Sin}[2c]}\right)\Bigg)\Bigg/$$

$$\left(b\left(-\frac{2\,\text{Cos}[2c]\sqrt{-a^2\,\text{Cos}[2c]+b^2\,\text{Cos}[2c]-i\,a^2\,\text{Sin}[2c]+i\,b^2\,\text{Sin}[2c]}}{b}+\right.\right.$$

$$\left.\left.\frac{2\,i\,\text{Sin}[2c]\sqrt{-a^2\,\text{Cos}[2c]+b^2\,\text{Cos}[2c]-i\,a^2\,\text{Sin}[2c]+i\,b^2\,\text{Sin}[2c]}}{b}\right)\right)-$$

$$\left(\left(\frac{x^2}{2\left(i\,a\,\text{Cos}[c]-a\,\text{Sin}[c]-\sqrt{(-a^2+b^2)\,(\text{Cos}[2c]+i\,\text{Sin}[2c])}\right)}+\frac{i\,x\,\text{Log}\left[1+\frac{b\,(\text{Cos}[2c+dx]+i\,\text{Sin}[2c+dx])}{i\,a\,\text{Cos}[c]-a\,\text{Sin}[c]-\sqrt{(-a^2+b^2)\,(\text{Cos}[2c]+i\,\text{Sin}[2c])}}\right]}{d\left(i\,a\,\text{Cos}[c]-a\,\text{Sin}[c]-\sqrt{(-a^2+b^2)\,(\text{Cos}[2c]+i\,\text{Sin}[2c])}\right)}+\right.\right.$$

$$\left.\frac{\text{PolyLog}\left[2,-\frac{b\,(\text{Cos}[2c+dx]+i\,\text{Sin}[2c+dx])}{i\,a\,\text{Cos}[c]-a\,\text{Sin}[c]-\sqrt{(-a^2+b^2)\,(\text{Cos}[2c]+i\,\text{Sin}[2c])}}\right]}{d^2\left(i\,a\,\text{Cos}[c]-a\,\text{Sin}[c]-\sqrt{(-a^2+b^2)\,(\text{Cos}[2c]+i\,\text{Sin}[2c])}\right)}\right)$$

$$\left(-i\,a\,\text{Cos}[c]-a\,\text{Sin}[c]+(\text{Cos}[2c]-i\,\text{Sin}[2c])\sqrt{-a^2\,\text{Cos}[2c]+b^2\,\text{Cos}[2c]-i\,a^2\,\text{Sin}[2c]+i\,b^2\,\text{Sin}[2c]}\right)\Bigg)\Bigg/$$

$$\left(b\left(-\frac{2\,\text{Cos}[2c]\sqrt{-a^2\,\text{Cos}[2c]+b^2\,\text{Cos}[2c]-i\,a^2\,\text{Sin}[2c]+i\,b^2\,\text{Sin}[2c]}}{b}+\right.\right.$$

$$\left.\left.\left.\frac{2\,i\,\text{Sin}[2c]\sqrt{-a^2\,\text{Cos}[2c]+b^2\,\text{Cos}[2c]-i\,a^2\,\text{Sin}[2c]+i\,b^2\,\text{Sin}[2c]}}{b}\right)\right)\right)-2\,i\,a\,f^2$$

$$\left(\left(\left(\frac{x^2}{2\left(i\,a\,\text{Cos}[c]-a\,\text{Sin}[c]+\sqrt{(-a^2+b^2)\,(\text{Cos}[2c]+i\,\text{Sin}[2c])}\right)}+\frac{i\,x\,\text{Log}\left[1+\frac{b\,(\text{Cos}[2c+dx]+i\,\text{Sin}[2c+dx])}{i\,a\,\text{Cos}[c]-a\,\text{Sin}[c]+\sqrt{(-a^2+b^2)\,(\text{Cos}[2c]+i\,\text{Sin}[2c])}}\right]}{d\left(i\,a\,\text{Cos}[c]-a\,\text{Sin}[c]+\sqrt{(-a^2+b^2)\,(\text{Cos}[2c]+i\,\text{Sin}[2c])}\right)}+\right.\right.\right.$$

$$\frac{\text{PolyLog}\left[2,-\frac{b\,(\text{Cos}[2c+dx]+i\,\text{Sin}[2c+dx])}{i\,a\,\text{Cos}[c]-a\,\text{Sin}[c]+\sqrt{(-a^2+b^2)}\,(\text{Cos}[2c]+i\,\text{Sin}[2c])}\right]}{d^2\left(i\,a\,\text{Cos}[c]-a\,\text{Sin}[c]+\sqrt{(-a^2+b^2)}\,(\text{Cos}[2c]+i\,\text{Sin}[2c])\right)}\Bigg)$$

$$\left(-i\,a\,\text{Cos}[c]-a\,\text{Sin}[c]-(\text{Cos}[2c]-i\,\text{Sin}[2c])\sqrt{-a^2\,\text{Cos}[2c]+b^2\,\text{Cos}[2c]-i\,a^2\,\text{Sin}[2c]+i\,b^2\,\text{Sin}[2c]}\right)\Bigg)\Big/$$

$$\left(b\left(-\frac{2\,\text{Cos}[2c]\sqrt{-a^2\,\text{Cos}[2c]+b^2\,\text{Cos}[2c]-i\,a^2\,\text{Sin}[2c]+i\,b^2\,\text{Sin}[2c]}}{b}+\right.\right.$$

$$\left.\left.\frac{2\,i\,\text{Sin}[2c]\sqrt{-a^2\,\text{Cos}[2c]+b^2\,\text{Cos}[2c]-i\,a^2\,\text{Sin}[2c]+i\,b^2\,\text{Sin}[2c]}}{b}\right)\right)-$$

$$\Bigg(\Bigg(\frac{x^2}{2\left(i\,a\,\text{Cos}[c]-a\,\text{Sin}[c]-\sqrt{(-a^2+b^2)}\,(\text{Cos}[2c]+i\,\text{Sin}[2c])\right)}+\frac{i\,x\,\text{Log}\left[1+\frac{b\,(\text{Cos}[2c+dx]+i\,\text{Sin}[2c+dx])}{i\,a\,\text{Cos}[c]-a\,\text{Sin}[c]-\sqrt{(-a^2+b^2)}\,(\text{Cos}[2c]+i\,\text{Sin}[2c])}\right]}{d\left(i\,a\,\text{Cos}[c]-a\,\text{Sin}[c]-\sqrt{(-a^2+b^2)}\,(\text{Cos}[2c]+i\,\text{Sin}[2c])\right)}+$$

$$\frac{\text{PolyLog}\left[2,-\frac{b\,(\text{Cos}[2c+dx]+i\,\text{Sin}[2c+dx])}{i\,a\,\text{Cos}[c]-a\,\text{Sin}[c]-\sqrt{(-a^2+b^2)}\,(\text{Cos}[2c]+i\,\text{Sin}[2c])}\right]}{d^2\left(i\,a\,\text{Cos}[c]-a\,\text{Sin}[c]-\sqrt{(-a^2+b^2)}\,(\text{Cos}[2c]+i\,\text{Sin}[2c])\right)}\Bigg)$$

$$\left(-i\,a\,\text{Cos}[c]-a\,\text{Sin}[c]+(\text{Cos}[2c]-i\,\text{Sin}[2c])\sqrt{-a^2\,\text{Cos}[2c]+b^2\,\text{Cos}[2c]-i\,a^2\,\text{Sin}[2c]+i\,b^2\,\text{Sin}[2c]}\right)\Bigg)\Big/$$

$$\left(b\left(-\frac{2\,\text{Cos}[2c]\sqrt{-a^2\,\text{Cos}[2c]+b^2\,\text{Cos}[2c]-i\,a^2\,\text{Sin}[2c]+i\,b^2\,\text{Sin}[2c]}}{b}+\right.\right.$$

$$\left.\left.\frac{2\,i\,\text{Sin}[2c]\sqrt{-a^2\,\text{Cos}[2c]+b^2\,\text{Cos}[2c]-i\,a^2\,\text{Sin}[2c]+i\,b^2\,\text{Sin}[2c]}}{b}\right)\right)\Bigg)-a\,d\,f^2$$

$$\Bigg(\Bigg(\Bigg(\frac{x^3}{3\left(i\,a\,\text{Cos}[c]-a\,\text{Sin}[c]+\sqrt{(-a^2+b^2)}\,(\text{Cos}[2c]+i\,\text{Sin}[2c])\right)}+\frac{i\,x^2\,\text{Log}\left[1+\frac{b\,(\text{Cos}[2c+dx]+i\,\text{Sin}[2c+dx])}{i\,a\,\text{Cos}[c]-a\,\text{Sin}[c]+\sqrt{(-a^2+b^2)}\,(\text{Cos}[2c]+i\,\text{Sin}[2c])}\right]}{d\left(i\,a\,\text{Cos}[c]-a\,\text{Sin}[c]+\sqrt{(-a^2+b^2)}\,(\text{Cos}[2c]+i\,\text{Sin}[2c])\right)}+$$

$$\frac{2\,x\,\text{PolyLog}\left[2,-\frac{b\,(\text{Cos}[2c+dx]+i\,\text{Sin}[2c+dx])}{i\,a\,\text{Cos}[c]-a\,\text{Sin}[c]+\sqrt{(-a^2+b^2)\,(\text{Cos}[2c]+i\,\text{Sin}[2c])}}\right]}{d^2\left(i\,a\,\text{Cos}[c]-a\,\text{Sin}[c]+\sqrt{(-a^2+b^2)\,(\text{Cos}[2c]+i\,\text{Sin}[2c])}\right)}+$$

$$\left.\frac{2\,i\,\text{PolyLog}\left[3,-\frac{b\,(\text{Cos}[2c+dx]+i\,\text{Sin}[2c+dx])}{i\,a\,\text{Cos}[c]-a\,\text{Sin}[c]+\sqrt{(-a^2+b^2)\,(\text{Cos}[2c]+i\,\text{Sin}[2c])}}\right]}{d^3\left(i\,a\,\text{Cos}[c]-a\,\text{Sin}[c]+\sqrt{(-a^2+b^2)\,(\text{Cos}[2c]+i\,\text{Sin}[2c])}\right)}\right)$$

$$\left.\left(-i\,a\,\text{Cos}[c]-a\,\text{Sin}[c]-(\text{Cos}[2c]-i\,\text{Sin}[2c])\sqrt{-a^2\,\text{Cos}[2c]+b^2\,\text{Cos}[2c]-i\,a^2\,\text{Sin}[2c]+i\,b^2\,\text{Sin}[2c]}\right)\right)\Big/$$

$$\left(b\left(-\frac{2\,\text{Cos}[2c]\sqrt{-a^2\,\text{Cos}[2c]+b^2\,\text{Cos}[2c]-i\,a^2\,\text{Sin}[2c]+i\,b^2\,\text{Sin}[2c]}}{b}+\right.\right.$$

$$\left.\left.\frac{2\,i\,\text{Sin}[2c]\sqrt{-a^2\,\text{Cos}[2c]+b^2\,\text{Cos}[2c]-i\,a^2\,\text{Sin}[2c]+i\,b^2\,\text{Sin}[2c]}}{b}\right)\right)-$$

$$\left(\left(\left(\frac{x^3}{3\left(i\,a\,\text{Cos}[c]-a\,\text{Sin}[c]-\sqrt{(-a^2+b^2)\,(\text{Cos}[2c]+i\,\text{Sin}[2c])}\right)}+\frac{i\,x^2\,\text{Log}\left[1+\frac{b\,(\text{Cos}[2c+dx]+i\,\text{Sin}[2c+dx])}{i\,a\,\text{Cos}[c]-a\,\text{Sin}[c]-\sqrt{(-a^2+b^2)\,(\text{Cos}[2c]+i\,\text{Sin}[2c])}}\right]}{d\left(i\,a\,\text{Cos}[c]-a\,\text{Sin}[c]-\sqrt{(-a^2+b^2)\,(\text{Cos}[2c]+i\,\text{Sin}[2c])}\right)}+\right.\right.\right.$$

$$\frac{2\,x\,\text{PolyLog}\left[2,-\frac{b\,(\text{Cos}[2c+dx]+i\,\text{Sin}[2c+dx])}{i\,a\,\text{Cos}[c]-a\,\text{Sin}[c]-\sqrt{(-a^2+b^2)\,(\text{Cos}[2c]+i\,\text{Sin}[2c])}}\right]}{d^2\left(i\,a\,\text{Cos}[c]-a\,\text{Sin}[c]-\sqrt{(-a^2+b^2)\,(\text{Cos}[2c]+i\,\text{Sin}[2c])}\right)}+$$

$$\left.\frac{2\,i\,\text{PolyLog}\left[3,-\frac{b\,(\text{Cos}[2c+dx]+i\,\text{Sin}[2c+dx])}{i\,a\,\text{Cos}[c]-a\,\text{Sin}[c]-\sqrt{(-a^2+b^2)\,(\text{Cos}[2c]+i\,\text{Sin}[2c])}}\right]}{d^3\left(i\,a\,\text{Cos}[c]-a\,\text{Sin}[c]-\sqrt{(-a^2+b^2)\,(\text{Cos}[2c]+i\,\text{Sin}[2c])}\right)}\right)$$

$$\left.\left(-i\,a\,\text{Cos}[c]-a\,\text{Sin}[c]+(\text{Cos}[2c]-i\,\text{Sin}[2c])\sqrt{-a^2\,\text{Cos}[2c]+b^2\,\text{Cos}[2c]-i\,a^2\,\text{Sin}[2c]+i\,b^2\,\text{Sin}[2c]}\right)\right)\Big/$$

$$\left(b\left(-\frac{2\,\text{Cos}[2c]\sqrt{-a^2\,\text{Cos}[2c]+b^2\,\text{Cos}[2c]-i\,a^2\,\text{Sin}[2c]+i\,b^2\,\text{Sin}[2c]}}{b}+\right.\right.$$

$$\left.\left.\left.\frac{2\,i\,\text{Sin}[2c]\sqrt{-a^2\,\text{Cos}[2c]+b^2\,\text{Cos}[2c]-i\,a^2\,\text{Sin}[2c]+i\,b^2\,\text{Sin}[2c]}}{b}\right)\right)\right)+2\,a\,d\,e\,f$$

$$\left(\left(\left(\left(\frac{x^2}{2\left(i\,a\,\text{Cos}[c]-a\,\text{Sin}[c]+\sqrt{\left(-a^2+b^2\right)\left(\text{Cos}[2c]+i\,\text{Sin}[2c]\right)}\right)}+\frac{i\,x\,\text{Log}\left[1+\frac{b\,(\text{Cos}[2c+dx]+i\,\text{Sin}[2c+dx])}{i\,a\,\text{Cos}[c]-a\,\text{Sin}[c]+\sqrt{\left(-a^2+b^2\right)\left(\text{Cos}[2c]+i\,\text{Sin}[2c]\right)}}\right]}{d\left(i\,a\,\text{Cos}[c]-a\,\text{Sin}[c]+\sqrt{\left(-a^2+b^2\right)\left(\text{Cos}[2c]+i\,\text{Sin}[2c]\right)}\right)}+\right.\right.\right.\right.$$

$$\left.\frac{\text{PolyLog}\left[2,-\frac{b\,(\text{Cos}[2c+dx]+i\,\text{Sin}[2c+dx])}{i\,a\,\text{Cos}[c]-a\,\text{Sin}[c]+\sqrt{\left(-a^2+b^2\right)\left(\text{Cos}[2c]+i\,\text{Sin}[2c]\right)}}\right]}{d^2\left(i\,a\,\text{Cos}[c]-a\,\text{Sin}[c]+\sqrt{\left(-a^2+b^2\right)\left(\text{Cos}[2c]+i\,\text{Sin}[2c]\right)}\right)}\right)(\text{Cos}[2c]+i\,\text{Sin}[2c])$$

$$\left.\left(-i\,a\,\text{Cos}[c]-a\,\text{Sin}[c]-(\text{Cos}[2c]-i\,\text{Sin}[2c])\sqrt{-a^2\,\text{Cos}[2c]+b^2\,\text{Cos}[2c]-i\,a^2\,\text{Sin}[2c]+i\,b^2\,\text{Sin}[2c]}\right)\right)\Big/$$

$$\left(b\left(-\frac{2\,\text{Cos}[2c]\sqrt{-a^2\,\text{Cos}[2c]+b^2\,\text{Cos}[2c]-i\,a^2\,\text{Sin}[2c]+i\,b^2\,\text{Sin}[2c]}}{b}+\right.\right.$$

$$\left.\left.\frac{2\,i\,\text{Sin}[2c]\sqrt{-a^2\,\text{Cos}[2c]+b^2\,\text{Cos}[2c]-i\,a^2\,\text{Sin}[2c]+i\,b^2\,\text{Sin}[2c]}}{b}\right)\right)-$$

$$\left(\left(\left(\frac{x^2}{2\left(i\,a\,\text{Cos}[c]-a\,\text{Sin}[c]-\sqrt{\left(-a^2+b^2\right)\left(\text{Cos}[2c]+i\,\text{Sin}[2c]\right)}\right)}+\frac{i\,x\,\text{Log}\left[1+\frac{b\,(\text{Cos}[2c+dx]+i\,\text{Sin}[2c+dx])}{i\,a\,\text{Cos}[c]-a\,\text{Sin}[c]-\sqrt{\left(-a^2+b^2\right)\left(\text{Cos}[2c]+i\,\text{Sin}[2c]\right)}}\right]}{d\left(i\,a\,\text{Cos}[c]-a\,\text{Sin}[c]-\sqrt{\left(-a^2+b^2\right)\left(\text{Cos}[2c]+i\,\text{Sin}[2c]\right)}\right)}+\right.\right.\right.$$

$$\left.\frac{\text{PolyLog}\left[2,-\frac{b\,(\text{Cos}[2c+dx]+i\,\text{Sin}[2c+dx])}{i\,a\,\text{Cos}[c]-a\,\text{Sin}[c]-\sqrt{\left(-a^2+b^2\right)\left(\text{Cos}[2c]+i\,\text{Sin}[2c]\right)}}\right]}{d^2\left(i\,a\,\text{Cos}[c]-a\,\text{Sin}[c]-\sqrt{\left(-a^2+b^2\right)\left(\text{Cos}[2c]+i\,\text{Sin}[2c]\right)}\right)}\right)(\text{Cos}[2c]+i\,\text{Sin}[2c])$$

$$\left.\left(-i\,a\,\text{Cos}[c]-a\,\text{Sin}[c]+(\text{Cos}[2c]-i\,\text{Sin}[2c])\sqrt{-a^2\,\text{Cos}[2c]+b^2\,\text{Cos}[2c]-i\,a^2\,\text{Sin}[2c]+i\,b^2\,\text{Sin}[2c]}\right)\right)\Big/$$

$$\left(b\left(-\frac{2\,\text{Cos}[2c]\sqrt{-a^2\,\text{Cos}[2c]+b^2\,\text{Cos}[2c]-i\,a^2\,\text{Sin}[2c]+i\,b^2\,\text{Sin}[2c]}}{b}+\right.\right.$$

$$\left.\left.\left.\frac{2\,i\,\text{Sin}[2\,c]\,\sqrt{-a^2\,\text{Cos}[2\,c]+b^2\,\text{Cos}[2\,c]-i\,a^2\,\text{Sin}[2\,c]+i\,b^2\,\text{Sin}[2\,c]}}{b}\right)\right)\right)+2\,i\,a\,f^2$$

$$\left(\left(\left(\frac{x^2}{2\left(i\,a\,\text{Cos}[c]-a\,\text{Sin}[c]+\sqrt{\left(-a^2+b^2\right)\,(\text{Cos}[2\,c]+i\,\text{Sin}[2\,c])}\right)}+\frac{i\,x\,\text{Log}\left[1+\frac{b\,(\text{Cos}[2\,c+d\,x]+i\,\text{Sin}[2\,c+d\,x])}{i\,a\,\text{Cos}[c]-a\,\text{Sin}[c]+\sqrt{\left(-a^2+b^2\right)\,(\text{Cos}[2\,c]+i\,\text{Sin}[2\,c])}}\right]}{d\left(i\,a\,\text{Cos}[c]-a\,\text{Sin}[c]+\sqrt{\left(-a^2+b^2\right)\,(\text{Cos}[2\,c]+i\,\text{Sin}[2\,c])}\right)}+\right.\right.\right.$$

$$\left.\frac{\text{PolyLog}\left[2,-\frac{b\,(\text{Cos}[2\,c+d\,x]+i\,\text{Sin}[2\,c+d\,x])}{i\,a\,\text{Cos}[c]-a\,\text{Sin}[c]+\sqrt{\left(-a^2+b^2\right)\,(\text{Cos}[2\,c]+i\,\text{Sin}[2\,c])}}\right]}{d^2\left(i\,a\,\text{Cos}[c]-a\,\text{Sin}[c]+\sqrt{\left(-a^2+b^2\right)\,(\text{Cos}[2\,c]+i\,\text{Sin}[2\,c])}\right)}\right)\,(\text{Cos}[2\,c]+i\,\text{Sin}[2\,c])$$

$$\left.\left(-i\,a\,\text{Cos}[c]-a\,\text{Sin}[c]-(\text{Cos}[2\,c]-i\,\text{Sin}[2\,c])\,\sqrt{-a^2\,\text{Cos}[2\,c]+b^2\,\text{Cos}[2\,c]-i\,a^2\,\text{Sin}[2\,c]+i\,b^2\,\text{Sin}[2\,c]}\right)\right)\Big/$$

$$\left(b\left(-\frac{2\,\text{Cos}[2\,c]\,\sqrt{-a^2\,\text{Cos}[2\,c]+b^2\,\text{Cos}[2\,c]-i\,a^2\,\text{Sin}[2\,c]+i\,b^2\,\text{Sin}[2\,c]}}{b}+\right.\right.$$

$$\left.\left.\frac{2\,i\,\text{Sin}[2\,c]\,\sqrt{-a^2\,\text{Cos}[2\,c]+b^2\,\text{Cos}[2\,c]-i\,a^2\,\text{Sin}[2\,c]+i\,b^2\,\text{Sin}[2\,c]}}{b}\right)\right)-$$

$$\left(\left(\left(\frac{x^2}{2\left(i\,a\,\text{Cos}[c]-a\,\text{Sin}[c]-\sqrt{\left(-a^2+b^2\right)\,(\text{Cos}[2\,c]+i\,\text{Sin}[2\,c])}\right)}+\frac{i\,x\,\text{Log}\left[1+\frac{b\,(\text{Cos}[2\,c+d\,x]+i\,\text{Sin}[2\,c+d\,x])}{i\,a\,\text{Cos}[c]-a\,\text{Sin}[c]-\sqrt{\left(-a^2+b^2\right)\,(\text{Cos}[2\,c]+i\,\text{Sin}[2\,c])}}\right]}{d\left(i\,a\,\text{Cos}[c]-a\,\text{Sin}[c]-\sqrt{\left(-a^2+b^2\right)\,(\text{Cos}[2\,c]+i\,\text{Sin}[2\,c])}\right)}+\right.\right.\right.$$

$$\left.\frac{\text{PolyLog}\left[2,-\frac{b\,(\text{Cos}[2\,c+d\,x]+i\,\text{Sin}[2\,c+d\,x])}{i\,a\,\text{Cos}[c]-a\,\text{Sin}[c]-\sqrt{\left(-a^2+b^2\right)\,(\text{Cos}[2\,c]+i\,\text{Sin}[2\,c])}}\right]}{d^2\left(i\,a\,\text{Cos}[c]-a\,\text{Sin}[c]-\sqrt{\left(-a^2+b^2\right)\,(\text{Cos}[2\,c]+i\,\text{Sin}[2\,c])}\right)}\right)\,(\text{Cos}[2\,c]+i\,\text{Sin}[2\,c])$$

$$\left.\left(-i\,a\,\text{Cos}[c]-a\,\text{Sin}[c]+(\text{Cos}[2\,c]-i\,\text{Sin}[2\,c])\,\sqrt{-a^2\,\text{Cos}[2\,c]+b^2\,\text{Cos}[2\,c]-i\,a^2\,\text{Sin}[2\,c]+i\,b^2\,\text{Sin}[2\,c]}\right)\right)\Big/$$

$$\left(b\left(-\frac{2\,\text{Cos}[2\,c]\,\sqrt{-a^2\,\text{Cos}[2\,c]+b^2\,\text{Cos}[2\,c]-i\,a^2\,\text{Sin}[2\,c]+i\,b^2\,\text{Sin}[2\,c]}}{b}+\right.\right.$$

$$\left.\left.\left.\frac{2\,\mathrm{i}\,\mathrm{Sin}[2\,c]\,\sqrt{-a^2\,\mathrm{Cos}[2\,c]+b^2\,\mathrm{Cos}[2\,c]-\mathrm{i}\,a^2\,\mathrm{Sin}[2\,c]+\mathrm{i}\,b^2\,\mathrm{Sin}[2\,c]}}{b}\right)\right)\right)+a\,d\,f^2$$

$$\left(\left(\left(\frac{x^3}{3\left(\mathrm{i}\,a\,\mathrm{Cos}[c]-a\,\mathrm{Sin}[c]+\sqrt{\left(-a^2+b^2\right)\,(\mathrm{Cos}[2\,c]+\mathrm{i}\,\mathrm{Sin}[2\,c])}\right)}+\frac{\mathrm{i}\,x^2\,\mathrm{Log}\left[1+\frac{b\,(\mathrm{Cos}[2\,c+d\,x]+\mathrm{i}\,\mathrm{Sin}[2\,c+d\,x])}{\mathrm{i}\,a\,\mathrm{Cos}[c]-a\,\mathrm{Sin}[c]+\sqrt{\left(-a^2+b^2\right)\,(\mathrm{Cos}[2\,c]+\mathrm{i}\,\mathrm{Sin}[2\,c])}}\right]}{d\left(\mathrm{i}\,a\,\mathrm{Cos}[c]-a\,\mathrm{Sin}[c]+\sqrt{\left(-a^2+b^2\right)\,(\mathrm{Cos}[2\,c]+\mathrm{i}\,\mathrm{Sin}[2\,c])}\right)}+\right.\right.\right.$$

$$\frac{2\,x\,\mathrm{PolyLog}\left[2,-\frac{b\,(\mathrm{Cos}[2\,c+d\,x]+\mathrm{i}\,\mathrm{Sin}[2\,c+d\,x])}{\mathrm{i}\,a\,\mathrm{Cos}[c]-a\,\mathrm{Sin}[c]+\sqrt{\left(-a^2+b^2\right)\,(\mathrm{Cos}[2\,c]+\mathrm{i}\,\mathrm{Sin}[2\,c])}}\right]}{d^2\left(\mathrm{i}\,a\,\mathrm{Cos}[c]-a\,\mathrm{Sin}[c]+\sqrt{\left(-a^2+b^2\right)\,(\mathrm{Cos}[2\,c]+\mathrm{i}\,\mathrm{Sin}[2\,c])}\right)}+$$

$$\left.\frac{2\,\mathrm{i}\,\mathrm{PolyLog}\left[3,-\frac{b\,(\mathrm{Cos}[2\,c+d\,x]+\mathrm{i}\,\mathrm{Sin}[2\,c+d\,x])}{\mathrm{i}\,a\,\mathrm{Cos}[c]-a\,\mathrm{Sin}[c]+\sqrt{\left(-a^2+b^2\right)\,(\mathrm{Cos}[2\,c]+\mathrm{i}\,\mathrm{Sin}[2\,c])}}\right]}{d^3\left(\mathrm{i}\,a\,\mathrm{Cos}[c]-a\,\mathrm{Sin}[c]+\sqrt{\left(-a^2+b^2\right)\,(\mathrm{Cos}[2\,c]+\mathrm{i}\,\mathrm{Sin}[2\,c])}\right)}\right)(\mathrm{Cos}[2\,c]+\mathrm{i}\,\mathrm{Sin}[2\,c])$$

$$\left.\left(-\mathrm{i}\,a\,\mathrm{Cos}[c]-a\,\mathrm{Sin}[c]-(\mathrm{Cos}[2\,c]-\mathrm{i}\,\mathrm{Sin}[2\,c])\,\sqrt{-a^2\,\mathrm{Cos}[2\,c]+b^2\,\mathrm{Cos}[2\,c]-\mathrm{i}\,a^2\,\mathrm{Sin}[2\,c]+\mathrm{i}\,b^2\,\mathrm{Sin}[2\,c]}\right)\right)\Big/$$

$$\left(b\left(-\frac{2\,\mathrm{Cos}[2\,c]\,\sqrt{-a^2\,\mathrm{Cos}[2\,c]+b^2\,\mathrm{Cos}[2\,c]-\mathrm{i}\,a^2\,\mathrm{Sin}[2\,c]+\mathrm{i}\,b^2\,\mathrm{Sin}[2\,c]}}{b}+\right.\right.$$

$$\left.\left.\frac{2\,\mathrm{i}\,\mathrm{Sin}[2\,c]\,\sqrt{-a^2\,\mathrm{Cos}[2\,c]+b^2\,\mathrm{Cos}[2\,c]-\mathrm{i}\,a^2\,\mathrm{Sin}[2\,c]+\mathrm{i}\,b^2\,\mathrm{Sin}[2\,c]}}{b}\right)\right)-$$

$$\left(\left(\frac{x^3}{3\left(\mathrm{i}\,a\,\mathrm{Cos}[c]-a\,\mathrm{Sin}[c]-\sqrt{\left(-a^2+b^2\right)\,(\mathrm{Cos}[2\,c]+\mathrm{i}\,\mathrm{Sin}[2\,c])}\right)}+\frac{\mathrm{i}\,x^2\,\mathrm{Log}\left[1+\frac{b\,(\mathrm{Cos}[2\,c+d\,x]+\mathrm{i}\,\mathrm{Sin}[2\,c+d\,x])}{\mathrm{i}\,a\,\mathrm{Cos}[c]-a\,\mathrm{Sin}[c]-\sqrt{\left(-a^2+b^2\right)\,(\mathrm{Cos}[2\,c]+\mathrm{i}\,\mathrm{Sin}[2\,c])}}\right]}{d\left(\mathrm{i}\,a\,\mathrm{Cos}[c]-a\,\mathrm{Sin}[c]-\sqrt{\left(-a^2+b^2\right)\,(\mathrm{Cos}[2\,c]+\mathrm{i}\,\mathrm{Sin}[2\,c])}\right)}+\right.\right.$$

$$\frac{2\,x\,\mathrm{PolyLog}\left[2,-\frac{b\,(\mathrm{Cos}[2\,c+d\,x]+\mathrm{i}\,\mathrm{Sin}[2\,c+d\,x])}{\mathrm{i}\,a\,\mathrm{Cos}[c]-a\,\mathrm{Sin}[c]-\sqrt{\left(-a^2+b^2\right)\,(\mathrm{Cos}[2\,c]+\mathrm{i}\,\mathrm{Sin}[2\,c])}}\right]}{d^2\left(\mathrm{i}\,a\,\mathrm{Cos}[c]-a\,\mathrm{Sin}[c]-\sqrt{\left(-a^2+b^2\right)\,(\mathrm{Cos}[2\,c]+\mathrm{i}\,\mathrm{Sin}[2\,c])}\right)}+$$

$$\left.\frac{2\,i\,\text{PolyLog}\left[3,-\frac{b\,(\text{Cos}[2c+dx]+i\,\text{Sin}[2c+dx])}{i\,a\,\text{Cos}[c]-a\,\text{Sin}[c]-\sqrt{\left(-a^2+b^2\right)\,(\text{Cos}[2c]+i\,\text{Sin}[2c])}}\right]}{d^3\left(i\,a\,\text{Cos}[c]-a\,\text{Sin}[c]-\sqrt{\left(-a^2+b^2\right)\,(\text{Cos}[2c]+i\,\text{Sin}[2c])}\right)}\right)(\text{Cos}[2c]+i\,\text{Sin}[2c])$$

$$\left.\left(-i\,a\,\text{Cos}[c]-a\,\text{Sin}[c]+(\text{Cos}[2c]-i\,\text{Sin}[2c])\sqrt{-a^2\,\text{Cos}[2c]+b^2\,\text{Cos}[2c]-i\,a^2\,\text{Sin}[2c]+i\,b^2\,\text{Sin}[2c]}\right)\right)\Big/$$

$$\left(b\left(-\frac{2\,\text{Cos}[2c]\sqrt{-a^2\,\text{Cos}[2c]+b^2\,\text{Cos}[2c]-i\,a^2\,\text{Sin}[2c]+i\,b^2\,\text{Sin}[2c]}}{b}+\right.\right.$$

$$\left.\left.\left.\left.\frac{2\,i\,\text{Sin}[2c]\sqrt{-a^2\,\text{Cos}[2c]+b^2\,\text{Cos}[2c]-i\,a^2\,\text{Sin}[2c]+i\,b^2\,\text{Sin}[2c]}}{b}\right)\right)\right)\right)-$$

$$\frac{(e+fx)^3}{2\,b\,d\,(a+b\,\text{Sin}[c+dx])^2}-\left(3\,\text{Csc}\left[\frac{c}{2}\right]\,\text{Sec}\left[\frac{c}{2}\right]\,\left(a\,e^2\,f\,\text{Cos}[c]+2\,a\,e\,f^2\,x\,\text{Cos}[c]+a\,f^3\,x^2\,\text{Cos}[c]+b\right.\right.$$

e^2
f
$\text{Sin}[d x]+2$
b
e
f^2
x
$\text{Sin}[d x]+b$
f^3
x^2

$$\left.\left.\text{Sin}[dx]\right)\right)\Big/\left(4\,(a-b)\,b\,(a+b)\,d^2\,(a+b\right.$$

$$\left.\text{Sin}[c+dx])\right)$$

- **Problem 325: Result more than twice size of optimal antiderivative.**

$$\int\frac{(e+fx)^3\,\text{Cos}[c+dx]\,\text{Cot}[c+dx]}{a+b\,\text{Sin}[c+dx]}\,dx$$

Optimal (type 4, 765 leaves, 33 steps) :

$$-\frac{(e+fx)^4}{4bf}-\frac{2(e+fx)^3\,\text{ArcTanh}\left[e^{i(c+dx)}\right]}{ad}-\frac{i\sqrt{a^2-b^2}\,(e+fx)^3\,\text{Log}\left[1-\frac{i\,b\,e^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right]}{a\,b\,d}+\frac{i\sqrt{a^2-b^2}\,(e+fx)^3\,\text{Log}\left[1-\frac{i\,b\,e^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right]}{a\,b\,d}+$$

$$\frac{3\,i\,f\,(e+fx)^2\,\text{PolyLog}\left[2,-e^{i(c+dx)}\right]}{a\,d^2}-\frac{3\,i\,f\,(e+fx)^2\,\text{PolyLog}\left[2,e^{i(c+dx)}\right]}{a\,d^2}-\frac{3\sqrt{a^2-b^2}\,f\,(e+fx)^2\,\text{PolyLog}\left[2,\frac{i\,b\,e^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right]}{a\,b\,d^2}+$$

$$\frac{3\sqrt{a^2-b^2}\,f\,(e+fx)^2\,\text{PolyLog}\left[2,\frac{i\,b\,e^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right]}{a\,b\,d^2}-\frac{6\,f^2\,(e+fx)\,\text{PolyLog}\left[3,-e^{i(c+dx)}\right]}{a\,d^3}+\frac{6\,f^2\,(e+fx)\,\text{PolyLog}\left[3,e^{i(c+dx)}\right]}{a\,d^3}-$$

$$\frac{6\,i\sqrt{a^2-b^2}\,f^2\,(e+fx)\,\text{PolyLog}\left[3,\frac{i\,b\,e^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right]}{a\,b\,d^3}+\frac{6\,i\sqrt{a^2-b^2}\,f^2\,(e+fx)\,\text{PolyLog}\left[3,\frac{i\,b\,e^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right]}{a\,b\,d^3}-\frac{6\,i\,f^3\,\text{PolyLog}\left[4,-e^{i(c+dx)}\right]}{a\,d^4}+$$

$$\frac{6\,i\,f^3\,\text{PolyLog}\left[4,e^{i(c+dx)}\right]}{a\,d^4}+\frac{6\sqrt{a^2-b^2}\,f^3\,\text{PolyLog}\left[4,\frac{i\,b\,e^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right]}{a\,b\,d^4}-\frac{6\sqrt{a^2-b^2}\,f^3\,\text{PolyLog}\left[4,\frac{i\,b\,e^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right]}{a\,b\,d^4}$$

Result (type 4, 1897 leaves) :

$$-\frac{x\left(4e^3+6e^2fx+4ef^2x^2+f^3x^3\right)}{4b}+$$

$$\frac{1}{a\,d^4}\Big(-2d^3e^3\,\text{ArcTanh}\left[e^{i(c+dx)}\right]+3d^3e^2fx\,\text{Log}\left[1-e^{i(c+dx)}\right]+3d^3ef^2x^2\,\text{Log}\left[1-e^{i(c+dx)}\right]+d^3f^3x^3\,\text{Log}\left[1-e^{i(c+dx)}\right]-$$
$$3d^3e^2fx\,\text{Log}\left[1+e^{i(c+dx)}\right]-3d^3ef^2x^2\,\text{Log}\left[1+e^{i(c+dx)}\right]-d^3f^3x^3\,\text{Log}\left[1+e^{i(c+dx)}\right]+3\,i\,d^2f\,(e+fx)^2\,\text{PolyLog}\left[2,-e^{i(c+dx)}\right]-$$
$$3\,i\,d^2f\,(e+fx)^2\,\text{PolyLog}\left[2,e^{i(c+dx)}\right]-6\,d\,e\,f^2\,\text{PolyLog}\left[3,-e^{i(c+dx)}\right]-6\,d\,f^3\,x\,\text{PolyLog}\left[3,-e^{i(c+dx)}\right]+6\,d\,e\,f^2\,\text{PolyLog}\left[3,e^{i(c+dx)}\right]+$$
$$6\,d\,f^3\,x\,\text{PolyLog}\left[3,e^{i(c+dx)}\right]-6\,i\,f^3\,\text{PolyLog}\left[4,-e^{i(c+dx)}\right]+6\,i\,f^3\,\text{PolyLog}\left[4,e^{i(c+dx)}\right]\Big)+\frac{1}{a\,b\,d^4\sqrt{\left(-a^2+b^2\right)\left(\text{Cos}[2c]+i\,\text{Sin}[2c]\right)}}$$

$$i\sqrt{a^2-b^2}\,\Bigg(3\,i\sqrt{a^2-b^2}\,d^3e^2fx\,\text{Log}\left[1+\frac{b\left(\text{Cos}[2c+dx]+i\,\text{Sin}[2c+dx]\right)}{i\,a\,\text{Cos}[c]+\sqrt{\left(-a^2+b^2\right)\left(\text{Cos}[c]+i\,\text{Sin}[c]\right)^2}-a\,\text{Sin}[c]}\right]\left(\text{Cos}[c]+i\,\text{Sin}[c]\right)+$$

$$3\,i\sqrt{a^2-b^2}\,d^3ef^2x^2\,\text{Log}\left[1+\frac{b\left(\text{Cos}[2c+dx]+i\,\text{Sin}[2c+dx]\right)}{i\,a\,\text{Cos}[c]+\sqrt{\left(-a^2+b^2\right)\left(\text{Cos}[c]+i\,\text{Sin}[c]\right)^2}-a\,\text{Sin}[c]}\right]\left(\text{Cos}[c]+i\,\text{Sin}[c]\right)+$$

$$i\sqrt{a^2-b^2}\,d^3f^3x^3\,\text{Log}\left[1+\frac{b\left(\text{Cos}[2c+dx]+i\,\text{Sin}[2c+dx]\right)}{i\,a\,\text{Cos}[c]+\sqrt{\left(-a^2+b^2\right)\left(\text{Cos}[c]+i\,\text{Sin}[c]\right)^2}-a\,\text{Sin}[c]}\right]\left(\text{Cos}[c]+i\,\text{Sin}[c]\right)+$$

$$3\sqrt{a^2-b^2}\,d^2f\,(e+fx)^2\,\text{PolyLog}\left[2,-\frac{b\left(\text{Cos}[2c+dx]+i\,\text{Sin}[2c+dx]\right)}{i\,a\,\text{Cos}[c]+\sqrt{\left(-a^2+b^2\right)\left(\text{Cos}[c]+i\,\text{Sin}[c]\right)^2}-a\,\text{Sin}[c]}\right]\left(\text{Cos}[c]+i\,\text{Sin}[c]\right)-$$

$$3\sqrt{a^2-b^2}\, d^2 f\,(e+f x)^2\, \text{PolyLog}\left[2, \frac{b\,(\text{Cos}[2c+d x]+i\,\text{Sin}[2c+d x])}{-i\,a\,\text{Cos}[c]+\sqrt{\left(-a^2+b^2\right)(\text{Cos}[c]+i\,\text{Sin}[c])^2}+a\,\text{Sin}[c]}\right](\text{Cos}[c]+i\,\text{Sin}[c])+$$

$$6 i\sqrt{a^2-b^2}\, d\, e\, f^2\, \text{PolyLog}\left[3, -\frac{b\,(\text{Cos}[2c+d x]+i\,\text{Sin}[2c+d x])}{i\,a\,\text{Cos}[c]+\sqrt{\left(-a^2+b^2\right)(\text{Cos}[c]+i\,\text{Sin}[c])^2}-a\,\text{Sin}[c]}\right](\text{Cos}[c]+i\,\text{Sin}[c])+$$

$$6 i\sqrt{a^2-b^2}\, d\, f^3\, x\, \text{PolyLog}\left[3, -\frac{b\,(\text{Cos}[2c+d x]+i\,\text{Sin}[2c+d x])}{i\,a\,\text{Cos}[c]+\sqrt{\left(-a^2+b^2\right)(\text{Cos}[c]+i\,\text{Sin}[c])^2}-a\,\text{Sin}[c]}\right](\text{Cos}[c]+i\,\text{Sin}[c])-$$

$$6\sqrt{a^2-b^2}\, f^3\, \text{PolyLog}\left[4, -\frac{b\,(\text{Cos}[2c+d x]+i\,\text{Sin}[2c+d x])}{i\,a\,\text{Cos}[c]+\sqrt{\left(-a^2+b^2\right)(\text{Cos}[c]+i\,\text{Sin}[c])^2}-a\,\text{Sin}[c]}\right](\text{Cos}[c]+i\,\text{Sin}[c])+$$

$$6\sqrt{a^2-b^2}\, f^3\, \text{PolyLog}\left[4, \frac{b\,(\text{Cos}[2c+d x]+i\,\text{Sin}[2c+d x])}{-i\,a\,\text{Cos}[c]+\sqrt{\left(-a^2+b^2\right)(\text{Cos}[c]+i\,\text{Sin}[c])^2}+a\,\text{Sin}[c]}\right](\text{Cos}[c]+i\,\text{Sin}[c])+$$

$$3\sqrt{a^2-b^2}\, d^3 e^2 f\, x\, \text{Log}\left[1-\frac{b\,(\text{Cos}[2c+d x]+i\,\text{Sin}[2c+d x])}{-i\,a\,\text{Cos}[c]+\sqrt{\left(-a^2+b^2\right)(\text{Cos}[c]+i\,\text{Sin}[c])^2}+a\,\text{Sin}[c]}\right](-i\,\text{Cos}[c]+\text{Sin}[c])+$$

$$3\sqrt{a^2-b^2}\, d^3 e\, f^2 x^2\, \text{Log}\left[1-\frac{b\,(\text{Cos}[2c+d x]+i\,\text{Sin}[2c+d x])}{-i\,a\,\text{Cos}[c]+\sqrt{\left(-a^2+b^2\right)(\text{Cos}[c]+i\,\text{Sin}[c])^2}+a\,\text{Sin}[c]}\right](-i\,\text{Cos}[c]+\text{Sin}[c])+$$

$$\sqrt{a^2-b^2}\, d^3 f^3 x^3\, \text{Log}\left[1-\frac{b\,(\text{Cos}[2c+d x]+i\,\text{Sin}[2c+d x])}{-i\,a\,\text{Cos}[c]+\sqrt{\left(-a^2+b^2\right)(\text{Cos}[c]+i\,\text{Sin}[c])^2}+a\,\text{Sin}[c]}\right](-i\,\text{Cos}[c]+\text{Sin}[c])+$$

$$6\sqrt{a^2-b^2}\, d\, e\, f^2\, \text{PolyLog}\left[3, \frac{b\,(\text{Cos}[2c+d x]+i\,\text{Sin}[2c+d x])}{-i\,a\,\text{Cos}[c]+\sqrt{\left(-a^2+b^2\right)(\text{Cos}[c]+i\,\text{Sin}[c])^2}+a\,\text{Sin}[c]}\right](-i\,\text{Cos}[c]+\text{Sin}[c])+$$

$$6\sqrt{a^2-b^2}\, d\, f^3\, x\, \text{PolyLog}\left[3, \frac{b\,(\text{Cos}[2c+d x]+i\,\text{Sin}[2c+d x])}{-i\,a\,\text{Cos}[c]+\sqrt{\left(-a^2+b^2\right)(\text{Cos}[c]+i\,\text{Sin}[c])^2}+a\,\text{Sin}[c]}\right](-i\,\text{Cos}[c]+\text{Sin}[c])-$$

$$\left.2 i\, d^3 e^3\, \text{ArcTan}\left[\frac{b\,\text{Cos}[c+d x]+i\,(a+b\,\text{Sin}[c+d x])}{\sqrt{a^2-b^2}}\right]\sqrt{\left(-a^2+b^2\right)(\text{Cos}[2c]+i\,\text{Sin}[2c])}\right)$$

- **Problem 329: Result more than twice size of optimal antiderivative.**

$$\int \frac{(e+f x)^3\,\text{Cos}[c+d x]^2\,\text{Cot}[c+d x]}{a+b\,\text{Sin}[c+d x]}\,dx$$

Optimal (type 4, 763 leaves, 34 steps):

$$-\frac{i\,(e+f\,x)^4}{4\,a\,f}-\frac{i\,(a^2-b^2)\,(e+f\,x)^4}{4\,a\,b^2\,f}+\frac{6\,f^3\,Cos[c+d\,x]}{b\,d^4}-\frac{3\,f\,(e+f\,x)^2\,Cos[c+d\,x]}{b\,d^2}+\frac{(a^2-b^2)\,(e+f\,x)^3\,Log\left[1-\frac{i\,b\,e^{i\,(c+d\,x)}}{a-\sqrt{a^2-b^2}}\right]}{a\,b^2\,d}+$$

$$\frac{(a^2-b^2)\,(e+f\,x)^3\,Log\left[1-\frac{i\,b\,e^{i\,(c+d\,x)}}{a+\sqrt{a^2-b^2}}\right]}{a\,b^2\,d}+\frac{(e+f\,x)^3\,Log\left[1-e^{2\,i\,(c+d\,x)}\right]}{a\,d}-\frac{3\,i\,(a^2-b^2)\,f\,(e+f\,x)^2\,PolyLog\left[2,\frac{i\,b\,e^{i\,(c+d\,x)}}{a-\sqrt{a^2-b^2}}\right]}{a\,b^2\,d^2}-$$

$$\frac{3\,i\,(a^2-b^2)\,f\,(e+f\,x)^2\,PolyLog\left[2,\frac{i\,b\,e^{i\,(c+d\,x)}}{a+\sqrt{a^2-b^2}}\right]}{a\,b^2\,d^2}-\frac{3\,i\,f\,(e+f\,x)^2\,PolyLog\left[2,e^{2\,i\,(c+d\,x)}\right]}{2\,a\,d^2}+\frac{6\,(a^2-b^2)\,f^2\,(e+f\,x)\,PolyLog\left[3,\frac{i\,b\,e^{i\,(c+d\,x)}}{a-\sqrt{a^2-b^2}}\right]}{a\,b^2\,d^3}+$$

$$\frac{6\,(a^2-b^2)\,f^2\,(e+f\,x)\,PolyLog\left[3,\frac{i\,b\,e^{i\,(c+d\,x)}}{a+\sqrt{a^2-b^2}}\right]}{a\,b^2\,d^3}+\frac{3\,f^2\,(e+f\,x)\,PolyLog\left[3,e^{2\,i\,(c+d\,x)}\right]}{2\,a\,d^3}+\frac{6\,i\,(a^2-b^2)\,f^3\,PolyLog\left[4,\frac{i\,b\,e^{i\,(c+d\,x)}}{a-\sqrt{a^2-b^2}}\right]}{a\,b^2\,d^4}+$$

$$\frac{6\,i\,(a^2-b^2)\,f^3\,PolyLog\left[4,\frac{i\,b\,e^{i\,(c+d\,x)}}{a+\sqrt{a^2-b^2}}\right]}{a\,b^2\,d^4}+\frac{3\,i\,f^3\,PolyLog\left[4,e^{2\,i\,(c+d\,x)}\right]}{4\,a\,d^4}+\frac{6\,f^2\,(e+f\,x)\,Sin[c+d\,x]}{b\,d^3}-\frac{(e+f\,x)^3\,Sin[c+d\,x]}{b\,d}$$

Result (type 4, 3808 leaves) :

$$-\frac{1}{4\,a\,d^3}e\,e^{-i\,c}\,f^2\,Csc[c]$$
$$\left(2\,d^2\,x^2\,\left(2\,d\,e^{2\,i\,c}\,x+3\,i\,\left(-1+e^{2\,i\,c}\right)\,Log\left[1-e^{2\,i\,(c+d\,x)}\right]\right)+6\,d\,\left(-1+e^{2\,i\,c}\right)\,x\,PolyLog\left[2,e^{2\,i\,(c+d\,x)}\right]+3\,i\,\left(-1+e^{2\,i\,c}\right)\,PolyLog\left[3,e^{2\,i\,(c+d\,x)}\right]\right)-$$

$$\frac{1}{4\,a}e^{i\,c}\,f^3\,Csc[c]\,\left(x^4+\left(-1+e^{-2\,i\,c}\right)\,x^4+1\,/\,\left(2\,d^4\right)\,e^{-2\,i\,c}\,\left(-1+e^{2\,i\,c}\right)\right.$$
$$\left.\left(2\,d^4\,x^4+4\,i\,d^3\,x^3\,Log\left[1-e^{2\,i\,(c+d\,x)}\right]+6\,d^2\,x^2\,PolyLog\left[2,e^{2\,i\,(c+d\,x)}\right]+6\,i\,d\,x\,PolyLog\left[3,e^{2\,i\,(c+d\,x)}\right]-3\,PolyLog\left[4,e^{2\,i\,(c+d\,x)}\right]\right)\right)+$$

$$\frac{1}{2\,a\,b^2\,d^4\,\left(-1+e^{2\,i\,c}\right)}\,(a^2-b^2)\,\left(-4\,i\,d^4\,e^3\,e^{2\,i\,c}\,x-6\,i\,d^4\,e^2\,e^{2\,i\,c}\,f\,x^2-4\,i\,d^4\,e\,e^{2\,i\,c}\,f^2\,x^3-i\,d^4\,e^{2\,i\,c}\,f^3\,x^4-\right.$$

$$2\,i\,d^3\,e^3\,ArcTan\left[\frac{2\,a\,e^{i\,(c+d\,x)}}{b\,\left(-1+e^{2\,i\,(c+d\,x)}\right)}\right]+2\,i\,d^3\,e^3\,e^{2\,i\,c}\,ArcTan\left[\frac{2\,a\,e^{i\,(c+d\,x)}}{b\,\left(-1+e^{2\,i\,(c+d\,x)}\right)}\right]-d^3\,e^3\,Log\left[4\,a^2\,e^{2\,i\,(c+d\,x)}+b^2\,\left(-1+e^{2\,i\,(c+d\,x)}\right)^2\right]+$$

$$d^3\,e^3\,e^{2\,i\,c}\,Log\left[4\,a^2\,e^{2\,i\,(c+d\,x)}+b^2\,\left(-1+e^{2\,i\,(c+d\,x)}\right)^2\right]-6\,d^3\,e^2\,f\,x\,Log\left[1+\frac{b\,e^{i\,(2\,c+d\,x)}}{i\,a\,e^{i\,c}-\sqrt{\left(-a^2+b^2\right)\,e^{2\,i\,c}}}\right]+$$

$$6\,d^3\,e^2\,e^{2\,i\,c}\,f\,x\,Log\left[1+\frac{b\,e^{i\,(2\,c+d\,x)}}{i\,a\,e^{i\,c}-\sqrt{\left(-a^2+b^2\right)\,e^{2\,i\,c}}}\right]-6\,d^3\,e\,f^2\,x^2\,Log\left[1+\frac{b\,e^{i\,(2\,c+d\,x)}}{i\,a\,e^{i\,c}-\sqrt{\left(-a^2+b^2\right)\,e^{2\,i\,c}}}\right]+$$

$$6\,d^3\,e\,e^{2\,i\,c}\,f^2\,x^2\,Log\left[1+\frac{b\,e^{i\,(2\,c+d\,x)}}{i\,a\,e^{i\,c}-\sqrt{\left(-a^2+b^2\right)\,e^{2\,i\,c}}}\right]-2\,d^3\,f^3\,x^3\,Log\left[1+\frac{b\,e^{i\,(2\,c+d\,x)}}{i\,a\,e^{i\,c}-\sqrt{\left(-a^2+b^2\right)\,e^{2\,i\,c}}}\right]+$$

$$2 d^3 e^{2 i c} f^3 x^3 \text{Log}\left[1+\frac{b e^{i (2 c+d x)}}{i a e^{i c}-\sqrt{\left(-a^2+b^2\right) e^{2 i c}}}\right]-6 d^3 e^2 f x \text{Log}\left[1+\frac{b e^{i (2 c+d x)}}{i a e^{i c}+\sqrt{\left(-a^2+b^2\right) e^{2 i c}}}\right]+$$

$$6 d^3 e^2 e^{2 i c} f x \text{Log}\left[1+\frac{b e^{i (2 c+d x)}}{i a e^{i c}+\sqrt{\left(-a^2+b^2\right) e^{2 i c}}}\right]-6 d^3 e f^2 x^2 \text{Log}\left[1+\frac{b e^{i (2 c+d x)}}{i a e^{i c}+\sqrt{\left(-a^2+b^2\right) e^{2 i c}}}\right]+$$

$$6 d^3 e e^{2 i c} f^2 x^2 \text{Log}\left[1+\frac{b e^{i (2 c+d x)}}{i a e^{i c}+\sqrt{\left(-a^2+b^2\right) e^{2 i c}}}\right]-2 d^3 f^3 x^3 \text{Log}\left[1+\frac{b e^{i (2 c+d x)}}{i a e^{i c}+\sqrt{\left(-a^2+b^2\right) e^{2 i c}}}\right]+$$

$$2 d^3 e^{2 i c} f^3 x^3 \text{Log}\left[1+\frac{b e^{i (2 c+d x)}}{i a e^{i c}+\sqrt{\left(-a^2+b^2\right) e^{2 i c}}}\right]-6 i d^2 \left(-1+e^{2 i c}\right) f (e+f x)^2 \text{PolyLog}\left[2,\frac{i b e^{i (2 c+d x)}}{a e^{i c}+i \sqrt{\left(-a^2+b^2\right) e^{2 i c}}}\right]-$$

$$6 i d^2 \left(-1+e^{2 i c}\right) f (e+f x)^2 \text{PolyLog}\left[2,-\frac{b e^{i (2 c+d x)}}{i a e^{i c}+\sqrt{\left(-a^2+b^2\right) e^{2 i c}}}\right]-$$

$$12 d e f^2 \text{PolyLog}\left[3,\frac{i b e^{i (2 c+d x)}}{a e^{i c}+i \sqrt{\left(-a^2+b^2\right) e^{2 i c}}}\right]+12 d e e^{2 i c} f^2 \text{PolyLog}\left[3,\frac{i b e^{i (2 c+d x)}}{a e^{i c}+i \sqrt{\left(-a^2+b^2\right) e^{2 i c}}}\right]-$$

$$12 d f^3 x \text{PolyLog}\left[3,\frac{i b e^{i (2 c+d x)}}{a e^{i c}+i \sqrt{\left(-a^2+b^2\right) e^{2 i c}}}\right]+12 d e^{2 i c} f^3 x \text{PolyLog}\left[3,\frac{i b e^{i (2 c+d x)}}{a e^{i c}+i \sqrt{\left(-a^2+b^2\right) e^{2 i c}}}\right]-$$

$$12 d e f^2 \text{PolyLog}\left[3,-\frac{b e^{i (2 c+d x)}}{i a e^{i c}+\sqrt{\left(-a^2+b^2\right) e^{2 i c}}}\right]+12 d e e^{2 i c} f^2 \text{PolyLog}\left[3,-\frac{b e^{i (2 c+d x)}}{i a e^{i c}+\sqrt{\left(-a^2+b^2\right) e^{2 i c}}}\right]-$$

$$12 d f^3 x \text{PolyLog}\left[3,-\frac{b e^{i (2 c+d x)}}{i a e^{i c}+\sqrt{\left(-a^2+b^2\right) e^{2 i c}}}\right]+12 d e^{2 i c} f^3 x \text{PolyLog}\left[3,-\frac{b e^{i (2 c+d x)}}{i a e^{i c}+\sqrt{\left(-a^2+b^2\right) e^{2 i c}}}\right]-$$

$$12 i f^3 \text{PolyLog}\left[4,\frac{i b e^{i (2 c+d x)}}{a e^{i c}+i \sqrt{\left(-a^2+b^2\right) e^{2 i c}}}\right]+12 i e^{2 i c} f^3 \text{PolyLog}\left[4,\frac{i b e^{i (2 c+d x)}}{a e^{i c}+i \sqrt{\left(-a^2+b^2\right) e^{2 i c}}}\right]-$$

$$\left.12 i f^3 \text{PolyLog}\left[4,-\frac{b e^{i (2 c+d x)}}{i a e^{i c}+\sqrt{\left(-a^2+b^2\right) e^{2 i c}}}\right]+12 i e^{2 i c} f^3 \text{PolyLog}\left[4,-\frac{b e^{i (2 c+d x)}}{i a e^{i c}+\sqrt{\left(-a^2+b^2\right) e^{2 i c}}}\right]\right)+$$

$$\frac{e^3 \text{Csc}[c] (-d x \text{Cos}[c]+\text{Log}[\text{Cos}[d x] \text{Sin}[c]+\text{Cos}[c] \text{Sin}[d x]] \text{Sin}[c])}{a d \left(\text{Cos}[c]^2+\text{Sin}[c]^2\right)}+$$

$$\text{Csc}[c]$$

$$\left(\frac{\text{Cos}[c+d x]}{8 b^2 d^4}-\frac{i \text{Sin}[c+d x]}{8 b^2 d^4}\right)$$

$$\left(4 a d^4 e^3 x \text{Cos}[d x]+6 a d^4 e^2 f x^2 \text{Cos}[d x]+4 a d^4 e f^2 x^3 \text{Cos}[d x]+a d^4 f^3 x^4 \text{Cos}[d x]+4 a d^4 e^3 x \text{Cos}[2 c+d x]+\right.$$

$$6 a d^4 e^2 f x^2 \text{Cos}[2 c+d x]+4 a d^4 e f^2 x^3 \text{Cos}[2 c+d x]+a d^4 f^3 x^4 \text{Cos}[2 c+d x]-2 b d^3 e^3 \text{Cos}[c+2 d x]-6 i b d^2 e^2 f \text{Cos}[c+2 d x]+$$

$$12\, b\, d\, e\, f^2 \,\text{Cos}[c+2 d x] + 12\, \mathrm{i}\, b\, f^3 \,\text{Cos}[c+2 d x] - 6\, b\, d^3 e^2 f\, x \,\text{Cos}[c+2 d x] - 12\, \mathrm{i}\, b\, d^2 e\, f^2 x \,\text{Cos}[c+2 d x] + 12\, b\, d\, f^3 x \,\text{Cos}[c+2 d x] -$$
$$6\, b\, d^3 e\, f^2 x^2 \,\text{Cos}[c+2 d x] - 6\, \mathrm{i}\, b\, d^2 f^3 x^2 \,\text{Cos}[c+2 d x] - 2\, b\, d^3 f^3 x^3 \,\text{Cos}[c+2 d x] + 2\, b\, d^3 e^3 \,\text{Cos}[3 c+2 d x] + 6\, \mathrm{i}\, b\, d^2 e^2 f \,\text{Cos}[3 c+2 d x] -$$
$$12\, b\, d\, e\, f^2 \,\text{Cos}[3 c+2 d x] - 12\, \mathrm{i}\, b\, f^3 \,\text{Cos}[3 c+2 d x] + 6\, b\, d^3 e^2 f\, x \,\text{Cos}[3 c+2 d x] + 12\, \mathrm{i}\, b\, d^2 e\, f^2 x \,\text{Cos}[3 c+2 d x] -$$
$$12\, b\, d\, f^3 x \,\text{Cos}[3 c+2 d x] + 6\, b\, d^3 e\, f^2 x^2 \,\text{Cos}[3 c+2 d x] + 6\, \mathrm{i}\, b\, d^2 f^3 x^2 \,\text{Cos}[3 c+2 d x] + 2\, b\, d^3 f^3 x^3 \,\text{Cos}[3 c+2 d x] - 4\, \mathrm{i}\, b\, d^3 e^3 \,\text{Sin}[c] -$$
$$12\, b\, d^2 e^2 f \,\text{Sin}[c] + 24\, \mathrm{i}\, b\, d\, e\, f^2 \,\text{Sin}[c] + 24\, b\, f^3 \,\text{Sin}[c] - 12\, \mathrm{i}\, b\, d^3 e^2 f\, x \,\text{Sin}[c] - 24\, b\, d^2 e\, f^2 x \,\text{Sin}[c] + 24\, \mathrm{i}\, b\, d\, f^3 x \,\text{Sin}[c] -$$
$$12\, \mathrm{i}\, b\, d^3 e\, f^2 x^2 \,\text{Sin}[c] - 12\, b\, d^2 f^3 x^2 \,\text{Sin}[c] - 4\, \mathrm{i}\, b\, d^3 f^3 x^3 \,\text{Sin}[c] + 4\, \mathrm{i}\, a\, d^4 e^3 x \,\text{Sin}[d x] + 6\, \mathrm{i}\, a\, d^4 e^2 f\, x^2 \,\text{Sin}[d x] +$$
$$4\, \mathrm{i}\, a\, d^4 e\, f^2 x^3 \,\text{Sin}[d x] + \mathrm{i}\, a\, d^4 f^3 x^4 \,\text{Sin}[d x] + 4\, \mathrm{i}\, a\, d^4 e^3 x \,\text{Sin}[2 c+d x] + 6\, \mathrm{i}\, a\, d^4 e^2 f\, x^2 \,\text{Sin}[2 c+d x] + 4\, \mathrm{i}\, a\, d^4 e\, f^2 x^3 \,\text{Sin}[2 c+d x] +$$
$$\mathrm{i}\, a\, d^4 f^3 x^4 \,\text{Sin}[2 c+d x] - 2\, \mathrm{i}\, b\, d^3 e^3 \,\text{Sin}[c+2 d x] + 6\, b\, d^2 e^2 f \,\text{Sin}[c+2 d x] + 12\, \mathrm{i}\, b\, d\, e\, f^2 \,\text{Sin}[c+2 d x] - 12\, b\, f^3 \,\text{Sin}[c+2 d x] -$$
$$6\, \mathrm{i}\, b\, d^3 e^2 f\, x \,\text{Sin}[c+2 d x] + 12\, b\, d^2 e\, f^2 x \,\text{Sin}[c+2 d x] + 12\, \mathrm{i}\, b\, d\, f^3 x \,\text{Sin}[c+2 d x] - 6\, \mathrm{i}\, b\, d^3 e\, f^2 x^2 \,\text{Sin}[c+2 d x] +$$
$$6\, b\, d^2 f^3 x^2 \,\text{Sin}[c+2 d x] - 2\, \mathrm{i}\, b\, d^3 f^3 x^3 \,\text{Sin}[c+2 d x] + 2\, \mathrm{i}\, b\, d^3 e^3 \,\text{Sin}[3 c+2 d x] - 6\, b\, d^2 e^2 f \,\text{Sin}[3 c+2 d x] -$$
$$12\, \mathrm{i}\, b\, d\, e\, f^2 \,\text{Sin}[3 c+2 d x] + 12\, b\, f^3 \,\text{Sin}[3 c+2 d x] + 6\, \mathrm{i}\, b\, d^3 e^2 f\, x \,\text{Sin}[3 c+2 d x] - 12\, b\, d^2 e\, f^2 x \,\text{Sin}[3 c+2 d x] -$$
$$12\, \mathrm{i}\, b\, d\, f^3 x \,\text{Sin}[3 c+2 d x] + 6\, \mathrm{i}\, b\, d^3 e\, f^2 x^2 \,\text{Sin}[3 c+2 d x] - 6\, b\, d^2 f^3 x^2 \,\text{Sin}[3 c+2 d x] + 2\, \mathrm{i}\, b\, d^3 f^3 x^3 \,\text{Sin}[3 c+2 d x]\Big) -$$
$$\Big(3\, e^2 f \,\text{Csc}[c]\,\text{Sec}[c]\,\Big(d^2\, \mathrm{e}^{\mathrm{i}\,\text{ArcTan}[\text{Tan}[c]]}\, x^2 + 1\Big/\Big(\sqrt{1+\text{Tan}[c]^2}\Big)\,\Big(\mathrm{i}\, d\, x\,(-\pi + 2\,\text{ArcTan}[\text{Tan}[c]]) - \pi\,\text{Log}\big[1+\mathrm{e}^{-2\,\mathrm{i}\, d x}\big] -$$
$$2\,(d x + \text{ArcTan}[\text{Tan}[c]])\,\text{Log}\big[1-\mathrm{e}^{2\,\mathrm{i}\,(d x+\text{ArcTan}[\text{Tan}[c]])}\big] + \pi\,\text{Log}[\text{Cos}[d x]] + 2\,\text{ArcTan}[\text{Tan}[c]]\,\text{Log}[\text{Sin}[d x+\text{ArcTan}[\text{Tan}[c]]]] +$$
$$\mathrm{i}\,\text{PolyLog}\big[2,\, \mathrm{e}^{2\,\mathrm{i}\,(d x+\text{ArcTan}[\text{Tan}[c]])}\big]\Big)\,\text{Tan}[c]\Big)\Big)\Big/\Big(2\, a\, d^2 \sqrt{\text{Sec}[c]^2}\,\big(\text{Cos}[c]^2+\text{Sin}[c]^2\big)\Big)$$

Problem 330: Result more than twice size of optimal antiderivative.

$$\int \frac{(e+f x)^2 \,\text{Cos}[c+d x]^2 \,\text{Cot}[c+d x]}{a+b \,\text{Sin}[c+d x]}\, dx$$

Optimal (type 4, 566 leaves, 26 steps):

$$-\frac{\mathrm{i}\,(e+f x)^3}{3\, a\, f} - \frac{\mathrm{i}\,(a^2-b^2)\,(e+f x)^3}{3\, a\, b^2 f} - \frac{2 f\,(e+f x)\,\text{Cos}[c+d x]}{b\, d^2} + \frac{(a^2-b^2)\,(e+f x)^2\,\text{Log}\Big[1-\frac{\mathrm{i}\, b\, \mathrm{e}^{\mathrm{i}\,(c+d x)}}{a-\sqrt{a^2-b^2}}\Big]}{a\, b^2 d} +$$
$$\frac{(a^2-b^2)\,(e+f x)^2\,\text{Log}\Big[1-\frac{\mathrm{i}\, b\, \mathrm{e}^{\mathrm{i}\,(c+d x)}}{a+\sqrt{a^2-b^2}}\Big]}{a\, b^2 d} + \frac{(e+f x)^2\,\text{Log}\big[1-\mathrm{e}^{2\,\mathrm{i}\,(c+d x)}\big]}{a\, d} - \frac{2\,\mathrm{i}\,(a^2-b^2)\, f\,(e+f x)\,\text{PolyLog}\Big[2, \frac{\mathrm{i}\, b\, \mathrm{e}^{\mathrm{i}\,(c+d x)}}{a-\sqrt{a^2-b^2}}\Big]}{a\, b^2 d^2} -$$
$$\frac{2\,\mathrm{i}\,(a^2-b^2)\, f\,(e+f x)\,\text{PolyLog}\Big[2, \frac{\mathrm{i}\, b\, \mathrm{e}^{\mathrm{i}\,(c+d x)}}{a+\sqrt{a^2-b^2}}\Big]}{a\, b^2 d^2} - \frac{\mathrm{i}\, f\,(e+f x)\,\text{PolyLog}\big[2, \mathrm{e}^{2\,\mathrm{i}\,(c+d x)}\big]}{a\, d^2} + \frac{2\,(a^2-b^2)\, f^2\,\text{PolyLog}\Big[3, \frac{\mathrm{i}\, b\, \mathrm{e}^{\mathrm{i}\,(c+d x)}}{a-\sqrt{a^2-b^2}}\Big]}{a\, b^2 d^3} +$$
$$\frac{2\,(a^2-b^2)\, f^2\,\text{PolyLog}\Big[3, \frac{\mathrm{i}\, b\, \mathrm{e}^{\mathrm{i}\,(c+d x)}}{a+\sqrt{a^2-b^2}}\Big]}{a\, b^2 d^3} + \frac{f^2\,\text{PolyLog}\big[3, \mathrm{e}^{2\,\mathrm{i}\,(c+d x)}\big]}{2\, a\, d^3} + \frac{2 f^2\,\text{Sin}[c+d x]}{b\, d^3} - \frac{(e+f x)^2\,\text{Sin}[c+d x]}{b\, d}$$

Result (type 4, 1740 leaves):

$$-\frac{1}{12\, a\, d^3}\mathrm{e}^{-\mathrm{i}\, c} f^2 \,\text{Csc}[c]$$
$$\Big(2\, d^2 x^2\,\Big(2\, d\, \mathrm{e}^{2\,\mathrm{i}\, c}\, x + 3\,\mathrm{i}\,\big(-1+\mathrm{e}^{2\,\mathrm{i}\, c}\big)\,\text{Log}\big[1-\mathrm{e}^{2\,\mathrm{i}\,(c+d x)}\big]\Big) + 6\, d\,\big(-1+\mathrm{e}^{2\,\mathrm{i}\, c}\big)\, x\,\text{PolyLog}\big[2, \mathrm{e}^{2\,\mathrm{i}\,(c+d x)}\big] + 3\,\mathrm{i}\,\big(-1+\mathrm{e}^{2\,\mathrm{i}\, c}\big)\,\text{PolyLog}\big[3, \mathrm{e}^{2\,\mathrm{i}\,(c+d x)}\big]\Big) +$$

$$\frac{1}{6\,a\,b^2\,d^3\,\left(-1+e^{2\,i\,c}\right)}\,\left(a^2-b^2\right)\,\Bigg(-12\,i\,d^3\,e^2\,e^{2\,i\,c}\,x-12\,i\,d^3\,e\,e^{2\,i\,c}\,f\,x^2-4\,i\,d^3\,e^{2\,i\,c}\,f^2\,x^3-6\,i\,d^2\,e^2\,\text{ArcTan}\Big[\frac{2\,a\,e^{i\,(c+d\,x)}}{b\,\left(-1+e^{2\,i\,(c+d\,x)}\right)}\Big]+$$

$$6\,i\,d^2\,e^2\,e^{2\,i\,c}\,\text{ArcTan}\Big[\frac{2\,a\,e^{i\,(c+d\,x)}}{b\,\left(-1+e^{2\,i\,(c+d\,x)}\right)}\Big]-3\,d^2\,e^2\,\text{Log}\Big[4\,a^2\,e^{2\,i\,(c+d\,x)}+b^2\,\left(-1+e^{2\,i\,(c+d\,x)}\right)^2\Big]+$$

$$3\,d^2\,e^2\,e^{2\,i\,c}\,\text{Log}\Big[4\,a^2\,e^{2\,i\,(c+d\,x)}+b^2\,\left(-1+e^{2\,i\,(c+d\,x)}\right)^2\Big]-12\,d^2\,e\,f\,x\,\text{Log}\Big[1+\frac{b\,e^{i\,(2\,c+d\,x)}}{i\,a\,e^{i\,c}-\sqrt{\left(-a^2+b^2\right)\,e^{2\,i\,c}}}\Big]+$$

$$12\,d^2\,e\,e^{2\,i\,c}\,f\,x\,\text{Log}\Big[1+\frac{b\,e^{i\,(2\,c+d\,x)}}{i\,a\,e^{i\,c}-\sqrt{\left(-a^2+b^2\right)\,e^{2\,i\,c}}}\Big]-6\,d^2\,f^2\,x^2\,\text{Log}\Big[1+\frac{b\,e^{i\,(2\,c+d\,x)}}{i\,a\,e^{i\,c}-\sqrt{\left(-a^2+b^2\right)\,e^{2\,i\,c}}}\Big]+$$

$$6\,d^2\,e^{2\,i\,c}\,f^2\,x^2\,\text{Log}\Big[1+\frac{b\,e^{i\,(2\,c+d\,x)}}{i\,a\,e^{i\,c}-\sqrt{\left(-a^2+b^2\right)\,e^{2\,i\,c}}}\Big]-12\,d^2\,e\,f\,x\,\text{Log}\Big[1+\frac{b\,e^{i\,(2\,c+d\,x)}}{i\,a\,e^{i\,c}+\sqrt{\left(-a^2+b^2\right)\,e^{2\,i\,c}}}\Big]+$$

$$12\,d^2\,e\,e^{2\,i\,c}\,f\,x\,\text{Log}\Big[1+\frac{b\,e^{i\,(2\,c+d\,x)}}{i\,a\,e^{i\,c}+\sqrt{\left(-a^2+b^2\right)\,e^{2\,i\,c}}}\Big]-6\,d^2\,f^2\,x^2\,\text{Log}\Big[1+\frac{b\,e^{i\,(2\,c+d\,x)}}{i\,a\,e^{i\,c}+\sqrt{\left(-a^2+b^2\right)\,e^{2\,i\,c}}}\Big]+$$

$$6\,d^2\,e^{2\,i\,c}\,f^2\,x^2\,\text{Log}\Big[1+\frac{b\,e^{i\,(2\,c+d\,x)}}{i\,a\,e^{i\,c}+\sqrt{\left(-a^2+b^2\right)\,e^{2\,i\,c}}}\Big]-12\,i\,d\,\left(-1+e^{2\,i\,c}\right)\,f\,(e+f\,x)\,\text{PolyLog}\Big[2,\,\frac{i\,b\,e^{i\,(2\,c+d\,x)}}{a\,e^{i\,c}+i\,\sqrt{\left(-a^2+b^2\right)\,e^{2\,i\,c}}}\Big]-$$

$$12\,i\,d\,\left(-1+e^{2\,i\,c}\right)\,f\,(e+f\,x)\,\text{PolyLog}\Big[2,\,-\frac{b\,e^{i\,(2\,c+d\,x)}}{i\,a\,e^{i\,c}+\sqrt{\left(-a^2+b^2\right)\,e^{2\,i\,c}}}\Big]-12\,f^2\,\text{PolyLog}\Big[3,\,\frac{i\,b\,e^{i\,(2\,c+d\,x)}}{a\,e^{i\,c}+i\,\sqrt{\left(-a^2+b^2\right)\,e^{2\,i\,c}}}\Big]+$$

$$12\,e^{2\,i\,c}\,f^2\,\text{PolyLog}\Big[3,\,\frac{i\,b\,e^{i\,(2\,c+d\,x)}}{a\,e^{i\,c}+i\,\sqrt{\left(-a^2+b^2\right)\,e^{2\,i\,c}}}\Big]-12\,f^2\,\text{PolyLog}\Big[3,\,-\frac{b\,e^{i\,(2\,c+d\,x)}}{i\,a\,e^{i\,c}+\sqrt{\left(-a^2+b^2\right)\,e^{2\,i\,c}}}\Big]+$$

$$12\,e^{2\,i\,c}\,f^2\,\text{PolyLog}\Big[3,\,-\frac{b\,e^{i\,(2\,c+d\,x)}}{i\,a\,e^{i\,c}+\sqrt{\left(-a^2+b^2\right)\,e^{2\,i\,c}}}\Big]\Bigg)+\frac{a\,x\,\left(3\,e^2+3\,e\,f\,x+f^2\,x^2\right)\,\text{Cos}[c]\,\text{Csc}\Big[\frac{c}{2}\Big]\,\text{Sec}\Big[\frac{c}{2}\Big]}{6\,b^2}-$$

$$\frac{\text{Cos}[d\,x]\,\left(2\,d\,e\,f\,\text{Cos}[c]+2\,d\,f^2\,x\,\text{Cos}[c]+d^2\,e^2\,\text{Sin}[c]-2\,f^2\,\text{Sin}[c]+2\,d^2\,e\,f\,x\,\text{Sin}[c]+d^2\,f^2\,x^2\,\text{Sin}[c]\right)}{b\,d^3}+$$

$$\frac{e^2\,\text{Csc}[c]\,(-d\,x\,\text{Cos}[c]+\text{Log}[\text{Cos}[d\,x]\,\text{Sin}[c]+\text{Cos}[c]\,\text{Sin}[d\,x]]\,\text{Sin}[c])}{a\,d\,\left(\text{Cos}[c]^2+\text{Sin}[c]^2\right)}-$$

$$\frac{\left(d^2\,e^2\,\text{Cos}[c]-2\,f^2\,\text{Cos}[c]+2\,d^2\,e\,f\,x\,\text{Cos}[c]+d^2\,f^2\,x^2\,\text{Cos}[c]-2\,d\,e\,f\,\text{Sin}[c]-2\,d\,f^2\,x\,\text{Sin}[c]\right)\,\text{Sin}[d\,x]}{b\,d^3}-$$

$$\Bigg(e\,f\,\text{Csc}[c]\,\text{Sec}[c]\,\Bigg(d^2\,e^{i\,\text{ArcTan}[\text{Tan}[c]]}\,x^2+1\Bigg/\left(\sqrt{1+\text{Tan}[c]^2}\right)\,\left(i\,d\,x\,(-\pi+2\,\text{ArcTan}[\text{Tan}[c]])-\pi\,\text{Log}\Big[1+e^{-2\,i\,d\,x}\Big]-\right.$$

$$\left.2\,(d\,x+\text{ArcTan}[\text{Tan}[c]])\,\text{Log}\Big[1-e^{2\,i\,(d\,x+\text{ArcTan}[\text{Tan}[c]])}\Big]+\pi\,\text{Log}[\text{Cos}[d\,x]]+2\,\text{ArcTan}[\text{Tan}[c]]\,\text{Log}[\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]]\right)+$$

$$\mathrm{i}\,\mathrm{PolyLog}\left[2,\, e^{2\,\mathrm{i}\,(d\,x+\mathrm{ArcTan}[\mathrm{Tan}[c]])}\right]\,\mathrm{Tan}[c]\Big)\Big)\Big/\left(a\,d^2\,\sqrt{\mathrm{Sec}[c]^2\,\left(\mathrm{Cos}[c]^2+\mathrm{Sin}[c]^2\right)}\right)$$

- **Problem 331: Result more than twice size of optimal antiderivative.**

$$\int \frac{(e+f\,x)\,\mathrm{Cos}[c+d\,x]^2\,\mathrm{Cot}[c+d\,x]}{a+b\,\mathrm{Sin}[c+d\,x]}\,dx$$

Optimal (type 4, 379 leaves, 22 steps):

$$-\frac{\mathrm{i}\,(e+f\,x)^2}{2\,a\,f}-\frac{\mathrm{i}\,\left(a^2-b^2\right)\,(e+f\,x)^2}{2\,a\,b^2\,f}-\frac{f\,\mathrm{Cos}[c+d\,x]}{b\,d^2}+\frac{\left(a^2-b^2\right)\,(e+f\,x)\,\mathrm{Log}\left[1-\frac{\mathrm{i}\,b\,e^{\mathrm{i}\,(c+d\,x)}}{a-\sqrt{a^2-b^2}}\right]}{a\,b^2\,d}+$$
$$\frac{\left(a^2-b^2\right)\,(e+f\,x)\,\mathrm{Log}\left[1-\frac{\mathrm{i}\,b\,e^{\mathrm{i}\,(c+d\,x)}}{a+\sqrt{a^2-b^2}}\right]}{a\,b^2\,d}+\frac{(e+f\,x)\,\mathrm{Log}\left[1-e^{2\,\mathrm{i}\,(c+d\,x)}\right]}{a\,d}-\frac{\mathrm{i}\,\left(a^2-b^2\right)\,f\,\mathrm{PolyLog}\left[2,\,\frac{\mathrm{i}\,b\,e^{\mathrm{i}\,(c+d\,x)}}{a-\sqrt{a^2-b^2}}\right]}{a\,b^2\,d^2}-$$
$$\frac{\mathrm{i}\,\left(a^2-b^2\right)\,f\,\mathrm{PolyLog}\left[2,\,\frac{\mathrm{i}\,b\,e^{\mathrm{i}\,(c+d\,x)}}{a+\sqrt{a^2-b^2}}\right]}{a\,b^2\,d^2}-\frac{\mathrm{i}\,f\,\mathrm{PolyLog}\left[2,\,e^{2\,\mathrm{i}\,(c+d\,x)}\right]}{2\,a\,d^2}-\frac{(e+f\,x)\,\mathrm{Sin}[c+d\,x]}{b\,d}$$

Result (type 4, 868 leaves):

$$\frac{1}{a\,b^2\,d^2}\Bigg(-a\,b\,f\,\mathrm{Cos}[c+d\,x]+b^2\,d\,e\,\mathrm{Log}[\mathrm{Sin}[c+d\,x]]-b^2\,c\,f\,\mathrm{Log}[\mathrm{Sin}[c+d\,x]]+a^2\,d\,e\,\mathrm{Log}\left[1+\frac{b\,\mathrm{Sin}[c+d\,x]}{a}\right]-$$
$$b^2\,d\,e\,\mathrm{Log}\left[1+\frac{b\,\mathrm{Sin}[c+d\,x]}{a}\right]-a^2\,c\,f\,\mathrm{Log}\left[1+\frac{b\,\mathrm{Sin}[c+d\,x]}{a}\right]+b^2\,c\,f\,\mathrm{Log}\left[1+\frac{b\,\mathrm{Sin}[c+d\,x]}{a}\right]+\frac{1}{8}\,a^2\,f\,\Bigg(\mathrm{i}\,(-2\,c+\pi-2\,d\,x)^2-$$
$$32\,\mathrm{i}\,\mathrm{ArcSin}\left[\frac{\sqrt{\frac{a+b}{b}}}{\sqrt{2}}\right]\,\mathrm{ArcTan}\left[\frac{(a-b)\,\mathrm{Cot}\left[\frac{1}{4}\,(2\,c+\pi+2\,d\,x)\right]}{\sqrt{a^2-b^2}}\right]-4\,\left(-2\,c+\pi-2\,d\,x+4\,\mathrm{ArcSin}\left[\frac{\sqrt{\frac{a+b}{b}}}{\sqrt{2}}\right]\right)\,\mathrm{Log}\left[1-\frac{\mathrm{i}\,\left(-a+\sqrt{a^2-b^2}\right)\,e^{-\mathrm{i}\,(c+d\,x)}}{b}\right]-$$
$$4\,\left(-2\,c+\pi-2\,d\,x-4\,\mathrm{ArcSin}\left[\frac{\sqrt{\frac{a+b}{b}}}{\sqrt{2}}\right]\right)\,\mathrm{Log}\left[1+\frac{\mathrm{i}\,\left(a+\sqrt{a^2-b^2}\right)\,e^{-\mathrm{i}\,(c+d\,x)}}{b}\right]+4\,(-2\,c+\pi-2\,d\,x)\,\mathrm{Log}[a+b\,\mathrm{Sin}[c+d\,x]]+$$

$$8 (c+d x) \operatorname{Log}[a+b \operatorname{Sin}[c+d x]]+8 i \left(\operatorname{PolyLog}\left[2, \frac{i \left(-a+\sqrt{a^2-b^2}\right) e^{-i (c+d x)}}{b}\right]+\operatorname{PolyLog}\left[2, -\frac{i \left(a+\sqrt{a^2-b^2}\right) e^{-i (c+d x)}}{b}\right]\right)\Bigg) -$$

$$\frac{1}{8} b^2 f \left(i (-2 c+\pi -2 d x)^2-32 i \operatorname{ArcSin}\left[\frac{\sqrt{\frac{a+b}{b}}}{\sqrt{2}}\right] \operatorname{ArcTan}\left[\frac{(a-b) \operatorname{Cot}\left[\frac{1}{4} (2 c+\pi +2 d x)\right]}{\sqrt{a^2-b^2}}\right]-\right.$$

$$4 \left(-2 c+\pi -2 d x+4 \operatorname{ArcSin}\left[\frac{\sqrt{\frac{a+b}{b}}}{\sqrt{2}}\right]\right) \operatorname{Log}\left[1-\frac{i \left(-a+\sqrt{a^2-b^2}\right) e^{-i (c+d x)}}{b}\right]-$$

$$4 \left(-2 c+\pi -2 d x-4 \operatorname{ArcSin}\left[\frac{\sqrt{\frac{a+b}{b}}}{\sqrt{2}}\right]\right) \operatorname{Log}\left[1+\frac{i \left(a+\sqrt{a^2-b^2}\right) e^{-i (c+d x)}}{b}\right]+4 (-2 c+\pi -2 d x) \operatorname{Log}[a+b \operatorname{Sin}[c+d x]]+$$

$$8 (c+d x) \operatorname{Log}[a+b \operatorname{Sin}[c+d x]]+8 i \left(\operatorname{PolyLog}\left[2, \frac{i \left(-a+\sqrt{a^2-b^2}\right) e^{-i (c+d x)}}{b}\right]+\operatorname{PolyLog}\left[2, -\frac{i \left(a+\sqrt{a^2-b^2}\right) e^{-i (c+d x)}}{b}\right]\right)\Bigg) +$$

$$\left. b^2 f \left((c+d x) \operatorname{Log}\left[1-e^{2 i (c+d x)}\right]-\frac{1}{2} i \left((c+d x)^2+\operatorname{PolyLog}\left[2, e^{2 i (c+d x)}\right]\right)\right)-a b d (e+f x) \operatorname{Sin}[c+d x]\right)$$

Problem 333: Result more than twice size of optimal antiderivative.

$$\int \frac{(e+f x)^3 \operatorname{Cos}[c+d x]^3 \operatorname{Cot}[c+d x]}{a+b \operatorname{Sin}[c+d x]} \, dx$$

Optimal (type 4, 1138 leaves, 53 steps) :

$$\frac{3 e f^2 x}{4 b d^2}+\frac{3 f^3 x^2}{8 b d^2}-\frac{(e+f x)^4}{8 b f}+\frac{\left(a^2-b^2\right)(e+f x)^4}{4 b^3 f}-\frac{2 (e+f x)^3 \text{ArcTanh}\left[e^{i (c+d x)}\right]}{a d}-\frac{6 f^2 (e+f x) \text{Cos}[c+d x]}{a d^3}-\frac{6 \left(a^2-b^2\right) f^2 (e+f x) \text{Cos}[c+d x]}{a b^2 d^3}+\frac{(e+f x)^3 \text{Cos}[c+d x]}{a d}+\frac{\left(a^2-b^2\right)(e+f x)^3 \text{Cos}[c+d x]}{a b^2 d}+\frac{3 f^3 \text{Cos}[c+d x]^2}{8 b d^4}-\frac{3 f (e+f x)^2 \text{Cos}[c+d x]^2}{4 b d^2}+\frac{i \left(a^2-b^2\right)^{3/2} (e+f x)^3 \text{Log}\left[1-\frac{i b e^{i (c+d x)}}{a-\sqrt{a^2-b^2}}\right]}{a b^3 d}-\frac{i \left(a^2-b^2\right)^{3/2} (e+f x)^3 \text{Log}\left[1-\frac{i b e^{i (c+d x)}}{a+\sqrt{a^2-b^2}}\right]}{a b^3 d}+\frac{3 i f (e+f x)^2 \text{PolyLog}\left[2,-e^{i (c+d x)}\right]}{a d^2}-\frac{3 i f (e+f x)^2 \text{PolyLog}\left[2,e^{i (c+d x)}\right]}{a d^2}+\frac{3 \left(a^2-b^2\right)^{3/2} f (e+f x)^2 \text{PolyLog}\left[2,\frac{i b e^{i (c+d x)}}{a-\sqrt{a^2-b^2}}\right]}{a b^3 d^2}-\frac{3 \left(a^2-b^2\right)^{3/2} f (e+f x)^2 \text{PolyLog}\left[2,\frac{i b e^{i (c+d x)}}{a+\sqrt{a^2-b^2}}\right]}{a b^3 d^2}-\frac{6 f^2 (e+f x) \text{PolyLog}\left[3,-e^{i (c+d x)}\right]}{a d^3}+\frac{6 f^2 (e+f x) \text{PolyLog}\left[3,e^{i (c+d x)}\right]}{a d^3}+\frac{6 i \left(a^2-b^2\right)^{3/2} f^2 (e+f x) \text{PolyLog}\left[3,\frac{i b e^{i (c+d x)}}{a-\sqrt{a^2-b^2}}\right]}{a b^3 d^3}-\frac{6 i \left(a^2-b^2\right)^{3/2} f^2 (e+f x) \text{PolyLog}\left[3,\frac{i b e^{i (c+d x)}}{a+\sqrt{a^2-b^2}}\right]}{a b^3 d^3}-\frac{6 i f^3 \text{PolyLog}\left[4,-e^{i (c+d x)}\right]}{a d^4}+\frac{6 i f^3 \text{PolyLog}\left[4,e^{i (c+d x)}\right]}{a d^4}-\frac{6 \left(a^2-b^2\right)^{3/2} f^3 \text{PolyLog}\left[4,\frac{i b e^{i (c+d x)}}{a-\sqrt{a^2-b^2}}\right]}{a b^3 d^4}+\frac{6 \left(a^2-b^2\right)^{3/2} f^3 \text{PolyLog}\left[4,\frac{i b e^{i (c+d x)}}{a+\sqrt{a^2-b^2}}\right]}{a b^3 d^4}+\frac{6 f^3 \text{Sin}[c+d x]}{a d^4}+\frac{6 \left(a^2-b^2\right) f^3 \text{Sin}[c+d x]}{a b^2 d^4}-\frac{3 f (e+f x)^2 \text{Sin}[c+d x]}{a d^2}-\frac{3 \left(a^2-b^2\right) f (e+f x)^2 \text{Sin}[c+d x]}{a b^2 d^2}+\frac{3 f^2 (e+f x) \text{Cos}[c+d x] \text{Sin}[c+d x]}{4 b d^3}-\frac{(e+f x)^3 \text{Cos}[c+d x] \text{Sin}[c+d x]}{2 b d}$$

Result (type 4, 3263 leaves) :

$$-\frac{\left(-2 a^2+3 b^2\right) e^3 x}{2 b^3}-\frac{3 \left(-2 a^2+3 b^2\right) e^2 f x^2}{4 b^3}-\frac{\left(-2 a^2+3 b^2\right) e f^2 x^3}{2 b^3}-\frac{\left(-2 a^2+3 b^2\right) f^3 x^4}{8 b^3}+\frac{1}{a d^4}\Big(-2 d^3 e^3 \text{ArcTanh}\left[e^{i (c+d x)}\right]+3 d^3 e^2 f x \text{Log}\left[1-e^{i (c+d x)}\right]+3 d^3 e f^2 x^2 \text{Log}\left[1-e^{i (c+d x)}\right]+d^3 f^3 x^3 \text{Log}\left[1-e^{i (c+d x)}\right]-3 d^3 e^2 f x \text{Log}\left[1+e^{i (c+d x)}\right]-3 d^3 e f^2 x^2 \text{Log}\left[1+e^{i (c+d x)}\right]-d^3 f^3 x^3 \text{Log}\left[1+e^{i (c+d x)}\right]+3 i d^2 f (e+f x)^2 \text{PolyLog}\left[2,-e^{i (c+d x)}\right]-3 i d^2 f (e+f x)^2 \text{PolyLog}\left[2,e^{i (c+d x)}\right]-6 d e f^2 \text{PolyLog}\left[3,-e^{i (c+d x)}\right]-6 d f^3 x \text{PolyLog}\left[3,-e^{i (c+d x)}\right]+6 d e f^2 \text{PolyLog}\left[3,e^{i (c+d x)}\right]+6 d f^3 x \text{PolyLog}\left[3,e^{i (c+d x)}\right]-6 i f^3 \text{PolyLog}\left[4,-e^{i (c+d x)}\right]+6 i f^3 \text{PolyLog}\left[4,e^{i (c+d x)}\right]\Big)+\frac{1}{a b^3 d^4 \sqrt{-\left(a^2-b^2\right)^2 e^{4 i c}}}$$

$$\left(a^2-b^2\right)^{3/2} \Bigg(-2 d^3 e^3 \sqrt{-\left(a^2-b^2\right)^2 e^{4 i c}}\, \text{ArcTan}\left[\frac{i a+b e^{i (c+d x)}}{\sqrt{a^2-b^2}}\right]+3 i \sqrt{a^2-b^2}\, d^3 e^2 e^{i c} \sqrt{\left(-a^2+b^2\right) e^{2 i c}}\, f x \text{Log}\left[1-\frac{i b e^{i (2 c+d x)}}{a e^{i c}-\sqrt{\left(a^2-b^2\right) e^{2 i c}}}\right]+$$

$$i \sqrt{a^2-b^2}\, d^3 e^{i c} \sqrt{\left(-a^2+b^2\right) e^{2 i c}}\, f^3 x^3 \text{Log}\left[1-\frac{i b e^{i (2 c+d x)}}{a e^{i c}-\sqrt{\left(a^2-b^2\right) e^{2 i c}}}\right]-3 i \sqrt{a^2-b^2}\, d^3 e^2 e^{i c} \sqrt{\left(-a^2+b^2\right) e^{2 i c}}$$

$$f x \text{Log}\left[1-\frac{i b e^{i (2 c+d x)}}{a e^{i c}+\sqrt{\left(a^2-b^2\right) e^{2 i c}}}\right]-i \sqrt{a^2-b^2}\, d^3 e^{i c} \sqrt{\left(-a^2+b^2\right) e^{2 i c}}\, f^3 x^3 \text{Log}\left[1-\frac{i b e^{i (2 c+d x)}}{a e^{i c}+\sqrt{\left(a^2-b^2\right) e^{2 i c}}}\right]-$$

$$3 \sqrt{a^2-b^2}\, d^3 e\, e^{i c} \sqrt{\left(a^2-b^2\right) e^{2 i c}}\, f^2 x^2 \text{Log}\left[1+\frac{b e^{i (2 c+d x)}}{i a e^{i c}-\sqrt{\left(-a^2+b^2\right) e^{2 i c}}}\right]+3 \sqrt{a^2-b^2}\, d^3 e\, e^{i c} \sqrt{\left(a^2-b^2\right) e^{2 i c}}\, f^2 x^2$$

$$\text{Log}\left[1+\frac{b e^{i (2 c+d x)}}{i a e^{i c}+\sqrt{\left(-a^2+b^2\right) e^{2 i c}}}\right]+3 \sqrt{a^2-b^2}\, d^2 e^{i c} \sqrt{\left(-a^2+b^2\right) e^{2 i c}}\, f \left(e^2+f^2 x^2\right) \text{PolyLog}\left[2,\frac{i b e^{i (2 c+d x)}}{a e^{i c}-\sqrt{\left(a^2-b^2\right) e^{2 i c}}}\right]-$$

$$3 \sqrt{a^2-b^2}\, d^2 e^{i c} \sqrt{\left(-a^2+b^2\right) e^{2 i c}}\, f \left(e^2+f^2 x^2\right) \text{PolyLog}\left[2,\frac{i b e^{i (2 c+d x)}}{a e^{i c}+\sqrt{\left(a^2-b^2\right) e^{2 i c}}}\right]+6 i \sqrt{a^2-b^2}\, d^2 e\, e^{i c} \sqrt{\left(a^2-b^2\right) e^{2 i c}}$$

$$f^2 x \text{PolyLog}\left[2,\frac{i b e^{i (2 c+d x)}}{a e^{i c}+i \sqrt{\left(-a^2+b^2\right) e^{2 i c}}}\right]-6 i \sqrt{a^2-b^2}\, d^2 e\, e^{i c} \sqrt{\left(a^2-b^2\right) e^{2 i c}}\, f^2 x \text{PolyLog}\left[2,-\frac{b e^{i (2 c+d x)}}{i a e^{i c}+\sqrt{\left(-a^2+b^2\right) e^{2 i c}}}\right]+$$

$$6 i \sqrt{a^2-b^2}\, d e^{i c} \sqrt{\left(-a^2+b^2\right) e^{2 i c}}\, f^3 x \text{PolyLog}\left[3,\frac{i b e^{i (2 c+d x)}}{a e^{i c}-\sqrt{\left(a^2-b^2\right) e^{2 i c}}}\right]-6 i \sqrt{a^2-b^2}\, d e^{i c} \sqrt{\left(-a^2+b^2\right) e^{2 i c}}\, f^3 x$$

$$\text{PolyLog}\left[3,\frac{i b e^{i (2 c+d x)}}{a e^{i c}+\sqrt{\left(a^2-b^2\right) e^{2 i c}}}\right]-6 \sqrt{a^2-b^2}\, d e\, e^{i c} \sqrt{\left(a^2-b^2\right) e^{2 i c}}\, f^2 \text{PolyLog}\left[3,\frac{i b e^{i (2 c+d x)}}{a e^{i c}+i \sqrt{\left(-a^2+b^2\right) e^{2 i c}}}\right]+$$

$$6 \sqrt{a^2-b^2}\, d e\, e^{i c} \sqrt{\left(a^2-b^2\right) e^{2 i c}}\, f^2 \text{PolyLog}\left[3,-\frac{b e^{i (2 c+d x)}}{i a e^{i c}+\sqrt{\left(-a^2+b^2\right) e^{2 i c}}}\right]-6 \sqrt{a^2-b^2}\, e^{i c} \sqrt{\left(-a^2+b^2\right) e^{2 i c}}\, f^3$$

$$\left.\text{PolyLog}\left[4,\frac{i b e^{i (2 c+d x)}}{a e^{i c}-\sqrt{\left(a^2-b^2\right) e^{2 i c}}}\right]+6 \sqrt{a^2-b^2}\, e^{i c} \sqrt{\left(-a^2+b^2\right) e^{2 i c}}\, f^3 \text{PolyLog}\left[4,\frac{i b e^{i (2 c+d x)}}{a e^{i c}+\sqrt{\left(a^2-b^2\right) e^{2 i c}}}\right]\right)+$$

$$\left(\frac{a f^3 x^3 \text{Cos}[c]}{2 b^2 d}-\frac{i a f^3 x^3 \text{Sin}[c]}{2 b^2 d}+\left(d^3 e^3-3 i d^2 e^2 f-6 d e f^2+6 i f^3\right) \left(\frac{a \text{Cos}[c]}{2 b^2 d^4}-\frac{i a \text{Sin}[c]}{2 b^2 d^4}\right)+\right.$$

$$\left.\left(a d^2 e^2 f-2 i a d e f^2-2 a f^3\right) \left(\frac{3 x \text{Cos}[c]}{2 b^2 d^3}-\frac{3 i x \text{Sin}[c]}{2 b^2 d^3}\right)+\left(a d e f^2-i a f^3\right) \left(\frac{3 x^2 \text{Cos}[c]}{2 b^2 d^2}-\frac{3 i x^2 \text{Sin}[c]}{2 b^2 d^2}\right)\right) (\text{Cos}[d x]-i \text{Sin}[d x])+$$

$$\left(\frac{a f^3 x^3 \text{Cos}[c]}{2 b^2 d}+\frac{i a f^3 x^3 \text{Sin}[c]}{2 b^2 d}+\left(d^3 e^3+3 i d^2 e^2 f-6 d e f^2-6 i f^3\right) \left(\frac{a \text{Cos}[c]}{2 b^2 d^4}+\frac{i a \text{Sin}[c]}{2 b^2 d^4}\right)+\right.$$

$$\frac{3 x^2 \left(a d e f^2 \text{Cos}[c]+i a f^3 \text{Cos}[c]+i a d e f^2 \text{Sin}[c]-a f^3 \text{Sin}[c]\right)}{2 b^2 d^2}+\frac{1}{2 b^2 d^3}$$

$$3 x \left(a d^2 e^2 f \operatorname{Cos}[c] + 2 i a d e f^2 \operatorname{Cos}[c] - 2 a f^3 \operatorname{Cos}[c] + i a d^2 e^2 f \operatorname{Sin}[c] - 2 a d e f^2 \operatorname{Sin}[c] - 2 i a f^3 \operatorname{Sin}[c]\right) (\operatorname{Cos}[d x] + i \operatorname{Sin}[d x]) +$$

$$\left(-\frac{i f^3 x^3 \operatorname{Cos}[2 c]}{8 b d} - \frac{f^3 x^3 \operatorname{Sin}[2 c]}{8 b d} + \left(-4 i d^3 e^3 - 6 d^2 e^2 f + 6 i d e f^2 + 3 f^3\right) \left(\frac{\operatorname{Cos}[2 c]}{32 b d^4} - \frac{i \operatorname{Sin}[2 c]}{32 b d^4}\right) + \right.$$

$$\left. \left(2 d^2 e^2 f - 2 i d e f^2 - f^3\right) \left(-\frac{3 i x \operatorname{Cos}[2 c]}{16 b d^3} - \frac{3 x \operatorname{Sin}[2 c]}{16 b d^3}\right) + \left(2 d e f^2 - i f^3\right) \left(-\frac{3 i x^2 \operatorname{Cos}[2 c]}{16 b d^2} - \frac{3 x^2 \operatorname{Sin}[2 c]}{16 b d^2}\right)\right) (\operatorname{Cos}[2 d x] - i \operatorname{Sin}[2 d x]) +$$

$$\left(\frac{i f^3 x^3 \operatorname{Cos}[2 c]}{8 b d} - \frac{f^3 x^3 \operatorname{Sin}[2 c]}{8 b d} + \left(4 i d^3 e^3 - 6 d^2 e^2 f - 6 i d e f^2 + 3 f^3\right) \left(\frac{\operatorname{Cos}[2 c]}{32 b d^4} + \frac{i \operatorname{Sin}[2 c]}{32 b d^4}\right) + \right.$$

$$\frac{3 i x^2 \left(2 d e f^2 \operatorname{Cos}[2 c] + i f^3 \operatorname{Cos}[2 c] + 2 i d e f^2 \operatorname{Sin}[2 c] - f^3 \operatorname{Sin}[2 c]\right)}{16 b d^2} + \frac{1}{16 b d^3}$$

$$\left. 3 i x \left(2 d^2 e^2 f \operatorname{Cos}[2 c] + 2 i d e f^2 \operatorname{Cos}[2 c] - f^3 \operatorname{Cos}[2 c] + 2 i d^2 e^2 f \operatorname{Sin}[2 c] - 2 d e f^2 \operatorname{Sin}[2 c] - i f^3 \operatorname{Sin}[2 c]\right)\right) (\operatorname{Cos}[2 d x] + i \operatorname{Sin}[2 d x])$$

- **Problem 337: Result more than twice size of optimal antiderivative.**

$$\int \frac{(e + f x)^3 \operatorname{Cos}[c + d x] \operatorname{Cot}[c + d x]^2}{a + b \operatorname{Sin}[c + d x]} \, dx$$

Optimal (type 4, 852 leaves, 48 steps):

$$\frac{i b (e + f x)^4}{4 a^2 f} + \frac{i \left(a^2 - b^2\right) (e + f x)^4}{4 a^2 b f} - \frac{6 f (e + f x)^2 \operatorname{ArcTanh}\left[e^{i (c+d x)}\right]}{a d^2} - \frac{(e + f x)^3 \operatorname{Csc}[c + d x]}{a d} - \frac{\left(a^2 - b^2\right) (e + f x)^3 \operatorname{Log}\left[1 - \frac{i b e^{i (c+d x)}}{a - \sqrt{a^2-b^2}}\right]}{a^2 b d} -$$

$$\frac{\left(a^2 - b^2\right) (e + f x)^3 \operatorname{Log}\left[1 - \frac{i b e^{i (c+d x)}}{a + \sqrt{a^2-b^2}}\right]}{a^2 b d} - \frac{b (e + f x)^3 \operatorname{Log}\left[1 - e^{2 i (c+d x)}\right]}{a^2 d} + \frac{6 i f^2 (e + f x) \operatorname{PolyLog}\left[2, -e^{i (c+d x)}\right]}{a d^3} -$$

$$\frac{6 i f^2 (e + f x) \operatorname{PolyLog}\left[2, e^{i (c+d x)}\right]}{a d^3} + \frac{3 i \left(a^2 - b^2\right) f (e + f x)^2 \operatorname{PolyLog}\left[2, \frac{i b e^{i (c+d x)}}{a - \sqrt{a^2-b^2}}\right]}{a^2 b d^2} + \frac{3 i \left(a^2 - b^2\right) f (e + f x)^2 \operatorname{PolyLog}\left[2, \frac{i b e^{i (c+d x)}}{a + \sqrt{a^2-b^2}}\right]}{a^2 b d^2} +$$

$$\frac{3 i b f (e + f x)^2 \operatorname{PolyLog}\left[2, e^{2 i (c+d x)}\right]}{2 a^2 d^2} - \frac{6 f^3 \operatorname{PolyLog}\left[3, -e^{i (c+d x)}\right]}{a d^4} + \frac{6 f^3 \operatorname{PolyLog}\left[3, e^{i (c+d x)}\right]}{a d^4} -$$

$$\frac{6 \left(a^2 - b^2\right) f^2 (e + f x) \operatorname{PolyLog}\left[3, \frac{i b e^{i (c+d x)}}{a - \sqrt{a^2-b^2}}\right]}{a^2 b d^3} - \frac{6 \left(a^2 - b^2\right) f^2 (e + f x) \operatorname{PolyLog}\left[3, \frac{i b e^{i (c+d x)}}{a + \sqrt{a^2-b^2}}\right]}{a^2 b d^3} - \frac{3 b f^2 (e + f x) \operatorname{PolyLog}\left[3, e^{2 i (c+d x)}\right]}{2 a^2 d^3} -$$

$$\frac{6 i \left(a^2 - b^2\right) f^3 \operatorname{PolyLog}\left[4, \frac{i b e^{i (c+d x)}}{a - \sqrt{a^2-b^2}}\right]}{a^2 b d^4} - \frac{6 i \left(a^2 - b^2\right) f^3 \operatorname{PolyLog}\left[4, \frac{i b e^{i (c+d x)}}{a + \sqrt{a^2-b^2}}\right]}{a^2 b d^4} - \frac{3 i b f^3 \operatorname{PolyLog}\left[4, e^{2 i (c+d x)}\right]}{4 a^2 d^4}$$

Result (type 4, 3114 leaves):

$$\frac{3 e^2 f \,\text{Log}\left[\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right]}{a d^2}+\frac{1}{a d^3}$$

$$6 e f^2 \left((c+d x)\left(\text{Log}\left[1-e^{i (c+d x)}\right]-\text{Log}\left[1+e^{i (c+d x)}\right]\right)-c \,\text{Log}\left[\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right]+i \left(\text{PolyLog}\left[2,-e^{i (c+d x)}\right]-\text{PolyLog}\left[2,e^{i (c+d x)}\right]\right)\right)+$$

$$\frac{1}{4 a^2 d^3} b e e^{-i c} f^2 \,\text{Csc}[c]$$

$$\left(2 d^2 x^2 \left(2 d e^{2 i c} x+3 i \left(-1+e^{2 i c}\right) \text{Log}\left[1-e^{2 i (c+d x)}\right]\right)+6 d \left(-1+e^{2 i c}\right) x \,\text{PolyLog}\left[2,e^{2 i (c+d x)}\right]+3 i \left(-1+e^{2 i c}\right) \text{PolyLog}\left[3,e^{2 i (c+d x)}\right]\right)-$$

$$\frac{1}{a d^4} 6 f^3 \left(d^2 x^2 \,\text{ArcTanh}[\text{Cos}[c+d x]+i \,\text{Sin}[c+d x]]-i d x \,\text{PolyLog}[2,-\text{Cos}[c+d x]-i \,\text{Sin}[c+d x]]+\right.$$

$$\left.i d x \,\text{PolyLog}[2,\text{Cos}[c+d x]+i \,\text{Sin}[c+d x]]+\text{PolyLog}[3,-\text{Cos}[c+d x]-i \,\text{Sin}[c+d x]]-\text{PolyLog}[3,\text{Cos}[c+d x]+i \,\text{Sin}[c+d x]]\right)+$$

$$\frac{1}{4 a^2} b e^{i c} f^3 \,\text{Csc}[c] \left(x^4+\left(-1+e^{-2 i c}\right) x^4+1/\left(2 d^4\right) e^{-2 i c} \left(-1+e^{2 i c}\right)\right.$$

$$\left.\left(2 d^4 x^4+4 i d^3 x^3 \,\text{Log}\left[1-e^{2 i (c+d x)}\right]+6 d^2 x^2 \,\text{PolyLog}\left[2,e^{2 i (c+d x)}\right]+6 i d x \,\text{PolyLog}\left[3,e^{2 i (c+d x)}\right]-3 \,\text{PolyLog}\left[4,e^{2 i (c+d x)}\right]\right)\right)+$$

$$\frac{1}{2 a^2 b d^4 \left(-1+e^{2 i c}\right)} \left(a^2-b^2\right) \left(4 i d^4 e^3 e^{2 i c} x+6 i d^4 e^2 e^{2 i c} f x^2+4 i d^4 e e^{2 i c} f^2 x^3+i d^4 e^{2 i c} f^3 x^4+\right.$$

$$2 i d^3 e^3 \,\text{ArcTan}\left[\frac{2 a e^{i (c+d x)}}{b \left(-1+e^{2 i (c+d x)}\right)}\right]-2 i d^3 e^3 e^{2 i c} \,\text{ArcTan}\left[\frac{2 a e^{i (c+d x)}}{b \left(-1+e^{2 i (c+d x)}\right)}\right]+d^3 e^3 \,\text{Log}\left[4 a^2 e^{2 i (c+d x)}+b^2 \left(-1+e^{2 i (c+d x)}\right)^2\right]-$$

$$d^3 e^3 e^{2 i c} \,\text{Log}\left[4 a^2 e^{2 i (c+d x)}+b^2 \left(-1+e^{2 i (c+d x)}\right)^2\right]+6 d^3 e^2 f x \,\text{Log}\left[1+\frac{b e^{i (2 c+d x)}}{i a e^{i c}-\sqrt{\left(-a^2+b^2\right) e^{2 i c}}}\right]-$$

$$6 d^3 e^2 e^{2 i c} f x \,\text{Log}\left[1+\frac{b e^{i (2 c+d x)}}{i a e^{i c}-\sqrt{\left(-a^2+b^2\right) e^{2 i c}}}\right]+6 d^3 e f^2 x^2 \,\text{Log}\left[1+\frac{b e^{i (2 c+d x)}}{i a e^{i c}-\sqrt{\left(-a^2+b^2\right) e^{2 i c}}}\right]-$$

$$6 d^3 e e^{2 i c} f^2 x^2 \,\text{Log}\left[1+\frac{b e^{i (2 c+d x)}}{i a e^{i c}-\sqrt{\left(-a^2+b^2\right) e^{2 i c}}}\right]+2 d^3 f^3 x^3 \,\text{Log}\left[1+\frac{b e^{i (2 c+d x)}}{i a e^{i c}-\sqrt{\left(-a^2+b^2\right) e^{2 i c}}}\right]-$$

$$2 d^3 e^{2 i c} f^3 x^3 \,\text{Log}\left[1+\frac{b e^{i (2 c+d x)}}{i a e^{i c}-\sqrt{\left(-a^2+b^2\right) e^{2 i c}}}\right]+6 d^3 e^2 f x \,\text{Log}\left[1+\frac{b e^{i (2 c+d x)}}{i a e^{i c}+\sqrt{\left(-a^2+b^2\right) e^{2 i c}}}\right]-$$

$$6 d^3 e^2 e^{2 i c} f x \,\text{Log}\left[1+\frac{b e^{i (2 c+d x)}}{i a e^{i c}+\sqrt{\left(-a^2+b^2\right) e^{2 i c}}}\right]+6 d^3 e f^2 x^2 \,\text{Log}\left[1+\frac{b e^{i (2 c+d x)}}{i a e^{i c}+\sqrt{\left(-a^2+b^2\right) e^{2 i c}}}\right]-$$

$$6 d^3 e e^{2 i c} f^2 x^2 \,\text{Log}\left[1+\frac{b e^{i (2 c+d x)}}{i a e^{i c}+\sqrt{\left(-a^2+b^2\right) e^{2 i c}}}\right]+2 d^3 f^3 x^3 \,\text{Log}\left[1+\frac{b e^{i (2 c+d x)}}{i a e^{i c}+\sqrt{\left(-a^2+b^2\right) e^{2 i c}}}\right]-$$

$$2\,d^3\,e^{2\,i\,c}\,f^3\,x^3\,\text{Log}\left[1+\frac{b\,e^{i\,(2\,c+d\,x)}}{i\,a\,e^{i\,c}+\sqrt{\left(-a^2+b^2\right)\,e^{2\,i\,c}}}\right]+6\,i\,d^2\,\left(-1+e^{2\,i\,c}\right)\,f\,(e+f\,x)^2\,\text{PolyLog}\left[2,\,\frac{i\,b\,e^{i\,(2\,c+d\,x)}}{a\,e^{i\,c}+i\,\sqrt{\left(-a^2+b^2\right)\,e^{2\,i\,c}}}\right]+$$

$$6\,i\,d^2\,\left(-1+e^{2\,i\,c}\right)\,f\,(e+f\,x)^2\,\text{PolyLog}\left[2,\,-\frac{b\,e^{i\,(2\,c+d\,x)}}{i\,a\,e^{i\,c}+\sqrt{\left(-a^2+b^2\right)\,e^{2\,i\,c}}}\right]+$$

$$12\,d\,e\,f^2\,\text{PolyLog}\left[3,\,\frac{i\,b\,e^{i\,(2\,c+d\,x)}}{a\,e^{i\,c}+i\,\sqrt{\left(-a^2+b^2\right)\,e^{2\,i\,c}}}\right]-12\,d\,e\,e^{2\,i\,c}\,f^2\,\text{PolyLog}\left[3,\,\frac{i\,b\,e^{i\,(2\,c+d\,x)}}{a\,e^{i\,c}+i\,\sqrt{\left(-a^2+b^2\right)\,e^{2\,i\,c}}}\right]+$$

$$12\,d\,f^3\,x\,\text{PolyLog}\left[3,\,\frac{i\,b\,e^{i\,(2\,c+d\,x)}}{a\,e^{i\,c}+i\,\sqrt{\left(-a^2+b^2\right)\,e^{2\,i\,c}}}\right]-12\,d\,e^{2\,i\,c}\,f^3\,x\,\text{PolyLog}\left[3,\,\frac{i\,b\,e^{i\,(2\,c+d\,x)}}{a\,e^{i\,c}+i\,\sqrt{\left(-a^2+b^2\right)\,e^{2\,i\,c}}}\right]+$$

$$12\,d\,e\,f^2\,\text{PolyLog}\left[3,\,-\frac{b\,e^{i\,(2\,c+d\,x)}}{i\,a\,e^{i\,c}+\sqrt{\left(-a^2+b^2\right)\,e^{2\,i\,c}}}\right]-12\,d\,e\,e^{2\,i\,c}\,f^2\,\text{PolyLog}\left[3,\,-\frac{b\,e^{i\,(2\,c+d\,x)}}{i\,a\,e^{i\,c}+\sqrt{\left(-a^2+b^2\right)\,e^{2\,i\,c}}}\right]+$$

$$12\,d\,f^3\,x\,\text{PolyLog}\left[3,\,-\frac{b\,e^{i\,(2\,c+d\,x)}}{i\,a\,e^{i\,c}+\sqrt{\left(-a^2+b^2\right)\,e^{2\,i\,c}}}\right]-12\,d\,e^{2\,i\,c}\,f^3\,x\,\text{PolyLog}\left[3,\,-\frac{b\,e^{i\,(2\,c+d\,x)}}{i\,a\,e^{i\,c}+\sqrt{\left(-a^2+b^2\right)\,e^{2\,i\,c}}}\right]+$$

$$12\,i\,f^3\,\text{PolyLog}\left[4,\,\frac{i\,b\,e^{i\,(2\,c+d\,x)}}{a\,e^{i\,c}+i\,\sqrt{\left(-a^2+b^2\right)\,e^{2\,i\,c}}}\right]-12\,i\,e^{2\,i\,c}\,f^3\,\text{PolyLog}\left[4,\,\frac{i\,b\,e^{i\,(2\,c+d\,x)}}{a\,e^{i\,c}+i\,\sqrt{\left(-a^2+b^2\right)\,e^{2\,i\,c}}}\right]+$$

$$12\,i\,f^3\,\text{PolyLog}\left[4,\,-\frac{b\,e^{i\,(2\,c+d\,x)}}{i\,a\,e^{i\,c}+\sqrt{\left(-a^2+b^2\right)\,e^{2\,i\,c}}}\right]-12\,i\,e^{2\,i\,c}\,f^3\,\text{PolyLog}\left[4,\,-\frac{b\,e^{i\,(2\,c+d\,x)}}{i\,a\,e^{i\,c}+\sqrt{\left(-a^2+b^2\right)\,e^{2\,i\,c}}}\right]\Bigg)+\frac{1}{8\,a\,b\,d}$$

$$\left(-4\,b\,e^3-12\,b\,e^2\,f\,x-12\,b\,e\,f^2\,x^2-4\,b\,f^3\,x^3-4\,a\,d\,e^3\,x\,\text{Cos}[c]-6\,a\,d\,e^2\,f\,x^2\,\text{Cos}[c]-4\,a\,d\,e\,f^2\,x^3\,\text{Cos}[c]-a\,d\,f^3\,x^4\,\text{Cos}[c]\right)$$

$$\text{Csc}\left[\frac{c}{2}\right]\,\text{Sec}\left[\frac{c}{2}\right]-$$

$$\frac{b\,e^3\,\text{Csc}[c]\,\left(-d\,x\,\text{Cos}[c]+\text{Log}[\text{Cos}[d\,x]\,\text{Sin}[c]+\text{Cos}[c]\,\text{Sin}[d\,x]]\,\text{Sin}[c]\right)}{a^2\,d\,\left(\text{Cos}[c]^2+\text{Sin}[c]^2\right)}+$$

$$\frac{\text{Sec}\left[\frac{c}{2}\right]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\,\left(-e^3\,\text{Sin}\left[\frac{d\,x}{2}\right]-3\,e^2\,f\,x\,\text{Sin}\left[\frac{d\,x}{2}\right]-3\,e\,f^2\,x^2\,\text{Sin}\left[\frac{d\,x}{2}\right]-f^3\,x^3\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)}{2\,a\,d}+$$

$$\frac{\text{Csc}\left[\frac{c}{2}\right]\,\text{Csc}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\,\left(e^3\,\text{Sin}\left[\frac{d\,x}{2}\right]+3\,e^2\,f\,x\,\text{Sin}\left[\frac{d\,x}{2}\right]+3\,e\,f^2\,x^2\,\text{Sin}\left[\frac{d\,x}{2}\right]+f^3\,x^3\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)}{2\,a\,d}+$$

$$\Bigg(3\,b\,e^2\,f\,\text{Csc}[c]\,\text{Sec}[c]\,\Bigg(d^2\,e^{i\,\text{ArcTan}[\text{Tan}[c]]}\,x^2+1\Big/\left(\sqrt{1+\text{Tan}[c]^2}\right)\Big(i\,d\,x\,(-\pi+2\,\text{ArcTan}[\text{Tan}[c]])-\pi\,\text{Log}\left[1+e^{-2\,i\,d\,x}\right]-$$

$$2\,(d\,x+\text{ArcTan}[\text{Tan}[c]])\,\text{Log}\left[1-e^{2\,i\,(d\,x+\text{ArcTan}[\text{Tan}[c]])}\right]+\pi\,\text{Log}[\text{Cos}[d\,x]]+2\,\text{ArcTan}[\text{Tan}[c]]\,\text{Log}[\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]]+$$

$$i\,\text{PolyLog}\left[2,\,e^{2\,i\,(d\,x+\text{ArcTan}[\text{Tan}[c]])}\right]\Big)\,\text{Tan}[c]\Bigg)\Bigg)\Bigg/\left(2\,a^2\,d^2\,\sqrt{\text{Sec}[c]^2\,\left(\text{Cos}[c]^2+\text{Sin}[c]^2\right)}\right)$$

- **Problem 338: Result more than twice size of optimal antiderivative.**

$$\int \frac{(e+f x)^2 \operatorname{Cos}[c+d x] \operatorname{Cot}[c+d x]^2}{a+b \operatorname{Sin}[c+d x]} \, dx$$

Optimal (type 4, 616 leaves, 37 steps):

$$\frac{i b (e+f x)^3}{3 a^2 f}+\frac{i \left(a^2-b^2\right) (e+f x)^3}{3 a^2 b f}-\frac{4 f (e+f x) \operatorname{ArcTanh}\left[e^{i (c+d x)}\right]}{a d^2}-\frac{(e+f x)^2 \operatorname{Csc}[c+d x]}{a d}-\frac{\left(a^2-b^2\right) (e+f x)^2 \operatorname{Log}\left[1-\frac{i b e^{i (c+d x)}}{a-\sqrt{a^2-b^2}}\right]}{a^2 b d}-$$
$$\frac{\left(a^2-b^2\right) (e+f x)^2 \operatorname{Log}\left[1-\frac{i b e^{i (c+d x)}}{a+\sqrt{a^2-b^2}}\right]}{a^2 b d}-\frac{b (e+f x)^2 \operatorname{Log}\left[1-e^{2 i (c+d x)}\right]}{a^2 d}+\frac{2 i f^2 \operatorname{PolyLog}\left[2,-e^{i (c+d x)}\right]}{a d^3}-\frac{2 i f^2 \operatorname{PolyLog}\left[2, e^{i (c+d x)}\right]}{a d^3}+$$
$$\frac{2 i \left(a^2-b^2\right) f (e+f x) \operatorname{PolyLog}\left[2, \frac{i b e^{i (c+d x)}}{a-\sqrt{a^2-b^2}}\right]}{a^2 b d^2}+\frac{2 i \left(a^2-b^2\right) f (e+f x) \operatorname{PolyLog}\left[2, \frac{i b e^{i (c+d x)}}{a+\sqrt{a^2-b^2}}\right]}{a^2 b d^2}+\frac{i b f (e+f x) \operatorname{PolyLog}\left[2, e^{2 i (c+d x)}\right]}{a^2 d^2}-$$
$$\frac{2 \left(a^2-b^2\right) f^2 \operatorname{PolyLog}\left[3, \frac{i b e^{i (c+d x)}}{a-\sqrt{a^2-b^2}}\right]}{a^2 b d^3}-\frac{2 \left(a^2-b^2\right) f^2 \operatorname{PolyLog}\left[3, \frac{i b e^{i (c+d x)}}{a+\sqrt{a^2-b^2}}\right]}{a^2 b d^3}-\frac{b f^2 \operatorname{PolyLog}\left[3, e^{2 i (c+d x)}\right]}{2 a^2 d^3}$$

Result (type 4, 1905 leaves):

$$\frac{2 e f \operatorname{Log}\left[\operatorname{Tan}\left[\frac{1}{2} (c+d x)\right]\right]}{a d^2}+\frac{1}{a d^3}$$
$$2 f^2 \left((c+d x) \left(\operatorname{Log}\left[1-e^{i (c+d x)}\right]-\operatorname{Log}\left[1+e^{i (c+d x)}\right]\right)-c \operatorname{Log}\left[\operatorname{Tan}\left[\frac{1}{2} (c+d x)\right]\right]+i \left(\operatorname{PolyLog}\left[2,-e^{i (c+d x)}\right]-\operatorname{PolyLog}\left[2, e^{i (c+d x)}\right]\right)\right)+$$
$$\frac{1}{12 a^2 d^3} b e^{-i c} f^2 \operatorname{Csc}[c]$$
$$\left(2 d^2 x^2 \left(2 d e^{2 i c} x+3 i \left(-1+e^{2 i c}\right) \operatorname{Log}\left[1-e^{2 i (c+d x)}\right]\right)+6 d \left(-1+e^{2 i c}\right) x \operatorname{PolyLog}\left[2, e^{2 i (c+d x)}\right]+3 i \left(-1+e^{2 i c}\right) \operatorname{PolyLog}\left[3, e^{2 i (c+d x)}\right]\right)+$$
$$\frac{1}{6 a^2 b d^3 \left(-1+e^{2 i c}\right)} \left(a^2-b^2\right) \left(12 i d^3 e^2 e^{2 i c} x+12 i d^3 e e^{2 i c} f x^2+4 i d^3 e^{2 i c} f^2 x^3+6 i d^2 e^2 \operatorname{ArcTan}\left[\frac{2 a e^{i (c+d x)}}{b \left(-1+e^{2 i (c+d x)}\right)}\right]-\right.$$
$$6 i d^2 e^2 e^{2 i c} \operatorname{ArcTan}\left[\frac{2 a e^{i (c+d x)}}{b \left(-1+e^{2 i (c+d x)}\right)}\right]+3 d^2 e^2 \operatorname{Log}\left[4 a^2 e^{2 i (c+d x)}+b^2 \left(-1+e^{2 i (c+d x)}\right)^2\right]-$$
$$3 d^2 e^2 e^{2 i c} \operatorname{Log}\left[4 a^2 e^{2 i (c+d x)}+b^2 \left(-1+e^{2 i (c+d x)}\right)^2\right]+12 d^2 e f x \operatorname{Log}\left[1+\frac{b e^{i (2 c+d x)}}{i a e^{i c}-\sqrt{\left(-a^2+b^2\right) e^{2 i c}}}\right]-$$
$$12 d^2 e e^{2 i c} f x \operatorname{Log}\left[1+\frac{b e^{i (2 c+d x)}}{i a e^{i c}-\sqrt{\left(-a^2+b^2\right) e^{2 i c}}}\right]+6 d^2 f^2 x^2 \operatorname{Log}\left[1+\frac{b e^{i (2 c+d x)}}{i a e^{i c}-\sqrt{\left(-a^2+b^2\right) e^{2 i c}}}\right]-$$

$$6\,d^2\,e^{2\,i\,c}\,f^2\,x^2\,\text{Log}\left[1+\frac{b\,e^{i\,(2\,c+d\,x)}}{i\,a\,e^{i\,c}-\sqrt{\left(-a^2+b^2\right)\,e^{2\,i\,c}}}\right]+12\,d^2\,e\,f\,x\,\text{Log}\left[1+\frac{b\,e^{i\,(2\,c+d\,x)}}{i\,a\,e^{i\,c}+\sqrt{\left(-a^2+b^2\right)\,e^{2\,i\,c}}}\right]-$$

$$12\,d^2\,e\,e^{2\,i\,c}\,f\,x\,\text{Log}\left[1+\frac{b\,e^{i\,(2\,c+d\,x)}}{i\,a\,e^{i\,c}+\sqrt{\left(-a^2+b^2\right)\,e^{2\,i\,c}}}\right]+6\,d^2\,f^2\,x^2\,\text{Log}\left[1+\frac{b\,e^{i\,(2\,c+d\,x)}}{i\,a\,e^{i\,c}+\sqrt{\left(-a^2+b^2\right)\,e^{2\,i\,c}}}\right]-$$

$$6\,d^2\,e^{2\,i\,c}\,f^2\,x^2\,\text{Log}\left[1+\frac{b\,e^{i\,(2\,c+d\,x)}}{i\,a\,e^{i\,c}+\sqrt{\left(-a^2+b^2\right)\,e^{2\,i\,c}}}\right]+12\,i\,d\,\left(-1+e^{2\,i\,c}\right)\,f\,(e+f\,x)\,\text{PolyLog}\left[2,\,\frac{i\,b\,e^{i\,(2\,c+d\,x)}}{a\,e^{i\,c}+i\,\sqrt{\left(-a^2+b^2\right)\,e^{2\,i\,c}}}\right]+$$

$$12\,i\,d\,\left(-1+e^{2\,i\,c}\right)\,f\,(e+f\,x)\,\text{PolyLog}\left[2,\,-\frac{b\,e^{i\,(2\,c+d\,x)}}{i\,a\,e^{i\,c}+\sqrt{\left(-a^2+b^2\right)\,e^{2\,i\,c}}}\right]+$$

$$12\,f^2\,\text{PolyLog}\left[3,\,\frac{i\,b\,e^{i\,(2\,c+d\,x)}}{a\,e^{i\,c}+i\,\sqrt{\left(-a^2+b^2\right)\,e^{2\,i\,c}}}\right]-12\,e^{2\,i\,c}\,f^2\,\text{PolyLog}\left[3,\,\frac{i\,b\,e^{i\,(2\,c+d\,x)}}{a\,e^{i\,c}+i\,\sqrt{\left(-a^2+b^2\right)\,e^{2\,i\,c}}}\right]+$$

$$\left.12\,f^2\,\text{PolyLog}\left[3,\,-\frac{b\,e^{i\,(2\,c+d\,x)}}{i\,a\,e^{i\,c}+\sqrt{\left(-a^2+b^2\right)\,e^{2\,i\,c}}}\right]-12\,e^{2\,i\,c}\,f^2\,\text{PolyLog}\left[3,\,-\frac{b\,e^{i\,(2\,c+d\,x)}}{i\,a\,e^{i\,c}+\sqrt{\left(-a^2+b^2\right)\,e^{2\,i\,c}}}\right]\right)+$$

$$\frac{\left(-3\,b\,e^2-6\,b\,e\,f\,x-3\,b\,f^2\,x^2-3\,a\,d\,e^2\,x\,\text{Cos}[c]-3\,a\,d\,e\,f\,x^2\,\text{Cos}[c]-a\,d\,f^2\,x^3\,\text{Cos}[c]\right)\,\text{Csc}\left[\frac{c}{2}\right]\,\text{Sec}\left[\frac{c}{2}\right]}{6\,a\,b\,d}-$$

$$\frac{b\,e^2\,\text{Csc}[c]\,(-d\,x\,\text{Cos}[c]+\text{Log}[\text{Cos}[d\,x]\,\text{Sin}[c]+\text{Cos}[c]\,\text{Sin}[d\,x]]\,\text{Sin}[c])}{a^2\,d\,\left(\text{Cos}[c]^2+\text{Sin}[c]^2\right)}+$$

$$\frac{\text{Sec}\left[\frac{c}{2}\right]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\,\left(-e^2\,\text{Sin}\left[\frac{d\,x}{2}\right]-2\,e\,f\,x\,\text{Sin}\left[\frac{d\,x}{2}\right]-f^2\,x^2\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)}{2\,a\,d}+$$

$$\frac{\text{Csc}\left[\frac{c}{2}\right]\,\text{Csc}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\,\left(e^2\,\text{Sin}\left[\frac{d\,x}{2}\right]+2\,e\,f\,x\,\text{Sin}\left[\frac{d\,x}{2}\right]+f^2\,x^2\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)}{2\,a\,d}+$$

$$\left(b\,e\,f\,\text{Csc}[c]\,\text{Sec}[c]\,\left(d^2\,e^{i\,\text{ArcTan}[\text{Tan}[c]]}\,x^2+1\Big/\left(\sqrt{1+\text{Tan}[c]^2}\right)\left(i\,d\,x\,(-\pi+2\,\text{ArcTan}[\text{Tan}[c]])-\pi\,\text{Log}\left[1+e^{-2\,i\,d\,x}\right]-\right.\right.\right.$$

$$2\,(d\,x+\text{ArcTan}[\text{Tan}[c]])\,\text{Log}\left[1-e^{2\,i\,(d\,x+\text{ArcTan}[\text{Tan}[c]])}\right]+\pi\,\text{Log}[\text{Cos}[d\,x]]+2\,\text{ArcTan}[\text{Tan}[c]]\,\text{Log}[\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]]+$$

$$\left.\left.\left.i\,\text{PolyLog}\left[2,\,e^{2\,i\,(d\,x+\text{ArcTan}[\text{Tan}[c]])}\right]\right)\,\text{Tan}[c]\right)\right)\Big/\left(a^2\,d^2\,\sqrt{\text{Sec}[c]^2\,\left(\text{Cos}[c]^2+\text{Sin}[c]^2\right)}\right)$$

- **Problem 339: Result more than twice size of optimal antiderivative.**

$$\int\frac{(e+f\,x)\,\text{Cos}[c+d\,x]\,\text{Cot}[c+d\,x]^2}{a+b\,\text{Sin}[c+d\,x]}\,dx$$

Optimal (type 4, 386 leaves, 28 steps):

$$\frac{i b (e+f x)^2}{2 a^2 f}+\frac{i \left(a^2-b^2\right) (e+f x)^2}{2 a^2 b f}-\frac{f \text{ArcTanh}[\text{Cos}[c+d x]]}{a d^2}-\frac{(e+f x) \text{Csc}[c+d x]}{a d}-$$
$$\frac{\left(a^2-b^2\right) (e+f x) \text{Log}\left[1-\frac{i b e^{i (c+d x)}}{a-\sqrt{a^2-b^2}}\right]}{a^2 b d}-\frac{\left(a^2-b^2\right) (e+f x) \text{Log}\left[1-\frac{i b e^{i (c+d x)}}{a+\sqrt{a^2-b^2}}\right]}{a^2 b d}-\frac{b (e+f x) \text{Log}\left[1-e^{2 i (c+d x)}\right]}{a^2 d}+$$
$$\frac{i \left(a^2-b^2\right) f \text{PolyLog}\left[2,\frac{i b e^{i (c+d x)}}{a-\sqrt{a^2-b^2}}\right]}{a^2 b d^2}+\frac{i \left(a^2-b^2\right) f \text{PolyLog}\left[2,\frac{i b e^{i (c+d x)}}{a+\sqrt{a^2-b^2}}\right]}{a^2 b d^2}+\frac{i b f \text{PolyLog}\left[2,e^{2 i (c+d x)}\right]}{2 a^2 d^2}$$

Result (type 4, 1107 leaves) :

$$\frac{\left(-d e \text{Cos}\left[\frac{1}{2} (c+d x)\right]+c f \text{Cos}\left[\frac{1}{2} (c+d x)\right]-f (c+d x) \text{Cos}\left[\frac{1}{2} (c+d x)\right]\right) \text{Csc}\left[\frac{1}{2} (c+d x)\right]}{2 a d^2}-$$
$$\frac{b e \text{Log}[\text{Sin}[c+d x]]}{a^2 d}+\frac{b c f \text{Log}[\text{Sin}[c+d x]]}{a^2 d^2}-\frac{e \text{Log}\left[1+\frac{b \text{Sin}[c+d x]}{a}\right]}{b d}+\frac{b e \text{Log}\left[1+\frac{b \text{Sin}[c+d x]}{a}\right]}{a^2 d}+$$
$$\frac{c f \text{Log}\left[1+\frac{b \text{Sin}[c+d x]}{a}\right]}{b d^2}-\frac{b c f \text{Log}\left[1+\frac{b \text{Sin}[c+d x]}{a}\right]}{a^2 d^2}+\frac{f \text{Log}\left[\text{Tan}\left[\frac{1}{2} (c+d x)\right]\right]}{a d^2}-\frac{1}{d^2}f \left(\frac{(c+d x) \text{Log}[a+b \text{Sin}[c+d x]]}{b}-\right.$$
$$1/b \left(-\frac{1}{2} i \left(-c+\frac{\pi}{2}-d x\right)^2+4 i \text{ArcSin}\left[\frac{\sqrt{\frac{a+b}{b}}}{\sqrt{2}}\right] \text{ArcTan}\left[\frac{(a-b) \text{Tan}\left[\frac{1}{2} \left(-c+\frac{\pi}{2}-d x\right)\right]}{\sqrt{a^2-b^2}}\right]+\left(-c+\frac{\pi}{2}-d x+2 \text{ArcSin}\left[\frac{\sqrt{\frac{a+b}{b}}}{\sqrt{2}}\right]\right)\right.$$
$$\text{Log}\left[1+\frac{\left(a-\sqrt{a^2-b^2}\right) e^{i \left(-c+\frac{\pi}{2}-d x\right)}}{b}\right]+\left(-c+\frac{\pi}{2}-d x-2 \text{ArcSin}\left[\frac{\sqrt{\frac{a+b}{b}}}{\sqrt{2}}\right]\right) \text{Log}\left[1+\frac{\left(a+\sqrt{a^2-b^2}\right) e^{i \left(-c+\frac{\pi}{2}-d x\right)}}{b}\right]-$$
$$\left.\left.\left(-c+\frac{\pi}{2}-d x\right) \text{Log}[a+b \text{Sin}[c+d x]]-i \left(\text{PolyLog}\left[2,-\frac{\left(a-\sqrt{a^2-b^2}\right) e^{i \left(-c+\frac{\pi}{2}-d x\right)}}{b}\right]+\text{PolyLog}\left[2,-\frac{\left(a+\sqrt{a^2-b^2}\right) e^{i \left(-c+\frac{\pi}{2}-d x\right)}}{b}\right]\right)\right)\right)+$$

$$\frac{1}{a^2 d^2} b^2 f \left(\frac{(c + d x) \text{Log}[a + b \text{Sin}[c + d x]]}{b} - 1/b \left(-\frac{1}{2} i \left(-c + \frac{\pi}{2} - d x\right)^2 + 4 i \text{ArcSin}\left[\frac{\sqrt{\frac{a+b}{b}}}{\sqrt{2}}\right] \text{ArcTan}\left[\frac{(a - b) \text{Tan}\left[\frac{1}{2} \left(-c + \frac{\pi}{2} - d x\right)\right]}{\sqrt{a^2 - b^2}}\right] + \right.\right.$$

$$\left(-c + \frac{\pi}{2} - d x + 2 \text{ArcSin}\left[\frac{\sqrt{\frac{a+b}{b}}}{\sqrt{2}}\right]\right) \text{Log}\left[1 + \frac{\left(a - \sqrt{a^2 - b^2}\right) e^{i \left(-c+\frac{\pi}{2}-d x\right)}}{b}\right] +$$

$$\left(-c + \frac{\pi}{2} - d x - 2 \text{ArcSin}\left[\frac{\sqrt{\frac{a+b}{b}}}{\sqrt{2}}\right]\right) \text{Log}\left[1 + \frac{\left(a + \sqrt{a^2 - b^2}\right) e^{i \left(-c+\frac{\pi}{2}-d x\right)}}{b}\right] - \left(-c + \frac{\pi}{2} - d x\right) \text{Log}[a + b \text{Sin}[c + d x]] -$$

$$\left.\left. i \left(\text{PolyLog}\left[2, -\frac{\left(a - \sqrt{a^2 - b^2}\right) e^{i \left(-c+\frac{\pi}{2}-d x\right)}}{b}\right] + \text{PolyLog}\left[2, -\frac{\left(a + \sqrt{a^2 - b^2}\right) e^{i \left(-c+\frac{\pi}{2}-d x\right)}}{b}\right]\right)\right)\right) -$$

$$\frac{b f \left((c + d x) \text{Log}\left[1 - e^{2 i (c+d x)}\right] - \frac{1}{2} i \left((c + d x)^2 + \text{PolyLog}\left[2, e^{2 i (c+d x)}\right]\right)\right)}{a^2 d^2} +$$

$$\frac{\text{Sec}\left[\frac{1}{2} (c + d x)\right] \left(-d e \text{Sin}\left[\frac{1}{2} (c + d x)\right] + c f \text{Sin}\left[\frac{1}{2} (c + d x)\right] - f (c + d x) \text{Sin}\left[\frac{1}{2} (c + d x)\right]\right)}{2 a d^2}$$

- **Problem 341: Result more than twice size of optimal antiderivative.**

$$\int \frac{(e + f x)^3 \text{Cos}[c + d x]^2 \text{Cot}[c + d x]^2}{a + b \text{Sin}[c + d x]} \, dx$$

Optimal (type 4, 1144 leaves, 66 steps) :

$$-\frac{i (e+f x)^3}{a d}-\frac{(e+f x)^4}{4 a f}-\frac{(a^2-b^2) (e+f x)^4}{4 a b^2 f}+\frac{2 b (e+f x)^3 \text{ArcTanh}[e^{i (c+d x)}]}{a^2 d}+\frac{6 b f^2 (e+f x) \text{Cos}[c+d x]}{a^2 d^3}+\frac{6 (a^2-b^2) f^2 (e+f x) \text{Cos}[c+d x]}{a^2 b d^3}-$$

$$\frac{b (e+f x)^3 \text{Cos}[c+d x]}{a^2 d}-\frac{(a^2-b^2) (e+f x)^3 \text{Cos}[c+d x]}{a^2 b d}-\frac{(e+f x)^3 \text{Cot}[c+d x]}{a d}-\frac{i (a^2-b^2)^{3/2} (e+f x)^3 \text{Log}\left[1-\frac{i b e^{i (c+d x)}}{a-\sqrt{a^2-b^2}}\right]}{a^2 b^2 d}+$$

$$\frac{i (a^2-b^2)^{3/2} (e+f x)^3 \text{Log}\left[1-\frac{i b e^{i (c+d x)}}{a+\sqrt{a^2-b^2}}\right]}{a^2 b^2 d}+\frac{3 f (e+f x)^2 \text{Log}[1-e^{2 i (c+d x)}]}{a d^2}-\frac{3 i b f (e+f x)^2 \text{PolyLog}[2,-e^{i (c+d x)}]}{a^2 d^2}+$$

$$\frac{3 i b f (e+f x)^2 \text{PolyLog}[2,e^{i (c+d x)}]}{a^2 d^2}-\frac{3 (a^2-b^2)^{3/2} f (e+f x)^2 \text{PolyLog}\left[2,\frac{i b e^{i (c+d x)}}{a-\sqrt{a^2-b^2}}\right]}{a^2 b^2 d^2}+\frac{3 (a^2-b^2)^{3/2} f (e+f x)^2 \text{PolyLog}\left[2,\frac{i b e^{i (c+d x)}}{a+\sqrt{a^2-b^2}}\right]}{a^2 b^2 d^2}-$$

$$\frac{3 i f^2 (e+f x) \text{PolyLog}[2,e^{2 i (c+d x)}]}{a d^3}+\frac{6 b f^2 (e+f x) \text{PolyLog}[3,-e^{i (c+d x)}]}{a^2 d^3}-\frac{6 b f^2 (e+f x) \text{PolyLog}[3,e^{i (c+d x)}]}{a^2 d^3}-$$

$$\frac{6 i (a^2-b^2)^{3/2} f^2 (e+f x) \text{PolyLog}\left[3,\frac{i b e^{i (c+d x)}}{a-\sqrt{a^2-b^2}}\right]}{a^2 b^2 d^3}+\frac{6 i (a^2-b^2)^{3/2} f^2 (e+f x) \text{PolyLog}\left[3,\frac{i b e^{i (c+d x)}}{a+\sqrt{a^2-b^2}}\right]}{a^2 b^2 d^3}+\frac{3 f^3 \text{PolyLog}[3,e^{2 i (c+d x)}]}{2 a d^4}+$$

$$\frac{6 i b f^3 \text{PolyLog}[4,-e^{i (c+d x)}]}{a^2 d^4}-\frac{6 i b f^3 \text{PolyLog}[4,e^{i (c+d x)}]}{a^2 d^4}+\frac{6 (a^2-b^2)^{3/2} f^3 \text{PolyLog}\left[4,\frac{i b e^{i (c+d x)}}{a-\sqrt{a^2-b^2}}\right]}{a^2 b^2 d^4}-\frac{6 (a^2-b^2)^{3/2} f^3 \text{PolyLog}\left[4,\frac{i b e^{i (c+d x)}}{a+\sqrt{a^2-b^2}}\right]}{a^2 b^2 d^4}-$$

$$\frac{6 b f^3 \text{Sin}[c+d x]}{a^2 d^4}-\frac{6 (a^2-b^2) f^3 \text{Sin}[c+d x]}{a^2 b d^4}+\frac{3 b f (e+f x)^2 \text{Sin}[c+d x]}{a^2 d^2}+\frac{3 (a^2-b^2) f (e+f x)^2 \text{Sin}[c+d x]}{a^2 b d^2}$$

Result (type 4, 4632 leaves) :

$$-\frac{b e^3 \text{Log}\left[\text{Tan}\left[\frac{1}{2} (c+d x)\right]\right]}{a^2 d}-\frac{1}{a^2 d^2}$$

$$3 b e^2 f \left((c+d x) \left(\text{Log}[1-e^{i (c+d x)}]-\text{Log}[1+e^{i (c+d x)}]\right)-c \text{Log}\left[\text{Tan}\left[\frac{1}{2} (c+d x)\right]\right]+i \left(\text{PolyLog}[2,-e^{i (c+d x)}]-\text{PolyLog}[2,e^{i (c+d x)}]\right)\right)-$$

$$\frac{1}{4 a d^4} e^{-i c} f^3 \text{Csc}[c]$$

$$\left(2 d^2 x^2 \left(2 d e^{2 i c} x+3 i \left(-1+e^{2 i c}\right) \text{Log}[1-e^{2 i (c+d x)}]\right)+6 d \left(-1+e^{2 i c}\right) x \text{PolyLog}[2,e^{2 i (c+d x)}]+3 i \left(-1+e^{2 i c}\right) \text{PolyLog}[3,e^{2 i (c+d x)}]\right)+$$

$$\frac{1}{a^2 d^3} 6 b e f^2 \left(d^2 x^2 \text{ArcTanh}[\text{Cos}[c+d x]+i \text{Sin}[c+d x]]-i d x \text{PolyLog}[2,-\text{Cos}[c+d x]-i \text{Sin}[c+d x]]+\right.$$

$$\left.i d x \text{PolyLog}[2,\text{Cos}[c+d x]+i \text{Sin}[c+d x]]+\text{PolyLog}[3,-\text{Cos}[c+d x]-i \text{Sin}[c+d x]]-\text{PolyLog}[3,\text{Cos}[c+d x]+i \text{Sin}[c+d x]]\right)-$$

$$\frac{1}{a^2 d^4} b f^3 \left(-2 d^3 x^3 \text{ArcTanh}[\text{Cos}[c+d x]+i \text{Sin}[c+d x]]+3 i d^2 x^2 \text{PolyLog}[2,-\text{Cos}[c+d x]-i \text{Sin}[c+d x]]-\right.$$

$$3 i d^2 x^2 \text{PolyLog}[2,\text{Cos}[c+d x]+i \text{Sin}[c+d x]]-6 d x \text{PolyLog}[3,-\text{Cos}[c+d x]-i \text{Sin}[c+d x]]+6 d x$$

$$\left.\text{PolyLog}[3,\text{Cos}[c+d x]+i \text{Sin}[c+d x]]-6 i \text{PolyLog}[4,-\text{Cos}[c+d x]-i \text{Sin}[c+d x]]+6 i \text{PolyLog}[4,\text{Cos}[c+d x]+i \text{Sin}[c+d x]]\right)+$$

$$\frac{3 e^2 f \operatorname{Csc}[c] \left(-d x \operatorname{Cos}[c]+\operatorname{Log}[\operatorname{Cos}[d x] \operatorname{Sin}[c]+\operatorname{Cos}[c] \operatorname{Sin}[d x]] \operatorname{Sin}[c]\right)}{a d^2 \left(\operatorname{Cos}[c]^2+\operatorname{Sin}[c]^2\right)}+\frac{1}{a^2 b^2 d^4 \sqrt{\left(-a^2+b^2\right) \left(\operatorname{Cos}[2 c]+i \operatorname{Sin}[2 c]\right)}}$$

$$i \left(a^2-b^2\right)^{3/2} \left(3 i \sqrt{a^2-b^2}\, d^3 e^2 f x \operatorname{Log}\left[1+\frac{b \left(\operatorname{Cos}[2 c+d x]+i \operatorname{Sin}[2 c+d x]\right)}{i a \operatorname{Cos}[c]+\sqrt{\left(-a^2+b^2\right) \left(\operatorname{Cos}[c]+i \operatorname{Sin}[c]\right)^2}-a \operatorname{Sin}[c]}\right] \left(\operatorname{Cos}[c]+i \operatorname{Sin}[c]\right)+\right.$$

$$3 i \sqrt{a^2-b^2}\, d^3 e f^2 x^2 \operatorname{Log}\left[1+\frac{b \left(\operatorname{Cos}[2 c+d x]+i \operatorname{Sin}[2 c+d x]\right)}{i a \operatorname{Cos}[c]+\sqrt{\left(-a^2+b^2\right) \left(\operatorname{Cos}[c]+i \operatorname{Sin}[c]\right)^2}-a \operatorname{Sin}[c]}\right] \left(\operatorname{Cos}[c]+i \operatorname{Sin}[c]\right)+$$

$$i \sqrt{a^2-b^2}\, d^3 f^3 x^3 \operatorname{Log}\left[1+\frac{b \left(\operatorname{Cos}[2 c+d x]+i \operatorname{Sin}[2 c+d x]\right)}{i a \operatorname{Cos}[c]+\sqrt{\left(-a^2+b^2\right) \left(\operatorname{Cos}[c]+i \operatorname{Sin}[c]\right)^2}-a \operatorname{Sin}[c]}\right] \left(\operatorname{Cos}[c]+i \operatorname{Sin}[c]\right)+$$

$$3 \sqrt{a^2-b^2}\, d^2 f (e+f x)^2 \operatorname{PolyLog}\left[2,-\frac{b \left(\operatorname{Cos}[2 c+d x]+i \operatorname{Sin}[2 c+d x]\right)}{i a \operatorname{Cos}[c]+\sqrt{\left(-a^2+b^2\right) \left(\operatorname{Cos}[c]+i \operatorname{Sin}[c]\right)^2}-a \operatorname{Sin}[c]}\right] \left(\operatorname{Cos}[c]+i \operatorname{Sin}[c]\right)-$$

$$3 \sqrt{a^2-b^2}\, d^2 f (e+f x)^2 \operatorname{PolyLog}\left[2,\frac{b \left(\operatorname{Cos}[2 c+d x]+i \operatorname{Sin}[2 c+d x]\right)}{-i a \operatorname{Cos}[c]+\sqrt{\left(-a^2+b^2\right) \left(\operatorname{Cos}[c]+i \operatorname{Sin}[c]\right)^2}+a \operatorname{Sin}[c]}\right] \left(\operatorname{Cos}[c]+i \operatorname{Sin}[c]\right)+$$

$$6 i \sqrt{a^2-b^2}\, d e f^2 \operatorname{PolyLog}\left[3,-\frac{b \left(\operatorname{Cos}[2 c+d x]+i \operatorname{Sin}[2 c+d x]\right)}{i a \operatorname{Cos}[c]+\sqrt{\left(-a^2+b^2\right) \left(\operatorname{Cos}[c]+i \operatorname{Sin}[c]\right)^2}-a \operatorname{Sin}[c]}\right] \left(\operatorname{Cos}[c]+i \operatorname{Sin}[c]\right)+$$

$$6 i \sqrt{a^2-b^2}\, d f^3 x \operatorname{PolyLog}\left[3,-\frac{b \left(\operatorname{Cos}[2 c+d x]+i \operatorname{Sin}[2 c+d x]\right)}{i a \operatorname{Cos}[c]+\sqrt{\left(-a^2+b^2\right) \left(\operatorname{Cos}[c]+i \operatorname{Sin}[c]\right)^2}-a \operatorname{Sin}[c]}\right] \left(\operatorname{Cos}[c]+i \operatorname{Sin}[c]\right)-$$

$$6 \sqrt{a^2-b^2}\, f^3 \operatorname{PolyLog}\left[4,-\frac{b \left(\operatorname{Cos}[2 c+d x]+i \operatorname{Sin}[2 c+d x]\right)}{i a \operatorname{Cos}[c]+\sqrt{\left(-a^2+b^2\right) \left(\operatorname{Cos}[c]+i \operatorname{Sin}[c]\right)^2}-a \operatorname{Sin}[c]}\right] \left(\operatorname{Cos}[c]+i \operatorname{Sin}[c]\right)+$$

$$6 \sqrt{a^2-b^2}\, f^3 \operatorname{PolyLog}\left[4,\frac{b \left(\operatorname{Cos}[2 c+d x]+i \operatorname{Sin}[2 c+d x]\right)}{-i a \operatorname{Cos}[c]+\sqrt{\left(-a^2+b^2\right) \left(\operatorname{Cos}[c]+i \operatorname{Sin}[c]\right)^2}+a \operatorname{Sin}[c]}\right] \left(\operatorname{Cos}[c]+i \operatorname{Sin}[c]\right)+$$

$$3 \sqrt{a^2-b^2}\, d^3 e^2 f x \operatorname{Log}\left[1-\frac{b \left(\operatorname{Cos}[2 c+d x]+i \operatorname{Sin}[2 c+d x]\right)}{-i a \operatorname{Cos}[c]+\sqrt{\left(-a^2+b^2\right) \left(\operatorname{Cos}[c]+i \operatorname{Sin}[c]\right)^2}+a \operatorname{Sin}[c]}\right] \left(-i \operatorname{Cos}[c]+\operatorname{Sin}[c]\right)+$$

$$3 \sqrt{a^2-b^2}\, d^3 e f^2 x^2 \operatorname{Log}\left[1-\frac{b \left(\operatorname{Cos}[2 c+d x]+i \operatorname{Sin}[2 c+d x]\right)}{-i a \operatorname{Cos}[c]+\sqrt{\left(-a^2+b^2\right) \left(\operatorname{Cos}[c]+i \operatorname{Sin}[c]\right)^2}+a \operatorname{Sin}[c]}\right] \left(-i \operatorname{Cos}[c]+\operatorname{Sin}[c]\right)+$$

$$\sqrt{a^2-b^2}\, d^3 f^3 x^3 \operatorname{Log}\left[1-\frac{b \left(\operatorname{Cos}[2 c+d x]+i \operatorname{Sin}[2 c+d x]\right)}{-i a \operatorname{Cos}[c]+\sqrt{\left(-a^2+b^2\right) \left(\operatorname{Cos}[c]+i \operatorname{Sin}[c]\right)^2}+a \operatorname{Sin}[c]}\right] \left(-i \operatorname{Cos}[c]+\operatorname{Sin}[c]\right)+$$

$$6 \sqrt{a^2-b^2}\, d e f^2 \operatorname{PolyLog}\left[3,\frac{b \left(\operatorname{Cos}[2 c+d x]+i \operatorname{Sin}[2 c+d x]\right)}{-i a \operatorname{Cos}[c]+\sqrt{\left(-a^2+b^2\right) \left(\operatorname{Cos}[c]+i \operatorname{Sin}[c]\right)^2}+a \operatorname{Sin}[c]}\right] \left(-i \operatorname{Cos}[c]+\operatorname{Sin}[c]\right)+$$

$$6\sqrt{a^2-b^2}\, d\, f^3\, x\, \text{PolyLog}\left[3,\ \frac{b\,(\text{Cos}[2c+dx]+i\,\text{Sin}[2c+dx])}{-i\,a\,\text{Cos}[c]+\sqrt{(-a^2+b^2)\,(\text{Cos}[c]+i\,\text{Sin}[c])^2}+a\,\text{Sin}[c]}\right](-i\,\text{Cos}[c]+\text{Sin}[c])-$$

$$\left.2\,i\,d^3 e^3\,\text{ArcTan}\left[\frac{b\,\text{Cos}[c+dx]+i\,(a+b\,\text{Sin}[c+dx])}{\sqrt{a^2-b^2}}\right]\sqrt{(-a^2+b^2)\,(\text{Cos}[2c]+i\,\text{Sin}[2c])}\right)+$$

$$\text{Csc}[c]\,\text{Csc}[c+dx]\left(\frac{\text{Cos}[c+dx]}{16\,a\,b^2 d^4}-\frac{i\,\text{Sin}[c+dx]}{16\,a\,b^2 d^4}\right)\left(8\,i\,b^2 d^3 e^3\,\text{Cos}[c]+24\,i\,b^2 d^3 e^2 f\,x\,\text{Cos}[c]+24\,i\,b^2 d^3 e\,f^2 x^2\,\text{Cos}[c]+\right.$$

$$8\,i\,b^2 d^3 f^3 x^3\,\text{Cos}[c]-2\,a\,b\,d^3 e^3\,\text{Cos}[dx]+18\,i\,a\,b\,d^2 e^2 f\,\text{Cos}[dx]+12\,a\,b\,d\,e\,f^2\,\text{Cos}[dx]-36\,i\,a\,b\,f^3\,\text{Cos}[dx]-6\,a\,b\,d^3 e^2 f\,x\,\text{Cos}[dx]+$$

$$36\,i\,a\,b\,d^2 e\,f^2 x\,\text{Cos}[dx]+12\,a\,b\,d\,f^3 x\,\text{Cos}[dx]-6\,a\,b\,d^3 e\,f^2 x^2\,\text{Cos}[dx]+18\,i\,a\,b\,d^2 f^3 x^2\,\text{Cos}[dx]-2\,a\,b\,d^3 f^3 x^3\,\text{Cos}[dx]+$$

$$2\,a\,b\,d^3 e^3\,\text{Cos}[2c+dx]-18\,i\,a\,b\,d^2 e^2 f\,\text{Cos}[2c+dx]-12\,a\,b\,d\,e\,f^2\,\text{Cos}[2c+dx]+36\,i\,a\,b\,f^3\,\text{Cos}[2c+dx]+6\,a\,b\,d^3 e^2 f\,x\,\text{Cos}[2c+dx]-$$

$$36\,i\,a\,b\,d^2 e\,f^2 x\,\text{Cos}[2c+dx]-12\,a\,b\,d\,f^3 x\,\text{Cos}[2c+dx]+6\,a\,b\,d^3 e\,f^2 x^2\,\text{Cos}[2c+dx]-18\,i\,a\,b\,d^2 f^3 x^2\,\text{Cos}[2c+dx]+$$

$$2\,a\,b\,d^3 f^3 x^3\,\text{Cos}[2c+dx]-8\,i\,b^2 d^3 e^3\,\text{Cos}[c+2dx]-4\,a^2 d^4 e^3 x\,\text{Cos}[c+2dx]-24\,i\,b^2 d^3 e^2 f\,x\,\text{Cos}[c+2dx]-6\,a^2 d^4 e^2 f\,x^2\,\text{Cos}[c+2dx]-$$

$$24\,i\,b^2 d^3 e\,f^2 x^2\,\text{Cos}[c+2dx]-4\,a^2 d^4 e\,f^2 x^3\,\text{Cos}[c+2dx]-8\,i\,b^2 d^3 f^3 x^3\,\text{Cos}[c+2dx]-a^2 d^4 f^3 x^4\,\text{Cos}[c+2dx]+$$

$$4\,a^2 d^4 e^3 x\,\text{Cos}[3c+2dx]+6\,a^2 d^4 e^2 f\,x^2\,\text{Cos}[3c+2dx]+4\,a^2 d^4 e\,f^2 x^3\,\text{Cos}[3c+2dx]+a^2 d^4 f^3 x^4\,\text{Cos}[3c+2dx]-$$

$$2\,a\,b\,d^3 e^3\,\text{Cos}[2c+3dx]-6\,i\,a\,b\,d^2 e^2 f\,\text{Cos}[2c+3dx]+12\,a\,b\,d\,e\,f^2\,\text{Cos}[2c+3dx]+12\,i\,a\,b\,f^3\,\text{Cos}[2c+3dx]-$$

$$6\,a\,b\,d^3 e^2 f\,x\,\text{Cos}[2c+3dx]-12\,i\,a\,b\,d^2 e\,f^2 x\,\text{Cos}[2c+3dx]+12\,a\,b\,d\,f^3 x\,\text{Cos}[2c+3dx]-6\,a\,b\,d^3 e\,f^2 x^2\,\text{Cos}[2c+3dx]-$$

$$6\,i\,a\,b\,d^2 f^3 x^2\,\text{Cos}[2c+3dx]-2\,a\,b\,d^3 f^3 x^3\,\text{Cos}[2c+3dx]+2\,a\,b\,d^3 e^3\,\text{Cos}[4c+3dx]+6\,i\,a\,b\,d^2 e^2 f\,\text{Cos}[4c+3dx]-$$

$$12\,a\,b\,d\,e\,f^2\,\text{Cos}[4c+3dx]-12\,i\,a\,b\,f^3\,\text{Cos}[4c+3dx]+6\,a\,b\,d^3 e^2 f\,x\,\text{Cos}[4c+3dx]+12\,i\,a\,b\,d^2 e\,f^2 x\,\text{Cos}[4c+3dx]-$$

$$12\,a\,b\,d\,f^3 x\,\text{Cos}[4c+3dx]+6\,a\,b\,d^3 e\,f^2 x^2\,\text{Cos}[4c+3dx]+6\,i\,a\,b\,d^2 f^3 x^2\,\text{Cos}[4c+3dx]+2\,a\,b\,d^3 f^3 x^3\,\text{Cos}[4c+3dx]-8\,b^2 d^3 e^3\,\text{Sin}[c]-$$

$$8\,i\,a^2 d^4 e^3 x\,\text{Sin}[c]-24\,b^2 d^3 e^2 f\,x\,\text{Sin}[c]-12\,i\,a^2 d^4 e^2 f\,x^2\,\text{Sin}[c]-24\,b^2 d^3 e\,f^2 x^2\,\text{Sin}[c]-8\,i\,a^2 d^4 e\,f^2 x^3\,\text{Sin}[c]-8\,b^2 d^3 f^3 x^3\,\text{Sin}[c]-$$

$$2\,i\,a^2 d^4 f^3 x^4\,\text{Sin}[c]+2\,i\,a\,b\,d^3 e^3\,\text{Sin}[dx]-6\,a\,b\,d^2 e^2 f\,\text{Sin}[dx]-12\,i\,a\,b\,d\,e\,f^2\,\text{Sin}[dx]+12\,a\,b\,f^3\,\text{Sin}[dx]+6\,i\,a\,b\,d^3 e^2 f\,x\,\text{Sin}[dx]-$$

$$12\,a\,b\,d^2 e\,f^2 x\,\text{Sin}[dx]-12\,i\,a\,b\,d\,f^3 x\,\text{Sin}[dx]+6\,i\,a\,b\,d^3 e\,f^2 x^2\,\text{Sin}[dx]-6\,a\,b\,d^2 f^3 x^2\,\text{Sin}[dx]+2\,i\,a\,b\,d^3 f^3 x^3\,\text{Sin}[dx]-$$

$$2\,i\,a\,b\,d^3 e^3\,\text{Sin}[2c+dx]+6\,a\,b\,d^2 e^2 f\,\text{Sin}[2c+dx]+12\,i\,a\,b\,d\,e\,f^2\,\text{Sin}[2c+dx]-12\,a\,b\,f^3\,\text{Sin}[2c+dx]-6\,i\,a\,b\,d^3 e^2 f\,x\,\text{Sin}[2c+dx]+$$

$$12\,a\,b\,d^2 e\,f^2 x\,\text{Sin}[2c+dx]+12\,i\,a\,b\,d\,f^3 x\,\text{Sin}[2c+dx]-6\,i\,a\,b\,d^3 e\,f^2 x^2\,\text{Sin}[2c+dx]+6\,a\,b\,d^2 f^3 x^2\,\text{Sin}[2c+dx]-$$

$$2\,i\,a\,b\,d^3 f^3 x^3\,\text{Sin}[2c+dx]+8\,b^2 d^3 e^3\,\text{Sin}[c+2dx]-4\,i\,a^2 d^4 e^3 x\,\text{Sin}[c+2dx]+24\,b^2 d^3 e^2 f\,x\,\text{Sin}[c+2dx]-6\,i\,a^2 d^4 e^2 f\,x^2\,\text{Sin}[c+2dx]+$$

$$24\,b^2 d^3 e\,f^2 x^2\,\text{Sin}[c+2dx]-4\,i\,a^2 d^4 e\,f^2 x^3\,\text{Sin}[c+2dx]+8\,b^2 d^3 f^3 x^3\,\text{Sin}[c+2dx]-i\,a^2 d^4 f^3 x^4\,\text{Sin}[c+2dx]+$$

$$4\,i\,a^2 d^4 e^3 x\,\text{Sin}[3c+2dx]+6\,i\,a^2 d^4 e^2 f\,x^2\,\text{Sin}[3c+2dx]+4\,i\,a^2 d^4 e\,f^2 x^3\,\text{Sin}[3c+2dx]+i\,a^2 d^4 f^3 x^4\,\text{Sin}[3c+2dx]-$$

$$2\,i\,a\,b\,d^3 e^3\,\text{Sin}[2c+3dx]+6\,a\,b\,d^2 e^2 f\,\text{Sin}[2c+3dx]+12\,i\,a\,b\,d\,e\,f^2\,\text{Sin}[2c+3dx]-12\,a\,b\,f^3\,\text{Sin}[2c+3dx]-$$

$$6\,i\,a\,b\,d^3 e^2 f\,x\,\text{Sin}[2c+3dx]+12\,a\,b\,d^2 e\,f^2 x\,\text{Sin}[2c+3dx]+12\,i\,a\,b\,d\,f^3 x\,\text{Sin}[2c+3dx]-6\,i\,a\,b\,d^3 e\,f^2 x^2\,\text{Sin}[2c+3dx]+$$

$$6\,a\,b\,d^2 f^3 x^2\,\text{Sin}[2c+3dx]-2\,i\,a\,b\,d^3 f^3 x^3\,\text{Sin}[2c+3dx]+2\,i\,a\,b\,d^3 e^3\,\text{Sin}[4c+3dx]-6\,a\,b\,d^2 e^2 f\,\text{Sin}[4c+3dx]-$$

$$12\,i\,a\,b\,d\,e\,f^2\,\text{Sin}[4c+3dx]+12\,a\,b\,f^3\,\text{Sin}[4c+3dx]+6\,i\,a\,b\,d^3 e^2 f\,x\,\text{Sin}[4c+3dx]-12\,a\,b\,d^2 e\,f^2 x\,\text{Sin}[4c+3dx]-$$

$$\left.12\,i\,a\,b\,d\,f^3 x\,\text{Sin}[4c+3dx]+6\,i\,a\,b\,d^3 e\,f^2 x^2\,\text{Sin}[4c+3dx]-6\,a\,b\,d^2 f^3 x^2\,\text{Sin}[4c+3dx]+2\,i\,a\,b\,d^3 f^3 x^3\,\text{Sin}[4c+3dx]\right)-$$

$$\left(3\,e\,f^2\,\text{Csc}[c]\,\text{Sec}[c]\left(d^2 e^{i\,\text{ArcTan}[\text{Tan}[c]]}x^2+1\Big/\left(\sqrt{1+\text{Tan}[c]^2}\right)\left(i\,d\,x\,(-\pi+2\,\text{ArcTan}[\text{Tan}[c]])-\pi\,\text{Log}\left[1+e^{-2\,i\,d\,x}\right]-\right.\right.\right.$$

$$2\,(d\,x+\text{ArcTan}[\text{Tan}[c]])\,\text{Log}\left[1-e^{2\,i\,(d\,x+\text{ArcTan}[\text{Tan}[c]])}\right]+\pi\,\text{Log}[\text{Cos}[d\,x]]+2\,\text{ArcTan}[\text{Tan}[c]]\,\text{Log}[\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]]+$$

$$\left.\left.\left.i\,\text{PolyLog}\left[2,\ e^{2\,i\,(d\,x+\text{ArcTan}[\text{Tan}[c]])}\right]\right)\text{Tan}[c]\right)\right)\Big/\left(a\,d^3\sqrt{\text{Sec}[c]^2\,(\text{Cos}[c]^2+\text{Sin}[c]^2)}\right)$$

■ Problem 342: Result more than twice size of optimal antiderivative.

$$\int\frac{(e+f\,x)^2\,\text{Cos}[c+d\,x]^2\,\text{Cot}[c+d\,x]^2}{a+b\,\text{Sin}[c+d\,x]}\,dx$$

Optimal (type 4, 840 leaves, 53 steps):

$$-\frac{i (e+f x)^2}{a d}-\frac{(e+f x)^3}{3 a f}-\frac{\left(a^2-b^2\right) (e+f x)^3}{3 a b^2 f}+\frac{2 b (e+f x)^2 \text{ArcTanh}\left[e^{i (c+d x)}\right]}{a^2 d}+\frac{2 b f^2 \text{Cos}[c+d x]}{a^2 d^3}+\frac{2 \left(a^2-b^2\right) f^2 \text{Cos}[c+d x]}{a^2 b d^3}-\frac{b (e+f x)^2 \text{Cos}[c+d x]}{a^2 d}-\frac{\left(a^2-b^2\right) (e+f x)^2 \text{Cos}[c+d x]}{a^2 b d}-\frac{(e+f x)^2 \text{Cot}[c+d x]}{a d}-\frac{i \left(a^2-b^2\right)^{3/2} (e+f x)^2 \text{Log}\left[1-\frac{i b e^{i (c+d x)}}{a-\sqrt{a^2-b^2}}\right]}{a^2 b^2 d}+\frac{i \left(a^2-b^2\right)^{3/2} (e+f x)^2 \text{Log}\left[1-\frac{i b e^{i (c+d x)}}{a+\sqrt{a^2-b^2}}\right]}{a^2 b^2 d}+\frac{2 f (e+f x) \text{Log}\left[1-e^{2 i (c+d x)}\right]}{a d^2}-\frac{2 i b f (e+f x) \text{PolyLog}\left[2,-e^{i (c+d x)}\right]}{a^2 d^2}+\frac{2 i b f (e+f x) \text{PolyLog}\left[2,e^{i (c+d x)}\right]}{a^2 d^2}-\frac{2 \left(a^2-b^2\right)^{3/2} f (e+f x) \text{PolyLog}\left[2,\frac{i b e^{i (c+d x)}}{a-\sqrt{a^2-b^2}}\right]}{a^2 b^2 d^2}+\frac{2 \left(a^2-b^2\right)^{3/2} f (e+f x) \text{PolyLog}\left[2,\frac{i b e^{i (c+d x)}}{a+\sqrt{a^2-b^2}}\right]}{a^2 b^2 d^2}-\frac{i f^2 \text{PolyLog}\left[2,e^{2 i (c+d x)}\right]}{a d^3}+\frac{2 b f^2 \text{PolyLog}\left[3,-e^{i (c+d x)}\right]}{a^2 d^3}-\frac{2 b f^2 \text{PolyLog}\left[3,e^{i (c+d x)}\right]}{a^2 d^3}-\frac{2 i \left(a^2-b^2\right)^{3/2} f^2 \text{PolyLog}\left[3,\frac{i b e^{i (c+d x)}}{a-\sqrt{a^2-b^2}}\right]}{a^2 b^2 d^3}+\frac{2 i \left(a^2-b^2\right)^{3/2} f^2 \text{PolyLog}\left[3,\frac{i b e^{i (c+d x)}}{a+\sqrt{a^2-b^2}}\right]}{a^2 b^2 d^3}+\frac{2 b f (e+f x) \text{Sin}[c+d x]}{a^2 d^2}+\frac{2 \left(a^2-b^2\right) f (e+f x) \text{Sin}[c+d x]}{a^2 b d^2}$$

Result (type 4, 2574 leaves):

$$-\frac{b e^2 \text{Log}\left[\text{Tan}\left[\frac{1}{2} (c+d x)\right]\right]}{a^2 d}-\frac{1}{a^2 d^2}$$

$$2 b e f \left((c+d x) \left(\text{Log}\left[1-e^{i (c+d x)}\right]-\text{Log}\left[1+e^{i (c+d x)}\right]\right)-c \text{Log}\left[\text{Tan}\left[\frac{1}{2} (c+d x)\right]\right]+i \left(\text{PolyLog}\left[2,-e^{i (c+d x)}\right]-\text{PolyLog}\left[2,e^{i (c+d x)}\right]\right)\right)+$$

$$\frac{1}{a^2 d^3}2 b f^2 \left(d^2 x^2 \text{ArcTanh}[\text{Cos}[c+d x]+i \text{Sin}[c+d x]]-i d x \text{PolyLog}[2,-\text{Cos}[c+d x]-i \text{Sin}[c+d x]]+\right.$$

$$\left.i d x \text{PolyLog}[2,\text{Cos}[c+d x]+i \text{Sin}[c+d x]]+\text{PolyLog}[3,-\text{Cos}[c+d x]-i \text{Sin}[c+d x]]-\text{PolyLog}[3,\text{Cos}[c+d x]+i \text{Sin}[c+d x]]\right)+$$

$$\frac{2 e f \text{Csc}[c] (-d x \text{Cos}[c]+\text{Log}[\text{Cos}[d x] \text{Sin}[c]+\text{Cos}[c] \text{Sin}[d x]] \text{Sin}[c])}{a d^2 \left(\text{Cos}[c]^2+\text{Sin}[c]^2\right)}+\frac{1}{a^2 b^2 d^3 \sqrt{\left(-a^2+b^2\right) (\text{Cos}[2 c]+i \text{Sin}[2 c])}}$$

$$i \left(a^2-b^2\right)^{3/2} \left(2 \sqrt{a^2-b^2} d f (e+f x) \text{PolyLog}\left[2,-\frac{b (\text{Cos}[2 c+d x]+i \text{Sin}[2 c+d x])}{i a \text{Cos}[c]+\sqrt{\left(-a^2+b^2\right) (\text{Cos}[c]+i \text{Sin}[c])^2}-a \text{Sin}[c]}\right] (\text{Cos}[c]+i \text{Sin}[c])-\right.$$

$$2 \sqrt{a^2-b^2} d f (e+f x) \text{PolyLog}\left[2,\frac{b (\text{Cos}[2 c+d x]+i \text{Sin}[2 c+d x])}{-i a \text{Cos}[c]+\sqrt{\left(-a^2+b^2\right) (\text{Cos}[c]+i \text{Sin}[c])^2}+a \text{Sin}[c]}\right] (\text{Cos}[c]+i \text{Sin}[c])-$$

$$i\left(-2\sqrt{a^2-b^2}\ f^2\ PolyLog\left[3,-\frac{b\ (Cos[2c+dx]+i\ Sin[2c+dx])}{i\ a\ Cos[c]+\sqrt{\left(-a^2+b^2\right)\ (Cos[c]+i\ Sin[c])^2}-a\ Sin[c]}\right](Cos[c]+i\ Sin[c])+\right.$$

$$2\sqrt{a^2-b^2}\ f^2\ PolyLog\left[3,\frac{b\ (Cos[2c+dx]+i\ Sin[2c+dx])}{-i\ a\ Cos[c]+\sqrt{\left(-a^2+b^2\right)\ (Cos[c]+i\ Sin[c])^2}+a\ Sin[c]}\right](Cos[c]+i\ Sin[c])+$$

$$d^2\left(\sqrt{a^2-b^2}\ f\ x\ (2e+fx)\left(-Log\left[1+\frac{b\ (Cos[2c+dx]+i\ Sin[2c+dx])}{i\ a\ Cos[c]+\sqrt{\left(-a^2+b^2\right)\ (Cos[c]+i\ Sin[c])^2}-a\ Sin[c]}\right]+\right.\right.$$

$$\left.Log\left[1-\frac{b\ (Cos[2c+dx]+i\ Sin[2c+dx])}{-i\ a\ Cos[c]+\sqrt{\left(-a^2+b^2\right)\ (Cos[c]+i\ Sin[c])^2}+a\ Sin[c]}\right]\right)(Cos[c]+i\ Sin[c])+$$

$$\left.\left.\left.2e^2\ ArcTan\left[\frac{b\ Cos[c+dx]+i\ (a+b\ Sin[c+dx])}{\sqrt{a^2-b^2}}\right]\sqrt{\left(-a^2+b^2\right)\ (Cos[2c]+i\ Sin[2c])}\right)\right)\right)+$$

$$Csc[c]\ Csc[c+dx]\left(\frac{Cos[c+dx]}{24\ a\ b^2\ d^3}-\frac{i\ Sin[c+dx]}{24\ a\ b^2\ d^3}\right)\left(12\ i\ b^2\ d^2\ e^2\ Cos[c]+24\ i\ b^2\ d^2\ e\ f\ x\ Cos[c]+12\ i\ b^2\ d^2\ f^2\ x^2\ Cos[c]-\right.$$
$$3\ a\ b\ d^2\ e^2\ Cos[dx]+18\ i\ a\ b\ d\ e\ f\ Cos[dx]+6\ a\ b\ f^2\ Cos[dx]-6\ a\ b\ d^2\ e\ f\ x\ Cos[dx]+18\ i\ a\ b\ d\ f^2\ x\ Cos[dx]-$$
$$3\ a\ b\ d^2\ f^2\ x^2\ Cos[dx]+3\ a\ b\ d^2\ e^2\ Cos[2c+dx]-18\ i\ a\ b\ d\ e\ f\ Cos[2c+dx]-6\ a\ b\ f^2\ Cos[2c+dx]+$$
$$6\ a\ b\ d^2\ e\ f\ x\ Cos[2c+dx]-18\ i\ a\ b\ d\ f^2\ x\ Cos[2c+dx]+3\ a\ b\ d^2\ f^2\ x^2\ Cos[2c+dx]-12\ i\ b^2\ d^2\ e^2\ Cos[c+2dx]-$$
$$6\ a^2\ d^3\ e^2\ x\ Cos[c+2dx]-24\ i\ b^2\ d^2\ e\ f\ x\ Cos[c+2dx]-6\ a^2\ d^3\ e\ f\ x^2\ Cos[c+2dx]-12\ i\ b^2\ d^2\ f^2\ x^2\ Cos[c+2dx]-$$
$$2\ a^2\ d^3\ f^2\ x^3\ Cos[c+2dx]+6\ a^2\ d^3\ e^2\ x\ Cos[3c+2dx]+6\ a^2\ d^3\ e\ f\ x^2\ Cos[3c+2dx]+2\ a^2\ d^3\ f^2\ x^3\ Cos[3c+2dx]-$$
$$3\ a\ b\ d^2\ e^2\ Cos[2c+3dx]-6\ i\ a\ b\ d\ e\ f\ Cos[2c+3dx]+6\ a\ b\ f^2\ Cos[2c+3dx]-6\ a\ b\ d^2\ e\ f\ x\ Cos[2c+3dx]-$$
$$6\ i\ a\ b\ d\ f^2\ x\ Cos[2c+3dx]-3\ a\ b\ d^2\ f^2\ x^2\ Cos[2c+3dx]+3\ a\ b\ d^2\ e^2\ Cos[4c+3dx]+6\ i\ a\ b\ d\ e\ f\ Cos[4c+3dx]-$$
$$6\ a\ b\ f^2\ Cos[4c+3dx]+6\ a\ b\ d^2\ e\ f\ x\ Cos[4c+3dx]+6\ i\ a\ b\ d\ f^2\ x\ Cos[4c+3dx]+3\ a\ b\ d^2\ f^2\ x^2\ Cos[4c+3dx]-$$
$$12\ b^2\ d^2\ e^2\ Sin[c]-12\ i\ a^2\ d^3\ e^2\ x\ Sin[c]-24\ b^2\ d^2\ e\ f\ x\ Sin[c]-12\ i\ a^2\ d^3\ e\ f\ x^2\ Sin[c]-12\ b^2\ d^2\ f^2\ x^2\ Sin[c]-$$
$$4\ i\ a^2\ d^3\ f^2\ x^3\ Sin[c]+3\ i\ a\ b\ d^2\ e^2\ Sin[dx]-6\ a\ b\ d\ e\ f\ Sin[dx]-6\ i\ a\ b\ f^2\ Sin[dx]+6\ i\ a\ b\ d^2\ e\ f\ x\ Sin[dx]-$$
$$6\ a\ b\ d\ f^2\ x\ Sin[dx]+3\ i\ a\ b\ d^2\ f^2\ x^2\ Sin[dx]-3\ i\ a\ b\ d^2\ e^2\ Sin[2c+dx]+6\ a\ b\ d\ e\ f\ Sin[2c+dx]+6\ i\ a\ b\ f^2\ Sin[2c+dx]-$$
$$6\ i\ a\ b\ d^2\ e\ f\ x\ Sin[2c+dx]+6\ a\ b\ d\ f^2\ x\ Sin[2c+dx]-3\ i\ a\ b\ d^2\ f^2\ x^2\ Sin[2c+dx]+12\ b^2\ d^2\ e^2\ Sin[c+2dx]-$$
$$6\ i\ a^2\ d^3\ e^2\ x\ Sin[c+2dx]+24\ b^2\ d^2\ e\ f\ x\ Sin[c+2dx]-6\ i\ a^2\ d^3\ e\ f\ x^2\ Sin[c+2dx]+12\ b^2\ d^2\ f^2\ x^2\ Sin[c+2dx]-$$
$$2\ i\ a^2\ d^3\ f^2\ x^3\ Sin[c+2dx]+6\ i\ a^2\ d^3\ e^2\ x\ Sin[3c+2dx]+6\ i\ a^2\ d^3\ e\ f\ x^2\ Sin[3c+2dx]+2\ i\ a^2\ d^3\ f^2\ x^3\ Sin[3c+2dx]-$$
$$3\ i\ a\ b\ d^2\ e^2\ Sin[2c+3dx]+6\ a\ b\ d\ e\ f\ Sin[2c+3dx]+6\ i\ a\ b\ f^2\ Sin[2c+3dx]-6\ i\ a\ b\ d^2\ e\ f\ x\ Sin[2c+3dx]+$$
$$6\ a\ b\ d\ f^2\ x\ Sin[2c+3dx]-3\ i\ a\ b\ d^2\ f^2\ x^2\ Sin[2c+3dx]+3\ i\ a\ b\ d^2\ e^2\ Sin[4c+3dx]-6\ a\ b\ d\ e\ f\ Sin[4c+3dx]-$$
$$\left.6\ i\ a\ b\ f^2\ Sin[4c+3dx]+6\ i\ a\ b\ d^2\ e\ f\ x\ Sin[4c+3dx]-6\ a\ b\ d\ f^2\ x\ Sin[4c+3dx]+3\ i\ a\ b\ d^2\ f^2\ x^2\ Sin[4c+3dx]\right)-$$

$$\left(f^2\ Csc[c]\ Sec[c]\left(d^2\ e^{i\ ArcTan[Tan[c]]}\ x^2+1\Big/\left(\sqrt{1+Tan[c]^2}\right)\left(i\ d\ x\ (-\pi+2\ ArcTan[Tan[c]])-\pi\ Log\left[1+e^{-2\ i\ d\ x}\right]-\right.\right.\right.$$
$$2\ (dx+ArcTan[Tan[c]])\ Log\left[1-e^{2\ i\ (dx+ArcTan[Tan[c]])}\right]+\pi\ Log[Cos[dx]]+2\ ArcTan[Tan[c]]\ Log[Sin[dx+ArcTan[Tan[c]]]]+$$
$$\left.\left.\left.i\ PolyLog\left[2,e^{2\ i\ (dx+ArcTan[Tan[c]])}\right]\right)Tan[c]\right)\right)\Big/\left(a\ d^3\sqrt{Sec[c]^2\ \left(Cos[c]^2+Sin[c]^2\right)}\right)$$

- **Problem 345: Result more than twice size of optimal antiderivative.**

$$\int \frac{(e+f x)^3 \operatorname{Cos}[c+d x]^3 \operatorname{Cot}[c+d x]^2}{a+b \operatorname{Sin}[c+d x]} \, dx$$

Optimal (type 4, 1432 leaves, 85 steps):

$$\frac{3 b f^3 x}{8 a^2 d^3}+\frac{3 \left(a^2-b^2\right) f^3 x}{8 a^2 b d^3}-\frac{b (e+f x)^3}{4 a^2 d}-\frac{\left(a^2-b^2\right) (e+f x)^3}{4 a^2 b d}+\frac{i b (e+f x)^4}{4 a^2 f}-\frac{i \left(a^2-b^2\right)^2 (e+f x)^4}{4 a^2 b^3 f}-\frac{6 f (e+f x)^2 \operatorname{ArcTanh}\left[e^{i (c+d x)}\right]}{a d^2}+$$
$$\frac{6 f^3 \operatorname{Cos}[c+d x]}{a d^4}+\frac{6 \left(a^2-b^2\right) f^3 \operatorname{Cos}[c+d x]}{a b^2 d^4}-\frac{3 f (e+f x)^2 \operatorname{Cos}[c+d x]}{a d^2}-\frac{3 \left(a^2-b^2\right) f (e+f x)^2 \operatorname{Cos}[c+d x]}{a b^2 d^2}-\frac{(e+f x)^3 \operatorname{Csc}[c+d x]}{a d}+$$
$$\frac{\left(a^2-b^2\right)^2 (e+f x)^3 \operatorname{Log}\left[1-\frac{i b e^{i (c+d x)}}{a-\sqrt{a^2-b^2}}\right]}{a^2 b^3 d}+\frac{\left(a^2-b^2\right)^2 (e+f x)^3 \operatorname{Log}\left[1-\frac{i b e^{i (c+d x)}}{a+\sqrt{a^2-b^2}}\right]}{a^2 b^3 d}-\frac{b (e+f x)^3 \operatorname{Log}\left[1-e^{2 i (c+d x)}\right]}{a^2 d}+$$
$$\frac{6 i f^2 (e+f x) \operatorname{PolyLog}\left[2,-e^{i (c+d x)}\right]}{a d^3}-\frac{6 i f^2 (e+f x) \operatorname{PolyLog}\left[2, e^{i (c+d x)}\right]}{a d^3}-\frac{3 i \left(a^2-b^2\right)^2 f (e+f x)^2 \operatorname{PolyLog}\left[2, \frac{i b e^{i (c+d x)}}{a-\sqrt{a^2-b^2}}\right]}{a^2 b^3 d^2}-$$
$$\frac{3 i \left(a^2-b^2\right)^2 f (e+f x)^2 \operatorname{PolyLog}\left[2, \frac{i b e^{i (c+d x)}}{a+\sqrt{a^2-b^2}}\right]}{a^2 b^3 d^2}+\frac{3 i b f (e+f x)^2 \operatorname{PolyLog}\left[2, e^{2 i (c+d x)}\right]}{2 a^2 d^2}-\frac{6 f^3 \operatorname{PolyLog}\left[3,-e^{i (c+d x)}\right]}{a d^4}+$$
$$\frac{6 f^3 \operatorname{PolyLog}\left[3, e^{i (c+d x)}\right]}{a d^4}+\frac{6 \left(a^2-b^2\right)^2 f^2 (e+f x) \operatorname{PolyLog}\left[3, \frac{i b e^{i (c+d x)}}{a-\sqrt{a^2-b^2}}\right]}{a^2 b^3 d^3}+\frac{6 \left(a^2-b^2\right)^2 f^2 (e+f x) \operatorname{PolyLog}\left[3, \frac{i b e^{i (c+d x)}}{a+\sqrt{a^2-b^2}}\right]}{a^2 b^3 d^3}-$$
$$\frac{3 b f^2 (e+f x) \operatorname{PolyLog}\left[3, e^{2 i (c+d x)}\right]}{2 a^2 d^3}+\frac{6 i \left(a^2-b^2\right)^2 f^3 \operatorname{PolyLog}\left[4, \frac{i b e^{i (c+d x)}}{a-\sqrt{a^2-b^2}}\right]}{a^2 b^3 d^4}+\frac{6 i \left(a^2-b^2\right)^2 f^3 \operatorname{PolyLog}\left[4, \frac{i b e^{i (c+d x)}}{a+\sqrt{a^2-b^2}}\right]}{a^2 b^3 d^4}-$$
$$\frac{3 i b f^3 \operatorname{PolyLog}\left[4, e^{2 i (c+d x)}\right]}{4 a^2 d^4}+\frac{6 f^2 (e+f x) \operatorname{Sin}[c+d x]}{a d^3}+\frac{6 \left(a^2-b^2\right) f^2 (e+f x) \operatorname{Sin}[c+d x]}{a b^2 d^3}-\frac{(e+f x)^3 \operatorname{Sin}[c+d x]}{a d}-$$
$$\frac{\left(a^2-b^2\right) (e+f x)^3 \operatorname{Sin}[c+d x]}{a b^2 d}-\frac{3 b f^3 \operatorname{Cos}[c+d x] \operatorname{Sin}[c+d x]}{8 a^2 d^4}-\frac{3 \left(a^2-b^2\right) f^3 \operatorname{Cos}[c+d x] \operatorname{Sin}[c+d x]}{8 a^2 b d^4}+$$
$$\frac{3 b f (e+f x)^2 \operatorname{Cos}[c+d x] \operatorname{Sin}[c+d x]}{4 a^2 d^2}+\frac{3 \left(a^2-b^2\right) f (e+f x)^2 \operatorname{Cos}[c+d x] \operatorname{Sin}[c+d x]}{4 a^2 b d^2}-\frac{3 b f^2 (e+f x) \operatorname{Sin}[c+d x]^2}{4 a^2 d^3}-$$
$$\frac{3 \left(a^2-b^2\right) f^2 (e+f x) \operatorname{Sin}[c+d x]^2}{4 a^2 b d^3}+\frac{b (e+f x)^3 \operatorname{Sin}[c+d x]^2}{2 a^2 d}+\frac{\left(a^2-b^2\right) (e+f x)^3 \operatorname{Sin}[c+d x]^2}{2 a^2 b d}$$

Result (type 4, 4084 leaves):

$$\frac{\left(-e^3-3 e^2 f x-3 e f^2 x^2-f^3 x^3\right) \operatorname{Csc}[c+d x]}{a d}+\frac{3 e^2 f \operatorname{Log}\left[\operatorname{Tan}\left[\frac{1}{2} (c+d x)\right]\right]}{a d^2}+\frac{1}{a d^3}$$
$$6 e f^2 \left((c+d x) \left(\operatorname{Log}\left[1-e^{i (c+d x)}\right]-\operatorname{Log}\left[1+e^{i (c+d x)}\right]\right)-c \operatorname{Log}\left[\operatorname{Tan}\left[\frac{1}{2} (c+d x)\right]\right]+i \left(\operatorname{PolyLog}\left[2,-e^{i (c+d x)}\right]-\operatorname{PolyLog}\left[2, e^{i (c+d x)}\right]\right)\right)+$$

$$\frac{1}{4 a^2 d^3} b e e^{-i c} f^2 \operatorname{Csc}[c]$$
$$\left(2 d^2 x^2 \left(2 d e^{2 i c} x + 3 i \left(-1 + e^{2 i c}\right) \operatorname{Log}\left[1 - e^{2 i (c+d x)}\right]\right) + 6 d \left(-1 + e^{2 i c}\right) x \operatorname{PolyLog}\left[2, e^{2 i (c+d x)}\right] + 3 i \left(-1 + e^{2 i c}\right) \operatorname{PolyLog}\left[3, e^{2 i (c+d x)}\right]\right) -$$
$$\frac{1}{a d^4} 6 f^3 \left(d^2 x^2 \operatorname{ArcTanh}[\operatorname{Cos}[c + d x] + i \operatorname{Sin}[c + d x]] - i d x \operatorname{PolyLog}[2, -\operatorname{Cos}[c + d x] - i \operatorname{Sin}[c + d x]] +\right.$$
$$\left. i d x \operatorname{PolyLog}[2, \operatorname{Cos}[c + d x] + i \operatorname{Sin}[c + d x]] + \operatorname{PolyLog}[3, -\operatorname{Cos}[c + d x] - i \operatorname{Sin}[c + d x]] - \operatorname{PolyLog}[3, \operatorname{Cos}[c + d x] + i \operatorname{Sin}[c + d x]]\right) +$$
$$\frac{1}{4 a^2} b e^{i c} f^3 \operatorname{Csc}[c] \left(x^4 + \left(-1 + e^{-2 i c}\right) x^4 + 1 / \left(2 d^4\right) e^{-2 i c} \left(-1 + e^{2 i c}\right)\right.$$
$$\left.\left(2 d^4 x^4 + 4 i d^3 x^3 \operatorname{Log}\left[1 - e^{2 i (c+d x)}\right] + 6 d^2 x^2 \operatorname{PolyLog}\left[2, e^{2 i (c+d x)}\right] + 6 i d x \operatorname{PolyLog}\left[3, e^{2 i (c+d x)}\right] - 3 \operatorname{PolyLog}\left[4, e^{2 i (c+d x)}\right]\right)\right) +$$
$$\frac{1}{2 a^2 b^3 d^4 \left(-1 + e^{2 i c}\right)} \left(a^2 - b^2\right)^2 \left(-4 i d^4 e^3 e^{2 i c} x - 6 i d^4 e^2 e^{2 i c} f x^2 - 4 i d^4 e e^{2 i c} f^2 x^3 - i d^4 e^{2 i c} f^3 x^4 -\right.$$
$$2 i d^3 e^3 \operatorname{ArcTan}\left[\frac{2 a e^{i (c+d x)}}{b \left(-1 + e^{2 i (c+d x)}\right)}\right] + 2 i d^3 e^3 e^{2 i c} \operatorname{ArcTan}\left[\frac{2 a e^{i (c+d x)}}{b \left(-1 + e^{2 i (c+d x)}\right)}\right] - d^3 e^3 \operatorname{Log}\left[4 a^2 e^{2 i (c+d x)} + b^2 \left(-1 + e^{2 i (c+d x)}\right)^2\right] +$$
$$d^3 e^3 e^{2 i c} \operatorname{Log}\left[4 a^2 e^{2 i (c+d x)} + b^2 \left(-1 + e^{2 i (c+d x)}\right)^2\right] - 6 d^3 e^2 f x \operatorname{Log}\left[1 + \frac{b e^{i (2 c+d x)}}{i a e^{i c} - \sqrt{\left(-a^2 + b^2\right) e^{2 i c}}}\right] +$$
$$6 d^3 e^2 e^{2 i c} f x \operatorname{Log}\left[1 + \frac{b e^{i (2 c+d x)}}{i a e^{i c} - \sqrt{\left(-a^2 + b^2\right) e^{2 i c}}}\right] - 6 d^3 e f^2 x^2 \operatorname{Log}\left[1 + \frac{b e^{i (2 c+d x)}}{i a e^{i c} - \sqrt{\left(-a^2 + b^2\right) e^{2 i c}}}\right] +$$
$$6 d^3 e e^{2 i c} f^2 x^2 \operatorname{Log}\left[1 + \frac{b e^{i (2 c+d x)}}{i a e^{i c} - \sqrt{\left(-a^2 + b^2\right) e^{2 i c}}}\right] - 2 d^3 f^3 x^3 \operatorname{Log}\left[1 + \frac{b e^{i (2 c+d x)}}{i a e^{i c} - \sqrt{\left(-a^2 + b^2\right) e^{2 i c}}}\right] +$$
$$2 d^3 e^{2 i c} f^3 x^3 \operatorname{Log}\left[1 + \frac{b e^{i (2 c+d x)}}{i a e^{i c} - \sqrt{\left(-a^2 + b^2\right) e^{2 i c}}}\right] - 6 d^3 e^2 f x \operatorname{Log}\left[1 + \frac{b e^{i (2 c+d x)}}{i a e^{i c} + \sqrt{\left(-a^2 + b^2\right) e^{2 i c}}}\right] +$$
$$6 d^3 e^2 e^{2 i c} f x \operatorname{Log}\left[1 + \frac{b e^{i (2 c+d x)}}{i a e^{i c} + \sqrt{\left(-a^2 + b^2\right) e^{2 i c}}}\right] - 6 d^3 e f^2 x^2 \operatorname{Log}\left[1 + \frac{b e^{i (2 c+d x)}}{i a e^{i c} + \sqrt{\left(-a^2 + b^2\right) e^{2 i c}}}\right] +$$
$$6 d^3 e e^{2 i c} f^2 x^2 \operatorname{Log}\left[1 + \frac{b e^{i (2 c+d x)}}{i a e^{i c} + \sqrt{\left(-a^2 + b^2\right) e^{2 i c}}}\right] - 2 d^3 f^3 x^3 \operatorname{Log}\left[1 + \frac{b e^{i (2 c+d x)}}{i a e^{i c} + \sqrt{\left(-a^2 + b^2\right) e^{2 i c}}}\right] +$$
$$2 d^3 e^{2 i c} f^3 x^3 \operatorname{Log}\left[1 + \frac{b e^{i (2 c+d x)}}{i a e^{i c} + \sqrt{\left(-a^2 + b^2\right) e^{2 i c}}}\right] - 6 i d^2 \left(-1 + e^{2 i c}\right) f (e + f x)^2 \operatorname{PolyLog}\left[2, \frac{i b e^{i (2 c+d x)}}{a e^{i c} + i \sqrt{\left(-a^2 + b^2\right) e^{2 i c}}}\right] -$$
$$6 i d^2 \left(-1 + e^{2 i c}\right) f (e + f x)^2 \operatorname{PolyLog}\left[2, -\frac{b e^{i (2 c+d x)}}{i a e^{i c} + \sqrt{\left(-a^2 + b^2\right) e^{2 i c}}}\right] -$$

$$12\,d\,e\,f^2\,\text{PolyLog}\left[3,\ \frac{\mathbb{i}\,b\,\mathbb{e}^{\mathbb{i}\,(2\,c+d\,x)}}{a\,\mathbb{e}^{\mathbb{i}\,c}+\mathbb{i}\,\sqrt{\left(-a^2+b^2\right)\,\mathbb{e}^{2\,\mathbb{i}\,c}}}\right]+12\,d\,e\,\mathbb{e}^{2\,\mathbb{i}\,c}\,f^2\,\text{PolyLog}\left[3,\ \frac{\mathbb{i}\,b\,\mathbb{e}^{\mathbb{i}\,(2\,c+d\,x)}}{a\,\mathbb{e}^{\mathbb{i}\,c}+\mathbb{i}\,\sqrt{\left(-a^2+b^2\right)\,\mathbb{e}^{2\,\mathbb{i}\,c}}}\right]-$$

$$12\,d\,f^3\,x\,\text{PolyLog}\left[3,\ \frac{\mathbb{i}\,b\,\mathbb{e}^{\mathbb{i}\,(2\,c+d\,x)}}{a\,\mathbb{e}^{\mathbb{i}\,c}+\mathbb{i}\,\sqrt{\left(-a^2+b^2\right)\,\mathbb{e}^{2\,\mathbb{i}\,c}}}\right]+12\,d\,\mathbb{e}^{2\,\mathbb{i}\,c}\,f^3\,x\,\text{PolyLog}\left[3,\ \frac{\mathbb{i}\,b\,\mathbb{e}^{\mathbb{i}\,(2\,c+d\,x)}}{a\,\mathbb{e}^{\mathbb{i}\,c}+\mathbb{i}\,\sqrt{\left(-a^2+b^2\right)\,\mathbb{e}^{2\,\mathbb{i}\,c}}}\right]-$$

$$12\,d\,e\,f^2\,\text{PolyLog}\left[3,\ -\frac{b\,\mathbb{e}^{\mathbb{i}\,(2\,c+d\,x)}}{\mathbb{i}\,a\,\mathbb{e}^{\mathbb{i}\,c}+\sqrt{\left(-a^2+b^2\right)\,\mathbb{e}^{2\,\mathbb{i}\,c}}}\right]+12\,d\,e\,\mathbb{e}^{2\,\mathbb{i}\,c}\,f^2\,\text{PolyLog}\left[3,\ -\frac{b\,\mathbb{e}^{\mathbb{i}\,(2\,c+d\,x)}}{\mathbb{i}\,a\,\mathbb{e}^{\mathbb{i}\,c}+\sqrt{\left(-a^2+b^2\right)\,\mathbb{e}^{2\,\mathbb{i}\,c}}}\right]-$$

$$12\,d\,f^3\,x\,\text{PolyLog}\left[3,\ -\frac{b\,\mathbb{e}^{\mathbb{i}\,(2\,c+d\,x)}}{\mathbb{i}\,a\,\mathbb{e}^{\mathbb{i}\,c}+\sqrt{\left(-a^2+b^2\right)\,\mathbb{e}^{2\,\mathbb{i}\,c}}}\right]+12\,d\,\mathbb{e}^{2\,\mathbb{i}\,c}\,f^3\,x\,\text{PolyLog}\left[3,\ -\frac{b\,\mathbb{e}^{\mathbb{i}\,(2\,c+d\,x)}}{\mathbb{i}\,a\,\mathbb{e}^{\mathbb{i}\,c}+\sqrt{\left(-a^2+b^2\right)\,\mathbb{e}^{2\,\mathbb{i}\,c}}}\right]-$$

$$12\,\mathbb{i}\,f^3\,\text{PolyLog}\left[4,\ \frac{\mathbb{i}\,b\,\mathbb{e}^{\mathbb{i}\,(2\,c+d\,x)}}{a\,\mathbb{e}^{\mathbb{i}\,c}+\mathbb{i}\,\sqrt{\left(-a^2+b^2\right)\,\mathbb{e}^{2\,\mathbb{i}\,c}}}\right]+12\,\mathbb{i}\,\mathbb{e}^{2\,\mathbb{i}\,c}\,f^3\,\text{PolyLog}\left[4,\ \frac{\mathbb{i}\,b\,\mathbb{e}^{\mathbb{i}\,(2\,c+d\,x)}}{a\,\mathbb{e}^{\mathbb{i}\,c}+\mathbb{i}\,\sqrt{\left(-a^2+b^2\right)\,\mathbb{e}^{2\,\mathbb{i}\,c}}}\right]-$$

$$12\,\mathbb{i}\,f^3\,\text{PolyLog}\left[4,\ -\frac{b\,\mathbb{e}^{\mathbb{i}\,(2\,c+d\,x)}}{\mathbb{i}\,a\,\mathbb{e}^{\mathbb{i}\,c}+\sqrt{\left(-a^2+b^2\right)\,\mathbb{e}^{2\,\mathbb{i}\,c}}}\right]+12\,\mathbb{i}\,\mathbb{e}^{2\,\mathbb{i}\,c}\,f^3\,\text{PolyLog}\left[4,\ -\frac{b\,\mathbb{e}^{\mathbb{i}\,(2\,c+d\,x)}}{\mathbb{i}\,a\,\mathbb{e}^{\mathbb{i}\,c}+\sqrt{\left(-a^2+b^2\right)\,\mathbb{e}^{2\,\mathbb{i}\,c}}}\right]\Bigg)-$$

$$\frac{b\,e^3\,\text{Csc}[c]\,\left(-d\,x\,\text{Cos}[c]+\text{Log}[\text{Cos}[d\,x]\,\text{Sin}[c]+\text{Cos}[c]\,\text{Sin}[d\,x]]\,\text{Sin}[c]\right)}{a^2\,d\,\left(\text{Cos}[c]^2+\text{Sin}[c]^2\right)}-$$

$$\frac{\mathbb{i}\,\left(-a^2+2\,b^2\right)\,e^3\,x\,\left(1+\text{Cos}[2\,c]+\mathbb{i}\,\text{Sin}[2\,c]\right)}{b^3\,\left(-1+\text{Cos}[2\,c]+\mathbb{i}\,\text{Sin}[2\,c]\right)}-$$

$$\frac{3\,\mathbb{i}\,\left(-a^2+2\,b^2\right)\,e^2\,f\,x^2\,\left(1+\text{Cos}[2\,c]+\mathbb{i}\,\text{Sin}[2\,c]\right)}{2\,b^3\,\left(-1+\text{Cos}[2\,c]+\mathbb{i}\,\text{Sin}[2\,c]\right)}-$$

$$\frac{\mathbb{i}\,\left(-a^2+2\,b^2\right)\,e\,f^2\,x^3\,\left(1+\text{Cos}[2\,c]+\mathbb{i}\,\text{Sin}[2\,c]\right)}{b^3\,\left(-1+\text{Cos}[2\,c]+\mathbb{i}\,\text{Sin}[2\,c]\right)}-$$

$$\frac{\mathbb{i}\,\left(-a^2+2\,b^2\right)\,f^3\,x^4\,\left(1+\text{Cos}[2\,c]+\mathbb{i}\,\text{Sin}[2\,c]\right)}{4\,b^3\,\left(-1+\text{Cos}[2\,c]+\mathbb{i}\,\text{Sin}[2\,c]\right)}+$$

$$\left(-\frac{\mathbb{i}\,a\,f^3\,x^3\,\text{Cos}[c]}{2\,b^2\,d}-\frac{a\,f^3\,x^3\,\text{Sin}[c]}{2\,b^2\,d}+\left(-\mathbb{i}\,d^3\,e^3-3\,d^2\,e^2\,f+6\,\mathbb{i}\,d\,e\,f^2+6\,f^3\right)\,\left(\frac{a\,\text{Cos}[c]}{2\,b^2\,d^4}-\frac{\mathbb{i}\,a\,\text{Sin}[c]}{2\,b^2\,d^4}\right)+\right.$$

$$\left.\left(a\,d^2\,e^2\,f-2\,\mathbb{i}\,a\,d\,e\,f^2-2\,a\,f^3\right)\,\left(-\frac{3\,\mathbb{i}\,x\,\text{Cos}[c]}{2\,b^2\,d^3}-\frac{3\,x\,\text{Sin}[c]}{2\,b^2\,d^3}\right)+\left(a\,d\,e\,f^2-\mathbb{i}\,a\,f^3\right)\,\left(-\frac{3\,\mathbb{i}\,x^2\,\text{Cos}[c]}{2\,b^2\,d^2}-\frac{3\,x^2\,\text{Sin}[c]}{2\,b^2\,d^2}\right)\right)\,\left(\text{Cos}[d\,x]-\mathbb{i}\,\text{Sin}[d\,x]\right)+$$

$$\left(\frac{\mathbb{i}\,a\,f^3\,x^3\,\text{Cos}[c]}{2\,b^2\,d}-\frac{a\,f^3\,x^3\,\text{Sin}[c]}{2\,b^2\,d}+\left(\mathbb{i}\,d^3\,e^3-3\,d^2\,e^2\,f-6\,\mathbb{i}\,d\,e\,f^2+6\,f^3\right)\,\left(\frac{a\,\text{Cos}[c]}{2\,b^2\,d^4}+\frac{\mathbb{i}\,a\,\text{Sin}[c]}{2\,b^2\,d^4}\right)+\right.$$

$$\frac{3\,\mathbb{i}\,x^2\,\left(a\,d\,e\,f^2\,\text{Cos}[c]+\mathbb{i}\,a\,f^3\,\text{Cos}[c]+\mathbb{i}\,a\,d\,e\,f^2\,\text{Sin}[c]-a\,f^3\,\text{Sin}[c]\right)}{2\,b^2\,d^2}+\frac{1}{2\,b^2\,d^3}$$

$$3\,i\,x\,\left(a\,d^2\,e^2\,f\,\text{Cos}[c]+2\,i\,a\,d\,e\,f^2\,\text{Cos}[c]-2\,a\,f^3\,\text{Cos}[c]+i\,a\,d^2\,e^2\,f\,\text{Sin}[c]-2\,a\,d\,e\,f^2\,\text{Sin}[c]-2\,i\,a\,f^3\,\text{Sin}[c]\right)\Bigg)\,(\text{Cos}[d\,x]+i\,\text{Sin}[d\,x])+$$

$$\left(-\frac{f^3\,x^3\,\text{Cos}[2\,c]}{8\,b\,d}+\frac{i\,f^3\,x^3\,\text{Sin}[2\,c]}{8\,b\,d}+\left(4\,d^3\,e^3-6\,i\,d^2\,e^2\,f-6\,d\,e\,f^2+3\,i\,f^3\right)\left(-\frac{\text{Cos}[2\,c]}{32\,b\,d^4}+\frac{i\,\text{Sin}[2\,c]}{32\,b\,d^4}\right)+\right.$$

$$\left.\left(2\,i\,d^2\,e^2\,f+2\,d\,e\,f^2-i\,f^3\right)\left(\frac{3\,i\,x\,\text{Cos}[2\,c]}{16\,b\,d^3}+\frac{3\,x\,\text{Sin}[2\,c]}{16\,b\,d^3}\right)+\left(2\,i\,d\,e\,f^2+f^3\right)\left(\frac{3\,i\,x^2\,\text{Cos}[2\,c]}{16\,b\,d^2}+\frac{3\,x^2\,\text{Sin}[2\,c]}{16\,b\,d^2}\right)\right)\,(\text{Cos}[2\,d\,x]-i\,\text{Sin}[2\,d\,x])+$$

$$\left(-\frac{f^3\,x^3\,\text{Cos}[2\,c]}{8\,b\,d}-\frac{i\,f^3\,x^3\,\text{Sin}[2\,c]}{8\,b\,d}+\left(4\,d^3\,e^3+6\,i\,d^2\,e^2\,f-6\,d\,e\,f^2-3\,i\,f^3\right)\left(-\frac{\text{Cos}[2\,c]}{32\,b\,d^4}-\frac{i\,\text{Sin}[2\,c]}{32\,b\,d^4}\right)-\frac{1}{16\,b\,d^3}\right.$$

$$3\,i\,x\,\left(-2\,i\,d^2\,e^2\,f\,\text{Cos}[2\,c]+2\,d\,e\,f^2\,\text{Cos}[2\,c]+i\,f^3\,\text{Cos}[2\,c]+2\,d^2\,e^2\,f\,\text{Sin}[2\,c]+2\,i\,d\,e\,f^2\,\text{Sin}[2\,c]-f^3\,\text{Sin}[2\,c]\right)-$$

$$\left.\frac{3\,i\,x^2\,\left(-2\,i\,d\,e\,f^2\,\text{Cos}[2\,c]+f^3\,\text{Cos}[2\,c]+2\,d\,e\,f^2\,\text{Sin}[2\,c]+i\,f^3\,\text{Sin}[2\,c]\right)}{16\,b\,d^2}\right)\,(\text{Cos}[2\,d\,x]+i\,\text{Sin}[2\,d\,x])+$$

$$\Bigg(3\,b\,e^2\,f\,\text{Csc}[c]\,\text{Sec}[c]\,\left(d^2\,e^{i\,\text{ArcTan}[\text{Tan}[c]]}\,x^2+1\Big/\left(\sqrt{1+\text{Tan}[c]^2}\right)\left(i\,d\,x\,(-\pi+2\,\text{ArcTan}[\text{Tan}[c]])-\pi\,\text{Log}\left[1+e^{-2\,i\,d\,x}\right]-\right.\right.$$

$$2\,(d\,x+\text{ArcTan}[\text{Tan}[c]])\,\text{Log}\left[1-e^{2\,i\,(d\,x+\text{ArcTan}[\text{Tan}[c]])}\right]+\pi\,\text{Log}[\text{Cos}[d\,x]]+2\,\text{ArcTan}[\text{Tan}[c]]\,\text{Log}[\text{Sin}[d\,x+\text{ArcTan}[\text{Tan}[c]]]]+$$

$$\left.\left.i\,\text{PolyLog}\left[2,\,e^{2\,i\,(d\,x+\text{ArcTan}[\text{Tan}[c]])}\right]\right)\,\text{Tan}[c]\right)\Bigg)\Big/\left(2\,a^2\,d^2\,\sqrt{\text{Sec}[c]^2\,\left(\text{Cos}[c]^2+\text{Sin}[c]^2\right)}\right)$$

- **Problem 346: Result more than twice size of optimal antiderivative.**

$$\int\frac{(e+f\,x)^2\,\text{Cos}[c+d\,x]^3\,\text{Cot}[c+d\,x]^2}{a+b\,\text{Sin}[c+d\,x]}\,dx$$

Optimal (type 4, 1051 leaves, 60 steps) :

$$-\frac{b e f x}{2 a^2 d}-\frac{\left(a^2-b^2\right) e f x}{2 a^2 b d}-\frac{b f^2 x^2}{4 a^2 d}-\frac{\left(a^2-b^2\right) f^2 x^2}{4 a^2 b d}+\frac{i b (e+f x)^3}{3 a^2 f}-\frac{i \left(a^2-b^2\right)^2 (e+f x)^3}{3 a^2 b^3 f}-\frac{4 f (e+f x) \text{ArcTanh}\left[e^{i (c+d x)}\right]}{a d^2}-$$
$$\frac{2 f (e+f x) \text{Cos}[c+d x]}{a d^2}-\frac{2 \left(a^2-b^2\right) f (e+f x) \text{Cos}[c+d x]}{a b^2 d^2}-\frac{(e+f x)^2 \text{Csc}[c+d x]}{a d}+\frac{\left(a^2-b^2\right)^2 (e+f x)^2 \text{Log}\left[1-\frac{i b e^{i (c+d x)}}{a-\sqrt{a^2-b^2}}\right]}{a^2 b^3 d}+$$
$$\frac{\left(a^2-b^2\right)^2 (e+f x)^2 \text{Log}\left[1-\frac{i b e^{i (c+d x)}}{a+\sqrt{a^2-b^2}}\right]}{a^2 b^3 d}-\frac{b (e+f x)^2 \text{Log}\left[1-e^{2 i (c+d x)}\right]}{a^2 d}+\frac{2 i f^2 \text{PolyLog}\left[2,-e^{i (c+d x)}\right]}{a d^3}-$$
$$\frac{2 i f^2 \text{PolyLog}\left[2,e^{i (c+d x)}\right]}{a d^3}-\frac{2 i \left(a^2-b^2\right)^2 f (e+f x) \text{PolyLog}\left[2,\frac{i b e^{i (c+d x)}}{a-\sqrt{a^2-b^2}}\right]}{a^2 b^3 d^2}-\frac{2 i \left(a^2-b^2\right)^2 f (e+f x) \text{PolyLog}\left[2,\frac{i b e^{i (c+d x)}}{a+\sqrt{a^2-b^2}}\right]}{a^2 b^3 d^2}+$$
$$\frac{i b f (e+f x) \text{PolyLog}\left[2,e^{2 i (c+d x)}\right]}{a^2 d^2}+\frac{2 \left(a^2-b^2\right)^2 f^2 \text{PolyLog}\left[3,\frac{i b e^{i (c+d x)}}{a-\sqrt{a^2-b^2}}\right]}{a^2 b^3 d^3}+\frac{2 \left(a^2-b^2\right)^2 f^2 \text{PolyLog}\left[3,\frac{i b e^{i (c+d x)}}{a+\sqrt{a^2-b^2}}\right]}{a^2 b^3 d^3}-$$
$$\frac{b f^2 \text{PolyLog}\left[3,e^{2 i (c+d x)}\right]}{2 a^2 d^3}+\frac{2 f^2 \text{Sin}[c+d x]}{a d^3}+\frac{2 \left(a^2-b^2\right) f^2 \text{Sin}[c+d x]}{a b^2 d^3}-\frac{(e+f x)^2 \text{Sin}[c+d x]}{a d}-$$
$$\frac{\left(a^2-b^2\right) (e+f x)^2 \text{Sin}[c+d x]}{a b^2 d}+\frac{b f (e+f x) \text{Cos}[c+d x] \text{Sin}[c+d x]}{2 a^2 d^2}+\frac{\left(a^2-b^2\right) f (e+f x) \text{Cos}[c+d x] \text{Sin}[c+d x]}{2 a^2 b d^2}-$$
$$\frac{b f^2 \text{Sin}[c+d x]^2}{4 a^2 d^3}-\frac{\left(a^2-b^2\right) f^2 \text{Sin}[c+d x]^2}{4 a^2 b d^3}+\frac{b (e+f x)^2 \text{Sin}[c+d x]^2}{2 a^2 d}+\frac{\left(a^2-b^2\right) (e+f x)^2 \text{Sin}[c+d x]^2}{2 a^2 b d}$$

Result (type 4, 5228 leaves) :

$$\frac{2 e f \text{Log}\left[\text{Tan}\left[\frac{1}{2} (c+d x)\right]\right]}{a d^2}+\frac{1}{a d^3}$$
$$2 f^2 \left((c+d x) \left(\text{Log}\left[1-e^{i (c+d x)}\right]-\text{Log}\left[1+e^{i (c+d x)}\right]\right)-c \text{Log}\left[\text{Tan}\left[\frac{1}{2} (c+d x)\right]\right]+i \left(\text{PolyLog}\left[2,-e^{i (c+d x)}\right]-\text{PolyLog}\left[2,e^{i (c+d x)}\right]\right)\right)+$$
$$\frac{1}{12 a^2 d^3} b e^{-i c} f^2 \text{Csc}[c]$$
$$\left(2 d^2 x^2 \left(2 d e^{2 i c} x+3 i \left(-1+e^{2 i c}\right) \text{Log}\left[1-e^{2 i (c+d x)}\right]\right)+6 d \left(-1+e^{2 i c}\right) x \text{PolyLog}\left[2,e^{2 i (c+d x)}\right]+3 i \left(-1+e^{2 i c}\right) \text{PolyLog}\left[3,e^{2 i (c+d x)}\right]\right)+$$
$$\frac{1}{6 a^2 b^3 d^3 \left(-1+e^{2 i c}\right)} \left(a^2-b^2\right)^2 \left(-12 i d^3 e^2 e^{2 i c} x-12 i d^3 e e^{2 i c} f x^2-4 i d^3 e^{2 i c} f^2 x^3-6 i d^2 e^2 \text{ArcTan}\left[\frac{2 a e^{i (c+d x)}}{b \left(-1+e^{2 i (c+d x)}\right)}\right]+\right.$$
$$6 i d^2 e^2 e^{2 i c} \text{ArcTan}\left[\frac{2 a e^{i (c+d x)}}{b \left(-1+e^{2 i (c+d x)}\right)}\right]-3 d^2 e^2 \text{Log}\left[4 a^2 e^{2 i (c+d x)}+b^2 \left(-1+e^{2 i (c+d x)}\right)^2\right]+$$
$$3 d^2 e^2 e^{2 i c} \text{Log}\left[4 a^2 e^{2 i (c+d x)}+b^2 \left(-1+e^{2 i (c+d x)}\right)^2\right]-12 d^2 e f x \text{Log}\left[1+\frac{b e^{i (2 c+d x)}}{i a e^{i c}-\sqrt{\left(-a^2+b^2\right) e^{2 i c}}}\right]+$$

$$12 d^2 e \mathbb{e}^{2 \mathbb{i} c} f x \operatorname{Log}\left[1+\frac{b \mathbb{e}^{\mathbb{i} (2 c+d x)}}{\mathbb{i} a \mathbb{e}^{\mathbb{i} c}-\sqrt{\left(-a^2+b^2\right) \mathbb{e}^{2 \mathbb{i} c}}}\right]-6 d^2 f^2 x^2 \operatorname{Log}\left[1+\frac{b \mathbb{e}^{\mathbb{i} (2 c+d x)}}{\mathbb{i} a \mathbb{e}^{\mathbb{i} c}-\sqrt{\left(-a^2+b^2\right) \mathbb{e}^{2 \mathbb{i} c}}}\right]+$$

$$6 d^2 \mathbb{e}^{2 \mathbb{i} c} f^2 x^2 \operatorname{Log}\left[1+\frac{b \mathbb{e}^{\mathbb{i} (2 c+d x)}}{\mathbb{i} a \mathbb{e}^{\mathbb{i} c}-\sqrt{\left(-a^2+b^2\right) \mathbb{e}^{2 \mathbb{i} c}}}\right]-12 d^2 e f x \operatorname{Log}\left[1+\frac{b \mathbb{e}^{\mathbb{i} (2 c+d x)}}{\mathbb{i} a \mathbb{e}^{\mathbb{i} c}+\sqrt{\left(-a^2+b^2\right) \mathbb{e}^{2 \mathbb{i} c}}}\right]+$$

$$12 d^2 e \mathbb{e}^{2 \mathbb{i} c} f x \operatorname{Log}\left[1+\frac{b \mathbb{e}^{\mathbb{i} (2 c+d x)}}{\mathbb{i} a \mathbb{e}^{\mathbb{i} c}+\sqrt{\left(-a^2+b^2\right) \mathbb{e}^{2 \mathbb{i} c}}}\right]-6 d^2 f^2 x^2 \operatorname{Log}\left[1+\frac{b \mathbb{e}^{\mathbb{i} (2 c+d x)}}{\mathbb{i} a \mathbb{e}^{\mathbb{i} c}+\sqrt{\left(-a^2+b^2\right) \mathbb{e}^{2 \mathbb{i} c}}}\right]+$$

$$6 d^2 \mathbb{e}^{2 \mathbb{i} c} f^2 x^2 \operatorname{Log}\left[1+\frac{b \mathbb{e}^{\mathbb{i} (2 c+d x)}}{\mathbb{i} a \mathbb{e}^{\mathbb{i} c}+\sqrt{\left(-a^2+b^2\right) \mathbb{e}^{2 \mathbb{i} c}}}\right]-12 \mathbb{i} d \left(-1+\mathbb{e}^{2 \mathbb{i} c}\right) f (e+f x) \operatorname{PolyLog}\left[2,\frac{\mathbb{i} b \mathbb{e}^{\mathbb{i} (2 c+d x)}}{a \mathbb{e}^{\mathbb{i} c}+\mathbb{i} \sqrt{\left(-a^2+b^2\right) \mathbb{e}^{2 \mathbb{i} c}}}\right]-$$

$$12 \mathbb{i} d \left(-1+\mathbb{e}^{2 \mathbb{i} c}\right) f (e+f x) \operatorname{PolyLog}\left[2,-\frac{b \mathbb{e}^{\mathbb{i} (2 c+d x)}}{\mathbb{i} a \mathbb{e}^{\mathbb{i} c}+\sqrt{\left(-a^2+b^2\right) \mathbb{e}^{2 \mathbb{i} c}}}\right]-$$

$$12 f^2 \operatorname{PolyLog}\left[3,\frac{\mathbb{i} b \mathbb{e}^{\mathbb{i} (2 c+d x)}}{a \mathbb{e}^{\mathbb{i} c}+\mathbb{i} \sqrt{\left(-a^2+b^2\right) \mathbb{e}^{2 \mathbb{i} c}}}\right]+12 \mathbb{e}^{2 \mathbb{i} c} f^2 \operatorname{PolyLog}\left[3,\frac{\mathbb{i} b \mathbb{e}^{\mathbb{i} (2 c+d x)}}{a \mathbb{e}^{\mathbb{i} c}+\mathbb{i} \sqrt{\left(-a^2+b^2\right) \mathbb{e}^{2 \mathbb{i} c}}}\right]-$$

$$\left.12 f^2 \operatorname{PolyLog}\left[3,-\frac{b \mathbb{e}^{\mathbb{i} (2 c+d x)}}{\mathbb{i} a \mathbb{e}^{\mathbb{i} c}+\sqrt{\left(-a^2+b^2\right) \mathbb{e}^{2 \mathbb{i} c}}}\right]+12 \mathbb{e}^{2 \mathbb{i} c} f^2 \operatorname{PolyLog}\left[3,-\frac{b \mathbb{e}^{\mathbb{i} (2 c+d x)}}{\mathbb{i} a \mathbb{e}^{\mathbb{i} c}+\sqrt{\left(-a^2+b^2\right) \mathbb{e}^{2 \mathbb{i} c}}}\right]\right)-$$

$$\frac{b e^2 \operatorname{Csc}[c] \left(-d x \operatorname{Cos}[c]+\operatorname{Log}[\operatorname{Cos}[d x] \operatorname{Sin}[c]+\operatorname{Cos}[c] \operatorname{Sin}[d x]] \operatorname{Sin}[c]\right)}{a^2 d \left(\operatorname{Cos}[c]^2+\operatorname{Sin}[c]^2\right)}+$$

$$\operatorname{Csc}[c] \operatorname{Csc}[c+d x] \left(\frac{\operatorname{Cos}[2 c+2 d x]}{192 a b^3 d^3}-\frac{\mathbb{i} \operatorname{Sin}[2 c+2 d x]}{192 a b^3 d^3}\right)$$

$$\left(-12 a b^2 d^2 e^2 \operatorname{Cos}[d x]+12 \mathbb{i} a b^2 d e f \operatorname{Cos}[d x]+6 a b^2 f^2 \operatorname{Cos}[d x]+48 \mathbb{i} a^3 d^3 e^2 x \operatorname{Cos}[d x]-96 \mathbb{i} a b^2 d^3 e^2 x \operatorname{Cos}[d x]-24 a b^2 d^2 e f x \operatorname{Cos}[d x]+\right.$$

$$12 \mathbb{i} a b^2 d f^2 x \operatorname{Cos}[d x]+48 \mathbb{i} a^3 d^3 e f x^2 \operatorname{Cos}[d x]-96 \mathbb{i} a b^2 d^3 e f x^2 \operatorname{Cos}[d x]-12 a b^2 d^2 f^2 x^2 \operatorname{Cos}[d x]+16 \mathbb{i} a^3 d^3 f^2 x^3 \operatorname{Cos}[d x]-$$

$$32 \mathbb{i} a b^2 d^3 f^2 x^3 \operatorname{Cos}[d x]+12 a b^2 d^2 e^2 \operatorname{Cos}[2 c+d x]-12 \mathbb{i} a b^2 d e f \operatorname{Cos}[2 c+d x]-6 a b^2 f^2 \operatorname{Cos}[2 c+d x]+48 \mathbb{i} a^3 d^3 e^2 x \operatorname{Cos}[2 c+d x]-$$

$$96 \mathbb{i} a b^2 d^3 e^2 x \operatorname{Cos}[2 c+d x]+24 a b^2 d^2 e f x \operatorname{Cos}[2 c+d x]-12 \mathbb{i} a b^2 d f^2 x \operatorname{Cos}[2 c+d x]+48 \mathbb{i} a^3 d^3 e f x^2 \operatorname{Cos}[2 c+d x]-$$

$$96 \mathbb{i} a b^2 d^3 e f x^2 \operatorname{Cos}[2 c+d x]+12 a b^2 d^2 f^2 x^2 \operatorname{Cos}[2 c+d x]+16 \mathbb{i} a^3 d^3 f^2 x^3 \operatorname{Cos}[2 c+d x]-32 \mathbb{i} a b^2 d^3 f^2 x^3 \operatorname{Cos}[2 c+d x]-$$

$$48 \mathbb{i} a^2 b d^2 e^2 \operatorname{Cos}[c+2 d x]-96 \mathbb{i} b^3 d^2 e^2 \operatorname{Cos}[c+2 d x]+96 \mathbb{i} a^2 b f^2 \operatorname{Cos}[c+2 d x]-96 \mathbb{i} a^2 b d^2 e f x \operatorname{Cos}[c+2 d x]-$$

$$192 \mathbb{i} b^3 d^2 e f x \operatorname{Cos}[c+2 d x]-48 \mathbb{i} a^2 b d^2 f^2 x^2 \operatorname{Cos}[c+2 d x]-96 \mathbb{i} b^3 d^2 f^2 x^2 \operatorname{Cos}[c+2 d x]+48 \mathbb{i} a^2 b d^2 e^2 \operatorname{Cos}[3 c+2 d x]+$$

$$96 \mathbb{i} b^3 d^2 e^2 \operatorname{Cos}[3 c+2 d x]-96 \mathbb{i} a^2 b f^2 \operatorname{Cos}[3 c+2 d x]+96 \mathbb{i} a^2 b d^2 e f x \operatorname{Cos}[3 c+2 d x]+192 \mathbb{i} b^3 d^2 e f x \operatorname{Cos}[3 c+2 d x]+$$

$$48 \mathbb{i} a^2 b d^2 f^2 x^2 \operatorname{Cos}[3 c+2 d x]+96 \mathbb{i} b^3 d^2 f^2 x^2 \operatorname{Cos}[3 c+2 d x]+6 a b^2 d^2 e^2 \operatorname{Cos}[2 c+3 d x]+6 \mathbb{i} a b^2 d e f \operatorname{Cos}[2 c+3 d x]-$$

$$3 a b^2 f^2 \operatorname{Cos}[2 c+3 d x]-48 \mathbb{i} a^3 d^3 e^2 x \operatorname{Cos}[2 c+3 d x]+96 \mathbb{i} a b^2 d^3 e^2 x \operatorname{Cos}[2 c+3 d x]+12 a b^2 d^2 e f x \operatorname{Cos}[2 c+3 d x]+$$

$$6 \mathbb{i} a b^2 d f^2 x \operatorname{Cos}[2 c+3 d x]-48 \mathbb{i} a^3 d^3 e f x^2 \operatorname{Cos}[2 c+3 d x]+96 \mathbb{i} a b^2 d^3 e f x^2 \operatorname{Cos}[2 c+3 d x]+6 a b^2 d^2 f^2 x^2 \operatorname{Cos}[2 c+3 d x]-$$

$$16 \mathbb{i} a^3 d^3 f^2 x^3 \operatorname{Cos}[2 c+3 d x]+32 \mathbb{i} a b^2 d^3 f^2 x^3 \operatorname{Cos}[2 c+3 d x]-6 a b^2 d^2 e^2 \operatorname{Cos}[4 c+3 d x]-6 \mathbb{i} a b^2 d e f \operatorname{Cos}[4 c+3 d x]+$$

$$3 a b^2 f^2 \operatorname{Cos}[4 c+3 d x]-48 \mathbb{i} a^3 d^3 e^2 x \operatorname{Cos}[4 c+3 d x]+96 \mathbb{i} a b^2 d^3 e^2 x \operatorname{Cos}[4 c+3 d x]-12 a b^2 d^2 e f x \operatorname{Cos}[4 c+3 d x]-$$

$$6 \mathbb{i} a b^2 d f^2 x \operatorname{Cos}[4 c+3 d x]-48 \mathbb{i} a^3 d^3 e f x^2 \operatorname{Cos}[4 c+3 d x]+96 \mathbb{i} a b^2 d^3 e f x^2 \operatorname{Cos}[4 c+3 d x]-6 a b^2 d^2 f^2 x^2 \operatorname{Cos}[4 c+3 d x]-$$

$$16 \mathbb{i} a^3 d^3 f^2 x^3 \operatorname{Cos}[4 c+3 d x]+32 \mathbb{i} a b^2 d^3 f^2 x^3 \operatorname{Cos}[4 c+3 d x]+24 \mathbb{i} a^2 b d^2 e^2 \operatorname{Cos}[3 c+4 d x]-48 a^2 b d e f \operatorname{Cos}[3 c+4 d x]-$$

$$48\, i\, a^2 b f^2 \text{Cos}[3 c+4 d x]+48\, i\, a^2 b d^2 e f x \text{Cos}[3 c+4 d x]-48 a^2 b d f^2 x \text{Cos}[3 c+4 d x]+24\, i\, a^2 b d^2 f^2 x^2 \text{Cos}[3 c+4 d x]-$$
$$24\, i\, a^2 b d^2 e^2 \text{Cos}[5 c+4 d x]+48 a^2 b d e f \text{Cos}[5 c+4 d x]+48\, i\, a^2 b f^2 \text{Cos}[5 c+4 d x]-48\, i\, a^2 b d^2 e f x \text{Cos}[5 c+4 d x]+$$
$$48 a^2 b d f^2 x \text{Cos}[5 c+4 d x]-24\, i\, a^2 b d^2 f^2 x^2 \text{Cos}[5 c+4 d x]-6 a b^2 d^2 e^2 \text{Cos}[4 c+5 d x]-6\, i\, a b^2 d e f \text{Cos}[4 c+5 d x]+$$
$$3 a b^2 f^2 \text{Cos}[4 c+5 d x]-12 a b^2 d^2 e f x \text{Cos}[4 c+5 d x]-6\, i\, a b^2 d f^2 x \text{Cos}[4 c+5 d x]-6 a b^2 d^2 f^2 x^2 \text{Cos}[4 c+5 d x]+$$
$$6 a b^2 d^2 e^2 \text{Cos}[6 c+5 d x]+6\, i\, a b^2 d e f \text{Cos}[6 c+5 d x]-3 a b^2 f^2 \text{Cos}[6 c+5 d x]+12 a b^2 d^2 e f x \text{Cos}[6 c+5 d x]+$$
$$6\, i\, a b^2 d f^2 x \text{Cos}[6 c+5 d x]+6 a b^2 d^2 f^2 x^2 \text{Cos}[6 c+5 d x]+48 a^2 b d^2 e^2 \text{Sin}[c]-96\, i\, a^2 b d e f \text{Sin}[c]-96 a^2 b f^2 \text{Sin}[c]+$$
$$96 a^2 b d^2 e f x \text{Sin}[c]-96\, i\, a^2 b d f^2 x \text{Sin}[c]+48 a^2 b d^2 f^2 x^2 \text{Sin}[c]-48 a^3 d^3 e^2 x \text{Sin}[d x]+96 a b^2 d^3 e^2 x \text{Sin}[d x]-48 a^3 d^3 e f x^2 \text{Sin}[d x]+$$
$$96 a b^2 d^3 e f x^2 \text{Sin}[d x]-16 a^3 d^3 f^2 x^3 \text{Sin}[d x]+32 a b^2 d^3 f^2 x^3 \text{Sin}[d x]-48 a^3 d^3 e^2 x \text{Sin}[2 c+d x]+96 a b^2 d^3 e^2 x \text{Sin}[2 c+d x]-$$
$$48 a^3 d^3 e f x^2 \text{Sin}[2 c+d x]+96 a b^2 d^3 e f x^2 \text{Sin}[2 c+d x]-16 a^3 d^3 f^2 x^3 \text{Sin}[2 c+d x]+32 a b^2 d^3 f^2 x^3 \text{Sin}[2 c+d x]+$$
$$48 a^2 b d^2 e^2 \text{Sin}[c+2 d x]+96 b^3 d^2 e^2 \text{Sin}[c+2 d x]-96 a^2 b f^2 \text{Sin}[c+2 d x]+96 a^2 b d^2 e f x \text{Sin}[c+2 d x]+192 b^3 d^2 e f x \text{Sin}[c+2 d x]+$$
$$48 a^2 b d^2 f^2 x^2 \text{Sin}[c+2 d x]+96 b^3 d^2 f^2 x^2 \text{Sin}[c+2 d x]-48 a^2 b d^2 e^2 \text{Sin}[3 c+2 d x]-96 b^3 d^2 e^2 \text{Sin}[3 c+2 d x]+96 a^2 b f^2 \text{Sin}[3 c+2 d x]-$$
$$96 a^2 b d^2 e f x \text{Sin}[3 c+2 d x]-192 b^3 d^2 e f x \text{Sin}[3 c+2 d x]-48 a^2 b d^2 f^2 x^2 \text{Sin}[3 c+2 d x]-96 b^3 d^2 f^2 x^2 \text{Sin}[3 c+2 d x]+$$
$$6\, i\, a b^2 d^2 e^2 \text{Sin}[2 c+3 d x]-6 a b^2 d e f \text{Sin}[2 c+3 d x]-3\, i\, a b^2 f^2 \text{Sin}[2 c+3 d x]+48 a^3 d^3 e^2 x \text{Sin}[2 c+3 d x]-$$
$$96 a b^2 d^3 e^2 x \text{Sin}[2 c+3 d x]+12\, i\, a b^2 d^2 e f x \text{Sin}[2 c+3 d x]-6 a b^2 d f^2 x \text{Sin}[2 c+3 d x]+48 a^3 d^3 e f x^2 \text{Sin}[2 c+3 d x]-$$
$$96 a b^2 d^3 e f x^2 \text{Sin}[2 c+3 d x]+6\, i\, a b^2 d^2 f^2 x^2 \text{Sin}[2 c+3 d x]+16 a^3 d^3 f^2 x^3 \text{Sin}[2 c+3 d x]-32 a b^2 d^3 f^2 x^3 \text{Sin}[2 c+3 d x]-$$
$$6\, i\, a b^2 d^2 e^2 \text{Sin}[4 c+3 d x]+6 a b^2 d e f \text{Sin}[4 c+3 d x]+3\, i\, a b^2 f^2 \text{Sin}[4 c+3 d x]+48 a^3 d^3 e^2 x \text{Sin}[4 c+3 d x]-$$
$$96 a b^2 d^3 e^2 x \text{Sin}[4 c+3 d x]-12\, i\, a b^2 d^2 e f x \text{Sin}[4 c+3 d x]+6 a b^2 d f^2 x \text{Sin}[4 c+3 d x]+48 a^3 d^3 e f x^2 \text{Sin}[4 c+3 d x]-$$
$$96 a b^2 d^3 e f x^2 \text{Sin}[4 c+3 d x]-6\, i\, a b^2 d^2 f^2 x^2 \text{Sin}[4 c+3 d x]+16 a^3 d^3 f^2 x^3 \text{Sin}[4 c+3 d x]-32 a b^2 d^3 f^2 x^3 \text{Sin}[4 c+3 d x]-$$
$$24 a^2 b d^2 e^2 \text{Sin}[3 c+4 d x]-48\, i\, a^2 b d e f \text{Sin}[3 c+4 d x]+48 a^2 b f^2 \text{Sin}[3 c+4 d x]-48 a^2 b d^2 e f x \text{Sin}[3 c+4 d x]-$$
$$48\, i\, a^2 b d f^2 x \text{Sin}[3 c+4 d x]-24 a^2 b d^2 f^2 x^2 \text{Sin}[3 c+4 d x]+24 a^2 b d^2 e^2 \text{Sin}[5 c+4 d x]+48\, i\, a^2 b d e f \text{Sin}[5 c+4 d x]-$$
$$48 a^2 b f^2 \text{Sin}[5 c+4 d x]+48 a^2 b d^2 e f x \text{Sin}[5 c+4 d x]+48\, i\, a^2 b d f^2 x \text{Sin}[5 c+4 d x]+24 a^2 b d^2 f^2 x^2 \text{Sin}[5 c+4 d x]-$$
$$6\, i\, a b^2 d^2 e^2 \text{Sin}[4 c+5 d x]+6 a b^2 d e f \text{Sin}[4 c+5 d x]+3\, i\, a b^2 f^2 \text{Sin}[4 c+5 d x]-12\, i\, a b^2 d^2 e f x \text{Sin}[4 c+5 d x]+$$
$$6 a b^2 d f^2 x \text{Sin}[4 c+5 d x]-6\, i\, a b^2 d^2 f^2 x^2 \text{Sin}[4 c+5 d x]+6\, i\, a b^2 d^2 e^2 \text{Sin}[6 c+5 d x]-6 a b^2 d e f \text{Sin}[6 c+5 d x]-$$
$$3\, i\, a b^2 f^2 \text{Sin}[6 c+5 d x]+12\, i\, a b^2 d^2 e f x \text{Sin}[6 c+5 d x]-6 a b^2 d f^2 x \text{Sin}[6 c+5 d x]+6\, i\, a b^2 d^2 f^2 x^2 \text{Sin}[6 c+5 d x]\Big)+$$

$$\Big(b e f \text{Csc}[c] \text{Sec}[c] \Big(d^2 e^{i \text{ArcTan}[\text{Tan}[c]]} x^2+1\Big/\Big(\sqrt{1+\text{Tan}[c]^2}\Big) \big(i d x (-\pi+2 \text{ArcTan}[\text{Tan}[c]])-\pi \text{Log}\big[1+e^{-2 i d x}\big]-$$
$$2 (d x+\text{ArcTan}[\text{Tan}[c]]) \text{Log}\big[1-e^{2 i (d x+\text{ArcTan}[\text{Tan}[c]])}\big]+\pi \text{Log}[\text{Cos}[d x]]+2 \text{ArcTan}[\text{Tan}[c]] \text{Log}[\text{Sin}[d x+\text{ArcTan}[\text{Tan}[c]]]]+$$
$$i \text{PolyLog}\big[2, e^{2 i (d x+\text{ArcTan}[\text{Tan}[c]])}\big]\big) \text{Tan}[c]\Big)\Big)\Big/\Big(a^2 d^2 \sqrt{\text{Sec}[c]^2 \left(\text{Cos}[c]^2+\text{Sin}[c]^2\right)}\Big)$$

- **Problem 347: Result more than twice size of optimal antiderivative.**

$$\int \frac{(e+f x) \text{Cos}[c+d x]^3 \text{Cot}[c+d x]^2}{a+b \text{Sin}[c+d x]} \, dx$$

Optimal (type 4, 641 leaves, 45 steps):

$$-\frac{b f x}{4 a^2 d}-\frac{\left(a^2-b^2\right) f x}{4 a^2 b d}+\frac{i b (e+f x)^2}{2 a^2 f}-\frac{i \left(a^2-b^2\right)^2 (e+f x)^2}{2 a^2 b^3 f}-\frac{f \text{ArcTanh}[\text{Cos}[c+d x]]}{a d^2}-$$

$$\frac{f \text{Cos}[c+d x]}{a d^2}-\frac{\left(a^2-b^2\right) f \text{Cos}[c+d x]}{a b^2 d^2}-\frac{(e+f x) \text{Csc}[c+d x]}{a d}+\frac{\left(a^2-b^2\right)^2 (e+f x) \text{Log}\left[1-\frac{i b e^{i (c+d x)}}{a-\sqrt{a^2-b^2}}\right]}{a^2 b^3 d}+$$

$$\frac{\left(a^2-b^2\right)^2 (e+f x) \text{Log}\left[1-\frac{i b e^{i (c+d x)}}{a+\sqrt{a^2-b^2}}\right]}{a^2 b^3 d}-\frac{b (e+f x) \text{Log}\left[1-e^{2 i (c+d x)}\right]}{a^2 d}-\frac{i \left(a^2-b^2\right)^2 f \text{PolyLog}\left[2,\frac{i b e^{i (c+d x)}}{a-\sqrt{a^2-b^2}}\right]}{a^2 b^3 d^2}-$$

$$\frac{i \left(a^2-b^2\right)^2 f \text{PolyLog}\left[2,\frac{i b e^{i (c+d x)}}{a+\sqrt{a^2-b^2}}\right]}{a^2 b^3 d^2}+\frac{i b f \text{PolyLog}\left[2,e^{2 i (c+d x)}\right]}{2 a^2 d^2}-\frac{(e+f x) \text{Sin}[c+d x]}{a d}-\frac{\left(a^2-b^2\right) (e+f x) \text{Sin}[c+d x]}{a b^2 d}+$$

$$\frac{b f \text{Cos}[c+d x] \text{Sin}[c+d x]}{4 a^2 d^2}+\frac{\left(a^2-b^2\right) f \text{Cos}[c+d x] \text{Sin}[c+d x]}{4 a^2 b d^2}+\frac{b (e+f x) \text{Sin}[c+d x]^2}{2 a^2 d}+\frac{\left(a^2-b^2\right) (e+f x) \text{Sin}[c+d x]^2}{2 a^2 b d}$$

Result (type 4, 1644 leaves) :

$$-\frac{a f \text{Cos}[c+d x]}{b^2 d^2}-\frac{(d e-c f+f (c+d x)) \text{Cos}[2 (c+d x)]}{4 b d^2}+$$

$$\frac{\left(-d e \text{Cos}\left[\frac{1}{2} (c+d x)\right]+c f \text{Cos}\left[\frac{1}{2} (c+d x)\right]-f (c+d x) \text{Cos}\left[\frac{1}{2} (c+d x)\right]\right) \text{Csc}\left[\frac{1}{2} (c+d x)\right]}{2 a d^2}-\frac{b e \text{Log}[\text{Sin}[c+d x]]}{a^2 d}+$$

$$\frac{b c f \text{Log}[\text{Sin}[c+d x]]}{a^2 d^2}+\frac{a^2 e \text{Log}\left[1+\frac{b \text{Sin}[c+d x]}{a}\right]}{b^3 d}-\frac{2 e \text{Log}\left[1+\frac{b \text{Sin}[c+d x]}{a}\right]}{b d}+\frac{b e \text{Log}\left[1+\frac{b \text{Sin}[c+d x]}{a}\right]}{a^2 d}-$$

$$\frac{a^2 c f \text{Log}\left[1+\frac{b \text{Sin}[c+d x]}{a}\right]}{b^3 d^2}+\frac{2 c f \text{Log}\left[1+\frac{b \text{Sin}[c+d x]}{a}\right]}{b d^2}-\frac{b c f \text{Log}\left[1+\frac{b \text{Sin}[c+d x]}{a}\right]}{a^2 d^2}+\frac{f \text{Log}\left[\text{Tan}\left[\frac{1}{2} (c+d x)\right]\right]}{a d^2}-\frac{1}{d^2}$$

$$2 f \left(\frac{(c+d x) \text{Log}[a+b \text{Sin}[c+d x]]}{b}-1/b \left(-\frac{1}{2} i \left(-c+\frac{\pi}{2}-d x\right)^2+4 i \text{ArcSin}\left[\frac{\sqrt{\frac{a+b}{b}}}{\sqrt{2}}\right] \text{ArcTan}\left[\frac{(a-b) \text{Tan}\left[\frac{1}{2} \left(-c+\frac{\pi}{2}-d x\right)\right]}{\sqrt{a^2-b^2}}\right]+\left(-c+\frac{\pi}{2}-d x+\right.\right.\right.$$

$$\left.2 \text{ArcSin}\left[\frac{\sqrt{\frac{a+b}{b}}}{\sqrt{2}}\right]\right) \text{Log}\left[1+\frac{\left(a-\sqrt{a^2-b^2}\right) e^{i \left(-c+\frac{\pi}{2}-d x\right)}}{b}\right]+\left(-c+\frac{\pi}{2}-d x-2 \text{ArcSin}\left[\frac{\sqrt{\frac{a+b}{b}}}{\sqrt{2}}\right]\right) \text{Log}\left[1+\frac{\left(a+\sqrt{a^2-b^2}\right) e^{i \left(-c+\frac{\pi}{2}-d x\right)}}{b}\right]-$$

$$\left(-c+\frac{\pi}{2}-d\,x\right)\operatorname{Log}[a+b\operatorname{Sin}[c+d\,x]]-i\left(\operatorname{PolyLog}\left[2,-\frac{\left(a-\sqrt{a^2-b^2}\right)e^{i\left(-c+\frac{\pi}{2}-d\,x\right)}}{b}\right]+\operatorname{PolyLog}\left[2,-\frac{\left(a+\sqrt{a^2-b^2}\right)e^{i\left(-c+\frac{\pi}{2}-d\,x\right)}}{b}\right]\right)\Bigg)\Bigg)+$$

$$\frac{1}{b^2\,d^2}a^2\,f\left(\frac{(c+d\,x)\operatorname{Log}[a+b\operatorname{Sin}[c+d\,x]]}{b}-1/b\left(-\frac{1}{2}\,i\left(-c+\frac{\pi}{2}-d\,x\right)^2+4\,i\operatorname{ArcSin}\left[\frac{\sqrt{\frac{a+b}{b}}}{\sqrt{2}}\right]\operatorname{ArcTan}\left[\frac{(a-b)\operatorname{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}{\sqrt{a^2-b^2}}\right]+\right.\right.$$

$$\left(-c+\frac{\pi}{2}-d\,x+2\operatorname{ArcSin}\left[\frac{\sqrt{\frac{a+b}{b}}}{\sqrt{2}}\right]\right)\operatorname{Log}\left[1+\frac{\left(a-\sqrt{a^2-b^2}\right)e^{i\left(-c+\frac{\pi}{2}-d\,x\right)}}{b}\right]+$$

$$\left(-c+\frac{\pi}{2}-d\,x-2\operatorname{ArcSin}\left[\frac{\sqrt{\frac{a+b}{b}}}{\sqrt{2}}\right]\right)\operatorname{Log}\left[1+\frac{\left(a+\sqrt{a^2-b^2}\right)e^{i\left(-c+\frac{\pi}{2}-d\,x\right)}}{b}\right]-\left(-c+\frac{\pi}{2}-d\,x\right)\operatorname{Log}[a+b\operatorname{Sin}[c+d\,x]]-$$

$$i\left(\operatorname{PolyLog}\left[2,-\frac{\left(a-\sqrt{a^2-b^2}\right)e^{i\left(-c+\frac{\pi}{2}-d\,x\right)}}{b}\right]+\operatorname{PolyLog}\left[2,-\frac{\left(a+\sqrt{a^2-b^2}\right)e^{i\left(-c+\frac{\pi}{2}-d\,x\right)}}{b}\right]\right)\Bigg)\Bigg)+\frac{1}{a^2\,d^2}$$

$$b^2\,f\left(\frac{(c+d\,x)\operatorname{Log}[a+b\operatorname{Sin}[c+d\,x]]}{b}-1/b\left(-\frac{1}{2}\,i\left(-c+\frac{\pi}{2}-d\,x\right)^2+4\,i\operatorname{ArcSin}\left[\frac{\sqrt{\frac{a+b}{b}}}{\sqrt{2}}\right]\operatorname{ArcTan}\left[\frac{(a-b)\operatorname{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}{\sqrt{a^2-b^2}}\right]+\right.\right.$$

$$\left(-c+\frac{\pi}{2}-d\,x+2\operatorname{ArcSin}\left[\frac{\sqrt{\frac{a+b}{b}}}{\sqrt{2}}\right]\right)\operatorname{Log}\left[1+\frac{\left(a-\sqrt{a^2-b^2}\right)e^{i\left(-c+\frac{\pi}{2}-d\,x\right)}}{b}\right]+$$

$$\left(-c+\frac{\pi}{2}-d\,x-2\,\text{ArcSin}\left[\frac{\sqrt{\frac{a+b}{b}}}{\sqrt{2}}\right]\right)\text{Log}\left[1+\frac{\left(a+\sqrt{a^2-b^2}\right)e^{i\left(-c+\frac{\pi}{2}-d\,x\right)}}{b}\right]-\left(-c+\frac{\pi}{2}-d\,x\right)\text{Log}[a+b\,\text{Sin}[c+d\,x]]-$$

$$i\left(\text{PolyLog}\left[2,-\frac{\left(a-\sqrt{a^2-b^2}\right)e^{i\left(-c+\frac{\pi}{2}-d\,x\right)}}{b}\right]+\text{PolyLog}\left[2,-\frac{\left(a+\sqrt{a^2-b^2}\right)e^{i\left(-c+\frac{\pi}{2}-d\,x\right)}}{b}\right]\right)\Bigg)\Bigg)-$$

$$\frac{b\,f\left((c+d\,x)\,\text{Log}\left[1-e^{2\,i\,(c+d\,x)}\right]-\frac{1}{2}\,i\left((c+d\,x)^2+\text{PolyLog}\left[2,e^{2\,i\,(c+d\,x)}\right]\right)\right)}{a^2\,d^2}+$$

$$\frac{\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]\left(-d\,e\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]+c\,f\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]-f\,(c+d\,x)\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)}{2\,a\,d^2}-$$

$$\frac{a\,(d\,e-c\,f+f\,(c+d\,x))\,\text{Sin}[c+d\,x]}{b^2\,d^2}+$$

$$\frac{f\,\text{Sin}[2\,(c+d\,x)]}{8\,b\,d^2}$$

Test results for the 72 problems in "4.1.1.1 (a+b sin)^n.m"

- **Problem 4: Result more than twice size of optimal antiderivative.**

$$\int\sqrt{a+a\,\text{Sin}[c+d\,x]}\,dx$$

Optimal (type 3, 26 leaves, 1 step):

$$-\frac{2\,a\,\text{Cos}[c+d\,x]}{d\,\sqrt{a+a\,\text{Sin}[c+d\,x]}}$$

Result (type 3, 65 leaves):

$$\frac{2\left(-\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)\sqrt{a\,(1+\text{Sin}[c+d\,x])}}{d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)}$$

- **Problem 5: Result unnecessarily involves imaginary or complex numbers.**

$$\int\frac{1}{\sqrt{a+a\,\text{Sin}[c+d\,x]}}\,dx$$

Optimal (type 3, 47 leaves, 2 steps):

$$-\frac{\sqrt{2}\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\text{Cos}[c+d\,x]}{\sqrt{2}\,\sqrt{a+a\,\text{Sin}[c+d\,x]}}\right]}{\sqrt{a}\,d}$$

Result (type 3, 73 leaves):

$$\frac{(2+2\,i)\,(-1)^{3/4}\,\text{ArcTanh}\left[\left(\frac{1}{2}+\frac{i}{2}\right)\,(-1)^{3/4}\,\left(-1+\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]\right)\right]\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)}{d\,\sqrt{a\,(1+\text{Sin}[c+d\,x])}}$$

Problem 6: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{1}{(a+a\,\text{Sin}[c+d\,x])^{3/2}}\,dx$$

Optimal (type 3, 77 leaves, 3 steps):

$$-\frac{\text{ArcTanh}\left[\frac{\sqrt{a}\,\text{Cos}[c+d\,x]}{\sqrt{2}\,\sqrt{a+a\,\text{Sin}[c+d\,x]}}\right]}{2\,\sqrt{2}\,a^{3/2}\,d}-\frac{\text{Cos}[c+d\,x]}{2\,d\,(a+a\,\text{Sin}[c+d\,x])^{3/2}}$$

Result (type 3, 108 leaves):

$$\left(\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\right.$$
$$\left(-\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]+(1+i)\,(-1)^{3/4}\,\text{ArcTanh}\left[\left(\frac{1}{2}+\frac{i}{2}\right)\,(-1)^{3/4}\,\left(-1+\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]\right)\right]\,(1+\text{Sin}[c+d\,x])\right)\Bigg)\Bigg/\Big(2$$
$$\left.d\,(a\,(1+\text{Sin}[c+d\,x]))^{3/2}\right)$$

Problem 7: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{1}{(a+a\,\text{Sin}[c+d\,x])^{5/2}}\,dx$$

Optimal (type 3, 107 leaves, 4 steps):

$$-\frac{3\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\text{Cos}[c+d\,x]}{\sqrt{2}\,\sqrt{a+a\,\text{Sin}[c+d\,x]}}\right]}{16\,\sqrt{2}\,a^{5/2}\,d}-\frac{\text{Cos}[c+d\,x]}{4\,d\,(a+a\,\text{Sin}[c+d\,x])^{5/2}}-\frac{3\,\text{Cos}[c+d\,x]}{16\,a\,d\,(a+a\,\text{Sin}[c+d\,x])^{3/2}}$$

Result (type 3, 196 leaves):

$$\frac{1}{16\,d\,(a\,(1+\mathrm{Sin}[c+d\,x]))^{5/2}}\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)\left(8\,\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]-4\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)+\right.$$
$$6\,\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2-3\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^3+$$
$$\left.(3+3\,i)\,(-1)^{3/4}\,\mathrm{ArcTanh}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{3/4}\left(-1+\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]\right)\right]\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4\right)$$

- **Problem 8: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int (a+a\,\mathrm{Sin}[c+d\,x])^{4/3}\,dx$$

Optimal (type 5, 67 leaves, 2 steps):

$$-\frac{2\times 2^{5/6}\,a\,\mathrm{Cos}[c+d\,x]\,\mathrm{Hypergeometric2F1}\left[-\frac{5}{6},\frac{1}{2},\frac{3}{2},\frac{1}{2}(1-\mathrm{Sin}[c+d\,x])\right](a+a\,\mathrm{Sin}[c+d\,x])^{1/3}}{d\,(1+\mathrm{Sin}[c+d\,x])^{5/6}}$$

Result (type 5, 314 leaves):

$$\frac{1}{2\,d\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^3}$$
$$\left(-\frac{3}{2}(-5+\mathrm{Cos}[c+d\,x])\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)-\frac{1}{8\left(1+i\,e^{-i\,(c+d\,x)}\right)^{2/3}\sqrt{1-\mathrm{Sin}[c+d\,x]}}\,3\,(-1)^{3/4}\right.$$
$$e^{-\frac{3}{2}i\,(c+d\,x)}\left(i+e^{i\,(c+d\,x)}\right)\left(-20\,e^{i\,(c+d\,x)}\sqrt{\mathrm{Cos}\left[\frac{1}{4}(2\,c+\pi+2\,d\,x)\right]^2}\,\mathrm{Hypergeometric2F1}\left[-\frac{1}{3},\frac{1}{3},\frac{2}{3},-i\,e^{-i\,(c+d\,x)}\right]+\right.$$
$$2\left(1+i\,e^{-i\,(c+d\,x)}\right)^{2/3}\left(1+e^{2\,i\,(c+d\,x)}\right)\mathrm{Hypergeometric2F1}\left[\frac{1}{2},\frac{5}{6},\frac{11}{6},\mathrm{Sin}\left[\frac{1}{4}(2\,c+\pi+2\,d\,x)\right]^2\right]-$$
$$\left.\left.5\,i\,\mathrm{Hypergeometric2F1}\left[\frac{1}{3},\frac{2}{3},\frac{5}{3},-i\,e^{-i\,(c+d\,x)}\right]\sqrt{2-2\,\mathrm{Sin}[c+d\,x]}\right)\right)(a\,(1+\mathrm{Sin}[c+d\,x]))^{4/3}$$

- **Problem 10: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int (a+a\,\mathrm{Sin}[c+d\,x])^{1/3}\,dx$$

Optimal (type 5, 66 leaves, 2 steps):

$$-\frac{2^{5/6}\,\mathrm{Cos}[c+d\,x]\,\mathrm{Hypergeometric2F1}\left[\frac{1}{6},\frac{1}{2},\frac{3}{2},\frac{1}{2}(1-\mathrm{Sin}[c+d\,x])\right](a+a\,\mathrm{Sin}[c+d\,x])^{1/3}}{d\,(1+\mathrm{Sin}[c+d\,x])^{5/6}}$$

Result (type 5, 546 leaves):

$$\frac{3\,(a\,(1+\text{Sin}[c+d\,x]))^{1/3}}{d}+\frac{1}{d\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)}\,2\,\sqrt{2}\,(1+\text{Sin}[c+d\,x])^{1/6}\,(a\,(1+\text{Sin}[c+d\,x]))^{1/3}$$

$$\left(-\left(\mathbb{i}\,\text{Cos}\left[\frac{\pi}{4}+\frac{1}{2}\,(-c-d\,x)\right]^{1/3}\left(-\frac{3\,\mathbb{i}\,\left(e^{-\mathbb{i}\,\left(\frac{\pi}{4}+\frac{1}{2}\,(-c-d\,x)\right)}+e^{\mathbb{i}\,\left(\frac{\pi}{4}+\frac{1}{2}\,(-c-d\,x)\right)}\right)^{2/3}\,\text{Hypergeometric2F1}\left[-\frac{1}{3},\,\frac{1}{3},\,\frac{2}{3},\,-e^{2\,\mathbb{i}\,\left(\frac{\pi}{4}+\frac{1}{2}\,(-c-d\,x)\right)}\right]}{2^{2/3}\,\left(1+e^{2\,\mathbb{i}\,\left(\frac{\pi}{4}+\frac{1}{2}\,(-c-d\,x)\right)}\right)^{2/3}}-\right.\right.\right.$$

$$\left.\left.\frac{3\,\mathbb{i}\,e^{\mathbb{i}\,\left(\frac{\pi}{4}+\frac{1}{2}\,(-c-d\,x)\right)}\,\left(1+e^{2\,\mathbb{i}\,\left(\frac{\pi}{4}+\frac{1}{2}\,(-c-d\,x)\right)}\right)^{1/3}\,\text{Hypergeometric2F1}\left[\frac{1}{3},\,\frac{2}{3},\,\frac{5}{3},\,-e^{2\,\mathbb{i}\,\left(\frac{\pi}{4}+\frac{1}{2}\,(-c-d\,x)\right)}\right]}{2\times 2^{2/3}\,\left(e^{-\mathbb{i}\,\left(\frac{\pi}{4}+\frac{1}{2}\,(-c-d\,x)\right)}+e^{\mathbb{i}\,\left(\frac{\pi}{4}+\frac{1}{2}\,(-c-d\,x)\right)}\right)^{1/3}}\right)\right)\Big/$$

$$\left(2\,\left(1+\text{Cos}\left[2\,\left(\frac{\pi}{4}+\frac{1}{2}\,(-c-d\,x)\right)\right]\right)\right)^{1/6}+\left(3\,\text{Cos}\left[\frac{\pi}{4}+\frac{1}{2}\,(-c-d\,x)\right]^{2}\,\text{Hypergeometric2F1}\left[\frac{1}{2},\,\frac{5}{6},\,\frac{11}{6},\,\text{Cos}\left[\frac{\pi}{4}+\frac{1}{2}\,(-c-d\,x)\right]^{2}\right]\right.$$

$$\left.\left.\text{Sin}\left[\frac{\pi}{4}+\frac{1}{2}\,(-c-d\,x)\right]\right)\Big/\left(5\,\left(1+\text{Cos}\left[2\,\left(\frac{\pi}{4}+\frac{1}{2}\,(-c-d\,x)\right)\right]\right)^{1/6}\,\sqrt{\text{Sin}\left[\frac{\pi}{4}+\frac{1}{2}\,(-c-d\,x)\right]^{2}}\right)\right)$$

- **Problem 12: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int\frac{1}{(a+a\,\text{Sin}[c+d\,x])^{2/3}}\,dx$$

Optimal (type 5, 66 leaves, 2 steps):

$$-\frac{\text{Cos}[c+d\,x]\,\text{Hypergeometric2F1}\left[\frac{1}{2},\,\frac{7}{6},\,\frac{3}{2},\,\frac{1}{2}\,(1-\text{Sin}[c+d\,x])\right]\,(1+\text{Sin}[c+d\,x])^{1/6}}{2^{1/6}\,d\,(a+a\,\text{Sin}[c+d\,x])^{2/3}}$$

Result (type 5, 604 leaves):

$$\frac{2\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2\left(-3+\frac{3\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]}{\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]}\right)}{d\,(a\,(1+\text{Sin}[c+d\,x]))^{2/3}}-$$

$$\frac{1}{d\,(a\,(1+\text{Sin}[c+d\,x]))^{2/3}}\,2\sqrt{2}\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)(1+\text{Sin}[c+d\,x])^{1/6}$$

$$\left(-\left(\dot{\mathbb{i}}\,\text{Cos}\left[\frac{\pi}{4}+\frac{1}{2}(-c-d\,x)\right]\right)^{1/3}\left(-\frac{3\,\dot{\mathbb{i}}\left(e^{-\dot{\mathbb{i}}\left(\frac{\pi}{4}+\frac{1}{2}(-c-d\,x)\right)}+e^{\dot{\mathbb{i}}\left(\frac{\pi}{4}+\frac{1}{2}(-c-d\,x)\right)}\right)^{2/3}\text{Hypergeometric2F1}\left[-\frac{1}{3},\frac{1}{3},\frac{2}{3},-e^{2\,\dot{\mathbb{i}}\left(\frac{\pi}{4}+\frac{1}{2}(-c-d\,x)\right)}\right]}{2^{2/3}\left(1+e^{2\,\dot{\mathbb{i}}\left(\frac{\pi}{4}+\frac{1}{2}(-c-d\,x)\right)}\right)^{2/3}}-\right.\right.$$

$$\left.\left.\frac{3\,\dot{\mathbb{i}}\,e^{\dot{\mathbb{i}}\left(\frac{\pi}{4}+\frac{1}{2}(-c-d\,x)\right)}\left(1+e^{2\,\dot{\mathbb{i}}\left(\frac{\pi}{4}+\frac{1}{2}(-c-d\,x)\right)}\right)^{1/3}\text{Hypergeometric2F1}\left[\frac{1}{3},\frac{2}{3},\frac{5}{3},-e^{2\,\dot{\mathbb{i}}\left(\frac{\pi}{4}+\frac{1}{2}(-c-d\,x)\right)}\right]}{2\times 2^{2/3}\left(e^{-\dot{\mathbb{i}}\left(\frac{\pi}{4}+\frac{1}{2}(-c-d\,x)\right)}+e^{\dot{\mathbb{i}}\left(\frac{\pi}{4}+\frac{1}{2}(-c-d\,x)\right)}\right)^{1/3}}\right)\right)\Big/$$

$$\left(2\left(1+\text{Cos}\left[2\left(\frac{\pi}{4}+\frac{1}{2}(-c-d\,x)\right)\right]\right)^{1/6}\right)+\left(3\,\text{Cos}\left[\frac{\pi}{4}+\frac{1}{2}(-c-d\,x)\right]^2\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{5}{6},\frac{11}{6},\text{Cos}\left[\frac{\pi}{4}+\frac{1}{2}(-c-d\,x)\right]^2\right]\right.$$

$$\left.\text{Sin}\left[\frac{\pi}{4}+\frac{1}{2}(-c-d\,x)\right]\right)\Big/\left(5\left(1+\text{Cos}\left[2\left(\frac{\pi}{4}+\frac{1}{2}(-c-d\,x)\right)\right]\right)^{1/6}\sqrt{\text{Sin}\left[\frac{\pi}{4}+\frac{1}{2}(-c-d\,x)\right]^2}\right)\right)$$

- **Problem 58: Result more than twice size of optimal antiderivative.**

$$\int(a+b\,\text{Sin}[c+d\,x])^{4/3}\,dx$$

Optimal (type 6, 109 leaves, 3 steps):

$$-\left(\sqrt{2}\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2},-\frac{4}{3},\frac{3}{2},\frac{1}{2}(1-\text{Sin}[c+d\,x]),\frac{b\,(1-\text{Sin}[c+d\,x])}{a+b}\right]\text{Cos}[c+d\,x]\,(a+b\,\text{Sin}[c+d\,x])^{1/3}\right)\Big/$$

$$\left(d\sqrt{1+\text{Sin}[c+d\,x]}\left(\frac{a+b\,\text{Sin}[c+d\,x]}{a+b}\right)^{1/3}\right)$$

Result (type 6, 244 leaves):

$$-\frac{1}{16\,b\,d}3\,\text{Sec}[c+d\,x]\,(a+b\,\text{Sin}[c+d\,x])^{1/3}\left(4\,b^2\,\text{Cos}[c+d\,x]^2+4\,(a^2-b^2)\,\text{AppellF1}\left[\frac{1}{3},\frac{1}{2},\frac{1}{2},\frac{4}{3},\frac{a+b\,\text{Sin}[c+d\,x]}{a-b},\frac{a+b\,\text{Sin}[c+d\,x]}{a+b}\right]\sqrt{-\frac{b\,(-1+\text{Sin}[c+d\,x])}{a+b}}\sqrt{\frac{b\,(1+\text{Sin}[c+d\,x])}{-a+b}}-5\,a\,\text{AppellF1}\left[\frac{4}{3},\frac{1}{2},\frac{1}{2},\frac{7}{3},\frac{a+b\,\text{Sin}[c+d\,x]}{a-b},\frac{a+b\,\text{Sin}[c+d\,x]}{a+b}\right]\sqrt{-\frac{b\,(-1+\text{Sin}[c+d\,x])}{a+b}}\sqrt{\frac{b\,(1+\text{Sin}[c+d\,x])}{-a+b}}\,(a+b\,\text{Sin}[c+d\,x])\right)$$

- **Problem 63: Result more than twice size of optimal antiderivative.**

$$\int\frac{1}{(a+b\,\text{Sin}[c+d\,x])^{4/3}}\,dx$$

Optimal (type 6, 111 leaves, 3 steps):

$$-\frac{\sqrt{2}\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2},\frac{4}{3},\frac{3}{2},\frac{1}{2}\,(1-\text{Sin}[c+d\,x]),\frac{b\,(1-\text{Sin}[c+d\,x])}{a+b}\right]\text{Cos}[c+d\,x]\left(\frac{a+b\,\text{Sin}[c+d\,x]}{a+b}\right)^{1/3}}{(a+b)\,d\,\sqrt{1+\text{Sin}[c+d\,x]}\,(a+b\,\text{Sin}[c+d\,x])^{1/3}}$$

Result (type 6, 262 leaves):

$$-\left(3\,\text{Sec}[c+d\,x]\left(5\,a\,\text{AppellF1}\left[\frac{2}{3},\frac{1}{2},\frac{1}{2},\frac{5}{3},\frac{a+b\,\text{Sin}[c+d\,x]}{a-b},\frac{a+b\,\text{Sin}[c+d\,x]}{a+b}\right]\sqrt{-\frac{b\,(-1+\text{Sin}[c+d\,x])}{a+b}}\sqrt{-\frac{b\,(1+\text{Sin}[c+d\,x])}{a-b}}\,(a+b\,\text{Sin}[c+d\,x])-2\left(5\,b^2\,\text{Cos}[c+d\,x]^2+2\,\text{AppellF1}\left[\frac{5}{3},\frac{1}{2},\frac{1}{2},\frac{8}{3},\frac{a+b\,\text{Sin}[c+d\,x]}{a-b},\frac{a+b\,\text{Sin}[c+d\,x]}{a+b}\right]\sqrt{-\frac{b\,(-1+\text{Sin}[c+d\,x])}{a+b}}\sqrt{\frac{b\,(1+\text{Sin}[c+d\,x])}{-a+b}}\,(a+b\,\text{Sin}[c+d\,x])^2\right)\right)\right)\Big/\left(10\,b\,(a^2-b^2)\,d\,(a+b\,\text{Sin}[c+d\,x])^{1/3}\right)$$

Test results for the 113 problems in "4.1.11 (e x)^m (a+b x^n)^p sin.m"

Problem 31: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{\text{Sin}[c+d x]}{x (a+b x)^2} \, dx$$

Optimal (type 4, 149 leaves, 12 steps):

$$-\frac{d \,\text{Cos}\left[c-\frac{a d}{b}\right] \text{CosIntegral}\left[\frac{a d}{b}+d x\right]}{a b}+\frac{\text{CosIntegral}[d x] \,\text{Sin}[c]}{a^2}-\frac{\text{CosIntegral}\left[\frac{a d}{b}+d x\right] \text{Sin}\left[c-\frac{a d}{b}\right]}{a^2}+\frac{\text{Sin}[c+d x]}{a (a+b x)}+\frac{\text{Cos}[c] \,\text{SinIntegral}[d x]}{a^2}-\frac{\text{Cos}\left[c-\frac{a d}{b}\right] \text{SinIntegral}\left[\frac{a d}{b}+d x\right]}{a^2}+\frac{d \,\text{Sin}\left[c-\frac{a d}{b}\right] \text{SinIntegral}\left[\frac{a d}{b}+d x\right]}{a b}$$

Result (type 4, 641 leaves):

$$\frac{1}{2 a^2 b (a+b x)} e^{-\frac{i d (2 a+b x)}{b}} \left(i a b e^{\frac{2 i a d}{b}} \text{Cos}[c]-i a b e^{\frac{2 i d (a+b x)}{b}} \text{Cos}[c]-a^2 d e^{\frac{i d (3 a+b x)}{b}} \text{Cos}[c] \,\text{ExpIntegralEi}\left[-\frac{i d (a+b x)}{b}\right]-\right.$$
$$a b d e^{\frac{i d (3 a+b x)}{b}} x \,\text{Cos}[c] \,\text{ExpIntegralEi}\left[-\frac{i d (a+b x)}{b}\right]-a^2 d e^{\frac{i d (a+b x)}{b}} \text{Cos}[c] \,\text{ExpIntegralEi}\left[\frac{i d (a+b x)}{b}\right]-$$
$$a b d e^{\frac{i d (a+b x)}{b}} x \,\text{Cos}[c] \,\text{ExpIntegralEi}\left[\frac{i d (a+b x)}{b}\right]+a b e^{\frac{2 i a d}{b}} \text{Sin}[c]+a b e^{\frac{2 i d (a+b x)}{b}} \text{Sin}[c]+2 b e^{\frac{i d (2 a+b x)}{b}} (a+b x) \,\text{CosIntegral}[d x] \,\text{Sin}[c]+$$
$$i a^2 d e^{\frac{i d (3 a+b x)}{b}} \text{ExpIntegralEi}\left[-\frac{i d (a+b x)}{b}\right] \text{Sin}[c]+i a b d e^{\frac{i d (3 a+b x)}{b}} x \,\text{ExpIntegralEi}\left[-\frac{i d (a+b x)}{b}\right] \text{Sin}[c]-$$
$$i a^2 d e^{\frac{i d (a+b x)}{b}} \text{ExpIntegralEi}\left[\frac{i d (a+b x)}{b}\right] \text{Sin}[c]-i a b d e^{\frac{i d (a+b x)}{b}} x \,\text{ExpIntegralEi}\left[\frac{i d (a+b x)}{b}\right] \text{Sin}[c]-$$
$$2 b e^{\frac{i d (2 a+b x)}{b}} (a+b x) \,\text{CosIntegral}\left[d \left(\frac{a}{b}+x\right)\right] \text{Sin}\left[c-\frac{a d}{b}\right]+2 a b e^{\frac{i d (2 a+b x)}{b}} \text{Cos}[c] \,\text{SinIntegral}[d x]+2 b^2 e^{\frac{i d (2 a+b x)}{b}} x \,\text{Cos}[c] \,\text{SinIntegral}[d x]-$$
$$\left.2 a b e^{\frac{i d (2 a+b x)}{b}} \text{Cos}\left[c-\frac{a d}{b}\right] \text{SinIntegral}\left[d \left(\frac{a}{b}+x\right)\right]-2 b^2 e^{\frac{i d (2 a+b x)}{b}} x \,\text{Cos}\left[c-\frac{a d}{b}\right] \text{SinIntegral}\left[d \left(\frac{a}{b}+x\right)\right]\right)$$

Problem 37: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{\text{Sin}[c+d x]}{x (a+b x)^3} \, dx$$

Optimal (type 4, 261 leaves, 17 steps):

$$\frac{d\,\text{Cos}[c+d\,x]}{2\,a\,b\,(a+b\,x)}-\frac{d\,\text{Cos}\left[c-\frac{a\,d}{b}\right]\text{CosIntegral}\left[\frac{a\,d}{b}+d\,x\right]}{a^2\,b}+\frac{\text{CosIntegral}[d\,x]\,\text{Sin}[c]}{a^3}-\frac{\text{CosIntegral}\left[\frac{a\,d}{b}+d\,x\right]\text{Sin}\left[c-\frac{a\,d}{b}\right]}{a^3}+$$

$$\frac{d^2\,\text{CosIntegral}\left[\frac{a\,d}{b}+d\,x\right]\text{Sin}\left[c-\frac{a\,d}{b}\right]}{2\,a\,b^2}+\frac{\text{Sin}[c+d\,x]}{2\,a\,(a+b\,x)^2}+\frac{\text{Sin}[c+d\,x]}{a^2\,(a+b\,x)}+\frac{\text{Cos}[c]\,\text{SinIntegral}[d\,x]}{a^3}-$$

$$\frac{\text{Cos}\left[c-\frac{a\,d}{b}\right]\text{SinIntegral}\left[\frac{a\,d}{b}+d\,x\right]}{a^3}+\frac{d^2\,\text{Cos}\left[c-\frac{a\,d}{b}\right]\text{SinIntegral}\left[\frac{a\,d}{b}+d\,x\right]}{2\,a\,b^2}+\frac{d\,\text{Sin}\left[c-\frac{a\,d}{b}\right]\text{SinIntegral}\left[\frac{a\,d}{b}+d\,x\right]}{a^2\,b}$$

Result (type 4, 2093 leaves) :

$$-\frac{1}{a}2\,b\,\text{Cos}[c]\left(\frac{1}{8\,b^3\,(a+b\,x)^2}i\,e^{-\frac{i\,d\,(2\,a+b\,x)}{b}}\left(-1+e^{\frac{2\,i\,a\,d}{b}}\right)\left(-b\left(b\left(1+e^{\frac{2\,i\,d\,(a+b\,x)}{b}}\right)+i\,d\left(-1+e^{\frac{2\,i\,d\,(a+b\,x)}{b}}\right)(a+b\,x)\right)-\right.\right.$$
$$\left.d^2\,e^{\frac{i\,d\,(a+b\,x)}{b}}(a+b\,x)^2\,\text{ExpIntegralEi}\left[-\frac{i\,d\,(a+b\,x)}{b}\right]-d^2\,e^{\frac{i\,d\,(a+b\,x)}{b}}(a+b\,x)^2\,\text{ExpIntegralEi}\left[\frac{i\,d\,(a+b\,x)}{b}\right]\right)+$$
$$\frac{1}{8\,b^3\,(a+b\,x)^2}i\,e^{-\frac{i\,d\,(2\,a+b\,x)}{b}}\left(1+e^{\frac{2\,i\,a\,d}{b}}\right)\left(b\left(b\left(-1+e^{\frac{2\,i\,d\,(a+b\,x)}{b}}\right)+i\,d\left(1+e^{\frac{2\,i\,d\,(a+b\,x)}{b}}\right)(a+b\,x)\right)-\right.$$
$$\left.\left.d^2\,e^{\frac{i\,d\,(a+b\,x)}{b}}(a+b\,x)^2\,\text{ExpIntegralEi}\left[-\frac{i\,d\,(a+b\,x)}{b}\right]+d^2\,e^{\frac{i\,d\,(a+b\,x)}{b}}(a+b\,x)^2\,\text{ExpIntegralEi}\left[\frac{i\,d\,(a+b\,x)}{b}\right]\right)\right)-$$
$$\frac{1}{a^2}b^2\,\text{Cos}[c]\left(\frac{1}{4\,b^3\,(a+b\,x)}e^{-\frac{i\,d\,(2\,a+b\,x)}{b}}\left(1+e^{\frac{2\,i\,a\,d}{b}}\right)\left(i\,b\left(-1+e^{\frac{2\,i\,d\,(a+b\,x)}{b}}\right)+d\,e^{\frac{i\,d\,(a+b\,x)}{b}}(a+b\,x)\,\text{ExpIntegralEi}\left[-\frac{i\,d\,(a+b\,x)}{b}\right]+\right.\right.$$
$$\left.d\,e^{\frac{i\,d\,(a+b\,x)}{b}}(a+b\,x)\,\text{ExpIntegralEi}\left[\frac{i\,d\,(a+b\,x)}{b}\right]\right)+\frac{1}{8\,b^4\,(a+b\,x)^2}$$
$$i\,a\,e^{-\frac{i\,d\,(2\,a+b\,x)}{b}}\left(1+e^{\frac{2\,i\,a\,d}{b}}\right)\left(-b\left(b\left(-1+e^{\frac{2\,i\,d\,(a+b\,x)}{b}}\right)+i\,d\left(1+e^{\frac{2\,i\,d\,(a+b\,x)}{b}}\right)(a+b\,x)\right)+d^2\,e^{\frac{i\,d\,(a+b\,x)}{b}}(a+b\,x)^2\,\text{ExpIntegralEi}\left[-\frac{i\,d\,(a+b\,x)}{b}\right]-\right.$$
$$\left.d^2\,e^{\frac{i\,d\,(a+b\,x)}{b}}(a+b\,x)^2\,\text{ExpIntegralEi}\left[\frac{i\,d\,(a+b\,x)}{b}\right]\right)+\frac{1}{8\,b^4\,(a+b\,x)^2}$$
$$a\,e^{-\frac{i\,d\,(2\,a+b\,x)}{b}}\left(-1+e^{\frac{2\,i\,a\,d}{b}}\right)\left(b\left(i\,b\left(1+e^{\frac{2\,i\,d\,(a+b\,x)}{b}}\right)-d\left(-1+e^{\frac{2\,i\,d\,(a+b\,x)}{b}}\right)(a+b\,x)\right)+i\,d^2\,e^{\frac{i\,d\,(a+b\,x)}{b}}(a+b\,x)^2\,\text{ExpIntegralEi}\left[-\frac{i\,d\,(a+b\,x)}{b}\right]+\right.$$
$$\left.i\,d^2\,e^{\frac{i\,d\,(a+b\,x)}{b}}(a+b\,x)^2\,\text{ExpIntegralEi}\left[\frac{i\,d\,(a+b\,x)}{b}\right]\right)+\frac{1}{4\,b^3\,(a+b\,x)}e^{-\frac{i\,d\,(2\,a+b\,x)}{b}}\left(-1+e^{\frac{2\,i\,a\,d}{b}}\right)$$
$$\left.\left(d\,e^{\frac{i\,d\,(a+b\,x)}{b}}(a+b\,x)\,\text{ExpIntegralEi}\left[-\frac{i\,d\,(a+b\,x)}{b}\right]-i\left(b+b\,e^{\frac{2\,i\,d\,(a+b\,x)}{b}}-i\,d\,e^{\frac{i\,d\,(a+b\,x)}{b}}(a+b\,x)\,\text{ExpIntegralEi}\left[\frac{i\,d\,(a+b\,x)}{b}\right]\right)\right)\right)-$$
$$\frac{1}{a^2}b^2\left(-\frac{1}{4\,b^3\,(a+b\,x)}e^{-\frac{i\,d\,(2\,a+b\,x)}{b}}\left(1+e^{\frac{2\,i\,a\,d}{b}}\right)\left(b+b\,e^{\frac{2\,i\,d\,(a+b\,x)}{b}}+i\,d\,e^{\frac{i\,d\,(a+b\,x)}{b}}(a+b\,x)\,\text{ExpIntegralEi}\left[-\frac{i\,d\,(a+b\,x)}{b}\right]-\right.\right.$$
$$\left.i\,d\,e^{\frac{i\,d\,(a+b\,x)}{b}}(a+b\,x)\,\text{ExpIntegralEi}\left[\frac{i\,d\,(a+b\,x)}{b}\right]\right)-\frac{1}{4\,b^3\,(a+b\,x)}e^{-\frac{i\,d\,(2\,a+b\,x)}{b}}\left(-1+e^{\frac{2\,i\,a\,d}{b}}\right)$$

$$\left(b-b\,e^{\frac{2\,i\,d\,(a+b\,x)}{b}}+i\,d\,e^{\frac{i\,d\,(a+b\,x)}{b}}\,(a+b\,x)\,\text{ExpIntegralEi}\left[-\frac{i\,d\,(a+b\,x)}{b}\right]+i\,d\,e^{\frac{i\,d\,(a+b\,x)}{b}}\,(a+b\,x)\,\text{ExpIntegralEi}\left[\frac{i\,d\,(a+b\,x)}{b}\right]\right)-$$

$$\frac{1}{8\,b^4\,(a+b\,x)^2}a\,e^{-\frac{i\,d\,(2\,a+b\,x)}{b}}\left(-1+e^{\frac{2\,i\,a\,d}{b}}\right)\left(b\left(b\left(-1+e^{\frac{2\,i\,d\,(a+b\,x)}{b}}\right)+i\,d\left(1+e^{\frac{2\,i\,d\,(a+b\,x)}{b}}\right)(a+b\,x)\right)-\right.$$

$$\left.d^2\,e^{\frac{i\,d\,(a+b\,x)}{b}}\,(a+b\,x)^2\,\text{ExpIntegralEi}\left[-\frac{i\,d\,(a+b\,x)}{b}\right]+d^2\,e^{\frac{i\,d\,(a+b\,x)}{b}}\,(a+b\,x)^2\,\text{ExpIntegralEi}\left[\frac{i\,d\,(a+b\,x)}{b}\right]\right)+\frac{1}{8\,b^4\,(a+b\,x)^2}$$

$$a\,e^{-\frac{i\,d\,(2\,a+b\,x)}{b}}\left(1+e^{\frac{2\,i\,a\,d}{b}}\right)\left(b\left(b\left(1+e^{\frac{2\,i\,d\,(a+b\,x)}{b}}\right)+i\,d\left(-1+e^{\frac{2\,i\,d\,(a+b\,x)}{b}}\right)(a+b\,x)\right)+d^2\,e^{\frac{i\,d\,(a+b\,x)}{b}}\,(a+b\,x)^2\,\text{ExpIntegralEi}\left[-\frac{i\,d\,(a+b\,x)}{b}\right]+\right.$$

$$\left.\left.\left.d^2\,e^{\frac{i\,d\,(a+b\,x)}{b}}\,(a+b\,x)^2\,\text{ExpIntegralEi}\left[\frac{i\,d\,(a+b\,x)}{b}\right]\right)\right)\right)\text{Sin}[c]-$$

$$\frac{1}{a}2\,b\left(\frac{1}{8\,b^3\,(a+b\,x)^2}e^{-\frac{i\,d\,(2\,a+b\,x)}{b}}\left(-1+e^{\frac{2\,i\,a\,d}{b}}\right)\left(b\left(b\left(-1+e^{\frac{2\,i\,d\,(a+b\,x)}{b}}\right)+i\,d\left(1+e^{\frac{2\,i\,d\,(a+b\,x)}{b}}\right)(a+b\,x)\right)-\right.\right.$$

$$\left.d^2\,e^{\frac{i\,d\,(a+b\,x)}{b}}\,(a+b\,x)^2\,\text{ExpIntegralEi}\left[-\frac{i\,d\,(a+b\,x)}{b}\right]+d^2\,e^{\frac{i\,d\,(a+b\,x)}{b}}\,(a+b\,x)^2\,\text{ExpIntegralEi}\left[\frac{i\,d\,(a+b\,x)}{b}\right]\right)-\frac{1}{8\,b^3\,(a+b\,x)^2}$$

$$e^{-\frac{i\,d\,(2\,a+b\,x)}{b}}\left(1+e^{\frac{2\,i\,a\,d}{b}}\right)\left(b\left(b\left(1+e^{\frac{2\,i\,d\,(a+b\,x)}{b}}\right)+i\,d\left(-1+e^{\frac{2\,i\,d\,(a+b\,x)}{b}}\right)(a+b\,x)\right)+d^2\,e^{\frac{i\,d\,(a+b\,x)}{b}}\,(a+b\,x)^2\,\text{ExpIntegralEi}\left[-\frac{i\,d\,(a+b\,x)}{b}\right]+\right.$$

$$\left.\left.\left.d^2\,e^{\frac{i\,d\,(a+b\,x)}{b}}\,(a+b\,x)^2\,\text{ExpIntegralEi}\left[\frac{i\,d\,(a+b\,x)}{b}\right]\right)\right)\right)\text{Sin}[c]+$$

$$\frac{1}{2\,a^3}\left(2\,\text{CosIntegral}[d\,x]\,\text{Sin}[c]-2\,\text{CosIntegral}\left[\frac{a\,d}{b}+d\,x\right]\text{Sin}\left[c-\frac{a\,d}{b}\right]+2\,\text{Cos}[c]\,\text{SinIntegral}[d\,x]-\right.$$

$$\left.2\,\text{Cos}\left[c-\frac{a\,d}{b}\right]\text{SinIntegral}\left[\frac{a\,d}{b}+d\,x\right]\right)$$

- **Problem 38: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int\frac{\text{Sin}[c+d\,x]}{x^2\,(a+b\,x)^3}\,dx$$

Optimal (type 4, 299 leaves, 21 steps):

$$-\frac{d\,\text{Cos}[c+d\,x]}{2\,a^2\,(a+b\,x)}+\frac{d\,\text{Cos}[c]\,\text{CosIntegral}[d\,x]}{a^3}+\frac{2\,d\,\text{Cos}\left[c-\frac{a\,d}{b}\right]\text{CosIntegral}\left[\frac{a\,d}{b}+d\,x\right]}{a^3}-$$

$$\frac{3\,b\,\text{CosIntegral}[d\,x]\,\text{Sin}[c]}{a^4}+\frac{3\,b\,\text{CosIntegral}\left[\frac{a\,d}{b}+d\,x\right]\text{Sin}\left[c-\frac{a\,d}{b}\right]}{a^4}-\frac{d^2\,\text{CosIntegral}\left[\frac{a\,d}{b}+d\,x\right]\text{Sin}\left[c-\frac{a\,d}{b}\right]}{2\,a^2\,b}-$$

$$\frac{\text{Sin}[c+d\,x]}{a^3\,x}-\frac{b\,\text{Sin}[c+d\,x]}{2\,a^2\,(a+b\,x)^2}-\frac{2\,b\,\text{Sin}[c+d\,x]}{a^3\,(a+b\,x)}-\frac{3\,b\,\text{Cos}[c]\,\text{SinIntegral}[d\,x]}{a^4}-\frac{d\,\text{Sin}[c]\,\text{SinIntegral}[d\,x]}{a^3}+$$

$$\frac{3\,b\,\text{Cos}\left[c-\frac{a\,d}{b}\right]\text{SinIntegral}\left[\frac{a\,d}{b}+d\,x\right]}{a^4}-\frac{d^2\,\text{Cos}\left[c-\frac{a\,d}{b}\right]\text{SinIntegral}\left[\frac{a\,d}{b}+d\,x\right]}{2\,a^2\,b}-\frac{2\,d\,\text{Sin}\left[c-\frac{a\,d}{b}\right]\text{SinIntegral}\left[\frac{a\,d}{b}+d\,x\right]}{a^3}$$

Result (type 4, 2557 leaves) :

$$-\frac{\left(2\,a^2+5\,a\,b\,x+2\,b^2\,x^2\right)\,\text{Cos}[d\,x]\,\text{Sin}[c]}{2\,a^3\,x\,(a+b\,x)^2}+$$

$$\frac{1}{4\,a^3}\,i\,\left(-4\,i\,b^2+a\,b\,d\right)\,\Bigg(\text{Cos}[c]\,\Bigg(\frac{1}{4\,b^2\,(a+b\,x)}e^{-\frac{i\,d\,(2\,a+b\,x)}{b}}\,\left(1+e^{\frac{2\,i\,a\,d}{b}}\right)\,\Bigg(i\,b\,\left(-1+e^{\frac{2\,i\,d\,(a+b\,x)}{b}}\right)+d\,e^{\frac{i\,d\,(a+b\,x)}{b}}\,(a+b\,x)\,\text{ExpIntegralEi}\Big[-\frac{i\,d\,(a+b\,x)}{b}\Big]+$$

$$d\,e^{\frac{i\,d\,(a+b\,x)}{b}}\,(a+b\,x)\,\text{ExpIntegralEi}\Big[\frac{i\,d\,(a+b\,x)}{b}\Big]\Bigg)+\frac{1}{4\,b^2\,(a+b\,x)}e^{-\frac{i\,d\,(2\,a+b\,x)}{b}}\,\left(-1+e^{\frac{2\,i\,a\,d}{b}}\right)$$

$$\Bigg(d\,e^{\frac{i\,d\,(a+b\,x)}{b}}\,(a+b\,x)\,\text{ExpIntegralEi}\Big[-\frac{i\,d\,(a+b\,x)}{b}\Big]-i\,\Bigg(b+b\,e^{\frac{2\,i\,d\,(a+b\,x)}{b}}-i\,d\,e^{\frac{i\,d\,(a+b\,x)}{b}}\,(a+b\,x)\,\text{ExpIntegralEi}\Big[\frac{i\,d\,(a+b\,x)}{b}\Big]\Bigg)\Bigg)\Bigg)+$$

$$\Bigg(-\frac{1}{4\,b^2\,(a+b\,x)}e^{-\frac{i\,d\,(2\,a+b\,x)}{b}}\,\left(1+e^{\frac{2\,i\,a\,d}{b}}\right)\,\Bigg(b+b\,e^{\frac{2\,i\,d\,(a+b\,x)}{b}}+i\,d\,e^{\frac{i\,d\,(a+b\,x)}{b}}\,(a+b\,x)\,\text{ExpIntegralEi}\Big[-\frac{i\,d\,(a+b\,x)}{b}\Big]-$$

$$i\,d\,e^{\frac{i\,d\,(a+b\,x)}{b}}\,(a+b\,x)\,\text{ExpIntegralEi}\Big[\frac{i\,d\,(a+b\,x)}{b}\Big]\Bigg)-\frac{1}{4\,b^2\,(a+b\,x)}e^{-\frac{i\,d\,(2\,a+b\,x)}{b}}\,\left(-1+e^{\frac{2\,i\,a\,d}{b}}\right)$$

$$\Bigg(b-b\,e^{\frac{2\,i\,d\,(a+b\,x)}{b}}+i\,d\,e^{\frac{i\,d\,(a+b\,x)}{b}}\,(a+b\,x)\,\text{ExpIntegralEi}\Big[-\frac{i\,d\,(a+b\,x)}{b}\Big]+i\,d\,e^{\frac{i\,d\,(a+b\,x)}{b}}\,(a+b\,x)\,\text{ExpIntegralEi}\Big[\frac{i\,d\,(a+b\,x)}{b}\Big]\Bigg)\Bigg)\,\text{Sin}[c]\Bigg)-$$

$$\frac{1}{4\,a^3}\,i\,\left(4\,i\,b^2+a\,b\,d\right)\,\Bigg(\text{Cos}[c]\,\Bigg(\frac{1}{4\,b^2\,(a+b\,x)}e^{-\frac{i\,d\,(2\,a+b\,x)}{b}}\,\left(1+e^{\frac{2\,i\,a\,d}{b}}\right)\,\Bigg(i\,b\,\left(-1+e^{\frac{2\,i\,d\,(a+b\,x)}{b}}\right)+d\,e^{\frac{i\,d\,(a+b\,x)}{b}}\,(a+b\,x)\,\text{ExpIntegralEi}\Big[-\frac{i\,d\,(a+b\,x)}{b}\Big]+$$

$$d\,e^{\frac{i\,d\,(a+b\,x)}{b}}\,(a+b\,x)\,\text{ExpIntegralEi}\Big[\frac{i\,d\,(a+b\,x)}{b}\Big]\Bigg)+\frac{1}{4\,b^2\,(a+b\,x)}e^{-\frac{i\,d\,(2\,a+b\,x)}{b}}\,\left(-1+e^{\frac{2\,i\,a\,d}{b}}\right)$$

$$\Bigg(d\,e^{\frac{i\,d\,(a+b\,x)}{b}}\,(a+b\,x)\,\text{ExpIntegralEi}\Big[-\frac{i\,d\,(a+b\,x)}{b}\Big]-i\,\Bigg(b+b\,e^{\frac{2\,i\,d\,(a+b\,x)}{b}}-i\,d\,e^{\frac{i\,d\,(a+b\,x)}{b}}\,(a+b\,x)\,\text{ExpIntegralEi}\Big[\frac{i\,d\,(a+b\,x)}{b}\Big]\Bigg)\Bigg)\Bigg)+$$

$$\Bigg(-\frac{1}{4\,b^2\,(a+b\,x)}e^{-\frac{i\,d\,(2\,a+b\,x)}{b}}\,\left(1+e^{\frac{2\,i\,a\,d}{b}}\right)\,\Bigg(b+b\,e^{\frac{2\,i\,d\,(a+b\,x)}{b}}+i\,d\,e^{\frac{i\,d\,(a+b\,x)}{b}}\,(a+b\,x)\,\text{ExpIntegralEi}\Big[-\frac{i\,d\,(a+b\,x)}{b}\Big]-$$

$$i\,d\,e^{\frac{i\,d\,(a+b\,x)}{b}}\,(a+b\,x)\,\text{ExpIntegralEi}\Big[\frac{i\,d\,(a+b\,x)}{b}\Big]\Bigg)-\frac{1}{4\,b^2\,(a+b\,x)}e^{-\frac{i\,d\,(2\,a+b\,x)}{b}}\,\left(-1+e^{\frac{2\,i\,a\,d}{b}}\right)$$

$$\Bigg(b-b\,e^{\frac{2\,i\,d\,(a+b\,x)}{b}}+i\,d\,e^{\frac{i\,d\,(a+b\,x)}{b}}\,(a+b\,x)\,\text{ExpIntegralEi}\Big[-\frac{i\,d\,(a+b\,x)}{b}\Big]+i\,d\,e^{\frac{i\,d\,(a+b\,x)}{b}}\,(a+b\,x)\,\text{ExpIntegralEi}\Big[\frac{i\,d\,(a+b\,x)}{b}\Big]\Bigg)\Bigg)\,\text{Sin}[c]\Bigg)+$$

$$\frac{1}{4\,a^3}\,\left(-4\,i\,b^2+a\,b\,d\right)\,\Bigg(\text{Cos}[c]\,\Bigg(-\frac{1}{4\,b^2\,(a+b\,x)}e^{-\frac{i\,d\,(2\,a+b\,x)}{b}}\,\left(1+e^{\frac{2\,i\,a\,d}{b}}\right)\,\Bigg(b+b\,e^{\frac{2\,i\,d\,(a+b\,x)}{b}}+i\,d\,e^{\frac{i\,d\,(a+b\,x)}{b}}\,(a+b\,x)\,\text{ExpIntegralEi}\Big[-\frac{i\,d\,(a+b\,x)}{b}\Big]-$$

$$i\,d\,e^{\frac{i\,d\,(a+b\,x)}{b}}\,(a+b\,x)\,\text{ExpIntegralEi}\Big[\frac{i\,d\,(a+b\,x)}{b}\Big]\Bigg)-\frac{1}{4\,b^2\,(a+b\,x)}e^{-\frac{i\,d\,(2\,a+b\,x)}{b}}\,\left(-1+e^{\frac{2\,i\,a\,d}{b}}\right)$$

$$\Bigg(b-b\,e^{\frac{2\,i\,d\,(a+b\,x)}{b}}+i\,d\,e^{\frac{i\,d\,(a+b\,x)}{b}}\,(a+b\,x)\,\text{ExpIntegralEi}\Big[-\frac{i\,d\,(a+b\,x)}{b}\Big]+i\,d\,e^{\frac{i\,d\,(a+b\,x)}{b}}\,(a+b\,x)\,\text{ExpIntegralEi}\Big[\frac{i\,d\,(a+b\,x)}{b}\Big]\Bigg)\Bigg)-$$

$$\Bigg(\frac{1}{4\,b^2\,(a+b\,x)}e^{-\frac{i\,d\,(2\,a+b\,x)}{b}}\,\left(1+e^{\frac{2\,i\,a\,d}{b}}\right)\,\Bigg(i\,b\,\left(-1+e^{\frac{2\,i\,d\,(a+b\,x)}{b}}\right)+d\,e^{\frac{i\,d\,(a+b\,x)}{b}}\,(a+b\,x)\,\text{ExpIntegralEi}\Big[-\frac{i\,d\,(a+b\,x)}{b}\Big]+$$

$$d\, e^{\frac{i d (a+b x)}{b}} (a+b x) \text{ExpIntegralEi}\left[\frac{i d (a+b x)}{b}\right]\Bigg) + \frac{1}{4 b^2 (a+b x)} e^{-\frac{i d (2 a+b x)}{b}} \left(-1+e^{\frac{2 i a d}{b}}\right)$$

$$\Bigg(d\, e^{\frac{i d (a+b x)}{b}} (a+b x) \text{ExpIntegralEi}\left[-\frac{i d (a+b x)}{b}\right] - i \left(b + b\, e^{\frac{2 i d (a+b x)}{b}} - i d\, e^{\frac{i d (a+b x)}{b}} (a+b x) \text{ExpIntegralEi}\left[\frac{i d (a+b x)}{b}\right]\right)\Bigg)\Bigg) \text{Sin}[c]\Bigg) +$$

$$\frac{1}{4 a^3} \left(4 i b^2 + a b d\right) \Bigg(\text{Cos}[c] \Bigg(-\frac{1}{4 b^2 (a+b x)} e^{-\frac{i d (2 a+b x)}{b}} \left(1+e^{\frac{2 i a d}{b}}\right) \Bigg(b + b\, e^{\frac{2 i d (a+b x)}{b}} + i d\, e^{\frac{i d (a+b x)}{b}} (a+b x) \text{ExpIntegralEi}\left[-\frac{i d (a+b x)}{b}\right] -$$

$$i d\, e^{\frac{i d (a+b x)}{b}} (a+b x) \text{ExpIntegralEi}\left[\frac{i d (a+b x)}{b}\right]\Bigg) - \frac{1}{4 b^2 (a+b x)} e^{-\frac{i d (2 a+b x)}{b}} \left(-1+e^{\frac{2 i a d}{b}}\right)$$

$$\Bigg(b - b\, e^{\frac{2 i d (a+b x)}{b}} + i d\, e^{\frac{i d (a+b x)}{b}} (a+b x) \text{ExpIntegralEi}\left[-\frac{i d (a+b x)}{b}\right] + i d\, e^{\frac{i d (a+b x)}{b}} (a+b x) \text{ExpIntegralEi}\left[\frac{i d (a+b x)}{b}\right]\Bigg)\Bigg) -$$

$$\Bigg(\frac{1}{4 b^2 (a+b x)} e^{-\frac{i d (2 a+b x)}{b}} \left(1+e^{\frac{2 i a d}{b}}\right) \Bigg(i b \left(-1+e^{\frac{2 i d (a+b x)}{b}}\right) + d\, e^{\frac{i d (a+b x)}{b}} (a+b x) \text{ExpIntegralEi}\left[-\frac{i d (a+b x)}{b}\right] +$$

$$d\, e^{\frac{i d (a+b x)}{b}} (a+b x) \text{ExpIntegralEi}\left[\frac{i d (a+b x)}{b}\right]\Bigg) + \frac{1}{4 b^2 (a+b x)} e^{-\frac{i d (2 a+b x)}{b}} \left(-1+e^{\frac{2 i a d}{b}}\right)$$

$$\Bigg(d\, e^{\frac{i d (a+b x)}{b}} (a+b x) \text{ExpIntegralEi}\left[-\frac{i d (a+b x)}{b}\right] - i \left(b + b\, e^{\frac{2 i d (a+b x)}{b}} - i d\, e^{\frac{i d (a+b x)}{b}} (a+b x) \text{ExpIntegralEi}\left[\frac{i d (a+b x)}{b}\right]\right)\Bigg)\Bigg) \text{Sin}[c]\Bigg) -$$

$$\frac{\left(2 a^2 + 5 a b x + 2 b^2 x^2\right) \text{Cos}[c] \, \text{Sin}[d x]}{2 a^3 x (a+b x)^2} + \frac{1}{2 a^4} \Bigg(2 a d\, \text{Cos}[c] \, \text{CosIntegral}[d x] -$$

6
b
$\text{CosIntegral}[d x]$
$\text{Sin}[c] + 6$
b
$\text{CosIntegral}\left[\frac{a d}{b} + d x\right]$
$\text{Sin}\left[c - \frac{a d}{b}\right] - 6$
b
$\text{Cos}[c]$
$\text{SinIntegral}[d x] - 2$
a
$d\, \text{Sin}[c]$
$\text{SinIntegral}[d x] + 6$
$b\, \text{Cos}\left[c - \frac{a d}{b}\right]$
$\text{SinIntegral}\left[\frac{a d}{b} + d x\right]\Bigg)$

- **Problem 57: Result unnecessarily involves imaginary or complex numbers.**

$$\int \frac{x^4 \operatorname{Sin}[c+d x]}{a+b x^2} \, dx$$

Optimal (type 4, 273 leaves, 14 steps):

$$\frac{2 \operatorname{Cos}[c+d x]}{b d^3}+\frac{a \operatorname{Cos}[c+d x]}{b^2 d}-\frac{x^2 \operatorname{Cos}[c+d x]}{b d}-\frac{(-a)^{3/2} \operatorname{CosIntegral}\left[\frac{\sqrt{-a} d}{\sqrt{b}}+d x\right] \operatorname{Sin}\left[c-\frac{\sqrt{-a} d}{\sqrt{b}}\right]}{2 b^{5/2}}+\frac{(-a)^{3/2} \operatorname{CosIntegral}\left[\frac{\sqrt{-a} d}{\sqrt{b}}-d x\right] \operatorname{Sin}\left[c+\frac{\sqrt{-a} d}{\sqrt{b}}\right]}{2 b^{5/2}}+\frac{2 x \operatorname{Sin}[c+d x]}{b d^2}-\frac{(-a)^{3/2} \operatorname{Cos}\left[c+\frac{\sqrt{-a} d}{\sqrt{b}}\right] \operatorname{SinIntegral}\left[\frac{\sqrt{-a} d}{\sqrt{b}}-d x\right]}{2 b^{5/2}}-\frac{(-a)^{3/2} \operatorname{Cos}\left[c-\frac{\sqrt{-a} d}{\sqrt{b}}\right] \operatorname{SinIntegral}\left[\frac{\sqrt{-a} d}{\sqrt{b}}+d x\right]}{2 b^{5/2}}$$

Result (type 4, 275 leaves):

$$\frac{1}{2 b^{5/2} d^3}\left(4 b^{3/2} \operatorname{Cos}[c+d x]+2 a \sqrt{b} d^2 \operatorname{Cos}[c+d x]-2 b^{3/2} d^2 x^2 \operatorname{Cos}[c+d x]+i a^{3/2} d^3 \operatorname{CosIntegral}\left[d\left(\frac{i \sqrt{a}}{\sqrt{b}}+x\right)\right] \operatorname{Sin}\left[c-\frac{i \sqrt{a} d}{\sqrt{b}}\right]-i a^{3/2} d^3 \operatorname{CosIntegral}\left[d\left(-\frac{i \sqrt{a}}{\sqrt{b}}+x\right)\right] \operatorname{Sin}\left[c+\frac{i \sqrt{a} d}{\sqrt{b}}\right]+4 b^{3/2} d x \operatorname{Sin}[c+d x]+i a^{3/2} d^3 \operatorname{Cos}\left[c-\frac{i \sqrt{a} d}{\sqrt{b}}\right] \operatorname{SinIntegral}\left[d\left(\frac{i \sqrt{a}}{\sqrt{b}}+x\right)\right]+i a^{3/2} d^3 \operatorname{Cos}\left[c+\frac{i \sqrt{a} d}{\sqrt{b}}\right] \operatorname{SinIntegral}\left[\frac{i \sqrt{a} d}{\sqrt{b}}-d x\right]\right)$$

- **Problem 58: Result unnecessarily involves imaginary or complex numbers.**

$$\int \frac{x^3 \operatorname{Sin}[c+d x]}{a+b x^2} \, dx$$

Optimal (type 4, 209 leaves, 12 steps):

$$-\frac{x \operatorname{Cos}[c+d x]}{b d}-\frac{a \operatorname{CosIntegral}\left[\frac{\sqrt{-a} d}{\sqrt{b}}+d x\right] \operatorname{Sin}\left[c-\frac{\sqrt{-a} d}{\sqrt{b}}\right]}{2 b^2}-\frac{a \operatorname{CosIntegral}\left[\frac{\sqrt{-a} d}{\sqrt{b}}-d x\right] \operatorname{Sin}\left[c+\frac{\sqrt{-a} d}{\sqrt{b}}\right]}{2 b^2}+\frac{\operatorname{Sin}[c+d x]}{b d^2}+\frac{a \operatorname{Cos}\left[c+\frac{\sqrt{-a} d}{\sqrt{b}}\right] \operatorname{SinIntegral}\left[\frac{\sqrt{-a} d}{\sqrt{b}}-d x\right]}{2 b^2}-\frac{a \operatorname{Cos}\left[c-\frac{\sqrt{-a} d}{\sqrt{b}}\right] \operatorname{SinIntegral}\left[\frac{\sqrt{-a} d}{\sqrt{b}}+d x\right]}{2 b^2}$$

Result (type 4, 202 leaves):

$$-\frac{1}{2 b^2 d^2}\left(2 b d x \operatorname{Cos}[c+d x]+a d^2 \operatorname{CosIntegral}\left[d\left(\frac{i \sqrt{a}}{\sqrt{b}}+x\right)\right] \operatorname{Sin}\left[c-\frac{i \sqrt{a} d}{\sqrt{b}}\right]+a d^2 \operatorname{CosIntegral}\left[d\left(-\frac{i \sqrt{a}}{\sqrt{b}}+x\right)\right] \operatorname{Sin}\left[c+\frac{i \sqrt{a} d}{\sqrt{b}}\right]-2 b \operatorname{Sin}[c+d x]+a d^2 \operatorname{Cos}\left[c-\frac{i \sqrt{a} d}{\sqrt{b}}\right] \operatorname{SinIntegral}\left[d\left(\frac{i \sqrt{a}}{\sqrt{b}}+x\right)\right]-a d^2 \operatorname{Cos}\left[c+\frac{i \sqrt{a} d}{\sqrt{b}}\right] \operatorname{SinIntegral}\left[\frac{i \sqrt{a} d}{\sqrt{b}}-d x\right]\right)$$

Problem 59: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{x^2 \operatorname{Sin}[c+d x]}{a+b x^2} \, dx$$

Optimal (type 4, 227 leaves, 11 steps):

$$-\frac{\operatorname{Cos}[c+d x]}{b d}-\frac{\sqrt{-a}\ \operatorname{CosIntegral}\left[\frac{\sqrt{-a}\ d}{\sqrt{b}}+d x\right] \operatorname{Sin}\left[c-\frac{\sqrt{-a}\ d}{\sqrt{b}}\right]}{2 b^{3/2}}+\frac{\sqrt{-a}\ \operatorname{CosIntegral}\left[\frac{\sqrt{-a}\ d}{\sqrt{b}}-d x\right] \operatorname{Sin}\left[c+\frac{\sqrt{-a}\ d}{\sqrt{b}}\right]}{2 b^{3/2}}-\frac{\sqrt{-a}\ \operatorname{Cos}\left[c+\frac{\sqrt{-a}\ d}{\sqrt{b}}\right] \operatorname{SinIntegral}\left[\frac{\sqrt{-a}\ d}{\sqrt{b}}-d x\right]}{2 b^{3/2}}-\frac{\sqrt{-a}\ \operatorname{Cos}\left[c-\frac{\sqrt{-a}\ d}{\sqrt{b}}\right] \operatorname{SinIntegral}\left[\frac{\sqrt{-a}\ d}{\sqrt{b}}+d x\right]}{2 b^{3/2}}$$

Result (type 4, 216 leaves):

$$-\frac{1}{2 b^{3/2} d}\left(2 \sqrt{b}\ \operatorname{Cos}[c+d x]+i \sqrt{a}\ d \operatorname{CosIntegral}\left[d\left(\frac{i \sqrt{a}}{\sqrt{b}}+x\right)\right] \operatorname{Sin}\left[c-\frac{i \sqrt{a}\ d}{\sqrt{b}}\right]-i \sqrt{a}\ d \operatorname{CosIntegral}\left[d\left(-\frac{i \sqrt{a}}{\sqrt{b}}+x\right)\right] \operatorname{Sin}\left[c+\frac{i \sqrt{a}\ d}{\sqrt{b}}\right]+ i \sqrt{a}\ d \operatorname{Cos}\left[c-\frac{i \sqrt{a}\ d}{\sqrt{b}}\right] \operatorname{SinIntegral}\left[d\left(\frac{i \sqrt{a}}{\sqrt{b}}+x\right)\right]+i \sqrt{a}\ d \operatorname{Cos}\left[c+\frac{i \sqrt{a}\ d}{\sqrt{b}}\right] \operatorname{SinIntegral}\left[\frac{i \sqrt{a}\ d}{\sqrt{b}}-d x\right]\right)$$

Problem 60: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{x \operatorname{Sin}[c+d x]}{a+b x^2} \, dx$$

Optimal (type 4, 177 leaves, 8 steps):

$$\frac{\operatorname{CosIntegral}\left[\frac{\sqrt{-a}\ d}{\sqrt{b}}+d x\right] \operatorname{Sin}\left[c-\frac{\sqrt{-a}\ d}{\sqrt{b}}\right]}{2 b}+\frac{\operatorname{CosIntegral}\left[\frac{\sqrt{-a}\ d}{\sqrt{b}}-d x\right] \operatorname{Sin}\left[c+\frac{\sqrt{-a}\ d}{\sqrt{b}}\right]}{2 b}-\frac{\operatorname{Cos}\left[c+\frac{\sqrt{-a}\ d}{\sqrt{b}}\right] \operatorname{SinIntegral}\left[\frac{\sqrt{-a}\ d}{\sqrt{b}}-d x\right]}{2 b}+\frac{\operatorname{Cos}\left[c-\frac{\sqrt{-a}\ d}{\sqrt{b}}\right] \operatorname{SinIntegral}\left[\frac{\sqrt{-a}\ d}{\sqrt{b}}+d x\right]}{2 b}$$

Result (type 4, 163 leaves):

$$\frac{1}{2 b}\left(\operatorname{CosIntegral}\left[d\left(\frac{i \sqrt{a}}{\sqrt{b}}+x\right)\right] \operatorname{Sin}\left[c-\frac{i \sqrt{a}\ d}{\sqrt{b}}\right]+\operatorname{CosIntegral}\left[d\left(-\frac{i \sqrt{a}}{\sqrt{b}}+x\right)\right] \operatorname{Sin}\left[c+\frac{i \sqrt{a}\ d}{\sqrt{b}}\right]+ \operatorname{Cos}\left[c-\frac{i \sqrt{a}\ d}{\sqrt{b}}\right] \operatorname{SinIntegral}\left[d\left(\frac{i \sqrt{a}}{\sqrt{b}}+x\right)\right]-\operatorname{Cos}\left[c+\frac{i \sqrt{a}\ d}{\sqrt{b}}\right] \operatorname{SinIntegral}\left[\frac{i \sqrt{a}\ d}{\sqrt{b}}-d x\right]\right)$$

Problem 61: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{\operatorname{Sin}[c+d x]}{a+b x^2} \, dx$$

Optimal (type 4, 213 leaves, 8 steps):

$$-\frac{\text{CosIntegral}\left[\frac{\sqrt{-a}\,d}{\sqrt{b}}+d\,x\right]\,\text{Sin}\left[c-\frac{\sqrt{-a}\,d}{\sqrt{b}}\right]}{2\,\sqrt{-a}\,\sqrt{b}}+\frac{\text{CosIntegral}\left[\frac{\sqrt{-a}\,d}{\sqrt{b}}-d\,x\right]\,\text{Sin}\left[c+\frac{\sqrt{-a}\,d}{\sqrt{b}}\right]}{2\,\sqrt{-a}\,\sqrt{b}}-\frac{\text{Cos}\left[c+\frac{\sqrt{-a}\,d}{\sqrt{b}}\right]\,\text{SinIntegral}\left[\frac{\sqrt{-a}\,d}{\sqrt{b}}-d\,x\right]}{2\,\sqrt{-a}\,\sqrt{b}}-\frac{\text{Cos}\left[c-\frac{\sqrt{-a}\,d}{\sqrt{b}}\right]\,\text{SinIntegral}\left[\frac{\sqrt{-a}\,d}{\sqrt{b}}+d\,x\right]}{2\,\sqrt{-a}\,\sqrt{b}}$$

Result (type 4, 172 leaves):

$$\frac{1}{2\,\sqrt{a}\,\sqrt{b}}\,i\,\left(\text{CosIntegral}\left[d\,\left(\frac{i\,\sqrt{a}}{\sqrt{b}}+x\right)\right]\,\text{Sin}\left[c-\frac{i\,\sqrt{a}\,d}{\sqrt{b}}\right]-\text{CosIntegral}\left[d\,\left(-\frac{i\,\sqrt{a}}{\sqrt{b}}+x\right)\right]\,\text{Sin}\left[c+\frac{i\,\sqrt{a}\,d}{\sqrt{b}}\right]+\text{Cos}\left[c-\frac{i\,\sqrt{a}\,d}{\sqrt{b}}\right]\,\text{SinIntegral}\left[d\,\left(\frac{i\,\sqrt{a}}{\sqrt{b}}+x\right)\right]+\text{Cos}\left[c+\frac{i\,\sqrt{a}\,d}{\sqrt{b}}\right]\,\text{SinIntegral}\left[\frac{i\,\sqrt{a}\,d}{\sqrt{b}}-d\,x\right]\right)$$

- **Problem 62: Result unnecessarily involves imaginary or complex numbers.**

$$\int\frac{\text{Sin}[c+d\,x]}{x\,\left(a+b\,x^2\right)}\,dx$$

Optimal (type 4, 197 leaves, 13 steps):

$$\frac{\text{CosIntegral}[d\,x]\,\text{Sin}[c]}{a}-\frac{\text{CosIntegral}\left[\frac{\sqrt{-a}\,d}{\sqrt{b}}+d\,x\right]\,\text{Sin}\left[c-\frac{\sqrt{-a}\,d}{\sqrt{b}}\right]}{2\,a}-\frac{\text{CosIntegral}\left[\frac{\sqrt{-a}\,d}{\sqrt{b}}-d\,x\right]\,\text{Sin}\left[c+\frac{\sqrt{-a}\,d}{\sqrt{b}}\right]}{2\,a}+\frac{\text{Cos}[c]\,\text{SinIntegral}[d\,x]}{a}+\frac{\text{Cos}\left[c+\frac{\sqrt{-a}\,d}{\sqrt{b}}\right]\,\text{SinIntegral}\left[\frac{\sqrt{-a}\,d}{\sqrt{b}}-d\,x\right]}{2\,a}-\frac{\text{Cos}\left[c-\frac{\sqrt{-a}\,d}{\sqrt{b}}\right]\,\text{SinIntegral}\left[\frac{\sqrt{-a}\,d}{\sqrt{b}}+d\,x\right]}{2\,a}$$

Result (type 4, 179 leaves):

$$-\frac{1}{2\,a}\left(-2\,\text{CosIntegral}[d\,x]\,\text{Sin}[c]+\text{CosIntegral}\left[d\,\left(\frac{i\,\sqrt{a}}{\sqrt{b}}+x\right)\right]\,\text{Sin}\left[c-\frac{i\,\sqrt{a}\,d}{\sqrt{b}}\right]+\text{CosIntegral}\left[d\,\left(-\frac{i\,\sqrt{a}}{\sqrt{b}}+x\right)\right]\,\text{Sin}\left[c+\frac{i\,\sqrt{a}\,d}{\sqrt{b}}\right]-2\,\text{Cos}[c]\,\text{SinIntegral}[d\,x]+\text{Cos}\left[c-\frac{i\,\sqrt{a}\,d}{\sqrt{b}}\right]\,\text{SinIntegral}\left[d\,\left(\frac{i\,\sqrt{a}}{\sqrt{b}}+x\right)\right]-\text{Cos}\left[c+\frac{i\,\sqrt{a}\,d}{\sqrt{b}}\right]\,\text{SinIntegral}\left[\frac{i\,\sqrt{a}\,d}{\sqrt{b}}-d\,x\right]\right)$$

- **Problem 63: Result unnecessarily involves imaginary or complex numbers.**

$$\int\frac{\text{Sin}[c+d\,x]}{x^2\,\left(a+b\,x^2\right)}\,dx$$

Optimal (type 4, 250 leaves, 14 steps):

$$\frac{d\,\text{Cos}[c]\,\text{CosIntegral}[d\,x]}{a}-\frac{\sqrt{b}\,\text{CosIntegral}\left[\frac{\sqrt{-a}\,d}{\sqrt{b}}+d\,x\right]\text{Sin}\left[c-\frac{\sqrt{-a}\,d}{\sqrt{b}}\right]}{2\,(-a)^{3/2}}+\frac{\sqrt{b}\,\text{CosIntegral}\left[\frac{\sqrt{-a}\,d}{\sqrt{b}}-d\,x\right]\text{Sin}\left[c+\frac{\sqrt{-a}\,d}{\sqrt{b}}\right]}{2\,(-a)^{3/2}}-\frac{\text{Sin}[c+d\,x]}{a\,x}-$$

$$\frac{d\,\text{Sin}[c]\,\text{SinIntegral}[d\,x]}{a}-\frac{\sqrt{b}\,\text{Cos}\left[c+\frac{\sqrt{-a}\,d}{\sqrt{b}}\right]\text{SinIntegral}\left[\frac{\sqrt{-a}\,d}{\sqrt{b}}-d\,x\right]}{2\,(-a)^{3/2}}-\frac{\sqrt{b}\,\text{Cos}\left[c-\frac{\sqrt{-a}\,d}{\sqrt{b}}\right]\text{SinIntegral}\left[\frac{\sqrt{-a}\,d}{\sqrt{b}}+d\,x\right]}{2\,(-a)^{3/2}}$$

Result (type 4, 238 leaves) :

$$\frac{d\,\text{Cos}[c]\,\text{CosIntegral}[d\,x]}{a}-\frac{1}{2\,a^{3/2}\,x}$$

$$\mathbb{i}\left(\sqrt{b}\,x\,\text{CosIntegral}\left[d\left(\frac{\mathbb{i}\sqrt{a}}{\sqrt{b}}+x\right)\right]\text{Sin}\left[c-\frac{\mathbb{i}\sqrt{a}\,d}{\sqrt{b}}\right]-\sqrt{b}\,x\,\text{CosIntegral}\left[d\left(-\frac{\mathbb{i}\sqrt{a}}{\sqrt{b}}+x\right)\right]\text{Sin}\left[c+\frac{\mathbb{i}\sqrt{a}\,d}{\sqrt{b}}\right]-2\,\mathbb{i}\sqrt{a}\,\text{Sin}[c+d\,x]-2\,\mathbb{i}\sqrt{a}\,d\,x\right.$$

$$\left.\text{Sin}[c]\,\text{SinIntegral}[d\,x]+\sqrt{b}\,x\,\text{Cos}\left[c-\frac{\mathbb{i}\sqrt{a}\,d}{\sqrt{b}}\right]\text{SinIntegral}\left[d\left(\frac{\mathbb{i}\sqrt{a}}{\sqrt{b}}+x\right)\right]+\sqrt{b}\,x\,\text{Cos}\left[c+\frac{\mathbb{i}\sqrt{a}\,d}{\sqrt{b}}\right]\text{SinIntegral}\left[\frac{\mathbb{i}\sqrt{a}\,d}{\sqrt{b}}-d\,x\right]\right)$$

- **Problem 64: Result unnecessarily involves imaginary or complex numbers.**

$$\int\frac{\text{Sin}[c+d\,x]}{x^3\,(a+b\,x^2)}\,dx$$

Optimal (type 4, 270 leaves, 18 steps) :

$$-\frac{d\,\text{Cos}[c+d\,x]}{2\,a\,x}-\frac{b\,\text{CosIntegral}[d\,x]\,\text{Sin}[c]}{a^2}-\frac{d^2\,\text{CosIntegral}[d\,x]\,\text{Sin}[c]}{2\,a}+\frac{b\,\text{CosIntegral}\left[\frac{\sqrt{-a}\,d}{\sqrt{b}}+d\,x\right]\text{Sin}\left[c-\frac{\sqrt{-a}\,d}{\sqrt{b}}\right]}{2\,a^2}+$$

$$\frac{b\,\text{CosIntegral}\left[\frac{\sqrt{-a}\,d}{\sqrt{b}}-d\,x\right]\text{Sin}\left[c+\frac{\sqrt{-a}\,d}{\sqrt{b}}\right]}{2\,a^2}-\frac{\text{Sin}[c+d\,x]}{2\,a\,x^2}-\frac{b\,\text{Cos}[c]\,\text{SinIntegral}[d\,x]}{a^2}-$$

$$\frac{d^2\,\text{Cos}[c]\,\text{SinIntegral}[d\,x]}{2\,a}-\frac{b\,\text{Cos}\left[c+\frac{\sqrt{-a}\,d}{\sqrt{b}}\right]\text{SinIntegral}\left[\frac{\sqrt{-a}\,d}{\sqrt{b}}-d\,x\right]}{2\,a^2}+\frac{b\,\text{Cos}\left[c-\frac{\sqrt{-a}\,d}{\sqrt{b}}\right]\text{SinIntegral}\left[\frac{\sqrt{-a}\,d}{\sqrt{b}}+d\,x\right]}{2\,a^2}$$

Result (type 4, 247 leaves) :

$$-\frac{1}{2\,a^2\,x^2}\left(a\,d\,x\,\text{Cos}[c+d\,x]+(2\,b+a\,d^2)\,x^2\,\text{CosIntegral}[d\,x]\,\text{Sin}[c]-b\,x^2\,\text{CosIntegral}\left[d\left(\frac{\mathbb{i}\sqrt{a}}{\sqrt{b}}+x\right)\right]\text{Sin}\left[c-\frac{\mathbb{i}\sqrt{a}\,d}{\sqrt{b}}\right]-\right.$$

$$b\,x^2\,\text{CosIntegral}\left[d\left(-\frac{\mathbb{i}\sqrt{a}}{\sqrt{b}}+x\right)\right]\text{Sin}\left[c+\frac{\mathbb{i}\sqrt{a}\,d}{\sqrt{b}}\right]+a\,\text{Sin}[c+d\,x]+2\,b\,x^2\,\text{Cos}[c]\,\text{SinIntegral}[d\,x]+a\,d^2\,x^2\,\text{Cos}[c]\,\text{SinIntegral}[d\,x]-$$

$$\left.b\,x^2\,\text{Cos}\left[c-\frac{\mathbb{i}\sqrt{a}\,d}{\sqrt{b}}\right]\text{SinIntegral}\left[d\left(\frac{\mathbb{i}\sqrt{a}}{\sqrt{b}}+x\right)\right]+b\,x^2\,\text{Cos}\left[c+\frac{\mathbb{i}\sqrt{a}\,d}{\sqrt{b}}\right]\text{SinIntegral}\left[\frac{\mathbb{i}\sqrt{a}\,d}{\sqrt{b}}-d\,x\right]\right)$$

Problem 65: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{x^4 \sin[c+d x]}{\left(a+b x^2\right)^2} \, dx$$

Optimal (type 4, 450 leaves, 24 steps):

$$-\frac{\cos[c+d x]}{b^2 d}-\frac{a d \cos\left[c+\frac{\sqrt{-a}\, d}{\sqrt{b}}\right] \text{CosIntegral}\left[\frac{\sqrt{-a}\, d}{\sqrt{b}}-d x\right]}{4 b^3}-\frac{a d \cos\left[c-\frac{\sqrt{-a}\, d}{\sqrt{b}}\right] \text{CosIntegral}\left[\frac{\sqrt{-a}\, d}{\sqrt{b}}+d x\right]}{4 b^3}-\frac{3 \sqrt{-a}\, \text{CosIntegral}\left[\frac{\sqrt{-a}\, d}{\sqrt{b}}+d x\right] \sin\left[c-\frac{\sqrt{-a}\, d}{\sqrt{b}}\right]}{4 b^{5/2}}+\frac{3 \sqrt{-a}\, \text{CosIntegral}\left[\frac{\sqrt{-a}\, d}{\sqrt{b}}-d x\right] \sin\left[c+\frac{\sqrt{-a}\, d}{\sqrt{b}}\right]}{4 b^{5/2}}+\frac{x \sin[c+d x]}{2 b^2}-\frac{x^3 \sin[c+d x]}{2 b \left(a+b x^2\right)}-\frac{3 \sqrt{-a}\, \cos\left[c+\frac{\sqrt{-a}\, d}{\sqrt{b}}\right] \text{SinIntegral}\left[\frac{\sqrt{-a}\, d}{\sqrt{b}}-d x\right]}{4 b^{5/2}}-\frac{a d \sin\left[c+\frac{\sqrt{-a}\, d}{\sqrt{b}}\right] \text{SinIntegral}\left[\frac{\sqrt{-a}\, d}{\sqrt{b}}-d x\right]}{4 b^3}-\frac{3 \sqrt{-a}\, \cos\left[c-\frac{\sqrt{-a}\, d}{\sqrt{b}}\right] \text{SinIntegral}\left[\frac{\sqrt{-a}\, d}{\sqrt{b}}+d x\right]}{4 b^{5/2}}+\frac{a d \sin\left[c-\frac{\sqrt{-a}\, d}{\sqrt{b}}\right] \text{SinIntegral}\left[\frac{\sqrt{-a}\, d}{\sqrt{b}}+d x\right]}{4 b^3}$$

Result (type 4, 632 leaves):

$$-\frac{1}{4 b^3 d \left(a+b x^2\right)}\Bigg(4 a b \cos[c+d x]+4 b^2 x^2 \cos[c+d x]+\sqrt{a}\, d \left(a+b x^2\right) \text{CosIntegral}\left[d \left(\frac{i \sqrt{a}}{\sqrt{b}}+x\right)\right] \left(\sqrt{a}\, d \cos\left[c-\frac{i \sqrt{a}\, d}{\sqrt{b}}\right]+3 i \sqrt{b} \sin\left[c-\frac{i \sqrt{a}\, d}{\sqrt{b}}\right]\right)+$$
$$\sqrt{a}\, d \left(a+b x^2\right) \text{CosIntegral}\left[d \left(-\frac{i \sqrt{a}}{\sqrt{b}}+x\right)\right] \left(\sqrt{a}\, d \cos\left[c+\frac{i \sqrt{a}\, d}{\sqrt{b}}\right]-3 i \sqrt{b} \sin\left[c+\frac{i \sqrt{a}\, d}{\sqrt{b}}\right]\right)-2 a b d x \sin[c+d x]+$$
$$3 i a^{3/2} \sqrt{b}\, d \cos\left[c-\frac{i \sqrt{a}\, d}{\sqrt{b}}\right] \text{SinIntegral}\left[d \left(\frac{i \sqrt{a}}{\sqrt{b}}+x\right)\right]+3 i \sqrt{a}\, b^{3/2} d x^2 \cos\left[c-\frac{i \sqrt{a}\, d}{\sqrt{b}}\right] \text{SinIntegral}\left[d \left(\frac{i \sqrt{a}}{\sqrt{b}}+x\right)\right]-$$
$$a^2 d^2 \sin\left[c-\frac{i \sqrt{a}\, d}{\sqrt{b}}\right] \text{SinIntegral}\left[d \left(\frac{i \sqrt{a}}{\sqrt{b}}+x\right)\right]-a b d^2 x^2 \sin\left[c-\frac{i \sqrt{a}\, d}{\sqrt{b}}\right] \text{SinIntegral}\left[d \left(\frac{i \sqrt{a}}{\sqrt{b}}+x\right)\right]+$$
$$3 i a^{3/2} \sqrt{b}\, d \cos\left[c+\frac{i \sqrt{a}\, d}{\sqrt{b}}\right] \text{SinIntegral}\left[\frac{i \sqrt{a}\, d}{\sqrt{b}}-d x\right]+3 i \sqrt{a}\, b^{3/2} d x^2 \cos\left[c+\frac{i \sqrt{a}\, d}{\sqrt{b}}\right] \text{SinIntegral}\left[\frac{i \sqrt{a}\, d}{\sqrt{b}}-d x\right]+$$
$$a^2 d^2 \sin\left[c+\frac{i \sqrt{a}\, d}{\sqrt{b}}\right] \text{SinIntegral}\left[\frac{i \sqrt{a}\, d}{\sqrt{b}}-d x\right]+a b d^2 x^2 \sin\left[c+\frac{i \sqrt{a}\, d}{\sqrt{b}}\right] \text{SinIntegral}\left[\frac{i \sqrt{a}\, d}{\sqrt{b}}-d x\right]\Bigg)$$

Problem 66: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{x^3 \operatorname{Sin}[c+d x]}{\left(a+b x^2\right)^2} \, dx$$

Optimal (type 4, 431 leaves, 20 steps):

$$\frac{\sqrt{-a}\, d \operatorname{Cos}\left[c+\frac{\sqrt{-a}\, d}{\sqrt{b}}\right] \operatorname{CosIntegral}\left[\frac{\sqrt{-a}\, d}{\sqrt{b}}-d x\right]}{4 b^{5/2}}-\frac{\sqrt{-a}\, d \operatorname{Cos}\left[c-\frac{\sqrt{-a}\, d}{\sqrt{b}}\right] \operatorname{CosIntegral}\left[\frac{\sqrt{-a}\, d}{\sqrt{b}}+d x\right]}{4 b^{5/2}}+\frac{\operatorname{CosIntegral}\left[\frac{\sqrt{-a}\, d}{\sqrt{b}}+d x\right] \operatorname{Sin}\left[c-\frac{\sqrt{-a}\, d}{\sqrt{b}}\right]}{2 b^2}+$$
$$\frac{\operatorname{CosIntegral}\left[\frac{\sqrt{-a}\, d}{\sqrt{b}}-d x\right] \operatorname{Sin}\left[c+\frac{\sqrt{-a}\, d}{\sqrt{b}}\right]}{2 b^2}+\frac{\operatorname{Sin}[c+d x]}{2 b^2}-\frac{x^2 \operatorname{Sin}[c+d x]}{2 b \left(a+b x^2\right)}-\frac{\operatorname{Cos}\left[c+\frac{\sqrt{-a}\, d}{\sqrt{b}}\right] \operatorname{SinIntegral}\left[\frac{\sqrt{-a}\, d}{\sqrt{b}}-d x\right]}{2 b^2}+$$
$$\frac{\sqrt{-a}\, d \operatorname{Sin}\left[c+\frac{\sqrt{-a}\, d}{\sqrt{b}}\right] \operatorname{SinIntegral}\left[\frac{\sqrt{-a}\, d}{\sqrt{b}}-d x\right]}{4 b^{5/2}}+\frac{\operatorname{Cos}\left[c-\frac{\sqrt{-a}\, d}{\sqrt{b}}\right] \operatorname{SinIntegral}\left[\frac{\sqrt{-a}\, d}{\sqrt{b}}+d x\right]}{2 b^2}+\frac{\sqrt{-a}\, d \operatorname{Sin}\left[c-\frac{\sqrt{-a}\, d}{\sqrt{b}}\right] \operatorname{SinIntegral}\left[\frac{\sqrt{-a}\, d}{\sqrt{b}}+d x\right]}{4 b^{5/2}}$$

Result (type 4, 583 leaves):

$$\frac{1}{4 b^{5/2} \left(a+b x^2\right)} \left(\left(a+b x^2\right) \operatorname{CosIntegral}\left[d \left(\frac{i \sqrt{a}}{\sqrt{b}}+x\right)\right] \left(-i \sqrt{a}\, d \operatorname{Cos}\left[c-\frac{i \sqrt{a}\, d}{\sqrt{b}}\right]+2 \sqrt{b} \operatorname{Sin}\left[c-\frac{i \sqrt{a}\, d}{\sqrt{b}}\right]\right)+\right.$$
$$\left(a+b x^2\right) \operatorname{CosIntegral}\left[d \left(-\frac{i \sqrt{a}}{\sqrt{b}}+x\right)\right] \left(i \sqrt{a}\, d \operatorname{Cos}\left[c+\frac{i \sqrt{a}\, d}{\sqrt{b}}\right]+2 \sqrt{b} \operatorname{Sin}\left[c+\frac{i \sqrt{a}\, d}{\sqrt{b}}\right]\right)+2 a \sqrt{b} \operatorname{Sin}[c+d x]+$$
$$2 a \sqrt{b} \operatorname{Cos}\left[c-\frac{i \sqrt{a}\, d}{\sqrt{b}}\right] \operatorname{SinIntegral}\left[d \left(\frac{i \sqrt{a}}{\sqrt{b}}+x\right)\right]+2 b^{3/2} x^2 \operatorname{Cos}\left[c-\frac{i \sqrt{a}\, d}{\sqrt{b}}\right] \operatorname{SinIntegral}\left[d \left(\frac{i \sqrt{a}}{\sqrt{b}}+x\right)\right]+$$
$$i a^{3/2} d \operatorname{Sin}\left[c-\frac{i \sqrt{a}\, d}{\sqrt{b}}\right] \operatorname{SinIntegral}\left[d \left(\frac{i \sqrt{a}}{\sqrt{b}}+x\right)\right]+i \sqrt{a}\, b d x^2 \operatorname{Sin}\left[c-\frac{i \sqrt{a}\, d}{\sqrt{b}}\right] \operatorname{SinIntegral}\left[d \left(\frac{i \sqrt{a}}{\sqrt{b}}+x\right)\right]-$$
$$2 a \sqrt{b} \operatorname{Cos}\left[c+\frac{i \sqrt{a}\, d}{\sqrt{b}}\right] \operatorname{SinIntegral}\left[\frac{i \sqrt{a}\, d}{\sqrt{b}}-d x\right]-2 b^{3/2} x^2 \operatorname{Cos}\left[c+\frac{i \sqrt{a}\, d}{\sqrt{b}}\right] \operatorname{SinIntegral}\left[\frac{i \sqrt{a}\, d}{\sqrt{b}}-d x\right]+$$
$$\left. i a^{3/2} d \operatorname{Sin}\left[c+\frac{i \sqrt{a}\, d}{\sqrt{b}}\right] \operatorname{SinIntegral}\left[\frac{i \sqrt{a}\, d}{\sqrt{b}}-d x\right]+i \sqrt{a}\, b d x^2 \operatorname{Sin}\left[c+\frac{i \sqrt{a}\, d}{\sqrt{b}}\right] \operatorname{SinIntegral}\left[\frac{i \sqrt{a}\, d}{\sqrt{b}}-d x\right]\right)$$

Problem 67: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{x^2 \operatorname{Sin}[c+d x]}{\left(a+b x^2\right)^2} \, dx$$

Optimal (type 4, 416 leaves, 17 steps):

$$\frac{d\,\text{Cos}\left[c+\frac{\sqrt{-a}\,d}{\sqrt{b}}\right]\text{CosIntegral}\left[\frac{\sqrt{-a}\,d}{\sqrt{b}}-d\,x\right]}{4\,b^2}+\frac{d\,\text{Cos}\left[c-\frac{\sqrt{-a}\,d}{\sqrt{b}}\right]\text{CosIntegral}\left[\frac{\sqrt{-a}\,d}{\sqrt{b}}+d\,x\right]}{4\,b^2}-\frac{\text{CosIntegral}\left[\frac{\sqrt{-a}\,d}{\sqrt{b}}+d\,x\right]\text{Sin}\left[c-\frac{\sqrt{-a}\,d}{\sqrt{b}}\right]}{4\,\sqrt{-a}\,b^{3/2}}+$$
$$\frac{\text{CosIntegral}\left[\frac{\sqrt{-a}\,d}{\sqrt{b}}-d\,x\right]\text{Sin}\left[c+\frac{\sqrt{-a}\,d}{\sqrt{b}}\right]}{4\,\sqrt{-a}\,b^{3/2}}-\frac{x\,\text{Sin}[c+d\,x]}{2\,b\,\left(a+b\,x^2\right)}-\frac{\text{Cos}\left[c+\frac{\sqrt{-a}\,d}{\sqrt{b}}\right]\text{SinIntegral}\left[\frac{\sqrt{-a}\,d}{\sqrt{b}}-d\,x\right]}{4\,\sqrt{-a}\,b^{3/2}}+$$
$$\frac{d\,\text{Sin}\left[c+\frac{\sqrt{-a}\,d}{\sqrt{b}}\right]\text{SinIntegral}\left[\frac{\sqrt{-a}\,d}{\sqrt{b}}-d\,x\right]}{4\,b^2}-\frac{\text{Cos}\left[c-\frac{\sqrt{-a}\,d}{\sqrt{b}}\right]\text{SinIntegral}\left[\frac{\sqrt{-a}\,d}{\sqrt{b}}+d\,x\right]}{4\,\sqrt{-a}\,b^{3/2}}-\frac{d\,\text{Sin}\left[c-\frac{\sqrt{-a}\,d}{\sqrt{b}}\right]\text{SinIntegral}\left[\frac{\sqrt{-a}\,d}{\sqrt{b}}+d\,x\right]}{4\,b^2}$$

Result (type 4, 583 leaves) :

$$\frac{1}{4\,\sqrt{a}\,b^2\,\left(a+b\,x^2\right)}\left(\left(a+b\,x^2\right)\text{CosIntegral}\left[d\left(\frac{i\,\sqrt{a}}{\sqrt{b}}+x\right)\right]\left(\sqrt{a}\,d\,\text{Cos}\left[c-\frac{i\,\sqrt{a}\,d}{\sqrt{b}}\right]+i\,\sqrt{b}\,\text{Sin}\left[c-\frac{i\,\sqrt{a}\,d}{\sqrt{b}}\right]\right)+\right.$$
$$\left(a+b\,x^2\right)\text{CosIntegral}\left[d\left(-\frac{i\,\sqrt{a}}{\sqrt{b}}+x\right)\right]\left(\sqrt{a}\,d\,\text{Cos}\left[c+\frac{i\,\sqrt{a}\,d}{\sqrt{b}}\right]-i\,\sqrt{b}\,\text{Sin}\left[c+\frac{i\,\sqrt{a}\,d}{\sqrt{b}}\right]\right)-2\,\sqrt{a}\,b\,x\,\text{Sin}[c+d\,x]+$$
$$i\,a\,\sqrt{b}\,\text{Cos}\left[c-\frac{i\,\sqrt{a}\,d}{\sqrt{b}}\right]\text{SinIntegral}\left[d\left(\frac{i\,\sqrt{a}}{\sqrt{b}}+x\right)\right]+i\,b^{3/2}\,x^2\,\text{Cos}\left[c-\frac{i\,\sqrt{a}\,d}{\sqrt{b}}\right]\text{SinIntegral}\left[d\left(\frac{i\,\sqrt{a}}{\sqrt{b}}+x\right)\right]-$$
$$a^{3/2}\,d\,\text{Sin}\left[c-\frac{i\,\sqrt{a}\,d}{\sqrt{b}}\right]\text{SinIntegral}\left[d\left(\frac{i\,\sqrt{a}}{\sqrt{b}}+x\right)\right]-\sqrt{a}\,b\,d\,x^2\,\text{Sin}\left[c-\frac{i\,\sqrt{a}\,d}{\sqrt{b}}\right]\text{SinIntegral}\left[d\left(\frac{i\,\sqrt{a}}{\sqrt{b}}+x\right)\right]+$$
$$i\,a\,\sqrt{b}\,\text{Cos}\left[c+\frac{i\,\sqrt{a}\,d}{\sqrt{b}}\right]\text{SinIntegral}\left[\frac{i\,\sqrt{a}\,d}{\sqrt{b}}-d\,x\right]+i\,b^{3/2}\,x^2\,\text{Cos}\left[c+\frac{i\,\sqrt{a}\,d}{\sqrt{b}}\right]\text{SinIntegral}\left[\frac{i\,\sqrt{a}\,d}{\sqrt{b}}-d\,x\right]+$$
$$\left.a^{3/2}\,d\,\text{Sin}\left[c+\frac{i\,\sqrt{a}\,d}{\sqrt{b}}\right]\text{SinIntegral}\left[\frac{i\,\sqrt{a}\,d}{\sqrt{b}}-d\,x\right]+\sqrt{a}\,b\,d\,x^2\,\text{Sin}\left[c+\frac{i\,\sqrt{a}\,d}{\sqrt{b}}\right]\text{SinIntegral}\left[\frac{i\,\sqrt{a}\,d}{\sqrt{b}}-d\,x\right]\right)$$

- **Problem 68: Result unnecessarily involves imaginary or complex numbers.**

$$\int\frac{x\,\text{Sin}[c+d\,x]}{\left(a+b\,x^2\right)^2}\,dx$$

Optimal (type 4, 239 leaves, 9 steps) :

$$\frac{d\,\text{Cos}\left[c+\frac{\sqrt{-a}\,d}{\sqrt{b}}\right]\text{CosIntegral}\left[\frac{\sqrt{-a}\,d}{\sqrt{b}}-d\,x\right]}{4\,\sqrt{-a}\,b^{3/2}}-\frac{d\,\text{Cos}\left[c-\frac{\sqrt{-a}\,d}{\sqrt{b}}\right]\text{CosIntegral}\left[\frac{\sqrt{-a}\,d}{\sqrt{b}}+d\,x\right]}{4\,\sqrt{-a}\,b^{3/2}}-$$
$$\frac{\text{Sin}[c+d\,x]}{2\,b\,\left(a+b\,x^2\right)}+\frac{d\,\text{Sin}\left[c+\frac{\sqrt{-a}\,d}{\sqrt{b}}\right]\text{SinIntegral}\left[\frac{\sqrt{-a}\,d}{\sqrt{b}}-d\,x\right]}{4\,\sqrt{-a}\,b^{3/2}}+\frac{d\,\text{Sin}\left[c-\frac{\sqrt{-a}\,d}{\sqrt{b}}\right]\text{SinIntegral}\left[\frac{\sqrt{-a}\,d}{\sqrt{b}}+d\,x\right]}{4\,\sqrt{-a}\,b^{3/2}}$$

Result (type 4, 309 leaves) :

$$-\frac{1}{4\sqrt{a}\, b^{3/2}\left(a+b x^2\right)} i \left(d\left(a+b x^2\right)\text{Cos}\left[c+\frac{i\sqrt{a}\, d}{\sqrt{b}}\right]\text{CosIntegral}\left[d\left(-\frac{i\sqrt{a}}{\sqrt{b}}+x\right)\right]-d\left(a+b x^2\right)\text{Cos}\left[c-\frac{i\sqrt{a}\, d}{\sqrt{b}}\right]\text{CosIntegral}\left[d\left(\frac{i\sqrt{a}}{\sqrt{b}}+x\right)\right]-2 i\sqrt{a}\sqrt{b}\,\text{Sin}[c+d x]+a d\,\text{Sin}\left[c-\frac{i\sqrt{a}\, d}{\sqrt{b}}\right]\text{SinIntegral}\left[d\left(\frac{i\sqrt{a}}{\sqrt{b}}+x\right)\right]+b d x^2\,\text{Sin}\left[c-\frac{i\sqrt{a}\, d}{\sqrt{b}}\right]\text{SinIntegral}\left[d\left(\frac{i\sqrt{a}}{\sqrt{b}}+x\right)\right]+a d\,\text{Sin}\left[c+\frac{i\sqrt{a}\, d}{\sqrt{b}}\right]\text{SinIntegral}\left[\frac{i\sqrt{a}\, d}{\sqrt{b}}-d x\right]+b d x^2\,\text{Sin}\left[c+\frac{i\sqrt{a}\, d}{\sqrt{b}}\right]\text{SinIntegral}\left[\frac{i\sqrt{a}\, d}{\sqrt{b}}-d x\right]\right)$$

- **Problem 69: Result unnecessarily involves imaginary or complex numbers.**

$$\int\frac{\text{Sin}[c+d x]}{\left(a+b x^2\right)^2}\, dx$$

Optimal (type 4, 476 leaves, 18 steps) :

$$-\frac{d\,\text{Cos}\left[c+\frac{\sqrt{-a}\, d}{\sqrt{b}}\right]\text{CosIntegral}\left[\frac{\sqrt{-a}\, d}{\sqrt{b}}-d x\right]}{4 a b}-\frac{d\,\text{Cos}\left[c-\frac{\sqrt{-a}\, d}{\sqrt{b}}\right]\text{CosIntegral}\left[\frac{\sqrt{-a}\, d}{\sqrt{b}}+d x\right]}{4 a b}+\frac{\text{CosIntegral}\left[\frac{\sqrt{-a}\, d}{\sqrt{b}}+d x\right]\text{Sin}\left[c-\frac{\sqrt{-a}\, d}{\sqrt{b}}\right]}{4(-a)^{3/2}\sqrt{b}}-\frac{\text{CosIntegral}\left[\frac{\sqrt{-a}\, d}{\sqrt{b}}-d x\right]\text{Sin}\left[c+\frac{\sqrt{-a}\, d}{\sqrt{b}}\right]}{4(-a)^{3/2}\sqrt{b}}-\frac{\text{Sin}[c+d x]}{4 a\sqrt{b}\left(\sqrt{-a}-\sqrt{b}\, x\right)}+\frac{\text{Sin}[c+d x]}{4 a\sqrt{b}\left(\sqrt{-a}+\sqrt{b}\, x\right)}+\frac{\text{Cos}\left[c+\frac{\sqrt{-a}\, d}{\sqrt{b}}\right]\text{SinIntegral}\left[\frac{\sqrt{-a}\, d}{\sqrt{b}}-d x\right]}{4(-a)^{3/2}\sqrt{b}}-\frac{d\,\text{Sin}\left[c+\frac{\sqrt{-a}\, d}{\sqrt{b}}\right]\text{SinIntegral}\left[\frac{\sqrt{-a}\, d}{\sqrt{b}}-d x\right]}{4 a b}+\frac{\text{Cos}\left[c-\frac{\sqrt{-a}\, d}{\sqrt{b}}\right]\text{SinIntegral}\left[\frac{\sqrt{-a}\, d}{\sqrt{b}}+d x\right]}{4(-a)^{3/2}\sqrt{b}}+\frac{d\,\text{Sin}\left[c-\frac{\sqrt{-a}\, d}{\sqrt{b}}\right]\text{SinIntegral}\left[\frac{\sqrt{-a}\, d}{\sqrt{b}}+d x\right]}{4 a b}$$

Result (type 4, 585 leaves) :

$$\frac{1}{4\,a^{3/2}\,b\,\left(a+b\,x^2\right)}\left(-\left(a+b\,x^2\right)\,\text{CosIntegral}\left[d\,\left(\frac{i\,\sqrt{a}}{\sqrt{b}}+x\right)\right]\,\left(\sqrt{a}\,d\,\text{Cos}\left[c-\frac{i\,\sqrt{a}\,d}{\sqrt{b}}\right]-i\,\sqrt{b}\,\text{Sin}\left[c-\frac{i\,\sqrt{a}\,d}{\sqrt{b}}\right]\right)-\right.$$
$$\left(a+b\,x^2\right)\,\text{CosIntegral}\left[d\,\left(-\frac{i\,\sqrt{a}}{\sqrt{b}}+x\right)\right]\,\left(\sqrt{a}\,d\,\text{Cos}\left[c+\frac{i\,\sqrt{a}\,d}{\sqrt{b}}\right]+i\,\sqrt{b}\,\text{Sin}\left[c+\frac{i\,\sqrt{a}\,d}{\sqrt{b}}\right]\right)+2\,\sqrt{a}\,b\,x\,\text{Sin}[c+d\,x]+$$
$$i\,a\,\sqrt{b}\,\text{Cos}\left[c-\frac{i\,\sqrt{a}\,d}{\sqrt{b}}\right]\,\text{SinIntegral}\left[d\,\left(\frac{i\,\sqrt{a}}{\sqrt{b}}+x\right)\right]+i\,b^{3/2}\,x^2\,\text{Cos}\left[c-\frac{i\,\sqrt{a}\,d}{\sqrt{b}}\right]\,\text{SinIntegral}\left[d\,\left(\frac{i\,\sqrt{a}}{\sqrt{b}}+x\right)\right]+$$
$$a^{3/2}\,d\,\text{Sin}\left[c-\frac{i\,\sqrt{a}\,d}{\sqrt{b}}\right]\,\text{SinIntegral}\left[d\,\left(\frac{i\,\sqrt{a}}{\sqrt{b}}+x\right)\right]+\sqrt{a}\,b\,d\,x^2\,\text{Sin}\left[c-\frac{i\,\sqrt{a}\,d}{\sqrt{b}}\right]\,\text{SinIntegral}\left[d\,\left(\frac{i\,\sqrt{a}}{\sqrt{b}}+x\right)\right]+$$
$$i\,a\,\sqrt{b}\,\text{Cos}\left[c+\frac{i\,\sqrt{a}\,d}{\sqrt{b}}\right]\,\text{SinIntegral}\left[\frac{i\,\sqrt{a}\,d}{\sqrt{b}}-d\,x\right]+i\,b^{3/2}\,x^2\,\text{Cos}\left[c+\frac{i\,\sqrt{a}\,d}{\sqrt{b}}\right]\,\text{SinIntegral}\left[\frac{i\,\sqrt{a}\,d}{\sqrt{b}}-d\,x\right]-$$
$$\left.a^{3/2}\,d\,\text{Sin}\left[c+\frac{i\,\sqrt{a}\,d}{\sqrt{b}}\right]\,\text{SinIntegral}\left[\frac{i\,\sqrt{a}\,d}{\sqrt{b}}-d\,x\right]-\sqrt{a}\,b\,d\,x^2\,\text{Sin}\left[c+\frac{i\,\sqrt{a}\,d}{\sqrt{b}}\right]\,\text{SinIntegral}\left[\frac{i\,\sqrt{a}\,d}{\sqrt{b}}-d\,x\right]\right)$$

Problem 70: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{\text{Sin}[c+d\,x]}{x\,\left(a+b\,x^2\right)^2}\,dx$$

Optimal (type 4, 435 leaves, 22 steps):

$$\frac{d\,\text{Cos}\left[c+\frac{\sqrt{-a}\,d}{\sqrt{b}}\right]\,\text{CosIntegral}\left[\frac{\sqrt{-a}\,d}{\sqrt{b}}-d\,x\right]}{4\,(-a)^{3/2}\,\sqrt{b}}-\frac{d\,\text{Cos}\left[c-\frac{\sqrt{-a}\,d}{\sqrt{b}}\right]\,\text{CosIntegral}\left[\frac{\sqrt{-a}\,d}{\sqrt{b}}+d\,x\right]}{4\,(-a)^{3/2}\,\sqrt{b}}+\frac{\text{CosIntegral}[d\,x]\,\text{Sin}[c]}{a^2}-$$
$$\frac{\text{CosIntegral}\left[\frac{\sqrt{-a}\,d}{\sqrt{b}}+d\,x\right]\,\text{Sin}\left[c-\frac{\sqrt{-a}\,d}{\sqrt{b}}\right]}{2\,a^2}-\frac{\text{CosIntegral}\left[\frac{\sqrt{-a}\,d}{\sqrt{b}}-d\,x\right]\,\text{Sin}\left[c+\frac{\sqrt{-a}\,d}{\sqrt{b}}\right]}{2\,a^2}+\frac{\text{Sin}[c+d\,x]}{2\,a\,\left(a+b\,x^2\right)}+$$
$$\frac{\text{Cos}[c]\,\text{SinIntegral}[d\,x]}{a^2}+\frac{\text{Cos}\left[c+\frac{\sqrt{-a}\,d}{\sqrt{b}}\right]\,\text{SinIntegral}\left[\frac{\sqrt{-a}\,d}{\sqrt{b}}-d\,x\right]}{2\,a^2}+\frac{d\,\text{Sin}\left[c+\frac{\sqrt{-a}\,d}{\sqrt{b}}\right]\,\text{SinIntegral}\left[\frac{\sqrt{-a}\,d}{\sqrt{b}}-d\,x\right]}{4\,(-a)^{3/2}\,\sqrt{b}}-$$
$$\frac{\text{Cos}\left[c-\frac{\sqrt{-a}\,d}{\sqrt{b}}\right]\,\text{SinIntegral}\left[\frac{\sqrt{-a}\,d}{\sqrt{b}}+d\,x\right]}{2\,a^2}+\frac{d\,\text{Sin}\left[c-\frac{\sqrt{-a}\,d}{\sqrt{b}}\right]\,\text{SinIntegral}\left[\frac{\sqrt{-a}\,d}{\sqrt{b}}+d\,x\right]}{4\,(-a)^{3/2}\,\sqrt{b}}$$

Result (type 4, 650 leaves):

$$\frac{1}{4 a^2 \sqrt{b} \left(a+b x^2\right)} \left(4 a \sqrt{b} \text{CosIntegral}[d x] \text{Sin}[c]+4 b^{3/2} x^2 \text{CosIntegral}[d x] \text{Sin}[c]-\right.$$
$$i \left(a+b x^2\right) \text{CosIntegral}\left[d \left(\frac{i \sqrt{a}}{\sqrt{b}}+x\right)\right] \left(\sqrt{a} d \text{Cos}\left[c-\frac{i \sqrt{a} d}{\sqrt{b}}\right]-2 i \sqrt{b} \text{Sin}\left[c-\frac{i \sqrt{a} d}{\sqrt{b}}\right]\right)+$$
$$i \left(a+b x^2\right) \text{CosIntegral}\left[d \left(-\frac{i \sqrt{a}}{\sqrt{b}}+x\right)\right] \left(\sqrt{a} d \text{Cos}\left[c+\frac{i \sqrt{a} d}{\sqrt{b}}\right]+2 i \sqrt{b} \text{Sin}\left[c+\frac{i \sqrt{a} d}{\sqrt{b}}\right]\right)+$$
$$2 a \sqrt{b} \text{Sin}[c+d x]+4 a \sqrt{b} \text{Cos}[c] \text{SinIntegral}[d x]+4 b^{3/2} x^2 \text{Cos}[c] \text{SinIntegral}[d x]-$$
$$2 a \sqrt{b} \text{Cos}\left[c-\frac{i \sqrt{a} d}{\sqrt{b}}\right] \text{SinIntegral}\left[d \left(\frac{i \sqrt{a}}{\sqrt{b}}+x\right)\right]-2 b^{3/2} x^2 \text{Cos}\left[c-\frac{i \sqrt{a} d}{\sqrt{b}}\right] \text{SinIntegral}\left[d \left(\frac{i \sqrt{a}}{\sqrt{b}}+x\right)\right]+$$
$$i a^{3/2} d \text{Sin}\left[c-\frac{i \sqrt{a} d}{\sqrt{b}}\right] \text{SinIntegral}\left[d \left(\frac{i \sqrt{a}}{\sqrt{b}}+x\right)\right]+i \sqrt{a} b d x^2 \text{Sin}\left[c-\frac{i \sqrt{a} d}{\sqrt{b}}\right] \text{SinIntegral}\left[d \left(\frac{i \sqrt{a}}{\sqrt{b}}+x\right)\right]+$$
$$2 a \sqrt{b} \text{Cos}\left[c+\frac{i \sqrt{a} d}{\sqrt{b}}\right] \text{SinIntegral}\left[\frac{i \sqrt{a} d}{\sqrt{b}}-d x\right]+2 b^{3/2} x^2 \text{Cos}\left[c+\frac{i \sqrt{a} d}{\sqrt{b}}\right] \text{SinIntegral}\left[\frac{i \sqrt{a} d}{\sqrt{b}}-d x\right]+$$
$$\left.i a^{3/2} d \text{Sin}\left[c+\frac{i \sqrt{a} d}{\sqrt{b}}\right] \text{SinIntegral}\left[\frac{i \sqrt{a} d}{\sqrt{b}}-d x\right]+i \sqrt{a} b d x^2 \text{Sin}\left[c+\frac{i \sqrt{a} d}{\sqrt{b}}\right] \text{SinIntegral}\left[\frac{i \sqrt{a} d}{\sqrt{b}}-d x\right]\right)$$

- **Problem 71: Result unnecessarily involves imaginary or complex numbers.**

$$\int \frac{\text{Sin}[c+d x]}{x^2 \left(a+b x^2\right)^2} \, dx$$

Optimal (type 4, 501 leaves, 32 steps):

$$\frac{d \text{Cos}[c] \text{CosIntegral}[d x]}{a^2}+\frac{d \text{Cos}\left[c+\frac{\sqrt{-a} d}{\sqrt{b}}\right] \text{CosIntegral}\left[\frac{\sqrt{-a} d}{\sqrt{b}}-d x\right]}{4 a^2}+\frac{d \text{Cos}\left[c-\frac{\sqrt{-a} d}{\sqrt{b}}\right] \text{CosIntegral}\left[\frac{\sqrt{-a} d}{\sqrt{b}}+d x\right]}{4 a^2}+$$
$$\frac{3 \sqrt{b} \text{CosIntegral}\left[\frac{\sqrt{-a} d}{\sqrt{b}}+d x\right] \text{Sin}\left[c-\frac{\sqrt{-a} d}{\sqrt{b}}\right]}{4 (-a)^{5/2}}-\frac{3 \sqrt{b} \text{CosIntegral}\left[\frac{\sqrt{-a} d}{\sqrt{b}}-d x\right] \text{Sin}\left[c+\frac{\sqrt{-a} d}{\sqrt{b}}\right]}{4 (-a)^{5/2}}-\frac{\text{Sin}[c+d x]}{a^2 x}+$$
$$\frac{\sqrt{b} \text{Sin}[c+d x]}{4 a^2 \left(\sqrt{-a}-\sqrt{b} x\right)}-\frac{\sqrt{b} \text{Sin}[c+d x]}{4 a^2 \left(\sqrt{-a}+\sqrt{b} x\right)}-\frac{d \text{Sin}[c] \text{SinIntegral}[d x]}{a^2}+\frac{3 \sqrt{b} \text{Cos}\left[c+\frac{\sqrt{-a} d}{\sqrt{b}}\right] \text{SinIntegral}\left[\frac{\sqrt{-a} d}{\sqrt{b}}-d x\right]}{4 (-a)^{5/2}}+$$
$$\frac{d \text{Sin}\left[c+\frac{\sqrt{-a} d}{\sqrt{b}}\right] \text{SinIntegral}\left[\frac{\sqrt{-a} d}{\sqrt{b}}-d x\right]}{4 a^2}+\frac{3 \sqrt{b} \text{Cos}\left[c-\frac{\sqrt{-a} d}{\sqrt{b}}\right] \text{SinIntegral}\left[\frac{\sqrt{-a} d}{\sqrt{b}}+d x\right]}{4 (-a)^{5/2}}-\frac{d \text{Sin}\left[c-\frac{\sqrt{-a} d}{\sqrt{b}}\right] \text{SinIntegral}\left[\frac{\sqrt{-a} d}{\sqrt{b}}+d x\right]}{4 a^2}$$

Result (type 4, 768 leaves):

$$\frac{1}{4\,a^{5/2}\,x\,\left(a+b\,x^2\right)}\left(4\,\sqrt{a}\,d\,x\,\left(a+b\,x^2\right)\,\text{Cos}[c]\,\text{CosIntegral}[d\,x]+\right.$$
$$a^{3/2}\,d\,x\,\text{Cos}\left[c-\frac{i\,\sqrt{a}\,d}{\sqrt{b}}\right]\,\text{CosIntegral}\left[d\,\left(\frac{i\,\sqrt{a}}{\sqrt{b}}+x\right)\right]+\sqrt{a}\,b\,d\,x^3\,\text{Cos}\left[c-\frac{i\,\sqrt{a}\,d}{\sqrt{b}}\right]\,\text{CosIntegral}\left[d\,\left(\frac{i\,\sqrt{a}}{\sqrt{b}}+x\right)\right]-$$
$$3\,i\,a\,\sqrt{b}\,x\,\text{CosIntegral}\left[d\,\left(\frac{i\,\sqrt{a}}{\sqrt{b}}+x\right)\right]\,\text{Sin}\left[c-\frac{i\,\sqrt{a}\,d}{\sqrt{b}}\right]-3\,i\,b^{3/2}\,x^3\,\text{CosIntegral}\left[d\,\left(\frac{i\,\sqrt{a}}{\sqrt{b}}+x\right)\right]\,\text{Sin}\left[c-\frac{i\,\sqrt{a}\,d}{\sqrt{b}}\right]+$$
$$x\,\left(a+b\,x^2\right)\,\text{CosIntegral}\left[d\,\left(-\frac{i\,\sqrt{a}}{\sqrt{b}}+x\right)\right]\,\left(\sqrt{a}\,d\,\text{Cos}\left[c+\frac{i\,\sqrt{a}\,d}{\sqrt{b}}\right]+3\,i\,\sqrt{b}\,\text{Sin}\left[c+\frac{i\,\sqrt{a}\,d}{\sqrt{b}}\right]\right)-4\,a^{3/2}\,\text{Sin}[c+d\,x]-$$
$$6\,\sqrt{a}\,b\,x^2\,\text{Sin}[c+d\,x]-4\,a^{3/2}\,d\,x\,\text{Sin}[c]\,\text{SinIntegral}[d\,x]-4\,\sqrt{a}\,b\,d\,x^3\,\text{Sin}[c]\,\text{SinIntegral}[d\,x]-$$
$$3\,i\,a\,\sqrt{b}\,x\,\text{Cos}\left[c-\frac{i\,\sqrt{a}\,d}{\sqrt{b}}\right]\,\text{SinIntegral}\left[d\,\left(\frac{i\,\sqrt{a}}{\sqrt{b}}+x\right)\right]-3\,i\,b^{3/2}\,x^3\,\text{Cos}\left[c-\frac{i\,\sqrt{a}\,d}{\sqrt{b}}\right]\,\text{SinIntegral}\left[d\,\left(\frac{i\,\sqrt{a}}{\sqrt{b}}+x\right)\right]-$$
$$a^{3/2}\,d\,x\,\text{Sin}\left[c-\frac{i\,\sqrt{a}\,d}{\sqrt{b}}\right]\,\text{SinIntegral}\left[d\,\left(\frac{i\,\sqrt{a}}{\sqrt{b}}+x\right)\right]-\sqrt{a}\,b\,d\,x^3\,\text{Sin}\left[c-\frac{i\,\sqrt{a}\,d}{\sqrt{b}}\right]\,\text{SinIntegral}\left[d\,\left(\frac{i\,\sqrt{a}}{\sqrt{b}}+x\right)\right]-$$
$$3\,i\,a\,\sqrt{b}\,x\,\text{Cos}\left[c+\frac{i\,\sqrt{a}\,d}{\sqrt{b}}\right]\,\text{SinIntegral}\left[\frac{i\,\sqrt{a}\,d}{\sqrt{b}}-d\,x\right]-3\,i\,b^{3/2}\,x^3\,\text{Cos}\left[c+\frac{i\,\sqrt{a}\,d}{\sqrt{b}}\right]\,\text{SinIntegral}\left[\frac{i\,\sqrt{a}\,d}{\sqrt{b}}-d\,x\right]+$$
$$\left.a^{3/2}\,d\,x\,\text{Sin}\left[c+\frac{i\,\sqrt{a}\,d}{\sqrt{b}}\right]\,\text{SinIntegral}\left[\frac{i\,\sqrt{a}\,d}{\sqrt{b}}-d\,x\right]+\sqrt{a}\,b\,d\,x^3\,\text{Sin}\left[c+\frac{i\,\sqrt{a}\,d}{\sqrt{b}}\right]\,\text{SinIntegral}\left[\frac{i\,\sqrt{a}\,d}{\sqrt{b}}-d\,x\right]\right)$$

- **Problem 72: Result unnecessarily involves imaginary or complex numbers.**

$$\int\frac{x^3\,\text{Sin}[c+d\,x]}{\left(a+b\,x^2\right)^3}\,dx$$

Optimal (type 4, 476 leaves, 27 steps) :

$$-\frac{d\,x\,\text{Cos}[c+d\,x]}{8\,b^2\,(a+b\,x^2)}+\frac{3\,d\,\text{Cos}\left[c+\frac{\sqrt{-a}\,d}{\sqrt{b}}\right]\,\text{CosIntegral}\left[\frac{\sqrt{-a}\,d}{\sqrt{b}}-d\,x\right]}{16\,\sqrt{-a}\,b^{5/2}}-\frac{3\,d\,\text{Cos}\left[c-\frac{\sqrt{-a}\,d}{\sqrt{b}}\right]\,\text{CosIntegral}\left[\frac{\sqrt{-a}\,d}{\sqrt{b}}+d\,x\right]}{16\,\sqrt{-a}\,b^{5/2}}-$$

$$\frac{d^2\,\text{CosIntegral}\left[\frac{\sqrt{-a}\,d}{\sqrt{b}}+d\,x\right]\,\text{Sin}\left[c-\frac{\sqrt{-a}\,d}{\sqrt{b}}\right]}{16\,b^3}-\frac{d^2\,\text{CosIntegral}\left[\frac{\sqrt{-a}\,d}{\sqrt{b}}-d\,x\right]\,\text{Sin}\left[c+\frac{\sqrt{-a}\,d}{\sqrt{b}}\right]}{16\,b^3}-\frac{x^2\,\text{Sin}[c+d\,x]}{4\,b\,(a+b\,x^2)^2}-$$

$$\frac{\text{Sin}[c+d\,x]}{4\,b^2\,(a+b\,x^2)}+\frac{d^2\,\text{Cos}\left[c+\frac{\sqrt{-a}\,d}{\sqrt{b}}\right]\,\text{SinIntegral}\left[\frac{\sqrt{-a}\,d}{\sqrt{b}}-d\,x\right]}{16\,b^3}+\frac{3\,d\,\text{Sin}\left[c+\frac{\sqrt{-a}\,d}{\sqrt{b}}\right]\,\text{SinIntegral}\left[\frac{\sqrt{-a}\,d}{\sqrt{b}}-d\,x\right]}{16\,\sqrt{-a}\,b^{5/2}}-$$

$$\frac{d^2\,\text{Cos}\left[c-\frac{\sqrt{-a}\,d}{\sqrt{b}}\right]\,\text{SinIntegral}\left[\frac{\sqrt{-a}\,d}{\sqrt{b}}+d\,x\right]}{16\,b^3}+\frac{3\,d\,\text{Sin}\left[c-\frac{\sqrt{-a}\,d}{\sqrt{b}}\right]\,\text{SinIntegral}\left[\frac{\sqrt{-a}\,d}{\sqrt{b}}+d\,x\right]}{16\,\sqrt{-a}\,b^{5/2}}$$

Result (type 4, 647 leaves) :

$$\frac{1}{16\,b^2}\left(-\frac{2\,\text{Cos}[d\,x]\,\left(d\,x\,(a+b\,x^2)\,\text{Cos}[c]+2\,(a+2\,b\,x^2)\,\text{Sin}[c]\right)}{(a+b\,x^2)^2}+\right.$$

$$\frac{2\,\left(-2\,(a+2\,b\,x^2)\,\text{Cos}[c]+d\,x\,(a+b\,x^2)\,\text{Sin}[c]\right)\,\text{Sin}[d\,x]}{(a+b\,x^2)^2}+\frac{1}{b}d^2\,\text{Cos}[c]\,\left(-i\,\text{CosIntegral}\left[d\left(-\frac{i\,\sqrt{a}}{\sqrt{b}}+x\right)\right]\,\text{Sinh}\left[\frac{\sqrt{a}\,d}{\sqrt{b}}\right]+\right.$$

$$\left.i\,\text{CosIntegral}\left[d\left(\frac{i\,\sqrt{a}}{\sqrt{b}}+x\right)\right]\,\text{Sinh}\left[\frac{\sqrt{a}\,d}{\sqrt{b}}\right]+\text{Cosh}\left[\frac{\sqrt{a}\,d}{\sqrt{b}}\right]\,\left(-\text{SinIntegral}\left[d\left(\frac{i\,\sqrt{a}}{\sqrt{b}}+x\right)\right]+\text{SinIntegral}\left[\frac{i\,\sqrt{a}\,d}{\sqrt{b}}-d\,x\right]\right)\right)+$$

$$\frac{1}{\sqrt{a}\,\sqrt{b}}3\,d\,\text{Cos}[c]\,\left(-i\,\text{Cosh}\left[\frac{\sqrt{a}\,d}{\sqrt{b}}\right]\,\text{CosIntegral}\left[d\left(-\frac{i\,\sqrt{a}}{\sqrt{b}}+x\right)\right]+i\,\text{Cosh}\left[\frac{\sqrt{a}\,d}{\sqrt{b}}\right]\,\text{CosIntegral}\left[d\left(\frac{i\,\sqrt{a}}{\sqrt{b}}+x\right)\right]+\right.$$

$$\left.\text{Sinh}\left[\frac{\sqrt{a}\,d}{\sqrt{b}}\right]\,\left(-\text{SinIntegral}\left[d\left(\frac{i\,\sqrt{a}}{\sqrt{b}}+x\right)\right]+\text{SinIntegral}\left[\frac{i\,\sqrt{a}\,d}{\sqrt{b}}-d\,x\right]\right)\right)-$$

$$\frac{1}{\sqrt{a}\,\sqrt{b}}3\,d\,\text{Sin}[c]\,\left(\text{CosIntegral}\left[d\left(-\frac{i\,\sqrt{a}}{\sqrt{b}}+x\right)\right]\,\text{Sinh}\left[\frac{\sqrt{a}\,d}{\sqrt{b}}\right]+\text{CosIntegral}\left[d\left(\frac{i\,\sqrt{a}}{\sqrt{b}}+x\right)\right]\,\text{Sinh}\left[\frac{\sqrt{a}\,d}{\sqrt{b}}\right]+\right.$$

$$\left.i\,\text{Cosh}\left[\frac{\sqrt{a}\,d}{\sqrt{b}}\right]\,\left(\text{SinIntegral}\left[d\left(\frac{i\,\sqrt{a}}{\sqrt{b}}+x\right)\right]+\text{SinIntegral}\left[\frac{i\,\sqrt{a}\,d}{\sqrt{b}}-d\,x\right]\right)\right)-$$

$$\frac{1}{b}d^2\,\text{Sin}[c]\,\left(\text{Cosh}\left[\frac{\sqrt{a}\,d}{\sqrt{b}}\right]\,\text{CosIntegral}\left[d\left(-\frac{i\,\sqrt{a}}{\sqrt{b}}+x\right)\right]+\text{Cosh}\left[\frac{\sqrt{a}\,d}{\sqrt{b}}\right]\,\text{CosIntegral}\left[d\left(\frac{i\,\sqrt{a}}{\sqrt{b}}+x\right)\right]+\right.$$

$$\left.\left.i\,\text{Sinh}\left[\frac{\sqrt{a}\,d}{\sqrt{b}}\right]\,\left(\text{SinIntegral}\left[d\left(\frac{i\,\sqrt{a}}{\sqrt{b}}+x\right)\right]+\text{SinIntegral}\left[\frac{i\,\sqrt{a}\,d}{\sqrt{b}}-d\,x\right]\right)\right)\right)$$

Problem 73: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{x^2 \operatorname{Sin}[c+d x]}{\left(a+b x^2\right)^3} \, dx$$

Optimal (type 4, 746 leaves, 28 steps):

$$-\frac{d \operatorname{Cos}[c+d x]}{8 b^2 \left(a+b x^2\right)}-\frac{d \operatorname{Cos}\left[c+\frac{\sqrt{-a} d}{\sqrt{b}}\right] \operatorname{CosIntegral}\left[\frac{\sqrt{-a} d}{\sqrt{b}}-d x\right]}{16 a b^2}-\frac{d \operatorname{Cos}\left[c-\frac{\sqrt{-a} d}{\sqrt{b}}\right] \operatorname{CosIntegral}\left[\frac{\sqrt{-a} d}{\sqrt{b}}+d x\right]}{16 a b^2}+$$
$$\frac{\operatorname{CosIntegral}\left[\frac{\sqrt{-a} d}{\sqrt{b}}+d x\right] \operatorname{Sin}\left[c-\frac{\sqrt{-a} d}{\sqrt{b}}\right]}{16 (-a)^{3/2} b^{3/2}}+\frac{d^2 \operatorname{CosIntegral}\left[\frac{\sqrt{-a} d}{\sqrt{b}}+d x\right] \operatorname{Sin}\left[c-\frac{\sqrt{-a} d}{\sqrt{b}}\right]}{16 \sqrt{-a} b^{5/2}}-\frac{\operatorname{CosIntegral}\left[\frac{\sqrt{-a} d}{\sqrt{b}}-d x\right] \operatorname{Sin}\left[c+\frac{\sqrt{-a} d}{\sqrt{b}}\right]}{16 (-a)^{3/2} b^{3/2}}-$$
$$\frac{d^2 \operatorname{CosIntegral}\left[\frac{\sqrt{-a} d}{\sqrt{b}}-d x\right] \operatorname{Sin}\left[c+\frac{\sqrt{-a} d}{\sqrt{b}}\right]}{16 \sqrt{-a} b^{5/2}}-\frac{\operatorname{Sin}[c+d x]}{16 a b^{3/2} \left(\sqrt{-a}-\sqrt{b} x\right)}+\frac{\operatorname{Sin}[c+d x]}{16 a b^{3/2} \left(\sqrt{-a}+\sqrt{b} x\right)}-\frac{x \operatorname{Sin}[c+d x]}{4 b \left(a+b x^2\right)^2}+$$
$$\frac{\operatorname{Cos}\left[c+\frac{\sqrt{-a} d}{\sqrt{b}}\right] \operatorname{SinIntegral}\left[\frac{\sqrt{-a} d}{\sqrt{b}}-d x\right]}{16 (-a)^{3/2} b^{3/2}}+\frac{d^2 \operatorname{Cos}\left[c+\frac{\sqrt{-a} d}{\sqrt{b}}\right] \operatorname{SinIntegral}\left[\frac{\sqrt{-a} d}{\sqrt{b}}-d x\right]}{16 \sqrt{-a} b^{5/2}}-\frac{d \operatorname{Sin}\left[c+\frac{\sqrt{-a} d}{\sqrt{b}}\right] \operatorname{SinIntegral}\left[\frac{\sqrt{-a} d}{\sqrt{b}}-d x\right]}{16 a b^2}+$$
$$\frac{\operatorname{Cos}\left[c-\frac{\sqrt{-a} d}{\sqrt{b}}\right] \operatorname{SinIntegral}\left[\frac{\sqrt{-a} d}{\sqrt{b}}+d x\right]}{16 (-a)^{3/2} b^{3/2}}+\frac{d^2 \operatorname{Cos}\left[c-\frac{\sqrt{-a} d}{\sqrt{b}}\right] \operatorname{SinIntegral}\left[\frac{\sqrt{-a} d}{\sqrt{b}}+d x\right]}{16 \sqrt{-a} b^{5/2}}+\frac{d \operatorname{Sin}\left[c-\frac{\sqrt{-a} d}{\sqrt{b}}\right] \operatorname{SinIntegral}\left[\frac{\sqrt{-a} d}{\sqrt{b}}+d x\right]}{16 a b^2}$$

Result (type 4, 927 leaves):

$$\frac{1}{16 a^{3/2} b^2}\left(-\frac{2 a^{5/2} d \text{Cos}[c] \text{Cos}[d x]}{\left(a+b x^2\right)^2}-\frac{2 a^{3/2} b d x^2 \text{Cos}[c] \text{Cos}[d x]}{\left(a+b x^2\right)^2}-\frac{2 a^{3/2} b x \text{Cos}[d x] \text{Sin}[c]}{\left(a+b x^2\right)^2}+\right.$$

$$\frac{2 \sqrt{a} b^2 x^3 \text{Cos}[d x] \text{Sin}[c]}{\left(a+b x^2\right)^2}+\frac{\text{CosIntegral}\left[d\left(\frac{i \sqrt{a}}{\sqrt{b}}+x\right)\right]\left(-\sqrt{a} \sqrt{b} d \text{Cos}\left[c-\frac{i \sqrt{a} d}{\sqrt{b}}\right]+i\left(b-a d^2\right) \text{Sin}\left[c-\frac{i \sqrt{a} d}{\sqrt{b}}\right]\right)}{\sqrt{b}}+$$

$$\frac{i \text{CosIntegral}\left[d\left(-\frac{i \sqrt{a}}{\sqrt{b}}+x\right)\right]\left(i \sqrt{a} \sqrt{b} d \text{Cos}\left[c+\frac{i \sqrt{a} d}{\sqrt{b}}\right]+\left(-b+a d^2\right) \text{Sin}\left[c+\frac{i \sqrt{a} d}{\sqrt{b}}\right]\right)}{\sqrt{b}}-$$

$$\frac{2 a^{3/2} b x \text{Cos}[c] \text{Sin}[d x]}{\left(a+b x^2\right)^2}+\frac{2 \sqrt{a} b^2 x^3 \text{Cos}[c] \text{Sin}[d x]}{\left(a+b x^2\right)^2}+\frac{2 a^{5/2} d \text{Sin}[c] \text{Sin}[d x]}{\left(a+b x^2\right)^2}+\frac{2 a^{3/2} b d x^2 \text{Sin}[c] \text{Sin}[d x]}{\left(a+b x^2\right)^2}+$$

$$i \sqrt{b} \text{Cos}[c] \text{Cosh}\left[\frac{\sqrt{a} d}{\sqrt{b}}\right] \text{SinIntegral}\left[d\left(\frac{i \sqrt{a}}{\sqrt{b}}+x\right)\right]-\frac{i a d^2 \text{Cos}[c] \text{Cosh}\left[\frac{\sqrt{a} d}{\sqrt{b}}\right] \text{SinIntegral}\left[d\left(\frac{i \sqrt{a}}{\sqrt{b}}+x\right)\right]}{\sqrt{b}}+$$

$$\sqrt{a} d \text{Cosh}\left[\frac{\sqrt{a} d}{\sqrt{b}}\right] \text{Sin}[c] \text{SinIntegral}\left[d\left(\frac{i \sqrt{a}}{\sqrt{b}}+x\right)\right]-i \sqrt{a} d \text{Cos}[c] \text{Sinh}\left[\frac{\sqrt{a} d}{\sqrt{b}}\right] \text{SinIntegral}\left[d\left(\frac{i \sqrt{a}}{\sqrt{b}}+x\right)\right]-$$

$$\sqrt{b} \text{Sin}[c] \text{Sinh}\left[\frac{\sqrt{a} d}{\sqrt{b}}\right] \text{SinIntegral}\left[d\left(\frac{i \sqrt{a}}{\sqrt{b}}+x\right)\right]+\frac{a d^2 \text{Sin}[c] \text{Sinh}\left[\frac{\sqrt{a} d}{\sqrt{b}}\right] \text{SinIntegral}\left[d\left(\frac{i \sqrt{a}}{\sqrt{b}}+x\right)\right]}{\sqrt{b}}+$$

$$i \sqrt{b} \text{Cos}[c] \text{Cosh}\left[\frac{\sqrt{a} d}{\sqrt{b}}\right] \text{SinIntegral}\left[\frac{i \sqrt{a} d}{\sqrt{b}}-d x\right]-\frac{i a d^2 \text{Cos}[c] \text{Cosh}\left[\frac{\sqrt{a} d}{\sqrt{b}}\right] \text{SinIntegral}\left[\frac{i \sqrt{a} d}{\sqrt{b}}-d x\right]}{\sqrt{b}}-$$

$$\sqrt{a} d \text{Cosh}\left[\frac{\sqrt{a} d}{\sqrt{b}}\right] \text{Sin}[c] \text{SinIntegral}\left[\frac{i \sqrt{a} d}{\sqrt{b}}-d x\right]-i \sqrt{a} d \text{Cos}[c] \text{Sinh}\left[\frac{\sqrt{a} d}{\sqrt{b}}\right] \text{SinIntegral}\left[\frac{i \sqrt{a} d}{\sqrt{b}}-d x\right]+$$

$$\left.\sqrt{b} \text{Sin}[c] \text{Sinh}\left[\frac{\sqrt{a} d}{\sqrt{b}}\right] \text{SinIntegral}\left[\frac{i \sqrt{a} d}{\sqrt{b}}-d x\right]-\frac{a d^2 \text{Sin}[c] \text{Sinh}\left[\frac{\sqrt{a} d}{\sqrt{b}}\right] \text{SinIntegral}\left[\frac{i \sqrt{a} d}{\sqrt{b}}-d x\right]}{\sqrt{b}}\right)$$

- **Problem 74: Result unnecessarily involves imaginary or complex numbers.**

$$\int \frac{x \text{Sin}[c+d x]}{\left(a+b x^2\right)^3} \, dx$$

Optimal (type 4, 512 leaves, 19 steps):

$$-\frac{d\,\mathrm{Cos}[c+d\,x]}{16\,a\,b^{3/2}\left(\sqrt{-a}-\sqrt{b}\,x\right)}+\frac{d\,\mathrm{Cos}[c+d\,x]}{16\,a\,b^{3/2}\left(\sqrt{-a}+\sqrt{b}\,x\right)}-\frac{d\,\mathrm{Cos}\left[c+\frac{\sqrt{-a}\,d}{\sqrt{b}}\right]\mathrm{CosIntegral}\left[\frac{\sqrt{-a}\,d}{\sqrt{b}}-d\,x\right]}{16\,(-a)^{3/2}\,b^{3/2}}+$$

$$\frac{d\,\mathrm{Cos}\left[c-\frac{\sqrt{-a}\,d}{\sqrt{b}}\right]\mathrm{CosIntegral}\left[\frac{\sqrt{-a}\,d}{\sqrt{b}}+d\,x\right]}{16\,(-a)^{3/2}\,b^{3/2}}+\frac{d^2\,\mathrm{CosIntegral}\left[\frac{\sqrt{-a}\,d}{\sqrt{b}}+d\,x\right]\mathrm{Sin}\left[c-\frac{\sqrt{-a}\,d}{\sqrt{b}}\right]}{16\,a\,b^2}+$$

$$\frac{d^2\,\mathrm{CosIntegral}\left[\frac{\sqrt{-a}\,d}{\sqrt{b}}-d\,x\right]\mathrm{Sin}\left[c+\frac{\sqrt{-a}\,d}{\sqrt{b}}\right]}{16\,a\,b^2}-\frac{\mathrm{Sin}[c+d\,x]}{4\,b\,\left(a+b\,x^2\right)^2}-\frac{d^2\,\mathrm{Cos}\left[c+\frac{\sqrt{-a}\,d}{\sqrt{b}}\right]\mathrm{SinIntegral}\left[\frac{\sqrt{-a}\,d}{\sqrt{b}}-d\,x\right]}{16\,a\,b^2}-$$

$$\frac{d\,\mathrm{Sin}\left[c+\frac{\sqrt{-a}\,d}{\sqrt{b}}\right]\mathrm{SinIntegral}\left[\frac{\sqrt{-a}\,d}{\sqrt{b}}-d\,x\right]}{16\,(-a)^{3/2}\,b^{3/2}}+\frac{d^2\,\mathrm{Cos}\left[c-\frac{\sqrt{-a}\,d}{\sqrt{b}}\right]\mathrm{SinIntegral}\left[\frac{\sqrt{-a}\,d}{\sqrt{b}}+d\,x\right]}{16\,a\,b^2}-\frac{d\,\mathrm{Sin}\left[c-\frac{\sqrt{-a}\,d}{\sqrt{b}}\right]\mathrm{SinIntegral}\left[\frac{\sqrt{-a}\,d}{\sqrt{b}}+d\,x\right]}{16\,(-a)^{3/2}\,b^{3/2}}$$

Result (type 4, 634 leaves) :

$$\frac{1}{16\,a\,b}\left(\frac{2\,\mathrm{Cos}[d\,x]\,\left(d\,x\,\left(a+b\,x^2\right)\mathrm{Cos}[c]-2\,a\,\mathrm{Sin}[c]\right)}{\left(a+b\,x^2\right)^2}-\right.$$

$$\frac{2\left(2\,a\,\mathrm{Cos}[c]+d\,x\,\left(a+b\,x^2\right)\mathrm{Sin}[c]\right)\mathrm{Sin}[d\,x]}{\left(a+b\,x^2\right)^2}+\frac{1}{b}d^2\,\mathrm{Cos}[c]\left(i\,\mathrm{CosIntegral}\left[d\left(-\frac{i\sqrt{a}}{\sqrt{b}}+x\right)\right]\mathrm{Sinh}\left[\frac{\sqrt{a}\,d}{\sqrt{b}}\right]-\right.$$

$$\left.i\,\mathrm{CosIntegral}\left[d\left(\frac{i\sqrt{a}}{\sqrt{b}}+x\right)\right]\mathrm{Sinh}\left[\frac{\sqrt{a}\,d}{\sqrt{b}}\right]+\mathrm{Cosh}\left[\frac{\sqrt{a}\,d}{\sqrt{b}}\right]\left(\mathrm{SinIntegral}\left[d\left(\frac{i\sqrt{a}}{\sqrt{b}}+x\right)\right]-\mathrm{SinIntegral}\left[\frac{i\sqrt{a}\,d}{\sqrt{b}}-d\,x\right]\right)\right)+$$

$$\frac{1}{\sqrt{a}\,\sqrt{b}}d\,\mathrm{Cos}[c]\left(-i\,\mathrm{Cosh}\left[\frac{\sqrt{a}\,d}{\sqrt{b}}\right]\mathrm{CosIntegral}\left[d\left(-\frac{i\sqrt{a}}{\sqrt{b}}+x\right)\right]+i\,\mathrm{Cosh}\left[\frac{\sqrt{a}\,d}{\sqrt{b}}\right]\mathrm{CosIntegral}\left[d\left(\frac{i\sqrt{a}}{\sqrt{b}}+x\right)\right]+\right.$$

$$\left.\mathrm{Sinh}\left[\frac{\sqrt{a}\,d}{\sqrt{b}}\right]\left(-\mathrm{SinIntegral}\left[d\left(\frac{i\sqrt{a}}{\sqrt{b}}+x\right)\right]+\mathrm{SinIntegral}\left[\frac{i\sqrt{a}\,d}{\sqrt{b}}-d\,x\right]\right)\right)-$$

$$\frac{1}{\sqrt{a}\,\sqrt{b}}d\,\mathrm{Sin}[c]\left(\mathrm{CosIntegral}\left[d\left(-\frac{i\sqrt{a}}{\sqrt{b}}+x\right)\right]\mathrm{Sinh}\left[\frac{\sqrt{a}\,d}{\sqrt{b}}\right]+\mathrm{CosIntegral}\left[d\left(\frac{i\sqrt{a}}{\sqrt{b}}+x\right)\right]\mathrm{Sinh}\left[\frac{\sqrt{a}\,d}{\sqrt{b}}\right]+\right.$$

$$\left.i\,\mathrm{Cosh}\left[\frac{\sqrt{a}\,d}{\sqrt{b}}\right]\left(\mathrm{SinIntegral}\left[d\left(\frac{i\sqrt{a}}{\sqrt{b}}+x\right)\right]+\mathrm{SinIntegral}\left[\frac{i\sqrt{a}\,d}{\sqrt{b}}-d\,x\right]\right)\right)+$$

$$\frac{1}{b}d^2\,\mathrm{Sin}[c]\left(\mathrm{Cosh}\left[\frac{\sqrt{a}\,d}{\sqrt{b}}\right]\mathrm{CosIntegral}\left[d\left(-\frac{i\sqrt{a}}{\sqrt{b}}+x\right)\right]+\mathrm{Cosh}\left[\frac{\sqrt{a}\,d}{\sqrt{b}}\right]\mathrm{CosIntegral}\left[d\left(\frac{i\sqrt{a}}{\sqrt{b}}+x\right)\right]+\right.$$

$$\left.\left.i\,\mathrm{Sinh}\left[\frac{\sqrt{a}\,d}{\sqrt{b}}\right]\left(\mathrm{SinIntegral}\left[d\left(\frac{i\sqrt{a}}{\sqrt{b}}+x\right)\right]+\mathrm{SinIntegral}\left[\frac{i\sqrt{a}\,d}{\sqrt{b}}-d\,x\right]\right)\right)\right)$$

Problem 75: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{\text{Sin}[c+d x]}{\left(a+b x^2\right)^3} \, dx$$

Optimal (type 4, 856 leaves, 28 steps):

$$\frac{d \, \text{Cos}[c+d x]}{16 (-a)^{3/2} b \left(\sqrt{-a}-\sqrt{b} x\right)}+\frac{d \, \text{Cos}[c+d x]}{16 (-a)^{3/2} b \left(\sqrt{-a}+\sqrt{b} x\right)}-\frac{3 d \, \text{Cos}\left[c+\frac{\sqrt{-a} d}{\sqrt{b}}\right] \text{CosIntegral}\left[\frac{\sqrt{-a} d}{\sqrt{b}}-d x\right]}{16 a^2 b}-$$
$$\frac{3 d \, \text{Cos}\left[c-\frac{\sqrt{-a} d}{\sqrt{b}}\right] \text{CosIntegral}\left[\frac{\sqrt{-a} d}{\sqrt{b}}+d x\right]}{16 a^2 b}-\frac{3 \, \text{CosIntegral}\left[\frac{\sqrt{-a} d}{\sqrt{b}}+d x\right] \text{Sin}\left[c-\frac{\sqrt{-a} d}{\sqrt{b}}\right]}{16 (-a)^{5/2} \sqrt{b}}+\frac{d^2 \, \text{CosIntegral}\left[\frac{\sqrt{-a} d}{\sqrt{b}}+d x\right] \text{Sin}\left[c-\frac{\sqrt{-a} d}{\sqrt{b}}\right]}{16 (-a)^{3/2} b^{3/2}}+$$
$$\frac{3 \, \text{CosIntegral}\left[\frac{\sqrt{-a} d}{\sqrt{b}}-d x\right] \text{Sin}\left[c+\frac{\sqrt{-a} d}{\sqrt{b}}\right]}{16 (-a)^{5/2} \sqrt{b}}-\frac{d^2 \, \text{CosIntegral}\left[\frac{\sqrt{-a} d}{\sqrt{b}}-d x\right] \text{Sin}\left[c+\frac{\sqrt{-a} d}{\sqrt{b}}\right]}{16 (-a)^{3/2} b^{3/2}}-\frac{\text{Sin}[c+d x]}{16 (-a)^{3/2} \sqrt{b} \left(\sqrt{-a}-\sqrt{b} x\right)^2}-$$
$$\frac{3 \, \text{Sin}[c+d x]}{16 a^2 \sqrt{b} \left(\sqrt{-a}-\sqrt{b} x\right)}+\frac{\text{Sin}[c+d x]}{16 (-a)^{3/2} \sqrt{b} \left(\sqrt{-a}+\sqrt{b} x\right)^2}+\frac{3 \, \text{Sin}[c+d x]}{16 a^2 \sqrt{b} \left(\sqrt{-a}+\sqrt{b} x\right)}-\frac{3 \, \text{Cos}\left[c+\frac{\sqrt{-a} d}{\sqrt{b}}\right] \text{SinIntegral}\left[\frac{\sqrt{-a} d}{\sqrt{b}}-d x\right]}{16 (-a)^{5/2} \sqrt{b}}+$$
$$\frac{d^2 \, \text{Cos}\left[c+\frac{\sqrt{-a} d}{\sqrt{b}}\right] \text{SinIntegral}\left[\frac{\sqrt{-a} d}{\sqrt{b}}-d x\right]}{16 (-a)^{3/2} b^{3/2}}-\frac{3 d \, \text{Sin}\left[c+\frac{\sqrt{-a} d}{\sqrt{b}}\right] \text{SinIntegral}\left[\frac{\sqrt{-a} d}{\sqrt{b}}-d x\right]}{16 a^2 b}-$$
$$\frac{3 \, \text{Cos}\left[c-\frac{\sqrt{-a} d}{\sqrt{b}}\right] \text{SinIntegral}\left[\frac{\sqrt{-a} d}{\sqrt{b}}+d x\right]}{16 (-a)^{5/2} \sqrt{b}}+\frac{d^2 \, \text{Cos}\left[c-\frac{\sqrt{-a} d}{\sqrt{b}}\right] \text{SinIntegral}\left[\frac{\sqrt{-a} d}{\sqrt{b}}+d x\right]}{16 (-a)^{3/2} b^{3/2}}+\frac{3 d \, \text{Sin}\left[c-\frac{\sqrt{-a} d}{\sqrt{b}}\right] \text{SinIntegral}\left[\frac{\sqrt{-a} d}{\sqrt{b}}+d x\right]}{16 a^2 b}$$

Result (type 4, 932 leaves):

$$\frac{1}{16\,a^2\,b^{3/2}}\,\Bigg(\frac{2\,a^2\,\sqrt{b}\,d\,\mathrm{Cos}[c]\,\mathrm{Cos}[d\,x]}{\left(a+b\,x^2\right)^2}+\frac{2\,a\,b^{3/2}\,d\,x^2\,\mathrm{Cos}[c]\,\mathrm{Cos}[d\,x]}{\left(a+b\,x^2\right)^2}+\frac{10\,a\,b^{3/2}\,x\,\mathrm{Cos}[d\,x]\,\mathrm{Sin}[c]}{\left(a+b\,x^2\right)^2}+$$

$$\frac{6\,b^{5/2}\,x^3\,\mathrm{Cos}[d\,x]\,\mathrm{Sin}[c]}{\left(a+b\,x^2\right)^2}+\frac{i\,\mathrm{CosIntegral}\left[d\left(\frac{i\sqrt{a}}{\sqrt{b}}+x\right)\right]\left(3\,i\,\sqrt{a}\,\sqrt{b}\,d\,\mathrm{Cos}\left[c-\frac{i\sqrt{a}\,d}{\sqrt{b}}\right]+\left(3\,b+a\,d^2\right)\mathrm{Sin}\left[c-\frac{i\sqrt{a}\,d}{\sqrt{b}}\right]\right)}{\sqrt{a}}-$$

$$\frac{i\,\mathrm{CosIntegral}\left[d\left(-\frac{i\sqrt{a}}{\sqrt{b}}+x\right)\right]\left(-3\,i\,\sqrt{a}\,\sqrt{b}\,d\,\mathrm{Cos}\left[c+\frac{i\sqrt{a}\,d}{\sqrt{b}}\right]+\left(3\,b+a\,d^2\right)\mathrm{Sin}\left[c+\frac{i\sqrt{a}\,d}{\sqrt{b}}\right]\right)}{\sqrt{a}}+$$

$$\frac{10\,a\,b^{3/2}\,x\,\mathrm{Cos}[c]\,\mathrm{Sin}[d\,x]}{\left(a+b\,x^2\right)^2}+\frac{6\,b^{5/2}\,x^3\,\mathrm{Cos}[c]\,\mathrm{Sin}[d\,x]}{\left(a+b\,x^2\right)^2}-\frac{2\,a^2\,\sqrt{b}\,d\,\mathrm{Sin}[c]\,\mathrm{Sin}[d\,x]}{\left(a+b\,x^2\right)^2}-\frac{2\,a\,b^{3/2}\,d\,x^2\,\mathrm{Sin}[c]\,\mathrm{Sin}[d\,x]}{\left(a+b\,x^2\right)^2}+$$

$$\frac{3\,i\,b\,\mathrm{Cos}[c]\,\mathrm{Cosh}\left[\frac{\sqrt{a}\,d}{\sqrt{b}}\right]\mathrm{SinIntegral}\left[d\left(\frac{i\sqrt{a}}{\sqrt{b}}+x\right)\right]}{\sqrt{a}}+i\,\sqrt{a}\,d^2\,\mathrm{Cos}[c]\,\mathrm{Cosh}\left[\frac{\sqrt{a}\,d}{\sqrt{b}}\right]\mathrm{SinIntegral}\left[d\left(\frac{i\sqrt{a}}{\sqrt{b}}+x\right)\right]+$$

$$3\,\sqrt{b}\,d\,\mathrm{Cosh}\left[\frac{\sqrt{a}\,d}{\sqrt{b}}\right]\mathrm{Sin}[c]\,\mathrm{SinIntegral}\left[d\left(\frac{i\sqrt{a}}{\sqrt{b}}+x\right)\right]-3\,i\,\sqrt{b}\,d\,\mathrm{Cos}[c]\,\mathrm{Sinh}\left[\frac{\sqrt{a}\,d}{\sqrt{b}}\right]\mathrm{SinIntegral}\left[d\left(\frac{i\sqrt{a}}{\sqrt{b}}+x\right)\right]-$$

$$\frac{3\,b\,\mathrm{Sin}[c]\,\mathrm{Sinh}\left[\frac{\sqrt{a}\,d}{\sqrt{b}}\right]\mathrm{SinIntegral}\left[d\left(\frac{i\sqrt{a}}{\sqrt{b}}+x\right)\right]}{\sqrt{a}}-\sqrt{a}\,d^2\,\mathrm{Sin}[c]\,\mathrm{Sinh}\left[\frac{\sqrt{a}\,d}{\sqrt{b}}\right]\mathrm{SinIntegral}\left[d\left(\frac{i\sqrt{a}}{\sqrt{b}}+x\right)\right]+$$

$$\frac{3\,i\,b\,\mathrm{Cos}[c]\,\mathrm{Cosh}\left[\frac{\sqrt{a}\,d}{\sqrt{b}}\right]\mathrm{SinIntegral}\left[\frac{i\sqrt{a}\,d}{\sqrt{b}}-d\,x\right]}{\sqrt{a}}+i\,\sqrt{a}\,d^2\,\mathrm{Cos}[c]\,\mathrm{Cosh}\left[\frac{\sqrt{a}\,d}{\sqrt{b}}\right]\mathrm{SinIntegral}\left[\frac{i\sqrt{a}\,d}{\sqrt{b}}-d\,x\right]-$$

$$3\,\sqrt{b}\,d\,\mathrm{Cosh}\left[\frac{\sqrt{a}\,d}{\sqrt{b}}\right]\mathrm{Sin}[c]\,\mathrm{SinIntegral}\left[\frac{i\sqrt{a}\,d}{\sqrt{b}}-d\,x\right]-3\,i\,\sqrt{b}\,d\,\mathrm{Cos}[c]\,\mathrm{Sinh}\left[\frac{\sqrt{a}\,d}{\sqrt{b}}\right]\mathrm{SinIntegral}\left[\frac{i\sqrt{a}\,d}{\sqrt{b}}-d\,x\right]+$$

$$\frac{3\,b\,\mathrm{Sin}[c]\,\mathrm{Sinh}\left[\frac{\sqrt{a}\,d}{\sqrt{b}}\right]\mathrm{SinIntegral}\left[\frac{i\sqrt{a}\,d}{\sqrt{b}}-d\,x\right]}{\sqrt{a}}+\sqrt{a}\,d^2\,\mathrm{Sin}[c]\,\mathrm{Sinh}\left[\frac{\sqrt{a}\,d}{\sqrt{b}}\right]\mathrm{SinIntegral}\left[\frac{i\sqrt{a}\,d}{\sqrt{b}}-d\,x\right]\Bigg)$$

- **Problem 76: Result unnecessarily involves imaginary or complex numbers.**

$$\int\frac{\mathrm{Sin}[c+d\,x]}{x\left(a+b\,x^2\right)^3}\,dx$$

Optimal (type 4, 730 leaves, 41 steps):

$$\frac{d\,\mathrm{Cos}[c+d\,x]}{16\,a^2\,\sqrt{b}\,\left(\sqrt{-a}-\sqrt{b}\,x\right)}-\frac{d\,\mathrm{Cos}[c+d\,x]}{16\,a^2\,\sqrt{b}\,\left(\sqrt{-a}+\sqrt{b}\,x\right)}-\frac{5\,d\,\mathrm{Cos}\left[c+\frac{\sqrt{-a}\,d}{\sqrt{b}}\right]\,\mathrm{CosIntegral}\left[\frac{\sqrt{-a}\,d}{\sqrt{b}}-d\,x\right]}{16\,(-a)^{5/2}\,\sqrt{b}}+$$

$$\frac{5\,d\,\mathrm{Cos}\left[c-\frac{\sqrt{-a}\,d}{\sqrt{b}}\right]\,\mathrm{CosIntegral}\left[\frac{\sqrt{-a}\,d}{\sqrt{b}}+d\,x\right]}{16\,(-a)^{5/2}\,\sqrt{b}}+\frac{\mathrm{CosIntegral}[d\,x]\,\mathrm{Sin}[c]}{a^3}-\frac{\mathrm{CosIntegral}\left[\frac{\sqrt{-a}\,d}{\sqrt{b}}+d\,x\right]\,\mathrm{Sin}\left[c-\frac{\sqrt{-a}\,d}{\sqrt{b}}\right]}{2\,a^3}-$$

$$\frac{d^2\,\mathrm{CosIntegral}\left[\frac{\sqrt{-a}\,d}{\sqrt{b}}+d\,x\right]\,\mathrm{Sin}\left[c-\frac{\sqrt{-a}\,d}{\sqrt{b}}\right]}{16\,a^2\,b}-\frac{\mathrm{CosIntegral}\left[\frac{\sqrt{-a}\,d}{\sqrt{b}}-d\,x\right]\,\mathrm{Sin}\left[c+\frac{\sqrt{-a}\,d}{\sqrt{b}}\right]}{2\,a^3}-\frac{d^2\,\mathrm{CosIntegral}\left[\frac{\sqrt{-a}\,d}{\sqrt{b}}-d\,x\right]\,\mathrm{Sin}\left[c+\frac{\sqrt{-a}\,d}{\sqrt{b}}\right]}{16\,a^2\,b}+$$

$$\frac{\mathrm{Sin}[c+d\,x]}{4\,a\,\left(a+b\,x^2\right)^2}+\frac{\mathrm{Sin}[c+d\,x]}{2\,a^2\,\left(a+b\,x^2\right)}+\frac{\mathrm{Cos}[c]\,\mathrm{SinIntegral}[d\,x]}{a^3}+\frac{\mathrm{Cos}\left[c+\frac{\sqrt{-a}\,d}{\sqrt{b}}\right]\,\mathrm{SinIntegral}\left[\frac{\sqrt{-a}\,d}{\sqrt{b}}-d\,x\right]}{2\,a^3}+$$

$$\frac{d^2\,\mathrm{Cos}\left[c+\frac{\sqrt{-a}\,d}{\sqrt{b}}\right]\,\mathrm{SinIntegral}\left[\frac{\sqrt{-a}\,d}{\sqrt{b}}-d\,x\right]}{16\,a^2\,b}-\frac{5\,d\,\mathrm{Sin}\left[c+\frac{\sqrt{-a}\,d}{\sqrt{b}}\right]\,\mathrm{SinIntegral}\left[\frac{\sqrt{-a}\,d}{\sqrt{b}}-d\,x\right]}{16\,(-a)^{5/2}\,\sqrt{b}}-$$

$$\frac{\mathrm{Cos}\left[c-\frac{\sqrt{-a}\,d}{\sqrt{b}}\right]\,\mathrm{SinIntegral}\left[\frac{\sqrt{-a}\,d}{\sqrt{b}}+d\,x\right]}{2\,a^3}-\frac{d^2\,\mathrm{Cos}\left[c-\frac{\sqrt{-a}\,d}{\sqrt{b}}\right]\,\mathrm{SinIntegral}\left[\frac{\sqrt{-a}\,d}{\sqrt{b}}+d\,x\right]}{16\,a^2\,b}-\frac{5\,d\,\mathrm{Sin}\left[c-\frac{\sqrt{-a}\,d}{\sqrt{b}}\right]\,\mathrm{SinIntegral}\left[\frac{\sqrt{-a}\,d}{\sqrt{b}}+d\,x\right]}{16\,(-a)^{5/2}\,\sqrt{b}}$$

Result (type 4, 1384 leaves) :

$$\mathrm{Cos}[c]\,\left(\frac{\mathrm{SinIntegral}[d\,x]}{a^3}+\frac{1}{16\,a^2\,b}\right.$$

$$\left(\frac{\left(\mathrm{i}\,\sqrt{a}\,\sqrt{b}\,d+b\,d\,x\right)\,\mathrm{Cos}[d\,x]+b\,\mathrm{Sin}[d\,x]}{\left(\sqrt{a}-\mathrm{i}\,\sqrt{b}\,x\right)^2}+\mathrm{i}\,d^2\,\mathrm{CosIntegral}\left[d\,\left(\frac{\mathrm{i}\,\sqrt{a}}{\sqrt{b}}+x\right)\right]\,\mathrm{Sinh}\left[\frac{\sqrt{a}\,d}{\sqrt{b}}\right]-d^2\,\mathrm{Cosh}\left[\frac{\sqrt{a}\,d}{\sqrt{b}}\right]\,\mathrm{SinIntegral}\left[d\,\left(\frac{\mathrm{i}\,\sqrt{a}}{\sqrt{b}}+x\right)\right]\right)-$$

$$\frac{5\,\mathrm{i}\,\sqrt{b}\,\left(-\frac{\mathrm{Sin}[d\,x]}{\mathrm{i}\,\sqrt{a}\,\sqrt{b}+b\,x}+\frac{d\,\left(\mathrm{Cosh}\left[\frac{\sqrt{a}\,d}{\sqrt{b}}\right]\,\mathrm{CosIntegral}\left[d\,\left(\frac{\mathrm{i}\,\sqrt{a}}{\sqrt{b}}+x\right)\right]+\mathrm{i}\,\mathrm{Sinh}\left[\frac{\sqrt{a}\,d}{\sqrt{b}}\right]\,\mathrm{SinIntegral}\left[d\,\left(\frac{\mathrm{i}\,\sqrt{a}}{\sqrt{b}}+x\right)\right]\right)}{b}\right)}{16\,a^{5/2}}-$$

$$\frac{i\,\text{CosIntegral}\left[-\frac{i\sqrt{a}\,d}{\sqrt{b}}+d\,x\right]\text{Sinh}\left[\frac{\sqrt{a}\,d}{\sqrt{b}}\right]-\text{Cosh}\left[\frac{\sqrt{a}\,d}{\sqrt{b}}\right]\text{SinIntegral}\left[\frac{i\sqrt{a}\,d}{\sqrt{b}}-d\,x\right]}{2\,a^3}+\frac{1}{16\,a^2\,b}$$

$$\left(\frac{\left(-i\sqrt{a}\sqrt{b}\,d+b\,d\,x\right)\text{Cos}[d\,x]+b\,\text{Sin}[d\,x]}{\left(\sqrt{a}+i\sqrt{b}\,x\right)^2}-i\,d^2\,\text{CosIntegral}\left[d\left(-\frac{i\sqrt{a}}{\sqrt{b}}+x\right)\right]\text{Sinh}\left[\frac{\sqrt{a}\,d}{\sqrt{b}}\right]+d^2\,\text{Cosh}\left[\frac{\sqrt{a}\,d}{\sqrt{b}}\right]\text{SinIntegral}\left[\frac{i\sqrt{a}\,d}{\sqrt{b}}-d\,x\right]\right)+$$

$$\frac{5\,i\sqrt{b}\left(-\frac{\text{Sin}[d\,x]}{-i\sqrt{a}\sqrt{b}+b\,x}+\frac{d\left(\text{Cosh}\left[\frac{\sqrt{a}\,d}{\sqrt{b}}\right]\text{CosIntegral}\left[d\left(-\frac{i\sqrt{a}}{\sqrt{b}}+x\right)\right]+i\,\text{Sinh}\left[\frac{\sqrt{a}\,d}{\sqrt{b}}\right]\text{SinIntegral}\left[\frac{i\sqrt{a}\,d}{\sqrt{b}}-d\,x\right]\right)}{b}\right)}{16\,a^{5/2}}-$$

$$\left.\frac{-i\,\text{CosIntegral}\left[\frac{i\sqrt{a}\,d}{\sqrt{b}}+d\,x\right]\text{Sinh}\left[\frac{\sqrt{a}\,d}{\sqrt{b}}\right]+\text{Cosh}\left[\frac{\sqrt{a}\,d}{\sqrt{b}}\right]\text{SinIntegral}\left[\frac{i\sqrt{a}\,d}{\sqrt{b}}+d\,x\right]}{2\,a^3}\right)+$$

$$\text{Sin}[c]\left(\frac{\text{CosIntegral}[d\,x]}{a^3}+\frac{1}{16\,a^2\,b}\left(-d^2\,\text{Cosh}\left[\frac{\sqrt{a}\,d}{\sqrt{b}}\right]\text{CosIntegral}\left[d\left(\frac{i\sqrt{a}}{\sqrt{b}}+x\right)\right]+\frac{b\,\text{Cos}[d\,x]+\left(-i\sqrt{a}\sqrt{b}\,d-b\,d\,x\right)\text{Sin}[d\,x]}{\left(\sqrt{a}-i\sqrt{b}\,x\right)^2}-\right.\right.$$

$$\left.i\,d^2\,\text{Sinh}\left[\frac{\sqrt{a}\,d}{\sqrt{b}}\right]\text{SinIntegral}\left[d\left(\frac{i\sqrt{a}}{\sqrt{b}}+x\right)\right]\right)-\frac{5\,i\sqrt{b}\left(-\frac{\text{Cos}[d\,x]}{i\sqrt{a}\sqrt{b}+b\,x}+\frac{i\,d\left(\text{CosIntegral}\left[d\left(\frac{i\sqrt{a}}{\sqrt{b}}+x\right)\right]\text{Sinh}\left[\frac{\sqrt{a}\,d}{\sqrt{b}}\right]+i\,\text{Cosh}\left[\frac{\sqrt{a}\,d}{\sqrt{b}}\right]\text{SinIntegral}\left[d\left(\frac{i\sqrt{a}}{\sqrt{b}}+x\right)\right]\right)}{b}\right)}{16\,a^{5/2}}-$$

$$\frac{\text{Cosh}\left[\frac{\sqrt{a}\,d}{\sqrt{b}}\right]\text{CosIntegral}\left[-\frac{i\sqrt{a}\,d}{\sqrt{b}}+d\,x\right]+i\,\text{Sinh}\left[\frac{\sqrt{a}\,d}{\sqrt{b}}\right]\text{SinIntegral}\left[\frac{i\sqrt{a}\,d}{\sqrt{b}}-d\,x\right]}{2\,a^3}+\frac{1}{16\,a^2\,b}$$

$$\left(-d^2\,\text{Cosh}\left[\frac{\sqrt{a}\,d}{\sqrt{b}}\right]\text{CosIntegral}\left[d\left(-\frac{i\sqrt{a}}{\sqrt{b}}+x\right)\right]+\frac{b\,\text{Cos}[d\,x]+i\sqrt{a}\sqrt{b}\,d\,\text{Sin}[d\,x]-b\,d\,x\,\text{Sin}[d\,x]}{\left(\sqrt{a}+i\sqrt{b}\,x\right)^2}-\right.$$

$$\left.\mathrm{i}\, d^2 \,\text{Sinh}\left[\frac{\sqrt{a}\, d}{\sqrt{b}}\right] \text{SinIntegral}\left[\frac{\mathrm{i}\sqrt{a}\, d}{\sqrt{b}} - d\, x\right]\right) + \frac{5\,\mathrm{i}\sqrt{b}\left(-\frac{\text{Cos}[d\,x]}{-\mathrm{i}\sqrt{a}\sqrt{b}+b\,x} - \frac{d\left(\mathrm{i}\,\text{CosIntegral}\left[d\left(-\frac{\mathrm{i}\sqrt{a}}{\sqrt{b}}+x\right)\right]\text{Sinh}\left[\frac{\sqrt{a}\,d}{\sqrt{b}}\right]-\text{Cosh}\left[\frac{\sqrt{a}\,d}{\sqrt{b}}\right]\text{SinIntegral}\left[\frac{\mathrm{i}\sqrt{a}\,d}{\sqrt{b}}-d\,x\right]\right)}{b}\right)}{16\, a^{5/2}} -$$

$$\left.\frac{\text{Cosh}\left[\frac{\sqrt{a}\,d}{\sqrt{b}}\right]\text{CosIntegral}\left[\frac{\mathrm{i}\sqrt{a}\,d}{\sqrt{b}}+d\,x\right] + \mathrm{i}\,\text{Sinh}\left[\frac{\sqrt{a}\,d}{\sqrt{b}}\right]\text{SinIntegral}\left[\frac{\mathrm{i}\sqrt{a}\,d}{\sqrt{b}}+d\,x\right]}{2\, a^3}\right)$$

Problem 77: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{\text{Sin}[c+d\,x]}{x^2\left(a+b\,x^2\right)^3}\,dx$$

Optimal (type 4, 875 leaves, 60 steps):

$$\frac{d\,\text{Cos}[c+d\,x]}{16\,(-a)^{5/2}\left(\sqrt{-a}-\sqrt{b}\,x\right)} + \frac{d\,\text{Cos}[c+d\,x]}{16\,(-a)^{5/2}\left(\sqrt{-a}+\sqrt{b}\,x\right)} + \frac{d\,\text{Cos}[c]\,\text{CosIntegral}[d\,x]}{a^3} + \frac{7\,d\,\text{Cos}\left[c+\frac{\sqrt{-a}\,d}{\sqrt{b}}\right]\text{CosIntegral}\left[\frac{\sqrt{-a}\,d}{\sqrt{b}}-d\,x\right]}{16\,a^3} +$$

$$\frac{7\,d\,\text{Cos}\left[c-\frac{\sqrt{-a}\,d}{\sqrt{b}}\right]\text{CosIntegral}\left[\frac{\sqrt{-a}\,d}{\sqrt{b}}+d\,x\right]}{16\,a^3} - \frac{15\sqrt{b}\,\text{CosIntegral}\left[\frac{\sqrt{-a}\,d}{\sqrt{b}}+d\,x\right]\text{Sin}\left[c-\frac{\sqrt{-a}\,d}{\sqrt{b}}\right]}{16\,(-a)^{7/2}} + \frac{d^2\,\text{CosIntegral}\left[\frac{\sqrt{-a}\,d}{\sqrt{b}}+d\,x\right]\text{Sin}\left[c-\frac{\sqrt{-a}\,d}{\sqrt{b}}\right]}{16\,(-a)^{5/2}\sqrt{b}} +$$

$$\frac{15\sqrt{b}\,\text{CosIntegral}\left[\frac{\sqrt{-a}\,d}{\sqrt{b}}-d\,x\right]\text{Sin}\left[c+\frac{\sqrt{-a}\,d}{\sqrt{b}}\right]}{16\,(-a)^{7/2}} - \frac{d^2\,\text{CosIntegral}\left[\frac{\sqrt{-a}\,d}{\sqrt{b}}-d\,x\right]\text{Sin}\left[c+\frac{\sqrt{-a}\,d}{\sqrt{b}}\right]}{16\,(-a)^{5/2}\sqrt{b}} - \frac{\text{Sin}[c+d\,x]}{a^3\,x} -$$

$$\frac{\sqrt{b}\,\text{Sin}[c+d\,x]}{16\,(-a)^{5/2}\left(\sqrt{-a}-\sqrt{b}\,x\right)^2} + \frac{7\sqrt{b}\,\text{Sin}[c+d\,x]}{16\,a^3\left(\sqrt{-a}-\sqrt{b}\,x\right)} + \frac{\sqrt{b}\,\text{Sin}[c+d\,x]}{16\,(-a)^{5/2}\left(\sqrt{-a}+\sqrt{b}\,x\right)^2} - \frac{7\sqrt{b}\,\text{Sin}[c+d\,x]}{16\,a^3\left(\sqrt{-a}+\sqrt{b}\,x\right)} - \frac{d\,\text{Sin}[c]\,\text{SinIntegral}[d\,x]}{a^3} -$$

$$\frac{15\sqrt{b}\,\text{Cos}\left[c+\frac{\sqrt{-a}\,d}{\sqrt{b}}\right]\text{SinIntegral}\left[\frac{\sqrt{-a}\,d}{\sqrt{b}}-d\,x\right]}{16\,(-a)^{7/2}} + \frac{d^2\,\text{Cos}\left[c+\frac{\sqrt{-a}\,d}{\sqrt{b}}\right]\text{SinIntegral}\left[\frac{\sqrt{-a}\,d}{\sqrt{b}}-d\,x\right]}{16\,(-a)^{5/2}\sqrt{b}} + \frac{7\,d\,\text{Sin}\left[c+\frac{\sqrt{-a}\,d}{\sqrt{b}}\right]\text{SinIntegral}\left[\frac{\sqrt{-a}\,d}{\sqrt{b}}-d\,x\right]}{16\,a^3} -$$

$$\frac{15\sqrt{b}\,\text{Cos}\left[c-\frac{\sqrt{-a}\,d}{\sqrt{b}}\right]\text{SinIntegral}\left[\frac{\sqrt{-a}\,d}{\sqrt{b}}+d\,x\right]}{16\,(-a)^{7/2}} + \frac{d^2\,\text{Cos}\left[c-\frac{\sqrt{-a}\,d}{\sqrt{b}}\right]\text{SinIntegral}\left[\frac{\sqrt{-a}\,d}{\sqrt{b}}+d\,x\right]}{16\,(-a)^{5/2}\sqrt{b}} - \frac{7\,d\,\text{Sin}\left[c-\frac{\sqrt{-a}\,d}{\sqrt{b}}\right]\text{SinIntegral}\left[\frac{\sqrt{-a}\,d}{\sqrt{b}}+d\,x\right]}{16\,a^3}$$

Result (type 4, 1673 leaves):

$$-\frac{1}{16\, a^{7/2}\sqrt{b}\; x\,\left(a+b\,x^2\right)^2}\, i\, \Big(-2\, i\, a^{5/2}\sqrt{b}\; d\, x\, \text{Cos}[c+d\,x]-2\, i\, a^{3/2}\, b^{3/2}\, d\, x^3\, \text{Cos}[c+d\,x]+$$

$$16\, i\sqrt{a}\,\sqrt{b}\; d\, x\,\left(a+b\,x^2\right)^2 \text{Cos}[c]\, \text{CosIntegral}[d\,x]+7\, i\, a^{5/2}\sqrt{b}\; d\, x\, \text{Cos}\Big[c-\frac{i\sqrt{a}\; d}{\sqrt{b}}\Big]\, \text{CosIntegral}\Big[d\,\Big(\frac{i\sqrt{a}}{\sqrt{b}}+x\Big)\Big]+$$

$$14\, i\, a^{3/2}\, b^{3/2}\, d\, x^3\, \text{Cos}\Big[c-\frac{i\sqrt{a}\; d}{\sqrt{b}}\Big]\, \text{CosIntegral}\Big[d\,\Big(\frac{i\sqrt{a}}{\sqrt{b}}+x\Big)\Big]+7\, i\sqrt{a}\; b^{5/2}\, d\, x^5\, \text{Cos}\Big[c-\frac{i\sqrt{a}\; d}{\sqrt{b}}\Big]\, \text{CosIntegral}\Big[d\,\Big(\frac{i\sqrt{a}}{\sqrt{b}}+x\Big)\Big]+$$

$$15\, a^2\, b\, x\, \text{CosIntegral}\Big[d\,\Big(\frac{i\sqrt{a}}{\sqrt{b}}+x\Big)\Big]\, \text{Sin}\Big[c-\frac{i\sqrt{a}\; d}{\sqrt{b}}\Big]+a^3\, d^2\, x\, \text{CosIntegral}\Big[d\,\Big(\frac{i\sqrt{a}}{\sqrt{b}}+x\Big)\Big]\, \text{Sin}\Big[c-\frac{i\sqrt{a}\; d}{\sqrt{b}}\Big]+$$

$$30\, a\, b^2\, x^3\, \text{CosIntegral}\Big[d\,\Big(\frac{i\sqrt{a}}{\sqrt{b}}+x\Big)\Big]\, \text{Sin}\Big[c-\frac{i\sqrt{a}\; d}{\sqrt{b}}\Big]+2\, a^2\, b\, d^2\, x^3\, \text{CosIntegral}\Big[d\,\Big(\frac{i\sqrt{a}}{\sqrt{b}}+x\Big)\Big]\, \text{Sin}\Big[c-\frac{i\sqrt{a}\; d}{\sqrt{b}}\Big]+$$

$$15\, b^3\, x^5\, \text{CosIntegral}\Big[d\,\Big(\frac{i\sqrt{a}}{\sqrt{b}}+x\Big)\Big]\, \text{Sin}\Big[c-\frac{i\sqrt{a}\; d}{\sqrt{b}}\Big]+a\, b^2\, d^2\, x^5\, \text{CosIntegral}\Big[d\,\Big(\frac{i\sqrt{a}}{\sqrt{b}}+x\Big)\Big]\, \text{Sin}\Big[c-\frac{i\sqrt{a}\; d}{\sqrt{b}}\Big]-$$

$$x\,\left(a+b\,x^2\right)^2 \text{CosIntegral}\Big[d\,\Big(-\frac{i\sqrt{a}}{\sqrt{b}}+x\Big)\Big]\,\Big(-7\, i\sqrt{a}\,\sqrt{b}\; d\, \text{Cos}\Big[c+\frac{i\sqrt{a}\; d}{\sqrt{b}}\Big]+\left(15\, b+a\, d^2\right) \text{Sin}\Big[c+\frac{i\sqrt{a}\; d}{\sqrt{b}}\Big]\Big)-$$

$$16\, i\, a^{5/2}\sqrt{b}\; \text{Sin}[c+d\,x]-50\, i\, a^{3/2}\, b^{3/2}\, x^2\, \text{Sin}[c+d\,x]-30\, i\sqrt{a}\; b^{5/2}\, x^4\, \text{Sin}[c+d\,x]-16\, i\, a^{5/2}\sqrt{b}\; d\, x\, \text{Sin}[c]\, \text{SinIntegral}[d\,x]-$$

$$32\, i\, a^{3/2}\, b^{3/2}\, d\, x^3\, \text{Sin}[c]\, \text{SinIntegral}[d\,x]-16\, i\sqrt{a}\; b^{5/2}\, d\, x^5\, \text{Sin}[c]\, \text{SinIntegral}[d\,x]+$$

$$15\, a^2\, b\, x\, \text{Cos}\Big[c-\frac{i\sqrt{a}\; d}{\sqrt{b}}\Big]\, \text{SinIntegral}\Big[d\,\Big(\frac{i\sqrt{a}}{\sqrt{b}}+x\Big)\Big]+a^3\, d^2\, x\, \text{Cos}\Big[c-\frac{i\sqrt{a}\; d}{\sqrt{b}}\Big]\, \text{SinIntegral}\Big[d\,\Big(\frac{i\sqrt{a}}{\sqrt{b}}+x\Big)\Big]+$$

$$30\, a\, b^2\, x^3\, \text{Cos}\Big[c-\frac{i\sqrt{a}\; d}{\sqrt{b}}\Big]\, \text{SinIntegral}\Big[d\,\Big(\frac{i\sqrt{a}}{\sqrt{b}}+x\Big)\Big]+2\, a^2\, b\, d^2\, x^3\, \text{Cos}\Big[c-\frac{i\sqrt{a}\; d}{\sqrt{b}}\Big]\, \text{SinIntegral}\Big[d\,\Big(\frac{i\sqrt{a}}{\sqrt{b}}+x\Big)\Big]+$$

$$15\, b^3\, x^5\, \text{Cos}\Big[c-\frac{i\sqrt{a}\; d}{\sqrt{b}}\Big]\, \text{SinIntegral}\Big[d\,\Big(\frac{i\sqrt{a}}{\sqrt{b}}+x\Big)\Big]+a\, b^2\, d^2\, x^5\, \text{Cos}\Big[c-\frac{i\sqrt{a}\; d}{\sqrt{b}}\Big]\, \text{SinIntegral}\Big[d\,\Big(\frac{i\sqrt{a}}{\sqrt{b}}+x\Big)\Big]-$$

$$7\, i\, a^{5/2}\sqrt{b}\; d\, x\, \text{Sin}\Big[c-\frac{i\sqrt{a}\; d}{\sqrt{b}}\Big]\, \text{SinIntegral}\Big[d\,\Big(\frac{i\sqrt{a}}{\sqrt{b}}+x\Big)\Big]-14\, i\, a^{3/2}\, b^{3/2}\, d\, x^3\, \text{Sin}\Big[c-\frac{i\sqrt{a}\; d}{\sqrt{b}}\Big]\, \text{SinIntegral}\Big[d\,\Big(\frac{i\sqrt{a}}{\sqrt{b}}+x\Big)\Big]-$$

$$7\, i\sqrt{a}\; b^{5/2}\, d\, x^5\, \text{Sin}\Big[c-\frac{i\sqrt{a}\; d}{\sqrt{b}}\Big]\, \text{SinIntegral}\Big[d\,\Big(\frac{i\sqrt{a}}{\sqrt{b}}+x\Big)\Big]+15\, a^2\, b\, x\, \text{Cos}\Big[c+\frac{i\sqrt{a}\; d}{\sqrt{b}}\Big]\, \text{SinIntegral}\Big[\frac{i\sqrt{a}\; d}{\sqrt{b}}-d\,x\Big]+$$

$$a^3\, d^2\, x\, \text{Cos}\Big[c+\frac{i\sqrt{a}\; d}{\sqrt{b}}\Big]\, \text{SinIntegral}\Big[\frac{i\sqrt{a}\; d}{\sqrt{b}}-d\,x\Big]+30\, a\, b^2\, x^3\, \text{Cos}\Big[c+\frac{i\sqrt{a}\; d}{\sqrt{b}}\Big]\, \text{SinIntegral}\Big[\frac{i\sqrt{a}\; d}{\sqrt{b}}-d\,x\Big]+$$

$$2\, a^2\, b\, d^2\, x^3\, \text{Cos}\Big[c+\frac{i\sqrt{a}\; d}{\sqrt{b}}\Big]\, \text{SinIntegral}\Big[\frac{i\sqrt{a}\; d}{\sqrt{b}}-d\,x\Big]+15\, b^3\, x^5\, \text{Cos}\Big[c+\frac{i\sqrt{a}\; d}{\sqrt{b}}\Big]\, \text{SinIntegral}\Big[\frac{i\sqrt{a}\; d}{\sqrt{b}}-d\,x\Big]+$$

$$a\,b^2 d^2 x^5 \text{Cos}\left[c+\frac{i\sqrt{a}\,d}{\sqrt{b}}\right] \text{SinIntegral}\left[\frac{i\sqrt{a}\,d}{\sqrt{b}}-d\,x\right]+7\,i\,a^{5/2}\sqrt{b}\,d\,x\,\text{Sin}\left[c+\frac{i\sqrt{a}\,d}{\sqrt{b}}\right] \text{SinIntegral}\left[\frac{i\sqrt{a}\,d}{\sqrt{b}}-d\,x\right]+$$
$$14\,i\,a^{3/2} b^{3/2} d\,x^3 \text{Sin}\left[c+\frac{i\sqrt{a}\,d}{\sqrt{b}}\right] \text{SinIntegral}\left[\frac{i\sqrt{a}\,d}{\sqrt{b}}-d\,x\right]+7\,i\sqrt{a}\,b^{5/2} d\,x^5 \text{Sin}\left[c+\frac{i\sqrt{a}\,d}{\sqrt{b}}\right] \text{SinIntegral}\left[\frac{i\sqrt{a}\,d}{\sqrt{b}}-d\,x\right]\Bigg)$$

- **Problem 78: Result unnecessarily involves imaginary or complex numbers.**

$$\int \frac{\text{Sin}[c+d\,x]}{x^3\left(a+b\,x^2\right)^3}\,dx$$

Optimal (type 4, 791 leaves, 46 steps):

$$-\frac{d\,\text{Cos}[c+d\,x]}{2\,a^3\,x}-\frac{\sqrt{b}\,d\,\text{Cos}[c+d\,x]}{16\,a^3\left(\sqrt{-a}-\sqrt{b}\,x\right)}+\frac{\sqrt{b}\,d\,\text{Cos}[c+d\,x]}{16\,a^3\left(\sqrt{-a}+\sqrt{b}\,x\right)}-\frac{9\sqrt{b}\,d\,\text{Cos}\left[c+\frac{\sqrt{-a}\,d}{\sqrt{b}}\right] \text{CosIntegral}\left[\frac{\sqrt{-a}\,d}{\sqrt{b}}-d\,x\right]}{16\,(-a)^{7/2}}+$$
$$\frac{9\sqrt{b}\,d\,\text{Cos}\left[c-\frac{\sqrt{-a}\,d}{\sqrt{b}}\right] \text{CosIntegral}\left[\frac{\sqrt{-a}\,d}{\sqrt{b}}+d\,x\right]}{16\,(-a)^{7/2}}-\frac{3\,b\,\text{CosIntegral}[d\,x]\,\text{Sin}[c]}{a^4}-\frac{d^2\,\text{CosIntegral}[d\,x]\,\text{Sin}[c]}{2\,a^3}+$$
$$\frac{3\,b\,\text{CosIntegral}\left[\frac{\sqrt{-a}\,d}{\sqrt{b}}+d\,x\right] \text{Sin}\left[c-\frac{\sqrt{-a}\,d}{\sqrt{b}}\right]}{2\,a^4}+\frac{d^2\,\text{CosIntegral}\left[\frac{\sqrt{-a}\,d}{\sqrt{b}}+d\,x\right] \text{Sin}\left[c-\frac{\sqrt{-a}\,d}{\sqrt{b}}\right]}{16\,a^3}+\frac{3\,b\,\text{CosIntegral}\left[\frac{\sqrt{-a}\,d}{\sqrt{b}}-d\,x\right] \text{Sin}\left[c+\frac{\sqrt{-a}\,d}{\sqrt{b}}\right]}{2\,a^4}+$$
$$\frac{d^2\,\text{CosIntegral}\left[\frac{\sqrt{-a}\,d}{\sqrt{b}}-d\,x\right] \text{Sin}\left[c+\frac{\sqrt{-a}\,d}{\sqrt{b}}\right]}{16\,a^3}-\frac{\text{Sin}[c+d\,x]}{2\,a^3\,x^2}-\frac{b\,\text{Sin}[c+d\,x]}{4\,a^2\left(a+b\,x^2\right)^2}-\frac{b\,\text{Sin}[c+d\,x]}{a^3\left(a+b\,x^2\right)}-\frac{3\,b\,\text{Cos}[c]\,\text{SinIntegral}[d\,x]}{a^4}-$$
$$\frac{d^2\,\text{Cos}[c]\,\text{SinIntegral}[d\,x]}{2\,a^3}-\frac{3\,b\,\text{Cos}\left[c+\frac{\sqrt{-a}\,d}{\sqrt{b}}\right] \text{SinIntegral}\left[\frac{\sqrt{-a}\,d}{\sqrt{b}}-d\,x\right]}{2\,a^4}-\frac{d^2\,\text{Cos}\left[c+\frac{\sqrt{-a}\,d}{\sqrt{b}}\right] \text{SinIntegral}\left[\frac{\sqrt{-a}\,d}{\sqrt{b}}-d\,x\right]}{16\,a^3}-$$
$$\frac{9\sqrt{b}\,d\,\text{Sin}\left[c+\frac{\sqrt{-a}\,d}{\sqrt{b}}\right] \text{SinIntegral}\left[\frac{\sqrt{-a}\,d}{\sqrt{b}}-d\,x\right]}{16\,(-a)^{7/2}}+\frac{3\,b\,\text{Cos}\left[c-\frac{\sqrt{-a}\,d}{\sqrt{b}}\right] \text{SinIntegral}\left[\frac{\sqrt{-a}\,d}{\sqrt{b}}+d\,x\right]}{2\,a^4}+$$
$$\frac{d^2\,\text{Cos}\left[c-\frac{\sqrt{-a}\,d}{\sqrt{b}}\right] \text{SinIntegral}\left[\frac{\sqrt{-a}\,d}{\sqrt{b}}+d\,x\right]}{16\,a^3}-\frac{9\sqrt{b}\,d\,\text{Sin}\left[c-\frac{\sqrt{-a}\,d}{\sqrt{b}}\right] \text{SinIntegral}\left[\frac{\sqrt{-a}\,d}{\sqrt{b}}+d\,x\right]}{16\,(-a)^{7/2}}$$

Result (type 4, 995 leaves):

$$\frac{1}{16\,a^4}\Bigg(-\frac{2\,a\,\text{Cos}[d\,x]\,\left(d\,x\,\left(4\,a^2+7\,a\,b\,x^2+3\,b^2\,x^4\right)\text{Cos}[c]+2\,\left(2\,a^2+9\,a\,b\,x^2+6\,b^2\,x^4\right)\text{Sin}[c]\right)}{x^2\,\left(a+b\,x^2\right)^2}+$$
$$\frac{2\,a\,\left(-2\,\left(2\,a^2+9\,a\,b\,x^2+6\,b^2\,x^4\right)\text{Cos}[c]+d\,x\,\left(4\,a^2+7\,a\,b\,x^2+3\,b^2\,x^4\right)\text{Sin}[c]\right)\text{Sin}[d\,x]}{x^2\,\left(a+b\,x^2\right)^2}-$$
$$8\,\left(6\,b+a\,d^2\right)\,(\text{CosIntegral}[d\,x]\,\text{Sin}[c]+\text{Cos}[c]\,\text{SinIntegral}[d\,x])+$$
$$24\,b\,\text{Cos}[c]\left(i\,\text{CosIntegral}\left[d\left(-\frac{i\sqrt{a}}{\sqrt{b}}+x\right)\right]\text{Sinh}\left[\frac{\sqrt{a}\,d}{\sqrt{b}}\right]-i\,\text{CosIntegral}\left[d\left(\frac{i\sqrt{a}}{\sqrt{b}}+x\right)\right]\text{Sinh}\left[\frac{\sqrt{a}\,d}{\sqrt{b}}\right]+\right.$$
$$\left.\text{Cosh}\left[\frac{\sqrt{a}\,d}{\sqrt{b}}\right]\left(\text{SinIntegral}\left[d\left(\frac{i\sqrt{a}}{\sqrt{b}}+x\right)\right]-\text{SinIntegral}\left[\frac{i\sqrt{a}\,d}{\sqrt{b}}-d\,x\right]\right)\right)+a\,d^2\,\text{Cos}[c]\left(i\,\text{CosIntegral}\left[d\left(-\frac{i\sqrt{a}}{\sqrt{b}}+x\right)\right]\text{Sinh}\left[\frac{\sqrt{a}\,d}{\sqrt{b}}\right]-\right.$$
$$\left.i\,\text{CosIntegral}\left[d\left(\frac{i\sqrt{a}}{\sqrt{b}}+x\right)\right]\text{Sinh}\left[\frac{\sqrt{a}\,d}{\sqrt{b}}\right]+\text{Cosh}\left[\frac{\sqrt{a}\,d}{\sqrt{b}}\right]\left(\text{SinIntegral}\left[d\left(\frac{i\sqrt{a}}{\sqrt{b}}+x\right)\right]-\text{SinIntegral}\left[\frac{i\sqrt{a}\,d}{\sqrt{b}}-d\,x\right]\right)\right)+$$
$$9\sqrt{a}\,\sqrt{b}\,d\,\text{Cos}[c]\left(-i\,\text{Cosh}\left[\frac{\sqrt{a}\,d}{\sqrt{b}}\right]\text{CosIntegral}\left[d\left(-\frac{i\sqrt{a}}{\sqrt{b}}+x\right)\right]+i\,\text{Cosh}\left[\frac{\sqrt{a}\,d}{\sqrt{b}}\right]\text{CosIntegral}\left[d\left(\frac{i\sqrt{a}}{\sqrt{b}}+x\right)\right]+\right.$$
$$\left.\text{Sinh}\left[\frac{\sqrt{a}\,d}{\sqrt{b}}\right]\left(-\text{SinIntegral}\left[d\left(\frac{i\sqrt{a}}{\sqrt{b}}+x\right)\right]+\text{SinIntegral}\left[\frac{i\sqrt{a}\,d}{\sqrt{b}}-d\,x\right]\right)\right)-$$
$$9\sqrt{a}\,\sqrt{b}\,d\,\text{Sin}[c]\left(\text{CosIntegral}\left[d\left(-\frac{i\sqrt{a}}{\sqrt{b}}+x\right)\right]\text{Sinh}\left[\frac{\sqrt{a}\,d}{\sqrt{b}}\right]+\text{CosIntegral}\left[d\left(\frac{i\sqrt{a}}{\sqrt{b}}+x\right)\right]\text{Sinh}\left[\frac{\sqrt{a}\,d}{\sqrt{b}}\right]+\right.$$
$$\left.i\,\text{Cosh}\left[\frac{\sqrt{a}\,d}{\sqrt{b}}\right]\left(\text{SinIntegral}\left[d\left(\frac{i\sqrt{a}}{\sqrt{b}}+x\right)\right]+\text{SinIntegral}\left[\frac{i\sqrt{a}\,d}{\sqrt{b}}-d\,x\right]\right)\right)+$$
$$24\,b\,\text{Sin}[c]\left(\text{Cosh}\left[\frac{\sqrt{a}\,d}{\sqrt{b}}\right]\text{CosIntegral}\left[d\left(-\frac{i\sqrt{a}}{\sqrt{b}}+x\right)\right]+\text{Cosh}\left[\frac{\sqrt{a}\,d}{\sqrt{b}}\right]\text{CosIntegral}\left[d\left(\frac{i\sqrt{a}}{\sqrt{b}}+x\right)\right]+\right.$$
$$\left.i\,\text{Sinh}\left[\frac{\sqrt{a}\,d}{\sqrt{b}}\right]\left(\text{SinIntegral}\left[d\left(\frac{i\sqrt{a}}{\sqrt{b}}+x\right)\right]+\text{SinIntegral}\left[\frac{i\sqrt{a}\,d}{\sqrt{b}}-d\,x\right]\right)\right)+$$
$$a\,d^2\,\text{Sin}[c]\left(\text{Cosh}\left[\frac{\sqrt{a}\,d}{\sqrt{b}}\right]\text{CosIntegral}\left[d\left(-\frac{i\sqrt{a}}{\sqrt{b}}+x\right)\right]+\text{Cosh}\left[\frac{\sqrt{a}\,d}{\sqrt{b}}\right]\text{CosIntegral}\left[d\left(\frac{i\sqrt{a}}{\sqrt{b}}+x\right)\right]+\right.$$
$$\left.\left.i\,\text{Sinh}\left[\frac{\sqrt{a}\,d}{\sqrt{b}}\right]\left(\text{SinIntegral}\left[d\left(\frac{i\sqrt{a}}{\sqrt{b}}+x\right)\right]+\text{SinIntegral}\left[\frac{i\sqrt{a}\,d}{\sqrt{b}}-d\,x\right]\right)\right)\right)$$

■ Problem 94: Result is not expressed in closed-form.

$$\int \frac{x^4 \operatorname{Sin}[c+d x]}{a+b x^3} \, dx$$

Optimal (type 4, 371 leaves, 15 steps):

$$-\frac{x \operatorname{Cos}[c+d x]}{b d}+\frac{a^{2/3} \operatorname{CosIntegral}\left[\frac{a^{1/3} d}{b^{1/3}}+d x\right] \operatorname{Sin}\left[c-\frac{a^{1/3} d}{b^{1/3}}\right]}{3 b^{5/3}}+\frac{(-1)^{2/3} a^{2/3} \operatorname{CosIntegral}\left[\frac{(-1)^{1/3} a^{1/3} d}{b^{1/3}}-d x\right] \operatorname{Sin}\left[c+\frac{(-1)^{1/3} a^{1/3} d}{b^{1/3}}\right]}{3 b^{5/3}}-\frac{(-1)^{1/3} a^{2/3} \operatorname{CosIntegral}\left[\frac{(-1)^{2/3} a^{1/3} d}{b^{1/3}}+d x\right] \operatorname{Sin}\left[c-\frac{(-1)^{2/3} a^{1/3} d}{b^{1/3}}\right]}{3 b^{5/3}}+\frac{\operatorname{Sin}[c+d x]}{b d^2}-\frac{(-1)^{2/3} a^{2/3} \operatorname{Cos}\left[c+\frac{(-1)^{1/3} a^{1/3} d}{b^{1/3}}\right] \operatorname{SinIntegral}\left[\frac{(-1)^{1/3} a^{1/3} d}{b^{1/3}}-d x\right]}{3 b^{5/3}}+\frac{a^{2/3} \operatorname{Cos}\left[c-\frac{a^{1/3} d}{b^{1/3}}\right] \operatorname{SinIntegral}\left[\frac{a^{1/3} d}{b^{1/3}}+d x\right]}{3 b^{5/3}}-\frac{(-1)^{1/3} a^{2/3} \operatorname{Cos}\left[c-\frac{(-1)^{2/3} a^{1/3} d}{b^{1/3}}\right] \operatorname{SinIntegral}\left[\frac{(-1)^{2/3} a^{1/3} d}{b^{1/3}}+d x\right]}{3 b^{5/3}}$$

Result (type 7, 231 leaves):

$$\frac{1}{6 b^2 d^2}\Big(-i a d^2 \operatorname{RootSum}\Big[a+b \#1^3 \&, \frac{1}{\#1}(\operatorname{Cos}[c+d \#1] \operatorname{CosIntegral}[d (x-\#1)]-i \operatorname{CosIntegral}[d (x-\#1)] \operatorname{Sin}[c+d \#1]-i \operatorname{Cos}[c+d \#1] \operatorname{SinIntegral}[d (x-\#1)]-\operatorname{Sin}[c+d \#1] \operatorname{SinIntegral}[d (x-\#1)]) \&\Big]+i a d^2 \operatorname{RootSum}\Big[a+b \#1^3 \&, \frac{1}{\#1}(\operatorname{Cos}[c+d \#1] \operatorname{CosIntegral}[d (x-\#1)]+i \operatorname{CosIntegral}[d (x-\#1)] \operatorname{Sin}[c+d \#1]+i \operatorname{Cos}[c+d \#1] \operatorname{SinIntegral}[d (x-\#1)]-\operatorname{Sin}[c+d \#1] \operatorname{SinIntegral}[d (x-\#1)]) \&\Big]+6 b (-d x \operatorname{Cos}[c+d x]+\operatorname{Sin}[c+d x])\Big)$$

■ Problem 95: Result is not expressed in closed-form.

$$\int \frac{x^3 \operatorname{Sin}[c+d x]}{a+b x^3} \, dx$$

Optimal (type 4, 357 leaves, 14 steps):

$$-\frac{\operatorname{Cos}[c+d x]}{b d}-\frac{a^{1/3} \operatorname{CosIntegral}\left[\frac{a^{1/3} d}{b^{1/3}}+d x\right] \operatorname{Sin}\left[c-\frac{a^{1/3} d}{b^{1/3}}\right]}{3 b^{4/3}}+\frac{(-1)^{1/3} a^{1/3} \operatorname{CosIntegral}\left[\frac{(-1)^{1/3} a^{1/3} d}{b^{1/3}}-d x\right] \operatorname{Sin}\left[c+\frac{(-1)^{1/3} a^{1/3} d}{b^{1/3}}\right]}{3 b^{4/3}}-\frac{(-1)^{2/3} a^{1/3} \operatorname{CosIntegral}\left[\frac{(-1)^{2/3} a^{1/3} d}{b^{1/3}}+d x\right] \operatorname{Sin}\left[c-\frac{(-1)^{2/3} a^{1/3} d}{b^{1/3}}\right]}{3 b^{4/3}}-\frac{(-1)^{1/3} a^{1/3} \operatorname{Cos}\left[c+\frac{(-1)^{1/3} a^{1/3} d}{b^{1/3}}\right] \operatorname{SinIntegral}\left[\frac{(-1)^{1/3} a^{1/3} d}{b^{1/3}}-d x\right]}{3 b^{4/3}}-\frac{a^{1/3} \operatorname{Cos}\left[c-\frac{a^{1/3} d}{b^{1/3}}\right] \operatorname{SinIntegral}\left[\frac{a^{1/3} d}{b^{1/3}}+d x\right]}{3 b^{4/3}}-\frac{(-1)^{2/3} a^{1/3} \operatorname{Cos}\left[c-\frac{(-1)^{2/3} a^{1/3} d}{b^{1/3}}\right] \operatorname{SinIntegral}\left[\frac{(-1)^{2/3} a^{1/3} d}{b^{1/3}}+d x\right]}{3 b^{4/3}}$$

Result (type 7, 216 leaves):

$$-\frac{1}{6 b^2 d}\left(6 b \operatorname{Cos}[c+d x]+\mathrm{i}\, a d \operatorname{RootSum}\left[a+b \sharp 1^3 \&, \frac{1}{\sharp 1^2}(\operatorname{Cos}[c+d \sharp 1] \operatorname{CosIntegral}[d(x-\sharp 1)]-\mathrm{i} \operatorname{CosIntegral}[d(x-\sharp 1)] \operatorname{Sin}[c+d \sharp 1]-\mathrm{i} \operatorname{Cos}[c+d \sharp 1] \operatorname{SinIntegral}[d(x-\sharp 1)]-\operatorname{Sin}[c+d \sharp 1] \operatorname{SinIntegral}[d(x-\sharp 1)]) \&\right]-\mathrm{i}\, a d \operatorname{RootSum}\left[a+b \sharp 1^3 \&, \frac{1}{\sharp 1^2}(\operatorname{Cos}[c+d \sharp 1] \operatorname{CosIntegral}[d(x-\sharp 1)]+\mathrm{i} \operatorname{CosIntegral}[d(x-\sharp 1)] \operatorname{Sin}[c+d \sharp 1]+\mathrm{i} \operatorname{Cos}[c+d \sharp 1] \operatorname{SinIntegral}[d(x-\sharp 1)]-\operatorname{Sin}[c+d \sharp 1] \operatorname{SinIntegral}[d(x-\sharp 1)]) \&\right]\right)$$

▪ Problem 96: Result is not expressed in closed-form.

$$\int \frac{x^2 \operatorname{Sin}[c+d x]}{a+b x^3} \, dx$$

Optimal (type 4, 281 leaves, 11 steps):

$$\frac{\operatorname{CosIntegral}\left[\frac{a^{1/3} d}{b^{1/3}}+d x\right] \operatorname{Sin}\left[c-\frac{a^{1/3} d}{b^{1/3}}\right]}{3 b}+\frac{\operatorname{CosIntegral}\left[\frac{(-1)^{1/3} a^{1/3} d}{b^{1/3}}-d x\right] \operatorname{Sin}\left[c+\frac{(-1)^{1/3} a^{1/3} d}{b^{1/3}}\right]}{3 b}+\frac{\operatorname{CosIntegral}\left[\frac{(-1)^{2/3} a^{1/3} d}{b^{1/3}}+d x\right] \operatorname{Sin}\left[c-\frac{(-1)^{2/3} a^{1/3} d}{b^{1/3}}\right]}{3 b}-\frac{\operatorname{Cos}\left[c+\frac{(-1)^{1/3} a^{1/3} d}{b^{1/3}}\right] \operatorname{SinIntegral}\left[\frac{(-1)^{1/3} a^{1/3} d}{b^{1/3}}-d x\right]}{3 b}+\frac{\operatorname{Cos}\left[c-\frac{a^{1/3} d}{b^{1/3}}\right] \operatorname{SinIntegral}\left[\frac{a^{1/3} d}{b^{1/3}}+d x\right]}{3 b}+\frac{\operatorname{Cos}\left[c-\frac{(-1)^{2/3} a^{1/3} d}{b^{1/3}}\right] \operatorname{SinIntegral}\left[\frac{(-1)^{2/3} a^{1/3} d}{b^{1/3}}+d x\right]}{3 b}$$

Result (type 7, 186 leaves):

$$\frac{1}{6 b} \mathrm{i}\left(\operatorname{RootSum}\left[a+b \sharp 1^3 \&, \operatorname{Cos}[c+d \sharp 1] \operatorname{CosIntegral}[d(x-\sharp 1)]-\mathrm{i} \operatorname{CosIntegral}[d(x-\sharp 1)] \operatorname{Sin}[c+d \sharp 1]-\mathrm{i} \operatorname{Cos}[c+d \sharp 1] \operatorname{SinIntegral}[d(x-\sharp 1)]-\operatorname{Sin}[c+d \sharp 1] \operatorname{SinIntegral}[d(x-\sharp 1)] \&\right]-\operatorname{RootSum}\left[a+b \sharp 1^3 \&, \operatorname{Cos}[c+d \sharp 1] \operatorname{CosIntegral}[d(x-\sharp 1)]+\mathrm{i} \operatorname{CosIntegral}[d(x-\sharp 1)] \operatorname{Sin}[c+d \sharp 1]+\mathrm{i} \operatorname{Cos}[c+d \sharp 1] \operatorname{SinIntegral}[d(x-\sharp 1)]-\operatorname{Sin}[c+d \sharp 1] \operatorname{SinIntegral}[d(x-\sharp 1)] \&\right]\right)$$

▪ Problem 97: Result is not expressed in closed-form.

$$\int \frac{x \operatorname{Sin}[c+d x]}{a+b x^3} \, dx$$

Optimal (type 4, 343 leaves, 11 steps):

$$-\frac{\operatorname{CosIntegral}\left[\frac{a^{1/3} d}{b^{1/3}}+d x\right] \operatorname{Sin}\left[c-\frac{a^{1/3} d}{b^{1/3}}\right]}{3 a^{1/3} b^{2/3}}-\frac{(-1)^{2/3} \operatorname{CosIntegral}\left[\frac{(-1)^{1/3} a^{1/3} d}{b^{1/3}}-d x\right] \operatorname{Sin}\left[c+\frac{(-1)^{1/3} a^{1/3} d}{b^{1/3}}\right]}{3 a^{1/3} b^{2/3}}+\frac{(-1)^{1/3} \operatorname{CosIntegral}\left[\frac{(-1)^{2/3} a^{1/3} d}{b^{1/3}}+d x\right] \operatorname{Sin}\left[c-\frac{(-1)^{2/3} a^{1/3} d}{b^{1/3}}\right]}{3 a^{1/3} b^{2/3}}+\frac{(-1)^{2/3} \operatorname{Cos}\left[c+\frac{(-1)^{1/3} a^{1/3} d}{b^{1/3}}\right] \operatorname{SinIntegral}\left[\frac{(-1)^{1/3} a^{1/3} d}{b^{1/3}}-d x\right]}{3 a^{1/3} b^{2/3}}-\frac{\operatorname{Cos}\left[c-\frac{a^{1/3} d}{b^{1/3}}\right] \operatorname{SinIntegral}\left[\frac{a^{1/3} d}{b^{1/3}}+d x\right]}{3 a^{1/3} b^{2/3}}+\frac{(-1)^{1/3} \operatorname{Cos}\left[c-\frac{(-1)^{2/3} a^{1/3} d}{b^{1/3}}\right] \operatorname{SinIntegral}\left[\frac{(-1)^{2/3} a^{1/3} d}{b^{1/3}}+d x\right]}{3 a^{1/3} b^{2/3}}$$

Result (type 7, 196 leaves):

$$\frac{1}{6b} i \left(\text{RootSum}\left[a+b\,\#1^3\,\&,\ 1/\#1\,(\text{Cos}[c+d\,\#1]\,\text{CosIntegral}[d\,(x-\#1)] - i\,\text{CosIntegral}[d\,(x-\#1)]\,\text{Sin}[c+d\,\#1] - i\,\text{Cos}[c+d\,\#1]\,\text{SinIntegral}[d\,(x-\#1)] - \text{Sin}[c+d\,\#1]\,\text{SinIntegral}[d\,(x-\#1)])\,\&\right] - \text{RootSum}\left[a+b\,\#1^3\,\&,\ 1/\#1\,(\text{Cos}[c+d\,\#1]\,\text{CosIntegral}[d\,(x-\#1)] + i\,\text{CosIntegral}[d\,(x-\#1)]\,\text{Sin}[c+d\,\#1] + i\,\text{Cos}[c+d\,\#1]\,\text{SinIntegral}[d\,(x-\#1)] - \text{Sin}[c+d\,\#1]\,\text{SinIntegral}[d\,(x-\#1)])\,\&\right]\right)$$

Problem 98: Result is not expressed in closed-form.

$$\int \frac{\text{Sin}[c+d\,x]}{a+b\,x^3}\,dx$$

Optimal (type 4, 343 leaves, 11 steps):

$$\frac{\text{CosIntegral}\left[\frac{a^{1/3} d}{b^{1/3}}+d\,x\right]\text{Sin}\left[c-\frac{a^{1/3} d}{b^{1/3}}\right]}{3\,a^{2/3}\,b^{1/3}} - \frac{(-1)^{1/3}\,\text{CosIntegral}\left[\frac{(-1)^{1/3} a^{1/3} d}{b^{1/3}}-d\,x\right]\text{Sin}\left[c+\frac{(-1)^{1/3} a^{1/3} d}{b^{1/3}}\right]}{3\,a^{2/3}\,b^{1/3}} + \frac{(-1)^{2/3}\,\text{CosIntegral}\left[\frac{(-1)^{2/3} a^{1/3} d}{b^{1/3}}+d\,x\right]\text{Sin}\left[c-\frac{(-1)^{2/3} a^{1/3} d}{b^{1/3}}\right]}{3\,a^{2/3}\,b^{1/3}} + \frac{(-1)^{1/3}\,\text{Cos}\left[c+\frac{(-1)^{1/3} a^{1/3} d}{b^{1/3}}\right]\text{SinIntegral}\left[\frac{(-1)^{1/3} a^{1/3} d}{b^{1/3}}-d\,x\right]}{3\,a^{2/3}\,b^{1/3}} + \frac{\text{Cos}\left[c-\frac{a^{1/3} d}{b^{1/3}}\right]\text{SinIntegral}\left[\frac{a^{1/3} d}{b^{1/3}}+d\,x\right]}{3\,a^{2/3}\,b^{1/3}} + \frac{(-1)^{2/3}\,\text{Cos}\left[c-\frac{(-1)^{2/3} a^{1/3} d}{b^{1/3}}\right]\text{SinIntegral}\left[\frac{(-1)^{2/3} a^{1/3} d}{b^{1/3}}+d\,x\right]}{3\,a^{2/3}\,b^{1/3}}$$

Result (type 7, 196 leaves):

$$\frac{1}{6b} i \left(\text{RootSum}\left[a+b\,\#1^3\,\&,\ 1\Big/\#1^2\,(\text{Cos}[c+d\,\#1]\,\text{CosIntegral}[d\,(x-\#1)] - i\,\text{CosIntegral}[d\,(x-\#1)]\,\text{Sin}[c+d\,\#1] - i\,\text{Cos}[c+d\,\#1]\,\text{SinIntegral}[d\,(x-\#1)] - \text{Sin}[c+d\,\#1]\,\text{SinIntegral}[d\,(x-\#1)])\,\&\right] - \text{RootSum}\left[a+b\,\#1^3\,\&,\ 1\Big/\#1^2\,(\text{Cos}[c+d\,\#1]\,\text{CosIntegral}[d\,(x-\#1)] + i\,\text{CosIntegral}[d\,(x-\#1)]\,\text{Sin}[c+d\,\#1] + i\,\text{Cos}[c+d\,\#1]\,\text{SinIntegral}[d\,(x-\#1)] - \text{Sin}[c+d\,\#1]\,\text{SinIntegral}[d\,(x-\#1)])\,\&\right]\right)$$

Problem 99: Result is not expressed in closed-form.

$$\int \frac{\text{Sin}[c+d\,x]}{x\,\left(a+b\,x^3\right)}\,dx$$

Optimal (type 4, 301 leaves, 16 steps):

$$\frac{\text{CosIntegral}[d\,x]\,\text{Sin}[c]}{a} - \frac{\text{CosIntegral}\left[\frac{a^{1/3} d}{b^{1/3}}+d\,x\right]\text{Sin}\left[c-\frac{a^{1/3} d}{b^{1/3}}\right]}{3\,a} - \frac{\text{CosIntegral}\left[\frac{(-1)^{1/3} a^{1/3} d}{b^{1/3}}-d\,x\right]\text{Sin}\left[c+\frac{(-1)^{1/3} a^{1/3} d}{b^{1/3}}\right]}{3\,a} - \frac{\text{CosIntegral}\left[\frac{(-1)^{2/3} a^{1/3} d}{b^{1/3}}+d\,x\right]\text{Sin}\left[c-\frac{(-1)^{2/3} a^{1/3} d}{b^{1/3}}\right]}{3\,a} + \frac{\text{Cos}[c]\,\text{SinIntegral}[d\,x]}{a} + \frac{\text{Cos}\left[c+\frac{(-1)^{1/3} a^{1/3} d}{b^{1/3}}\right]\text{SinIntegral}\left[\frac{(-1)^{1/3} a^{1/3} d}{b^{1/3}}-d\,x\right]}{3\,a} - \frac{\text{Cos}\left[c-\frac{a^{1/3} d}{b^{1/3}}\right]\text{SinIntegral}\left[\frac{a^{1/3} d}{b^{1/3}}+d\,x\right]}{3\,a} - \frac{\text{Cos}\left[c-\frac{(-1)^{2/3} a^{1/3} d}{b^{1/3}}\right]\text{SinIntegral}\left[\frac{(-1)^{2/3} a^{1/3} d}{b^{1/3}}+d\,x\right]}{3\,a}$$

Result (type 7, 206 leaves):

$$\frac{1}{6a}\Big(-i\,\text{RootSum}\big[a+b\,\#1^3\,\&,\ \text{Cos}[c+d\,\#1]\,\text{CosIntegral}[d\,(x-\#1)] - i\,\text{CosIntegral}[d\,(x-\#1)]\,\text{Sin}[c+d\,\#1] - i\,\text{Cos}[c+d\,\#1]\,\text{SinIntegral}[d\,(x-\#1)] - \text{Sin}[c+d\,\#1]\,\text{SinIntegral}[d\,(x-\#1)]\,\&\big] + i\,\text{RootSum}\big[a+b\,\#1^3\,\&,\ \text{Cos}[c+d\,\#1]\,\text{CosIntegral}[d\,(x-\#1)] + i\,\text{CosIntegral}[d\,(x-\#1)]\,\text{Sin}[c+d\,\#1] + i\,\text{Cos}[c+d\,\#1]\,\text{SinIntegral}[d\,(x-\#1)] - \text{Sin}[c+d\,\#1]\,\text{SinIntegral}[d\,(x-\#1)]\,\&\big] + 6\,\text{CosIntegral}[d\,x]\,\text{Sin}[c] + 6\,\text{Cos}[c]\,\text{SinIntegral}[d\,x]\Big)$$

- **Problem 100: Result is not expressed in closed-form.**

$$\int \frac{\text{Sin}[c+d\,x]}{x^2\,(a+b\,x^3)}\,dx$$

Optimal (type 4, 380 leaves, 17 steps):

$$\frac{d\,\text{Cos}[c]\,\text{CosIntegral}[d\,x]}{a} + \frac{b^{1/3}\,\text{CosIntegral}\left[\frac{a^{1/3}\,d}{b^{1/3}}+d\,x\right]\,\text{Sin}\left[c-\frac{a^{1/3}\,d}{b^{1/3}}\right]}{3\,a^{4/3}} + \frac{(-1)^{2/3}\,b^{1/3}\,\text{CosIntegral}\left[\frac{(-1)^{1/3}\,a^{1/3}\,d}{b^{1/3}}-d\,x\right]\,\text{Sin}\left[c+\frac{(-1)^{1/3}\,a^{1/3}\,d}{b^{1/3}}\right]}{3\,a^{4/3}} - \frac{(-1)^{1/3}\,b^{1/3}\,\text{CosIntegral}\left[\frac{(-1)^{2/3}\,a^{1/3}\,d}{b^{1/3}}+d\,x\right]\,\text{Sin}\left[c-\frac{(-1)^{2/3}\,a^{1/3}\,d}{b^{1/3}}\right]}{3\,a^{4/3}} - \frac{\text{Sin}[c+d\,x]}{a\,x} - \frac{d\,\text{Sin}[c]\,\text{SinIntegral}[d\,x]}{a} - \frac{(-1)^{2/3}\,b^{1/3}\,\text{Cos}\left[c+\frac{(-1)^{1/3}\,a^{1/3}\,d}{b^{1/3}}\right]\,\text{SinIntegral}\left[\frac{(-1)^{1/3}\,a^{1/3}\,d}{b^{1/3}}-d\,x\right]}{3\,a^{4/3}} + \frac{b^{1/3}\,\text{Cos}\left[c-\frac{a^{1/3}\,d}{b^{1/3}}\right]\,\text{SinIntegral}\left[\frac{a^{1/3}\,d}{b^{1/3}}+d\,x\right]}{3\,a^{4/3}} - \frac{(-1)^{1/3}\,b^{1/3}\,\text{Cos}\left[c-\frac{(-1)^{2/3}\,a^{1/3}\,d}{b^{1/3}}\right]\,\text{SinIntegral}\left[\frac{(-1)^{2/3}\,a^{1/3}\,d}{b^{1/3}}+d\,x\right]}{3\,a^{4/3}}$$

Result (type 7, 233 leaves):

$$\frac{1}{6\,a\,x}\Big(6\,d\,x\,\text{Cos}[c]\,\text{CosIntegral}[d\,x] - i\,x\,\text{RootSum}\big[a+b\,\#1^3\,\&,\ \frac{1}{\#1}(\text{Cos}[c+d\,\#1]\,\text{CosIntegral}[d\,(x-\#1)] - i\,\text{CosIntegral}[d\,(x-\#1)]\,\text{Sin}[c+d\,\#1] - i\,\text{Cos}[c+d\,\#1]\,\text{SinIntegral}[d\,(x-\#1)] - \text{Sin}[c+d\,\#1]\,\text{SinIntegral}[d\,(x-\#1)])\,\&\big] + i\,x\,\text{RootSum}\big[a+b\,\#1^3\,\&,\ \frac{1}{\#1}(\text{Cos}[c+d\,\#1]\,\text{CosIntegral}[d\,(x-\#1)] + i\,\text{CosIntegral}[d\,(x-\#1)]\,\text{Sin}[c+d\,\#1] + i\,\text{Cos}[c+d\,\#1]\,\text{SinIntegral}[d\,(x-\#1)] - \text{Sin}[c+d\,\#1]\,\text{SinIntegral}[d\,(x-\#1)])\,\&\big] - 6\,\text{Sin}[c+d\,x] - 6\,d\,x\,\text{Sin}[c]\,\text{SinIntegral}[d\,x]\Big)$$

- **Problem 101: Result is not expressed in closed-form.**

$$\int \frac{\text{Sin}[c+d\,x]}{x^3\,(a+b\,x^3)}\,dx$$

Optimal (type 4, 408 leaves, 18 steps):

$$-\frac{d\,\text{Cos}[c+d\,x]}{2\,a\,x}-\frac{d^2\,\text{CosIntegral}[d\,x]\,\text{Sin}[c]}{2\,a}-\frac{b^{2/3}\,\text{CosIntegral}\left[\frac{a^{1/3}\,d}{b^{1/3}}+d\,x\right]\,\text{Sin}\left[c-\frac{a^{1/3}\,d}{b^{1/3}}\right]}{3\,a^{5/3}}+$$
$$\frac{(-1)^{1/3}\,b^{2/3}\,\text{CosIntegral}\left[\frac{(-1)^{1/3}\,a^{1/3}\,d}{b^{1/3}}-d\,x\right]\,\text{Sin}\left[c+\frac{(-1)^{1/3}\,a^{1/3}\,d}{b^{1/3}}\right]}{3\,a^{5/3}}-\frac{(-1)^{2/3}\,b^{2/3}\,\text{CosIntegral}\left[\frac{(-1)^{2/3}\,a^{1/3}\,d}{b^{1/3}}+d\,x\right]\,\text{Sin}\left[c-\frac{(-1)^{2/3}\,a^{1/3}\,d}{b^{1/3}}\right]}{3\,a^{5/3}}-$$
$$\frac{\text{Sin}[c+d\,x]}{2\,a\,x^2}-\frac{d^2\,\text{Cos}[c]\,\text{SinIntegral}[d\,x]}{2\,a}-\frac{(-1)^{1/3}\,b^{2/3}\,\text{Cos}\left[c+\frac{(-1)^{1/3}\,a^{1/3}\,d}{b^{1/3}}\right]\,\text{SinIntegral}\left[\frac{(-1)^{1/3}\,a^{1/3}\,d}{b^{1/3}}-d\,x\right]}{3\,a^{5/3}}-$$
$$\frac{b^{2/3}\,\text{Cos}\left[c-\frac{a^{1/3}\,d}{b^{1/3}}\right]\,\text{SinIntegral}\left[\frac{a^{1/3}\,d}{b^{1/3}}+d\,x\right]}{3\,a^{5/3}}-\frac{(-1)^{2/3}\,b^{2/3}\,\text{Cos}\left[c-\frac{(-1)^{2/3}\,a^{1/3}\,d}{b^{1/3}}\right]\,\text{SinIntegral}\left[\frac{(-1)^{2/3}\,a^{1/3}\,d}{b^{1/3}}+d\,x\right]}{3\,a^{5/3}}$$

Result (type 7, 253 leaves) :

$$\frac{1}{6\,a\,x^2}\left(-i\,x^2\,\text{RootSum}\left[a+b\,\#1^3\,\&,\,\frac{1}{\#1^2}\left(\text{Cos}[c+d\,\#1]\,\text{CosIntegral}[d\,(x-\#1)]-\right.\right.\right.$$
$$\left.\left.i\,\text{CosIntegral}[d\,(x-\#1)]\,\text{Sin}[c+d\,\#1]-i\,\text{Cos}[c+d\,\#1]\,\text{SinIntegral}[d\,(x-\#1)]-\text{Sin}[c+d\,\#1]\,\text{SinIntegral}[d\,(x-\#1)]\right)\,\&\right]+$$
$$i\,x^2\,\text{RootSum}\left[a+b\,\#1^3\,\&,\,\frac{1}{\#1^2}\left(\text{Cos}[c+d\,\#1]\,\text{CosIntegral}[d\,(x-\#1)]+i\,\text{CosIntegral}[d\,(x-\#1)]\,\text{Sin}[c+d\,\#1]+\right.\right.$$
$$\left.\left.i\,\text{Cos}[c+d\,\#1]\,\text{SinIntegral}[d\,(x-\#1)]-\text{Sin}[c+d\,\#1]\,\text{SinIntegral}[d\,(x-\#1)]\right)\,\&\right]-$$
$$\left.3\,\left(d\,x\,\text{Cos}[c+d\,x]+d^2\,x^2\,\text{CosIntegral}[d\,x]\,\text{Sin}[c]+\text{Sin}[c+d\,x]+d^2\,x^2\,\text{Cos}[c]\,\text{SinIntegral}[d\,x]\right)\right)$$

- **Problem 102: Result is not expressed in closed-form.**

$$\int\frac{x^3\,\text{Sin}[c+d\,x]}{\left(a+b\,x^3\right)^2}\,dx$$

Optimal (type 4, 714 leaves, 23 steps) :

$$-\frac{(-1)^{2/3}\, d\, \text{Cos}\left[c+\frac{(-1)^{1/3} a^{1/3} d}{b^{1/3}}\right] \text{CosIntegral}\left[\frac{(-1)^{1/3} a^{1/3} d}{b^{1/3}}-d\, x\right]}{9\, a^{1/3}\, b^{5/3}}-\frac{d\, \text{Cos}\left[c-\frac{a^{1/3} d}{b^{1/3}}\right] \text{CosIntegral}\left[\frac{a^{1/3} d}{b^{1/3}}+d\, x\right]}{9\, a^{1/3}\, b^{5/3}}+$$

$$\frac{(-1)^{1/3}\, d\, \text{Cos}\left[c-\frac{(-1)^{2/3} a^{1/3} d}{b^{1/3}}\right] \text{CosIntegral}\left[\frac{(-1)^{2/3} a^{1/3} d}{b^{1/3}}+d\, x\right]}{9\, a^{1/3}\, b^{5/3}}+\frac{\text{CosIntegral}\left[\frac{a^{1/3} d}{b^{1/3}}+d\, x\right] \text{Sin}\left[c-\frac{a^{1/3} d}{b^{1/3}}\right]}{9\, a^{2/3}\, b^{4/3}}-$$

$$\frac{(-1)^{1/3}\, \text{CosIntegral}\left[\frac{(-1)^{1/3} a^{1/3} d}{b^{1/3}}-d\, x\right] \text{Sin}\left[c+\frac{(-1)^{1/3} a^{1/3} d}{b^{1/3}}\right]}{9\, a^{2/3}\, b^{4/3}}+\frac{(-1)^{2/3}\, \text{CosIntegral}\left[\frac{(-1)^{2/3} a^{1/3} d}{b^{1/3}}+d\, x\right] \text{Sin}\left[c-\frac{(-1)^{2/3} a^{1/3} d}{b^{1/3}}\right]}{9\, a^{2/3}\, b^{4/3}}-\frac{x\, \text{Sin}[c+d\, x]}{3\, b\, \left(a+b\, x^3\right)}+$$

$$\frac{(-1)^{1/3}\, \text{Cos}\left[c+\frac{(-1)^{1/3} a^{1/3} d}{b^{1/3}}\right] \text{SinIntegral}\left[\frac{(-1)^{1/3} a^{1/3} d}{b^{1/3}}-d\, x\right]}{9\, a^{2/3}\, b^{4/3}}-\frac{(-1)^{2/3}\, d\, \text{Sin}\left[c+\frac{(-1)^{1/3} a^{1/3} d}{b^{1/3}}\right] \text{SinIntegral}\left[\frac{(-1)^{1/3} a^{1/3} d}{b^{1/3}}-d\, x\right]}{9\, a^{1/3}\, b^{5/3}}+$$

$$\frac{\text{Cos}\left[c-\frac{a^{1/3} d}{b^{1/3}}\right] \text{SinIntegral}\left[\frac{a^{1/3} d}{b^{1/3}}+d\, x\right]}{9\, a^{2/3}\, b^{4/3}}+\frac{d\, \text{Sin}\left[c-\frac{a^{1/3} d}{b^{1/3}}\right] \text{SinIntegral}\left[\frac{a^{1/3} d}{b^{1/3}}+d\, x\right]}{9\, a^{1/3}\, b^{5/3}}+$$

$$\frac{(-1)^{2/3}\, \text{Cos}\left[c-\frac{(-1)^{2/3} a^{1/3} d}{b^{1/3}}\right] \text{SinIntegral}\left[\frac{(-1)^{2/3} a^{1/3} d}{b^{1/3}}+d\, x\right]}{9\, a^{2/3}\, b^{4/3}}-\frac{(-1)^{1/3}\, d\, \text{Sin}\left[c-\frac{(-1)^{2/3} a^{1/3} d}{b^{1/3}}\right] \text{SinIntegral}\left[\frac{(-1)^{2/3} a^{1/3} d}{b^{1/3}}+d\, x\right]}{9\, a^{1/3}\, b^{5/3}}$$

Result (type 7, 383 leaves) :

$$\frac{1}{18\, b^2}\Bigg(\text{RootSum}\Big[a+b\, \#1^3\, \&,$$
$$\frac{1}{\#1^2}\big(i\, \text{Cos}[c+d\, \#1]\, \text{CosIntegral}[d\, (x-\#1)]+\text{CosIntegral}[d\, (x-\#1)]\, \text{Sin}[c+d\, \#1]+\text{Cos}[c+d\, \#1]\, \text{SinIntegral}[d\, (x-\#1)]-$$
$$i\, \text{Sin}[c+d\, \#1]\, \text{SinIntegral}[d\, (x-\#1)]+d\, \text{Cos}[c+d\, \#1]\, \text{CosIntegral}[d\, (x-\#1)]\, \#1-i\, d\, \text{CosIntegral}[d\, (x-\#1)]\, \text{Sin}[c+d\, \#1]\, \#1-$$
$$i\, d\, \text{Cos}[c+d\, \#1]\, \text{SinIntegral}[d\, (x-\#1)]\, \#1-d\, \text{Sin}[c+d\, \#1]\, \text{SinIntegral}[d\, (x-\#1)]\, \#1\big)\, \&\Big]+\text{RootSum}\Big[a+b\, \#1^3\, \&,$$
$$\frac{1}{\#1^2}\big(-i\, \text{Cos}[c+d\, \#1]\, \text{CosIntegral}[d\, (x-\#1)]+\text{CosIntegral}[d\, (x-\#1)]\, \text{Sin}[c+d\, \#1]+\text{Cos}[c+d\, \#1]\, \text{SinIntegral}[d\, (x-\#1)]+$$
$$i\, \text{Sin}[c+d\, \#1]\, \text{SinIntegral}[d\, (x-\#1)]+d\, \text{Cos}[c+d\, \#1]\, \text{CosIntegral}[d\, (x-\#1)]\, \#1+i\, d\, \text{CosIntegral}[d\, (x-\#1)]\, \text{Sin}[c+d\, \#1]\, \#1+$$
$$i\, d\, \text{Cos}[c+d\, \#1]\, \text{SinIntegral}[d\, (x-\#1)]\, \#1-d\, \text{Sin}[c+d\, \#1]\, \text{SinIntegral}[d\, (x-\#1)]\, \#1\big)\, \&\Big]-\frac{6\, b\, x\, \text{Sin}[c+d\, x]}{a+b\, x^3}\Bigg)$$

- **Problem 103: Result is not expressed in closed-form.**

$$\int \frac{x^2\, \text{Sin}[c+d\, x]}{\left(a+b\, x^3\right)^2}\, dx$$

Optimal (type 4, 371 leaves, 12 steps) :

$$-\frac{(-1)^{1/3}\, d\, \text{Cos}\left[c+\frac{(-1)^{1/3} a^{1/3} d}{b^{1/3}}\right] \text{CosIntegral}\left[\frac{(-1)^{1/3} a^{1/3} d}{b^{1/3}}-d\, x\right]}{9\, a^{2/3}\, b^{4/3}}+\frac{d\, \text{Cos}\left[c-\frac{a^{1/3} d}{b^{1/3}}\right] \text{CosIntegral}\left[\frac{a^{1/3} d}{b^{1/3}}+d\, x\right]}{9\, a^{2/3}\, b^{4/3}}+$$
$$\frac{(-1)^{2/3}\, d\, \text{Cos}\left[c-\frac{(-1)^{2/3} a^{1/3} d}{b^{1/3}}\right] \text{CosIntegral}\left[\frac{(-1)^{2/3} a^{1/3} d}{b^{1/3}}+d\, x\right]}{9\, a^{2/3}\, b^{4/3}}-\frac{\text{Sin}[c+d\, x]}{3\, b\, \left(a+b\, x^3\right)}-\frac{(-1)^{1/3}\, d\, \text{Sin}\left[c+\frac{(-1)^{1/3} a^{1/3} d}{b^{1/3}}\right] \text{SinIntegral}\left[\frac{(-1)^{1/3} a^{1/3} d}{b^{1/3}}-d\, x\right]}{9\, a^{2/3}\, b^{4/3}}-$$
$$\frac{d\, \text{Sin}\left[c-\frac{a^{1/3} d}{b^{1/3}}\right] \text{SinIntegral}\left[\frac{a^{1/3} d}{b^{1/3}}+d\, x\right]}{9\, a^{2/3}\, b^{4/3}}-\frac{(-1)^{2/3}\, d\, \text{Sin}\left[c-\frac{(-1)^{2/3} a^{1/3} d}{b^{1/3}}\right] \text{SinIntegral}\left[\frac{(-1)^{2/3} a^{1/3} d}{b^{1/3}}+d\, x\right]}{9\, a^{2/3}\, b^{4/3}}$$

Result (type 7, 214 leaves) :

$$\frac{1}{18\, b^2}\Big(d\, \text{RootSum}\Big[a+b\, \#1^3\, \&,\, 1\Big/\#1^2\, (\text{Cos}[c+d\, \#1]\, \text{CosIntegral}[d\, (x-\#1)]-$$
$$i\, \text{CosIntegral}[d\, (x-\#1)]\, \text{Sin}[c+d\, \#1]-i\, \text{Cos}[c+d\, \#1]\, \text{SinIntegral}[d\, (x-\#1)]-\text{Sin}[c+d\, \#1]\, \text{SinIntegral}[d\, (x-\#1)])\, \&\Big]+$$
$$d\, \text{RootSum}\Big[a+b\, \#1^3\, \&,\, 1\Big/\#1^2\, (\text{Cos}[c+d\, \#1]\, \text{CosIntegral}[d\, (x-\#1)]+i\, \text{CosIntegral}[d\, (x-\#1)]\, \text{Sin}[c+d\, \#1]+$$
$$i\, \text{Cos}[c+d\, \#1]\, \text{SinIntegral}[d\, (x-\#1)]-\text{Sin}[c+d\, \#1]\, \text{SinIntegral}[d\, (x-\#1)])\, \&\Big]-\frac{6\, b\, \text{Sin}[c+d\, x]}{a+b\, x^3}\Big)$$

Problem 104: Result is not expressed in closed-form.

$$\int \frac{x\, \text{Sin}[c+d\, x]}{\left(a+b\, x^3\right)^2}\, dx$$

Optimal (type 4, 691 leaves, 34 steps) :

$$-\frac{d\, \text{Cos}\left[c+\frac{(-1)^{1/3} a^{1/3} d}{b^{1/3}}\right] \text{CosIntegral}\left[\frac{(-1)^{1/3} a^{1/3} d}{b^{1/3}}-d\, x\right]}{9\, a\, b}-\frac{d\, \text{Cos}\left[c-\frac{a^{1/3} d}{b^{1/3}}\right] \text{CosIntegral}\left[\frac{a^{1/3} d}{b^{1/3}}+d\, x\right]}{9\, a\, b}-$$
$$\frac{d\, \text{Cos}\left[c-\frac{(-1)^{2/3} a^{1/3} d}{b^{1/3}}\right] \text{CosIntegral}\left[\frac{(-1)^{2/3} a^{1/3} d}{b^{1/3}}+d\, x\right]}{9\, a\, b}-\frac{\text{CosIntegral}\left[\frac{a^{1/3} d}{b^{1/3}}+d\, x\right] \text{Sin}\left[c-\frac{a^{1/3} d}{b^{1/3}}\right]}{9\, a^{4/3}\, b^{2/3}}-$$
$$\frac{(-1)^{2/3}\, \text{CosIntegral}\left[\frac{(-1)^{1/3} a^{1/3} d}{b^{1/3}}-d\, x\right] \text{Sin}\left[c+\frac{(-1)^{1/3} a^{1/3} d}{b^{1/3}}\right]}{9\, a^{4/3}\, b^{2/3}}+\frac{(-1)^{1/3}\, \text{CosIntegral}\left[\frac{(-1)^{2/3} a^{1/3} d}{b^{1/3}}+d\, x\right] \text{Sin}\left[c-\frac{(-1)^{2/3} a^{1/3} d}{b^{1/3}}\right]}{9\, a^{4/3}\, b^{2/3}}+$$
$$\frac{\text{Sin}[c+d\, x]}{3\, a\, b\, x}-\frac{\text{Sin}[c+d\, x]}{3\, b\, x\, \left(a+b\, x^3\right)}+\frac{(-1)^{2/3}\, \text{Cos}\left[c+\frac{(-1)^{1/3} a^{1/3} d}{b^{1/3}}\right] \text{SinIntegral}\left[\frac{(-1)^{1/3} a^{1/3} d}{b^{1/3}}-d\, x\right]}{9\, a^{4/3}\, b^{2/3}}-$$
$$\frac{d\, \text{Sin}\left[c+\frac{(-1)^{1/3} a^{1/3} d}{b^{1/3}}\right] \text{SinIntegral}\left[\frac{(-1)^{1/3} a^{1/3} d}{b^{1/3}}-d\, x\right]}{9\, a\, b}-\frac{\text{Cos}\left[c-\frac{a^{1/3} d}{b^{1/3}}\right] \text{SinIntegral}\left[\frac{a^{1/3} d}{b^{1/3}}+d\, x\right]}{9\, a^{4/3}\, b^{2/3}}+\frac{d\, \text{Sin}\left[c-\frac{a^{1/3} d}{b^{1/3}}\right] \text{SinIntegral}\left[\frac{a^{1/3} d}{b^{1/3}}+d\, x\right]}{9\, a\, b}+$$
$$\frac{(-1)^{1/3}\, \text{Cos}\left[c-\frac{(-1)^{2/3} a^{1/3} d}{b^{1/3}}\right] \text{SinIntegral}\left[\frac{(-1)^{2/3} a^{1/3} d}{b^{1/3}}+d\, x\right]}{9\, a^{4/3}\, b^{2/3}}+\frac{d\, \text{Sin}\left[c-\frac{(-1)^{2/3} a^{1/3} d}{b^{1/3}}\right] \text{SinIntegral}\left[\frac{(-1)^{2/3} a^{1/3} d}{b^{1/3}}+d\, x\right]}{9\, a\, b}$$

Result (type 7, 408 leaves) :

$$-\frac{1}{18\,a\,b\,\left(a+b\,x^3\right)}\left(\left(a+b\,x^3\right)\,\text{RootSum}\left[a+b\,\#1^3\,\&,\right.\right.$$
$$\frac{1}{\#1}\left(-i\,\text{Cos}[c+d\,\#1]\,\text{CosIntegral}[d\,(x-\#1)]-\text{CosIntegral}[d\,(x-\#1)]\,\text{Sin}[c+d\,\#1]-\text{Cos}[c+d\,\#1]\,\text{SinIntegral}[d\,(x-\#1)]+\right.$$
$$i\,\text{Sin}[c+d\,\#1]\,\text{SinIntegral}[d\,(x-\#1)]+d\,\text{Cos}[c+d\,\#1]\,\text{CosIntegral}[d\,(x-\#1)]\,\#1-i\,d\,\text{CosIntegral}[d\,(x-\#1)]\,\text{Sin}[c+d\,\#1]\,\#1-$$
$$\left.\left.i\,d\,\text{Cos}[c+d\,\#1]\,\text{SinIntegral}[d\,(x-\#1)]\,\#1-d\,\text{Sin}[c+d\,\#1]\,\text{SinIntegral}[d\,(x-\#1)]\,\#1\right)\,\&\right]+\left(a+b\,x^3\right)\,\text{RootSum}\left[a+b\,\#1^3\,\&,\right.$$
$$\frac{1}{\#1}\left(i\,\text{Cos}[c+d\,\#1]\,\text{CosIntegral}[d\,(x-\#1)]-\text{CosIntegral}[d\,(x-\#1)]\,\text{Sin}[c+d\,\#1]-\text{Cos}[c+d\,\#1]\,\text{SinIntegral}[d\,(x-\#1)]-\right.$$
$$i\,\text{Sin}[c+d\,\#1]\,\text{SinIntegral}[d\,(x-\#1)]+d\,\text{Cos}[c+d\,\#1]\,\text{CosIntegral}[d\,(x-\#1)]\,\#1+i\,d\,\text{CosIntegral}[d\,(x-\#1)]\,\text{Sin}[c+d\,\#1]\,\#1+$$
$$\left.\left.\left.i\,d\,\text{Cos}[c+d\,\#1]\,\text{SinIntegral}[d\,(x-\#1)]\,\#1-d\,\text{Sin}[c+d\,\#1]\,\text{SinIntegral}[d\,(x-\#1)]\,\#1\right)\,\&\right]-6\,b\,x^2\,\text{Sin}[c+d\,x]\right)$$

- **Problem 105: Result is not expressed in closed-form.**

$$\int\frac{\text{Sin}[c+d\,x]}{\left(a+b\,x^3\right)^2}\,dx$$

Optimal (type 4, 735 leaves, 36 steps):

$$\frac{(-1)^{2/3}\,d\,\text{Cos}\left[c+\frac{(-1)^{1/3}\,a^{1/3}\,d}{b^{1/3}}\right]\,\text{CosIntegral}\left[\frac{(-1)^{1/3}\,a^{1/3}\,d}{b^{1/3}}-d\,x\right]}{9\,a^{4/3}\,b^{2/3}}+\frac{d\,\text{Cos}\left[c-\frac{a^{1/3}\,d}{b^{1/3}}\right]\,\text{CosIntegral}\left[\frac{a^{1/3}\,d}{b^{1/3}}+d\,x\right]}{9\,a^{4/3}\,b^{2/3}}-$$
$$\frac{(-1)^{1/3}\,d\,\text{Cos}\left[c-\frac{(-1)^{2/3}\,a^{1/3}\,d}{b^{1/3}}\right]\,\text{CosIntegral}\left[\frac{(-1)^{2/3}\,a^{1/3}\,d}{b^{1/3}}+d\,x\right]}{9\,a^{4/3}\,b^{2/3}}+\frac{2\,\text{CosIntegral}\left[\frac{a^{1/3}\,d}{b^{1/3}}+d\,x\right]\,\text{Sin}\left[c-\frac{a^{1/3}\,d}{b^{1/3}}\right]}{9\,a^{5/3}\,b^{1/3}}-$$
$$\frac{2\,(-1)^{1/3}\,\text{CosIntegral}\left[\frac{(-1)^{1/3}\,a^{1/3}\,d}{b^{1/3}}-d\,x\right]\,\text{Sin}\left[c+\frac{(-1)^{1/3}\,a^{1/3}\,d}{b^{1/3}}\right]}{9\,a^{5/3}\,b^{1/3}}+\frac{2\,(-1)^{2/3}\,\text{CosIntegral}\left[\frac{(-1)^{2/3}\,a^{1/3}\,d}{b^{1/3}}+d\,x\right]\,\text{Sin}\left[c-\frac{(-1)^{2/3}\,a^{1/3}\,d}{b^{1/3}}\right]}{9\,a^{5/3}\,b^{1/3}}+\frac{\text{Sin}[c+d\,x]}{3\,a\,b\,x^2}-$$
$$\frac{\text{Sin}[c+d\,x]}{3\,b\,x^2\,\left(a+b\,x^3\right)}+\frac{2\,(-1)^{1/3}\,\text{Cos}\left[c+\frac{(-1)^{1/3}\,a^{1/3}\,d}{b^{1/3}}\right]\,\text{SinIntegral}\left[\frac{(-1)^{1/3}\,a^{1/3}\,d}{b^{1/3}}-d\,x\right]}{9\,a^{5/3}\,b^{1/3}}+\frac{(-1)^{2/3}\,d\,\text{Sin}\left[c+\frac{(-1)^{1/3}\,a^{1/3}\,d}{b^{1/3}}\right]\,\text{SinIntegral}\left[\frac{(-1)^{1/3}\,a^{1/3}\,d}{b^{1/3}}-d\,x\right]}{9\,a^{4/3}\,b^{2/3}}+$$
$$\frac{2\,\text{Cos}\left[c-\frac{a^{1/3}\,d}{b^{1/3}}\right]\,\text{SinIntegral}\left[\frac{a^{1/3}\,d}{b^{1/3}}+d\,x\right]}{9\,a^{5/3}\,b^{1/3}}-\frac{d\,\text{Sin}\left[c-\frac{a^{1/3}\,d}{b^{1/3}}\right]\,\text{SinIntegral}\left[\frac{a^{1/3}\,d}{b^{1/3}}+d\,x\right]}{9\,a^{4/3}\,b^{2/3}}+$$
$$\frac{2\,(-1)^{2/3}\,\text{Cos}\left[c-\frac{(-1)^{2/3}\,a^{1/3}\,d}{b^{1/3}}\right]\,\text{SinIntegral}\left[\frac{(-1)^{2/3}\,a^{1/3}\,d}{b^{1/3}}+d\,x\right]}{9\,a^{5/3}\,b^{1/3}}+\frac{(-1)^{1/3}\,d\,\text{Sin}\left[c-\frac{(-1)^{2/3}\,a^{1/3}\,d}{b^{1/3}}\right]\,\text{SinIntegral}\left[\frac{(-1)^{2/3}\,a^{1/3}\,d}{b^{1/3}}+d\,x\right]}{9\,a^{4/3}\,b^{2/3}}$$

Result (type 7, 406 leaves):

$$-\frac{1}{18\,a\,b\,(a+b\,x^3)}\left((a+b\,x^3)\,\text{RootSum}\Big[a+b\,\#1^3\,\&,\ \frac{1}{\#1^2}\,(-2\,i\,\text{Cos}[c+d\,\#1]\,\text{CosIntegral}[d\,(x-\#1)]-2\,\text{CosIntegral}[d\,(x-\#1)]\,\text{Sin}[c+d\,\#1]-2\,\text{Cos}[c+d\,\#1]\,\text{SinIntegral}[d\,(x-\#1)]+2\,i\,\text{Sin}[c+d\,\#1]\,\text{SinIntegral}[d\,(x-\#1)]+d\,\text{Cos}[c+d\,\#1]\,\text{CosIntegral}[d\,(x-\#1)]\,\#1-i\,d\,\text{CosIntegral}[d\,(x-\#1)]\,\text{Sin}[c+d\,\#1]\,\#1-i\,d\,\text{Cos}[c+d\,\#1]\,\text{SinIntegral}[d\,(x-\#1)]\,\#1-d\,\text{Sin}[c+d\,\#1]\,\text{SinIntegral}[d\,(x-\#1)]\,\#1)\,\&\Big]+(a+b\,x^3)\,\text{RootSum}\Big[a+b\,\#1^3\,\&,\ \frac{1}{\#1^2}\,(2\,i\,\text{Cos}[c+d\,\#1]\,\text{CosIntegral}[d\,(x-\#1)]-2\,\text{CosIntegral}[d\,(x-\#1)]\,\text{Sin}[c+d\,\#1]-2\,\text{Cos}[c+d\,\#1]\,\text{SinIntegral}[d\,(x-\#1)]-2\,i\,\text{Sin}[c+d\,\#1]\,\text{SinIntegral}[d\,(x-\#1)]+d\,\text{Cos}[c+d\,\#1]\,\text{CosIntegral}[d\,(x-\#1)]\,\#1+i\,d\,\text{CosIntegral}[d\,(x-\#1)]\,\text{Sin}[c+d\,\#1]\,\#1+i\,d\,\text{Cos}[c+d\,\#1]\,\text{SinIntegral}[d\,(x-\#1)]\,\#1-d\,\text{Sin}[c+d\,\#1]\,\text{SinIntegral}[d\,(x-\#1)]\,\#1)\,\&\Big]-6\,b\,x\,\text{Sin}[c+d\,x]\right)$$

- **Problem 106: Result more than twice size of optimal antiderivative.**

$$\int \frac{\text{Sin}[c+d\,x]}{x\,(a+b\,x^3)^2}\,dx$$

Optimal (type 4, 693 leaves, 41 steps):

$$\frac{(-1)^{1/3}\,d\,\text{Cos}\Big[c+\frac{(-1)^{1/3}a^{1/3}d}{b^{1/3}}\Big]\,\text{CosIntegral}\Big[\frac{(-1)^{1/3}a^{1/3}d}{b^{1/3}}-d\,x\Big]}{9\,a^{5/3}\,b^{1/3}}-\frac{d\,\text{Cos}\Big[c-\frac{a^{1/3}d}{b^{1/3}}\Big]\,\text{CosIntegral}\Big[\frac{a^{1/3}d}{b^{1/3}}+d\,x\Big]}{9\,a^{5/3}\,b^{1/3}}-\frac{(-1)^{2/3}\,d\,\text{Cos}\Big[c-\frac{(-1)^{2/3}a^{1/3}d}{b^{1/3}}\Big]\,\text{CosIntegral}\Big[\frac{(-1)^{2/3}a^{1/3}d}{b^{1/3}}+d\,x\Big]}{9\,a^{5/3}\,b^{1/3}}+\frac{\text{CosIntegral}[d\,x]\,\text{Sin}[c]}{a^2}-\frac{\text{CosIntegral}\Big[\frac{a^{1/3}d}{b^{1/3}}+d\,x\Big]\,\text{Sin}\Big[c-\frac{a^{1/3}d}{b^{1/3}}\Big]}{3\,a^2}-\frac{\text{CosIntegral}\Big[\frac{(-1)^{1/3}a^{1/3}d}{b^{1/3}}-d\,x\Big]\,\text{Sin}\Big[c+\frac{(-1)^{1/3}a^{1/3}d}{b^{1/3}}\Big]}{3\,a^2}-\frac{\text{CosIntegral}\Big[\frac{(-1)^{2/3}a^{1/3}d}{b^{1/3}}+d\,x\Big]\,\text{Sin}\Big[c-\frac{(-1)^{2/3}a^{1/3}d}{b^{1/3}}\Big]}{3\,a^2}+\frac{\text{Sin}[c+d\,x]}{3\,a\,b\,x^3}-\frac{\text{Sin}[c+d\,x]}{3\,b\,x^3\,(a+b\,x^3)}+\frac{\text{Cos}[c]\,\text{SinIntegral}[d\,x]}{a^2}+\frac{\text{Cos}\Big[c+\frac{(-1)^{1/3}a^{1/3}d}{b^{1/3}}\Big]\,\text{SinIntegral}\Big[\frac{(-1)^{1/3}a^{1/3}d}{b^{1/3}}-d\,x\Big]}{3\,a^2}+\frac{(-1)^{1/3}\,d\,\text{Sin}\Big[c+\frac{(-1)^{1/3}a^{1/3}d}{b^{1/3}}\Big]\,\text{SinIntegral}\Big[\frac{(-1)^{1/3}a^{1/3}d}{b^{1/3}}-d\,x\Big]}{9\,a^{5/3}\,b^{1/3}}-\frac{\text{Cos}\Big[c-\frac{a^{1/3}d}{b^{1/3}}\Big]\,\text{SinIntegral}\Big[\frac{a^{1/3}d}{b^{1/3}}+d\,x\Big]}{3\,a^2}+\frac{d\,\text{Sin}\Big[c-\frac{a^{1/3}d}{b^{1/3}}\Big]\,\text{SinIntegral}\Big[\frac{a^{1/3}d}{b^{1/3}}+d\,x\Big]}{9\,a^{5/3}\,b^{1/3}}-\frac{\text{Cos}\Big[c-\frac{(-1)^{2/3}a^{1/3}d}{b^{1/3}}\Big]\,\text{SinIntegral}\Big[\frac{(-1)^{2/3}a^{1/3}d}{b^{1/3}}+d\,x\Big]}{3\,a^2}+\frac{(-1)^{2/3}\,d\,\text{Sin}\Big[c-\frac{(-1)^{2/3}a^{1/3}d}{b^{1/3}}\Big]\,\text{SinIntegral}\Big[\frac{(-1)^{2/3}a^{1/3}d}{b^{1/3}}+d\,x\Big]}{9\,a^{5/3}\,b^{1/3}}$$

Result (type 4, 1819 leaves):

$$\text{Sin}[c]\left(\frac{\text{CosIntegral}[d\,x]}{a^2}-\frac{1}{\left(1+(-1)^{1/3}\right)^2\,a^2\,b^{1/3}}\left(3\,b^{1/3}-2\,(-1)^{1/3}\,b^{1/3}+3\,(-1)^{2/3}\,b^{1/3}\right)\right.$$

$$\left(\text{Cos}\left[\frac{(-1)^{1/3}a^{1/3}d}{b^{1/3}}\right]\text{CosIntegral}\left[-\frac{(-1)^{1/3}a^{1/3}d}{b^{1/3}}+d\,x\right]+\text{Sin}\left[\frac{(-1)^{1/3}a^{1/3}d}{b^{1/3}}\right]\text{SinIntegral}\left[\frac{(-1)^{1/3}a^{1/3}d}{b^{1/3}}-d\,x\right]\right)+$$

$$\left(\left(21-22\,(-1)^{1/3}+21\,(-1)^{2/3}\right)b^{1/3}\left(-\frac{\text{Cos}[d\,x]}{b^{1/3}\left(-(-1)^{1/3}a^{1/3}+b^{1/3}x\right)}+1\Big/b^{2/3}d\left(-\text{CosIntegral}\left[-\frac{(-1)^{1/3}a^{1/3}d}{b^{1/3}}+d\,x\right]\text{Sin}\left[\frac{(-1)^{1/3}a^{1/3}d}{b^{1/3}}\right]+\right.\right.\right.$$

$$\left.\left.\left.\text{Cos}\left[\frac{(-1)^{1/3}a^{1/3}d}{b^{1/3}}\right]\text{SinIntegral}\left[\frac{(-1)^{1/3}a^{1/3}d}{b^{1/3}}-d\,x\right]\right)\right)\right)\Big/\left(3\left(-1+(-1)^{1/3}\right)\left(1+(-1)^{1/3}\right)^2a^{5/3}\right)-$$

$$\left(\left(2\,b^{1/3}-3\,(-1)^{1/3}b^{1/3}+3\,(-1)^{2/3}b^{1/3}\right)\left(\text{Cos}\left[\frac{a^{1/3}d}{b^{1/3}}\right]\text{CosIntegral}\left[\frac{a^{1/3}d}{b^{1/3}}+d\,x\right]+\text{Sin}\left[\frac{a^{1/3}d}{b^{1/3}}\right]\text{SinIntegral}\left[\frac{a^{1/3}d}{b^{1/3}}+d\,x\right]\right)\right)\Big/$$

$$\left(\left(-1+(-1)^{1/3}\right)\left(1+(-1)^{1/3}\right)^2a^2b^{1/3}\right)+$$

$$\left(\left(22-21\,(-1)^{1/3}+21\,(-1)^{2/3}\right)b^{1/3}\left(-\frac{\text{Cos}[d\,x]}{b^{1/3}\left(a^{1/3}+b^{1/3}x\right)}+\frac{d\left(\text{CosIntegral}\left[\frac{a^{1/3}d}{b^{1/3}}+d\,x\right]\text{Sin}\left[\frac{a^{1/3}d}{b^{1/3}}\right]-\text{Cos}\left[\frac{a^{1/3}d}{b^{1/3}}\right]\text{SinIntegral}\left[\frac{a^{1/3}d}{b^{1/3}}+d\,x\right]\right)}{b^{2/3}}\right)\right)\Big/$$

$$\left(3\left(-1+(-1)^{1/3}\right)\left(1+(-1)^{1/3}\right)^2a^{5/3}\right)-\left(\left(2\,b^{1/3}-3\,(-1)^{1/3}b^{1/3}+3\,(-1)^{2/3}b^{1/3}\right)\right.$$

$$\left.\left(\text{Cos}\left[\frac{(-1)^{2/3}a^{1/3}d}{b^{1/3}}\right]\text{CosIntegral}\left[\frac{(-1)^{2/3}a^{1/3}d}{b^{1/3}}+d\,x\right]+\text{Sin}\left[\frac{(-1)^{2/3}a^{1/3}d}{b^{1/3}}\right]\text{SinIntegral}\left[\frac{(-1)^{2/3}a^{1/3}d}{b^{1/3}}+d\,x\right]\right)\right)\Big/$$

$$\left(\left(-1+(-1)^{1/3}\right)\left(1+(-1)^{1/3}\right)^2a^2b^{1/3}\right)+\frac{1}{3\left(1+(-1)^{1/3}\right)^2a^{5/3}}\left(22\,b^{1/3}-21\,(-1)^{1/3}b^{1/3}+21\,(-1)^{2/3}b^{1/3}\right)\left(-\frac{\text{Cos}[d\,x]}{b^{1/3}\left((-1)^{2/3}a^{1/3}+b^{1/3}x\right)}+\right.$$

$$\left.\left.1\Big/b^{2/3}d\left(\text{CosIntegral}\left[\frac{(-1)^{2/3}a^{1/3}d}{b^{1/3}}+d\,x\right]\text{Sin}\left[\frac{(-1)^{2/3}a^{1/3}d}{b^{1/3}}\right]-\text{Cos}\left[\frac{(-1)^{2/3}a^{1/3}d}{b^{1/3}}\right]\text{SinIntegral}\left[\frac{(-1)^{2/3}a^{1/3}d}{b^{1/3}}+d\,x\right]\right)\right)\right)+$$

$$\text{Cos}[c]\left(\frac{\text{SinIntegral}[d\,x]}{a^2}-\frac{1}{\left(1+(-1)^{1/3}\right)^2a^2b^{1/3}}\left(3\,b^{1/3}-2\,(-1)^{1/3}b^{1/3}+3\,(-1)^{2/3}b^{1/3}\right)\right.$$

$$\left(\text{CosIntegral}\left[-\frac{(-1)^{1/3}a^{1/3}d}{b^{1/3}}+d\,x\right]\text{Sin}\left[\frac{(-1)^{1/3}a^{1/3}d}{b^{1/3}}\right]-\text{Cos}\left[\frac{(-1)^{1/3}a^{1/3}d}{b^{1/3}}\right]\text{SinIntegral}\left[\frac{(-1)^{1/3}a^{1/3}d}{b^{1/3}}-d\,x\right]\right)+$$

$$\left(\left(21-22\,(-1)^{1/3}+21\,(-1)^{2/3}\right)b^{1/3}\left(-\frac{\text{Sin}[d\,x]}{b^{1/3}\left(-(-1)^{1/3}a^{1/3}+b^{1/3}x\right)}+1\Big/b^{2/3}d\left(\text{Cos}\left[\frac{(-1)^{1/3}a^{1/3}d}{b^{1/3}}\right]\text{CosIntegral}\left[-\frac{(-1)^{1/3}a^{1/3}d}{b^{1/3}}+d\,x\right]+\right.\right.\right.$$

$$\left.\left.\left.\text{Sin}\left[\frac{(-1)^{1/3}a^{1/3}d}{b^{1/3}}\right]\text{SinIntegral}\left[\frac{(-1)^{1/3}a^{1/3}d}{b^{1/3}}-d\,x\right]\right)\right)\right)\Big/\left(3\left(-1+(-1)^{1/3}\right)\left(1+(-1)^{1/3}\right)^2a^{5/3}\right)-$$

$$\left(\left(2\,b^{1/3}-3\,(-1)^{1/3}b^{1/3}+3\,(-1)^{2/3}b^{1/3}\right)\left(-\text{CosIntegral}\left[\frac{a^{1/3}d}{b^{1/3}}+d\,x\right]\text{Sin}\left[\frac{a^{1/3}d}{b^{1/3}}\right]+\text{Cos}\left[\frac{a^{1/3}d}{b^{1/3}}\right]\text{SinIntegral}\left[\frac{a^{1/3}d}{b^{1/3}}+d\,x\right]\right)\right)\Big/$$

$$\left(\left(-1+(-1)^{1/3}\right)\left(1+(-1)^{1/3}\right)^2a^2b^{1/3}\right)+$$

$$\left(\left(22-21(-1)^{1/3}+21(-1)^{2/3}\right)b^{1/3}\left(-\frac{\text{Sin}[d\,x]}{b^{1/3}\left(a^{1/3}+b^{1/3}x\right)}+\frac{d\left(\text{Cos}\left[\frac{a^{1/3}d}{b^{1/3}}\right]\text{CosIntegral}\left[\frac{a^{1/3}d}{b^{1/3}}+d\,x\right]+\text{Sin}\left[\frac{a^{1/3}d}{b^{1/3}}\right]\text{SinIntegral}\left[\frac{a^{1/3}d}{b^{1/3}}+d\,x\right]\right)}{b^{2/3}}\right)\right)\bigg/$$

$$\left(3\left(-1+(-1)^{1/3}\right)\left(1+(-1)^{1/3}\right)^2a^{5/3}\right)-\left(\left(2\,b^{1/3}-3(-1)^{1/3}b^{1/3}+3(-1)^{2/3}b^{1/3}\right)\right.$$

$$\left.\left(-\text{CosIntegral}\left[\frac{(-1)^{2/3}a^{1/3}d}{b^{1/3}}+d\,x\right]\text{Sin}\left[\frac{(-1)^{2/3}a^{1/3}d}{b^{1/3}}\right]+\text{Cos}\left[\frac{(-1)^{2/3}a^{1/3}d}{b^{1/3}}\right]\text{SinIntegral}\left[\frac{(-1)^{2/3}a^{1/3}d}{b^{1/3}}+d\,x\right]\right)\right)\bigg/$$

$$\left(\left(-1+(-1)^{1/3}\right)\left(1+(-1)^{1/3}\right)^2a^2b^{1/3}\right)+\frac{1}{3\left(1+(-1)^{1/3}\right)^2a^{5/3}}\left(22\,b^{1/3}-21(-1)^{1/3}b^{1/3}+21(-1)^{2/3}b^{1/3}\right)\left(-\frac{\text{Sin}[d\,x]}{b^{1/3}\left((-1)^{2/3}a^{1/3}+b^{1/3}x\right)}+\right.$$

$$\left.\left.1\big/b^{2/3}d\left(\text{Cos}\left[\frac{(-1)^{2/3}a^{1/3}d}{b^{1/3}}\right]\text{CosIntegral}\left[\frac{(-1)^{2/3}a^{1/3}d}{b^{1/3}}+d\,x\right]+\text{Sin}\left[\frac{(-1)^{2/3}a^{1/3}d}{b^{1/3}}\right]\text{SinIntegral}\left[\frac{(-1)^{2/3}a^{1/3}d}{b^{1/3}}+d\,x\right]\right)\right)\right)$$

▪ Problem 107: Result is not expressed in closed-form.

$$\int\frac{\text{Sin}[c+d\,x]}{x^2\left(a+b\,x^3\right)^2}\,dx$$

Optimal (type 4, 712 leaves, 47 steps):

$$\frac{d\,\text{Cos}[c]\,\text{CosIntegral}[d\,x]}{a^2}+\frac{d\,\text{Cos}\left[c+\frac{(-1)^{1/3}a^{1/3}d}{b^{1/3}}\right]\text{CosIntegral}\left[\frac{(-1)^{1/3}a^{1/3}d}{b^{1/3}}-d\,x\right]}{9\,a^2}+\frac{d\,\text{Cos}\left[c-\frac{a^{1/3}d}{b^{1/3}}\right]\text{CosIntegral}\left[\frac{a^{1/3}d}{b^{1/3}}+d\,x\right]}{9\,a^2}+$$

$$\frac{d\,\text{Cos}\left[c-\frac{(-1)^{2/3}a^{1/3}d}{b^{1/3}}\right]\text{CosIntegral}\left[\frac{(-1)^{2/3}a^{1/3}d}{b^{1/3}}+d\,x\right]}{9\,a^2}+\frac{4\,b^{1/3}\,\text{CosIntegral}\left[\frac{a^{1/3}d}{b^{1/3}}+d\,x\right]\text{Sin}\left[c-\frac{a^{1/3}d}{b^{1/3}}\right]}{9\,a^{7/3}}+$$

$$\frac{4(-1)^{2/3}b^{1/3}\,\text{CosIntegral}\left[\frac{(-1)^{1/3}a^{1/3}d}{b^{1/3}}-d\,x\right]\text{Sin}\left[c+\frac{(-1)^{1/3}a^{1/3}d}{b^{1/3}}\right]}{9\,a^{7/3}}-\frac{4(-1)^{1/3}b^{1/3}\,\text{CosIntegral}\left[\frac{(-1)^{2/3}a^{1/3}d}{b^{1/3}}+d\,x\right]\text{Sin}\left[c-\frac{(-1)^{2/3}a^{1/3}d}{b^{1/3}}\right]}{9\,a^{7/3}}+$$

$$\frac{\text{Sin}[c+d\,x]}{3\,a\,b\,x^4}-\frac{4\,\text{Sin}[c+d\,x]}{3\,a^2\,x}-\frac{\text{Sin}[c+d\,x]}{3\,b\,x^4\left(a+b\,x^3\right)}-\frac{d\,\text{Sin}[c]\,\text{SinIntegral}[d\,x]}{a^2}-\frac{4(-1)^{2/3}b^{1/3}\,\text{Cos}\left[c+\frac{(-1)^{1/3}a^{1/3}d}{b^{1/3}}\right]\text{SinIntegral}\left[\frac{(-1)^{1/3}a^{1/3}d}{b^{1/3}}-d\,x\right]}{9\,a^{7/3}}+$$

$$\frac{d\,\text{Sin}\left[c+\frac{(-1)^{1/3}a^{1/3}d}{b^{1/3}}\right]\text{SinIntegral}\left[\frac{(-1)^{1/3}a^{1/3}d}{b^{1/3}}-d\,x\right]}{9\,a^2}+\frac{4\,b^{1/3}\,\text{Cos}\left[c-\frac{a^{1/3}d}{b^{1/3}}\right]\text{SinIntegral}\left[\frac{a^{1/3}d}{b^{1/3}}+d\,x\right]}{9\,a^{7/3}}-\frac{d\,\text{Sin}\left[c-\frac{a^{1/3}d}{b^{1/3}}\right]\text{SinIntegral}\left[\frac{a^{1/3}d}{b^{1/3}}+d\,x\right]}{9\,a^2}-$$

$$\frac{4(-1)^{1/3}b^{1/3}\,\text{Cos}\left[c-\frac{(-1)^{2/3}a^{1/3}d}{b^{1/3}}\right]\text{SinIntegral}\left[\frac{(-1)^{2/3}a^{1/3}d}{b^{1/3}}+d\,x\right]}{9\,a^{7/3}}-\frac{d\,\text{Sin}\left[c-\frac{(-1)^{2/3}a^{1/3}d}{b^{1/3}}\right]\text{SinIntegral}\left[\frac{(-1)^{2/3}a^{1/3}d}{b^{1/3}}+d\,x\right]}{9\,a^2}$$

Result (type 7, 445 leaves):

$$-\frac{1}{3 a^2 x \left(a+b x^3\right)}\left(\left(3 a+4 b x^3\right) \text{Cos}[d x]\, \text{Sin}[c]+\left(3 a+4 b x^3\right) \text{Cos}[c]\, \text{Sin}[d x]-\frac{1}{6} x \left(a+b x^3\right) \left(18 d\, \text{Cos}[c]\, \text{CosIntegral}[d x]+\text{RootSum}\Big[a+b \#1^3\&,\right.\right.$$
$$\frac{1}{\#1}(-4 i\, \text{Cos}[c+d \#1]\, \text{CosIntegral}[d (x-\#1)]-4\, \text{CosIntegral}[d (x-\#1)]\, \text{Sin}[c+d \#1]-4\, \text{Cos}[c+d \#1]\, \text{SinIntegral}[d (x-\#1)]+$$
$$4 i\, \text{Sin}[c+d \#1]\, \text{SinIntegral}[d (x-\#1)]+d\, \text{Cos}[c+d \#1]\, \text{CosIntegral}[d (x-\#1)]\, \#1-i d\, \text{CosIntegral}[d (x-\#1)]\, \text{Sin}[c+d \#1]$$
$$\#1-i d\, \text{Cos}[c+d \#1]\, \text{SinIntegral}[d (x-\#1)]\, \#1-d\, \text{Sin}[c+d \#1]\, \text{SinIntegral}[d (x-\#1)]\, \#1)\ \&\Big]+\text{RootSum}\Big[a+b \#1^3\&,$$
$$\frac{1}{\#1}(4 i\, \text{Cos}[c+d \#1]\, \text{CosIntegral}[d (x-\#1)]-4\, \text{CosIntegral}[d (x-\#1)]\, \text{Sin}[c+d \#1]-4\, \text{Cos}[c+d \#1]\, \text{SinIntegral}[d (x-\#1)]-$$
$$4 i\, \text{Sin}[c+d \#1]\, \text{SinIntegral}[d (x-\#1)]+d\, \text{Cos}[c+d \#1]\, \text{CosIntegral}[d (x-\#1)]\, \#1+i d\, \text{CosIntegral}[d (x-\#1)]\, \text{Sin}[c+d \#1]$$
$$\left.\left.\#1+i d\, \text{Cos}[c+d \#1]\, \text{SinIntegral}[d (x-\#1)]\, \#1-d\, \text{Sin}[c+d \#1]\, \text{SinIntegral}[d (x-\#1)]\, \#1)\ \&\Big]-18 d\, \text{Sin}[c]\, \text{SinIntegral}[d x]\right)\right)$$

- **Problem 108: Result is not expressed in closed-form.**

$$\int \frac{\text{Sin}[c+d x]}{x^3 \left(a+b x^3\right)^2} \, dx$$

Optimal (type 4, 800 leaves, 51 steps):

$$-\frac{d\, \text{Cos}[c+d x]}{2 a^2 x}-\frac{(-1)^{2/3} b^{1/3} d\, \text{Cos}\left[c+\frac{(-1)^{1/3} a^{1/3} d}{b^{1/3}}\right] \text{CosIntegral}\left[\frac{(-1)^{1/3} a^{1/3} d}{b^{1/3}}-d x\right]}{9 a^{7/3}}-\frac{b^{1/3} d\, \text{Cos}\left[c-\frac{a^{1/3} d}{b^{1/3}}\right] \text{CosIntegral}\left[\frac{a^{1/3} d}{b^{1/3}}+d x\right]}{9 a^{7/3}}+$$
$$\frac{(-1)^{1/3} b^{1/3} d\, \text{Cos}\left[c-\frac{(-1)^{2/3} a^{1/3} d}{b^{1/3}}\right] \text{CosIntegral}\left[\frac{(-1)^{2/3} a^{1/3} d}{b^{1/3}}+d x\right]}{9 a^{7/3}}-\frac{d^2\, \text{CosIntegral}[d x]\, \text{Sin}[c]}{2 a^2}-$$
$$\frac{5 b^{2/3}\, \text{CosIntegral}\left[\frac{a^{1/3} d}{b^{1/3}}+d x\right] \text{Sin}\left[c-\frac{a^{1/3} d}{b^{1/3}}\right]}{9 a^{8/3}}+\frac{5 (-1)^{1/3} b^{2/3}\, \text{CosIntegral}\left[\frac{(-1)^{1/3} a^{1/3} d}{b^{1/3}}-d x\right] \text{Sin}\left[c+\frac{(-1)^{1/3} a^{1/3} d}{b^{1/3}}\right]}{9 a^{8/3}}-$$
$$\frac{5 (-1)^{2/3} b^{2/3}\, \text{CosIntegral}\left[\frac{(-1)^{2/3} a^{1/3} d}{b^{1/3}}+d x\right] \text{Sin}\left[c-\frac{(-1)^{2/3} a^{1/3} d}{b^{1/3}}\right]}{9 a^{8/3}}+\frac{\text{Sin}[c+d x]}{3 a b x^5}-\frac{5\, \text{Sin}[c+d x]}{6 a^2 x^2}-\frac{\text{Sin}[c+d x]}{3 b x^5 \left(a+b x^3\right)}-\frac{d^2\, \text{Cos}[c]\, \text{SinIntegral}[d x]}{2 a^2}-$$
$$\frac{5 (-1)^{1/3} b^{2/3}\, \text{Cos}\left[c+\frac{(-1)^{1/3} a^{1/3} d}{b^{1/3}}\right] \text{SinIntegral}\left[\frac{(-1)^{1/3} a^{1/3} d}{b^{1/3}}-d x\right]}{9 a^{8/3}}-\frac{(-1)^{2/3} b^{1/3} d\, \text{Sin}\left[c+\frac{(-1)^{1/3} a^{1/3} d}{b^{1/3}}\right] \text{SinIntegral}\left[\frac{(-1)^{1/3} a^{1/3} d}{b^{1/3}}-d x\right]}{9 a^{7/3}}-$$
$$\frac{5 b^{2/3}\, \text{Cos}\left[c-\frac{a^{1/3} d}{b^{1/3}}\right] \text{SinIntegral}\left[\frac{a^{1/3} d}{b^{1/3}}+d x\right]}{9 a^{8/3}}+\frac{b^{1/3} d\, \text{Sin}\left[c-\frac{a^{1/3} d}{b^{1/3}}\right] \text{SinIntegral}\left[\frac{a^{1/3} d}{b^{1/3}}+d x\right]}{9 a^{7/3}}-$$
$$\frac{5 (-1)^{2/3} b^{2/3}\, \text{Cos}\left[c-\frac{(-1)^{2/3} a^{1/3} d}{b^{1/3}}\right] \text{SinIntegral}\left[\frac{(-1)^{2/3} a^{1/3} d}{b^{1/3}}+d x\right]}{9 a^{8/3}}-\frac{(-1)^{1/3} b^{1/3} d\, \text{Sin}\left[c-\frac{(-1)^{2/3} a^{1/3} d}{b^{1/3}}\right] \text{SinIntegral}\left[\frac{(-1)^{2/3} a^{1/3} d}{b^{1/3}}+d x\right]}{9 a^{7/3}}$$

Result (type 7, 470 leaves):

$$\frac{1}{18\,a^2}\left(\text{RootSum}\left[a+b\,\#1^3\,\&,\right.\right.$$

$$\frac{1}{\#1^2}\,\big(-5\,i\,\text{Cos}[c+d\,\#1]\,\text{CosIntegral}[d\,(x-\#1)]-5\,\text{CosIntegral}[d\,(x-\#1)]\,\text{Sin}[c+d\,\#1]-5\,\text{Cos}[c+d\,\#1]\,\text{SinIntegral}[d\,(x-\#1)]+$$

$$5\,i\,\text{Sin}[c+d\,\#1]\,\text{SinIntegral}[d\,(x-\#1)]+d\,\text{Cos}[c+d\,\#1]\,\text{CosIntegral}[d\,(x-\#1)]\,\#1-i\,d\,\text{CosIntegral}[d\,(x-\#1)]\,\text{Sin}[c+d\,\#1]\,\#1-$$

$$\left.i\,d\,\text{Cos}[c+d\,\#1]\,\text{SinIntegral}[d\,(x-\#1)]\,\#1-d\,\text{Sin}[c+d\,\#1]\,\text{SinIntegral}[d\,(x-\#1)]\,\#1\big)\,\&\right]+\text{RootSum}\left[a+b\,\#1^3\,\&,\right.$$

$$\frac{1}{\#1^2}\,\big(5\,i\,\text{Cos}[c+d\,\#1]\,\text{CosIntegral}[d\,(x-\#1)]-5\,\text{CosIntegral}[d\,(x-\#1)]\,\text{Sin}[c+d\,\#1]-5\,\text{Cos}[c+d\,\#1]\,\text{SinIntegral}[d\,(x-\#1)]-$$

$$5\,i\,\text{Sin}[c+d\,\#1]\,\text{SinIntegral}[d\,(x-\#1)]+d\,\text{Cos}[c+d\,\#1]\,\text{CosIntegral}[d\,(x-\#1)]\,\#1+i\,d\,\text{CosIntegral}[d\,(x-\#1)]\,\text{Sin}[c+d\,\#1]\,\#1+$$

$$\left.i\,d\,\text{Cos}[c+d\,\#1]\,\text{SinIntegral}[d\,(x-\#1)]\,\#1-d\,\text{Sin}[c+d\,\#1]\,\text{SinIntegral}[d\,(x-\#1)]\,\#1\big)\,\&\right]-$$

$$\frac{1}{x^2\,(a+b\,x^3)}3\,\big(3\,a\,d\,x\,\text{Cos}[c+d\,x]+3\,b\,d\,x^4\,\text{Cos}[c+d\,x]+3\,d^2\,x^2\,(a+b\,x^3)\,\text{CosIntegral}[d\,x]\,\text{Sin}[c]+3\,a\,\text{Sin}[c+d\,x]+$$

$$\left.5\,b\,x^3\,\text{Sin}[c+d\,x]+3\,d^2\,x^2\,(a+b\,x^3)\,\text{Cos}[c]\,\text{SinIntegral}[d\,x]\big)\right)$$

■ Problem 109: Result is not expressed in closed-form.

$$\int\frac{x^3\,\text{Sin}[c+d\,x]}{(a+b\,x^3)^3}\,dx$$

Optimal (type 4, 772 leaves, 71 steps):

$$\frac{d\,\text{Cos}[c+d\,x]}{18\,a\,b^2\,x}-\frac{d\,\text{Cos}[c+d\,x]}{18\,b^2\,x\,(a+b\,x^3)}+\frac{\text{CosIntegral}\left[\frac{a^{1/3}\,d}{b^{1/3}}+d\,x\right]\,\text{Sin}\left[c-\frac{a^{1/3}\,d}{b^{1/3}}\right]}{27\,a^{5/3}\,b^{4/3}}+\frac{d^2\,\text{CosIntegral}\left[\frac{a^{1/3}\,d}{b^{1/3}}+d\,x\right]\,\text{Sin}\left[c-\frac{a^{1/3}\,d}{b^{1/3}}\right]}{54\,a\,b^2}-$$

$$\frac{(-1)^{1/3}\,\text{CosIntegral}\left[\frac{(-1)^{1/3}\,a^{1/3}\,d}{b^{1/3}}-d\,x\right]\,\text{Sin}\left[c+\frac{(-1)^{1/3}\,a^{1/3}\,d}{b^{1/3}}\right]}{27\,a^{5/3}\,b^{4/3}}+\frac{d^2\,\text{CosIntegral}\left[\frac{(-1)^{1/3}\,a^{1/3}\,d}{b^{1/3}}-d\,x\right]\,\text{Sin}\left[c+\frac{(-1)^{1/3}\,a^{1/3}\,d}{b^{1/3}}\right]}{54\,a\,b^2}+$$

$$\frac{(-1)^{2/3}\,\text{CosIntegral}\left[\frac{(-1)^{2/3}\,a^{1/3}\,d}{b^{1/3}}+d\,x\right]\,\text{Sin}\left[c-\frac{(-1)^{2/3}\,a^{1/3}\,d}{b^{1/3}}\right]}{27\,a^{5/3}\,b^{4/3}}+\frac{d^2\,\text{CosIntegral}\left[\frac{(-1)^{2/3}\,a^{1/3}\,d}{b^{1/3}}+d\,x\right]\,\text{Sin}\left[c-\frac{(-1)^{2/3}\,a^{1/3}\,d}{b^{1/3}}\right]}{54\,a\,b^2}+$$

$$\frac{\text{Sin}[c+d\,x]}{18\,a\,b^2\,x^2}-\frac{x\,\text{Sin}[c+d\,x]}{6\,b\,(a+b\,x^3)^2}-\frac{\text{Sin}[c+d\,x]}{18\,b^2\,x^2\,(a+b\,x^3)}+\frac{(-1)^{1/3}\,\text{Cos}\left[c+\frac{(-1)^{1/3}\,a^{1/3}\,d}{b^{1/3}}\right]\,\text{SinIntegral}\left[\frac{(-1)^{1/3}\,a^{1/3}\,d}{b^{1/3}}-d\,x\right]}{27\,a^{5/3}\,b^{4/3}}-$$

$$\frac{d^2\,\text{Cos}\left[c+\frac{(-1)^{1/3}\,a^{1/3}\,d}{b^{1/3}}\right]\,\text{SinIntegral}\left[\frac{(-1)^{1/3}\,a^{1/3}\,d}{b^{1/3}}-d\,x\right]}{54\,a\,b^2}+\frac{\text{Cos}\left[c-\frac{a^{1/3}\,d}{b^{1/3}}\right]\,\text{SinIntegral}\left[\frac{a^{1/3}\,d}{b^{1/3}}+d\,x\right]}{27\,a^{5/3}\,b^{4/3}}+\frac{d^2\,\text{Cos}\left[c-\frac{a^{1/3}\,d}{b^{1/3}}\right]\,\text{SinIntegral}\left[\frac{a^{1/3}\,d}{b^{1/3}}+d\,x\right]}{54\,a\,b^2}+$$

$$\frac{(-1)^{2/3}\,\text{Cos}\left[c-\frac{(-1)^{2/3}\,a^{1/3}\,d}{b^{1/3}}\right]\,\text{SinIntegral}\left[\frac{(-1)^{2/3}\,a^{1/3}\,d}{b^{1/3}}+d\,x\right]}{27\,a^{5/3}\,b^{4/3}}+\frac{d^2\,\text{Cos}\left[c-\frac{(-1)^{2/3}\,a^{1/3}\,d}{b^{1/3}}\right]\,\text{SinIntegral}\left[\frac{(-1)^{2/3}\,a^{1/3}\,d}{b^{1/3}}+d\,x\right]}{54\,a\,b^2}$$

Result (type 7, 457 leaves):

$$\frac{1}{108\, a\, b^2}\left(i\, \text{RootSum}\left[a+b\, \#1^3\&,\ \frac{1}{\#1^2}\left(2\, \text{Cos}[c+d\, \#1]\, \text{CosIntegral}[d\, (x-\#1)]-2\, i\, \text{CosIntegral}[d\, (x-\#1)]\, \text{Sin}[c+d\, \#1]-2\, i\, \text{Cos}[c+d\, \#1]\, \text{SinIntegral}[d\, (x-\#1)]-2\, \text{Sin}[c+d\, \#1]\, \text{SinIntegral}[d\, (x-\#1)]+d^2\, \text{Cos}[c+d\, \#1]\, \text{CosIntegral}[d\, (x-\#1)]\, \#1^2-i\, d^2\, \text{CosIntegral}[d\, (x-\#1)]\, \text{Sin}[c+d\, \#1]\, \#1^2-i\, d^2\, \text{Cos}[c+d\, \#1]\, \text{SinIntegral}[d\, (x-\#1)]\, \#1^2-d^2\, \text{Sin}[c+d\, \#1]\, \text{SinIntegral}[d\, (x-\#1)]\, \#1^2\right)\&\right]-i\, \text{RootSum}\left[a+b\, \#1^3\&,\ \frac{1}{\#1^2}\left(2\, \text{Cos}[c+d\, \#1]\, \text{CosIntegral}[d\, (x-\#1)]+2\, i\, \text{CosIntegral}[d\, (x-\#1)]\, \text{Sin}[c+d\, \#1]+2\, i\, \text{Cos}[c+d\, \#1]\, \text{SinIntegral}[d\, (x-\#1)]-2\, \text{Sin}[c+d\, \#1]\, \text{SinIntegral}[d\, (x-\#1)]+d^2\, \text{Cos}[c+d\, \#1]\, \text{CosIntegral}[d\, (x-\#1)]\, \#1^2+i\, d^2\, \text{CosIntegral}[d\, (x-\#1)]\, \text{Sin}[c+d\, \#1]\, \#1^2+i\, d^2\, \text{Cos}[c+d\, \#1]\, \text{SinIntegral}[d\, (x-\#1)]\, \#1^2-d^2\, \text{Sin}[c+d\, \#1]\, \text{SinIntegral}[d\, (x-\#1)]\, \#1^2\right)\&\right]+\frac{6\, b\, x\, \left(d\, x\, (a+b\, x^3)\, \text{Cos}[c+d\, x]+(-2\, a+b\, x^3)\, \text{Sin}[c+d\, x]\right)}{(a+b\, x^3)^2}\right)$$

- **Problem 110: Result is not expressed in closed-form.**

$$\int \frac{x^2\, \text{Sin}[c+d\, x]}{(a+b\, x^3)^3}\, dx$$

Optimal (type 4, 777 leaves, 37 steps):

$$\frac{d\, \text{Cos}[c+d\, x]}{18\, a\, b^2\, x^2}-\frac{d\, \text{Cos}[c+d\, x]}{18\, b^2\, x^2\, (a+b\, x^3)}-\frac{(-1)^{1/3}\, d\, \text{Cos}\left[c+\frac{(-1)^{1/3} a^{1/3} d}{b^{1/3}}\right]\, \text{CosIntegral}\left[\frac{(-1)^{1/3} a^{1/3} d}{b^{1/3}}-d\, x\right]}{27\, a^{5/3}\, b^{4/3}}+\frac{d\, \text{Cos}\left[c-\frac{a^{1/3} d}{b^{1/3}}\right]\, \text{CosIntegral}\left[\frac{a^{1/3} d}{b^{1/3}}+d\, x\right]}{27\, a^{5/3}\, b^{4/3}}+$$
$$\frac{(-1)^{2/3}\, d\, \text{Cos}\left[c-\frac{(-1)^{2/3} a^{1/3} d}{b^{1/3}}\right]\, \text{CosIntegral}\left[\frac{(-1)^{2/3} a^{1/3} d}{b^{1/3}}+d\, x\right]}{27\, a^{5/3}\, b^{4/3}}-\frac{d^2\, \text{CosIntegral}\left[\frac{a^{1/3} d}{b^{1/3}}+d\, x\right]\, \text{Sin}\left[c-\frac{a^{1/3} d}{b^{1/3}}\right]}{54\, a^{4/3}\, b^{5/3}}-$$
$$\frac{(-1)^{2/3}\, d^2\, \text{CosIntegral}\left[\frac{(-1)^{1/3} a^{1/3} d}{b^{1/3}}-d\, x\right]\, \text{Sin}\left[c+\frac{(-1)^{1/3} a^{1/3} d}{b^{1/3}}\right]}{54\, a^{4/3}\, b^{5/3}}+\frac{(-1)^{1/3}\, d^2\, \text{CosIntegral}\left[\frac{(-1)^{2/3} a^{1/3} d}{b^{1/3}}+d\, x\right]\, \text{Sin}\left[c-\frac{(-1)^{2/3} a^{1/3} d}{b^{1/3}}\right]}{54\, a^{4/3}\, b^{5/3}}-$$
$$\frac{\text{Sin}[c+d\, x]}{6\, b\, (a+b\, x^3)^2}+\frac{(-1)^{2/3}\, d^2\, \text{Cos}\left[c+\frac{(-1)^{1/3} a^{1/3} d}{b^{1/3}}\right]\, \text{SinIntegral}\left[\frac{(-1)^{1/3} a^{1/3} d}{b^{1/3}}-d\, x\right]}{54\, a^{4/3}\, b^{5/3}}-\frac{(-1)^{1/3}\, d\, \text{Sin}\left[c+\frac{(-1)^{1/3} a^{1/3} d}{b^{1/3}}\right]\, \text{SinIntegral}\left[\frac{(-1)^{1/3} a^{1/3} d}{b^{1/3}}-d\, x\right]}{27\, a^{5/3}\, b^{4/3}}-$$
$$\frac{d^2\, \text{Cos}\left[c-\frac{a^{1/3} d}{b^{1/3}}\right]\, \text{SinIntegral}\left[\frac{a^{1/3} d}{b^{1/3}}+d\, x\right]}{54\, a^{4/3}\, b^{5/3}}-\frac{d\, \text{Sin}\left[c-\frac{a^{1/3} d}{b^{1/3}}\right]\, \text{SinIntegral}\left[\frac{a^{1/3} d}{b^{1/3}}+d\, x\right]}{27\, a^{5/3}\, b^{4/3}}+$$
$$\frac{(-1)^{1/3}\, d^2\, \text{Cos}\left[c-\frac{(-1)^{2/3} a^{1/3} d}{b^{1/3}}\right]\, \text{SinIntegral}\left[\frac{(-1)^{2/3} a^{1/3} d}{b^{1/3}}+d\, x\right]}{54\, a^{4/3}\, b^{5/3}}-\frac{(-1)^{2/3}\, d\, \text{Sin}\left[c-\frac{(-1)^{2/3} a^{1/3} d}{b^{1/3}}\right]\, \text{SinIntegral}\left[\frac{(-1)^{2/3} a^{1/3} d}{b^{1/3}}+d\, x\right]}{27\, a^{5/3}\, b^{4/3}}$$

Result (type 7, 449 leaves):

$$\frac{1}{108\,a\,b^2}\left(i\,d\,\text{RootSum}\left[a+b\,\#1^3\,\&,\right.\right.$$
$$\frac{1}{\#1^2}\,(-2\,i\,\text{Cos}[c+d\,\#1]\,\text{CosIntegral}[d\,(x-\#1)]-2\,\text{CosIntegral}[d\,(x-\#1)]\,\text{Sin}[c+d\,\#1]-2\,\text{Cos}[c+d\,\#1]\,\text{SinIntegral}[d\,(x-\#1)]+$$
$$2\,i\,\text{Sin}[c+d\,\#1]\,\text{SinIntegral}[d\,(x-\#1)]+d\,\text{Cos}[c+d\,\#1]\,\text{CosIntegral}[d\,(x-\#1)]\,\#1-i\,d\,\text{CosIntegral}[d\,(x-\#1)]\,\text{Sin}[c+d\,\#1]\,\#1-$$
$$\left.i\,d\,\text{Cos}[c+d\,\#1]\,\text{SinIntegral}[d\,(x-\#1)]\,\#1-d\,\text{Sin}[c+d\,\#1]\,\text{SinIntegral}[d\,(x-\#1)]\,\#1)\,\&\right]-i\,d\,\text{RootSum}\left[a+b\,\#1^3\,\&,\right.$$
$$\frac{1}{\#1^2}\,(2\,i\,\text{Cos}[c+d\,\#1]\,\text{CosIntegral}[d\,(x-\#1)]-2\,\text{CosIntegral}[d\,(x-\#1)]\,\text{Sin}[c+d\,\#1]-2\,\text{Cos}[c+d\,\#1]\,\text{SinIntegral}[d\,(x-\#1)]-$$
$$2\,i\,\text{Sin}[c+d\,\#1]\,\text{SinIntegral}[d\,(x-\#1)]+d\,\text{Cos}[c+d\,\#1]\,\text{CosIntegral}[d\,(x-\#1)]\,\#1+i\,d\,\text{CosIntegral}[d\,(x-\#1)]\,\text{Sin}[c+d\,\#1]\,\#1+$$
$$\left.i\,d\,\text{Cos}[c+d\,\#1]\,\text{SinIntegral}[d\,(x-\#1)]\,\#1-d\,\text{Sin}[c+d\,\#1]\,\text{SinIntegral}[d\,(x-\#1)]\,\#1)\,\&\right]+$$
$$\left.\frac{6\,b\,\text{Cos}[d\,x]\,\left(d\,x\,\left(a+b\,x^3\right)\,\text{Cos}[c]-3\,a\,\text{Sin}[c]\right)}{\left(a+b\,x^3\right)^2}-\frac{6\,b\,\left(3\,a\,\text{Cos}[c]+d\,x\,\left(a+b\,x^3\right)\,\text{Sin}[c]\right)\,\text{Sin}[d\,x]}{\left(a+b\,x^3\right)^2}\right)$$

- **Problem 111: Result is not expressed in closed-form.**

$$\int\frac{x\,\text{Sin}[c+d\,x]}{\left(a+b\,x^3\right)^3}\,dx$$

Optimal (type 4, 1141 leaves, 89 steps) :

$$\frac{d\,\text{Cos}[c+d\,x]}{18\,a\,b^2\,x^3}-\frac{d\,\text{Cos}[c+d\,x]}{18\,b^2\,x^3\,(a+b\,x^3)}-\frac{2\,d\,\text{Cos}\left[c+\frac{(-1)^{1/3}a^{1/3}d}{b^{1/3}}\right]\text{CosIntegral}\left[\frac{(-1)^{1/3}a^{1/3}d}{b^{1/3}}-d\,x\right]}{27\,a^2\,b}-\frac{2\,d\,\text{Cos}\left[c-\frac{a^{1/3}d}{b^{1/3}}\right]\text{CosIntegral}\left[\frac{a^{1/3}d}{b^{1/3}}+d\,x\right]}{27\,a^2\,b}-$$

$$\frac{2\,d\,\text{Cos}\left[c-\frac{(-1)^{2/3}a^{1/3}d}{b^{1/3}}\right]\text{CosIntegral}\left[\frac{(-1)^{2/3}a^{1/3}d}{b^{1/3}}+d\,x\right]}{27\,a^2\,b}-\frac{2\,\text{CosIntegral}\left[\frac{a^{1/3}d}{b^{1/3}}+d\,x\right]\text{Sin}\left[c-\frac{a^{1/3}d}{b^{1/3}}\right]}{27\,a^{7/3}\,b^{2/3}}+$$

$$\frac{d^2\,\text{CosIntegral}\left[\frac{a^{1/3}d}{b^{1/3}}+d\,x\right]\text{Sin}\left[c-\frac{a^{1/3}d}{b^{1/3}}\right]}{54\,a^{5/3}\,b^{4/3}}-\frac{2\,(-1)^{2/3}\,\text{CosIntegral}\left[\frac{(-1)^{1/3}a^{1/3}d}{b^{1/3}}-d\,x\right]\text{Sin}\left[c+\frac{(-1)^{1/3}a^{1/3}d}{b^{1/3}}\right]}{27\,a^{7/3}\,b^{2/3}}-$$

$$\frac{(-1)^{1/3}\,d^2\,\text{CosIntegral}\left[\frac{(-1)^{1/3}a^{1/3}d}{b^{1/3}}-d\,x\right]\text{Sin}\left[c+\frac{(-1)^{1/3}a^{1/3}d}{b^{1/3}}\right]}{54\,a^{5/3}\,b^{4/3}}+\frac{2\,(-1)^{1/3}\,\text{CosIntegral}\left[\frac{(-1)^{2/3}a^{1/3}d}{b^{1/3}}+d\,x\right]\text{Sin}\left[c-\frac{(-1)^{2/3}a^{1/3}d}{b^{1/3}}\right]}{27\,a^{7/3}\,b^{2/3}}+$$

$$\frac{(-1)^{2/3}\,d^2\,\text{CosIntegral}\left[\frac{(-1)^{2/3}a^{1/3}d}{b^{1/3}}+d\,x\right]\text{Sin}\left[c-\frac{(-1)^{2/3}a^{1/3}d}{b^{1/3}}\right]}{54\,a^{5/3}\,b^{4/3}}-\frac{\text{Sin}[c+d\,x]}{18\,a\,b^2\,x^4}+\frac{2\,\text{Sin}[c+d\,x]}{9\,a^2\,b\,x}-\frac{\text{Sin}[c+d\,x]}{6\,b\,x\,(a+b\,x^3)^2}+\frac{\text{Sin}[c+d\,x]}{18\,b^2\,x^4\,(a+b\,x^3)}+$$

$$\frac{2\,(-1)^{2/3}\,\text{Cos}\left[c+\frac{(-1)^{1/3}a^{1/3}d}{b^{1/3}}\right]\text{SinIntegral}\left[\frac{(-1)^{1/3}a^{1/3}d}{b^{1/3}}-d\,x\right]}{27\,a^{7/3}\,b^{2/3}}+\frac{(-1)^{1/3}\,d^2\,\text{Cos}\left[c+\frac{(-1)^{1/3}a^{1/3}d}{b^{1/3}}\right]\text{SinIntegral}\left[\frac{(-1)^{1/3}a^{1/3}d}{b^{1/3}}-d\,x\right]}{54\,a^{5/3}\,b^{4/3}}-$$

$$\frac{2\,d\,\text{Sin}\left[c+\frac{(-1)^{1/3}a^{1/3}d}{b^{1/3}}\right]\text{SinIntegral}\left[\frac{(-1)^{1/3}a^{1/3}d}{b^{1/3}}-d\,x\right]}{27\,a^2\,b}-\frac{2\,\text{Cos}\left[c-\frac{a^{1/3}d}{b^{1/3}}\right]\text{SinIntegral}\left[\frac{a^{1/3}d}{b^{1/3}}+d\,x\right]}{27\,a^{7/3}\,b^{2/3}}+\frac{d^2\,\text{Cos}\left[c-\frac{a^{1/3}d}{b^{1/3}}\right]\text{SinIntegral}\left[\frac{a^{1/3}d}{b^{1/3}}+d\,x\right]}{54\,a^{5/3}\,b^{4/3}}+$$

$$\frac{2\,d\,\text{Sin}\left[c-\frac{a^{1/3}d}{b^{1/3}}\right]\text{SinIntegral}\left[\frac{a^{1/3}d}{b^{1/3}}+d\,x\right]}{27\,a^2\,b}+\frac{2\,(-1)^{1/3}\,\text{Cos}\left[c-\frac{(-1)^{2/3}a^{1/3}d}{b^{1/3}}\right]\text{SinIntegral}\left[\frac{(-1)^{2/3}a^{1/3}d}{b^{1/3}}+d\,x\right]}{27\,a^{7/3}\,b^{2/3}}+$$

$$\frac{(-1)^{2/3}\,d^2\,\text{Cos}\left[c-\frac{(-1)^{2/3}a^{1/3}d}{b^{1/3}}\right]\text{SinIntegral}\left[\frac{(-1)^{2/3}a^{1/3}d}{b^{1/3}}+d\,x\right]}{54\,a^{5/3}\,b^{4/3}}+\frac{2\,d\,\text{Sin}\left[c-\frac{(-1)^{2/3}a^{1/3}d}{b^{1/3}}\right]\text{SinIntegral}\left[\frac{(-1)^{2/3}a^{1/3}d}{b^{1/3}}+d\,x\right]}{27\,a^2\,b}$$

Result (type 7, 698 leaves) :

$$-\frac{1}{108\,a^2\,b^2}\Bigg(\text{RootSum}\Big[a+b\,\#1^3\,\&,\ \frac{1}{\#1^2}\Big(-i\,a\,d^2\,\text{Cos}[c+d\,\#1]\,\text{CosIntegral}[d\,(x-\#1)]-a\,d^2\,\text{CosIntegral}[d\,(x-\#1)]\,\text{Sin}[c+d\,\#1]-a\,d^2\,\text{Cos}[c+d\,\#1]\,\text{SinIntegral}[d\,(x-\#1)]+i\,a\,d^2\,\text{Sin}[c+d\,\#1]\,\text{SinIntegral}[d\,(x-\#1)]-4\,i\,b\,\text{Cos}[c+d\,\#1]\,\text{CosIntegral}[d\,(x-\#1)]\,\#1-4\,b\,\text{CosIntegral}[d\,(x-\#1)]\,\text{Sin}[c+d\,\#1]\,\#1-4\,b\,\text{Cos}[c+d\,\#1]\,\text{SinIntegral}[d\,(x-\#1)]\,\#1+4\,i\,b\,\text{Sin}[c+d\,\#1]\,\text{SinIntegral}[d\,(x-\#1)]\,\#1+4\,b\,d\,\text{Cos}[c+d\,\#1]\,\text{CosIntegral}[d\,(x-\#1)]\,\#1^2-4\,i\,b\,d\,\text{CosIntegral}[d\,(x-\#1)]\,\text{Sin}[c+d\,\#1]\,\#1^2-4\,i\,b\,d\,\text{Cos}[c+d\,\#1]\,\text{SinIntegral}[d\,(x-\#1)]\,\#1^2-4\,b\,d\,\text{Sin}[c+d\,\#1]\,\text{SinIntegral}[d\,(x-\#1)]\,\#1^2\Big)\,\&\Big]+\text{RootSum}\Big[a+b\,\#1^3\,\&,\ \frac{1}{\#1^2}\Big(i\,a\,d^2\,\text{Cos}[c+d\,\#1]\,\text{CosIntegral}[d\,(x-\#1)]-a\,d^2\,\text{CosIntegral}[d\,(x-\#1)]\,\text{Sin}[c+d\,\#1]-a\,d^2\,\text{Cos}[c+d\,\#1]\,\text{SinIntegral}[d\,(x-\#1)]-i\,a\,d^2\,\text{Sin}[c+d\,\#1]\,\text{SinIntegral}[d\,(x-\#1)]+4\,i\,b\,\text{Cos}[c+d\,\#1]\,\text{CosIntegral}[d\,(x-\#1)]\,\#1-4\,b\,\text{CosIntegral}[d\,(x-\#1)]\,\text{Sin}[c+d\,\#1]\,\#1-4\,b\,\text{Cos}[c+d\,\#1]\,\text{SinIntegral}[d\,(x-\#1)]\,\#1-4\,i\,b\,\text{Sin}[c+d\,\#1]\,\text{SinIntegral}[d\,(x-\#1)]\,\#1+4\,b\,d\,\text{Cos}[c+d\,\#1]\,\text{CosIntegral}[d\,(x-\#1)]\,\#1^2+4\,i\,b\,d\,\text{CosIntegral}[d\,(x-\#1)]\,\text{Sin}[c+d\,\#1]\,\#1^2+4\,i\,b\,d\,\text{Cos}[c+d\,\#1]\,\text{SinIntegral}[d\,(x-\#1)]\,\#1^2-4\,b\,d\,\text{Sin}[c+d\,\#1]\,\text{SinIntegral}[d\,(x-\#1)]\,\#1^2\Big)\,\&\Big]-\frac{6\,b\,\text{Cos}[d\,x]\,\left(a\,d\,\left(a+b\,x^3\right)\,\text{Cos}[c]+b\,x^2\,\left(7\,a+4\,b\,x^3\right)\,\text{Sin}[c]\right)}{\left(a+b\,x^3\right)^2}-\frac{6\,b\,\left(b\,x^2\,\left(7\,a+4\,b\,x^3\right)\,\text{Cos}[c]-a\,d\,\left(a+b\,x^3\right)\,\text{Sin}[c]\right)\,\text{Sin}[d\,x]}{\left(a+b\,x^3\right)^2}\Bigg)$$

- **Problem 112: Result is not expressed in closed-form.**

$$\int \frac{\text{Sin}[c+d\,x]}{\left(a+b\,x^3\right)^3}\,dx$$

Optimal (type 4, 1161 leaves, 99 steps):

$$\frac{d\,\text{Cos}[c+d\,x]}{18\,a\,b^2\,x^4}-\frac{d\,\text{Cos}[c+d\,x]}{18\,a^2\,b\,x}-\frac{d\,\text{Cos}[c+d\,x]}{18\,b^2\,x^4\left(a+b\,x^3\right)}+\frac{(-1)^{2/3}\,d\,\text{Cos}\left[c+\frac{(-1)^{1/3}\,a^{1/3}\,d}{b^{1/3}}\right]\,\text{CosIntegral}\left[\frac{(-1)^{1/3}\,a^{1/3}\,d}{b^{1/3}}-d\,x\right]}{9\,a^{7/3}\,b^{2/3}}+$$

$$\frac{d\,\text{Cos}\left[c-\frac{a^{1/3}\,d}{b^{1/3}}\right]\,\text{CosIntegral}\left[\frac{a^{1/3}\,d}{b^{1/3}}+d\,x\right]}{9\,a^{7/3}\,b^{2/3}}-\frac{(-1)^{1/3}\,d\,\text{Cos}\left[c-\frac{(-1)^{2/3}\,a^{1/3}\,d}{b^{1/3}}\right]\,\text{CosIntegral}\left[\frac{(-1)^{2/3}\,a^{1/3}\,d}{b^{1/3}}+d\,x\right]}{9\,a^{7/3}\,b^{2/3}}+$$

$$\frac{5\,\text{CosIntegral}\left[\frac{a^{1/3}\,d}{b^{1/3}}+d\,x\right]\,\text{Sin}\left[c-\frac{a^{1/3}\,d}{b^{1/3}}\right]}{27\,a^{8/3}\,b^{1/3}}-\frac{d^2\,\text{CosIntegral}\left[\frac{a^{1/3}\,d}{b^{1/3}}+d\,x\right]\,\text{Sin}\left[c-\frac{a^{1/3}\,d}{b^{1/3}}\right]}{54\,a^2\,b}-$$

$$\frac{5\,(-1)^{1/3}\,\text{CosIntegral}\left[\frac{(-1)^{1/3}\,a^{1/3}\,d}{b^{1/3}}-d\,x\right]\,\text{Sin}\left[c+\frac{(-1)^{1/3}\,a^{1/3}\,d}{b^{1/3}}\right]}{27\,a^{8/3}\,b^{1/3}}-\frac{d^2\,\text{CosIntegral}\left[\frac{(-1)^{1/3}\,a^{1/3}\,d}{b^{1/3}}-d\,x\right]\,\text{Sin}\left[c+\frac{(-1)^{1/3}\,a^{1/3}\,d}{b^{1/3}}\right]}{54\,a^2\,b}+$$

$$\frac{5\,(-1)^{2/3}\,\text{CosIntegral}\left[\frac{(-1)^{2/3}\,a^{1/3}\,d}{b^{1/3}}+d\,x\right]\,\text{Sin}\left[c-\frac{(-1)^{2/3}\,a^{1/3}\,d}{b^{1/3}}\right]}{27\,a^{8/3}\,b^{1/3}}-\frac{d^2\,\text{CosIntegral}\left[\frac{(-1)^{2/3}\,a^{1/3}\,d}{b^{1/3}}+d\,x\right]\,\text{Sin}\left[c-\frac{(-1)^{2/3}\,a^{1/3}\,d}{b^{1/3}}\right]}{54\,a^2\,b}-$$

$$\frac{\text{Sin}[c+d\,x]}{9\,a\,b^2\,x^5}+\frac{5\,\text{Sin}[c+d\,x]}{18\,a^2\,b\,x^2}-\frac{\text{Sin}[c+d\,x]}{6\,b\,x^2\left(a+b\,x^3\right)^2}+\frac{\text{Sin}[c+d\,x]}{9\,b^2\,x^5\left(a+b\,x^3\right)}+\frac{5\,(-1)^{1/3}\,\text{Cos}\left[c+\frac{(-1)^{1/3}\,a^{1/3}\,d}{b^{1/3}}\right]\,\text{SinIntegral}\left[\frac{(-1)^{1/3}\,a^{1/3}\,d}{b^{1/3}}-d\,x\right]}{27\,a^{8/3}\,b^{1/3}}+$$

$$\frac{d^2\,\text{Cos}\left[c+\frac{(-1)^{1/3}\,a^{1/3}\,d}{b^{1/3}}\right]\,\text{SinIntegral}\left[\frac{(-1)^{1/3}\,a^{1/3}\,d}{b^{1/3}}-d\,x\right]}{54\,a^2\,b}+\frac{(-1)^{2/3}\,d\,\text{Sin}\left[c+\frac{(-1)^{1/3}\,a^{1/3}\,d}{b^{1/3}}\right]\,\text{SinIntegral}\left[\frac{(-1)^{1/3}\,a^{1/3}\,d}{b^{1/3}}-d\,x\right]}{9\,a^{7/3}\,b^{2/3}}+$$

$$\frac{5\,\text{Cos}\left[c-\frac{a^{1/3}\,d}{b^{1/3}}\right]\,\text{SinIntegral}\left[\frac{a^{1/3}\,d}{b^{1/3}}+d\,x\right]}{27\,a^{8/3}\,b^{1/3}}-\frac{d^2\,\text{Cos}\left[c-\frac{a^{1/3}\,d}{b^{1/3}}\right]\,\text{SinIntegral}\left[\frac{a^{1/3}\,d}{b^{1/3}}+d\,x\right]}{54\,a^2\,b}-$$

$$\frac{d\,\text{Sin}\left[c-\frac{a^{1/3}\,d}{b^{1/3}}\right]\,\text{SinIntegral}\left[\frac{a^{1/3}\,d}{b^{1/3}}+d\,x\right]}{9\,a^{7/3}\,b^{2/3}}+\frac{5\,(-1)^{2/3}\,\text{Cos}\left[c-\frac{(-1)^{2/3}\,a^{1/3}\,d}{b^{1/3}}\right]\,\text{SinIntegral}\left[\frac{(-1)^{2/3}\,a^{1/3}\,d}{b^{1/3}}+d\,x\right]}{27\,a^{8/3}\,b^{1/3}}-$$

$$\frac{d^2\,\text{Cos}\left[c-\frac{(-1)^{2/3}\,a^{1/3}\,d}{b^{1/3}}\right]\,\text{SinIntegral}\left[\frac{(-1)^{2/3}\,a^{1/3}\,d}{b^{1/3}}+d\,x\right]}{54\,a^2\,b}+\frac{(-1)^{1/3}\,d\,\text{Sin}\left[c-\frac{(-1)^{2/3}\,a^{1/3}\,d}{b^{1/3}}\right]\,\text{SinIntegral}\left[\frac{(-1)^{2/3}\,a^{1/3}\,d}{b^{1/3}}+d\,x\right]}{9\,a^{7/3}\,b^{2/3}}$$

Result (type 7, 675 leaves) :

$$\frac{1}{108\,a^2}\left(-\frac{1}{b}\,\mathrm{i}\,\mathrm{RootSum}\Big[a+b\,\#1^3\,\&,\right.$$
$$\frac{1}{\#1^2}\,(-10\,\mathrm{Cos}[c+d\,\#1]\,\mathrm{CosIntegral}[d\,(x-\#1)]+10\,\mathrm{i}\,\mathrm{CosIntegral}[d\,(x-\#1)]\,\mathrm{Sin}[c+d\,\#1]+10\,\mathrm{i}\,\mathrm{Cos}[c+d\,\#1]\,\mathrm{SinIntegral}[d\,(x-\#1)]+$$
$$10\,\mathrm{Sin}[c+d\,\#1]\,\mathrm{SinIntegral}[d\,(x-\#1)]-6\,\mathrm{i}\,d\,\mathrm{Cos}[c+d\,\#1]\,\mathrm{CosIntegral}[d\,(x-\#1)]\,\#1-6\,d\,\mathrm{CosIntegral}[d\,(x-\#1)]$$
$$\mathrm{Sin}[c+d\,\#1]\,\#1-6\,d\,\mathrm{Cos}[c+d\,\#1]\,\mathrm{SinIntegral}[d\,(x-\#1)]\,\#1+6\,\mathrm{i}\,d\,\mathrm{Sin}[c+d\,\#1]\,\mathrm{SinIntegral}[d\,(x-\#1)]\,\#1+$$
$$d^2\,\mathrm{Cos}[c+d\,\#1]\,\mathrm{CosIntegral}[d\,(x-\#1)]\,\#1^2-\mathrm{i}\,d^2\,\mathrm{CosIntegral}[d\,(x-\#1)]\,\mathrm{Sin}[c+d\,\#1]\,\#1^2-$$
$$\mathrm{i}\,d^2\,\mathrm{Cos}[c+d\,\#1]\,\mathrm{SinIntegral}[d\,(x-\#1)]\,\#1^2-d^2\,\mathrm{Sin}[c+d\,\#1]\,\mathrm{SinIntegral}[d\,(x-\#1)]\,\#1^2)\,\&\Big]+$$
$$\frac{1}{b}\,\mathrm{i}\,\mathrm{RootSum}\Big[a+b\,\#1^3\,\&,\,\frac{1}{\#1^2}\,(-10\,\mathrm{Cos}[c+d\,\#1]\,\mathrm{CosIntegral}[d\,(x-\#1)]-10\,\mathrm{i}\,\mathrm{CosIntegral}[d\,(x-\#1)]\,\mathrm{Sin}[c+d\,\#1]-$$
$$10\,\mathrm{i}\,\mathrm{Cos}[c+d\,\#1]\,\mathrm{SinIntegral}[d\,(x-\#1)]+10\,\mathrm{Sin}[c+d\,\#1]\,\mathrm{SinIntegral}[d\,(x-\#1)]+6\,\mathrm{i}\,d\,\mathrm{Cos}[c+d\,\#1]\,\mathrm{CosIntegral}[d\,(x-\#1)]\,\#1-$$
$$6\,d\,\mathrm{CosIntegral}[d\,(x-\#1)]\,\mathrm{Sin}[c+d\,\#1]\,\#1-6\,d\,\mathrm{Cos}[c+d\,\#1]\,\mathrm{SinIntegral}[d\,(x-\#1)]\,\#1-$$
$$6\,\mathrm{i}\,d\,\mathrm{Sin}[c+d\,\#1]\,\mathrm{SinIntegral}[d\,(x-\#1)]\,\#1+d^2\,\mathrm{Cos}[c+d\,\#1]\,\mathrm{CosIntegral}[d\,(x-\#1)]\,\#1^2+\mathrm{i}\,d^2\,\mathrm{CosIntegral}[d\,(x-\#1)]$$
$$\mathrm{Sin}[c+d\,\#1]\,\#1^2+\mathrm{i}\,d^2\,\mathrm{Cos}[c+d\,\#1]\,\mathrm{SinIntegral}[d\,(x-\#1)]\,\#1^2-d^2\,\mathrm{Sin}[c+d\,\#1]\,\mathrm{SinIntegral}[d\,(x-\#1)]\,\#1^2)\,\&\Big]-$$
$$\left.\frac{6\,x\,\mathrm{Cos}[d\,x]\,\left(d\,x\,\left(a+b\,x^3\right)\,\mathrm{Cos}[c]-\left(8\,a+5\,b\,x^3\right)\,\mathrm{Sin}[c]\right)}{\left(a+b\,x^3\right)^2}+\frac{6\,x\,\left(\left(8\,a+5\,b\,x^3\right)\,\mathrm{Cos}[c]+d\,x\,\left(a+b\,x^3\right)\,\mathrm{Sin}[c]\right)\,\mathrm{Sin}[d\,x]}{\left(a+b\,x^3\right)^2}\right)$$

- **Problem 113: Result more than twice size of optimal antiderivative.**

$$\int\frac{\mathrm{Sin}[c+d\,x]}{x\,\left(a+b\,x^3\right)^3}\,dx$$

Optimal (type 4, 1163 leaves, 110 steps):

$$\frac{d\,\text{Cos}[c+d\,x]}{18\,a\,b^2\,x^5}-\frac{d\,\text{Cos}[c+d\,x]}{18\,a^2\,b\,x^2}-\frac{d\,\text{Cos}[c+d\,x]}{18\,b^2\,x^5\,\left(a+b\,x^3\right)}+\frac{4\,(-1)^{1/3}\,d\,\text{Cos}\left[c+\frac{(-1)^{1/3}\,a^{1/3}\,d}{b^{1/3}}\right]\,\text{CosIntegral}\left[\frac{(-1)^{1/3}\,a^{1/3}\,d}{b^{1/3}}-d\,x\right]}{27\,a^{8/3}\,b^{1/3}}-$$

$$\frac{4\,d\,\text{Cos}\left[c-\frac{a^{1/3}\,d}{b^{1/3}}\right]\,\text{CosIntegral}\left[\frac{a^{1/3}\,d}{b^{1/3}}+d\,x\right]}{27\,a^{8/3}\,b^{1/3}}-\frac{4\,(-1)^{2/3}\,d\,\text{Cos}\left[c-\frac{(-1)^{2/3}\,a^{1/3}\,d}{b^{1/3}}\right]\,\text{CosIntegral}\left[\frac{(-1)^{2/3}\,a^{1/3}\,d}{b^{1/3}}+d\,x\right]}{27\,a^{8/3}\,b^{1/3}}+\frac{\text{CosIntegral}[d\,x]\,\text{Sin}[c]}{a^3}-$$

$$\frac{\text{CosIntegral}\left[\frac{a^{1/3}\,d}{b^{1/3}}+d\,x\right]\,\text{Sin}\left[c-\frac{a^{1/3}\,d}{b^{1/3}}\right]}{3\,a^3}+\frac{d^2\,\text{CosIntegral}\left[\frac{a^{1/3}\,d}{b^{1/3}}+d\,x\right]\,\text{Sin}\left[c-\frac{a^{1/3}\,d}{b^{1/3}}\right]}{54\,a^{7/3}\,b^{2/3}}-\frac{\text{CosIntegral}\left[\frac{(-1)^{1/3}\,a^{1/3}\,d}{b^{1/3}}-d\,x\right]\,\text{Sin}\left[c+\frac{(-1)^{1/3}\,a^{1/3}\,d}{b^{1/3}}\right]}{3\,a^3}+$$

$$\frac{(-1)^{2/3}\,d^2\,\text{CosIntegral}\left[\frac{(-1)^{1/3}\,a^{1/3}\,d}{b^{1/3}}-d\,x\right]\,\text{Sin}\left[c+\frac{(-1)^{1/3}\,a^{1/3}\,d}{b^{1/3}}\right]}{54\,a^{7/3}\,b^{2/3}}-\frac{\text{CosIntegral}\left[\frac{(-1)^{2/3}\,a^{1/3}\,d}{b^{1/3}}+d\,x\right]\,\text{Sin}\left[c-\frac{(-1)^{2/3}\,a^{1/3}\,d}{b^{1/3}}\right]}{3\,a^3}-$$

$$\frac{(-1)^{1/3}\,d^2\,\text{CosIntegral}\left[\frac{(-1)^{2/3}\,a^{1/3}\,d}{b^{1/3}}+d\,x\right]\,\text{Sin}\left[c-\frac{(-1)^{2/3}\,a^{1/3}\,d}{b^{1/3}}\right]}{54\,a^{7/3}\,b^{2/3}}-\frac{\text{Sin}[c+d\,x]}{6\,a\,b^2\,x^6}+\frac{\text{Sin}[c+d\,x]}{3\,a^2\,b\,x^3}-\frac{\text{Sin}[c+d\,x]}{6\,b\,x^3\,\left(a+b\,x^3\right)^2}+\frac{\text{Sin}[c+d\,x]}{6\,b^2\,x^6\,\left(a+b\,x^3\right)}+$$

$$\frac{\text{Cos}[c]\,\text{SinIntegral}[d\,x]}{a^3}+\frac{\text{Cos}\left[c+\frac{(-1)^{1/3}\,a^{1/3}\,d}{b^{1/3}}\right]\,\text{SinIntegral}\left[\frac{(-1)^{1/3}\,a^{1/3}\,d}{b^{1/3}}-d\,x\right]}{3\,a^3}-\frac{(-1)^{2/3}\,d^2\,\text{Cos}\left[c+\frac{(-1)^{1/3}\,a^{1/3}\,d}{b^{1/3}}\right]\,\text{SinIntegral}\left[\frac{(-1)^{1/3}\,a^{1/3}\,d}{b^{1/3}}-d\,x\right]}{54\,a^{7/3}\,b^{2/3}}+$$

$$\frac{4\,(-1)^{1/3}\,d\,\text{Sin}\left[c+\frac{(-1)^{1/3}\,a^{1/3}\,d}{b^{1/3}}\right]\,\text{SinIntegral}\left[\frac{(-1)^{1/3}\,a^{1/3}\,d}{b^{1/3}}-d\,x\right]}{27\,a^{8/3}\,b^{1/3}}-\frac{\text{Cos}\left[c-\frac{a^{1/3}\,d}{b^{1/3}}\right]\,\text{SinIntegral}\left[\frac{a^{1/3}\,d}{b^{1/3}}+d\,x\right]}{3\,a^3}+$$

$$\frac{d^2\,\text{Cos}\left[c-\frac{a^{1/3}\,d}{b^{1/3}}\right]\,\text{SinIntegral}\left[\frac{a^{1/3}\,d}{b^{1/3}}+d\,x\right]}{54\,a^{7/3}\,b^{2/3}}+\frac{4\,d\,\text{Sin}\left[c-\frac{a^{1/3}\,d}{b^{1/3}}\right]\,\text{SinIntegral}\left[\frac{a^{1/3}\,d}{b^{1/3}}+d\,x\right]}{27\,a^{8/3}\,b^{1/3}}-\frac{\text{Cos}\left[c-\frac{(-1)^{2/3}\,a^{1/3}\,d}{b^{1/3}}\right]\,\text{SinIntegral}\left[\frac{(-1)^{2/3}\,a^{1/3}\,d}{b^{1/3}}+d\,x\right]}{3\,a^3}-$$

$$\frac{(-1)^{1/3}\,d^2\,\text{Cos}\left[c-\frac{(-1)^{2/3}\,a^{1/3}\,d}{b^{1/3}}\right]\,\text{SinIntegral}\left[\frac{(-1)^{2/3}\,a^{1/3}\,d}{b^{1/3}}+d\,x\right]}{54\,a^{7/3}\,b^{2/3}}+\frac{4\,(-1)^{2/3}\,d\,\text{Sin}\left[c-\frac{(-1)^{2/3}\,a^{1/3}\,d}{b^{1/3}}\right]\,\text{SinIntegral}\left[\frac{(-1)^{2/3}\,a^{1/3}\,d}{b^{1/3}}+d\,x\right]}{27\,a^{8/3}\,b^{1/3}}$$

Result (type 4, 2929 leaves) :

$$\text{Sin}[c]\,\left(\frac{\text{CosIntegral}[d\,x]}{a^3}-\right.$$

$$\left((-1)^{2/3}\,\left(63-64\,(-1)^{1/3}+62\,(-1)^{2/3}\right)\,\left(d^2\,\text{Cos}\left[\frac{a^{1/3}\,d}{b^{1/3}}\right]\,\text{CosIntegral}\left[d\,\left(\frac{a^{1/3}}{b^{1/3}}+x\right)\right]+\frac{b^{1/3}\,\left(b^{1/3}\,\text{Cos}[d\,x]-d\,\left(a^{1/3}+b^{1/3}\,x\right)\,\text{Sin}[d\,x]\right)}{\left(a^{1/3}+b^{1/3}\,x\right)^2}+\right.\right.$$

$$\left.\left.d^2\,\text{Sin}\left[\frac{a^{1/3}\,d}{b^{1/3}}\right]\,\text{SinIntegral}\left[d\,\left(\frac{a^{1/3}}{b^{1/3}}+x\right)\right]\right)\right)\Big/\left(18\,\left(-1+(-1)^{1/3}\right)\,\left(1+(-1)^{1/3}\right)^3\,a^{7/3}\,b^{2/3}\right)-$$

$$\left((-1)^{2/3}\,\left(64-62\,(-1)^{1/3}+63\,(-1)^{2/3}\right)\,\left(d^2\,\text{Cos}\left[\frac{(-1)^{2/3}\,a^{1/3}\,d}{b^{1/3}}\right]\,\text{CosIntegral}\left[d\,\left(\frac{(-1)^{2/3}\,a^{1/3}}{b^{1/3}}+x\right)\right]+\right.\right.$$

$$\frac{b^{1/3}\left(b^{1/3}\,\text{Cos}[d\,x]-d\left((-1)^{2/3}a^{1/3}+b^{1/3}x\right)\text{Sin}[d\,x]\right)}{\left((-1)^{2/3}a^{1/3}+b^{1/3}x\right)^2}+d^2\,\text{Sin}\left[\frac{(-1)^{2/3}a^{1/3}d}{b^{1/3}}\right]\text{SinIntegral}\left[d\left(\frac{(-1)^{2/3}a^{1/3}}{b^{1/3}}+x\right)\right]\Bigg)\Bigg)\Bigg/$$

$$\left(18\left(1+(-1)^{1/3}\right)^3a^{7/3}b^{2/3}\right)+\frac{1}{\left(1+(-1)^{1/3}\right)^2a^3}\left(2-3(-1)^{1/3}+2(-1)^{2/3}\right)$$

$$\Bigg(\text{Cos}\left[\frac{(-1)^{1/3}a^{1/3}d}{b^{1/3}}\right]\text{CosIntegral}\left[-\frac{(-1)^{1/3}a^{1/3}d}{b^{1/3}}+d\,x\right]+\text{Sin}\left[\frac{(-1)^{1/3}a^{1/3}d}{b^{1/3}}\right]\text{SinIntegral}\left[\frac{(-1)^{1/3}a^{1/3}d}{b^{1/3}}-d\,x\right]\Bigg)-$$

$$\Bigg((-1)^{2/3}\left(64-62(-1)^{1/3}+63(-1)^{2/3}\right)\Bigg(d^2\,\text{Cos}\left[\frac{(-1)^{1/3}a^{1/3}d}{b^{1/3}}\right]\text{CosIntegral}\left[d\left(-\frac{(-1)^{1/3}a^{1/3}}{b^{1/3}}+x\right)\right]+$$

$$\frac{b^{2/3}\,\text{Cos}[d\,x]+b^{1/3}d\left((-1)^{1/3}a^{1/3}-b^{1/3}x\right)\text{Sin}[d\,x]}{\left((-1)^{1/3}a^{1/3}-b^{1/3}x\right)^2}+d^2\,\text{Sin}\left[\frac{(-1)^{1/3}a^{1/3}d}{b^{1/3}}\right]\text{SinIntegral}\left[\frac{(-1)^{1/3}a^{1/3}d}{b^{1/3}}-d\,x\right]\Bigg)\Bigg)\Bigg/$$

$$\left(18\left(-1+(-1)^{1/3}\right)\left(1+(-1)^{1/3}\right)^3a^{7/3}b^{2/3}\right)-\frac{1}{9\left(1+(-1)^{1/3}\right)^3a^{8/3}}(-1)^{2/3}\left(59-67(-1)^{1/3}+63(-1)^{2/3}\right)b^{1/3}\Bigg(-\frac{\text{Cos}[d\,x]}{b^{1/3}\left(-(-1)^{1/3}a^{1/3}+b^{1/3}x\right)}+$$

$$1\Big/b^{2/3}d\Bigg(-\text{CosIntegral}\left[-\frac{(-1)^{1/3}a^{1/3}d}{b^{1/3}}+d\,x\right]\text{Sin}\left[\frac{(-1)^{1/3}a^{1/3}d}{b^{1/3}}\right]+\text{Cos}\left[\frac{(-1)^{1/3}a^{1/3}d}{b^{1/3}}\right]\text{SinIntegral}\left[\frac{(-1)^{1/3}a^{1/3}d}{b^{1/3}}-d\,x\right]\Bigg)\Bigg)-$$

$$\frac{1}{\left(1+(-1)^{1/3}\right)^2a^3b^{1/3}}(-1)^{2/3}\left(5\,b^{1/3}-5(-1)^{1/3}b^{1/3}+4(-1)^{2/3}b^{1/3}\right)$$

$$\Bigg(\text{Cos}\left[\frac{a^{1/3}d}{b^{1/3}}\right]\text{CosIntegral}\left[\frac{a^{1/3}d}{b^{1/3}}+d\,x\right]+\text{Sin}\left[\frac{a^{1/3}d}{b^{1/3}}\right]\text{SinIntegral}\left[\frac{a^{1/3}d}{b^{1/3}}+d\,x\right]\Bigg)-$$

$$\Bigg(\left(59-67(-1)^{1/3}+63(-1)^{2/3}\right)b^{1/3}\Bigg(-\frac{\text{Cos}[d\,x]}{b^{1/3}\left(a^{1/3}+b^{1/3}x\right)}+\frac{d\left(\text{CosIntegral}\left[\frac{a^{1/3}d}{b^{1/3}}+d\,x\right]\text{Sin}\left[\frac{a^{1/3}d}{b^{1/3}}\right]-\text{Cos}\left[\frac{a^{1/3}d}{b^{1/3}}\right]\text{SinIntegral}\left[\frac{a^{1/3}d}{b^{1/3}}+d\,x\right]\right)}{b^{2/3}}\Bigg)\Bigg)\Bigg/$$

$$\left(9\left(-1+(-1)^{1/3}\right)\left(1+(-1)^{1/3}\right)^3a^{8/3}\right)+\frac{1}{\left(1+(-1)^{1/3}\right)^2a^3b^{1/3}}(-1)^{2/3}\left(2\,b^{1/3}-2(-1)^{1/3}b^{1/3}+3(-1)^{2/3}b^{1/3}\right)$$

$$\Bigg(\text{Cos}\left[\frac{(-1)^{2/3}a^{1/3}d}{b^{1/3}}\right]\text{CosIntegral}\left[\frac{(-1)^{2/3}a^{1/3}d}{b^{1/3}}+d\,x\right]+\text{Sin}\left[\frac{(-1)^{2/3}a^{1/3}d}{b^{1/3}}\right]\text{SinIntegral}\left[\frac{(-1)^{2/3}a^{1/3}d}{b^{1/3}}+d\,x\right]\Bigg)-$$

$$\Bigg((-1)^{2/3}\left(59\,b^{1/3}-67(-1)^{1/3}b^{1/3}+63(-1)^{2/3}b^{1/3}\right)\Bigg(-\frac{\text{Cos}[d\,x]}{b^{1/3}\left((-1)^{2/3}a^{1/3}+b^{1/3}x\right)}+1\Big/b^{2/3}d\Bigg(\text{CosIntegral}\left[\frac{(-1)^{2/3}a^{1/3}d}{b^{1/3}}+d\,x\right]$$

$$\text{Sin}\left[\frac{(-1)^{2/3}a^{1/3}d}{b^{1/3}}\right]-\text{Cos}\left[\frac{(-1)^{2/3}a^{1/3}d}{b^{1/3}}\right]\text{SinIntegral}\left[\frac{(-1)^{2/3}a^{1/3}d}{b^{1/3}}+d\,x\right]\Bigg)\Bigg)\Bigg)\Bigg/\left(9\left(-1+(-1)^{1/3}\right)\left(1+(-1)^{1/3}\right)^3a^{8/3}\right)\Bigg)+$$

$$\text{Cos}[c] \left(\frac{\text{SinIntegral}[d\,x]}{a^3} - \left((-1)^{2/3} \left(63 - 64 (-1)^{1/3} + 62 (-1)^{2/3}\right) \left(-d^2\, \text{CosIntegral}\left[d \left(\frac{a^{1/3}}{b^{1/3}} + x\right)\right] \text{Sin}\left[\frac{a^{1/3} d}{b^{1/3}}\right] + \right.\right.\right.$$

$$\left.\left.\frac{b^{1/3} \left(d \left(a^{1/3} + b^{1/3} x\right) \text{Cos}[d\,x] + b^{1/3}\, \text{Sin}[d\,x]\right)}{\left(a^{1/3} + b^{1/3} x\right)^2} + d^2\, \text{Cos}\left[\frac{a^{1/3} d}{b^{1/3}}\right] \text{SinIntegral}\left[d \left(\frac{a^{1/3}}{b^{1/3}} + x\right)\right]\right)\right) \Big/$$

$$\left(18 \left(-1 + (-1)^{1/3}\right) \left(1 + (-1)^{1/3}\right)^3 a^{7/3} b^{2/3}\right) - \left((-1)^{2/3} \left(64 - 62 (-1)^{1/3} + 63 (-1)^{2/3}\right)\right.$$

$$\left(-d^2\, \text{CosIntegral}\left[d \left(\frac{(-1)^{2/3} a^{1/3}}{b^{1/3}} + x\right)\right] \text{Sin}\left[\frac{(-1)^{2/3} a^{1/3} d}{b^{1/3}}\right] + \frac{b^{1/3} \left(d \left((-1)^{2/3} a^{1/3} + b^{1/3} x\right) \text{Cos}[d\,x] + b^{1/3}\, \text{Sin}[d\,x]\right)}{\left((-1)^{2/3} a^{1/3} + b^{1/3} x\right)^2} + \right.$$

$$\left.\left. d^2\, \text{Cos}\left[\frac{(-1)^{2/3} a^{1/3} d}{b^{1/3}}\right] \text{SinIntegral}\left[d \left(\frac{(-1)^{2/3} a^{1/3}}{b^{1/3}} + x\right)\right]\right)\right) \Big/ \left(18 \left(1 + (-1)^{1/3}\right)^3 a^{7/3} b^{2/3}\right) + \frac{1}{\left(1 + (-1)^{1/3}\right)^2 a^3}$$

$$\left(2 - 3 (-1)^{1/3} + 2 (-1)^{2/3}\right) \left(\text{CosIntegral}\left[-\frac{(-1)^{1/3} a^{1/3} d}{b^{1/3}} + d\,x\right] \text{Sin}\left[\frac{(-1)^{1/3} a^{1/3} d}{b^{1/3}}\right] - \text{Cos}\left[\frac{(-1)^{1/3} a^{1/3} d}{b^{1/3}}\right] \text{SinIntegral}\left[\frac{(-1)^{1/3} a^{1/3} d}{b^{1/3}} - d\,x\right]\right) +$$

$$\left((-1)^{2/3} \left(64 - 62 (-1)^{1/3} + 63 (-1)^{2/3}\right) \left(-d^2\, \text{CosIntegral}\left[d \left(-\frac{(-1)^{1/3} a^{1/3}}{b^{1/3}} + x\right)\right] \text{Sin}\left[\frac{(-1)^{1/3} a^{1/3} d}{b^{1/3}}\right] + \right.\right.$$

$$\left.\left.\frac{b^{1/3} d \left((-1)^{1/3} a^{1/3} - b^{1/3} x\right) \text{Cos}[d\,x] - b^{2/3}\, \text{Sin}[d\,x]}{\left((-1)^{1/3} a^{1/3} - b^{1/3} x\right)^2} + d^2\, \text{Cos}\left[\frac{(-1)^{1/3} a^{1/3} d}{b^{1/3}}\right] \text{SinIntegral}\left[\frac{(-1)^{1/3} a^{1/3} d}{b^{1/3}} - d\,x\right]\right)\right) \Big/$$

$$\left(18 \left(-1 + (-1)^{1/3}\right) \left(1 + (-1)^{1/3}\right)^3 a^{7/3} b^{2/3}\right) - \frac{1}{9 \left(1 + (-1)^{1/3}\right)^3 a^{8/3}} (-1)^{2/3} \left(59 - 67 (-1)^{1/3} + 63 (-1)^{2/3}\right) b^{1/3} \left(-\frac{\text{Sin}[d\,x]}{b^{1/3} \left(-(-1)^{1/3} a^{1/3} + b^{1/3} x\right)} + \right.$$

$$\left. 1 \Big/ b^{2/3} d \left(\text{Cos}\left[\frac{(-1)^{1/3} a^{1/3} d}{b^{1/3}}\right] \text{CosIntegral}\left[-\frac{(-1)^{1/3} a^{1/3} d}{b^{1/3}} + d\,x\right] + \text{Sin}\left[\frac{(-1)^{1/3} a^{1/3} d}{b^{1/3}}\right] \text{SinIntegral}\left[\frac{(-1)^{1/3} a^{1/3} d}{b^{1/3}} - d\,x\right]\right)\right) -$$

$$\frac{1}{\left(1 + (-1)^{1/3}\right)^2 a^3 b^{1/3}} (-1)^{2/3} \left(5 b^{1/3} - 5 (-1)^{1/3} b^{1/3} + 4 (-1)^{2/3} b^{1/3}\right)$$

$$\left(-\text{CosIntegral}\left[\frac{a^{1/3} d}{b^{1/3}} + d\,x\right] \text{Sin}\left[\frac{a^{1/3} d}{b^{1/3}}\right] + \text{Cos}\left[\frac{a^{1/3} d}{b^{1/3}}\right] \text{SinIntegral}\left[\frac{a^{1/3} d}{b^{1/3}} + d\,x\right]\right) -$$

$$\left(\left(59 - 67 (-1)^{1/3} + 63 (-1)^{2/3}\right) b^{1/3} \left(-\frac{\text{Sin}[d\,x]}{b^{1/3} \left(a^{1/3} + b^{1/3} x\right)} + \frac{d \left(\text{Cos}\left[\frac{a^{1/3} d}{b^{1/3}}\right] \text{CosIntegral}\left[\frac{a^{1/3} d}{b^{1/3}} + d\,x\right] + \text{Sin}\left[\frac{a^{1/3} d}{b^{1/3}}\right] \text{SinIntegral}\left[\frac{a^{1/3} d}{b^{1/3}} + d\,x\right]\right)}{b^{2/3}}\right)\right) \Big/$$

$$\left(9 \left(-1 + (-1)^{1/3}\right) \left(1 + (-1)^{1/3}\right)^3 a^{8/3}\right) + \frac{1}{\left(1 + (-1)^{1/3}\right)^2 a^3 b^{1/3}} (-1)^{2/3} \left(2 b^{1/3} - 2 (-1)^{1/3} b^{1/3} + 3 (-1)^{2/3} b^{1/3}\right)$$

$$\left(-\text{CosIntegral}\left[\frac{(-1)^{2/3} a^{1/3} d}{b^{1/3}}+d x\right] \text{Sin}\left[\frac{(-1)^{2/3} a^{1/3} d}{b^{1/3}}\right]+\text{Cos}\left[\frac{(-1)^{2/3} a^{1/3} d}{b^{1/3}}\right] \text{SinIntegral}\left[\frac{(-1)^{2/3} a^{1/3} d}{b^{1/3}}+d x\right]\right)-$$

$$\left((-1)^{2/3} \left(59 b^{1/3}-67 (-1)^{1/3} b^{1/3}+63 (-1)^{2/3} b^{1/3}\right) \left(-\frac{\text{Sin}[d x]}{b^{1/3} \left((-1)^{2/3} a^{1/3}+b^{1/3} x\right)}+1/b^{2/3} d \left(\text{Cos}\left[\frac{(-1)^{2/3} a^{1/3} d}{b^{1/3}}\right] \text{CosIntegral}\left[\frac{(-1)^{2/3} a^{1/3} d}{b^{1/3}}+d x\right]+\text{Sin}\left[\frac{(-1)^{2/3} a^{1/3} d}{b^{1/3}}\right] \text{SinIntegral}\left[\frac{(-1)^{2/3} a^{1/3} d}{b^{1/3}}+d x\right]\right)\right)\right) \Big/ \left(9 \left(-1+(-1)^{1/3}\right) \left(1+(-1)^{1/3}\right)^3 a^{8/3}\right)$$

Test results for the 357 problems in "4.1.12 (e x)^m (a+b sin(c+d x^n))^p.m"

- **Problem 36: Result more than twice size of optimal antiderivative.**

$$\int \frac{x^3}{a+b \,\text{Sin}\left[c+d x^2\right]} \, dx$$

Optimal (type 4, 245 leaves, 9 steps):

$$-\frac{i x^2 \,\text{Log}\left[1-\frac{i b e^{i (c+d x^2)}}{a-\sqrt{a^2-b^2}}\right]}{2 \sqrt{a^2-b^2}\, d}+\frac{i x^2 \,\text{Log}\left[1-\frac{i b e^{i (c+d x^2)}}{a+\sqrt{a^2-b^2}}\right]}{2 \sqrt{a^2-b^2}\, d}-\frac{\text{PolyLog}\left[2, \frac{i b e^{i (c+d x^2)}}{a-\sqrt{a^2-b^2}}\right]}{2 \sqrt{a^2-b^2}\, d^2}+\frac{\text{PolyLog}\left[2, \frac{i b e^{i (c+d x^2)}}{a+\sqrt{a^2-b^2}}\right]}{2 \sqrt{a^2-b^2}\, d^2}$$

Result (type 4, 952 leaves):

$$\frac{1}{2\,d^2}\left(\frac{\pi\,\text{ArcTan}\left[\frac{b+a\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x^2\right)\right]}{\sqrt{a^2-b^2}}\right]}{\sqrt{a^2-b^2}}+\right.$$

$$\frac{1}{\sqrt{-a^2+b^2}}\left(2\left(c-\text{ArcCos}\left[-\frac{a}{b}\right]\right)\text{ArcTanh}\left[\frac{(a-b)\,\text{Tan}\left[\frac{1}{4}\left(2\,c-\pi+2\,d\,x^2\right)\right]}{\sqrt{-a^2+b^2}}\right]+\left(-2\,c+\pi-2\,d\,x^2\right)\text{ArcTanh}\left[\frac{(a+b)\,\text{Tan}\left[\frac{1}{4}\left(2\,c+\pi+2\,d\,x^2\right)\right]}{\sqrt{-a^2+b^2}}\right]-\right.$$

$$\left(\text{ArcCos}\left[-\frac{a}{b}\right]-2\,i\,\text{ArcTanh}\left[\frac{(a-b)\,\text{Tan}\left[\frac{1}{4}\left(2\,c-\pi+2\,d\,x^2\right)\right]}{\sqrt{-a^2+b^2}}\right]\right)\text{Log}\left[\frac{(a+b)\left(-a+b-i\sqrt{-a^2+b^2}\right)\left(1+i\,\text{Cot}\left[\frac{1}{4}\left(2\,c+\pi+2\,d\,x^2\right)\right]\right)}{b\left(a+b+\sqrt{-a^2+b^2}\,\text{Cot}\left[\frac{1}{4}\left(2\,c+\pi+2\,d\,x^2\right)\right]\right)}\right]+$$

$$\left(\text{ArcCos}\left[-\frac{a}{b}\right]+2\,i\left(-\text{ArcTanh}\left[\frac{(a-b)\,\text{Tan}\left[\frac{1}{4}\left(2\,c-\pi+2\,d\,x^2\right)\right]}{\sqrt{-a^2+b^2}}\right]+\text{ArcTanh}\left[\frac{(a+b)\,\text{Tan}\left[\frac{1}{4}\left(2\,c+\pi+2\,d\,x^2\right)\right]}{\sqrt{-a^2+b^2}}\right]\right)\right)$$

$$\text{Log}\left[\frac{\sqrt{-a^2+b^2}\,e^{\frac{1}{4}i\left(-2\,c+\pi-2\,d\,x^2\right)}}{\sqrt{2}\,\sqrt{b}\,\sqrt{a+b\,\text{Sin}\left[c+d\,x^2\right]}}\right]+\left(\text{ArcCos}\left[-\frac{a}{b}\right]+2\,i\,\text{ArcTanh}\left[\frac{(a-b)\,\text{Tan}\left[\frac{1}{4}\left(2\,c-\pi+2\,d\,x^2\right)\right]}{\sqrt{-a^2+b^2}}\right]-\right.$$

$$\left.2\,i\,\text{ArcTanh}\left[\frac{(a+b)\,\text{Tan}\left[\frac{1}{4}\left(2\,c+\pi+2\,d\,x^2\right)\right]}{\sqrt{-a^2+b^2}}\right]\right)\text{Log}\left[\frac{\sqrt{-a^2+b^2}\,e^{\frac{1}{4}i\left(2\,c-\pi+2\,d\,x^2\right)}}{\sqrt{2}\,\sqrt{b}\,\sqrt{a+b\,\text{Sin}\left[c+d\,x^2\right]}}\right]-$$

$$\left(\text{ArcCos}\left[-\frac{a}{b}\right]+2\,i\,\text{ArcTanh}\left[\frac{(a-b)\,\text{Tan}\left[\frac{1}{4}\left(2\,c-\pi+2\,d\,x^2\right)\right]}{\sqrt{-a^2+b^2}}\right]\right)\text{Log}\left[1+\frac{i\left(i\,a+\sqrt{-a^2+b^2}\right)\left(a+b+\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{4}\left(2\,c-\pi+2\,d\,x^2\right)\right]\right)}{b\left(a+b+\sqrt{-a^2+b^2}\,\text{Cot}\left[\frac{1}{4}\left(2\,c+\pi+2\,d\,x^2\right)\right]\right)}\right]+$$

$$i\left(\text{PolyLog}\left[2,\frac{\left(a-i\sqrt{-a^2+b^2}\right)\left(a+b+\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{4}\left(2\,c-\pi+2\,d\,x^2\right)\right]\right)}{b\left(a+b+\sqrt{-a^2+b^2}\,\text{Cot}\left[\frac{1}{4}\left(2\,c+\pi+2\,d\,x^2\right)\right]\right)}\right]-\right.$$

$$\left.\left.\left.\text{PolyLog}\left[2,\frac{\left(a+i\sqrt{-a^2+b^2}\right)\left(a+b+\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{4}\left(2\,c-\pi+2\,d\,x^2\right)\right]\right)}{b\left(a+b+\sqrt{-a^2+b^2}\,\text{Cot}\left[\frac{1}{4}\left(2\,c+\pi+2\,d\,x^2\right)\right]\right)}\right]\right)\right)\right)$$

Problem 81: Result more than twice size of optimal antiderivative.

$$\int \frac{x^5}{a+b\,\text{Sin}\left[c+d\,x^3\right]}\,dx$$

Optimal (type 4, 245 leaves, 9 steps):

$$-\frac{i\,x^3\,\text{Log}\left[1-\frac{i\,b\,e^{i\,(c+d\,x^3)}}{a-\sqrt{a^2-b^2}}\right]}{3\,\sqrt{a^2-b^2}\,d}+\frac{i\,x^3\,\text{Log}\left[1-\frac{i\,b\,e^{i\,(c+d\,x^3)}}{a+\sqrt{a^2-b^2}}\right]}{3\,\sqrt{a^2-b^2}\,d}-\frac{\text{PolyLog}\left[2,\frac{i\,b\,e^{i\,(c+d\,x^3)}}{a-\sqrt{a^2-b^2}}\right]}{3\,\sqrt{a^2-b^2}\,d^2}+\frac{\text{PolyLog}\left[2,\frac{i\,b\,e^{i\,(c+d\,x^3)}}{a+\sqrt{a^2-b^2}}\right]}{3\,\sqrt{a^2-b^2}\,d^2}$$

Result (type 4, 952 leaves):

$$\frac{1}{3\,d^2}\left(\frac{\pi\,\text{ArcTan}\left[\frac{b+a\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x^3\right)\right]}{\sqrt{a^2-b^2}}\right]}{\sqrt{a^2-b^2}}+\right.$$

$$\frac{1}{\sqrt{-a^2+b^2}}\left(2\left(c-\text{ArcCos}\left[-\frac{a}{b}\right]\right)\text{ArcTanh}\left[\frac{(a-b)\,\text{Tan}\left[\frac{1}{4}\left(2\,c-\pi+2\,d\,x^3\right)\right]}{\sqrt{-a^2+b^2}}\right]+\left(-2\,c+\pi-2\,d\,x^3\right)\text{ArcTanh}\left[\frac{(a+b)\,\text{Tan}\left[\frac{1}{4}\left(2\,c+\pi+2\,d\,x^3\right)\right]}{\sqrt{-a^2+b^2}}\right]-\right.$$

$$\left(\text{ArcCos}\left[-\frac{a}{b}\right]-2\,\mathbb{i}\,\text{ArcTanh}\left[\frac{(a-b)\,\text{Tan}\left[\frac{1}{4}\left(2\,c-\pi+2\,d\,x^3\right)\right]}{\sqrt{-a^2+b^2}}\right]\right)\text{Log}\left[\frac{(a+b)\left(-a+b-\mathbb{i}\sqrt{-a^2+b^2}\right)\left(1+\mathbb{i}\,\text{Cot}\left[\frac{1}{4}\left(2\,c+\pi+2\,d\,x^3\right)\right]\right)}{b\left(a+b+\sqrt{-a^2+b^2}\,\text{Cot}\left[\frac{1}{4}\left(2\,c+\pi+2\,d\,x^3\right)\right]\right)}\right]+$$

$$\left(\text{ArcCos}\left[-\frac{a}{b}\right]+2\,\mathbb{i}\left(-\text{ArcTanh}\left[\frac{(a-b)\,\text{Tan}\left[\frac{1}{4}\left(2\,c-\pi+2\,d\,x^3\right)\right]}{\sqrt{-a^2+b^2}}\right]+\text{ArcTanh}\left[\frac{(a+b)\,\text{Tan}\left[\frac{1}{4}\left(2\,c+\pi+2\,d\,x^3\right)\right]}{\sqrt{-a^2+b^2}}\right]\right)\right)$$

$$\text{Log}\left[\frac{\sqrt{-a^2+b^2}\;e^{\frac{1}{4}\mathbb{i}\left(-2\,c+\pi-2\,d\,x^3\right)}}{\sqrt{2}\,\sqrt{b}\,\sqrt{a+b\,\text{Sin}\left[c+d\,x^3\right]}}\right]+\left(\text{ArcCos}\left[-\frac{a}{b}\right]+2\,\mathbb{i}\,\text{ArcTanh}\left[\frac{(a-b)\,\text{Tan}\left[\frac{1}{4}\left(2\,c-\pi+2\,d\,x^3\right)\right]}{\sqrt{-a^2+b^2}}\right]-\right.$$

$$\left.2\,\mathbb{i}\,\text{ArcTanh}\left[\frac{(a+b)\,\text{Tan}\left[\frac{1}{4}\left(2\,c+\pi+2\,d\,x^3\right)\right]}{\sqrt{-a^2+b^2}}\right]\right)\text{Log}\left[\frac{\sqrt{-a^2+b^2}\;e^{\frac{1}{4}\mathbb{i}\left(2\,c-\pi+2\,d\,x^3\right)}}{\sqrt{2}\,\sqrt{b}\,\sqrt{a+b\,\text{Sin}\left[c+d\,x^3\right]}}\right]-$$

$$\left(\text{ArcCos}\left[-\frac{a}{b}\right]+2\,\mathbb{i}\,\text{ArcTanh}\left[\frac{(a-b)\,\text{Tan}\left[\frac{1}{4}\left(2\,c-\pi+2\,d\,x^3\right)\right]}{\sqrt{-a^2+b^2}}\right]\right)\text{Log}\left[1+\frac{\mathbb{i}\left(\mathbb{i}\,a+\sqrt{-a^2+b^2}\right)\left(a+b+\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{4}\left(2\,c-\pi+2\,d\,x^3\right)\right]\right)}{b\left(a+b+\sqrt{-a^2+b^2}\,\text{Cot}\left[\frac{1}{4}\left(2\,c+\pi+2\,d\,x^3\right)\right]\right)}\right]+$$

$$\mathbb{i}\left(\text{PolyLog}\left[2,\frac{\left(a-\mathbb{i}\sqrt{-a^2+b^2}\right)\left(a+b+\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{4}\left(2\,c-\pi+2\,d\,x^3\right)\right]\right)}{b\left(a+b+\sqrt{-a^2+b^2}\,\text{Cot}\left[\frac{1}{4}\left(2\,c+\pi+2\,d\,x^3\right)\right]\right)}\right]-\right.$$

$$\left.\left.\left.\text{PolyLog}\left[2,\frac{\left(a+\mathbb{i}\sqrt{-a^2+b^2}\right)\left(a+b+\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{4}\left(2\,c-\pi+2\,d\,x^3\right)\right]\right)}{b\left(a+b+\sqrt{-a^2+b^2}\,\text{Cot}\left[\frac{1}{4}\left(2\,c+\pi+2\,d\,x^3\right)\right]\right)}\right]\right)\right)\right)$$

Problem 165: Result unnecessarily involves imaginary or complex numbers.

$$\int (e + f x)^3 \operatorname{Sin}\left[a + b (c + d x)^2\right] \, dx$$

Optimal (type 4, 341 leaves, 14 steps):

$$-\frac{3 f (d e - c f)^2 \operatorname{Cos}\left[a + b (c + d x)^2\right]}{2 b d^4} - \frac{3 f^2 (d e - c f) (c + d x) \operatorname{Cos}\left[a + b (c + d x)^2\right]}{2 b d^4} - \frac{f^3 (c + d x)^2 \operatorname{Cos}\left[a + b (c + d x)^2\right]}{2 b d^4} + \frac{3 f^2 (d e - c f) \sqrt{\frac{\pi}{2}} \operatorname{Cos}[a] \operatorname{FresnelC}\left[\sqrt{b} \sqrt{\frac{2}{\pi}} (c + d x)\right]}{2 b^{3/2} d^4} + \frac{(d e - c f)^3 \sqrt{\frac{\pi}{2}} \operatorname{Cos}[a] \operatorname{FresnelS}\left[\sqrt{b} \sqrt{\frac{2}{\pi}} (c + d x)\right]}{\sqrt{b} d^4} + \frac{(d e - c f)^3 \sqrt{\frac{\pi}{2}} \operatorname{FresnelC}\left[\sqrt{b} \sqrt{\frac{2}{\pi}} (c + d x)\right] \operatorname{Sin}[a]}{\sqrt{b} d^4} - \frac{3 f^2 (d e - c f) \sqrt{\frac{\pi}{2}} \operatorname{FresnelS}\left[\sqrt{b} \sqrt{\frac{2}{\pi}} (c + d x)\right] \operatorname{Sin}[a]}{2 b^{3/2} d^4} + \frac{f^3 \operatorname{Sin}\left[a + b (c + d x)^2\right]}{2 b^2 d^4}$$

Result (type 4, 283 leaves):

$$-\frac{1}{2 \sqrt{2} b^2 d^4} \left(\operatorname{Cos}\left[a + b (c + d x)^2\right] - i \operatorname{Sin}\left[a + b (c + d x)^2\right]\right) \left(\operatorname{Cos}\left[a + b (c + d x)^2\right] + i \operatorname{Sin}\left[a + b (c + d x)^2\right]\right) \left(-\sqrt{b} (d e - c f) \sqrt{\pi} \operatorname{FresnelS}\left[\sqrt{b} \sqrt{\frac{2}{\pi}} (c + d x)\right] \left(2 b (d e - c f)^2 \operatorname{Cos}[a] - 3 f^2 \operatorname{Sin}[a]\right) - \sqrt{b} (d e - c f) \sqrt{\pi} \operatorname{FresnelC}\left[\sqrt{b} \sqrt{\frac{2}{\pi}} (c + d x)\right] \left(3 f^2 \operatorname{Cos}[a] + 2 b (d e - c f)^2 \operatorname{Sin}[a]\right) + \sqrt{2} f \left(b \left(c^2 f^2 - c d f (3 e + f x) + d^2 \left(3 e^2 + 3 e f x + f^2 x^2\right)\right) \operatorname{Cos}\left[a + b (c + d x)^2\right] - f^2 \operatorname{Sin}\left[a + b (c + d x)^2\right]\right)\right)$$

Problem 166: Result unnecessarily involves imaginary or complex numbers.

$$\int (e + f x)^2 \operatorname{Sin}\left[a + b (c + d x)^2\right] \, dx$$

Optimal (type 4, 256 leaves, 11 steps):

$$-\frac{f\,(d\,e-c\,f)\,\text{Cos}\left[a+b\,(c+d\,x)^2\right]}{b\,d^3}-\frac{f^2\,(c+d\,x)\,\text{Cos}\left[a+b\,(c+d\,x)^2\right]}{2\,b\,d^3}+$$
$$\frac{f^2\,\sqrt{\frac{\pi}{2}}\,\text{Cos}[a]\,\text{FresnelC}\left[\sqrt{b}\,\sqrt{\frac{2}{\pi}}\,(c+d\,x)\right]}{2\,b^{3/2}\,d^3}+\frac{(d\,e-c\,f)^2\,\sqrt{\frac{\pi}{2}}\,\text{Cos}[a]\,\text{FresnelS}\left[\sqrt{b}\,\sqrt{\frac{2}{\pi}}\,(c+d\,x)\right]}{\sqrt{b}\,d^3}+$$
$$\frac{(d\,e-c\,f)^2\,\sqrt{\frac{\pi}{2}}\,\text{FresnelC}\left[\sqrt{b}\,\sqrt{\frac{2}{\pi}}\,(c+d\,x)\right]\,\text{Sin}[a]}{\sqrt{b}\,d^3}-\frac{f^2\,\sqrt{\frac{\pi}{2}}\,\text{FresnelS}\left[\sqrt{b}\,\sqrt{\frac{2}{\pi}}\,(c+d\,x)\right]\,\text{Sin}[a]}{2\,b^{3/2}\,d^3}$$

Result (type 4, 214 leaves) :

$$-\frac{1}{2\,\sqrt{2}\,b^{3/2}\,d^3}\left(\sqrt{2}\,\sqrt{b}\,f\,(2\,d\,e-c\,f+d\,f\,x)\,\text{Cos}\left[a+b\,(c+d\,x)^2\right]-\sqrt{\pi}\,\text{FresnelS}\left[\sqrt{b}\,\sqrt{\frac{2}{\pi}}\,(c+d\,x)\right]\left(2\,b\,(d\,e-c\,f)^2\,\text{Cos}[a]-f^2\,\text{Sin}[a]\right)-\right.$$
$$\left.\sqrt{\pi}\,\text{FresnelC}\left[\sqrt{b}\,\sqrt{\frac{2}{\pi}}\,(c+d\,x)\right]\left(f^2\,\text{Cos}[a]+2\,b\,(d\,e-c\,f)^2\,\text{Sin}[a]\right)\right)$$
$$\left(\text{Cos}\left[a+b\,(c+d\,x)^2\right]-i\,\text{Sin}\left[a+b\,(c+d\,x)^2\right]\right)\left(\text{Cos}\left[a+b\,(c+d\,x)^2\right]+i\,\text{Sin}\left[a+b\,(c+d\,x)^2\right]\right)$$

Problem 171: Attempted integration timed out after 120 seconds.

$$\int (e+f\,x)^3\,\text{Sin}\left[a+b\,(c+d\,x)^3\right]\,dx$$

Optimal (type 4, 434 leaves, 14 steps) :

$$-\frac{f^2\,(d\,e-c\,f)\,\text{Cos}\left[a+b\,(c+d\,x)^3\right]}{b\,d^4}-\frac{f^3\,(c+d\,x)\,\text{Cos}\left[a+b\,(c+d\,x)^3\right]}{3\,b\,d^4}-$$
$$\frac{e^{i\,a}\,f^3\,(c+d\,x)\,\text{Gamma}\left[\frac{1}{3},-i\,b\,(c+d\,x)^3\right]}{18\,b\,d^4\,\left(-i\,b\,(c+d\,x)^3\right)^{1/3}}+\frac{i\,e^{i\,a}\,(d\,e-c\,f)^3\,(c+d\,x)\,\text{Gamma}\left[\frac{1}{3},-i\,b\,(c+d\,x)^3\right]}{6\,d^4\,\left(-i\,b\,(c+d\,x)^3\right)^{1/3}}-$$
$$\frac{e^{-i\,a}\,f^3\,(c+d\,x)\,\text{Gamma}\left[\frac{1}{3},i\,b\,(c+d\,x)^3\right]}{18\,b\,d^4\,\left(i\,b\,(c+d\,x)^3\right)^{1/3}}-\frac{i\,e^{-i\,a}\,(d\,e-c\,f)^3\,(c+d\,x)\,\text{Gamma}\left[\frac{1}{3},i\,b\,(c+d\,x)^3\right]}{6\,d^4\,\left(i\,b\,(c+d\,x)^3\right)^{1/3}}+$$
$$\frac{i\,e^{i\,a}\,f\,(d\,e-c\,f)^2\,(c+d\,x)^2\,\text{Gamma}\left[\frac{2}{3},-i\,b\,(c+d\,x)^3\right]}{2\,d^4\,\left(-i\,b\,(c+d\,x)^3\right)^{2/3}}-\frac{i\,e^{-i\,a}\,f\,(d\,e-c\,f)^2\,(c+d\,x)^2\,\text{Gamma}\left[\frac{2}{3},i\,b\,(c+d\,x)^3\right]}{2\,d^4\,\left(i\,b\,(c+d\,x)^3\right)^{2/3}}$$

Result (type 1, 1 leaves) :

???

Problem 172: Attempted integration timed out after 120 seconds.

$$\int (e+f x)^2 \operatorname{Sin}\left[a+b (c+d x)^3\right] dx$$

Optimal (type 4, 280 leaves, 10 steps):

$$-\frac{f^2 \operatorname{Cos}\left[a+b (c+d x)^3\right]}{3 b d^3}+\frac{i e^{i a} (d e-c f)^2 (c+d x) \operatorname{Gamma}\left[\frac{1}{3},-i b (c+d x)^3\right]}{6 d^3 \left(-i b (c+d x)^3\right)^{1/3}}-\frac{i e^{-i a} (d e-c f)^2 (c+d x) \operatorname{Gamma}\left[\frac{1}{3}, i b (c+d x)^3\right]}{6 d^3 \left(i b (c+d x)^3\right)^{1/3}}+\frac{i e^{i a} f (d e-c f) (c+d x)^2 \operatorname{Gamma}\left[\frac{2}{3},-i b (c+d x)^3\right]}{3 d^3 \left(-i b (c+d x)^3\right)^{2/3}}-\frac{i e^{-i a} f (d e-c f) (c+d x)^2 \operatorname{Gamma}\left[\frac{2}{3}, i b (c+d x)^3\right]}{3 d^3 \left(i b (c+d x)^3\right)^{2/3}}$$

Result (type 1, 1 leaves):

???

Problem 173: Attempted integration timed out after 120 seconds.

$$\int (e+f x) \operatorname{Sin}\left[a+b (c+d x)^3\right] dx$$

Optimal (type 4, 235 leaves, 8 steps):

$$\frac{i e^{i a} (d e-c f) (c+d x) \operatorname{Gamma}\left[\frac{1}{3},-i b (c+d x)^3\right]}{6 d^2 \left(-i b (c+d x)^3\right)^{1/3}}-\frac{i e^{-i a} (d e-c f) (c+d x) \operatorname{Gamma}\left[\frac{1}{3}, i b (c+d x)^3\right]}{6 d^2 \left(i b (c+d x)^3\right)^{1/3}}+\frac{i e^{i a} f (c+d x)^2 \operatorname{Gamma}\left[\frac{2}{3},-i b (c+d x)^3\right]}{6 d^2 \left(-i b (c+d x)^3\right)^{2/3}}-\frac{i e^{-i a} f (c+d x)^2 \operatorname{Gamma}\left[\frac{2}{3}, i b (c+d x)^3\right]}{6 d^2 \left(i b (c+d x)^3\right)^{2/3}}$$

Result (type 1, 1 leaves):

???

Problem 175: Attempted integration timed out after 120 seconds.

$$\int \frac{\operatorname{Sin}\left[a+b (c+d x)^3\right]}{e+f x} dx$$

Optimal (type 9, 22 leaves, 0 steps):

$$\operatorname{Unintegrable}\left[\frac{\operatorname{Sin}\left[a+b (c+d x)^3\right]}{e+f x}, x\right]$$

Result (type 1, 1 leaves):

???

Problem 176: Attempted integration timed out after 120 seconds.

$$\int \frac{\text{Sin}\left[a+b\,(c+d\,x)^3\right]}{(e+f\,x)^2}\,dx$$

Optimal (type 9, 22 leaves, 0 steps):

$$\text{Unintegrable}\left[\frac{\text{Sin}\left[a+b\,(c+d\,x)^3\right]}{(e+f\,x)^2},\,x\right]$$

Result (type 1, 1 leaves):

???

Problem 183: Result more than twice size of optimal antiderivative.

$$\int (e+f\,x)\,\text{Sin}\left[a+\frac{b}{(c+d\,x)^3}\right]\,dx$$

Optimal (type 4, 235 leaves, 8 steps):

$$-\frac{i\,e^{i\,a}\,f\,\left(-\frac{i\,b}{(c+d\,x)^3}\right)^{2/3}\,(c+d\,x)^2\,\text{Gamma}\left[-\frac{2}{3},\,-\frac{i\,b}{(c+d\,x)^3}\right]}{6\,d^2}+\frac{i\,e^{-i\,a}\,f\,\left(\frac{i\,b}{(c+d\,x)^3}\right)^{2/3}\,(c+d\,x)^2\,\text{Gamma}\left[-\frac{2}{3},\,\frac{i\,b}{(c+d\,x)^3}\right]}{6\,d^2}-\frac{i\,e^{i\,a}\,(d\,e-c\,f)\,\left(-\frac{i\,b}{(c+d\,x)^3}\right)^{1/3}\,(c+d\,x)\,\text{Gamma}\left[-\frac{1}{3},\,-\frac{i\,b}{(c+d\,x)^3}\right]}{6\,d^2}+\frac{i\,e^{-i\,a}\,(d\,e-c\,f)\,\left(\frac{i\,b}{(c+d\,x)^3}\right)^{1/3}\,(c+d\,x)\,\text{Gamma}\left[-\frac{1}{3},\,\frac{i\,b}{(c+d\,x)^3}\right]}{6\,d^2}$$

Result (type 4, 700 leaves):

$$\frac{e\,(c+d\,x)\,\text{Cos}\left[\frac{b}{(c+d\,x)^3}\right]\,\text{Sin}[a]}{d}+\frac{f\,(-c+d\,x)\,(c+d\,x)\,\text{Cos}\left[\frac{b}{(c+d\,x)^3}\right]\,\text{Sin}[a]}{2\,d^2}+\frac{1}{2\,d^2}$$
$$3\,b\,f\left(\frac{1}{2}\,\text{Cos}[a]\left(\frac{\text{Gamma}\left[\frac{1}{3},\,-\frac{i\,b}{(c+d\,x)^3}\right]}{3\left(-\frac{i\,b}{(c+d\,x)^3}\right)^{1/3}(c+d\,x)}+\frac{\text{Gamma}\left[\frac{1}{3},\,\frac{i\,b}{(c+d\,x)^3}\right]}{3\left(\frac{i\,b}{(c+d\,x)^3}\right)^{1/3}(c+d\,x)}\right)+\frac{1}{2}\,i\left(\frac{\text{Gamma}\left[\frac{1}{3},\,-\frac{i\,b}{(c+d\,x)^3}\right]}{3\left(-\frac{i\,b}{(c+d\,x)^3}\right)^{1/3}(c+d\,x)}-\frac{\text{Gamma}\left[\frac{1}{3},\,\frac{i\,b}{(c+d\,x)^3}\right]}{3\left(\frac{i\,b}{(c+d\,x)^3}\right)^{1/3}(c+d\,x)}\right)\text{Sin}[a]\right)+\frac{1}{d}$$
$$3\,b\,e\left(\frac{1}{2}\,\text{Cos}[a]\left(\frac{\text{Gamma}\left[\frac{2}{3},\,-\frac{i\,b}{(c+d\,x)^3}\right]}{3\left(-\frac{i\,b}{(c+d\,x)^3}\right)^{2/3}(c+d\,x)^2}+\frac{\text{Gamma}\left[\frac{2}{3},\,\frac{i\,b}{(c+d\,x)^3}\right]}{3\left(\frac{i\,b}{(c+d\,x)^3}\right)^{2/3}(c+d\,x)^2}\right)+\frac{1}{2}\,i\left(\frac{\text{Gamma}\left[\frac{2}{3},\,-\frac{i\,b}{(c+d\,x)^3}\right]}{3\left(-\frac{i\,b}{(c+d\,x)^3}\right)^{2/3}(c+d\,x)^2}-\frac{\text{Gamma}\left[\frac{2}{3},\,\frac{i\,b}{(c+d\,x)^3}\right]}{3\left(\frac{i\,b}{(c+d\,x)^3}\right)^{2/3}(c+d\,x)^2}\right)\text{Sin}[a]\right)-$$
$$\frac{1}{d^2}3\,b\,c\,f\left(\frac{1}{2}\,\text{Cos}[a]\left(\frac{\text{Gamma}\left[\frac{2}{3},\,-\frac{i\,b}{(c+d\,x)^3}\right]}{3\left(-\frac{i\,b}{(c+d\,x)^3}\right)^{2/3}(c+d\,x)^2}+\frac{\text{Gamma}\left[\frac{2}{3},\,\frac{i\,b}{(c+d\,x)^3}\right]}{3\left(\frac{i\,b}{(c+d\,x)^3}\right)^{2/3}(c+d\,x)^2}\right)+\frac{1}{2}\,i\left(\frac{\text{Gamma}\left[\frac{2}{3},\,-\frac{i\,b}{(c+d\,x)^3}\right]}{3\left(-\frac{i\,b}{(c+d\,x)^3}\right)^{2/3}(c+d\,x)^2}-\frac{\text{Gamma}\left[\frac{2}{3},\,\frac{i\,b}{(c+d\,x)^3}\right]}{3\left(\frac{i\,b}{(c+d\,x)^3}\right)^{2/3}(c+d\,x)^2}\right)\text{Sin}[a]\right)+$$
$$\frac{e\,(c+d\,x)\,\text{Cos}[a]\,\text{Sin}\left[\frac{b}{(c+d\,x)^3}\right]}{d}+\frac{f\,(-c+d\,x)\,(c+d\,x)\,\text{Cos}[a]\,\text{Sin}\left[\frac{b}{(c+d\,x)^3}\right]}{2\,d^2}$$

Problem 190: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{\text{Sin}\left[a+b\sqrt{c+d\,x}\right]}{e+f\,x}\,dx$$

Optimal (type 4, 238 leaves, 8 steps):

$$\frac{\text{CosIntegral}\left[\frac{b\sqrt{-d\,e+c\,f}}{\sqrt{f}}+b\sqrt{c+d\,x}\right]\text{Sin}\left[a-\frac{b\sqrt{-d\,e+c\,f}}{\sqrt{f}}\right]}{f}+\frac{\text{CosIntegral}\left[\frac{b\sqrt{-d\,e+c\,f}}{\sqrt{f}}-b\sqrt{c+d\,x}\right]\text{Sin}\left[a+\frac{b\sqrt{-d\,e+c\,f}}{\sqrt{f}}\right]}{f}-\frac{\text{Cos}\left[a+\frac{b\sqrt{-d\,e+c\,f}}{\sqrt{f}}\right]\text{SinIntegral}\left[\frac{b\sqrt{-d\,e+c\,f}}{\sqrt{f}}-b\sqrt{c+d\,x}\right]}{f}+\frac{\text{Cos}\left[a-\frac{b\sqrt{-d\,e+c\,f}}{\sqrt{f}}\right]\text{SinIntegral}\left[\frac{b\sqrt{-d\,e+c\,f}}{\sqrt{f}}+b\sqrt{c+d\,x}\right]}{f}$$

Result (type 4, 238 leaves):

$$\frac{1}{2f}\,i\,e^{-i\left(a+\frac{b\sqrt{-d\,e+c\,f}}{\sqrt{f}}\right)}\left(\text{ExpIntegralEi}\left[-i\,b\left(-\frac{\sqrt{-d\,e+c\,f}}{\sqrt{f}}+\sqrt{c+d\,x}\right)\right]-e^{2\,i\left(a+\frac{b\sqrt{-d\,e+c\,f}}{\sqrt{f}}\right)}\text{ExpIntegralEi}\left[i\,b\left(-\frac{\sqrt{-d\,e+c\,f}}{\sqrt{f}}+\sqrt{c+d\,x}\right)\right]+e^{\frac{2\,i\,b\sqrt{-d\,e+c\,f}}{\sqrt{f}}}\text{ExpIntegralEi}\left[-i\,b\left(\frac{\sqrt{-d\,e+c\,f}}{\sqrt{f}}+\sqrt{c+d\,x}\right)\right]-e^{2\,i\,a}\,\text{ExpIntegralEi}\left[i\,b\left(\frac{\sqrt{-d\,e+c\,f}}{\sqrt{f}}+\sqrt{c+d\,x}\right)\right]\right)$$

Problem 191: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{\text{Sin}\left[a+b\sqrt{c+d\,x}\right]}{(e+f\,x)^2}\,dx$$

Optimal (type 4, 339 leaves, 10 steps):

$$\frac{b\,d\,\text{Cos}\left[a+\frac{b\sqrt{-d\,e+c\,f}}{\sqrt{f}}\right]\text{CosIntegral}\left[\frac{b\sqrt{-d\,e+c\,f}}{\sqrt{f}}-b\sqrt{c+d\,x}\right]}{2\,f^{3/2}\sqrt{-d\,e+c\,f}}-\frac{b\,d\,\text{Cos}\left[a-\frac{b\sqrt{-d\,e+c\,f}}{\sqrt{f}}\right]\text{CosIntegral}\left[\frac{b\sqrt{-d\,e+c\,f}}{\sqrt{f}}+b\sqrt{c+d\,x}\right]}{2\,f^{3/2}\sqrt{-d\,e+c\,f}}-\frac{\text{Sin}\left[a+b\sqrt{c+d\,x}\right]}{f\,(e+f\,x)}+\frac{b\,d\,\text{Sin}\left[a+\frac{b\sqrt{-d\,e+c\,f}}{\sqrt{f}}\right]\text{SinIntegral}\left[\frac{b\sqrt{-d\,e+c\,f}}{\sqrt{f}}-b\sqrt{c+d\,x}\right]}{2\,f^{3/2}\sqrt{-d\,e+c\,f}}+\frac{b\,d\,\text{Sin}\left[a-\frac{b\sqrt{-d\,e+c\,f}}{\sqrt{f}}\right]\text{SinIntegral}\left[\frac{b\sqrt{-d\,e+c\,f}}{\sqrt{f}}+b\sqrt{c+d\,x}\right]}{2\,f^{3/2}\sqrt{-d\,e+c\,f}}$$

Result (type 4, 397 leaves):

$$\frac{1}{4 f^{3/2}} i\, d\, e^{-i a} \left(-\frac{2 e^{-i b \sqrt{c+d x}} \sqrt{f}}{d e+d f x}-\frac{i b\, e^{-\frac{i b \sqrt{-d e+c f}}{\sqrt{f}}} \text{ExpIntegralEi}\left[-i b \left(-\frac{\sqrt{-d e+c f}}{\sqrt{f}}+\sqrt{c+d x}\right)\right]}{\sqrt{-d e+c f}}+\frac{i b\, e^{\frac{i b \sqrt{-d e+c f}}{\sqrt{f}}} \text{ExpIntegralEi}\left[-i b \left(\frac{\sqrt{-d e+c f}}{\sqrt{f}}+\sqrt{c+d x}\right)\right]}{\sqrt{-d e+c f}}+\right.$$

$$\left. e^{2 i a} \left(\frac{2 e^{i b \sqrt{c+d x}} \sqrt{f}}{d e+d f x}-\frac{i b\, e^{\frac{i b \sqrt{-d e+c f}}{\sqrt{f}}} \text{ExpIntegralEi}\left[i b \left(-\frac{\sqrt{-d e+c f}}{\sqrt{f}}+\sqrt{c+d x}\right)\right]}{\sqrt{-d e+c f}}+\frac{i b\, e^{-\frac{i b \sqrt{-d e+c f}}{\sqrt{f}}} \text{ExpIntegralEi}\left[i b \left(\frac{\sqrt{-d e+c f}}{\sqrt{f}}+\sqrt{c+d x}\right)\right]}{\sqrt{-d e+c f}}\right)\right)$$

- **Problem 193: Result more than twice size of optimal antiderivative.**

$$\int (e+f x) \text{Sin}\left[a+b (c+d x)^{3/2}\right] dx$$

Optimal (type 4, 291 leaves, 9 steps) :

$$-\frac{2 f \sqrt{c+d x} \text{Cos}\left[a+b (c+d x)^{3/2}\right]}{3 b d^2}-\frac{e^{i a} f \sqrt{c+d x} \text{Gamma}\left[\frac{1}{3},-i b (c+d x)^{3/2}\right]}{9 b d^2 \left(-i b (c+d x)^{3/2}\right)^{1/3}}-\frac{e^{-i a} f \sqrt{c+d x} \text{Gamma}\left[\frac{1}{3},i b (c+d x)^{3/2}\right]}{9 b d^2 \left(i b (c+d x)^{3/2}\right)^{1/3}}+$$

$$\frac{i e^{i a} (d e-c f) (c+d x) \text{Gamma}\left[\frac{2}{3},-i b (c+d x)^{3/2}\right]}{3 d^2 \left(-i b (c+d x)^{3/2}\right)^{2/3}}-\frac{i e^{-i a} (d e-c f) (c+d x) \text{Gamma}\left[\frac{2}{3},i b (c+d x)^{3/2}\right]}{3 d^2 \left(i b (c+d x)^{3/2}\right)^{2/3}}$$

Result (type 4, 705 leaves) :

$$-\frac{2 f \sqrt{c+d x} \text{Cos}[a] \text{Cos}\left[b (c+d x)^{3/2}\right]}{3 b d^2}+\frac{f \text{Cos}[a] \left(-\frac{2 \sqrt{c+d x} \text{Gamma}\left[\frac{1}{3},-i b (c+d x)^{3/2}\right]}{3 \left(-i b (c+d x)^{3/2}\right)^{1/3}}-\frac{2 \sqrt{c+d x} \text{Gamma}\left[\frac{1}{3},i b (c+d x)^{3/2}\right]}{3 \left(i b (c+d x)^{3/2}\right)^{1/3}}\right)}{6 b d^2}-$$

$$\frac{i e \text{Cos}[a] \left(-\frac{2 (c+d x) \text{Gamma}\left[\frac{2}{3},-i b (c+d x)^{3/2}\right]}{3 \left(-i b (c+d x)^{3/2}\right)^{2/3}}+\frac{2 (c+d x) \text{Gamma}\left[\frac{2}{3},i b (c+d x)^{3/2}\right]}{3 \left(i b (c+d x)^{3/2}\right)^{2/3}}\right)}{2 d}+\frac{i c f \text{Cos}[a] \left(-\frac{2 (c+d x) \text{Gamma}\left[\frac{2}{3},-i b (c+d x)^{3/2}\right]}{3 \left(-i b (c+d x)^{3/2}\right)^{2/3}}+\frac{2 (c+d x) \text{Gamma}\left[\frac{2}{3},i b (c+d x)^{3/2}\right]}{3 \left(i b (c+d x)^{3/2}\right)^{2/3}}\right)}{2 d^2}+$$

$$\frac{i f \left(-\frac{2 \sqrt{c+d x} \text{Gamma}\left[\frac{1}{3},-i b (c+d x)^{3/2}\right]}{3 \left(-i b (c+d x)^{3/2}\right)^{1/3}}+\frac{2 \sqrt{c+d x} \text{Gamma}\left[\frac{1}{3},i b (c+d x)^{3/2}\right]}{3 \left(i b (c+d x)^{3/2}\right)^{1/3}}\right) \text{Sin}[a]}{6 b d^2}+\frac{e \left(-\frac{2 (c+d x) \text{Gamma}\left[\frac{2}{3},-i b (c+d x)^{3/2}\right]}{3 \left(-i b (c+d x)^{3/2}\right)^{2/3}}-\frac{2 (c+d x) \text{Gamma}\left[\frac{2}{3},i b (c+d x)^{3/2}\right]}{3 \left(i b (c+d x)^{3/2}\right)^{2/3}}\right) \text{Sin}[a]}{2 d}-$$

$$\frac{c f \left(-\frac{2 (c+d x) \text{Gamma}\left[\frac{2}{3},-i b (c+d x)^{3/2}\right]}{3 \left(-i b (c+d x)^{3/2}\right)^{2/3}}-\frac{2 (c+d x) \text{Gamma}\left[\frac{2}{3},i b (c+d x)^{3/2}\right]}{3 \left(i b (c+d x)^{3/2}\right)^{2/3}}\right) \text{Sin}[a]}{2 d^2}+\frac{2 f \sqrt{c+d x} \text{Sin}[a] \text{Sin}\left[b (c+d x)^{3/2}\right]}{3 b d^2}$$

Problem 197: Result unnecessarily involves imaginary or complex numbers.

$$\int (e+f x)^2 \operatorname{Sin}\left[a+\frac{b}{\sqrt{c+d x}}\right] dx$$

Optimal (type 4, 611 leaves, 23 steps):

$$\frac{b^5 f^2 \sqrt{c+d x} \operatorname{Cos}\left[a+\frac{b}{\sqrt{c+d x}}\right]}{360 d^3}-\frac{b^3 f (d e-c f) \sqrt{c+d x} \operatorname{Cos}\left[a+\frac{b}{\sqrt{c+d x}}\right]}{6 d^3}+\frac{b (d e-c f)^2 \sqrt{c+d x} \operatorname{Cos}\left[a+\frac{b}{\sqrt{c+d x}}\right]}{d^3}-$$
$$\frac{b^3 f^2 (c+d x)^{3/2} \operatorname{Cos}\left[a+\frac{b}{\sqrt{c+d x}}\right]}{180 d^3}+\frac{b f (d e-c f) (c+d x)^{3/2} \operatorname{Cos}\left[a+\frac{b}{\sqrt{c+d x}}\right]}{3 d^3}+\frac{b f^2 (c+d x)^{5/2} \operatorname{Cos}\left[a+\frac{b}{\sqrt{c+d x}}\right]}{15 d^3}+$$
$$\frac{b^6 f^2 \operatorname{CosIntegral}\left[\frac{b}{\sqrt{c+d x}}\right] \operatorname{Sin}[a]}{360 d^3}-\frac{b^4 f (d e-c f) \operatorname{CosIntegral}\left[\frac{b}{\sqrt{c+d x}}\right] \operatorname{Sin}[a]}{6 d^3}+\frac{b^2 (d e-c f)^2 \operatorname{CosIntegral}\left[\frac{b}{\sqrt{c+d x}}\right] \operatorname{Sin}[a]}{d^3}+$$
$$\frac{b^4 f^2 (c+d x) \operatorname{Sin}\left[a+\frac{b}{\sqrt{c+d x}}\right]}{360 d^3}-\frac{b^2 f (d e-c f) (c+d x) \operatorname{Sin}\left[a+\frac{b}{\sqrt{c+d x}}\right]}{6 d^3}+\frac{(d e-c f)^2 (c+d x) \operatorname{Sin}\left[a+\frac{b}{\sqrt{c+d x}}\right]}{d^3}-$$
$$\frac{b^2 f^2 (c+d x)^2 \operatorname{Sin}\left[a+\frac{b}{\sqrt{c+d x}}\right]}{60 d^3}+\frac{f (d e-c f) (c+d x)^2 \operatorname{Sin}\left[a+\frac{b}{\sqrt{c+d x}}\right]}{d^3}+\frac{f^2 (c+d x)^3 \operatorname{Sin}\left[a+\frac{b}{\sqrt{c+d x}}\right]}{3 d^3}+$$
$$\frac{b^6 f^2 \operatorname{Cos}[a] \operatorname{SinIntegral}\left[\frac{b}{\sqrt{c+d x}}\right]}{360 d^3}-\frac{b^4 f (d e-c f) \operatorname{Cos}[a] \operatorname{SinIntegral}\left[\frac{b}{\sqrt{c+d x}}\right]}{6 d^3}+\frac{b^2 (d e-c f)^2 \operatorname{Cos}[a] \operatorname{SinIntegral}\left[\frac{b}{\sqrt{c+d x}}\right]}{d^3}$$

Result (type 4, 557 leaves):

$$\frac{1}{720 d^3} i e^{-i a} \left(e^{-\frac{i b}{\sqrt{c+d x}}} \sqrt{c+d x} \left(-i b^5 f^2+b^4 f^2 \sqrt{c+d x}+2 i b^3 f (30 d e-29 c f+d f x)-6 b^2 f \sqrt{c+d x} (10 d e-9 c f+d f x)+\right.\right.$$
$$\left.120 \sqrt{c+d x} \left(c^2 f^2-c d f (3 e+f x)+d^2 \left(3 e^2+3 e f x+f^2 x^2\right)\right)-24 i b \left(11 c^2 f^2-c d f (25 e+3 f x)+d^2 \left(15 e^2+5 e f x+f^2 x^2\right)\right)\right)-$$
$$e^{i \left(2 a+\frac{b}{\sqrt{c+d x}}\right)} \sqrt{c+d x} \left(i b^5 f^2+b^4 f^2 \sqrt{c+d x}-2 i b^3 f (30 d e-29 c f+d f x)-6 b^2 f \sqrt{c+d x} (10 d e-9 c f+d f x)+\right.$$
$$\left.120 \sqrt{c+d x} \left(c^2 f^2-c d f (3 e+f x)+d^2 \left(3 e^2+3 e f x+f^2 x^2\right)\right)+24 i b \left(11 c^2 f^2-c d f (25 e+3 f x)+d^2 \left(15 e^2+5 e f x+f^2 x^2\right)\right)\right)+$$
$$b^2 \left(360 d^2 e^2-60 \left(b^2+12 c\right) d e f+\left(b^4+60 b^2 c+360 c^2\right) f^2\right) \operatorname{ExpIntegralEi}\left[-\frac{i b}{\sqrt{c+d x}}\right]-$$
$$\left.b^2 e^{2 i a} \left(360 d^2 e^2-60 \left(b^2+12 c\right) d e f+\left(b^4+60 b^2 c+360 c^2\right) f^2\right) \operatorname{ExpIntegralEi}\left[\frac{i b}{\sqrt{c+d x}}\right]\right)$$

Problem 200: Unable to integrate problem.

$$\int \frac{\operatorname{Sin}\left[a+\frac{b}{\sqrt{c+d x}}\right]}{e+f x} \, dx$$

Optimal (type 4, 276 leaves, 13 steps):

$$-\frac{2 \operatorname{CosIntegral}\left[\frac{b}{\sqrt{c+d x}}\right] \operatorname{Sin}[a]}{f}+\frac{\operatorname{CosIntegral}\left[\frac{b \sqrt{f}}{\sqrt{-d e+c f}}+\frac{b}{\sqrt{c+d x}}\right] \operatorname{Sin}\left[a-\frac{b \sqrt{f}}{\sqrt{-d e+c f}}\right]}{f}+\frac{\operatorname{CosIntegral}\left[\frac{b \sqrt{f}}{\sqrt{-d e+c f}}-\frac{b}{\sqrt{c+d x}}\right] \operatorname{Sin}\left[a+\frac{b \sqrt{f}}{\sqrt{-d e+c f}}\right]}{f}-\frac{2 \operatorname{Cos}[a] \operatorname{SinIntegral}\left[\frac{b}{\sqrt{c+d x}}\right]}{f}-\frac{\operatorname{Cos}\left[a+\frac{b \sqrt{f}}{\sqrt{-d e+c f}}\right] \operatorname{SinIntegral}\left[\frac{b \sqrt{f}}{\sqrt{-d e+c f}}-\frac{b}{\sqrt{c+d x}}\right]}{f}+\frac{\operatorname{Cos}\left[a-\frac{b \sqrt{f}}{\sqrt{-d e+c f}}\right] \operatorname{SinIntegral}\left[\frac{b \sqrt{f}}{\sqrt{-d e+c f}}+\frac{b}{\sqrt{c+d x}}\right]}{f}$$

Result (type 8, 24 leaves):

$$\int \frac{\operatorname{Sin}\left[a+\frac{b}{\sqrt{c+d x}}\right]}{e+f x} \, dx$$

Problem 201: Attempted integration timed out after 120 seconds.

$$\int \frac{\operatorname{Sin}\left[a+\frac{b}{\sqrt{c+d x}}\right]}{(e+f x)^2} \, dx$$

Optimal (type 4, 350 leaves, 10 steps):

$$-\frac{b d \operatorname{Cos}\left[a+\frac{b \sqrt{f}}{\sqrt{-d e+c f}}\right] \operatorname{CosIntegral}\left[\frac{b \sqrt{f}}{\sqrt{-d e+c f}}-\frac{b}{\sqrt{c+d x}}\right]}{2 \sqrt{f} \, (-d e+c f)^{3/2}}+\frac{b d \operatorname{Cos}\left[a-\frac{b \sqrt{f}}{\sqrt{-d e+c f}}\right] \operatorname{CosIntegral}\left[\frac{b \sqrt{f}}{\sqrt{-d e+c f}}+\frac{b}{\sqrt{c+d x}}\right]}{2 \sqrt{f} \, (-d e+c f)^{3/2}}+\frac{(c+d x) \operatorname{Sin}\left[a+\frac{b}{\sqrt{c+d x}}\right]}{(d e-c f) (e+f x)}-\frac{b d \operatorname{Sin}\left[a+\frac{b \sqrt{f}}{\sqrt{-d e+c f}}\right] \operatorname{SinIntegral}\left[\frac{b \sqrt{f}}{\sqrt{-d e+c f}}-\frac{b}{\sqrt{c+d x}}\right]}{2 \sqrt{f} \, (-d e+c f)^{3/2}}-\frac{b d \operatorname{Sin}\left[a-\frac{b \sqrt{f}}{\sqrt{-d e+c f}}\right] \operatorname{SinIntegral}\left[\frac{b \sqrt{f}}{\sqrt{-d e+c f}}+\frac{b}{\sqrt{c+d x}}\right]}{2 \sqrt{f} \, (-d e+c f)^{3/2}}$$

Result (type 1, 1 leaves):

???

Problem 203: Result more than twice size of optimal antiderivative.

$$\int (e+f x) \operatorname{Sin}\left[a+\frac{b}{(c+d x)^{3/2}}\right] \, dx$$

Optimal (type 4, 251 leaves, 8 steps):

$$-\frac{i e^{i a} f \left(-\frac{i b}{(c+d x)^{3/2}}\right)^{4/3} (c+d x)^2 \text{Gamma}\left[-\frac{4}{3},-\frac{i b}{(c+d x)^{3/2}}\right]}{3 d^2}+\frac{i e^{-i a} f \left(\frac{i b}{(c+d x)^{3/2}}\right)^{4/3} (c+d x)^2 \text{Gamma}\left[-\frac{4}{3},\frac{i b}{(c+d x)^{3/2}}\right]}{3 d^2}-\frac{i e^{i a} (d e-c f) \left(-\frac{i b}{(c+d x)^{3/2}}\right)^{2/3} (c+d x) \text{Gamma}\left[-\frac{2}{3},-\frac{i b}{(c+d x)^{3/2}}\right]}{3 d^2}+\frac{i e^{-i a} (d e-c f) \left(\frac{i b}{(c+d x)^{3/2}}\right)^{2/3} (c+d x) \text{Gamma}\left[-\frac{2}{3},\frac{i b}{(c+d x)^{3/2}}\right]}{3 d^2}$$

Result (type 4, 835 leaves) :

$$\frac{3 b e \text{Cos}[a] \left(\frac{2 \text{Gamma}\left[\frac{1}{3},-\frac{i b}{(c+d x)^{3/2}}\right]}{3 \left(-\frac{i b}{(c+d x)^{3/2}}\right)^{1/3} \sqrt{c+d x}}+\frac{2 \text{Gamma}\left[\frac{1}{3},\frac{i b}{(c+d x)^{3/2}}\right]}{3 \left(\frac{i b}{(c+d x)^{3/2}}\right)^{1/3} \sqrt{c+d x}}\right)}{4 d}-\frac{3 b c f \text{Cos}[a] \left(\frac{2 \text{Gamma}\left[\frac{1}{3},-\frac{i b}{(c+d x)^{3/2}}\right]}{3 \left(-\frac{i b}{(c+d x)^{3/2}}\right)^{1/3} \sqrt{c+d x}}+\frac{2 \text{Gamma}\left[\frac{1}{3},\frac{i b}{(c+d x)^{3/2}}\right]}{3 \left(\frac{i b}{(c+d x)^{3/2}}\right)^{1/3} \sqrt{c+d x}}\right)}{4 d^2}+$$

$$\frac{9 i b^2 f \text{Cos}[a] \left(\frac{2 \text{Gamma}\left[\frac{2}{3},-\frac{i b}{(c+d x)^{3/2}}\right]}{3 \left(-\frac{i b}{(c+d x)^{3/2}}\right)^{2/3} (c+d x)}-\frac{2 \text{Gamma}\left[\frac{2}{3},\frac{i b}{(c+d x)^{3/2}}\right]}{3 \left(\frac{i b}{(c+d x)^{3/2}}\right)^{2/3} (c+d x)}\right)}{8 d^2}+\frac{e (c+d x) \text{Cos}\left[\frac{b}{(c+d x)^{3/2}}\right] \text{Sin}[a]}{d}+$$

$$\frac{3 i b e \left(\frac{2 \text{Gamma}\left[\frac{1}{3},-\frac{i b}{(c+d x)^{3/2}}\right]}{3 \left(-\frac{i b}{(c+d x)^{3/2}}\right)^{1/3} \sqrt{c+d x}}-\frac{2 \text{Gamma}\left[\frac{1}{3},\frac{i b}{(c+d x)^{3/2}}\right]}{3 \left(\frac{i b}{(c+d x)^{3/2}}\right)^{1/3} \sqrt{c+d x}}\right) \text{Sin}[a]}{4 d}-\frac{3 i b c f \left(\frac{2 \text{Gamma}\left[\frac{1}{3},-\frac{i b}{(c+d x)^{3/2}}\right]}{3 \left(-\frac{i b}{(c+d x)^{3/2}}\right)^{1/3} \sqrt{c+d x}}-\frac{2 \text{Gamma}\left[\frac{1}{3},\frac{i b}{(c+d x)^{3/2}}\right]}{3 \left(\frac{i b}{(c+d x)^{3/2}}\right)^{1/3} \sqrt{c+d x}}\right) \text{Sin}[a]}{4 d^2}-$$

$$\frac{9 b^2 f \left(\frac{2 \text{Gamma}\left[\frac{2}{3},-\frac{i b}{(c+d x)^{3/2}}\right]}{3 \left(-\frac{i b}{(c+d x)^{3/2}}\right)^{2/3} (c+d x)}+\frac{2 \text{Gamma}\left[\frac{2}{3},\frac{i b}{(c+d x)^{3/2}}\right]}{3 \left(\frac{i b}{(c+d x)^{3/2}}\right)^{2/3} (c+d x)}\right) \text{Sin}[a]}{8 d^2}+\frac{f \sqrt{c+d x} \text{Cos}\left[\frac{b}{(c+d x)^{3/2}}\right] \left(3 b \text{Cos}[a]-2 c \sqrt{c+d x} \text{Sin}[a]+(c+d x)^{3/2} \text{Sin}[a]\right)}{2 d^2}+$$

$$\frac{e (c+d x) \text{Cos}[a] \text{Sin}\left[\frac{b}{(c+d x)^{3/2}}\right]}{d}+\frac{f \sqrt{c+d x} \left(-2 c \sqrt{c+d x} \text{Cos}[a]+(c+d x)^{3/2} \text{Cos}[a]-3 b \text{Sin}[a]\right) \text{Sin}\left[\frac{b}{(c+d x)^{3/2}}\right]}{2 d^2}$$

Problem 210: Result is not expressed in closed-form.

$$\int \frac{\text{Sin}\left[a+b (c+d x)^{1/3}\right]}{e+f x} \, dx$$

Optimal (type 4, 396 leaves, 11 steps) :

$$\frac{\text{CosIntegral}\left[\frac{b (d e-c f)^{1/3}}{f^{1/3}}+b (c+d x)^{1/3}\right] \text{Sin}\left[a-\frac{b (d e-c f)^{1/3}}{f^{1/3}}\right]}{f}+\frac{\text{CosIntegral}\left[\frac{(-1)^{1/3} b (d e-c f)^{1/3}}{f^{1/3}}-b (c+d x)^{1/3}\right] \text{Sin}\left[a+\frac{(-1)^{1/3} b (d e-c f)^{1/3}}{f^{1/3}}\right]}{f}+$$

$$\frac{\text{CosIntegral}\left[\frac{(-1)^{2/3} b (d e-c f)^{1/3}}{f^{1/3}}+b (c+d x)^{1/3}\right] \text{Sin}\left[a-\frac{(-1)^{2/3} b (d e-c f)^{1/3}}{f^{1/3}}\right]}{f}-\frac{\text{Cos}\left[a+\frac{(-1)^{1/3} b (d e-c f)^{1/3}}{f^{1/3}}\right] \text{SinIntegral}\left[\frac{(-1)^{1/3} b (d e-c f)^{1/3}}{f^{1/3}}-b (c+d x)^{1/3}\right]}{f}+$$

$$\frac{\text{Cos}\left[a-\frac{b (d e-c f)^{1/3}}{f^{1/3}}\right] \text{SinIntegral}\left[\frac{b (d e-c f)^{1/3}}{f^{1/3}}+b (c+d x)^{1/3}\right]}{f}+\frac{\text{Cos}\left[a-\frac{(-1)^{2/3} b (d e-c f)^{1/3}}{f^{1/3}}\right] \text{SinIntegral}\left[\frac{(-1)^{2/3} b (d e-c f)^{1/3}}{f^{1/3}}+b (c+d x)^{1/3}\right]}{f}$$

Result (type 7, 118 leaves):

$$\frac{1}{2\,f}\,i\,\left(\text{RootSum}\left[d\,e-c\,f+f\,\#1^3\,\&,\ e^{-i\,a-i\,b\,\#1}\,\text{ExpIntegralEi}\left[-i\,b\,\left((c+d\,x)^{1/3}-\#1\right)\right]\,\&\right]-\text{RootSum}\left[d\,e-c\,f+f\,\#1^3\,\&,\ e^{i\,a+i\,b\,\#1}\,\text{ExpIntegralEi}\left[i\,b\,\left((c+d\,x)^{1/3}-\#1\right)\right]\,\&\right]\right)$$

Problem 211: Result is not expressed in closed-form.

$$\int\frac{\text{Sin}\left[a+b\,(c+d\,x)^{1/3}\right]}{(e+f\,x)^2}\,dx$$

Optimal (type 4, 555 leaves, 13 steps):

$$-\frac{(-1)^{1/3}\,b\,d\,\text{Cos}\left[a+\frac{(-1)^{1/3}\,b\,(d\,e-c\,f)^{1/3}}{f^{1/3}}\right]\,\text{CosIntegral}\left[\frac{(-1)^{1/3}\,b\,(d\,e-c\,f)^{1/3}}{f^{1/3}}-b\,(c+d\,x)^{1/3}\right]}{3\,f^{4/3}\,(d\,e-c\,f)^{2/3}}+$$
$$\frac{b\,d\,\text{Cos}\left[a-\frac{b\,(d\,e-c\,f)^{1/3}}{f^{1/3}}\right]\,\text{CosIntegral}\left[\frac{b\,(d\,e-c\,f)^{1/3}}{f^{1/3}}+b\,(c+d\,x)^{1/3}\right]}{3\,f^{4/3}\,(d\,e-c\,f)^{2/3}}+$$
$$\frac{(-1)^{2/3}\,b\,d\,\text{Cos}\left[a-\frac{(-1)^{2/3}\,b\,(d\,e-c\,f)^{1/3}}{f^{1/3}}\right]\,\text{CosIntegral}\left[\frac{(-1)^{2/3}\,b\,(d\,e-c\,f)^{1/3}}{f^{1/3}}+b\,(c+d\,x)^{1/3}\right]}{3\,f^{4/3}\,(d\,e-c\,f)^{2/3}}-$$
$$\frac{\text{Sin}\left[a+b\,(c+d\,x)^{1/3}\right]}{f\,(e+f\,x)}-\frac{(-1)^{1/3}\,b\,d\,\text{Sin}\left[a+\frac{(-1)^{1/3}\,b\,(d\,e-c\,f)^{1/3}}{f^{1/3}}\right]\,\text{SinIntegral}\left[\frac{(-1)^{1/3}\,b\,(d\,e-c\,f)^{1/3}}{f^{1/3}}-b\,(c+d\,x)^{1/3}\right]}{3\,f^{4/3}\,(d\,e-c\,f)^{2/3}}-$$
$$\frac{b\,d\,\text{Sin}\left[a-\frac{b\,(d\,e-c\,f)^{1/3}}{f^{1/3}}\right]\,\text{SinIntegral}\left[\frac{b\,(d\,e-c\,f)^{1/3}}{f^{1/3}}+b\,(c+d\,x)^{1/3}\right]}{3\,f^{4/3}\,(d\,e-c\,f)^{2/3}}-$$
$$\frac{(-1)^{2/3}\,b\,d\,\text{Sin}\left[a-\frac{(-1)^{2/3}\,b\,(d\,e-c\,f)^{1/3}}{f^{1/3}}\right]\,\text{SinIntegral}\left[\frac{(-1)^{2/3}\,b\,(d\,e-c\,f)^{1/3}}{f^{1/3}}+b\,(c+d\,x)^{1/3}\right]}{3\,f^{4/3}\,(d\,e-c\,f)^{2/3}}$$

Result (type 7, 180 leaves):

$$\frac{1}{6\,f^2}\left(\frac{3\,i\,e^{-i\,\left(a+b\,(c+d\,x)^{1/3}\right)}\,\left(-1+e^{2\,i\,\left(a+b\,(c+d\,x)^{1/3}\right)}\right)\,f}{e+f\,x}+b\,d\,\text{RootSum}\left[d\,e-c\,f+f\,\#1^3\,\&,\ \frac{e^{-i\,a-i\,b\,\#1}\,\text{ExpIntegralEi}\left[-i\,b\,\left((c+d\,x)^{1/3}-\#1\right)\right]}{\#1^2}\,\&\right]+b\,d\,\text{RootSum}\left[d\,e-c\,f+f\,\#1^3\,\&,\ \frac{e^{i\,a+i\,b\,\#1}\,\text{ExpIntegralEi}\left[i\,b\,\left((c+d\,x)^{1/3}-\#1\right)\right]}{\#1^2}\,\&\right]\right)$$

Problem 212: Result unnecessarily involves imaginary or complex numbers.

$$\int(e+f\,x)^2\,\text{Sin}\left[a+b\,(c+d\,x)^{2/3}\right]\,dx$$

Optimal (type 4, 513 leaves, 17 steps):

$$\frac{6 f (d e - c f) \operatorname{Cos}\left[a + b (c + d x)^{2/3}\right]}{b^3 d^3} - \frac{3 (d e - c f)^2 (c + d x)^{1/3} \operatorname{Cos}\left[a + b (c + d x)^{2/3}\right]}{2 b d^3} +$$
$$\frac{105 f^2 (c + d x) \operatorname{Cos}\left[a + b (c + d x)^{2/3}\right]}{8 b^3 d^3} - \frac{3 f (d e - c f) (c + d x)^{4/3} \operatorname{Cos}\left[a + b (c + d x)^{2/3}\right]}{b d^3} - \frac{3 f^2 (c + d x)^{7/3} \operatorname{Cos}\left[a + b (c + d x)^{2/3}\right]}{2 b d^3} +$$
$$\frac{3 (d e - c f)^2 \sqrt{\frac{\pi}{2}} \operatorname{Cos}[a] \operatorname{FresnelC}\left[\sqrt{b} \sqrt{\frac{2}{\pi}} (c + d x)^{1/3}\right]}{2 b^{3/2} d^3} + \frac{315 f^2 \sqrt{\frac{\pi}{2}} \operatorname{Cos}[a] \operatorname{FresnelS}\left[\sqrt{b} \sqrt{\frac{2}{\pi}} (c + d x)^{1/3}\right]}{16 b^{9/2} d^3} +$$
$$\frac{315 f^2 \sqrt{\frac{\pi}{2}} \operatorname{FresnelC}\left[\sqrt{b} \sqrt{\frac{2}{\pi}} (c + d x)^{1/3}\right] \operatorname{Sin}[a]}{16 b^{9/2} d^3} - \frac{3 (d e - c f)^2 \sqrt{\frac{\pi}{2}} \operatorname{FresnelS}\left[\sqrt{b} \sqrt{\frac{2}{\pi}} (c + d x)^{1/3}\right] \operatorname{Sin}[a]}{2 b^{3/2} d^3} -$$
$$\frac{315 f^2 (c + d x)^{1/3} \operatorname{Sin}\left[a + b (c + d x)^{2/3}\right]}{16 b^4 d^3} + \frac{6 f (d e - c f) (c + d x)^{2/3} \operatorname{Sin}\left[a + b (c + d x)^{2/3}\right]}{b^2 d^3} + \frac{21 f^2 (c + d x)^{5/3} \operatorname{Sin}\left[a + b (c + d x)^{2/3}\right]}{4 b^2 d^3}$$

Result (type 4, 510 leaves) :

$$-\frac{1}{64 b^{9/2} d^3} 3 i \Bigg((\operatorname{Cos}[a] + i \operatorname{Sin}[a])$$
$$\Bigg((1 + i) \left(-105 i f^2 + 8 b^3 (d e - c f)^2\right) \sqrt{\frac{\pi}{2}} \operatorname{Erfi}\left[\frac{(1 + i) \sqrt{b} (c + d x)^{1/3}}{\sqrt{2}}\right] + 2 \sqrt{b} \Big(-105 f^2 (c + d x)^{1/3} - 8 i b^3 d^2 (c + d x)^{1/3} (e + f x)^2 +$$
$$4 b^2 f (c + d x)^{2/3} (8 d e - c f + 7 d f x) + 2 i b f (16 d e + 19 c f + 35 d f x)\Big) \left(\operatorname{Cos}\left[b (c + d x)^{2/3}\right] + i \operatorname{Sin}\left[b (c + d x)^{2/3}\right]\right)\Bigg) -$$
$$\Bigg(2 \sqrt{b} \left(-105 f^2 (c + d x)^{1/3} + 8 i b^3 d^2 (c + d x)^{1/3} (e + f x)^2 + 4 b^2 f (c + d x)^{2/3} (8 d e - c f + 7 d f x) - 2 i b f (16 d e + 19 c f + 35 d f x)\right) -$$
$$(1 + i) \left(105 i f^2 + 8 b^3 \left(d^2 e^2 + c^2 f^2\right)\right) \sqrt{\frac{\pi}{2}} \operatorname{Erf}\left[\frac{(1 + i) \sqrt{b} (c + d x)^{1/3}}{\sqrt{2}}\right] \left(\operatorname{Cos}\left[b (c + d x)^{2/3}\right] + i \operatorname{Sin}\left[b (c + d x)^{2/3}\right]\right) + (8 + 8 i) b^3 c d e$$
$$f \sqrt{2 \pi} \operatorname{Erf}\left[\frac{(1 + i) \sqrt{b} (c + d x)^{1/3}}{\sqrt{2}}\right] \left(\operatorname{Cos}\left[b (c + d x)^{2/3}\right] + i \operatorname{Sin}\left[b (c + d x)^{2/3}\right]\right)\Bigg) \left(\operatorname{Cos}\left[a + b (c + d x)^{2/3}\right] - i \operatorname{Sin}\left[a + b (c + d x)^{2/3}\right]\right)\Bigg)$$

- **Problem 217: Result unnecessarily involves imaginary or complex numbers.**

$$\int (e + f x)^2 \operatorname{Sin}\left[a + \frac{b}{(c + d x)^{1/3}}\right] dx$$

Optimal (type 4, 855 leaves, 29 steps) :

$$\frac{b^5 f (d e-c f) (c+d x)^{1/3} \mathrm{Cos}\left[a+\frac{b}{(c+d x)^{1/3}}\right]}{120 d^3}-\frac{b^7 f^2 (c+d x)^{2/3} \mathrm{Cos}\left[a+\frac{b}{(c+d x)^{1/3}}\right]}{120960 d^3}+\frac{b (d e-c f)^2 (c+d x)^{2/3} \mathrm{Cos}\left[a+\frac{b}{(c+d x)^{1/3}}\right]}{2 d^3}-$$

$$\frac{b^3 f (d e-c f) (c+d x) \mathrm{Cos}\left[a+\frac{b}{(c+d x)^{1/3}}\right]}{60 d^3}+\frac{b^5 f^2 (c+d x)^{4/3} \mathrm{Cos}\left[a+\frac{b}{(c+d x)^{1/3}}\right]}{20160 d^3}+\frac{b f (d e-c f) (c+d x)^{5/3} \mathrm{Cos}\left[a+\frac{b}{(c+d x)^{1/3}}\right]}{5 d^3}-$$

$$\frac{b^3 f^2 (c+d x)^2 \mathrm{Cos}\left[a+\frac{b}{(c+d x)^{1/3}}\right]}{1008 d^3}+\frac{b f^2 (c+d x)^{8/3} \mathrm{Cos}\left[a+\frac{b}{(c+d x)^{1/3}}\right]}{24 d^3}-\frac{b^9 f^2 \mathrm{Cos}[a] \mathrm{CosIntegral}\left[\frac{b}{(c+d x)^{1/3}}\right]}{120960 d^3}+$$

$$\frac{b^3 (d e-c f)^2 \mathrm{Cos}[a] \mathrm{CosIntegral}\left[\frac{b}{(c+d x)^{1/3}}\right]}{2 d^3}+\frac{b^6 f (d e-c f) \mathrm{CosIntegral}\left[\frac{b}{(c+d x)^{1/3}}\right] \mathrm{Sin}[a]}{120 d^3}+\frac{b^8 f^2 (c+d x)^{1/3} \mathrm{Sin}\left[a+\frac{b}{(c+d x)^{1/3}}\right]}{120960 d^3}-$$

$$\frac{b^2 (d e-c f)^2 (c+d x)^{1/3} \mathrm{Sin}\left[a+\frac{b}{(c+d x)^{1/3}}\right]}{2 d^3}+\frac{b^4 f (d e-c f) (c+d x)^{2/3} \mathrm{Sin}\left[a+\frac{b}{(c+d x)^{1/3}}\right]}{120 d^3}-\frac{b^6 f^2 (c+d x) \mathrm{Sin}\left[a+\frac{b}{(c+d x)^{1/3}}\right]}{60480 d^3}+$$

$$\frac{(d e-c f)^2 (c+d x) \mathrm{Sin}\left[a+\frac{b}{(c+d x)^{1/3}}\right]}{d^3}-\frac{b^2 f (d e-c f) (c+d x)^{4/3} \mathrm{Sin}\left[a+\frac{b}{(c+d x)^{1/3}}\right]}{20 d^3}+\frac{b^4 f^2 (c+d x)^{5/3} \mathrm{Sin}\left[a+\frac{b}{(c+d x)^{1/3}}\right]}{5040 d^3}+$$

$$\frac{f (d e-c f) (c+d x)^2 \mathrm{Sin}\left[a+\frac{b}{(c+d x)^{1/3}}\right]}{d^3}-\frac{b^2 f^2 (c+d x)^{7/3} \mathrm{Sin}\left[a+\frac{b}{(c+d x)^{1/3}}\right]}{168 d^3}+\frac{f^2 (c+d x)^3 \mathrm{Sin}\left[a+\frac{b}{(c+d x)^{1/3}}\right]}{3 d^3}+$$

$$\frac{b^6 f (d e-c f) \mathrm{Cos}[a] \mathrm{SinIntegral}\left[\frac{b}{(c+d x)^{1/3}}\right]}{120 d^3}+\frac{b^9 f^2 \mathrm{Sin}[a] \mathrm{SinIntegral}\left[\frac{b}{(c+d x)^{1/3}}\right]}{120960 d^3}-\frac{b^3 (d e-c f)^2 \mathrm{Sin}[a] \mathrm{SinIntegral}\left[\frac{b}{(c+d x)^{1/3}}\right]}{2 d^3}$$

Result (type 4, 929 leaves) :

$$-\frac{1}{241920\,d^3}\,i\left((\text{Cos}[a]+i\,\text{Sin}[a])\left(60480\,i\,b^3\,d^2\,e^2\,\text{ExpIntegralEi}\left[\frac{i\,b}{(c+d\,x)^{1/3}}\right]+\right.\right.$$
$$1008\,b^6\,d\,e\,f\,\text{ExpIntegralEi}\left[\frac{i\,b}{(c+d\,x)^{1/3}}\right]-120960\,i\,b^3\,c\,d\,e\,f\,\text{ExpIntegralEi}\left[\frac{i\,b}{(c+d\,x)^{1/3}}\right]-i\,b^9\,f^2\,\text{ExpIntegralEi}\left[\frac{i\,b}{(c+d\,x)^{1/3}}\right]-$$
$$1008\,b^6\,c\,f^2\,\text{ExpIntegralEi}\left[\frac{i\,b}{(c+d\,x)^{1/3}}\right]+60480\,i\,b^3\,c^2\,f^2\,\text{ExpIntegralEi}\left[\frac{i\,b}{(c+d\,x)^{1/3}}\right]+(c+d\,x)^{1/3}$$
$$\left(b^8\,f^2-i\,b^7\,f^2\,(c+d\,x)^{1/3}-2\,b^6\,f^2\,(c+d\,x)^{2/3}+24\,i\,b^3\,f\,(c+d\,x)^{2/3}\,(-84\,d\,e+79\,c\,f-5\,d\,f\,x)+6\,i\,b^5\,f\,(168\,d\,e-167\,c\,f+d\,f\,x)+\right.$$
$$24\,b^4\,f\,(c+d\,x)^{1/3}\,(42\,d\,e-41\,c\,f+d\,f\,x)+40320\,(c+d\,x)^{2/3}\left(c^2\,f^2-c\,d\,f\,(3\,e+f\,x)+d^2\left(3\,e^2+3\,e\,f\,x+f^2\,x^2\right)\right)+$$
$$1008\,i\,b\,(c+d\,x)^{1/3}\left(41\,c^2\,f^2-2\,c\,d\,f\,(48\,e+7\,f\,x)+d^2\left(60\,e^2+24\,e\,f\,x+5\,f^2\,x^2\right)\right)-$$
$$\left.\left.144\,b^2\left(383\,c^2\,f^2-2\,c\,d\,f\,(399\,e+16\,f\,x)+d^2\left(420\,e^2+42\,e\,f\,x+5\,f^2\,x^2\right)\right)\right)\left(\text{Cos}\left[\frac{b}{(c+d\,x)^{1/3}}\right]+i\,\text{Sin}\left[\frac{b}{(c+d\,x)^{1/3}}\right]\right)\right)-$$
$$\left((c+d\,x)^{1/3}\left(b^8\,f^2+i\,b^7\,f^2\,(c+d\,x)^{1/3}-2\,b^6\,f^2\,(c+d\,x)^{2/3}-6\,i\,b^5\,f\,(168\,d\,e-167\,c\,f+d\,f\,x)+24\,b^4\,f\,(c+d\,x)^{1/3}\,(42\,d\,e-41\,c\,f+d\,f\,x)+\right.\right.$$
$$24\,i\,b^3\,f\,(c+d\,x)^{2/3}\,(84\,d\,e-79\,c\,f+5\,d\,f\,x)+40320\,(c+d\,x)^{2/3}\left(c^2\,f^2-c\,d\,f\,(3\,e+f\,x)+d^2\left(3\,e^2+3\,e\,f\,x+f^2\,x^2\right)\right)-$$
$$1008\,i\,b\,(c+d\,x)^{1/3}\left(41\,c^2\,f^2-2\,c\,d\,f\,(48\,e+7\,f\,x)+d^2\left(60\,e^2+24\,e\,f\,x+5\,f^2\,x^2\right)\right)-$$
$$\left.144\,b^2\left(383\,c^2\,f^2-2\,c\,d\,f\,(399\,e+16\,f\,x)+d^2\left(420\,e^2+42\,e\,f\,x+5\,f^2\,x^2\right)\right)\right)+$$
$$i\,b^3\left(-60480\,d^2\,e^2+1008\left(-i\,b^3+120\,c\right)d\,e\,f+\left(b^6+1008\,i\,b^3\,c-60480\,c^2\right)f^2\right)\text{ExpIntegralEi}\left[-\frac{i\,b}{(c+d\,x)^{1/3}}\right]$$
$$\left.\left(\text{Cos}\left[\frac{b}{(c+d\,x)^{1/3}}\right]+i\,\text{Sin}\left[\frac{b}{(c+d\,x)^{1/3}}\right]\right)\right)\left(\text{Cos}\left[a+\frac{b}{(c+d\,x)^{1/3}}\right]-i\,\text{Sin}\left[a+\frac{b}{(c+d\,x)^{1/3}}\right]\right)\right)$$

- **Problem 220: Result is not expressed in closed-form.**

$$\int\frac{\text{Sin}\left[a+\frac{b}{(c+d\,x)^{1/3}}\right]}{e+f\,x}\,dx$$

Optimal (type 4, 434 leaves, 16 steps):

$$-\frac{3\,\text{CosIntegral}\left[\frac{b}{(c+d\,x)^{1/3}}\right]\text{Sin}[a]}{f}+\frac{\text{CosIntegral}\left[\frac{b\,f^{1/3}}{(d\,e-c\,f)^{1/3}}+\frac{b}{(c+d\,x)^{1/3}}\right]\text{Sin}\left[a-\frac{b\,f^{1/3}}{(d\,e-c\,f)^{1/3}}\right]}{f}+$$
$$\frac{\text{CosIntegral}\left[\frac{(-1)^{1/3}\,b\,f^{1/3}}{(d\,e-c\,f)^{1/3}}-\frac{b}{(c+d\,x)^{1/3}}\right]\text{Sin}\left[a+\frac{(-1)^{1/3}\,b\,f^{1/3}}{(d\,e-c\,f)^{1/3}}\right]}{f}+\frac{\text{CosIntegral}\left[\frac{(-1)^{2/3}\,b\,f^{1/3}}{(d\,e-c\,f)^{1/3}}+\frac{b}{(c+d\,x)^{1/3}}\right]\text{Sin}\left[a-\frac{(-1)^{2/3}\,b\,f^{1/3}}{(d\,e-c\,f)^{1/3}}\right]}{f}-$$
$$\frac{3\,\text{Cos}[a]\,\text{SinIntegral}\left[\frac{b}{(c+d\,x)^{1/3}}\right]}{f}-\frac{\text{Cos}\left[a+\frac{(-1)^{1/3}\,b\,f^{1/3}}{(d\,e-c\,f)^{1/3}}\right]\text{SinIntegral}\left[\frac{(-1)^{1/3}\,b\,f^{1/3}}{(d\,e-c\,f)^{1/3}}-\frac{b}{(c+d\,x)^{1/3}}\right]}{f}+$$
$$\frac{\text{Cos}\left[a-\frac{b\,f^{1/3}}{(d\,e-c\,f)^{1/3}}\right]\text{SinIntegral}\left[\frac{b\,f^{1/3}}{(d\,e-c\,f)^{1/3}}+\frac{b}{(c+d\,x)^{1/3}}\right]}{f}+\frac{\text{Cos}\left[a-\frac{(-1)^{2/3}\,b\,f^{1/3}}{(d\,e-c\,f)^{1/3}}\right]\text{SinIntegral}\left[\frac{(-1)^{2/3}\,b\,f^{1/3}}{(d\,e-c\,f)^{1/3}}+\frac{b}{(c+d\,x)^{1/3}}\right]}{f}$$

Result (type 7, 170 leaves):

$$\frac{1}{2 f}\,i \left(\left(-3\,\text{ExpIntegralEi}\left[-\frac{i\,b}{(c+d\,x)^{1/3}}\right]+\text{RootSum}\left[d\,e-c\,f+f\,\#1^3\,\&,\ e^{-\frac{i\,b}{\#1}}\,\text{ExpIntegralEi}\left[-i\,b\left(\frac{1}{(c+d\,x)^{1/3}}-\frac{1}{\#1}\right)\right]\,\&\right]\right)(\text{Cos}[a]-i\,\text{Sin}[a])+\left(3\,\text{ExpIntegralEi}\left[\frac{i\,b}{(c+d\,x)^{1/3}}\right]-\text{RootSum}\left[d\,e-c\,f+f\,\#1^3\,\&,\ e^{\frac{i\,b}{\#1}}\,\text{ExpIntegralEi}\left[i\,b\left(\frac{1}{(c+d\,x)^{1/3}}-\frac{1}{\#1}\right)\right]\,\&\right]\right)(\text{Cos}[a]+i\,\text{Sin}[a])\right)$$

- **Problem 221: Result is not expressed in closed-form.**

$$\int\frac{\text{Sin}\left[a+\frac{b}{(c+d\,x)^{1/3}}\right]}{(e+f\,x)^2}\,dx$$

Optimal (type 4, 566 leaves, 13 steps):

$$-\frac{b\,d\,\text{Cos}\left[a+\frac{b\,f^{1/3}}{(-d\,e+c\,f)^{1/3}}\right]\text{CosIntegral}\left[\frac{b\,f^{1/3}}{(-d\,e+c\,f)^{1/3}}-\frac{b}{(c+d\,x)^{1/3}}\right]}{3\,f^{2/3}\,(-d\,e+c\,f)^{4/3}}-\frac{(-1)^{2/3}\,b\,d\,\text{Cos}\left[a+\frac{(-1)^{2/3}\,b\,f^{1/3}}{(-d\,e+c\,f)^{1/3}}\right]\text{CosIntegral}\left[\frac{(-1)^{2/3}\,b\,f^{1/3}}{(-d\,e+c\,f)^{1/3}}-\frac{b}{(c+d\,x)^{1/3}}\right]}{3\,f^{2/3}\,(-d\,e+c\,f)^{4/3}}+\frac{(-1)^{1/3}\,b\,d\,\text{Cos}\left[a-\frac{(-1)^{1/3}\,b\,f^{1/3}}{(-d\,e+c\,f)^{1/3}}\right]\text{CosIntegral}\left[\frac{(-1)^{1/3}\,b\,f^{1/3}}{(-d\,e+c\,f)^{1/3}}+\frac{b}{(c+d\,x)^{1/3}}\right]}{3\,f^{2/3}\,(-d\,e+c\,f)^{4/3}}+\frac{(c+d\,x)\,\text{Sin}\left[a+\frac{b}{(c+d\,x)^{1/3}}\right]}{(d\,e-c\,f)\,(e+f\,x)}-\frac{b\,d\,\text{Sin}\left[a+\frac{b\,f^{1/3}}{(-d\,e+c\,f)^{1/3}}\right]\text{SinIntegral}\left[\frac{b\,f^{1/3}}{(-d\,e+c\,f)^{1/3}}-\frac{b}{(c+d\,x)^{1/3}}\right]}{3\,f^{2/3}\,(-d\,e+c\,f)^{4/3}}-\frac{(-1)^{2/3}\,b\,d\,\text{Sin}\left[a+\frac{(-1)^{2/3}\,b\,f^{1/3}}{(-d\,e+c\,f)^{1/3}}\right]\text{SinIntegral}\left[\frac{(-1)^{2/3}\,b\,f^{1/3}}{(-d\,e+c\,f)^{1/3}}-\frac{b}{(c+d\,x)^{1/3}}\right]}{3\,f^{2/3}\,(-d\,e+c\,f)^{4/3}}-\frac{(-1)^{1/3}\,b\,d\,\text{Sin}\left[a-\frac{(-1)^{1/3}\,b\,f^{1/3}}{(-d\,e+c\,f)^{1/3}}\right]\text{SinIntegral}\left[\frac{(-1)^{1/3}\,b\,f^{1/3}}{(-d\,e+c\,f)^{1/3}}+\frac{b}{(c+d\,x)^{1/3}}\right]}{3\,f^{2/3}\,(-d\,e+c\,f)^{4/3}}$$

Result (type 7, 313 leaves):

$$\frac{1}{6 f (-d e + c f) (e + f x)}$$

$$\Bigg((\text{Cos}[a] + i\,\text{Sin}[a]) \Bigg(b\,d\,(e + f x)\,\text{RootSum}\Big[d e - c f + f\,\#1^3\,\&, \frac{\text{ExpIntegralEi}\Big[\frac{i b}{(c+d x)^{1/3}}\Big] - e^{\frac{i b}{\#1}}\,\text{ExpIntegralEi}\Big[i\,b\,\Big(\frac{1}{(c+d x)^{1/3}} - \frac{1}{\#1}\Big)\Big]}{\#1}\,\&\Big] +$$

$$(c + d x)\Big(3\,i\,f\,\text{Cos}\Big[\frac{b}{(c + d x)^{1/3}}\Big] - 3\,f\,\text{Sin}\Big[\frac{b}{(c + d x)^{1/3}}\Big]\Big)\Bigg) +$$

$$i\,\Bigg(-3 c f - 3 d f x + b\,d\,(e + f x)\,\text{RootSum}\Big[d e - c f + f\,\#1^3\,\&, \frac{\text{ExpIntegralEi}\Big[-\frac{i b}{(c+d x)^{1/3}}\Big] - e^{-\frac{i b}{\#1}}\,\text{ExpIntegralEi}\Big[-i\,b\,\Big(\frac{1}{(c+d x)^{1/3}} - \frac{1}{\#1}\Big)\Big]}{\#1}\,\&\Big]$$

$$\Big(-i\,\text{Cos}\Big[\frac{b}{(c + d x)^{1/3}}\Big] + \text{Sin}\Big[\frac{b}{(c + d x)^{1/3}}\Big]\Big)\Bigg)\Big(\text{Cos}\Big[a + \frac{b}{(c + d x)^{1/3}}\Big] - i\,\text{Sin}\Big[a + \frac{b}{(c + d x)^{1/3}}\Big]\Big)\Bigg)$$

- **Problem 222: Result unnecessarily involves imaginary or complex numbers.**

$$\int (e + f x)^2\,\text{Sin}\Big[a + \frac{b}{(c + d x)^{2/3}}\Big]\,dx$$

Optimal (type 4, 630 leaves, 24 steps) :

$$\frac{2\,b\,(d\,e-c\,f)^2\,(c+d\,x)^{1/3}\,\text{Cos}\left[a+\frac{b}{(c+d\,x)^{2/3}}\right]}{d^3}-\frac{8\,b^3\,f^2\,(c+d\,x)\,\text{Cos}\left[a+\frac{b}{(c+d\,x)^{2/3}}\right]}{315\,d^3}+$$
$$\frac{b\,f\,(d\,e-c\,f)\,(c+d\,x)^{4/3}\,\text{Cos}\left[a+\frac{b}{(c+d\,x)^{2/3}}\right]}{2\,d^3}+\frac{2\,b\,f^2\,(c+d\,x)^{7/3}\,\text{Cos}\left[a+\frac{b}{(c+d\,x)^{2/3}}\right]}{21\,d^3}+\frac{b^3\,f\,(d\,e-c\,f)\,\text{Cos}[a]\,\text{CosIntegral}\left[\frac{b}{(c+d\,x)^{2/3}}\right]}{2\,d^3}-$$
$$\frac{16\,b^{9/2}\,f^2\,\sqrt{2\,\pi}\,\text{Cos}[a]\,\text{FresnelC}\left[\frac{\sqrt{b}\,\sqrt{\frac{2}{\pi}}}{(c+d\,x)^{1/3}}\right]}{315\,d^3}+\frac{2\,b^{3/2}\,(d\,e-c\,f)^2\,\sqrt{2\,\pi}\,\text{Cos}[a]\,\text{FresnelS}\left[\frac{\sqrt{b}\,\sqrt{\frac{2}{\pi}}}{(c+d\,x)^{1/3}}\right]}{d^3}+$$
$$\frac{2\,b^{3/2}\,(d\,e-c\,f)^2\,\sqrt{2\,\pi}\,\text{FresnelC}\left[\frac{\sqrt{b}\,\sqrt{\frac{2}{\pi}}}{(c+d\,x)^{1/3}}\right]\,\text{Sin}[a]}{d^3}+\frac{16\,b^{9/2}\,f^2\,\sqrt{2\,\pi}\,\text{FresnelS}\left[\frac{\sqrt{b}\,\sqrt{\frac{2}{\pi}}}{(c+d\,x)^{1/3}}\right]\,\text{Sin}[a]}{315\,d^3}+\frac{16\,b^4\,f^2\,(c+d\,x)^{1/3}\,\text{Sin}\left[a+\frac{b}{(c+d\,x)^{2/3}}\right]}{315\,d^3}-$$
$$\frac{b^2\,f\,(d\,e-c\,f)\,(c+d\,x)^{2/3}\,\text{Sin}\left[a+\frac{b}{(c+d\,x)^{2/3}}\right]}{2\,d^3}+\frac{(d\,e-c\,f)^2\,(c+d\,x)\,\text{Sin}\left[a+\frac{b}{(c+d\,x)^{2/3}}\right]}{d^3}-\frac{4\,b^2\,f^2\,(c+d\,x)^{5/3}\,\text{Sin}\left[a+\frac{b}{(c+d\,x)^{2/3}}\right]}{105\,d^3}+$$
$$\frac{f\,(d\,e-c\,f)\,(c+d\,x)^2\,\text{Sin}\left[a+\frac{b}{(c+d\,x)^{2/3}}\right]}{d^3}+\frac{f^2\,(c+d\,x)^3\,\text{Sin}\left[a+\frac{b}{(c+d\,x)^{2/3}}\right]}{3\,d^3}-\frac{b^3\,f\,(d\,e-c\,f)\,\text{Sin}[a]\,\text{SinIntegral}\left[\frac{b}{(c+d\,x)^{2/3}}\right]}{2\,d^3}$$

Result (type 4, 613 leaves) :

$$\frac{1}{1260\,d^3}\,i\,e^{-i\,a}\left(e^{-\frac{i\,b}{(c+d\,x)^{2/3}}}\,(c+d\,x)^{1/3}\left(32\,b^4\,f^2+16\,i\,b^3\,f^2\,(c+d\,x)^{2/3}+3\,b^2\,f\,(c+d\,x)^{1/3}\,(-105\,d\,e+97\,c\,f-8\,d\,f\,x)-\right.\right.$$
$$\left.15\,i\,b\left(84\,d^2\,e^2+21\,d\,e\,f\,(-7\,c+d\,x)+f^2\left(67\,c^2-13\,c\,d\,x+4\,d^2\,x^2\right)\right)+210\,(c+d\,x)^{2/3}\left(c^2\,f^2-c\,d\,f\,(3\,e+f\,x)+d^2\left(3\,e^2+3\,e\,f\,x+f^2\,x^2\right)\right)\right)-$$
$$e^{i\left(2\,a+\frac{b}{(c+d\,x)^{2/3}}\right)}\,(c+d\,x)^{1/3}\left(32\,b^4\,f^2-16\,i\,b^3\,f^2\,(c+d\,x)^{2/3}+3\,b^2\,f\,(c+d\,x)^{1/3}\,(-105\,d\,e+97\,c\,f-8\,d\,f\,x)+\right.$$
$$\left.15\,i\,b\left(84\,d^2\,e^2+21\,d\,e\,f\,(-7\,c+d\,x)+f^2\left(67\,c^2-13\,c\,d\,x+4\,d^2\,x^2\right)\right)+210\,(c+d\,x)^{2/3}\left(c^2\,f^2-c\,d\,f\,(3\,e+f\,x)+d^2\left(3\,e^2+3\,e\,f\,x+f^2\,x^2\right)\right)\right)+$$
$$4\,(-1)^{1/4}\,b^{3/2}\,e^{2\,i\,a}\left(315\,i\,d^2\,e^2-630\,i\,c\,d\,e\,f+\left(8\,b^3+315\,i\,c^2\right)\,f^2\right)\sqrt{\pi}\,\text{Erfi}\left[\frac{(-1)^{1/4}\,\sqrt{b}}{(c+d\,x)^{1/3}}\right]-$$
$$4\,(-1)^{1/4}\,b^{3/2}\left(315\,d^2\,e^2-630\,c\,d\,e\,f+\left(8\,i\,b^3+315\,c^2\right)\,f^2\right)\sqrt{\pi}\,\text{Erfi}\left[\frac{(-1)^{3/4}\,\sqrt{b}}{(c+d\,x)^{1/3}}\right]+$$
$$\left.315\,i\,b^3\,f\,(-d\,e+c\,f)\,\text{ExpIntegralEi}\left[-\frac{i\,b}{(c+d\,x)^{2/3}}\right]+315\,i\,b^3\,e^{2\,i\,a}\,f\,(-d\,e+c\,f)\,\text{ExpIntegralEi}\left[\frac{i\,b}{(c+d\,x)^{2/3}}\right]\right)$$

- **Problem 226: Attempted integration timed out after 120 seconds.**

$$\int\frac{\text{Sin}\left[a+\frac{b}{(c+d\,x)^{2/3}}\right]}{(e+f\,x)^2}\,dx$$

Optimal (type 9, 24 leaves, 0 steps) :

$$\text{Unintegrable}\left[\frac{\text{Sin}\left[a+\frac{b}{(c+d\,x)^{2/3}}\right]}{(e+f\,x)^2},\,x\right]$$

Result (type 1, 1 leaves) :

???

Problem 260: Unable to integrate problem.

$$\int x^3\,\text{Sin}\left[a+b\,(c+d\,x)^n\right]\,dx$$

Optimal (type 4, 503 leaves, 14 steps) :

$$-\frac{i\,c^3\,e^{i\,a}\,(c+d\,x)\,\left(-i\,b\,(c+d\,x)^n\right)^{-1/n}\,\text{Gamma}\left[\frac{1}{n},\,-i\,b\,(c+d\,x)^n\right]}{2\,d^4\,n}+\frac{i\,c^3\,e^{-i\,a}\,(c+d\,x)\,\left(i\,b\,(c+d\,x)^n\right)^{-1/n}\,\text{Gamma}\left[\frac{1}{n},\,i\,b\,(c+d\,x)^n\right]}{2\,d^4\,n}+$$
$$\frac{3\,i\,c^2\,e^{i\,a}\,(c+d\,x)^2\,\left(-i\,b\,(c+d\,x)^n\right)^{-2/n}\,\text{Gamma}\left[\frac{2}{n},\,-i\,b\,(c+d\,x)^n\right]}{2\,d^4\,n}-\frac{3\,i\,c^2\,e^{-i\,a}\,(c+d\,x)^2\,\left(i\,b\,(c+d\,x)^n\right)^{-2/n}\,\text{Gamma}\left[\frac{2}{n},\,i\,b\,(c+d\,x)^n\right]}{2\,d^4\,n}-$$
$$\frac{3\,i\,c\,e^{i\,a}\,(c+d\,x)^3\,\left(-i\,b\,(c+d\,x)^n\right)^{-3/n}\,\text{Gamma}\left[\frac{3}{n},\,-i\,b\,(c+d\,x)^n\right]}{2\,d^4\,n}+\frac{3\,i\,c\,e^{-i\,a}\,(c+d\,x)^3\,\left(i\,b\,(c+d\,x)^n\right)^{-3/n}\,\text{Gamma}\left[\frac{3}{n},\,i\,b\,(c+d\,x)^n\right]}{2\,d^4\,n}+$$
$$\frac{i\,e^{i\,a}\,(c+d\,x)^4\,\left(-i\,b\,(c+d\,x)^n\right)^{-4/n}\,\text{Gamma}\left[\frac{4}{n},\,-i\,b\,(c+d\,x)^n\right]}{2\,d^4\,n}-\frac{i\,e^{-i\,a}\,(c+d\,x)^4\,\left(i\,b\,(c+d\,x)^n\right)^{-4/n}\,\text{Gamma}\left[\frac{4}{n},\,i\,b\,(c+d\,x)^n\right]}{2\,d^4\,n}$$

Result (type 8, 18 leaves) :

$$\int x^3\,\text{Sin}\left[a+b\,(c+d\,x)^n\right]\,dx$$

Problem 261: Unable to integrate problem.

$$\int x^2\,\text{Sin}\left[a+b\,(c+d\,x)^n\right]\,dx$$

Optimal (type 4, 369 leaves, 11 steps) :

$$\frac{i\,c^2\,e^{i\,a}\,(c+d\,x)\,\left(-i\,b\,(c+d\,x)^n\right)^{-1/n}\,\text{Gamma}\left[\frac{1}{n},\,-i\,b\,(c+d\,x)^n\right]}{2\,d^3\,n}-\frac{i\,c^2\,e^{-i\,a}\,(c+d\,x)\,\left(i\,b\,(c+d\,x)^n\right)^{-1/n}\,\text{Gamma}\left[\frac{1}{n},\,i\,b\,(c+d\,x)^n\right]}{2\,d^3\,n}-$$
$$\frac{i\,c\,e^{i\,a}\,(c+d\,x)^2\,\left(-i\,b\,(c+d\,x)^n\right)^{-2/n}\,\text{Gamma}\left[\frac{2}{n},\,-i\,b\,(c+d\,x)^n\right]}{d^3\,n}+\frac{i\,c\,e^{-i\,a}\,(c+d\,x)^2\,\left(i\,b\,(c+d\,x)^n\right)^{-2/n}\,\text{Gamma}\left[\frac{2}{n},\,i\,b\,(c+d\,x)^n\right]}{d^3\,n}+$$
$$\frac{i\,e^{i\,a}\,(c+d\,x)^3\,\left(-i\,b\,(c+d\,x)^n\right)^{-3/n}\,\text{Gamma}\left[\frac{3}{n},\,-i\,b\,(c+d\,x)^n\right]}{2\,d^3\,n}-\frac{i\,e^{-i\,a}\,(c+d\,x)^3\,\left(i\,b\,(c+d\,x)^n\right)^{-3/n}\,\text{Gamma}\left[\frac{3}{n},\,i\,b\,(c+d\,x)^n\right]}{2\,d^3\,n}$$

Result (type 8, 18 leaves) :

$$\int x^2\,\text{Sin}\left[a+b\,(c+d\,x)^n\right]\,dx$$

Problem 266: Unable to integrate problem.

$$\int x^3 \left(a+b \operatorname{Sin}\left[c+d (f+g x)^n\right]\right) dx$$

Optimal (type 4, 519 leaves, 16 steps):

$$\frac{a x^4}{4}-\frac{i b e^{i c} f^3 (f+g x) \left(-i d (f+g x)^n\right)^{-1/n} \operatorname{Gamma}\left[\frac{1}{n},-i d (f+g x)^n\right]}{2 g^4 n}+\frac{i b e^{-i c} f^3 (f+g x) \left(i d (f+g x)^n\right)^{-1/n} \operatorname{Gamma}\left[\frac{1}{n},i d (f+g x)^n\right]}{2 g^4 n}+\frac{3 i b e^{i c} f^2 (f+g x)^2 \left(-i d (f+g x)^n\right)^{-2/n} \operatorname{Gamma}\left[\frac{2}{n},-i d (f+g x)^n\right]}{2 g^4 n}-\frac{3 i b e^{-i c} f^2 (f+g x)^2 \left(i d (f+g x)^n\right)^{-2/n} \operatorname{Gamma}\left[\frac{2}{n},i d (f+g x)^n\right]}{2 g^4 n}-\frac{3 i b e^{i c} f (f+g x)^3 \left(-i d (f+g x)^n\right)^{-3/n} \operatorname{Gamma}\left[\frac{3}{n},-i d (f+g x)^n\right]}{2 g^4 n}+\frac{3 i b e^{-i c} f (f+g x)^3 \left(i d (f+g x)^n\right)^{-3/n} \operatorname{Gamma}\left[\frac{3}{n},i d (f+g x)^n\right]}{2 g^4 n}+\frac{i b e^{i c} (f+g x)^4 \left(-i d (f+g x)^n\right)^{-4/n} \operatorname{Gamma}\left[\frac{4}{n},-i d (f+g x)^n\right]}{2 g^4 n}-\frac{i b e^{-i c} (f+g x)^4 \left(i d (f+g x)^n\right)^{-4/n} \operatorname{Gamma}\left[\frac{4}{n},i d (f+g x)^n\right]}{2 g^4 n}$$

Result (type 8, 22 leaves):

$$\int x^3 \left(a+b \operatorname{Sin}\left[c+d (f+g x)^n\right]\right) dx$$

Problem 267: Unable to integrate problem.

$$\int x^2 \left(a+b \operatorname{Sin}\left[c+d (f+g x)^n\right]\right) dx$$

Optimal (type 4, 383 leaves, 13 steps):

$$\frac{a x^3}{3}+\frac{i b e^{i c} f^2 (f+g x) \left(-i d (f+g x)^n\right)^{-1/n} \operatorname{Gamma}\left[\frac{1}{n},-i d (f+g x)^n\right]}{2 g^3 n}-\frac{i b e^{-i c} f^2 (f+g x) \left(i d (f+g x)^n\right)^{-1/n} \operatorname{Gamma}\left[\frac{1}{n},i d (f+g x)^n\right]}{2 g^3 n}-\frac{i b e^{i c} f (f+g x)^2 \left(-i d (f+g x)^n\right)^{-2/n} \operatorname{Gamma}\left[\frac{2}{n},-i d (f+g x)^n\right]}{g^3 n}+\frac{i b e^{-i c} f (f+g x)^2 \left(i d (f+g x)^n\right)^{-2/n} \operatorname{Gamma}\left[\frac{2}{n},i d (f+g x)^n\right]}{g^3 n}+\frac{i b e^{i c} (f+g x)^3 \left(-i d (f+g x)^n\right)^{-3/n} \operatorname{Gamma}\left[\frac{3}{n},-i d (f+g x)^n\right]}{2 g^3 n}-\frac{i b e^{-i c} (f+g x)^3 \left(i d (f+g x)^n\right)^{-3/n} \operatorname{Gamma}\left[\frac{3}{n},i d (f+g x)^n\right]}{2 g^3 n}$$

Result (type 8, 22 leaves):

$$\int x^2 \left(a+b \operatorname{Sin}\left[c+d (f+g x)^n\right]\right) dx$$

Problem 272: Unable to integrate problem.

$$\int x^2 \left(a+b \operatorname{Sin}\left[c+d (f+g x)^n\right]\right)^2 dx$$

Optimal (type 4, 856 leaves, 28 steps):

$$\frac{(2a^2+b^2) f^2 x}{2g^2} - \frac{(2a^2+b^2) f (f+gx)^2}{2g^3} + \frac{(2a^2+b^2)(f+gx)^3}{6g^3} +$$
$$\frac{i a b e^{ic} f^2 (f+gx) (-i d (f+gx)^n)^{-1/n} \text{Gamma}\left[\frac{1}{n}, -i d (f+gx)^n\right]}{g^3 n} - \frac{i a b e^{-ic} f^2 (f+gx) (i d (f+gx)^n)^{-1/n} \text{Gamma}\left[\frac{1}{n}, i d (f+gx)^n\right]}{g^3 n} +$$
$$\frac{2^{-2-\frac{1}{n}} b^2 e^{2ic} f^2 (f+gx) (-i d (f+gx)^n)^{-1/n} \text{Gamma}\left[\frac{1}{n}, -2 i d (f+gx)^n\right]}{g^3 n} + \frac{2^{-2-\frac{1}{n}} b^2 e^{-2ic} f^2 (f+gx) (i d (f+gx)^n)^{-1/n} \text{Gamma}\left[\frac{1}{n}, 2 i d (f+gx)^n\right]}{g^3 n} -$$
$$\frac{2 i a b e^{ic} f (f+gx)^2 (-i d (f+gx)^n)^{-2/n} \text{Gamma}\left[\frac{2}{n}, -i d (f+gx)^n\right]}{g^3 n} + \frac{2 i a b e^{-ic} f (f+gx)^2 (i d (f+gx)^n)^{-2/n} \text{Gamma}\left[\frac{2}{n}, i d (f+gx)^n\right]}{g^3 n} -$$
$$\frac{2^{-1-\frac{2}{n}} b^2 e^{2ic} f (f+gx)^2 (-i d (f+gx)^n)^{-2/n} \text{Gamma}\left[\frac{2}{n}, -2 i d (f+gx)^n\right]}{g^3 n} - \frac{2^{-1-\frac{2}{n}} b^2 e^{-2ic} f (f+gx)^2 (i d (f+gx)^n)^{-2/n} \text{Gamma}\left[\frac{2}{n}, 2 i d (f+gx)^n\right]}{g^3 n} +$$
$$\frac{i a b e^{ic} (f+gx)^3 (-i d (f+gx)^n)^{-3/n} \text{Gamma}\left[\frac{3}{n}, -i d (f+gx)^n\right]}{g^3 n} - \frac{i a b e^{-ic} (f+gx)^3 (i d (f+gx)^n)^{-3/n} \text{Gamma}\left[\frac{3}{n}, i d (f+gx)^n\right]}{g^3 n} +$$
$$\frac{2^{-2-\frac{3}{n}} b^2 e^{2ic} (f+gx)^3 (-i d (f+gx)^n)^{-3/n} \text{Gamma}\left[\frac{3}{n}, -2 i d (f+gx)^n\right]}{g^3 n} + \frac{2^{-2-\frac{3}{n}} b^2 e^{-2ic} (f+gx)^3 (i d (f+gx)^n)^{-3/n} \text{Gamma}\left[\frac{3}{n}, 2 i d (f+gx)^n\right]}{g^3 n}$$

Result (type 8, 24 leaves) :

$$\int x^2 (a + b \,\text{Sin}[c + d (f + g x)^n])^2 \, dx$$

- **Problem 273: Unable to integrate problem.**

$$\int x (a + b \,\text{Sin}[c + d (f + g x)^n])^2 \, dx$$

Optimal (type 4, 556 leaves, 19 steps) :

$$-\frac{\left(2 a^2+b^2\right) f x}{2 g}+\frac{\left(2 a^2+b^2\right) (f+g x)^2}{4 g^2}-\frac{i a b e^{i c} f (f+g x) \left(-i d (f+g x)^n\right)^{-1/n} \text{Gamma}\left[\frac{1}{n},-i d (f+g x)^n\right]}{g^2 n}+$$

$$\frac{i a b e^{-i c} f (f+g x) \left(i d (f+g x)^n\right)^{-1/n} \text{Gamma}\left[\frac{1}{n},i d (f+g x)^n\right]}{g^2 n}-\frac{2^{-2-\frac{1}{n}} b^2 e^{2 i c} f (f+g x) \left(-i d (f+g x)^n\right)^{-1/n} \text{Gamma}\left[\frac{1}{n},-2 i d (f+g x)^n\right]}{g^2 n}-$$

$$\frac{2^{-2-\frac{1}{n}} b^2 e^{-2 i c} f (f+g x) \left(i d (f+g x)^n\right)^{-1/n} \text{Gamma}\left[\frac{1}{n},2 i d (f+g x)^n\right]}{g^2 n}+$$

$$\frac{i a b e^{i c} (f+g x)^2 \left(-i d (f+g x)^n\right)^{-2/n} \text{Gamma}\left[\frac{2}{n},-i d (f+g x)^n\right]}{g^2 n}-\frac{i a b e^{-i c} (f+g x)^2 \left(i d (f+g x)^n\right)^{-2/n} \text{Gamma}\left[\frac{2}{n},i d (f+g x)^n\right]}{g^2 n}+$$

$$\frac{4^{-1-\frac{1}{n}} b^2 e^{2 i c} (f+g x)^2 \left(-i d (f+g x)^n\right)^{-2/n} \text{Gamma}\left[\frac{2}{n},-2 i d (f+g x)^n\right]}{g^2 n}+\frac{4^{-1-\frac{1}{n}} b^2 e^{-2 i c} (f+g x)^2 \left(i d (f+g x)^n\right)^{-2/n} \text{Gamma}\left[\frac{2}{n},2 i d (f+g x)^n\right]}{g^2 n}$$

Result (type 8, 22 leaves) :

$$\int x \left(a+b \text{Sin}\left[c+d (f+g x)^n\right]\right)^2 dx$$

- **Problem 282: Attempted integration timed out after 120 seconds.**

$$\int \frac{x^2}{\left(a+b \text{Sin}\left[c+d (f+g x)^n\right]\right)^2} dx$$

Optimal (type 9, 24 leaves, 0 steps) :

$$\text{Unintegrable}\left[\frac{x^2}{\left(a+b \text{Sin}\left[c+d (f+g x)^n\right]\right)^2},x\right]$$

Result (type 1, 1 leaves) :

???

- **Problem 283: Attempted integration timed out after 120 seconds.**

$$\int \frac{x}{\left(a+b \text{Sin}\left[c+d (f+g x)^n\right]\right)^2} dx$$

Optimal (type 9, 22 leaves, 0 steps) :

$$\text{Unintegrable}\left[\frac{x}{\left(a+b \text{Sin}\left[c+d (f+g x)^n\right]\right)^2},x\right]$$

Result (type 1, 1 leaves) :

???

- **Problem 285: Attempted integration timed out after 120 seconds.**

$$\int \frac{1}{x\,(a+b\,\text{Sin}[c+d\,(f+g\,x)^n])^2}\,dx$$

Optimal (type 9, 24 leaves, 0 steps):

$$\text{Unintegrable}\left[\frac{1}{x\,(a+b\,\text{Sin}[c+d\,(f+g\,x)^n])^2},\,x\right]$$

Result (type 1, 1 leaves):

???

- **Problem 286: Attempted integration timed out after 120 seconds.**

$$\int \frac{1}{x^2\,(a+b\,\text{Sin}[c+d\,(f+g\,x)^n])^2}\,dx$$

Optimal (type 9, 24 leaves, 0 steps):

$$\text{Unintegrable}\left[\frac{1}{x^2\,(a+b\,\text{Sin}[c+d\,(f+g\,x)^n])^2},\,x\right]$$

Result (type 1, 1 leaves):

???

Test results for the 653 problems in "4.1.1.2 (g cos)^p (a+b sin)^m.m"

- **Problem 8: Result more than twice size of optimal antiderivative.**

$$\int \text{Sec}[c+d\,x]\,(a+a\,\text{Sin}[c+d\,x])\,dx$$

Optimal (type 3, 17 leaves, 2 steps):

$$-\frac{a\,\text{Log}[1-\text{Sin}[c+d\,x]]}{d}$$

Result (type 3, 83 leaves):

$$-\frac{a\,\text{Log}[\text{Cos}[c+d\,x]]}{d}-\frac{a\,\text{Log}\left[\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]-\text{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right]}{d}+\frac{a\,\text{Log}\left[\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right]}{d}$$

- **Problem 10: Result more than twice size of optimal antiderivative.**

$$\int \text{Sec}[c+d\,x]^3\,(a+a\,\text{Sin}[c+d\,x])\,dx$$

Optimal (type 3, 39 leaves, 4 steps):

$$\frac{a\,\text{ArcTanh}[\text{Sin}[c+d\,x]]}{2\,d}+\frac{a^2}{2\,d\,(a-a\,\text{Sin}[c+d\,x])}$$

Result (type 3, 143 leaves):

$$-\frac{a\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]}{2\,d}+\frac{a\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]}{2\,d}+\frac{a\,\text{Sec}[c+d\,x]^2}{2\,d}+\frac{a}{4\,d\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}-\frac{a}{4\,d\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}$$

- **Problem 12: Result more than twice size of optimal antiderivative.**

$$\int \text{Sec}[c+d\,x]^5\,(a+a\,\text{Sin}[c+d\,x])\,dx$$

Optimal (type 3, 84 leaves, 4 steps):

$$\frac{3\,a\,\text{ArcTanh}[\text{Sin}[c+d\,x]]}{8\,d}+\frac{a^3}{8\,d\,(a-a\,\text{Sin}[c+d\,x])^2}+\frac{a^2}{4\,d\,(a-a\,\text{Sin}[c+d\,x])}-\frac{a^2}{8\,d\,(a+a\,\text{Sin}[c+d\,x])}$$

Result (type 3, 207 leaves):

$$-\frac{3\,a\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]}{8\,d}+\frac{3\,a\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]}{8\,d}+\frac{a\,\text{Sec}[c+d\,x]^4}{4\,d}+\frac{a}{16\,d\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^4}+\frac{3\,a}{16\,d\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}-\frac{a}{16\,d\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^4}-\frac{3\,a}{16\,d\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}$$

- **Problem 20: Result more than twice size of optimal antiderivative.**

$$\int \text{Sec}[c+d\,x]^2\,(a+a\,\text{Sin}[c+d\,x])^2\,dx$$

Optimal (type 3, 38 leaves, 3 steps):

$$-a^2\,x+\frac{2\,a^4\,\text{Cos}[c+d\,x]}{d\,\left(a^2-a^2\,\text{Sin}[c+d\,x]\right)}$$

Result (type 3, 101 leaves):

$$-\frac{a^2\,\left((c+d\,x)\,\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-(4+c+d\,x)\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\,(1+\text{Sin}[c+d\,x])^2}{d\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^4}$$

Problem 25: Result more than twice size of optimal antiderivative.

$$\int \text{Sec}[c+d x]^7 (a+a \text{Sin}[c+d x])^2 \, dx$$

Optimal (type 3, 109 leaves, 4 steps):

$$\frac{a^2 \text{ArcTanh}[\text{Sin}[c+d x]]}{4 d}+\frac{a^5}{12 d (a-a \text{Sin}[c+d x])^3}+\frac{a^4}{8 d (a-a \text{Sin}[c+d x])^2}+\frac{3 a^3}{16 d (a-a \text{Sin}[c+d x])}-\frac{a^3}{16 d (a+a \text{Sin}[c+d x])}$$

Result (type 3, 290 leaves):

$$\left(\left(\left(-3-12 \text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]\right)\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2+\right.\right.$$
$$12 \text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2+$$
$$\frac{4\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2}{\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^6}+\frac{6\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2}{\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^4}+\left.\frac{9\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2}{\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2}\right)$$
$$\left.(a+a \text{Sin}[c+d x])^2\right) \Big/ \left(48 d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^6\right)$$

Problem 32: Result more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d x] (a+a \text{Sin}[c+d x])^3 \, dx$$

Optimal (type 3, 22 leaves, 2 steps):

$$\frac{(a+a \text{Sin}[c+d x])^4}{4 a d}$$

Result (type 3, 47 leaves):

$$\frac{a^3 (-28 \text{Cos}[2 (c+d x)]+\text{Cos}[4 (c+d x)]+56 \text{Sin}[c+d x]-8 \text{Sin}[3 (c+d x)])}{32 d}$$

Problem 35: Result more than twice size of optimal antiderivative.

$$\int \text{Sec}[c+d x]^3 (a+a \text{Sin}[c+d x])^3 \, dx$$

Optimal (type 3, 40 leaves, 3 steps):

$$\frac{a^3 \text{Log}[1-\text{Sin}[c+d x]]}{d}+\frac{2 a^4}{d (a-a \text{Sin}[c+d x])}$$

Result (type 3, 92 leaves):

$$-\left(2 a^3 \left(-1-\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]+\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right] \text{Sin}[c+d x]\right)\right) \Big/ \left(d \left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2\right)$$

- **Problem 41: Result more than twice size of optimal antiderivative.**

$$\int \text{Cos}[c+d x]^5 (a+a \text{Sin}[c+d x])^8 \, dx$$

Optimal (type 3, 67 leaves, 3 steps):

$$\frac{4 (a+a \text{Sin}[c+d x])^{11}}{11 a^3 d}-\frac{(a+a \text{Sin}[c+d x])^{12}}{3 a^4 d}+\frac{(a+a \text{Sin}[c+d x])^{13}}{13 a^5 d}$$

Result (type 3, 139 leaves):

$$-\frac{1}{1757184 d} a^8 (4434144 \text{Cos}[2 (c+d x)]+815100 \text{Cos}[4 (c+d x)]-354640 \text{Cos}[6 (c+d x)]-92664 \text{Cos}[8 (c+d x)]+20592 \text{Cos}[10 (c+d x)]-572 \text{Cos}[12 (c+d x)]-8314020 \text{Sin}[c+d x]+877591 \text{Sin}[3 (c+d x)]+872157 \text{Sin}[5 (c+d x)]+6006 \text{Sin}[7 (c+d x)]-58630 \text{Sin}[9 (c+d x)]+4485 \text{Sin}[11 (c+d x)]-33 \text{Sin}[13 (c+d x)])$$

- **Problem 43: Result more than twice size of optimal antiderivative.**

$$\int \text{Cos}[c+d x]^3 (a+a \text{Sin}[c+d x])^8 \, dx$$

Optimal (type 3, 45 leaves, 3 steps):

$$\frac{(a+a \text{Sin}[c+d x])^{10}}{5 a^2 d}-\frac{(a+a \text{Sin}[c+d x])^{11}}{11 a^3 d}$$

Result (type 3, 109 leaves):

$$\frac{1}{56320 d} a^8 (-284240 \text{Cos}[2 (c+d x)]+25080 \text{Cos}[6 (c+d x)]-3520 \text{Cos}[8 (c+d x)]+88 \text{Cos}[10 (c+d x)]+461890 \text{Sin}[c+d x]-106590 \text{Sin}[3 (c+d x)]-31977 \text{Sin}[5 (c+d x)]+11495 \text{Sin}[7 (c+d x)]-715 \text{Sin}[9 (c+d x)]+5 \text{Sin}[11 (c+d x)])$$

- **Problem 45: Result more than twice size of optimal antiderivative.**

$$\int \text{Cos}[c+d x] (a+a \text{Sin}[c+d x])^8 \, dx$$

Optimal (type 3, 22 leaves, 2 steps):

$$\frac{(a+a \text{Sin}[c+d x])^9}{9 a d}$$

Result (type 3, 97 leaves):

$$\frac{1}{2304\,d}a^8\left(-31824\,\text{Cos}[2\,(c+d\,x)]+8568\,\text{Cos}[4\,(c+d\,x)]-816\,\text{Cos}[6\,(c+d\,x)]+18\,\text{Cos}[8\,(c+d\,x)]+43758\,\text{Sin}[c+d\,x]-18564\,\text{Sin}[3\,(c+d\,x)]+3060\,\text{Sin}[5\,(c+d\,x)]-153\,\text{Sin}[7\,(c+d\,x)]+\text{Sin}[9\,(c+d\,x)]\right)$$

- **Problem 49: Result more than twice size of optimal antiderivative.**

$$\int \text{Sec}[c+d\,x]^4\,(a+a\,\text{Sin}[c+d\,x])^8\,dx$$

Optimal (type 3, 179 leaves, 8 steps):

$$\frac{1155\,a^8\,x}{8}-\frac{385\,a^8\,\text{Cos}[c+d\,x]^3}{4\,d}+\frac{1155\,a^8\,\text{Cos}[c+d\,x]\,\text{Sin}[c+d\,x]}{8\,d}+\frac{2\,a^{15}\,\text{Cos}[c+d\,x]^{11}}{3\,d\,(a-a\,\text{Sin}[c+d\,x])^7}-\frac{22\,a^{13}\,\text{Cos}[c+d\,x]^9}{3\,d\,(a-a\,\text{Sin}[c+d\,x])^5}-\frac{66\,a^{14}\,\text{Cos}[c+d\,x]^7}{d\,\left(a^2-a^2\,\text{Sin}[c+d\,x]\right)^3}-\frac{231\,a^{16}\,\text{Cos}[c+d\,x]^5}{4\,d\,\left(a^8-a^8\,\text{Sin}[c+d\,x]\right)}$$

Result (type 3, 465 leaves):

$$\frac{1155\,(c+d\,x)\,(a+a\,\text{Sin}[c+d\,x])^8}{8\,d\,\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^{16}}-\frac{78\,\text{Cos}[c+d\,x]\,(a+a\,\text{Sin}[c+d\,x])^8}{d\,\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^{16}}+\frac{2\,\text{Cos}[3\,(c+d\,x)]\,(a+a\,\text{Sin}[c+d\,x])^8}{3\,d\,\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^{16}}+\frac{64\,(a+a\,\text{Sin}[c+d\,x])^8}{3\,d\,\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^{16}}+\frac{128\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\,(a+a\,\text{Sin}[c+d\,x])^8}{3\,d\,\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^3\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^{16}}-\frac{1024\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\,(a+a\,\text{Sin}[c+d\,x])^8}{3\,d\,\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^{16}}-\frac{31\,(a+a\,\text{Sin}[c+d\,x])^8\,\text{Sin}[2\,(c+d\,x)]}{4\,d\,\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^{16}}+\frac{(a+a\,\text{Sin}[c+d\,x])^8\,\text{Sin}[4\,(c+d\,x)]}{32\,d\,\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^{16}}$$

- **Problem 50: Result more than twice size of optimal antiderivative.**

$$\int \text{Sec}[c+d\,x]^5\,(a+a\,\text{Sin}[c+d\,x])^8\,dx$$

Optimal (type 3, 110 leaves, 3 steps):

$$-\frac{80\,a^8\,\text{Log}[1-\text{Sin}[c+d\,x]]}{d}-\frac{31\,a^8\,\text{Sin}[c+d\,x]}{d}-\frac{4\,a^8\,\text{Sin}[c+d\,x]^2}{d}-\frac{a^8\,\text{Sin}[c+d\,x]^3}{3\,d}+\frac{16\,a^{10}}{d\,(a-a\,\text{Sin}[c+d\,x])^2}-\frac{80\,a^9}{d\,(a-a\,\text{Sin}[c+d\,x])}$$

Result (type 3, 341 leaves):

$$\frac{2\,\text{Cos}[2\,(c+d\,x)]\,(a+a\,\text{Sin}[c+d\,x])^8}{d\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^{16}}-\frac{160\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\,(a+a\,\text{Sin}[c+d\,x])^8}{d\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^{16}}+$$

$$\frac{16\,(a+a\,\text{Sin}[c+d\,x])^8}{d\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^4\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^{16}}-$$

$$\frac{80\,(a+a\,\text{Sin}[c+d\,x])^8}{d\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^{16}}-$$

$$\frac{125\,\text{Sin}[c+d\,x]\,(a+a\,\text{Sin}[c+d\,x])^8}{4\,d\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^{16}}+\frac{(a+a\,\text{Sin}[c+d\,x])^8\,\text{Sin}[3\,(c+d\,x)]}{12\,d\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^{16}}$$

- **Problem 57: Result more than twice size of optimal antiderivative.**

$$\int\frac{\text{Sec}[c+d\,x]}{a+a\,\text{Sin}[c+d\,x]}\,dx$$

Optimal (type 3, 37 leaves, 4 steps):

$$\frac{\text{ArcTanh}[\text{Sin}[c+d\,x]]}{2\,a\,d}-\frac{1}{2\,d\,(a+a\,\text{Sin}[c+d\,x])}$$

Result (type 3, 126 leaves):

$$\frac{1}{2\,a\,d\,(1+\text{Sin}[c+d\,x])}\left(-1-\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]+\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]+\right.$$
$$\left.\left(-\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]+\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\right)\text{Sin}[c+d\,x]\right)$$

- **Problem 58: Result more than twice size of optimal antiderivative.**

$$\int\frac{\text{Sec}[c+d\,x]^2}{a+a\,\text{Sin}[c+d\,x]}\,dx$$

Optimal (type 3, 42 leaves, 3 steps):

$$-\frac{\text{Sec}[c+d\,x]}{3\,d\,(a+a\,\text{Sin}[c+d\,x])}+\frac{2\,\text{Tan}[c+d\,x]}{3\,a\,d}$$

Result (type 3, 103 leaves):

$$\frac{2\,\text{Cos}[c+d\,x]-4\,\text{Cos}[2\,(c+d\,x)]+8\,\text{Sin}[c+d\,x]+\text{Sin}[2\,(c+d\,x)]}{12\,a\,d\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)(1+\text{Sin}[c+d\,x])}$$

- **Problem 59: Result more than twice size of optimal antiderivative.**

$$\int\frac{\text{Sec}[c+d\,x]^3}{a+a\,\text{Sin}[c+d\,x]}\,dx$$

Optimal (type 3, 77 leaves, 4 steps):

$$\frac{3\,\text{ArcTanh}[\text{Sin}[c+d\,x]]}{8\,a\,d}+\frac{1}{8\,d\,(a-a\,\text{Sin}[c+d\,x])}-\frac{a}{8\,d\,(a+a\,\text{Sin}[c+d\,x])^2}-\frac{1}{4\,d\,(a+a\,\text{Sin}[c+d\,x])}$$

Result (type 3, 190 leaves):

$$-\frac{1}{8\,d\,(a+a\,\text{Sin}[c+d\,x])}\left(2+\frac{1}{\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2}+3\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2-3\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2-\frac{\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2}{\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2}\right)$$

Problem 61: Result more than twice size of optimal antiderivative.

$$\int\frac{\text{Sec}[c+d\,x]^5}{a+a\,\text{Sin}[c+d\,x]}\,dx$$

Optimal (type 3, 120 leaves, 4 steps):

$$\frac{5\,\text{ArcTanh}[\text{Sin}[c+d\,x]]}{16\,a\,d}+\frac{a}{32\,d\,(a-a\,\text{Sin}[c+d\,x])^2}+\frac{1}{8\,d\,(a-a\,\text{Sin}[c+d\,x])}-\frac{a^2}{24\,d\,(a+a\,\text{Sin}[c+d\,x])^3}-\frac{3\,a}{32\,d\,(a+a\,\text{Sin}[c+d\,x])^2}-\frac{3}{16\,d\,(a+a\,\text{Sin}[c+d\,x])}$$

Result (type 3, 267 leaves):

$$\frac{1}{96\,d\,(a+a\,\text{Sin}[c+d\,x])}\left(-18-\frac{4}{\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4}-\frac{9}{\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2}-30\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2+30\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2+\frac{3\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2}{\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4}+\frac{12\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2}{\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2}\right)$$

Problem 68: Result more than twice size of optimal antiderivative.

$$\int\frac{\text{Cos}[c+d\,x]^2}{(a+a\,\text{Sin}[c+d\,x])^2}\,dx$$

Optimal (type 3, 34 leaves, 2 steps):

$$-\frac{x}{a^2}-\frac{2\,\text{Cos}[c+d\,x]}{d\,\left(a^2+a^2\,\text{Sin}[c+d\,x]\right)}$$

Result (type 3, 75 leaves):

$$-\frac{\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^3\,\left((c+d\,x)\,\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+(-4+c+d\,x)\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)}{a^2\,d\,(1+\text{Sin}[c+d\,x])^2}$$

- **Problem 70: Result more than twice size of optimal antiderivative.**

$$\int\frac{\text{Sec}[c+d\,x]}{(a+a\,\text{Sin}[c+d\,x])^2}\,dx$$

Optimal (type 3, 60 leaves, 4 steps):

$$\frac{\text{ArcTanh}[\text{Sin}[c+d\,x]]}{4\,a^2\,d}-\frac{1}{4\,d\,(a+a\,\text{Sin}[c+d\,x])^2}-\frac{1}{4\,d\,\left(a^2+a^2\,\text{Sin}[c+d\,x]\right)}$$

Result (type 3, 139 leaves):

$$-\frac{1}{4\,d\,(a+a\,\text{Sin}[c+d\,x])^2}\left(1+\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2+\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^4-\right.$$
$$\left.\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^4\right)$$

- **Problem 72: Result more than twice size of optimal antiderivative.**

$$\int\frac{\text{Sec}[c+d\,x]^3}{(a+a\,\text{Sin}[c+d\,x])^2}\,dx$$

Optimal (type 3, 104 leaves, 4 steps):

$$\frac{\text{ArcTanh}[\text{Sin}[c+d\,x]]}{4\,a^2\,d}-\frac{a}{12\,d\,(a+a\,\text{Sin}[c+d\,x])^3}-\frac{1}{8\,d\,(a+a\,\text{Sin}[c+d\,x])^2}+\frac{1}{16\,d\,\left(a^2-a^2\,\text{Sin}[c+d\,x]\right)}-\frac{3}{16\,d\,\left(a^2+a^2\,\text{Sin}[c+d\,x]\right)}$$

Result (type 3, 217 leaves):

$$-\frac{1}{48\,d\,(a+a\,\mathrm{Sin}[c+d\,x])^2}\left(6+\frac{4}{\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2}+9\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2+12\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4-12\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4-\frac{3\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4}{\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2}\right)$$

- **Problem 76: Result more than twice size of optimal antiderivative.**

$$\int\frac{\mathrm{Cos}[c+d\,x]^7}{(a+a\,\mathrm{Sin}[c+d\,x])^3}\,dx$$

Optimal (type 3, 23 leaves, 2 steps):

$$-\frac{(a-a\,\mathrm{Sin}[c+d\,x])^4}{4\,a^7\,d}$$

Result (type 3, 48 leaves):

$$-\frac{-28\,\mathrm{Cos}[2\,(c+d\,x)]+\mathrm{Cos}[4\,(c+d\,x)]+8\,(-7\,\mathrm{Sin}[c+d\,x]+\mathrm{Sin}[3\,(c+d\,x)])}{32\,a^3\,d}$$

- **Problem 80: Result more than twice size of optimal antiderivative.**

$$\int\frac{\mathrm{Cos}[c+d\,x]^3}{(a+a\,\mathrm{Sin}[c+d\,x])^3}\,dx$$

Optimal (type 3, 39 leaves, 3 steps):

$$-\frac{\mathrm{Log}[1+\mathrm{Sin}[c+d\,x]]}{a^3\,d}-\frac{2}{d\,\left(a^3+a^3\,\mathrm{Sin}[c+d\,x]\right)}$$

Result (type 3, 89 leaves):

$$\frac{1}{d\,(a+a\,\mathrm{Sin}[c+d\,x])^3}2\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4\left(-1-\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2\right)$$

- **Problem 81: Result more than twice size of optimal antiderivative.**

$$\int\frac{\mathrm{Cos}[c+d\,x]^2}{(a+a\,\mathrm{Sin}[c+d\,x])^3}\,dx$$

Optimal (type 3, 27 leaves, 1 step):

$$-\frac{\text{Cos}[c+d x]^3}{3 d (a+a \text{Sin}[c+d x])^3}$$

Result (type 3, 66 leaves):

$$\frac{\left(-3 \text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Cos}\left[\frac{3}{2}(c+d x)\right]\right)\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3}{3 a^3 d (1+\text{Sin}[c+d x])^3}$$

- **Problem 83: Result more than twice size of optimal antiderivative.**

$$\int \frac{\text{Sec}[c+d x]}{(a+a \text{Sin}[c+d x])^3} \, dx$$

Optimal (type 3, 82 leaves, 4 steps):

$$\frac{\text{ArcTanh}[\text{Sin}[c+d x]]}{8 a^3 d}-\frac{1}{6 d (a+a \text{Sin}[c+d x])^3}-\frac{1}{8 a d (a+a \text{Sin}[c+d x])^2}-\frac{1}{8 d \left(a^3+a^3 \text{Sin}[c+d x]\right)}$$

Result (type 3, 167 leaves):

$$-\frac{1}{24 d (a+a \text{Sin}[c+d x])^3}\left(4+3\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2+3\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^4+3 \text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]\right.$$
$$\left.\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^6-3 \text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^6\right)$$

- **Problem 88: Result more than twice size of optimal antiderivative.**

$$\int \frac{\text{Cos}[c+d x]^8}{(a+a \text{Sin}[c+d x])^8} \, dx$$

Optimal (type 3, 127 leaves, 5 steps):

$$\frac{x}{a^8}-\frac{2 \text{Cos}[c+d x]^7}{7 a d (a+a \text{Sin}[c+d x])^7}+\frac{2 \text{Cos}[c+d x]^5}{5 a^3 d (a+a \text{Sin}[c+d x])^5}-\frac{2 \text{Cos}[c+d x]^3}{3 a^2 d \left(a^2+a^2 \text{Sin}[c+d x]\right)^3}+\frac{2 \text{Cos}[c+d x]}{d \left(a^8+a^8 \text{Sin}[c+d x]\right)}$$

Result (type 3, 263 leaves):

$$\frac{1}{105\,d\,(a+a\,\mathrm{Sin}[c+d\,x])^8}\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^9 \left(480\,\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]-240\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)-1056\,\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2+528\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^3+976\,\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4-488\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^5-704\,\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^6+105\,(c+d\,x)\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^7\right)$$

- **Problem 90: Result more than twice size of optimal antiderivative.**

$$\int\frac{\mathrm{Cos}[c+d\,x]^6}{(a+a\,\mathrm{Sin}[c+d\,x])^8}\,dx$$

Optimal (type 3, 58 leaves, 2 steps):

$$-\frac{\mathrm{Cos}[c+d\,x]^7}{9\,d\,(a+a\,\mathrm{Sin}[c+d\,x])^8}-\frac{\mathrm{Cos}[c+d\,x]^7}{63\,a\,d\,(a+a\,\mathrm{Sin}[c+d\,x])^7}$$

Result (type 3, 128 leaves):

$$-\left(315\,\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]-189\,\mathrm{Cos}\left[\frac{3}{2}(c+d\,x)\right]-63\,\mathrm{Cos}\left[\frac{5}{2}(c+d\,x)\right]+9\,\mathrm{Cos}\left[\frac{7}{2}(c+d\,x)\right]-189\,\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]-105\,\mathrm{Sin}\left[\frac{3}{2}(c+d\,x)\right]+27\,\mathrm{Sin}\left[\frac{5}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{9}{2}(c+d\,x)\right]\right)\Big/\left(504\,a^8\,d\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^9\right)$$

- **Problem 101: Result more than twice size of optimal antiderivative.**

$$\int\mathrm{Cos}[c+d\,x]^7\sqrt{a+a\,\mathrm{Sin}[c+d\,x]}\,dx$$

Optimal (type 3, 97 leaves, 3 steps):

$$\frac{16\,(a+a\,\mathrm{Sin}[c+d\,x])^{9/2}}{9\,a^4\,d}-\frac{24\,(a+a\,\mathrm{Sin}[c+d\,x])^{11/2}}{11\,a^5\,d}+\frac{12\,(a+a\,\mathrm{Sin}[c+d\,x])^{13/2}}{13\,a^6\,d}-\frac{2\,(a+a\,\mathrm{Sin}[c+d\,x])^{15/2}}{15\,a^7\,d}$$

Result (type 3, 1137 leaves):

$$\frac{35\,\text{Cos}\left[\frac{d\,x}{2}\right]\left(\text{Cos}\left[\frac{c}{2}\right]+\text{Sin}\left[\frac{c}{2}\right]\right)\sqrt{a\,(1+\text{Sin}[c+d\,x])}}{64\,d\left(\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right)}-\frac{35\,\text{Cos}\left[\frac{3\,d\,x}{2}\right]\left(\text{Cos}\left[\frac{3\,c}{2}\right]-\text{Sin}\left[\frac{3\,c}{2}\right]\right)\sqrt{a\,(1+\text{Sin}[c+d\,x])}}{192\,d\left(\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right)}+$$

$$\frac{21\,\text{Cos}\left[\frac{5\,d\,x}{2}\right]\left(\text{Cos}\left[\frac{5\,c}{2}\right]+\text{Sin}\left[\frac{5\,c}{2}\right]\right)\sqrt{a\,(1+\text{Sin}[c+d\,x])}}{320\,d\left(\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right)}-\frac{3\,\text{Cos}\left[\frac{7\,d\,x}{2}\right]\left(\text{Cos}\left[\frac{7\,c}{2}\right]-\text{Sin}\left[\frac{7\,c}{2}\right]\right)\sqrt{a\,(1+\text{Sin}[c+d\,x])}}{64\,d\left(\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right)}+$$

$$\frac{7\,\text{Cos}\left[\frac{9\,d\,x}{2}\right]\left(\text{Cos}\left[\frac{9\,c}{2}\right]+\text{Sin}\left[\frac{9\,c}{2}\right]\right)\sqrt{a\,(1+\text{Sin}[c+d\,x])}}{576\,d\left(\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right)}-\frac{7\,\text{Cos}\left[\frac{11\,d\,x}{2}\right]\left(\text{Cos}\left[\frac{11\,c}{2}\right]-\text{Sin}\left[\frac{11\,c}{2}\right]\right)\sqrt{a\,(1+\text{Sin}[c+d\,x])}}{704\,d\left(\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right)}+$$

$$\frac{\text{Cos}\left[\frac{13\,d\,x}{2}\right]\left(\text{Cos}\left[\frac{13\,c}{2}\right]+\text{Sin}\left[\frac{13\,c}{2}\right]\right)\sqrt{a\,(1+\text{Sin}[c+d\,x])}}{832\,d\left(\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right)}-\frac{\text{Cos}\left[\frac{15\,d\,x}{2}\right]\left(\text{Cos}\left[\frac{15\,c}{2}\right]-\text{Sin}\left[\frac{15\,c}{2}\right]\right)\sqrt{a\,(1+\text{Sin}[c+d\,x])}}{960\,d\left(\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right)}+$$

$$\frac{35\left(\text{Cos}\left[\frac{c}{2}\right]-\text{Sin}\left[\frac{c}{2}\right]\right)\text{Sin}\left[\frac{d\,x}{2}\right]\sqrt{a\,(1+\text{Sin}[c+d\,x])}}{64\,d\left(\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right)}+\frac{35\left(\text{Cos}\left[\frac{3\,c}{2}\right]+\text{Sin}\left[\frac{3\,c}{2}\right]\right)\text{Sin}\left[\frac{3\,d\,x}{2}\right]\sqrt{a\,(1+\text{Sin}[c+d\,x])}}{192\,d\left(\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right)}+$$

$$\frac{21\left(\text{Cos}\left[\frac{5\,c}{2}\right]-\text{Sin}\left[\frac{5\,c}{2}\right]\right)\text{Sin}\left[\frac{5\,d\,x}{2}\right]\sqrt{a\,(1+\text{Sin}[c+d\,x])}}{320\,d\left(\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right)}+\frac{3\left(\text{Cos}\left[\frac{7\,c}{2}\right]+\text{Sin}\left[\frac{7\,c}{2}\right]\right)\text{Sin}\left[\frac{7\,d\,x}{2}\right]\sqrt{a\,(1+\text{Sin}[c+d\,x])}}{64\,d\left(\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right)}+$$

$$\frac{7\left(\text{Cos}\left[\frac{9\,c}{2}\right]-\text{Sin}\left[\frac{9\,c}{2}\right]\right)\text{Sin}\left[\frac{9\,d\,x}{2}\right]\sqrt{a\,(1+\text{Sin}[c+d\,x])}}{576\,d\left(\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right)}+\frac{7\left(\text{Cos}\left[\frac{11\,c}{2}\right]+\text{Sin}\left[\frac{11\,c}{2}\right]\right)\text{Sin}\left[\frac{11\,d\,x}{2}\right]\sqrt{a\,(1+\text{Sin}[c+d\,x])}}{704\,d\left(\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right)}+$$

$$\frac{\left(\text{Cos}\left[\frac{13\,c}{2}\right]-\text{Sin}\left[\frac{13\,c}{2}\right]\right)\text{Sin}\left[\frac{13\,d\,x}{2}\right]\sqrt{a\,(1+\text{Sin}[c+d\,x])}}{832\,d\left(\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right)}+\frac{\left(\text{Cos}\left[\frac{15\,c}{2}\right]+\text{Sin}\left[\frac{15\,c}{2}\right]\right)\text{Sin}\left[\frac{15\,d\,x}{2}\right]\sqrt{a\,(1+\text{Sin}[c+d\,x])}}{960\,d\left(\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right)}$$

■ Problem 102: Result more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d\,x]^6\,\sqrt{a+a\,\text{Sin}[c+d\,x]}\,dx$$

Optimal (type 3, 127 leaves, 4 steps):

$$-\frac{256\,a^4\,\text{Cos}[c+d\,x]^7}{3003\,d\,(a+a\,\text{Sin}[c+d\,x])^{7/2}}-\frac{64\,a^3\,\text{Cos}[c+d\,x]^7}{429\,d\,(a+a\,\text{Sin}[c+d\,x])^{5/2}}-\frac{24\,a^2\,\text{Cos}[c+d\,x]^7}{143\,d\,(a+a\,\text{Sin}[c+d\,x])^{3/2}}-\frac{2\,a\,\text{Cos}[c+d\,x]^7}{13\,d\,\sqrt{a+a\,\text{Sin}[c+d\,x]}}$$

Result (type 3, 995 leaves):

$$-\frac{5\,\text{Cos}\left[\frac{d x}{2}\right]\left(\text{Cos}\left[\frac{c}{2}\right]-\text{Sin}\left[\frac{c}{2}\right]\right)\sqrt{a\,(1+\text{Sin}[c+d x])}}{8\,d\left(\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right)}+\frac{5\,\text{Cos}\left[\frac{3 d x}{2}\right]\left(\text{Cos}\left[\frac{3 c}{2}\right]+\text{Sin}\left[\frac{3 c}{2}\right]\right)\sqrt{a\,(1+\text{Sin}[c+d x])}}{32\,d\left(\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right)}-$$

$$\frac{3\,\text{Cos}\left[\frac{5 d x}{2}\right]\left(\text{Cos}\left[\frac{5 c}{2}\right]-\text{Sin}\left[\frac{5 c}{2}\right]\right)\sqrt{a\,(1+\text{Sin}[c+d x])}}{32\,d\left(\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right)}+\frac{3\,\text{Cos}\left[\frac{7 d x}{2}\right]\left(\text{Cos}\left[\frac{7 c}{2}\right]+\text{Sin}\left[\frac{7 c}{2}\right]\right)\sqrt{a\,(1+\text{Sin}[c+d x])}}{112\,d\left(\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right)}-$$

$$\frac{\text{Cos}\left[\frac{9 d x}{2}\right]\left(\text{Cos}\left[\frac{9 c}{2}\right]-\text{Sin}\left[\frac{9 c}{2}\right]\right)\sqrt{a\,(1+\text{Sin}[c+d x])}}{48\,d\left(\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right)}+\frac{\text{Cos}\left[\frac{11 d x}{2}\right]\left(\text{Cos}\left[\frac{11 c}{2}\right]+\text{Sin}\left[\frac{11 c}{2}\right]\right)\sqrt{a\,(1+\text{Sin}[c+d x])}}{352\,d\left(\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right)}-$$

$$\frac{\text{Cos}\left[\frac{13 d x}{2}\right]\left(\text{Cos}\left[\frac{13 c}{2}\right]-\text{Sin}\left[\frac{13 c}{2}\right]\right)\sqrt{a\,(1+\text{Sin}[c+d x])}}{416\,d\left(\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right)}+\frac{5\left(\text{Cos}\left[\frac{c}{2}\right]+\text{Sin}\left[\frac{c}{2}\right]\right)\text{Sin}\left[\frac{d x}{2}\right]\sqrt{a\,(1+\text{Sin}[c+d x])}}{8\,d\left(\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right)}+$$

$$\frac{5\left(\text{Cos}\left[\frac{3 c}{2}\right]-\text{Sin}\left[\frac{3 c}{2}\right]\right)\text{Sin}\left[\frac{3 d x}{2}\right]\sqrt{a\,(1+\text{Sin}[c+d x])}}{32\,d\left(\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right)}+\frac{3\left(\text{Cos}\left[\frac{5 c}{2}\right]+\text{Sin}\left[\frac{5 c}{2}\right]\right)\text{Sin}\left[\frac{5 d x}{2}\right]\sqrt{a\,(1+\text{Sin}[c+d x])}}{32\,d\left(\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right)}+$$

$$\frac{3\left(\text{Cos}\left[\frac{7 c}{2}\right]-\text{Sin}\left[\frac{7 c}{2}\right]\right)\text{Sin}\left[\frac{7 d x}{2}\right]\sqrt{a\,(1+\text{Sin}[c+d x])}}{112\,d\left(\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right)}+\frac{\left(\text{Cos}\left[\frac{9 c}{2}\right]+\text{Sin}\left[\frac{9 c}{2}\right]\right)\text{Sin}\left[\frac{9 d x}{2}\right]\sqrt{a\,(1+\text{Sin}[c+d x])}}{48\,d\left(\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right)}+$$

$$\frac{\left(\text{Cos}\left[\frac{11 c}{2}\right]-\text{Sin}\left[\frac{11 c}{2}\right]\right)\text{Sin}\left[\frac{11 d x}{2}\right]\sqrt{a\,(1+\text{Sin}[c+d x])}}{352\,d\left(\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right)}+\frac{\left(\text{Cos}\left[\frac{13 c}{2}\right]+\text{Sin}\left[\frac{13 c}{2}\right]\right)\text{Sin}\left[\frac{13 d x}{2}\right]\sqrt{a\,(1+\text{Sin}[c+d x])}}{416\,d\left(\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right)}$$

- **Problem 108: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int \text{Sec}[c+d x]\sqrt{a+a\,\text{Sin}[c+d x]}\,dx$$

Optimal (type 3, 40 leaves, 3 steps):

$$\frac{\sqrt{2}\,\sqrt{a}\,\text{ArcTanh}\left[\frac{\sqrt{a+a\,\text{Sin}[c+d x]}}{\sqrt{2}\,\sqrt{a}}\right]}{d}$$

Result (type 3, 95 leaves):

$$-\left((2-2\,i)\,(-1)^{1/4}\,\text{ArcTanh}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{3/4}\,\text{Sec}\left[\frac{d x}{4}\right]\left(\text{Cos}\left[\frac{1}{4}\,(2 c+d x)\right]+\text{Sin}\left[\frac{1}{4}\,(2 c+d x)\right]\right)\right]\sqrt{a\,(1+\text{Sin}[c+d x])}\right)\Big/\left(d\left(\text{Cos}\left[\frac{1}{2}\,(c+d x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d x)\right]\right)\right)$$

- **Problem 109: Result unnecessarily involves imaginary or complex numbers.**

$$\int \text{Sec}[c+d x]^2\sqrt{a+a\,\text{Sin}[c+d x]}\,dx$$

Optimal (type 3, 72 leaves, 3 steps):

$$-\frac{\sqrt{a}\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\text{Cos}[c+d x]}{\sqrt{2}\,\sqrt{a+a\,\text{Sin}[c+d x]}}\right]}{\sqrt{2}\,d}+\frac{\text{Sec}[c+d x]\,\sqrt{a+a\,\text{Sin}[c+d x]}}{d}$$

Result (type 3, 106 leaves):

$$\frac{1}{d}\text{Sec}[c+d x]\left(1-(1+i)\,(-1)^{3/4}\,\text{ArcTanh}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{3/4}\,\text{Sec}\left[\frac{d x}{4}\right]\left(\text{Cos}\left[\frac{1}{4}(2 c+d x)\right]-\text{Sin}\left[\frac{1}{4}(2 c+d x)\right]\right)\right]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)\right)\sqrt{a\,(1+\text{Sin}[c+d x])}$$

- **Problem 110: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int \text{Sec}[c+d x]^3\,\sqrt{a+a\,\text{Sin}[c+d x]}\,dx$$

Optimal (type 3, 95 leaves, 5 steps):

$$\frac{3\sqrt{a}\,\text{ArcTanh}\left[\frac{\sqrt{a+a\,\text{Sin}[c+d x]}}{\sqrt{2}\,\sqrt{a}}\right]}{4\sqrt{2}\,d}-\frac{3 a}{4 d\sqrt{a+a\,\text{Sin}[c+d x]}}+\frac{\text{Sec}[c+d x]^2\,\sqrt{a+a\,\text{Sin}[c+d x]}}{2 d}$$

Result (type 3, 271 leaves):

$$\left(\left(-2-(3-3 i)\,(-1)^{1/4}\,\text{ArcTanh}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{3/4}\,\text{Sec}\left[\frac{d x}{4}\right]\left(\text{Cos}\left[\frac{1}{4}(2 c+d x)\right]+\text{Sin}\left[\frac{1}{4}(2 c+d x)\right]\right)\right]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)+\frac{2\,\text{Sin}\left[\frac{d x}{2}\right]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)}{\left(\text{Cos}\left[\frac{c}{2}\right]-\text{Sin}\left[\frac{c}{2}\right]\right)\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2}+\frac{\left(\text{Cos}\left[\frac{c}{2}\right]+\text{Sin}\left[\frac{c}{2}\right]\right)\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)}{\left(\text{Cos}\left[\frac{c}{2}\right]-\text{Sin}\left[\frac{c}{2}\right]\right)\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)}\right)\sqrt{a\,(1+\text{Sin}[c+d x])}\right)\Big/\left(4 d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2\right)$$

- **Problem 111: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int \text{Sec}[c+d x]^4\,\sqrt{a+a\,\text{Sin}[c+d x]}\,dx$$

Optimal (type 3, 137 leaves, 5 steps):

$$-\frac{5\sqrt{a}\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\text{Cos}[c+d x]}{\sqrt{2}\,\sqrt{a+a\,\text{Sin}[c+d x]}}\right]}{8\sqrt{2}\,d}-\frac{5 a^2\,\text{Cos}[c+d x]}{8 d\,(a+a\,\text{Sin}[c+d x])^{3/2}}+\frac{5 a\,\text{Sec}[c+d x]}{6 d\sqrt{a+a\,\text{Sin}[c+d x]}}+\frac{\text{Sec}[c+d x]^3\,\sqrt{a+a\,\text{Sin}[c+d x]}}{3 d}$$

Result (type 3, 302 leaves):

$$\left(\left(\frac{6\,\text{Sin}\left[\frac{d x}{2}\right]}{\text{Cos}\left[\frac{c}{2}\right]+\text{Sin}\left[\frac{c}{2}\right]}-\frac{3\left(\text{Cos}\left[\frac{c}{2}\right]-\text{Sin}\left[\frac{c}{2}\right]\right)\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)}{\text{Cos}\left[\frac{c}{2}\right]+\text{Sin}\left[\frac{c}{2}\right]}-\right.\right.$$
$$(15+15\,i)\,(-1)^{3/4}\,\text{ArcTanh}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{3/4}\,\text{Sec}\left[\frac{d x}{4}\right]\left(\text{Cos}\left[\frac{1}{4}(2 c+d x)\right]-\text{Sin}\left[\frac{1}{4}(2 c+d x)\right]\right)\right]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2+$$
$$\left.\frac{4\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2}{\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3}+\frac{12\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2}{\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]}\right)$$
$$\left.\sqrt{a\,(1+\text{Sin}[c+d x])}\right)\Big/\left(24\,d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3\right)$$

Problem 112: Result unnecessarily involves imaginary or complex numbers.

$$\int \text{Sec}[c+d x]^5\,\sqrt{a+a\,\text{Sin}[c+d x]}\,dx$$

Optimal (type 3, 149 leaves, 7 steps):

$$\frac{35\sqrt{a}\,\text{ArcTanh}\left[\frac{\sqrt{a+a\,\text{Sin}[c+d x]}}{\sqrt{2}\,\sqrt{a}}\right]}{64\sqrt{2}\,d}-\frac{35\,a^2}{96\,d\,(a+a\,\text{Sin}[c+d x])^{3/2}}-$$
$$\frac{35\,a}{64\,d\sqrt{a+a\,\text{Sin}[c+d x]}}+\frac{7\,a\,\text{Sec}[c+d x]^2}{16\,d\sqrt{a+a\,\text{Sin}[c+d x]}}+\frac{\text{Sec}[c+d x]^4\sqrt{a+a\,\text{Sin}[c+d x]}}{4\,d}$$

Result (type 3, 179 leaves):

$$\left(\sqrt{a\,(1+\text{Sin}[c+d x])}\right.$$
$$\left((-420+420\,i)\,(-1)^{1/4}\,\text{ArcTanh}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{3/4}\,\text{Sec}\left[\frac{d x}{4}\right]\left(\text{Cos}\left[\frac{1}{4}(2 c+d x)\right]+\text{Sin}\left[\frac{1}{4}(2 c+d x)\right]\right)\right]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3+\right.$$
$$\left.\left.\frac{-102-70\,\text{Cos}[2(c+d x)]+329\,\text{Sin}[c+d x]+105\,\text{Sin}[3(c+d x)]}{\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^4}\right)\right)\Big/\left(768\,d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^4\right)$$

Problem 113: Result unnecessarily involves imaginary or complex numbers.

$$\int \text{Sec}[c+d x]^6\,\sqrt{a+a\,\text{Sin}[c+d x]}\,dx$$

Optimal (type 3, 197 leaves, 7 steps):

$$-\frac{63\sqrt{a}\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\text{Cos}[c+d x]}{\sqrt{2}\,\sqrt{a+a\,\text{Sin}[c+d x]}}\right]}{128\sqrt{2}\,d}-\frac{63\,a^2\,\text{Cos}[c+d x]}{128\,d\,(a+a\,\text{Sin}[c+d x])^{3/2}}-\frac{21\,a^2\,\text{Sec}[c+d x]}{80\,d\,(a+a\,\text{Sin}[c+d x])^{3/2}}+$$

$$\frac{21\,a\,\text{Sec}[c+d x]}{32\,d\,\sqrt{a+a\,\text{Sin}[c+d x]}}+\frac{3\,a\,\text{Sec}[c+d x]^3}{10\,d\,\sqrt{a+a\,\text{Sin}[c+d x]}}+\frac{\text{Sec}[c+d x]^5\,\sqrt{a+a\,\text{Sin}[c+d x]}}{5\,d}$$

Result (type 3, 191 leaves) :

$$\left(\sqrt{a\,(1+\text{Sin}[c+d x])}\right.$$

$$\left((-2520-2520\,\mathrm{i})\,(-1)^{3/4}\,\text{ArcTanh}\left[\left(\frac{1}{2}+\frac{\mathrm{i}}{2}\right)(-1)^{3/4}\,\text{Sec}\left[\frac{d x}{4}\right]\left(\text{Cos}\left[\frac{1}{4}\,(2 c+d x)\right]-\text{Sin}\left[\frac{1}{4}\,(2 c+d x)\right]\right)\right]\left(\text{Cos}\left[\frac{1}{2}\,(c+d x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d x)\right]\right)^4+\right.$$

$$\left.\left.\frac{649+1092\,\text{Cos}[2\,(c+d x)]+315\,\text{Cos}[4\,(c+d x)]+1572\,\text{Sin}[c+d x]+420\,\text{Sin}[3\,(c+d x)]}{\left(\text{Cos}\left[\frac{1}{2}\,(c+d x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d x)\right]\right)^5}\right)\right)\Big/$$

$$\left(5120\,d\left(\text{Cos}\left[\frac{1}{2}\,(c+d x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d x)\right]\right)^5\right)$$

- **Problem 114: Result more than twice size of optimal antiderivative.**

$$\int \text{Cos}[c+d x]^7\,(a+a\,\text{Sin}[c+d x])^{3/2}\,dx$$

Optimal (type 3, 97 leaves, 3 steps) :

$$\frac{16\,(a+a\,\text{Sin}[c+d x])^{11/2}}{11\,a^4\,d}-\frac{24\,(a+a\,\text{Sin}[c+d x])^{13/2}}{13\,a^5\,d}+\frac{4\,(a+a\,\text{Sin}[c+d x])^{15/2}}{5\,a^6\,d}-\frac{2\,(a+a\,\text{Sin}[c+d x])^{17/2}}{17\,a^7\,d}$$

Result (type 3, 865 leaves) :

$$\frac{35\,\text{Cos}\left[\frac{1}{2}(c+d x)\right](a(1+\text{Sin}[c+d x]))^{3/2}}{64\,d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3}-\frac{7\,\text{Cos}\left[\frac{3}{2}(c+d x)\right](a(1+\text{Sin}[c+d x]))^{3/2}}{32\,d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3}+$$

$$\frac{7\,\text{Cos}\left[\frac{5}{2}(c+d x)\right](a(1+\text{Sin}[c+d x]))^{3/2}}{160\,d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3}-\frac{\text{Cos}\left[\frac{7}{2}(c+d x)\right](a(1+\text{Sin}[c+d x]))^{3/2}}{16\,d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3}-\frac{5\,\text{Cos}\left[\frac{11}{2}(c+d x)\right](a(1+\text{Sin}[c+d x]))^{3/2}}{352\,d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3}-$$

$$\frac{\text{Cos}\left[\frac{13}{2}(c+d x)\right](a(1+\text{Sin}[c+d x]))^{3/2}}{416\,d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3}-\frac{\text{Cos}\left[\frac{15}{2}(c+d x)\right](a(1+\text{Sin}[c+d x]))^{3/2}}{640\,d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3}-$$

$$\frac{\text{Cos}\left[\frac{17}{2}(c+d x)\right](a(1+\text{Sin}[c+d x]))^{3/2}}{2176\,d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3}+\frac{35\,\text{Sin}\left[\frac{1}{2}(c+d x)\right](a(1+\text{Sin}[c+d x]))^{3/2}}{64\,d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3}+\frac{7\,(a(1+\text{Sin}[c+d x]))^{3/2}\,\text{Sin}\left[\frac{3}{2}(c+d x)\right]}{32\,d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3}+$$

$$\frac{7\,(a(1+\text{Sin}[c+d x]))^{3/2}\,\text{Sin}\left[\frac{5}{2}(c+d x)\right]}{160\,d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3}+\frac{(a(1+\text{Sin}[c+d x]))^{3/2}\,\text{Sin}\left[\frac{7}{2}(c+d x)\right]}{16\,d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3}+\frac{5\,(a(1+\text{Sin}[c+d x]))^{3/2}\,\text{Sin}\left[\frac{11}{2}(c+d x)\right]}{352\,d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3}-$$

$$\frac{(a(1+\text{Sin}[c+d x]))^{3/2}\,\text{Sin}\left[\frac{13}{2}(c+d x)\right]}{416\,d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3}+\frac{(a(1+\text{Sin}[c+d x]))^{3/2}\,\text{Sin}\left[\frac{15}{2}(c+d x)\right]}{640\,d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3}-\frac{(a(1+\text{Sin}[c+d x]))^{3/2}\,\text{Sin}\left[\frac{17}{2}(c+d x)\right]}{2176\,d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3}$$

- **Problem 115: Result more than twice size of optimal antiderivative.**

$$\int \text{Cos}[c+d x]^6\,(a+a\,\text{Sin}[c+d x])^{3/2}\,dx$$

Optimal (type 3, 159 leaves, 5 steps):

$$-\frac{4096\,a^5\,\text{Cos}[c+d x]^7}{45045\,d\,(a+a\,\text{Sin}[c+d x])^{7/2}}-\frac{1024\,a^4\,\text{Cos}[c+d x]^7}{6435\,d\,(a+a\,\text{Sin}[c+d x])^{5/2}}-\frac{128\,a^3\,\text{Cos}[c+d x]^7}{715\,d\,(a+a\,\text{Sin}[c+d x])^{3/2}}-\frac{32\,a^2\,\text{Cos}[c+d x]^7}{195\,d\,\sqrt{a+a\,\text{Sin}[c+d x]}}-\frac{2\,a\,\text{Cos}[c+d x]^7\,\sqrt{a+a\,\text{Sin}[c+d x]}}{15\,d}$$

Result (type 3, 865 leaves):

$$-\frac{45\,\text{Cos}\left[\frac{1}{2}(c+d\,x)\right](a(1+\text{Sin}[c+d\,x]))^{3/2}}{64\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^3}+\frac{25\,\text{Cos}\left[\frac{3}{2}(c+d\,x)\right](a(1+\text{Sin}[c+d\,x]))^{3/2}}{192\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^3}-$$

$$\frac{39\,\text{Cos}\left[\frac{5}{2}(c+d\,x)\right](a(1+\text{Sin}[c+d\,x]))^{3/2}}{320\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^3}+\frac{3\,\text{Cos}\left[\frac{7}{2}(c+d\,x)\right](a(1+\text{Sin}[c+d\,x]))^{3/2}}{448\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^3}-$$

$$\frac{17\,\text{Cos}\left[\frac{9}{2}(c+d\,x)\right](a(1+\text{Sin}[c+d\,x]))^{3/2}}{576\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^3}-\frac{3\,\text{Cos}\left[\frac{11}{2}(c+d\,x)\right](a(1+\text{Sin}[c+d\,x]))^{3/2}}{704\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^3}-\frac{3\,\text{Cos}\left[\frac{13}{2}(c+d\,x)\right](a(1+\text{Sin}[c+d\,x]))^{3/2}}{832\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^3}-$$

$$\frac{\text{Cos}\left[\frac{15}{2}(c+d\,x)\right](a(1+\text{Sin}[c+d\,x]))^{3/2}}{960\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^3}+\frac{45\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right](a(1+\text{Sin}[c+d\,x]))^{3/2}}{64\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^3}+\frac{25\,(a(1+\text{Sin}[c+d\,x]))^{3/2}\,\text{Sin}\left[\frac{3}{2}(c+d\,x)\right]}{192\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^3}+$$

$$\frac{39\,(a(1+\text{Sin}[c+d\,x]))^{3/2}\,\text{Sin}\left[\frac{5}{2}(c+d\,x)\right]}{320\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^3}+\frac{3\,(a(1+\text{Sin}[c+d\,x]))^{3/2}\,\text{Sin}\left[\frac{7}{2}(c+d\,x)\right]}{448\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^3}+\frac{17\,(a(1+\text{Sin}[c+d\,x]))^{3/2}\,\text{Sin}\left[\frac{9}{2}(c+d\,x)\right]}{576\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^3}-$$

$$\frac{3\,(a(1+\text{Sin}[c+d\,x]))^{3/2}\,\text{Sin}\left[\frac{11}{2}(c+d\,x)\right]}{704\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^3}+\frac{3\,(a(1+\text{Sin}[c+d\,x]))^{3/2}\,\text{Sin}\left[\frac{13}{2}(c+d\,x)\right]}{832\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^3}-\frac{(a(1+\text{Sin}[c+d\,x]))^{3/2}\,\text{Sin}\left[\frac{15}{2}(c+d\,x)\right]}{960\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^3}$$

- **Problem 121: Result unnecessarily involves imaginary or complex numbers.**

$$\int \text{Sec}[c+d\,x]\,(a+a\,\text{Sin}[c+d\,x])^{3/2}\,dx$$

Optimal (type 3, 62 leaves, 4 steps):

$$\frac{2\sqrt{2}\,a^{3/2}\,\text{ArcTanh}\left[\frac{\sqrt{a+a\,\text{Sin}[c+d\,x]}}{\sqrt{2}\,\sqrt{a}}\right]}{d}-\frac{2\,a\sqrt{a+a\,\text{Sin}[c+d\,x]}}{d}$$

Result (type 3, 98 leaves):

$$-\left(2\left((2+2\,i)\,(-1)^{1/4}\,\text{ArcTan}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{1/4}\left(1+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]\right)\right]+\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)(a(1+\text{Sin}[c+d\,x]))^{3/2}\right)\Big/\left(d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^3\right)$$

- **Problem 122: Result more than twice size of optimal antiderivative.**

$$\int \text{Sec}[c+d\,x]^2\,(a+a\,\text{Sin}[c+d\,x])^{3/2}\,dx$$

Optimal (type 3, 26 leaves, 1 step):

$$\frac{2\,a\,\text{Sec}[c+d\,x]\sqrt{a+a\,\text{Sin}[c+d\,x]}}{d}$$

Result (type 3, 67 leaves) :

$$\frac{2\,(a\,(1+\text{Sin}[c+d\,x]))^{3/2}}{d\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^3}$$

- **Problem 123: Result unnecessarily involves imaginary or complex numbers.**

$$\int \text{Sec}[c+d\,x]^3\,(a+a\,\text{Sin}[c+d\,x])^{3/2}\,dx$$

Optimal (type 3, 73 leaves, 4 steps) :

$$\frac{a^{3/2}\,\text{ArcTanh}\left[\frac{\sqrt{a+a\,\text{Sin}[c+d\,x]}}{\sqrt{2}\,\sqrt{a}}\right]}{2\,\sqrt{2}\,d}+\frac{\text{Sec}[c+d\,x]^2\,(a+a\,\text{Sin}[c+d\,x])^{3/2}}{2\,d}$$

Result (type 3, 134 leaves) :

$$\left(a\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]+(1+i)\,(-1)^{1/4}\,\text{ArcTan}\left[\left(\frac{1}{2}+\frac{i}{2}\right)\,(-1)^{1/4}\,\left(1+\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]\right)\right]\,(-1+\text{Sin}[c+d\,x])\right)\right.$$
$$\left.\sqrt{a\,(1+\text{Sin}[c+d\,x])}\right)\Big/\left(2\,d\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\right)$$

- **Problem 124: Result unnecessarily involves imaginary or complex numbers.**

$$\int \text{Sec}[c+d\,x]^4\,(a+a\,\text{Sin}[c+d\,x])^{3/2}\,dx$$

Optimal (type 3, 107 leaves, 4 steps) :

$$-\frac{a^{3/2}\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\text{Cos}[c+d\,x]}{\sqrt{2}\,\sqrt{a+a\,\text{Sin}[c+d\,x]}}\right]}{2\,\sqrt{2}\,d}+\frac{a\,\text{Sec}[c+d\,x]\,\sqrt{a+a\,\text{Sin}[c+d\,x]}}{2\,d}+\frac{\text{Sec}[c+d\,x]^3\,(a+a\,\text{Sin}[c+d\,x])^{3/2}}{3\,d}$$

Result (type 3, 130 leaves) :

$$\frac{1}{d}\left(\frac{1}{12}+\frac{i}{12}\right)\,a\,\text{Sec}[c+d\,x]^3\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2\,\sqrt{a\,(1+\text{Sin}[c+d\,x])}$$
$$\left(6\,(-1)^{3/4}\,\text{ArcTanh}\left[\left(\frac{1}{2}+\frac{i}{2}\right)\,(-1)^{3/4}\,\left(-1+\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]\right)\right]\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^3-(1-i)\,(-5+3\,\text{Sin}[c+d\,x])\right)$$

- **Problem 125: Result unnecessarily involves imaginary or complex numbers.**

$$\int \text{Sec}[c+d\,x]^5\,(a+a\,\text{Sin}[c+d\,x])^{3/2}\,dx$$

Optimal (type 3, 127 leaves, 6 steps) :

$$\frac{15\,a^{3/2}\,\text{ArcTanh}\left[\frac{\sqrt{a+a\,\text{Sin}[c+d\,x]}}{\sqrt{2}\,\sqrt{a}}\right]}{32\,\sqrt{2}\,d}-\frac{15\,a^2}{32\,d\,\sqrt{a+a\,\text{Sin}[c+d\,x]}}+\frac{5\,a\,\text{Sec}[c+d\,x]^2\,\sqrt{a+a\,\text{Sin}[c+d\,x]}}{16\,d}+\frac{\text{Sec}[c+d\,x]^4\,(a+a\,\text{Sin}[c+d\,x])^{3/2}}{4\,d}$$

Result (type 3, 161 leaves):

$$\frac{1}{d}\left(\frac{1}{128}+\frac{i}{128}\right) a \operatorname{Sec}[c+d x]^4 \left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2 \sqrt{a(1+\operatorname{Sin}[c+d x])} \left(-60(-1)^{1/4} \operatorname{ArcTan}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{1/4}\left(1+\operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]\right)\right] \left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]-\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^4 \left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)+(1-i)(-9+15 \operatorname{Cos}[2(c+d x)]+40 \operatorname{Sin}[c+d x])\right)$$

Problem 126: Result unnecessarily involves imaginary or complex numbers.

$$\int \operatorname{Sec}[c+d x]^6 (a+a \operatorname{Sin}[c+d x])^{3/2} \, dx$$

Optimal (type 3, 169 leaves, 6 steps):

$$-\frac{7 a^{3/2} \operatorname{ArcTanh}\left[\frac{\sqrt{a} \operatorname{Cos}[c+d x]}{\sqrt{2} \sqrt{a+a \operatorname{Sin}[c+d x]}}\right]}{16 \sqrt{2} d}-\frac{7 a^3 \operatorname{Cos}[c+d x]}{16 d (a+a \operatorname{Sin}[c+d x])^{3/2}}+\frac{7 a^2 \operatorname{Sec}[c+d x]}{12 d \sqrt{a+a \operatorname{Sin}[c+d x]}}+\frac{7 a \operatorname{Sec}[c+d x]^3 \sqrt{a+a \operatorname{Sin}[c+d x]}}{30 d}+\frac{\operatorname{Sec}[c+d x]^5 (a+a \operatorname{Sin}[c+d x])^{3/2}}{5 d}$$

Result (type 3, 288 leaves):

$$\frac{1}{240 d \left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^5} \left(30 \operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]-15\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)+(105+105 i)(-1)^{3/4} \operatorname{ArcTanh}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{3/4}\left(-1+\operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]\right)\right] \left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2+\frac{24\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2}{\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]-\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^5}+\frac{40\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2}{\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]-\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3}+\frac{90\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2}{\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]-\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]}\right)(a(1+\operatorname{Sin}[c+d x]))^{3/2}$$

Problem 127: Result more than twice size of optimal antiderivative.

$$\int \operatorname{Cos}[c+d x]^5 (a+a \operatorname{Sin}[c+d x])^{5/2} \, dx$$

Optimal (type 3, 73 leaves, 3 steps):

$$\frac{8 (a+a \operatorname{Sin}[c+d x])^{11/2}}{11 a^3 d}-\frac{8 (a+a \operatorname{Sin}[c+d x])^{13/2}}{13 a^4 d}+\frac{2 (a+a \operatorname{Sin}[c+d x])^{15/2}}{15 a^5 d}$$

Result (type 3, 865 leaves) :

$$\frac{45\,\text{Cos}\left[\frac{1}{2}(c+d\,x)\right](a\,(1+\text{Sin}[c+d\,x]))^{5/2}}{64\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^5}-\frac{65\,\text{Cos}\left[\frac{3}{2}(c+d\,x)\right](a\,(1+\text{Sin}[c+d\,x]))^{5/2}}{192\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^5}-$$

$$\frac{\text{Cos}\left[\frac{5}{2}(c+d\,x)\right](a\,(1+\text{Sin}[c+d\,x]))^{5/2}}{320\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^5}-\frac{5\,\text{Cos}\left[\frac{7}{2}(c+d\,x)\right](a\,(1+\text{Sin}[c+d\,x]))^{5/2}}{64\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^5}-\frac{5\,\text{Cos}\left[\frac{9}{2}(c+d\,x)\right](a\,(1+\text{Sin}[c+d\,x]))^{5/2}}{192\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^5}-$$

$$\frac{5\,\text{Cos}\left[\frac{11}{2}(c+d\,x)\right](a\,(1+\text{Sin}[c+d\,x]))^{5/2}}{704\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^5}-\frac{5\,\text{Cos}\left[\frac{13}{2}(c+d\,x)\right](a\,(1+\text{Sin}[c+d\,x]))^{5/2}}{832\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^5}+\frac{\text{Cos}\left[\frac{15}{2}(c+d\,x)\right](a\,(1+\text{Sin}[c+d\,x]))^{5/2}}{960\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^5}+$$

$$\frac{45\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right](a\,(1+\text{Sin}[c+d\,x]))^{5/2}}{64\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^5}+\frac{65\,(a\,(1+\text{Sin}[c+d\,x]))^{5/2}\,\text{Sin}\left[\frac{3}{2}(c+d\,x)\right]}{192\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^5}-$$

$$\frac{(a\,(1+\text{Sin}[c+d\,x]))^{5/2}\,\text{Sin}\left[\frac{5}{2}(c+d\,x)\right]}{320\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^5}+\frac{5\,(a\,(1+\text{Sin}[c+d\,x]))^{5/2}\,\text{Sin}\left[\frac{7}{2}(c+d\,x)\right]}{64\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^5}-\frac{5\,(a\,(1+\text{Sin}[c+d\,x]))^{5/2}\,\text{Sin}\left[\frac{9}{2}(c+d\,x)\right]}{192\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^5}+$$

$$\frac{5\,(a\,(1+\text{Sin}[c+d\,x]))^{5/2}\,\text{Sin}\left[\frac{11}{2}(c+d\,x)\right]}{704\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^5}-\frac{5\,(a\,(1+\text{Sin}[c+d\,x]))^{5/2}\,\text{Sin}\left[\frac{13}{2}(c+d\,x)\right]}{832\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^5}-\frac{(a\,(1+\text{Sin}[c+d\,x]))^{5/2}\,\text{Sin}\left[\frac{15}{2}(c+d\,x)\right]}{960\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^5}$$

- **Problem 128: Result more than twice size of optimal antiderivative.**

$$\int \text{Cos}[c+d\,x]^4\,(a+a\,\text{Sin}[c+d\,x])^{5/2}\,dx$$

Optimal (type 3, 159 leaves, 5 steps) :

$$-\frac{4096\,a^5\,\text{Cos}[c+d\,x]^5}{15\,015\,d\,(a+a\,\text{Sin}[c+d\,x])^{5/2}}-\frac{1024\,a^4\,\text{Cos}[c+d\,x]^5}{3003\,d\,(a+a\,\text{Sin}[c+d\,x])^{3/2}}-$$

$$\frac{128\,a^3\,\text{Cos}[c+d\,x]^5}{429\,d\,\sqrt{a+a\,\text{Sin}[c+d\,x]}}-\frac{32\,a^2\,\text{Cos}[c+d\,x]^5\,\sqrt{a+a\,\text{Sin}[c+d\,x]}}{143\,d}-\frac{2\,a\,\text{Cos}[c+d\,x]^5\,(a+a\,\text{Sin}[c+d\,x])^{3/2}}{13\,d}$$

Result (type 3, 757 leaves) :

$$-\frac{9\,\text{Cos}\left[\frac{1}{2}(c+d\,x)\right](a\,(1+\text{Sin}[c+d\,x]))^{5/2}}{8\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^5}+\frac{3\,\text{Cos}\left[\frac{3}{2}(c+d\,x)\right](a\,(1+\text{Sin}[c+d\,x]))^{5/2}}{32\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^5}-$$

$$\frac{29\,\text{Cos}\left[\frac{5}{2}(c+d\,x)\right](a\,(1+\text{Sin}[c+d\,x]))^{5/2}}{160\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^5}-\frac{5\,\text{Cos}\left[\frac{7}{2}(c+d\,x)\right](a\,(1+\text{Sin}[c+d\,x]))^{5/2}}{112\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^5}-\frac{\text{Cos}\left[\frac{9}{2}(c+d\,x)\right](a\,(1+\text{Sin}[c+d\,x]))^{5/2}}{48\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^5}-$$

$$\frac{5\,\text{Cos}\left[\frac{11}{2}(c+d\,x)\right](a\,(1+\text{Sin}[c+d\,x]))^{5/2}}{352\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^5}+\frac{\text{Cos}\left[\frac{13}{2}(c+d\,x)\right](a\,(1+\text{Sin}[c+d\,x]))^{5/2}}{416\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^5}+\frac{9\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right](a\,(1+\text{Sin}[c+d\,x]))^{5/2}}{8\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^5}+$$

$$\frac{3\,(a\,(1+\text{Sin}[c+d\,x]))^{5/2}\,\text{Sin}\left[\frac{3}{2}(c+d\,x)\right]}{32\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^5}+\frac{29\,(a\,(1+\text{Sin}[c+d\,x]))^{5/2}\,\text{Sin}\left[\frac{5}{2}(c+d\,x)\right]}{160\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^5}-\frac{5\,(a\,(1+\text{Sin}[c+d\,x]))^{5/2}\,\text{Sin}\left[\frac{7}{2}(c+d\,x)\right]}{112\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^5}+$$

$$\frac{(a\,(1+\text{Sin}[c+d\,x]))^{5/2}\,\text{Sin}\left[\frac{9}{2}(c+d\,x)\right]}{48\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^5}-\frac{5\,(a\,(1+\text{Sin}[c+d\,x]))^{5/2}\,\text{Sin}\left[\frac{11}{2}(c+d\,x)\right]}{352\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^5}-\frac{(a\,(1+\text{Sin}[c+d\,x]))^{5/2}\,\text{Sin}\left[\frac{13}{2}(c+d\,x)\right]}{416\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^5}$$

Problem 132: Result unnecessarily involves imaginary or complex numbers.

$$\int \text{Sec}[c+d\,x]\,(a+a\,\text{Sin}[c+d\,x])^{5/2}\,dx$$

Optimal (type 3, 86 leaves, 5 steps):

$$\frac{4\sqrt{2}\,a^{5/2}\,\text{ArcTanh}\left[\frac{\sqrt{a+a\,\text{Sin}[c+d\,x]}}{\sqrt{2}\,\sqrt{a}}\right]}{d}-\frac{4\,a^2\sqrt{a+a\,\text{Sin}[c+d\,x]}}{d}-\frac{2\,a\,(a+a\,\text{Sin}[c+d\,x])^{3/2}}{3\,d}$$

Result (type 3, 126 leaves):

$$-\left((a\,(1+\text{Sin}[c+d\,x]))^{5/2}\left((24+24\,i)\,(-1)^{1/4}\,\text{ArcTan}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{1/4}\left(1+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]\right)\right]+15\,\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\right.\right.$$
$$\left.\left.\text{Cos}\left[\frac{3}{2}(c+d\,x)\right]+15\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{3}{2}(c+d\,x)\right]\right)\right)\Big/\left(3\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^5\right)$$

Problem 134: Result unnecessarily involves imaginary or complex numbers.

$$\int \text{Sec}[c+d\,x]^3\,(a+a\,\text{Sin}[c+d\,x])^{5/2}\,dx$$

Optimal (type 3, 69 leaves, 4 steps):

$$-\frac{a^{5/2}\,\text{ArcTanh}\left[\frac{\sqrt{a+a\,\text{Sin}[c+d\,x]}}{\sqrt{2}\,\sqrt{a}}\right]}{\sqrt{2}\,d}+\frac{a\,\text{Sec}[c+d\,x]^2\,(a+a\,\text{Sin}[c+d\,x])^{3/2}}{d}$$

Result (type 3, 138 leaves):

$$-\left(a^2\left(-\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]-\mathrm{Sin}\left[\frac{1}{2}(c+d x)\right]+(1+i)(-1)^{1/4}\,\mathrm{ArcTan}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{1/4}\left(1+\mathrm{Tan}\left[\frac{1}{4}(c+d x)\right]\right)\right](-1+\mathrm{Sin}[c+d x])\right.\right.$$
$$\left.\left.\sqrt{a(1+\mathrm{Sin}[c+d x])}\right)\Big/\left(d\left(\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]-\mathrm{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2\left(\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d x)\right]\right)\right)\right)$$

- **Problem 135: Result more than twice size of optimal antiderivative.**

$$\int \mathrm{Sec}[c+d x]^4\,(a+a\,\mathrm{Sin}[c+d x])^{5/2}\,dx$$

Optimal (type 3, 30 leaves, 1 step):

$$\frac{2\,a\,\mathrm{Sec}[c+d x]^3\,(a+a\,\mathrm{Sin}[c+d x])^{3/2}}{3\,d}$$

Result (type 3, 69 leaves):

$$\frac{2\,(a\,(1+\mathrm{Sin}[c+d x]))^{5/2}}{3\,d\left(\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]-\mathrm{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3\left(\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^5}$$

- **Problem 136: Result unnecessarily involves imaginary or complex numbers.**

$$\int \mathrm{Sec}[c+d x]^5\,(a+a\,\mathrm{Sin}[c+d x])^{5/2}\,dx$$

Optimal (type 3, 103 leaves, 5 steps):

$$\frac{3\,a^{5/2}\,\mathrm{ArcTanh}\left[\frac{\sqrt{a+a\,\mathrm{Sin}[c+d x]}}{\sqrt{2}\,\sqrt{a}}\right]}{16\,\sqrt{2}\,d}+\frac{3\,a\,\mathrm{Sec}[c+d x]^2\,(a+a\,\mathrm{Sin}[c+d x])^{3/2}}{16\,d}+\frac{\mathrm{Sec}[c+d x]^4\,(a+a\,\mathrm{Sin}[c+d x])^{5/2}}{4\,d}$$

Result (type 3, 174 leaves):

$$\left(a^2\sqrt{a(1+\mathrm{Sin}[c+d x])}\left(11\,\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]+3\,\mathrm{Cos}\left[\frac{3}{2}(c+d x)\right]+11\,\mathrm{Sin}\left[\frac{1}{2}(c+d x)\right]+\right.\right.$$
$$\left.\left.(3+3 i)(-1)^{1/4}\,\mathrm{ArcTan}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{1/4}\left(1+\mathrm{Tan}\left[\frac{1}{4}(c+d x)\right]\right)\right](-3+\mathrm{Cos}[2(c+d x)]+4\,\mathrm{Sin}[c+d x])-3\,\mathrm{Sin}\left[\frac{3}{2}(c+d x)\right]\right)\right)\Big/$$
$$\left(32\,d\left(\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]-\mathrm{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^4\left(\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d x)\right]\right)\right)$$

- **Problem 137: Result unnecessarily involves imaginary or complex numbers.**

$$\int \mathrm{Sec}[c+d x]^6\,(a+a\,\mathrm{Sin}[c+d x])^{5/2}\,dx$$

Optimal (type 3, 139 leaves, 5 steps):

$$-\frac{a^{5/2}\,\mathrm{ArcTanh}\left[\frac{\sqrt{a}\,\mathrm{Cos}[c+d x]}{\sqrt{2}\,\sqrt{a+a\,\mathrm{Sin}[c+d x]}}\right]}{4\,\sqrt{2}\,d}+\frac{a^2\,\mathrm{Sec}[c+d x]\,\sqrt{a+a\,\mathrm{Sin}[c+d x]}}{4\,d}+\frac{a\,\mathrm{Sec}[c+d x]^3\,(a+a\,\mathrm{Sin}[c+d x])^{3/2}}{6\,d}+\frac{\mathrm{Sec}[c+d x]^5\,(a+a\,\mathrm{Sin}[c+d x])^{5/2}}{5\,d}$$

Result (type 3, 129 leaves) :

$$\left(\left((15+15\,i)\,(-1)^{3/4}\,\text{ArcTanh}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{3/4}\left(-1+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]\right)\right]+\frac{89-15\,\text{Cos}[2\,(c+d\,x)]-80\,\text{Sin}[c+d\,x]}{2\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^5}\right)(a\,(1+\text{Sin}[c+d\,x]))^{5/2}\right)\Big/\left(60\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^5\right)$$

Problem 138: Result unnecessarily involves imaginary or complex numbers.

$$\int \text{Sec}[c+d\,x]^7\,(a+a\,\text{Sin}[c+d\,x])^{5/2}\,dx$$

Optimal (type 3, 159 leaves, 7 steps) :

$$\frac{35\,a^{5/2}\,\text{ArcTanh}\left[\frac{\sqrt{a+a\,\text{Sin}[c+d\,x]}}{\sqrt{2}\,\sqrt{a}}\right]}{128\,\sqrt{2}\,d}-\frac{35\,a^3}{128\,d\,\sqrt{a+a\,\text{Sin}[c+d\,x]}}+\frac{35\,a^2\,\text{Sec}[c+d\,x]^2\,\sqrt{a+a\,\text{Sin}[c+d\,x]}}{192\,d}+\frac{7\,a\,\text{Sec}[c+d\,x]^4\,(a+a\,\text{Sin}[c+d\,x])^{3/2}}{48\,d}+\frac{\text{Sec}[c+d\,x]^6\,(a+a\,\text{Sin}[c+d\,x])^{5/2}}{6\,d}$$

Result (type 3, 176 leaves) :

$$\frac{1}{d}\left(\frac{1}{3072}+\frac{i}{3072}\right)a^2\,\text{Sec}[c+d\,x]^6\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4\sqrt{a\,(1+\text{Sin}[c+d\,x])}\left(-840\,(-1)^{1/4}\,\text{ArcTan}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{1/4}\left(1+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]\right)\right]\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^6\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)+(1-i)\,(490\,\text{Cos}[2\,(c+d\,x)]+791\,\text{Sin}[c+d\,x]-15\,(10+7\,\text{Sin}[3\,(c+d\,x)]))\right)$$

Problem 139: Result more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d\,x]^7\,(a+a\,\text{Sin}[c+d\,x])^{7/2}\,dx$$

Optimal (type 3, 97 leaves, 3 steps) :

$$\frac{16\,(a+a\,\text{Sin}[c+d\,x])^{15/2}}{15\,a^4\,d}-\frac{24\,(a+a\,\text{Sin}[c+d\,x])^{17/2}}{17\,a^5\,d}+\frac{12\,(a+a\,\text{Sin}[c+d\,x])^{19/2}}{19\,a^6\,d}-\frac{2\,(a+a\,\text{Sin}[c+d\,x])^{21/2}}{21\,a^7\,d}$$

Result (type 3, 1189 leaves) :

$$\frac{91\,\text{Cos}\left[\frac{1}{2}(c+d x)\right](a(1+\text{Sin}[c+d x]))^{7/2}}{128\,d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^7}-\frac{91\,\text{Cos}\left[\frac{3}{2}(c+d x)\right](a(1+\text{Sin}[c+d x]))^{7/2}}{256\,d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^7}-$$

$$\frac{7\,\text{Cos}\left[\frac{5}{2}(c+d x)\right](a(1+\text{Sin}[c+d x]))^{7/2}}{1280\,d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^7}-\frac{43\,\text{Cos}\left[\frac{7}{2}(c+d x)\right](a(1+\text{Sin}[c+d x]))^{7/2}}{448\,d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^7}-\frac{7\,\text{Cos}\left[\frac{9}{2}(c+d x)\right](a(1+\text{Sin}[c+d x]))^{7/2}}{192\,d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^7}-$$

$$\frac{7\,\text{Cos}\left[\frac{11}{2}(c+d x)\right](a(1+\text{Sin}[c+d x]))^{7/2}}{512\,d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^7}-\frac{7\,\text{Cos}\left[\frac{13}{2}(c+d x)\right](a(1+\text{Sin}[c+d x]))^{7/2}}{512\,d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^7}+\frac{7\,\text{Cos}\left[\frac{15}{2}(c+d x)\right](a(1+\text{Sin}[c+d x]))^{7/2}}{3840\,d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^7}-$$

$$\frac{7\,\text{Cos}\left[\frac{17}{2}(c+d x)\right](a(1+\text{Sin}[c+d x]))^{7/2}}{4352\,d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^7}+\frac{7\,\text{Cos}\left[\frac{19}{2}(c+d x)\right](a(1+\text{Sin}[c+d x]))^{7/2}}{9728\,d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^7}+$$

$$\frac{\text{Cos}\left[\frac{21}{2}(c+d x)\right](a(1+\text{Sin}[c+d x]))^{7/2}}{10752\,d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^7}+\frac{91\,\text{Sin}\left[\frac{1}{2}(c+d x)\right](a(1+\text{Sin}[c+d x]))^{7/2}}{128\,d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^7}+\frac{91\,(a(1+\text{Sin}[c+d x]))^{7/2}\,\text{Sin}\left[\frac{3}{2}(c+d x)\right]}{256\,d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^7}-$$

$$\frac{7\,(a(1+\text{Sin}[c+d x]))^{7/2}\,\text{Sin}\left[\frac{5}{2}(c+d x)\right]}{1280\,d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^7}+\frac{43\,(a(1+\text{Sin}[c+d x]))^{7/2}\,\text{Sin}\left[\frac{7}{2}(c+d x)\right]}{448\,d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^7}-\frac{7\,(a(1+\text{Sin}[c+d x]))^{7/2}\,\text{Sin}\left[\frac{9}{2}(c+d x)\right]}{192\,d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^7}+$$

$$\frac{7\,(a(1+\text{Sin}[c+d x]))^{7/2}\,\text{Sin}\left[\frac{11}{2}(c+d x)\right]}{512\,d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^7}-\frac{7\,(a(1+\text{Sin}[c+d x]))^{7/2}\,\text{Sin}\left[\frac{13}{2}(c+d x)\right]}{512\,d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^7}-\frac{7\,(a(1+\text{Sin}[c+d x]))^{7/2}\,\text{Sin}\left[\frac{15}{2}(c+d x)\right]}{3840\,d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^7}-$$

$$\frac{7\,(a(1+\text{Sin}[c+d x]))^{7/2}\,\text{Sin}\left[\frac{17}{2}(c+d x)\right]}{4352\,d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^7}-\frac{7\,(a(1+\text{Sin}[c+d x]))^{7/2}\,\text{Sin}\left[\frac{19}{2}(c+d x)\right]}{9728\,d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^7}+\frac{(a(1+\text{Sin}[c+d x]))^{7/2}\,\text{Sin}\left[\frac{21}{2}(c+d x)\right]}{10752\,d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^7}$$

- **Problem 140: Result more than twice size of optimal antiderivative.**

$$\int \text{Cos}[c+d x]^6\,(a+a\,\text{Sin}[c+d x])^{7/2}\,dx$$

Optimal (type 3, 223 leaves, 7 steps):

$$-\frac{131072\,a^7\,\text{Cos}[c+d x]^7}{969969\,d\,(a+a\,\text{Sin}[c+d x])^{7/2}}-\frac{32768\,a^6\,\text{Cos}[c+d x]^7}{138567\,d\,(a+a\,\text{Sin}[c+d x])^{5/2}}-\frac{12288\,a^5\,\text{Cos}[c+d x]^7}{46189\,d\,(a+a\,\text{Sin}[c+d x])^{3/2}}-\frac{1024\,a^4\,\text{Cos}[c+d x]^7}{4199\,d\,\sqrt{a+a\,\text{Sin}[c+d x]}}-$$

$$\frac{64\,a^3\,\text{Cos}[c+d x]^7\,\sqrt{a+a\,\text{Sin}[c+d x]}}{323\,d}-\frac{48\,a^2\,\text{Cos}[c+d x]^7\,(a+a\,\text{Sin}[c+d x])^{3/2}}{323\,d}-\frac{2\,a\,\text{Cos}[c+d x]^7\,(a+a\,\text{Sin}[c+d x])^{5/2}}{19\,d}$$

Result (type 3, 1081 leaves):

$$-\frac{143\,\text{Cos}\left[\frac{1}{2}(c+d\,x)\right](a\,(1+\text{Sin}[c+d\,x]))^{7/2}}{128\,d\,\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^7}+\frac{13\,\text{Cos}\left[\frac{3}{2}(c+d\,x)\right](a\,(1+\text{Sin}[c+d\,x]))^{7/2}}{128\,d\,\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^7}-$$

$$\frac{13\,\text{Cos}\left[\frac{5}{2}(c+d\,x)\right](a\,(1+\text{Sin}[c+d\,x]))^{7/2}}{64\,d\,\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^7}-\frac{23\,\text{Cos}\left[\frac{7}{2}(c+d\,x)\right](a\,(1+\text{Sin}[c+d\,x]))^{7/2}}{448\,d\,\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^7}-\frac{7\,\text{Cos}\left[\frac{9}{2}(c+d\,x)\right](a\,(1+\text{Sin}[c+d\,x]))^{7/2}}{192\,d\,\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^7}-$$

$$\frac{19\,\text{Cos}\left[\frac{11}{2}(c+d\,x)\right](a\,(1+\text{Sin}[c+d\,x]))^{7/2}}{704\,d\,\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^7}+\frac{7\,\text{Cos}\left[\frac{13}{2}(c+d\,x)\right](a\,(1+\text{Sin}[c+d\,x]))^{7/2}}{3328\,d\,\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^7}-\frac{\text{Cos}\left[\frac{15}{2}(c+d\,x)\right](a\,(1+\text{Sin}[c+d\,x]))^{7/2}}{256\,d\,\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^7}+$$

$$\frac{7\,\text{Cos}\left[\frac{17}{2}(c+d\,x)\right](a\,(1+\text{Sin}[c+d\,x]))^{7/2}}{4352\,d\,\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^7}+\frac{\text{Cos}\left[\frac{19}{2}(c+d\,x)\right](a\,(1+\text{Sin}[c+d\,x]))^{7/2}}{4864\,d\,\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^7}+\frac{143\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right](a\,(1+\text{Sin}[c+d\,x]))^{7/2}}{128\,d\,\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^7}+$$

$$\frac{13\,(a\,(1+\text{Sin}[c+d\,x]))^{7/2}\,\text{Sin}\left[\frac{3}{2}(c+d\,x)\right]}{128\,d\,\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^7}+\frac{13\,(a\,(1+\text{Sin}[c+d\,x]))^{7/2}\,\text{Sin}\left[\frac{5}{2}(c+d\,x)\right]}{64\,d\,\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^7}-\frac{23\,(a\,(1+\text{Sin}[c+d\,x]))^{7/2}\,\text{Sin}\left[\frac{7}{2}(c+d\,x)\right]}{448\,d\,\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^7}+$$

$$\frac{7\,(a\,(1+\text{Sin}[c+d\,x]))^{7/2}\,\text{Sin}\left[\frac{9}{2}(c+d\,x)\right]}{192\,d\,\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^7}-\frac{19\,(a\,(1+\text{Sin}[c+d\,x]))^{7/2}\,\text{Sin}\left[\frac{11}{2}(c+d\,x)\right]}{704\,d\,\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^7}-\frac{7\,(a\,(1+\text{Sin}[c+d\,x]))^{7/2}\,\text{Sin}\left[\frac{13}{2}(c+d\,x)\right]}{3328\,d\,\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^7}-$$

$$\frac{(a\,(1+\text{Sin}[c+d\,x]))^{7/2}\,\text{Sin}\left[\frac{15}{2}(c+d\,x)\right]}{256\,d\,\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^7}-\frac{7\,(a\,(1+\text{Sin}[c+d\,x]))^{7/2}\,\text{Sin}\left[\frac{17}{2}(c+d\,x)\right]}{4352\,d\,\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^7}+\frac{(a\,(1+\text{Sin}[c+d\,x]))^{7/2}\,\text{Sin}\left[\frac{19}{2}(c+d\,x)\right]}{4864\,d\,\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^7}$$

Problem 141: Result more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d\,x]^5\,(a+a\,\text{Sin}[c+d\,x])^{7/2}\,dx$$

Optimal (type 3, 73 leaves, 3 steps):

$$\frac{8\,(a+a\,\text{Sin}[c+d\,x])^{13/2}}{13\,a^3\,d}-\frac{8\,(a+a\,\text{Sin}[c+d\,x])^{15/2}}{15\,a^4\,d}+\frac{2\,(a+a\,\text{Sin}[c+d\,x])^{17/2}}{17\,a^5\,d}$$

Result (type 3, 865 leaves):

$$\frac{55\,\text{Cos}\left[\frac{1}{2}(c+d\,x)\right](a(1+\text{Sin}[c+d\,x]))^{7/2}}{64\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^7}-\frac{11\,\text{Cos}\left[\frac{3}{2}(c+d\,x)\right](a(1+\text{Sin}[c+d\,x]))^{7/2}}{24\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^7}-$$

$$\frac{\text{Cos}\left[\frac{5}{2}(c+d\,x)\right](a(1+\text{Sin}[c+d\,x]))^{7/2}}{20\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^7}-\frac{3\,\text{Cos}\left[\frac{7}{2}(c+d\,x)\right](a(1+\text{Sin}[c+d\,x]))^{7/2}}{32\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^7}-\frac{5\,\text{Cos}\left[\frac{9}{2}(c+d\,x)\right](a(1+\text{Sin}[c+d\,x]))^{7/2}}{96\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^7}-$$

$$\frac{\text{Cos}\left[\frac{13}{2}(c+d\,x)\right](a(1+\text{Sin}[c+d\,x]))^{7/2}}{104\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^7}+\frac{7\,\text{Cos}\left[\frac{15}{2}(c+d\,x)\right](a(1+\text{Sin}[c+d\,x]))^{7/2}}{1920\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^7}+$$

$$\frac{\text{Cos}\left[\frac{17}{2}(c+d\,x)\right](a(1+\text{Sin}[c+d\,x]))^{7/2}}{2176\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^7}+\frac{55\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right](a(1+\text{Sin}[c+d\,x]))^{7/2}}{64\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^7}+\frac{11(a(1+\text{Sin}[c+d\,x]))^{7/2}\,\text{Sin}\left[\frac{3}{2}(c+d\,x)\right]}{24\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^7}-$$

$$\frac{(a(1+\text{Sin}[c+d\,x]))^{7/2}\,\text{Sin}\left[\frac{5}{2}(c+d\,x)\right]}{20\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^7}+\frac{3(a(1+\text{Sin}[c+d\,x]))^{7/2}\,\text{Sin}\left[\frac{7}{2}(c+d\,x)\right]}{32\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^7}-\frac{5(a(1+\text{Sin}[c+d\,x]))^{7/2}\,\text{Sin}\left[\frac{9}{2}(c+d\,x)\right]}{96\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^7}-$$

$$\frac{(a(1+\text{Sin}[c+d\,x]))^{7/2}\,\text{Sin}\left[\frac{13}{2}(c+d\,x)\right]}{104\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^7}-\frac{7(a(1+\text{Sin}[c+d\,x]))^{7/2}\,\text{Sin}\left[\frac{15}{2}(c+d\,x)\right]}{1920\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^7}+\frac{(a(1+\text{Sin}[c+d\,x]))^{7/2}\,\text{Sin}\left[\frac{17}{2}(c+d\,x)\right]}{2176\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^7}$$

- **Problem 142: Result more than twice size of optimal antiderivative.**

$$\int \text{Cos}[c+d\,x]^4\,(a+a\,\text{Sin}[c+d\,x])^{7/2}\,dx$$

Optimal (type 3, 191 leaves, 6 steps) :

$$-\frac{16384\,a^6\,\text{Cos}[c+d\,x]^5}{45045\,d\,(a+a\,\text{Sin}[c+d\,x])^{5/2}}-\frac{4096\,a^5\,\text{Cos}[c+d\,x]^5}{9009\,d\,(a+a\,\text{Sin}[c+d\,x])^{3/2}}-\frac{512\,a^4\,\text{Cos}[c+d\,x]^5}{1287\,d\,\sqrt{a+a\,\text{Sin}[c+d\,x]}}-$$

$$\frac{128\,a^3\,\text{Cos}[c+d\,x]^5\,\sqrt{a+a\,\text{Sin}[c+d\,x]}}{429\,d}-\frac{8\,a^2\,\text{Cos}[c+d\,x]^5\,(a+a\,\text{Sin}[c+d\,x])^{3/2}}{39\,d}-\frac{2\,a\,\text{Cos}[c+d\,x]^5\,(a+a\,\text{Sin}[c+d\,x])^{5/2}}{15\,d}$$

Result (type 3, 865 leaves) :

$$-\frac{99\,\text{Cos}\left[\frac{1}{2}(c+d x)\right](a(1+\text{Sin}[c+d x]))^{7/2}}{64\,d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^7}+\frac{11\,\text{Cos}\left[\frac{3}{2}(c+d x)\right](a(1+\text{Sin}[c+d x]))^{7/2}}{192\,d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^7}-$$

$$\frac{77\,\text{Cos}\left[\frac{5}{2}(c+d x)\right](a(1+\text{Sin}[c+d x]))^{7/2}}{320\,d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^7}-\frac{43\,\text{Cos}\left[\frac{7}{2}(c+d x)\right](a(1+\text{Sin}[c+d x]))^{7/2}}{448\,d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^7}-\frac{7\,\text{Cos}\left[\frac{9}{2}(c+d x)\right](a(1+\text{Sin}[c+d x]))^{7/2}}{576\,d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^7}-$$

$$\frac{17\,\text{Cos}\left[\frac{11}{2}(c+d x)\right](a(1+\text{Sin}[c+d x]))^{7/2}}{704\,d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^7}+\frac{7\,\text{Cos}\left[\frac{13}{2}(c+d x)\right](a(1+\text{Sin}[c+d x]))^{7/2}}{832\,d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^7}+$$

$$\frac{\text{Cos}\left[\frac{15}{2}(c+d x)\right](a(1+\text{Sin}[c+d x]))^{7/2}}{960\,d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^7}+\frac{99\,\text{Sin}\left[\frac{1}{2}(c+d x)\right](a(1+\text{Sin}[c+d x]))^{7/2}}{64\,d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^7}+\frac{11\,(a(1+\text{Sin}[c+d x]))^{7/2}\,\text{Sin}\left[\frac{3}{2}(c+d x)\right]}{192\,d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^7}+$$

$$\frac{77\,(a(1+\text{Sin}[c+d x]))^{7/2}\,\text{Sin}\left[\frac{5}{2}(c+d x)\right]}{320\,d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^7}-\frac{43\,(a(1+\text{Sin}[c+d x]))^{7/2}\,\text{Sin}\left[\frac{7}{2}(c+d x)\right]}{448\,d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^7}+\frac{7\,(a(1+\text{Sin}[c+d x]))^{7/2}\,\text{Sin}\left[\frac{9}{2}(c+d x)\right]}{576\,d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^7}-$$

$$\frac{17\,(a(1+\text{Sin}[c+d x]))^{7/2}\,\text{Sin}\left[\frac{11}{2}(c+d x)\right]}{704\,d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^7}-\frac{7\,(a(1+\text{Sin}[c+d x]))^{7/2}\,\text{Sin}\left[\frac{13}{2}(c+d x)\right]}{832\,d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^7}+\frac{(a(1+\text{Sin}[c+d x]))^{7/2}\,\text{Sin}\left[\frac{15}{2}(c+d x)\right]}{960\,d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^7}$$

- **Problem 143: Result more than twice size of optimal antiderivative.**

$$\int \text{Cos}[c+d x]^3\,(a+a\,\text{Sin}[c+d x])^{7/2}\,dx$$

Optimal (type 3, 49 leaves, 3 steps):

$$\frac{4\,(a+a\,\text{Sin}[c+d x])^{11/2}}{11\,a^2\,d}-\frac{2\,(a+a\,\text{Sin}[c+d x])^{13/2}}{13\,a^3\,d}$$

Result (type 3, 757 leaves):

$$\frac{9\,\text{Cos}\left[\frac{1}{2}(c+d x)\right](a(1+\text{Sin}[c+d x]))^{7/2}}{8\,d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^7}-\frac{21\,\text{Cos}\left[\frac{3}{2}(c+d x)\right](a(1+\text{Sin}[c+d x]))^{7/2}}{32\,d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^7}-$$
$$\frac{5\,\text{Cos}\left[\frac{5}{2}(c+d x)\right](a(1+\text{Sin}[c+d x]))^{7/2}}{32\,d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^7}-\frac{\text{Cos}\left[\frac{7}{2}(c+d x)\right](a(1+\text{Sin}[c+d x]))^{7/2}}{16\,d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^7}-\frac{\text{Cos}\left[\frac{9}{2}(c+d x)\right](a(1+\text{Sin}[c+d x]))^{7/2}}{16\,d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^7}+$$
$$\frac{7\,\text{Cos}\left[\frac{11}{2}(c+d x)\right](a(1+\text{Sin}[c+d x]))^{7/2}}{352\,d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^7}+\frac{\text{Cos}\left[\frac{13}{2}(c+d x)\right](a(1+\text{Sin}[c+d x]))^{7/2}}{416\,d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^7}+\frac{9\,\text{Sin}\left[\frac{1}{2}(c+d x)\right](a(1+\text{Sin}[c+d x]))^{7/2}}{8\,d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^7}+$$
$$\frac{21(a(1+\text{Sin}[c+d x]))^{7/2}\,\text{Sin}\left[\frac{3}{2}(c+d x)\right]}{32\,d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^7}-\frac{5(a(1+\text{Sin}[c+d x]))^{7/2}\,\text{Sin}\left[\frac{5}{2}(c+d x)\right]}{32\,d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^7}+\frac{(a(1+\text{Sin}[c+d x]))^{7/2}\,\text{Sin}\left[\frac{7}{2}(c+d x)\right]}{16\,d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^7}-$$
$$\frac{(a(1+\text{Sin}[c+d x]))^{7/2}\,\text{Sin}\left[\frac{9}{2}(c+d x)\right]}{16\,d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^7}-\frac{7(a(1+\text{Sin}[c+d x]))^{7/2}\,\text{Sin}\left[\frac{11}{2}(c+d x)\right]}{352\,d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^7}+\frac{(a(1+\text{Sin}[c+d x]))^{7/2}\,\text{Sin}\left[\frac{13}{2}(c+d x)\right]}{416\,d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^7}$$

Problem 144: Result more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d x]^2\,(a+a\,\text{Sin}[c+d x])^{7/2}\,dx$$

Optimal (type 3, 159 leaves, 5 steps):

$$-\frac{4096\,a^5\,\text{Cos}[c+d x]^3}{3465\,d\,(a+a\,\text{Sin}[c+d x])^{3/2}}-\frac{1024\,a^4\,\text{Cos}[c+d x]^3}{1155\,d\sqrt{a+a\,\text{Sin}[c+d x]}}-\frac{128\,a^3\,\text{Cos}[c+d x]^3\sqrt{a+a\,\text{Sin}[c+d x]}}{231\,d}-$$
$$\frac{32\,a^2\,\text{Cos}[c+d x]^3\,(a+a\,\text{Sin}[c+d x])^{3/2}}{99\,d}-\frac{2\,a\,\text{Cos}[c+d x]^3\,(a+a\,\text{Sin}[c+d x])^{5/2}}{11\,d}$$

Result (type 3, 649 leaves):

$$-\frac{21\,\text{Cos}\left[\frac{1}{2}(c+d x)\right](a(1+\text{Sin}[c+d x]))^{7/2}}{8\,d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^7}-\frac{\text{Cos}\left[\frac{3}{2}(c+d x)\right](a(1+\text{Sin}[c+d x]))^{7/2}}{8\,d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^7}-\frac{21\,\text{Cos}\left[\frac{5}{2}(c+d x)\right](a(1+\text{Sin}[c+d x]))^{7/2}}{80\,d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^7}-$$
$$\frac{19\,\text{Cos}\left[\frac{7}{2}(c+d x)\right](a(1+\text{Sin}[c+d x]))^{7/2}}{112\,d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^7}+\frac{7\,\text{Cos}\left[\frac{9}{2}(c+d x)\right](a(1+\text{Sin}[c+d x]))^{7/2}}{144\,d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^7}+\frac{\text{Cos}\left[\frac{11}{2}(c+d x)\right](a(1+\text{Sin}[c+d x]))^{7/2}}{176\,d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^7}+$$
$$\frac{21\,\text{Sin}\left[\frac{1}{2}(c+d x)\right](a(1+\text{Sin}[c+d x]))^{7/2}}{8\,d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^7}-\frac{(a(1+\text{Sin}[c+d x]))^{7/2}\,\text{Sin}\left[\frac{3}{2}(c+d x)\right]}{8\,d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^7}+\frac{21(a(1+\text{Sin}[c+d x]))^{7/2}\,\text{Sin}\left[\frac{5}{2}(c+d x)\right]}{80\,d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^7}-$$
$$\frac{19(a(1+\text{Sin}[c+d x]))^{7/2}\,\text{Sin}\left[\frac{7}{2}(c+d x)\right]}{112\,d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^7}-\frac{7(a(1+\text{Sin}[c+d x]))^{7/2}\,\text{Sin}\left[\frac{9}{2}(c+d x)\right]}{144\,d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^7}+\frac{(a(1+\text{Sin}[c+d x]))^{7/2}\,\text{Sin}\left[\frac{11}{2}(c+d x)\right]}{176\,d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^7}$$

Problem 146: Result unnecessarily involves imaginary or complex numbers.

$$\int \text{Sec}[c+d x] (a+a \text{Sin}[c+d x])^{7/2} \, dx$$

Optimal (type 3, 110 leaves, 6 steps):

$$\frac{8 \sqrt{2} a^{7/2} \text{ArcTanh}\left[\frac{\sqrt{a+a \text{Sin}[c+d x]}}{\sqrt{2} \sqrt{a}}\right]}{d}-\frac{8 a^3 \sqrt{a+a \text{Sin}[c+d x]}}{d}-\frac{4 a^2 (a+a \text{Sin}[c+d x])^{3/2}}{3 d}-\frac{2 a (a+a \text{Sin}[c+d x])^{5/2}}{5 d}$$

Result (type 3, 165 leaves):

$$-\left(a^3 (1+\text{Sin}[c+d x])^3 \sqrt{a (1+\text{Sin}[c+d x])} \left((480+480 i) (-1)^{1/4} \text{ArcTan}\left[\left(\frac{1}{2}+\frac{i}{2}\right) (-1)^{1/4} \left(1+\text{Tan}\left[\frac{1}{4} (c+d x)\right]\right)\right]+330 \text{Cos}\left[\frac{1}{2} (c+d x)\right]-35 \text{Cos}\left[\frac{3}{2} (c+d x)\right]-3 \text{Cos}\left[\frac{5}{2} (c+d x)\right]+330 \text{Sin}\left[\frac{1}{2} (c+d x)\right]+35 \text{Sin}\left[\frac{3}{2} (c+d x)\right]-3 \text{Sin}\left[\frac{5}{2} (c+d x)\right]\right)\right) \Big/ \left(30 d \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^7\right)$$

Problem 148: Result unnecessarily involves imaginary or complex numbers.

$$\int \text{Sec}[c+d x]^3 (a+a \text{Sin}[c+d x])^{7/2} \, dx$$

Optimal (type 3, 91 leaves, 5 steps):

$$-\frac{3 \sqrt{2} a^{7/2} \text{ArcTanh}\left[\frac{\sqrt{a+a \text{Sin}[c+d x]}}{\sqrt{2} \sqrt{a}}\right]}{d}+\frac{3 a^3 \sqrt{a+a \text{Sin}[c+d x]}}{d}+\frac{a \text{Sec}[c+d x]^2 (a+a \text{Sin}[c+d x])^{5/2}}{d}$$

Result (type 3, 159 leaves):

$$\left(a^3 \sqrt{a (1+\text{Sin}[c+d x])} \left(3 \text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Cos}\left[\frac{3}{2} (c+d x)\right]+3 \text{Sin}\left[\frac{1}{2} (c+d x)\right]-(6+6 i) (-1)^{1/4} \text{ArcTan}\left[\left(\frac{1}{2}+\frac{i}{2}\right) (-1)^{1/4} \left(1+\text{Tan}\left[\frac{1}{4} (c+d x)\right]\right)\right] (-1+\text{Sin}[c+d x])-\text{Sin}\left[\frac{3}{2} (c+d x)\right]\right)\right) \Big/ \left(d \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]-\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^2 \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)\right)$$

Problem 150: Result unnecessarily involves imaginary or complex numbers.

$$\int \text{Sec}[c+d x]^5 (a+a \text{Sin}[c+d x])^{7/2} \, dx$$

Optimal (type 3, 106 leaves, 5 steps):

$$-\frac{a^{7/2} \text{ArcTanh}\left[\frac{\sqrt{a+a \text{Sin}[c+d x]}}{\sqrt{2} \sqrt{a}}\right]}{8 \sqrt{2} d}-\frac{a^2 \text{Sec}[c+d x]^2 (a+a \text{Sin}[c+d x])^{3/2}}{8 d}+\frac{a \text{Sec}[c+d x]^4 (a+a \text{Sin}[c+d x])^{5/2}}{2 d}$$

Result (type 3, 172 leaves):

$$-\left(a^3 \sqrt{a (1+\text{Sin}[c+d x])} \left(-7 \text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Cos}\left[\frac{3}{2} (c+d x)\right]-7 \text{Sin}\left[\frac{1}{2} (c+d x)\right]+(1+i) (-1)^{1/4} \text{ArcTan}\left[\left(\frac{1}{2}+\frac{i}{2}\right) (-1)^{1/4} \left(1+\text{Tan}\left[\frac{1}{4} (c+d x)\right]\right)\right] (-3+\text{Cos}[2 (c+d x)]+4 \text{Sin}[c+d x])-\text{Sin}\left[\frac{3}{2} (c+d x)\right]\right)\right)\Big/\left(16 d \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]-\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^4 \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)\right)$$

Problem 151: Result more than twice size of optimal antiderivative.

$$\int \text{Sec}[c+d x]^6 (a+a \text{Sin}[c+d x])^{7/2} \, dx$$

Optimal (type 3, 30 leaves, 1 step):

$$\frac{2 a \text{Sec}[c+d x]^5 (a+a \text{Sin}[c+d x])^{5/2}}{5 d}$$

Result (type 3, 69 leaves):

$$\frac{2 (a (1+\text{Sin}[c+d x]))^{7/2}}{5 d \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]-\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^5 \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^7}$$

Problem 152: Result unnecessarily involves imaginary or complex numbers.

$$\int \text{Sec}[c+d x]^7 (a+a \text{Sin}[c+d x])^{7/2} \, dx$$

Optimal (type 3, 135 leaves, 6 steps):

$$\frac{5 a^{7/2} \text{ArcTanh}\left[\frac{\sqrt{a+a \text{Sin}[c+d x]}}{\sqrt{2} \sqrt{a}}\right]}{64 \sqrt{2} d}+\frac{5 a^2 \text{Sec}[c+d x]^2 (a+a \text{Sin}[c+d x])^{3/2}}{64 d}+\frac{5 a \text{Sec}[c+d x]^4 (a+a \text{Sin}[c+d x])^{5/2}}{48 d}+\frac{\text{Sec}[c+d x]^6 (a+a \text{Sin}[c+d x])^{7/2}}{6 d}$$

Result (type 3, 205 leaves):

$$\left(a^3 \sqrt{a (1+\text{Sin}[c+d x])} \left(198 \text{Cos}\left[\frac{1}{2} (c+d x)\right]+85 \text{Cos}\left[\frac{3}{2} (c+d x)\right]-15 \text{Cos}\left[\frac{5}{2} (c+d x)\right]-(60+60 i) (-1)^{1/4} \text{ArcTan}\left[\left(\frac{1}{2}+\frac{i}{2}\right) (-1)^{1/4} \left(1+\text{Tan}\left[\frac{1}{4} (c+d x)\right]\right)\right] \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]-\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^6+198 \text{Sin}\left[\frac{1}{2} (c+d x)\right]-85 \text{Sin}\left[\frac{3}{2} (c+d x)\right]-15 \text{Sin}\left[\frac{5}{2} (c+d x)\right]\right)\right)\Big/\left(768 d \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]-\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^6 \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)\right)$$

Problem 153: Result unnecessarily involves imaginary or complex numbers.

$$\int \text{Sec}[c+d x]^8 (a+a \text{Sin}[c+d x])^{7/2} \, dx$$

Optimal (type 3, 171 leaves, 6 steps):

$$-\frac{a^{7/2} \text{ArcTanh}\left[\frac{\sqrt{a} \text{Cos}[c+d x]}{\sqrt{2} \sqrt{a+a \text{Sin}[c+d x]}}\right]}{8 \sqrt{2} d}+\frac{a^3 \text{Sec}[c+d x] \sqrt{a+a \text{Sin}[c+d x]}}{8 d}+\frac{a^2 \text{Sec}[c+d x]^3 (a+a \text{Sin}[c+d x])^{3/2}}{12 d}+\frac{a \text{Sec}[c+d x]^5 (a+a \text{Sin}[c+d x])^{5/2}}{10 d}+\frac{\text{Sec}[c+d x]^7 (a+a \text{Sin}[c+d x])^{7/2}}{7 d}$$

Result (type 3, 139 leaves):

$$\left((a (1+\text{Sin}[c+d x]))^{7/2} \left((105+105 i) (-1)^{3/4} \text{ArcTanh}\left[\left(\frac{1}{2}+\frac{i}{2}\right) (-1)^{3/4} \left(-1+\text{Tan}\left[\frac{1}{4} (c+d x)\right]\right)\right]+\frac{2286-770 \text{Cos}[2 (c+d x)]-2471 \text{Sin}[c+d x]+105 \text{Sin}[3 (c+d x)]}{4 \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]-\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^7}\right)\right) \Big/ \left(840 d \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^7\right)$$

Problem 154: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \text{Sec}[c+d x]^9 (a+a \text{Sin}[c+d x])^{7/2} \, dx$$

Optimal (type 3, 191 leaves, 8 steps):

$$\frac{315 a^{7/2} \text{ArcTanh}\left[\frac{\sqrt{a+a \text{Sin}[c+d x]}}{\sqrt{2} \sqrt{a}}\right]}{2048 \sqrt{2} d}-\frac{315 a^4}{2048 d \sqrt{a+a \text{Sin}[c+d x]}}+\frac{105 a^3 \text{Sec}[c+d x]^2 \sqrt{a+a \text{Sin}[c+d x]}}{1024 d}+\frac{21 a^2 \text{Sec}[c+d x]^4 (a+a \text{Sin}[c+d x])^{3/2}}{256 d}+\frac{3 a \text{Sec}[c+d x]^6 (a+a \text{Sin}[c+d x])^{5/2}}{32 d}+\frac{\text{Sec}[c+d x]^8 (a+a \text{Sin}[c+d x])^{7/2}}{8 d}$$

Result (type 3, 735 leaves):

$$-\frac{(a\,(1+\text{Sin}[c+d\,x]))^{7/2}}{16\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^8}-$$

$$\left(\left(\frac{315}{2048}+\frac{315\,i}{2048}\right)(-1)^{1/4}\,\text{ArcTan}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{1/4}\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]\left(\text{Cos}\left[\frac{1}{4}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{4}(c+d\,x)\right]\right)\right](a\,(1+\text{Sin}[c+d\,x]))^{7/2}\right)\Big/$$

$$\left(d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^7\right)+\frac{(a\,(1+\text{Sin}[c+d\,x]))^{7/2}}{16\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^7\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^7}+$$

$$\frac{5\,(a\,(1+\text{Sin}[c+d\,x]))^{7/2}}{64\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^5\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^7}+$$

$$\frac{41\,(a\,(1+\text{Sin}[c+d\,x]))^{7/2}}{512\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^3\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^7}+$$

$$\frac{187\,(a\,(1+\text{Sin}[c+d\,x]))^{7/2}}{2048\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^7}+$$

$$\frac{\text{Sin}\left[\frac{1}{2}(c+d\,x)\right](a\,(1+\text{Sin}[c+d\,x]))^{7/2}}{8\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^8\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^7}+$$

$$\frac{5\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right](a\,(1+\text{Sin}[c+d\,x]))^{7/2}}{32\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^6\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^7}+$$

$$\frac{41\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right](a\,(1+\text{Sin}[c+d\,x]))^{7/2}}{256\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^7}+$$

$$\frac{187\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right](a\,(1+\text{Sin}[c+d\,x]))^{7/2}}{1024\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^7}$$

- **Problem 155: Result unnecessarily involves imaginary or complex numbers.**

$$\int \text{Sec}[c+d\,x]^{10}\,(a+a\,\text{Sin}[c+d\,x])^{7/2}\,dx$$

Optimal (type 3, 233 leaves, 8 steps) :

$$-\frac{11\,a^{7/2}\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\text{Cos}[c+d\,x]}{\sqrt{2}\,\sqrt{a+a\,\text{Sin}[c+d\,x]}}\right]}{64\,\sqrt{2}\,d}-\frac{11\,a^5\,\text{Cos}[c+d\,x]}{64\,d\,(a+a\,\text{Sin}[c+d\,x])^{3/2}}+\frac{11\,a^4\,\text{Sec}[c+d\,x]}{48\,d\,\sqrt{a+a\,\text{Sin}[c+d\,x]}}+\frac{11\,a^3\,\text{Sec}[c+d\,x]^3\,\sqrt{a+a\,\text{Sin}[c+d\,x]}}{120\,d}+$$

$$\frac{11\,a^2\,\text{Sec}[c+d\,x]^5\,(a+a\,\text{Sin}[c+d\,x])^{3/2}}{140\,d}+\frac{11\,a\,\text{Sec}[c+d\,x]^7\,(a+a\,\text{Sin}[c+d\,x])^{5/2}}{126\,d}+\frac{\text{Sec}[c+d\,x]^9\,(a+a\,\text{Sin}[c+d\,x])^{7/2}}{9\,d}$$

Result (type 3, 388 leaves):

$$\frac{1}{20160\, d \left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^9}\left(630\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]-315\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)+\right.$$
$$(3465+3465\, i)\,(-1)^{3/4}\,\text{ArcTanh}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{3/4}\left(-1+\text{Tan}\left[\frac{1}{4}(c+d x)\right]\right)\right]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2+$$
$$\frac{1120\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2}{\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^9}+\frac{1440\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2}{\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^7}+\frac{1512\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2}{\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^5}+$$
$$\left.\frac{1680\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2}{\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3}+\frac{3150\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2}{\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]}\right)(a\,(1+\text{Sin}[c+d x]))^{7/2}$$

- **Problem 161: Result more than twice size of optimal antiderivative.**

$$\int \frac{\text{Cos}[c+d x]^2}{\sqrt{a+a\,\text{Sin}[c+d x]}}\,dx$$

Optimal (type 3, 30 leaves, 1 step):

$$-\frac{2\, a\, \text{Cos}[c+d x]^3}{3\, d\, (a+a\,\text{Sin}[c+d x])^{3/2}}$$

Result (type 3, 67 leaves):

$$-\frac{2\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)}{3\, d\sqrt{a\,(1+\text{Sin}[c+d x])}}$$

- **Problem 163: Result unnecessarily involves imaginary or complex numbers.**

$$\int \frac{\text{Sec}[c+d x]}{\sqrt{a+a\,\text{Sin}[c+d x]}}\,dx$$

Optimal (type 3, 60 leaves, 4 steps):

$$\frac{\text{ArcTanh}\left[\frac{\sqrt{a+a\,\text{Sin}[c+d x]}}{\sqrt{2}\,\sqrt{a}}\right]}{\sqrt{2}\,\sqrt{a}\, d}-\frac{1}{d\sqrt{a+a\,\text{Sin}[c+d x]}}$$

Result (type 3, 76 leaves):

$$\frac{-1-(1+i)\,(-1)^{1/4}\,\text{ArcTan}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{1/4}\left(1+\text{Tan}\left[\frac{1}{4}(c+d x)\right]\right)\right]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)}{d\sqrt{a\,(1+\text{Sin}[c+d x])}}$$

Problem 164: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{\text{Sec}[c+d x]^2}{\sqrt{a+a \text{Sin}[c+d x]}} \, dx$$

Optimal (type 3, 102 leaves, 4 steps):

$$-\frac{3 \text{ArcTanh}\left[\frac{\sqrt{a} \text{Cos}[c+d x]}{\sqrt{2} \sqrt{a+a \text{Sin}[c+d x]}}\right]}{4 \sqrt{2} \sqrt{a} d}-\frac{3 a \text{Cos}[c+d x]}{4 d (a+a \text{Sin}[c+d x])^{3/2}}+\frac{\text{Sec}[c+d x]}{d \sqrt{a+a \text{Sin}[c+d x]}}$$

Result (type 3, 118 leaves):

$$-\frac{1}{4 d \sqrt{a (1+\text{Sin}[c+d x])}} \text{Sec}[c+d x] \left(-1-(3+3 i) (-1)^{3/4} \text{ArcTanh}\left[\left(\frac{1}{2}+\frac{i}{2}\right) (-1)^{3/4} \left(-1+\text{Tan}\left[\frac{1}{4} (c+d x)\right]\right)\right] \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]-\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right) \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^2-3 \text{Sin}[c+d x]\right)$$

Problem 165: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{\text{Sec}[c+d x]^3}{\sqrt{a+a \text{Sin}[c+d x]}} \, dx$$

Optimal (type 3, 116 leaves, 6 steps):

$$\frac{5 \text{ArcTanh}\left[\frac{\sqrt{a+a \text{Sin}[c+d x]}}{\sqrt{2} \sqrt{a}}\right]}{8 \sqrt{2} \sqrt{a} d}-\frac{5 a}{12 d (a+a \text{Sin}[c+d x])^{3/2}}-\frac{5}{8 d \sqrt{a+a \text{Sin}[c+d x]}}+\frac{\text{Sec}[c+d x]^2}{2 d \sqrt{a+a \text{Sin}[c+d x]}}$$

Result (type 3, 108 leaves):

$$\left((-30-30 i) (-1)^{1/4} \text{ArcTan}\left[\left(\frac{1}{2}+\frac{i}{2}\right) (-1)^{1/4} \left(1+\text{Tan}\left[\frac{1}{4} (c+d x)\right]\right)\right] \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)-\text{Sec}[c+d x]^2 (11+15 \text{Cos}[2 (c+d x)]-20 \text{Sin}[c+d x])\right) \Big/ \left(48 d \sqrt{a (1+\text{Sin}[c+d x])}\right)$$

Problem 166: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{\text{Sec}[c+d x]^4}{\sqrt{a+a \text{Sin}[c+d x]}} \, dx$$

Optimal (type 3, 162 leaves, 6 steps):

$$-\frac{35\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\text{Cos}[c+d\,x]}{\sqrt{2}\,\sqrt{a+a\,\text{Sin}[c+d\,x]}}\right]}{64\,\sqrt{2}\,\sqrt{a}\,d}-\frac{35\,a\,\text{Cos}[c+d\,x]}{64\,d\,(a+a\,\text{Sin}[c+d\,x])^{3/2}}-\frac{7\,a\,\text{Sec}[c+d\,x]}{24\,d\,(a+a\,\text{Sin}[c+d\,x])^{3/2}}+\frac{35\,\text{Sec}[c+d\,x]}{48\,d\,\sqrt{a+a\,\text{Sin}[c+d\,x]}}+\frac{\text{Sec}[c+d\,x]^3}{3\,d\,\sqrt{a+a\,\text{Sin}[c+d\,x]}}$$

Result (type 3, 117 leaves):

$$\left((420+420\,i)\,(-1)^{3/4}\,\text{ArcTanh}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{3/4}\left(-1+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]\right)\right]\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)+\text{Sec}[c+d\,x]^3\,(102+70\,\text{Cos}[2\,(c+d\,x)]+329\,\text{Sin}[c+d\,x]+105\,\text{Sin}[3\,(c+d\,x)])\right)\Big/\left(768\,d\,\sqrt{a\,(1+\text{Sin}[c+d\,x])}\right)$$

Problem 167: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{\text{Sec}[c+d\,x]^5}{\sqrt{a+a\,\text{Sin}[c+d\,x]}}\,dx$$

Optimal (type 3, 175 leaves, 8 steps):

$$\frac{63\,\text{ArcTanh}\left[\frac{\sqrt{a+a\,\text{Sin}[c+d\,x]}}{\sqrt{2}\,\sqrt{a}}\right]}{128\,\sqrt{2}\,\sqrt{a}\,d}-\frac{21\,a}{64\,d\,(a+a\,\text{Sin}[c+d\,x])^{3/2}}-\frac{9\,a\,\text{Sec}[c+d\,x]^2}{40\,d\,(a+a\,\text{Sin}[c+d\,x])^{3/2}}-\frac{63}{128\,d\,\sqrt{a+a\,\text{Sin}[c+d\,x]}}+\frac{63\,\text{Sec}[c+d\,x]^2}{160\,d\,\sqrt{a+a\,\text{Sin}[c+d\,x]}}+\frac{\text{Sec}[c+d\,x]^4}{4\,d\,\sqrt{a+a\,\text{Sin}[c+d\,x]}}$$

Result (type 3, 130 leaves):

$$\left((-315-315\,i)\,(-1)^{1/4}\,\text{ArcTan}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{1/4}\left(1+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]\right)\right]\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)-\frac{1}{8}\,\text{Sec}[c+d\,x]^4\,(649+1092\,\text{Cos}[2\,(c+d\,x)]+315\,\text{Cos}[4\,(c+d\,x)]-1572\,\text{Sin}[c+d\,x]-420\,\text{Sin}[3\,(c+d\,x)])\right)\Big/\left(640\,d\,\sqrt{a\,(1+\text{Sin}[c+d\,x])}\right)$$

Problem 168: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{\text{Sec}[c+d\,x]^6}{\sqrt{a+a\,\text{Sin}[c+d\,x]}}\,dx$$

Optimal (type 3, 221 leaves, 8 steps):

$$-\frac{231\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\text{Cos}[c+d\,x]}{\sqrt{2}\,\sqrt{a+a\,\text{Sin}[c+d\,x]}}\right]}{512\,\sqrt{2}\,\sqrt{a}\,d}-\frac{231\,a\,\text{Cos}[c+d\,x]}{512\,d\,(a+a\,\text{Sin}[c+d\,x])^{3/2}}-\frac{77\,a\,\text{Sec}[c+d\,x]}{320\,d\,(a+a\,\text{Sin}[c+d\,x])^{3/2}}-\frac{11\,a\,\text{Sec}[c+d\,x]^3}{60\,d\,(a+a\,\text{Sin}[c+d\,x])^{3/2}}+\frac{77\,\text{Sec}[c+d\,x]}{128\,d\,\sqrt{a+a\,\text{Sin}[c+d\,x]}}+\frac{11\,\text{Sec}[c+d\,x]^3}{40\,d\,\sqrt{a+a\,\text{Sin}[c+d\,x]}}+\frac{\text{Sec}[c+d\,x]^5}{5\,d\,\sqrt{a+a\,\text{Sin}[c+d\,x]}}$$

Result (type 3, 140 leaves):

$$\left((3465+3465\,i)\,(-1)^{3/4}\,\text{ArcTanh}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{3/4}\left(-1+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]\right)\right]\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)+\frac{1}{16}\,\text{Sec}[c+d\,x]^5\,(11\,090+11\,352\,\text{Cos}[2\,(c+d\,x)]+2310\,\text{Cos}[4\,(c+d\,x)]+36\,850\,\text{Sin}[c+d\,x]+17\,787\,\text{Sin}[3\,(c+d\,x)]+3465\,\text{Sin}[5\,(c+d\,x)])\right)\Big/\left(7680\,d\,\sqrt{a\,(1+\text{Sin}[c+d\,x])}\right)$$

Problem 172: Result more than twice size of optimal antiderivative.

$$\int\frac{\text{Cos}[c+d\,x]^4}{(a+a\,\text{Sin}[c+d\,x])^{3/2}}\,dx$$

Optimal (type 3, 30 leaves, 1 step):

$$-\frac{2\,a\,\text{Cos}[c+d\,x]^5}{5\,d\,(a+a\,\text{Sin}[c+d\,x])^{5/2}}$$

Result (type 3, 69 leaves):

$$-\frac{2\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^5\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^3}{5\,d\,(a\,(1+\text{Sin}[c+d\,x]))^{3/2}}$$

Problem 174: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{\text{Cos}[c+d\,x]^2}{(a+a\,\text{Sin}[c+d\,x])^{3/2}}\,dx$$

Optimal (type 3, 76 leaves, 3 steps):

$$-\frac{2\,\sqrt{2}\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\text{Cos}[c+d\,x]}{\sqrt{2}\,\sqrt{a+a\,\text{Sin}[c+d\,x]}}\right]}{a^{3/2}\,d}+\frac{2\,\text{Cos}[c+d\,x]}{a\,d\,\sqrt{a+a\,\text{Sin}[c+d\,x]}}$$

Result (type 3, 100 leaves):

$$\frac{1}{d\,(a\,(1+\text{Sin}[c+d\,x]))^{3/2}}\,2\left((2+2\,i)\,(-1)^{3/4}\,\text{ArcTanh}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{3/4}\left(-1+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]\right)\right]+\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^3$$

Problem 176: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{\text{Sec}[c+d\,x]}{(a+a\,\text{Sin}[c+d\,x])^{3/2}}\,dx$$

Optimal (type 3, 89 leaves, 5 steps):

$$\frac{\text{ArcTanh}\left[\frac{\sqrt{a+a\,\text{Sin}[c+d\,x]}}{\sqrt{2}\,\sqrt{a}}\right]}{2\,\sqrt{2}\,a^{3/2}\,d}-\frac{1}{3\,d\,(a+a\,\text{Sin}[c+d\,x])^{3/2}}-\frac{1}{2\,a\,d\,\sqrt{a+a\,\text{Sin}[c+d\,x]}}$$

Result (type 3, 106 leaves) :

$$\left(\left(-2-3\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2-(3+3\,i)\,(-1)^{1/4}\,\text{ArcTan}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{1/4}\left(1+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]\right)\right]\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^3\right)\Big/\left(6\,d\,(a\,(1+\text{Sin}[c+d\,x]))^{3/2}\right)$$

- **Problem 177: Result unnecessarily involves imaginary or complex numbers.**

$$\int\frac{\text{Sec}[c+d\,x]^2}{(a+a\,\text{Sin}[c+d\,x])^{3/2}}\,dx$$

Optimal (type 3, 134 leaves, 5 steps) :

$$-\frac{15\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\text{Cos}[c+d\,x]}{\sqrt{2}\,\sqrt{a+a\,\text{Sin}[c+d\,x]}}\right]}{32\,\sqrt{2}\,a^{3/2}\,d}-\frac{15\,\text{Cos}[c+d\,x]}{32\,d\,(a+a\,\text{Sin}[c+d\,x])^{3/2}}-\frac{\text{Sec}[c+d\,x]}{4\,d\,(a+a\,\text{Sin}[c+d\,x])^{3/2}}+\frac{5\,\text{Sec}[c+d\,x]}{8\,a\,d\,\sqrt{a+a\,\text{Sin}[c+d\,x]}}$$

Result (type 3, 224 leaves) :

$$\left(\left(-4+\frac{8\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]}{\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]}+14\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)-7\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2+(15+15\,i)\,(-1)^{3/4}\,\text{ArcTanh}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{3/4}\left(-1+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]\right)\right]\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^3+\frac{8\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^3}{\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]}\right)\Big/\left(32\,d\,(a\,(1+\text{Sin}[c+d\,x]))^{3/2}\right)$$

- **Problem 178: Result unnecessarily involves imaginary or complex numbers.**

$$\int\frac{\text{Sec}[c+d\,x]^3}{(a+a\,\text{Sin}[c+d\,x])^{3/2}}\,dx$$

Optimal (type 3, 150 leaves, 7 steps) :

$$\frac{7\,\text{ArcTanh}\left[\frac{\sqrt{a+a\,\text{Sin}[c+d\,x]}}{\sqrt{2}\,\sqrt{a}}\right]}{16\,\sqrt{2}\,a^{3/2}\,d}-\frac{7}{24\,d\,(a+a\,\text{Sin}[c+d\,x])^{3/2}}-\frac{\text{Sec}[c+d\,x]^2}{5\,d\,(a+a\,\text{Sin}[c+d\,x])^{3/2}}-\frac{7}{16\,a\,d\,\sqrt{a+a\,\text{Sin}[c+d\,x]}}+\frac{7\,\text{Sec}[c+d\,x]^2}{20\,a\,d\,\sqrt{a+a\,\text{Sin}[c+d\,x]}}$$

Result (type 3, 241 leaves) :

$$\left(-40-\frac{24}{\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2}-90\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2-\right.$$

$$(105+105\,i)\,(-1)^{1/4}\,\text{ArcTan}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{1/4}\left(1+\text{Tan}\left[\frac{1}{4}(c+d x)\right]\right)\right]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3+$$

$$\left.\frac{15\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3}{\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]}+\frac{30\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3}{\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2}\right)\Big/\left(240\,d\,(a\,(1+\text{Sin}[c+d x]))^{3/2}\right)$$

- **Problem 179: Result unnecessarily involves imaginary or complex numbers.**

$$\int\frac{\text{Sec}[c+d x]^4}{(a+a\,\text{Sin}[c+d x])^{3/2}}\,dx$$

Optimal (type 3, 195 leaves, 7 steps):

$$-\frac{105\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\text{Cos}[c+d x]}{\sqrt{2}\,\sqrt{a+a\,\text{Sin}[c+d x]}}\right]}{256\,\sqrt{2}\,a^{3/2}\,d}-\frac{105\,\text{Cos}[c+d x]}{256\,d\,(a+a\,\text{Sin}[c+d x])^{3/2}}-$$

$$\frac{7\,\text{Sec}[c+d x]}{32\,d\,(a+a\,\text{Sin}[c+d x])^{3/2}}-\frac{\text{Sec}[c+d x]^3}{6\,d\,(a+a\,\text{Sin}[c+d x])^{3/2}}+\frac{35\,\text{Sec}[c+d x]}{64\,a\,d\,\sqrt{a+a\,\text{Sin}[c+d x]}}+\frac{\text{Sec}[c+d x]^3}{4\,a\,d\,\sqrt{a+a\,\text{Sin}[c+d x]}}$$

Result (type 3, 334 leaves):

$$\frac{1}{768\,d\,(a\,(1+\text{Sin}[c+d x]))^{3/2}}$$

$$\left(-68+\frac{64\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]}{\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3}-\frac{32}{\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2}+\frac{136\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]}{\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]}+\right.$$

$$246\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)-123\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2+$$

$$(315+315\,i)\,(-1)^{3/4}\,\text{ArcTanh}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{3/4}\left(-1+\text{Tan}\left[\frac{1}{4}(c+d x)\right]\right)\right]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3+$$

$$\left.\frac{32\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3}{\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3}+\frac{192\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3}{\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]}\right)$$

- **Problem 180: Result unnecessarily involves imaginary or complex numbers.**

$$\int\frac{\text{Sec}[c+d x]^5}{(a+a\,\text{Sin}[c+d x])^{3/2}}\,dx$$

Optimal (type 3, 211 leaves, 9 steps):

$$\frac{99\,\text{ArcTanh}\left[\frac{\sqrt{a+a\,\text{Sin}[c+d\,x]}}{\sqrt{2}\,\sqrt{a}}\right]}{256\,\sqrt{2}\,a^{3/2}\,d}-\frac{33}{128\,d\,(a+a\,\text{Sin}[c+d\,x])^{3/2}}-\frac{99\,\text{Sec}[c+d\,x]^2}{560\,d\,(a+a\,\text{Sin}[c+d\,x])^{3/2}}-$$
$$\frac{\text{Sec}[c+d\,x]^4}{7\,d\,(a+a\,\text{Sin}[c+d\,x])^{3/2}}-\frac{99}{256\,a\,d\,\sqrt{a+a\,\text{Sin}[c+d\,x]}}+\frac{99\,\text{Sec}[c+d\,x]^2}{320\,a\,d\,\sqrt{a+a\,\text{Sin}[c+d\,x]}}+\frac{11\,\text{Sec}[c+d\,x]^4}{56\,a\,d\,\sqrt{a+a\,\text{Sin}[c+d\,x]}}$$

Result (type 3, 376 leaves):

$$\frac{1}{8960\,d\,(a\,(1+\text{Sin}[c+d\,x]))^{3/2}}$$
$$\Bigg(-1120-\frac{320}{\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4}-\frac{672}{\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2}-2800\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2-$$
$$(3465+3465\,i)\,(-1)^{1/4}\,\text{ArcTan}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{1/4}\left(1+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]\right)\right]\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^3+$$
$$\frac{140\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^3}{\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^3}+\frac{665\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^3}{\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]}+$$
$$\frac{280\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^3}{\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4}+\frac{1330\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^3}{\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2}\Bigg)$$

- **Problem 181: Result unnecessarily involves imaginary or complex numbers.**

$$\int\frac{\text{Sec}[c+d\,x]^6}{(a+a\,\text{Sin}[c+d\,x])^{3/2}}\,dx$$

Optimal (type 3, 256 leaves, 9 steps):

$$-\frac{3003\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\text{Cos}[c+d\,x]}{\sqrt{2}\,\sqrt{a+a\,\text{Sin}[c+d\,x]}}\right]}{8192\,\sqrt{2}\,a^{3/2}\,d}-\frac{3003\,\text{Cos}[c+d\,x]}{8192\,d\,(a+a\,\text{Sin}[c+d\,x])^{3/2}}-\frac{1001\,\text{Sec}[c+d\,x]}{5120\,d\,(a+a\,\text{Sin}[c+d\,x])^{3/2}}-\frac{143\,\text{Sec}[c+d\,x]^3}{960\,d\,(a+a\,\text{Sin}[c+d\,x])^{3/2}}-$$
$$\frac{\text{Sec}[c+d\,x]^5}{8\,d\,(a+a\,\text{Sin}[c+d\,x])^{3/2}}+\frac{1001\,\text{Sec}[c+d\,x]}{2048\,a\,d\,\sqrt{a+a\,\text{Sin}[c+d\,x]}}+\frac{143\,\text{Sec}[c+d\,x]^3}{640\,a\,d\,\sqrt{a+a\,\text{Sin}[c+d\,x]}}+\frac{13\,\text{Sec}[c+d\,x]^5}{80\,a\,d\,\sqrt{a+a\,\text{Sin}[c+d\,x]}}$$

Result (type 3, 444 leaves):

$$\frac{1}{122880\, d\, (a\, (1+\mathrm{Sin}[c+d\,x]))^{3/2}}\left(-8860+\frac{3840\,\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]}{\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^5}-\frac{1920}{\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4}+\right.$$
$$\frac{9920\,\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]}{\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^3}-\frac{4960}{\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2}+\frac{17720\,\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]}{\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]}+$$
$$32490\,\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)-16245\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2+$$
$$(45045+45045\,i)\,(-1)^{3/4}\,\mathrm{ArcTanh}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{3/4}\left(-1+\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]\right)\right]\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^3+$$
$$\left.\frac{1536\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^3}{\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^5}+\frac{6400\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^3}{\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^3}+\frac{28800\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^3}{\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]}\right)$$

- **Problem 182: Result more than twice size of optimal antiderivative.**

$$\int\frac{\mathrm{Cos}[c+d\,x]^{10}}{(a+a\,\mathrm{Sin}[c+d\,x])^{5/2}}\,dx$$

Optimal (type 3, 95 leaves, 3 steps):

$$-\frac{64\,a^3\,\mathrm{Cos}[c+d\,x]^{11}}{2145\,d\,(a+a\,\mathrm{Sin}[c+d\,x])^{11/2}}-\frac{16\,a^2\,\mathrm{Cos}[c+d\,x]^{11}}{195\,d\,(a+a\,\mathrm{Sin}[c+d\,x])^{9/2}}-\frac{2\,a\,\mathrm{Cos}[c+d\,x]^{11}}{15\,d\,(a+a\,\mathrm{Sin}[c+d\,x])^{7/2}}$$

Result (type 3, 865 leaves):

$$-\frac{45\,\text{Cos}\left[\frac{1}{2}(c+d x)\right]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^5}{64\,d\,(a\,(1+\text{Sin}[c+d x]))^{5/2}}+\frac{65\,\text{Cos}\left[\frac{3}{2}(c+d x)\right]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^5}{192\,d\,(a\,(1+\text{Sin}[c+d x]))^{5/2}}+$$

$$\frac{\text{Cos}\left[\frac{5}{2}(c+d x)\right]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^5}{320\,d\,(a\,(1+\text{Sin}[c+d x]))^{5/2}}+\frac{5\,\text{Cos}\left[\frac{7}{2}(c+d x)\right]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^5}{64\,d\,(a\,(1+\text{Sin}[c+d x]))^{5/2}}+$$

$$\frac{5\,\text{Cos}\left[\frac{9}{2}(c+d x)\right]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^5}{192\,d\,(a\,(1+\text{Sin}[c+d x]))^{5/2}}+\frac{5\,\text{Cos}\left[\frac{11}{2}(c+d x)\right]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^5}{704\,d\,(a\,(1+\text{Sin}[c+d x]))^{5/2}}+$$

$$\frac{5\,\text{Cos}\left[\frac{13}{2}(c+d x)\right]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^5}{832\,d\,(a\,(1+\text{Sin}[c+d x]))^{5/2}}-\frac{\text{Cos}\left[\frac{15}{2}(c+d x)\right]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^5}{960\,d\,(a\,(1+\text{Sin}[c+d x]))^{5/2}}+$$

$$\frac{45\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^5}{64\,d\,(a\,(1+\text{Sin}[c+d x]))^{5/2}}+\frac{65\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^5\text{Sin}\left[\frac{3}{2}(c+d x)\right]}{192\,d\,(a\,(1+\text{Sin}[c+d x]))^{5/2}}-$$

$$\frac{\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^5\text{Sin}\left[\frac{5}{2}(c+d x)\right]}{320\,d\,(a\,(1+\text{Sin}[c+d x]))^{5/2}}+\frac{5\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^5\text{Sin}\left[\frac{7}{2}(c+d x)\right]}{64\,d\,(a\,(1+\text{Sin}[c+d x]))^{5/2}}-$$

$$\frac{5\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^5\text{Sin}\left[\frac{9}{2}(c+d x)\right]}{192\,d\,(a\,(1+\text{Sin}[c+d x]))^{5/2}}+\frac{5\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^5\text{Sin}\left[\frac{11}{2}(c+d x)\right]}{704\,d\,(a\,(1+\text{Sin}[c+d x]))^{5/2}}-$$

$$\frac{5\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^5\text{Sin}\left[\frac{13}{2}(c+d x)\right]}{832\,d\,(a\,(1+\text{Sin}[c+d x]))^{5/2}}-\frac{\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^5\text{Sin}\left[\frac{15}{2}(c+d x)\right]}{960\,d\,(a\,(1+\text{Sin}[c+d x]))^{5/2}}$$

- **Problem 183: Result more than twice size of optimal antiderivative.**

$$\int\frac{\text{Cos}[c+d x]^9}{(a+a\,\text{Sin}[c+d x])^{5/2}}\,dx$$

Optimal (type 3, 121 leaves, 3 steps):

$$\frac{32\,(a+a\,\text{Sin}[c+d x])^{5/2}}{5\,a^5\,d}-\frac{64\,(a+a\,\text{Sin}[c+d x])^{7/2}}{7\,a^6\,d}+\frac{16\,(a+a\,\text{Sin}[c+d x])^{9/2}}{3\,a^7\,d}-\frac{16\,(a+a\,\text{Sin}[c+d x])^{11/2}}{11\,a^8\,d}+\frac{2\,(a+a\,\text{Sin}[c+d x])^{13/2}}{13\,a^9\,d}$$

Result (type 3, 757 leaves):

$$\frac{9\,\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^5}{8\,d\,(a\,(1+\text{Sin}[c+d\,x]))^{5/2}}-\frac{3\,\text{Cos}\left[\frac{3}{2}(c+d\,x)\right]\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^5}{32\,d\,(a\,(1+\text{Sin}[c+d\,x]))^{5/2}}+$$

$$\frac{29\,\text{Cos}\left[\frac{5}{2}(c+d\,x)\right]\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^5}{160\,d\,(a\,(1+\text{Sin}[c+d\,x]))^{5/2}}+\frac{5\,\text{Cos}\left[\frac{7}{2}(c+d\,x)\right]\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^5}{112\,d\,(a\,(1+\text{Sin}[c+d\,x]))^{5/2}}+$$

$$\frac{\text{Cos}\left[\frac{9}{2}(c+d\,x)\right]\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^5}{48\,d\,(a\,(1+\text{Sin}[c+d\,x]))^{5/2}}+\frac{5\,\text{Cos}\left[\frac{11}{2}(c+d\,x)\right]\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^5}{352\,d\,(a\,(1+\text{Sin}[c+d\,x]))^{5/2}}-$$

$$\frac{\text{Cos}\left[\frac{13}{2}(c+d\,x)\right]\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^5}{416\,d\,(a\,(1+\text{Sin}[c+d\,x]))^{5/2}}+\frac{9\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^5}{8\,d\,(a\,(1+\text{Sin}[c+d\,x]))^{5/2}}+$$

$$\frac{3\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^5\text{Sin}\left[\frac{3}{2}(c+d\,x)\right]}{32\,d\,(a\,(1+\text{Sin}[c+d\,x]))^{5/2}}+\frac{29\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^5\text{Sin}\left[\frac{5}{2}(c+d\,x)\right]}{160\,d\,(a\,(1+\text{Sin}[c+d\,x]))^{5/2}}-$$

$$\frac{5\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^5\text{Sin}\left[\frac{7}{2}(c+d\,x)\right]}{112\,d\,(a\,(1+\text{Sin}[c+d\,x]))^{5/2}}+\frac{\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^5\text{Sin}\left[\frac{9}{2}(c+d\,x)\right]}{48\,d\,(a\,(1+\text{Sin}[c+d\,x]))^{5/2}}-$$

$$\frac{5\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^5\text{Sin}\left[\frac{11}{2}(c+d\,x)\right]}{352\,d\,(a\,(1+\text{Sin}[c+d\,x]))^{5/2}}-\frac{\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^5\text{Sin}\left[\frac{13}{2}(c+d\,x)\right]}{416\,d\,(a\,(1+\text{Sin}[c+d\,x]))^{5/2}}$$

- **Problem 186: Result more than twice size of optimal antiderivative.**

$$\int\frac{\text{Cos}[c+d\,x]^6}{(a+a\,\text{Sin}[c+d\,x])^{5/2}}\,dx$$

Optimal (type 3, 30 leaves, 1 step):

$$-\frac{2\,a\,\text{Cos}[c+d\,x]^7}{7\,d\,(a+a\,\text{Sin}[c+d\,x])^{7/2}}$$

Result (type 3, 69 leaves):

$$-\frac{2\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^7\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^5}{7\,d\,(a\,(1+\text{Sin}[c+d\,x]))^{5/2}}$$

- **Problem 188: Result unnecessarily involves imaginary or complex numbers.**

$$\int\frac{\text{Cos}[c+d\,x]^4}{(a+a\,\text{Sin}[c+d\,x])^{5/2}}\,dx$$

Optimal (type 3, 108 leaves, 4 steps):

$$-\frac{4\sqrt{2}\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\text{Cos}[c+d\,x]}{\sqrt{2}\,\sqrt{a+a\,\text{Sin}[c+d\,x]}}\right]}{a^{5/2}\,d}+\frac{2\,\text{Cos}[c+d\,x]^3}{3\,a\,d\,(a+a\,\text{Sin}[c+d\,x])^{3/2}}+\frac{4\,\text{Cos}[c+d\,x]}{a^2\,d\,\sqrt{a+a\,\text{Sin}[c+d\,x]}}$$

Result (type 3, 128 leaves) :

$$\left(\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^5\left((24+24 i)(-1)^{3/4}\,\text{ArcTanh}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{3/4}\left(-1+\text{Tan}\left[\frac{1}{4}(c+d x)\right]\right)\right]+15\,\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Cos}\left[\frac{3}{2}(c+d x)\right]-15\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{3}{2}(c+d x)\right]\right)\right)\Big/\left(3 d\,(a(1+\text{Sin}[c+d x]))^{5/2}\right)$$

Problem 190: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{\text{Cos}[c+d x]^2}{(a+a\,\text{Sin}[c+d x])^{5/2}}\,dx$$

Optimal (type 3, 75 leaves, 3 steps) :

$$\frac{\text{ArcTanh}\left[\frac{\sqrt{a}\,\text{Cos}[c+d x]}{\sqrt{2}\,\sqrt{a+a\,\text{Sin}[c+d x]}}\right]}{\sqrt{2}\,a^{5/2}\,d}-\frac{\text{Cos}[c+d x]}{a\,d\,(a+a\,\text{Sin}[c+d x])^{3/2}}$$

Result (type 3, 108 leaves) :

$$-\frac{1}{d\,(a(1+\text{Sin}[c+d x]))^{5/2}}\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]+(1+i)(-1)^{3/4}\,\text{ArcTanh}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{3/4}\left(-1+\text{Tan}\left[\frac{1}{4}(c+d x)\right]\right)\right](1+\text{Sin}[c+d x])\right)$$

Problem 192: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{\text{Sec}[c+d x]}{(a+a\,\text{Sin}[c+d x])^{5/2}}\,dx$$

Optimal (type 3, 113 leaves, 6 steps) :

$$\frac{\text{ArcTanh}\left[\frac{\sqrt{a+a\,\text{Sin}[c+d x]}}{\sqrt{2}\,\sqrt{a}}\right]}{4\sqrt{2}\,a^{5/2}\,d}-\frac{1}{5 d\,(a+a\,\text{Sin}[c+d x])^{5/2}}-\frac{1}{6 a d\,(a+a\,\text{Sin}[c+d x])^{3/2}}-\frac{1}{4 a^2 d\sqrt{a+a\,\text{Sin}[c+d x]}}$$

Result (type 3, 131 leaves) :

$$\left(-12-10\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2-15\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^4-(15+15 i)(-1)^{1/4}\,\text{ArcTan}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{1/4}\left(1+\text{Tan}\left[\frac{1}{4}(c+d x)\right]\right)\right]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^5\right)\Big/\left(60 d\,(a(1+\text{Sin}[c+d x]))^{5/2}\right)$$

Problem 193: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{\text{Sec}[c+d x]^2}{(a+a\,\text{Sin}[c+d x])^{5/2}}\,dx$$

Optimal (type 3, 167 leaves, 6 steps) :

$$-\frac{35\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\text{Cos}[c+d x]}{\sqrt{2}\,\sqrt{a+a\,\text{Sin}[c+d x]}}\right]}{128\,\sqrt{2}\,a^{5/2}\,d}-\frac{\text{Sec}[c+d x]}{6\,d\,(a+a\,\text{Sin}[c+d x])^{5/2}}-\frac{35\,\text{Cos}[c+d x]}{128\,a\,d\,(a+a\,\text{Sin}[c+d x])^{3/2}}-\frac{7\,\text{Sec}[c+d x]}{48\,a\,d\,(a+a\,\text{Sin}[c+d x])^{3/2}}+\frac{35\,\text{Sec}[c+d x]}{96\,a^2\,d\,\sqrt{a+a\,\text{Sin}[c+d x]}}$$

Result (type 3, 284 leaves) :

$$\frac{1}{384\,d\,(a\,(1+\text{Sin}[c+d x]))^{5/2}}\left(-32+\frac{64\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]}{\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]}+88\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)-44\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2+114\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3-57\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^4+(105+105\,i)\,(-1)^{3/4}\,\text{ArcTanh}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{3/4}\left(-1+\text{Tan}\left[\frac{1}{4}(c+d x)\right]\right)\right]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^5+\frac{48\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^5}{\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]}\right)$$

- **Problem 194: Result unnecessarily involves imaginary or complex numbers.**

$$\int\frac{\text{Sec}[c+d x]^3}{(a+a\,\text{Sin}[c+d x])^{5/2}}\,dx$$

Optimal (type 3, 185 leaves, 8 steps) :

$$\frac{9\,\text{ArcTanh}\left[\frac{\sqrt{a+a\,\text{Sin}[c+d x]}}{\sqrt{2}\,\sqrt{a}}\right]}{32\,\sqrt{2}\,a^{5/2}\,d}-\frac{\text{Sec}[c+d x]^2}{7\,d\,(a+a\,\text{Sin}[c+d x])^{5/2}}-\frac{3}{16\,a\,d\,(a+a\,\text{Sin}[c+d x])^{3/2}}-\frac{9\,\text{Sec}[c+d x]^2}{70\,a\,d\,(a+a\,\text{Sin}[c+d x])^{3/2}}-\frac{9}{32\,a^2\,d\,\sqrt{a+a\,\text{Sin}[c+d x]}}+\frac{9\,\text{Sec}[c+d x]^2}{40\,a^2\,d\,\sqrt{a+a\,\text{Sin}[c+d x]}}$$

Result (type 3, 266 leaves) :

$$\frac{1}{1120\, d\, (a\, (1+\mathrm{Sin}[c+d\, x]))^{5/2}}\left(-112-\frac{80}{\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\, x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\, x)\right]\right)^2}-140\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\, x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\, x)\right]\right)^2-280\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\, x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\, x)\right]\right)^4-\right.$$
$$(315+315\, i)\,(-1)^{1/4}\,\mathrm{ArcTan}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{1/4}\left(1+\mathrm{Tan}\left[\frac{1}{4}(c+d\, x)\right]\right)\right]\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\, x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\, x)\right]\right)^5+$$
$$\left.\frac{35\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\, x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\, x)\right]\right)^5}{\mathrm{Cos}\left[\frac{1}{2}(c+d\, x)\right]-\mathrm{Sin}\left[\frac{1}{2}(c+d\, x)\right]}+\frac{70\,\mathrm{Sin}\left[\frac{1}{2}(c+d\, x)\right]\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\, x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\, x)\right]\right)^5}{\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\, x)\right]-\mathrm{Sin}\left[\frac{1}{2}(c+d\, x)\right]\right)^2}\right)$$

- **Problem 195: Result unnecessarily involves imaginary or complex numbers.**

$$\int\frac{\mathrm{Sec}[c+d\, x]^4}{(a+a\,\mathrm{Sin}[c+d\, x])^{5/2}}\,dx$$

Optimal (type 3, 233 leaves, 8 steps):

$$-\frac{1155\,\mathrm{ArcTanh}\left[\frac{\sqrt{a}\,\mathrm{Cos}[c+d\, x]}{\sqrt{2}\,\sqrt{a+a\,\mathrm{Sin}[c+d\, x]}}\right]}{4096\,\sqrt{2}\,a^{5/2}\,d}-\frac{\mathrm{Sec}[c+d\, x]^3}{8\,d\,(a+a\,\mathrm{Sin}[c+d\, x])^{5/2}}-\frac{1155\,\mathrm{Cos}[c+d\, x]}{4096\,a\,d\,(a+a\,\mathrm{Sin}[c+d\, x])^{3/2}}-$$
$$\frac{77\,\mathrm{Sec}[c+d\, x]}{512\,a\,d\,(a+a\,\mathrm{Sin}[c+d\, x])^{3/2}}-\frac{11\,\mathrm{Sec}[c+d\, x]^3}{96\,a\,d\,(a+a\,\mathrm{Sin}[c+d\, x])^{3/2}}+\frac{385\,\mathrm{Sec}[c+d\, x]}{1024\,a^2\,d\,\sqrt{a+a\,\mathrm{Sin}[c+d\, x]}}+\frac{11\,\mathrm{Sec}[c+d\, x]^3}{64\,a^2\,d\,\sqrt{a+a\,\mathrm{Sin}[c+d\, x]}}$$

Result (type 3, 394 leaves):

$$\frac{1}{12288\, d\, (a\, (1+\mathrm{Sin}[c+d\, x]))^{5/2}}\left(-736+\frac{768\,\mathrm{Sin}\left[\frac{1}{2}(c+d\, x)\right]}{\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\, x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\, x)\right]\right)^3}-\frac{384}{\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\, x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\, x)\right]\right)^2}+\frac{1472\,\mathrm{Sin}\left[\frac{1}{2}(c+d\, x)\right]}{\mathrm{Cos}\left[\frac{1}{2}(c+d\, x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\, x)\right]}+\right.$$
$$2072\,\mathrm{Sin}\left[\frac{1}{2}(c+d\, x)\right]\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\, x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\, x)\right]\right)-1036\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\, x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\, x)\right]\right)^2+$$
$$3090\,\mathrm{Sin}\left[\frac{1}{2}(c+d\, x)\right]\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\, x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\, x)\right]\right)^3-1545\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\, x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\, x)\right]\right)^4+$$
$$(3465+3465\, i)\,(-1)^{3/4}\,\mathrm{ArcTanh}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{3/4}\left(-1+\mathrm{Tan}\left[\frac{1}{4}(c+d\, x)\right]\right)\right]\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\, x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\, x)\right]\right)^5+$$
$$\left.\frac{256\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\, x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\, x)\right]\right)^5}{\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\, x)\right]-\mathrm{Sin}\left[\frac{1}{2}(c+d\, x)\right]\right)^3}+\frac{1920\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\, x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\, x)\right]\right)^5}{\mathrm{Cos}\left[\frac{1}{2}(c+d\, x)\right]-\mathrm{Sin}\left[\frac{1}{2}(c+d\, x)\right]}\right)$$

Problem 197: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int (e \operatorname{Cos}[c+d x])^{5/2} (a+a \operatorname{Sin}[c+d x]) \, dx$$

Optimal (type 4, 95 leaves, 4 steps):

$$-\frac{2 a (e \operatorname{Cos}[c+d x])^{7/2}}{7 d e}+\frac{6 a e^2 \sqrt{e \operatorname{Cos}[c+d x]} \operatorname{EllipticE}\left[\frac{1}{2} (c+d x), 2\right]}{5 d \sqrt{\operatorname{Cos}[c+d x]}}+\frac{2 a e (e \operatorname{Cos}[c+d x])^{3/2} \operatorname{Sin}[c+d x]}{5 d}$$

Result (type 5, 264 leaves):

$$\frac{1}{560 d \sqrt{e \operatorname{Cos}[c+d x]}} a e^3 \operatorname{Csc}\left[\frac{c}{2}\right] \operatorname{Sec}\left[\frac{c}{2}\right] \Big(-154 \operatorname{Cos}[d x]-182 \operatorname{Cos}[2 c+d x]+14 \operatorname{Cos}[2 c+3 d x]-14 \operatorname{Cos}[4 c+3 d x]-30 \operatorname{Sin}[c]+$$
$$168 \operatorname{Hypergeometric2F1}\left[-\frac{1}{4}, \frac{1}{2}, \frac{3}{4}, -e^{2 i d x} (\operatorname{Cos}[c]+i \operatorname{Sin}[c])^2\right] (\operatorname{Cos}[d x]-i \operatorname{Sin}[d x]) \sqrt{1+\operatorname{Cos}[2 (c+d x)]+i \operatorname{Sin}[2 (c+d x)]}+$$
$$56 \operatorname{Hypergeometric2F1}\left[\frac{1}{2}, \frac{3}{4}, \frac{7}{4}, -e^{2 i d x} (\operatorname{Cos}[c]+i \operatorname{Sin}[c])^2\right] (\operatorname{Cos}[d x]+i \operatorname{Sin}[d x]) \sqrt{1+\operatorname{Cos}[2 (c+d x)]+i \operatorname{Sin}[2 (c+d x)]}+$$
$$20 \operatorname{Sin}[c+2 d x]-20 \operatorname{Sin}[3 c+2 d x]+5 \operatorname{Sin}[3 c+4 d x]-5 \operatorname{Sin}[5 c+4 d x]\Big)$$

Problem 199: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \sqrt{e \operatorname{Cos}[c+d x]} (a+a \operatorname{Sin}[c+d x]) \, dx$$

Optimal (type 4, 63 leaves, 3 steps):

$$-\frac{2 a (e \operatorname{Cos}[c+d x])^{3/2}}{3 d e}+\frac{2 a \sqrt{e \operatorname{Cos}[c+d x]} \operatorname{EllipticE}\left[\frac{1}{2} (c+d x), 2\right]}{d \sqrt{\operatorname{Cos}[c+d x]}}$$

Result (type 5, 260 leaves):

$$\frac{1}{6 d \left(\left(1+e^{2 i d x}\right) \operatorname{Cos}[c]+i \left(-1+e^{2 i d x}\right) \operatorname{Sin}[c]\right)}$$
$$a \sqrt{e \operatorname{Cos}[c+d x]} \operatorname{Csc}\left[\frac{c}{2}\right] \operatorname{Sec}\left[\frac{c}{2}\right] (\operatorname{Cos}[d x]+i \operatorname{Sin}[d x]) \Big(-6 \operatorname{Cos}[d x]-6 \operatorname{Cos}[2 c+d x]-2 \operatorname{Sin}[c]+$$
$$6 \operatorname{Hypergeometric2F1}\left[-\frac{1}{4}, \frac{1}{2}, \frac{3}{4}, -e^{2 i d x} (\operatorname{Cos}[c]+i \operatorname{Sin}[c])^2\right] (\operatorname{Cos}[d x]-i \operatorname{Sin}[d x]) \sqrt{1+\operatorname{Cos}[2 (c+d x)]+i \operatorname{Sin}[2 (c+d x)]}+$$
$$2 \operatorname{Hypergeometric2F1}\left[\frac{1}{2}, \frac{3}{4}, \frac{7}{4}, -e^{2 i d x} (\operatorname{Cos}[c]+i \operatorname{Sin}[c])^2\right] (\operatorname{Cos}[d x]+i \operatorname{Sin}[d x]) \sqrt{1+\operatorname{Cos}[2 (c+d x)]+i \operatorname{Sin}[2 (c+d x)]}+$$
$$\operatorname{Sin}[c+2 d x]-\operatorname{Sin}[3 c+2 d x]\Big)$$

- **Problem 201: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int \frac{a+a\,\text{Sin}[c+d\,x]}{(e\,\text{Cos}[c+d\,x])^{3/2}}\,dx$$

Optimal (type 4, 91 leaves, 4 steps):

$$\frac{2\,a}{d\,e\,\sqrt{e\,\text{Cos}[c+d\,x]}}-\frac{2\,a\,\sqrt{e\,\text{Cos}[c+d\,x]}\;\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),\,2\right]}{d\,e^2\,\sqrt{\text{Cos}[c+d\,x]}}+\frac{2\,a\,\text{Sin}[c+d\,x]}{d\,e\,\sqrt{e\,\text{Cos}[c+d\,x]}}$$

Result (type 5, 188 leaves):

$$-\frac{1}{6\,d\,e\,\sqrt{e\,\text{Cos}[c+d\,x]}}\,a\,\text{Csc}\left[\frac{c}{2}\right]\,\text{Sec}\left[\frac{c}{2}\right]\,\Bigg(-6\,(\text{Cos}[d\,x]+\text{Sin}[c])+$$
$$3\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\,\frac{1}{2},\,\frac{3}{4},\,-e^{2\,i\,d\,x}\,(\text{Cos}[c]+i\,\text{Sin}[c])^2\right]\,(\text{Cos}[d\,x]-i\,\text{Sin}[d\,x])\,\sqrt{1+\text{Cos}[2\,(c+d\,x)]+i\,\text{Sin}[2\,(c+d\,x)]}\,+$$
$$\text{Hypergeometric2F1}\left[\frac{1}{2},\,\frac{3}{4},\,\frac{7}{4},\,-e^{2\,i\,d\,x}\,(\text{Cos}[c]+i\,\text{Sin}[c])^2\right]\,(\text{Cos}[d\,x]+i\,\text{Sin}[d\,x])\,\sqrt{1+\text{Cos}[2\,(c+d\,x)]+i\,\text{Sin}[2\,(c+d\,x)]}\Bigg)$$

- **Problem 203: Result unnecessarily involves higher level functions.**

$$\int \frac{a+a\,\text{Sin}[c+d\,x]}{(e\,\text{Cos}[c+d\,x])^{7/2}}\,dx$$

Optimal (type 4, 126 leaves, 5 steps):

$$\frac{2\,a}{5\,d\,e\,(e\,\text{Cos}[c+d\,x])^{5/2}}-\frac{6\,a\,\sqrt{e\,\text{Cos}[c+d\,x]}\;\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),\,2\right]}{5\,d\,e^4\,\sqrt{\text{Cos}[c+d\,x]}}+\frac{2\,a\,\text{Sin}[c+d\,x]}{5\,d\,e\,(e\,\text{Cos}[c+d\,x])^{5/2}}+\frac{6\,a\,\text{Sin}[c+d\,x]}{5\,d\,e^3\,\sqrt{e\,\text{Cos}[c+d\,x]}}$$

Result (type 5, 160 leaves):

$$\Bigg(2\,a\,\sqrt{e\,\text{Cos}[c+d\,x]}\,(\text{Cos}[c+d\,x]-i\,\text{Sin}[c+d\,x])$$
$$\left(3\,i+\text{Cos}[c+d\,x]+3\,i\,\sqrt{1+e^{2\,i\,(c+d\,x)}}\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\,\frac{1}{2},\,\frac{3}{4},\,-e^{2\,i\,(c+d\,x)}\right]\,(-1+\text{Sin}[c+d\,x])-2\,i\,\text{Sin}[c+d\,x]\right)\Bigg)\Bigg/$$
$$\left(5\,d\,e^4\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^3\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\right)$$

- **Problem 210: Result more than twice size of optimal antiderivative.**

$$\int \frac{(a+a\,\text{Sin}[c+d\,x])^2}{(e\,\text{Cos}[c+d\,x])^{5/2}}\,dx$$

Optimal (type 4, 89 leaves, 4 steps):

$$-\frac{2 a^2 \sqrt{\text{Cos}[c+d x]}\ \text{EllipticF}\left[\frac{1}{2}(c+d x), 2\right]}{3 d e^2 \sqrt{e \text{Cos}[c+d x]}}+\frac{4 a^4 \sqrt{e \text{Cos}[c+d x]}}{3 d e^3\left(a^2-a^2 \text{Sin}[c+d x]\right)}$$

Result (type 4, 1198 leaves) :

$$\frac{\text{Cos}[c+d x]^3\left(-\frac{2}{3}+\frac{4}{3\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2}\right)(a+a \text{Sin}[c+d x])^2}{d\,(e \text{Cos}[c+d x])^{5/2}\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^4}+$$

$$\left(2 \text{Cos}[c+d x]^2\left(-\frac{\text{Cos}\left[\frac{1}{2}(c+d x)\right] \sqrt{\text{Cos}[c+d x]}}{3\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)}-\frac{\sqrt{\text{Cos}[c+d x]}\ \text{Sin}\left[\frac{1}{2}(c+d x)\right]}{3\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)}\right)\right.$$

$$(a+a \text{Sin}[c+d x])^2\left(\text{Cos}[c+d x]-2 \sqrt{2}\ \text{Cos}\left[\frac{1}{4}(c+d x)\right]^2 \sqrt{\frac{-1+\sqrt{2}-\left(-2+\sqrt{2}\right) \text{Cos}\left[\frac{1}{2}(c+d x)\right]}{1+\text{Cos}\left[\frac{1}{2}(c+d x)\right]}}\right.$$

$$\left.\left.\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{3-2 \sqrt{2}}}\right], 17-12 \sqrt{2}\right] \sqrt{3-2 \sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}\right)\right) \Big/$$

$$\left(3 d\,(e \text{Cos}[c+d x])^{5/2}\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^4\left(\frac{1}{3 \text{Cos}[c+d x]^{3/2}} \text{Sin}[c+d x]\left(\text{Cos}[c+d x]-2 \sqrt{2}\ \text{Cos}\left[\frac{1}{4}(c+d x)\right]^2\right.\right.\right.$$

$$\left.\sqrt{\frac{-1+\sqrt{2}-\left(-2+\sqrt{2}\right) \text{Cos}\left[\frac{1}{2}(c+d x)\right]}{1+\text{Cos}\left[\frac{1}{2}(c+d x)\right]}}\ \text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{3-2 \sqrt{2}}}\right], 17-12 \sqrt{2}\right] \sqrt{3-2 \sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}\right)+$$

$$\frac{1}{3 \sqrt{\text{Cos}[c+d x]}} 2\left(-\text{Sin}[c+d x]+\frac{\sqrt{\frac{-1+\sqrt{2}-\left(-2+\sqrt{2}\right) \text{Cos}\left[\frac{1}{2}(c+d x)\right]}{1+\text{Cos}\left[\frac{1}{2}(c+d x)\right]}}\ \text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{3-2 \sqrt{2}}}\right], 17-12 \sqrt{2}\right] \text{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{2} \sqrt{3-2 \sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}}+\right.$$

$$\sqrt{2}\,\text{Cos}\left[\frac{1}{4}(c+d x)\right]\sqrt{\frac{-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]}{1+\text{Cos}\left[\frac{1}{2}(c+d x)\right]}}\ \text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]$$

$$\text{Sin}\left[\frac{1}{4}(c+d x)\right]\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}-\left(\sqrt{2}\,\text{Cos}\left[\frac{1}{4}(c+d x)\right]^2\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]\right.$$

$$\left(\frac{\left(-2+\sqrt{2}\right)\text{Sin}\left[\frac{1}{2}(c+d x)\right]}{2\left(1+\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right)}+\frac{\left(-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right)\text{Sin}\left[\frac{1}{2}(c+d x)\right]}{2\left(1+\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right)^2}\right)\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}\Bigg)\Bigg/$$

$$\left(\sqrt{\frac{-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]}{1+\text{Cos}\left[\frac{1}{2}(c+d x)\right]}}\right)-\frac{\sqrt{\frac{-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]}{1+\text{Cos}\left[\frac{1}{2}(c+d x)\right]}}\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}}{\sqrt{2\left(3-2\sqrt{2}\right)}\sqrt{1-\frac{\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}{3-2\sqrt{2}}}\sqrt{1-\frac{\left(17-12\sqrt{2}\right)\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}{3-2\sqrt{2}}}}\Bigg)\Bigg)\Bigg)$$

- **Problem 212: Result more than twice size of optimal antiderivative.**

$$\int\frac{(a+a\,\text{Sin}[c+d x])^2}{(e\,\text{Cos}[c+d x])^{9/2}}\,dx$$

Optimal (type 4, 114 leaves, 4 steps):

$$\frac{2a^2\sqrt{\text{Cos}[c+d x]}\ \text{EllipticF}\left[\frac{1}{2}(c+d x),2\right]}{7 d e^4\sqrt{e\,\text{Cos}[c+d x]}}+\frac{2a^2\,\text{Sin}[c+d x]}{7 d e^3\,(e\,\text{Cos}[c+d x])^{3/2}}+\frac{4\left(a^2+a^2\,\text{Sin}[c+d x]\right)}{7 d e\,(e\,\text{Cos}[c+d x])^{7/2}}$$

Result (type 4, 1227 leaves):

$$\frac{\text{Cos}[c+d x]^5\left(\frac{2}{7}+\frac{2}{7\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^4}+\frac{2}{7\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2}\right)(a+a\,\text{Sin}[c+d x])^2}{d\,(e\,\text{Cos}[c+d x])^{9/2}\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^4}-$$

$$\left(2\,\text{Cos}[c+d x]^4\left(\frac{\text{Cos}\left[\frac{1}{2}(c+d x)\right]\sqrt{\text{Cos}[c+d x]}}{7\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)}+\frac{\sqrt{\text{Cos}[c+d x]}\ \text{Sin}\left[\frac{1}{2}(c+d x)\right]}{7\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)}\right)\right.$$

$$(a+a\,\text{Sin}[c+d x])^2\left(\text{Cos}[c+d x]-2\sqrt{2}\,\text{Cos}\left[\frac{1}{4}(c+d x)\right]^2\sqrt{\frac{-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]}{1+\text{Cos}\left[\frac{1}{2}(c+d x)\right]}}\right.$$

$$\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}\Bigg)\Bigg)\Bigg/$$

$$\left(7 d (e\,\text{Cos}[c+d x])^{9/2}\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^4\right)\left(-\frac{1}{7\,\text{Cos}[c+d x]^{3/2}}\text{Sin}[c+d x]\left(\text{Cos}[c+d x]-2\sqrt{2}\,\text{Cos}\left[\frac{1}{4}(c+d x)\right]^2\right.\right.$$

$$\sqrt{\frac{-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]}{1+\text{Cos}\left[\frac{1}{2}(c+d x)\right]}}\ \text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}\Bigg)-$$

$$\frac{1}{7\sqrt{\text{Cos}[c+d x]}}2\left(-\text{Sin}[c+d x]+\frac{\sqrt{\frac{-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]}{1+\text{Cos}\left[\frac{1}{2}(c+d x)\right]}}\ \text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]\text{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{2}\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}}+\right.$$

$$\sqrt{2}\,\text{Cos}\left[\frac{1}{4}(c+d x)\right]\sqrt{\frac{-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]}{1+\text{Cos}\left[\frac{1}{2}(c+d x)\right]}}\ \text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]$$

$$\text{Sin}\left[\frac{1}{4}(c+d x)\right]\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}-\left(\sqrt{2}\,\text{Cos}\left[\frac{1}{4}(c+d x)\right]^2\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]\right.$$

$$\left(\frac{\left(-2+\sqrt{2}\right)\text{Sin}\left[\frac{1}{2}(c+d x)\right]}{2\left(1+\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right)}+\frac{\left(-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right)\text{Sin}\left[\frac{1}{2}(c+d x)\right]}{2\left(1+\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right)^2}\right)\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}\Bigg)\Bigg/$$

$$\left(\sqrt{\frac{-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]}{1+\text{Cos}\left[\frac{1}{2}(c+d x)\right]}}-\frac{\sqrt{\frac{-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]}{1+\text{Cos}\left[\frac{1}{2}(c+d x)\right]}}\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}}{\sqrt{2\left(3-2\sqrt{2}\right)}\sqrt{1-\frac{\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}{3-2\sqrt{2}}}\sqrt{1-\frac{\left(17-12\sqrt{2}\right)\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}{3-2\sqrt{2}}}}\right)\Bigg)\Bigg)$$

- **Problem 222: Result more than twice size of optimal antiderivative.**

$$\int\frac{(a+a\,\text{Sin}[c+d x])^3}{(e\,\text{Cos}[c+d x])^{9/2}}\,dx$$

Optimal (type 4, 127 leaves, 5 steps):

$$-\frac{2 a^3\sqrt{\text{Cos}[c+d x]}\,\text{EllipticF}\left[\frac{1}{2}(c+d x),2\right]}{21 d e^4\sqrt{e\,\text{Cos}[c+d x]}}+\frac{4 a^5\sqrt{e\,\text{Cos}[c+d x]}}{7 d e^5\,(a-a\,\text{Sin}[c+d x])^2}-\frac{2 a^6\sqrt{e\,\text{Cos}[c+d x]}}{21 d e^5\left(a^3-a^3\,\text{Sin}[c+d x]\right)}$$

Result (type 4, 1227 leaves):

$$\frac{\text{Cos}[c+d x]^5\left(-\frac{2}{21}+\frac{4}{7\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^4}-\frac{2}{21\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2}\right)(a+a\,\text{Sin}[c+d x])^3}{d\,(e\,\text{Cos}[c+d x])^{9/2}\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^6}+$$

$$\Bigg(2\,\text{Cos}[c+d x]^4\left(-\frac{\text{Cos}\left[\frac{1}{2}(c+d x)\right]\sqrt{\text{Cos}[c+d x]}}{21\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)}-\frac{\sqrt{\text{Cos}[c+d x]}\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]}{21\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)}\right)$$

$$(a+a\,\text{Sin}[c+d x])^3\Bigg(\text{Cos}[c+d x]-2\sqrt{2}\,\text{Cos}\left[\frac{1}{4}(c+d x)\right]^2\sqrt{\frac{-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]}{1+\text{Cos}\left[\frac{1}{2}(c+d x)\right]}}$$

$$\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}\Bigg)\Bigg)\Bigg/$$

$$\Bigg(21 d\,(e\,\text{Cos}[c+d x])^{9/2}\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^6\Bigg(\frac{1}{21\,\text{Cos}[c+d x]^{3/2}}\text{Sin}[c+d x]\left(\text{Cos}[c+d x]-2\sqrt{2}\,\text{Cos}\left[\frac{1}{4}(c+d x)\right]^2\right.$$

$$\sqrt{\frac{-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]}{1+\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]}}\;\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\Bigg)+$$

$$\frac{1}{21\sqrt{\text{Cos}[c+d\,x]}}2\left(-\text{Sin}[c+d\,x]+\frac{\sqrt{\frac{-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]}{1+\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]}}\;\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]}{\sqrt{2}\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}}+\right.$$

$$\sqrt{2}\,\text{Cos}\left[\frac{1}{4}(c+d\,x)\right]\sqrt{\frac{-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]}{1+\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]}}\;\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]$$

$$\text{Sin}\left[\frac{1}{4}(c+d\,x)\right]\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}-\left(\sqrt{2}\,\text{Cos}\left[\frac{1}{4}(c+d\,x)\right]^2\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]\right.$$

$$\left(\frac{\left(-2+\sqrt{2}\right)\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]}{2\left(1+\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]\right)}+\frac{\left(-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]\right)\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]}{2\left(1+\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]\right)^2}\right)\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\Bigg)\Big/$$

$$\left(\sqrt{\frac{-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]}{1+\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]}}\right)-\frac{\sqrt{\frac{-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]}{1+\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]}}\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}}{\sqrt{2\left(3-2\sqrt{2}\right)}\sqrt{1-\frac{\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}{3-2\sqrt{2}}}\sqrt{1-\frac{\left(17-12\sqrt{2}\right)\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}{3-2\sqrt{2}}}}\Bigg)\Bigg)\Bigg)$$

- **Problem 230: Result more than twice size of optimal antiderivative.**

$$\int\frac{(a+a\,\text{Sin}[c+d\,x])^4}{(e\,\text{Cos}[c+d\,x])^{9/2}}\,dx$$

Optimal (type 4, 127 leaves, 5 steps):

$$\frac{10\,a^4\sqrt{\text{Cos}[c+d\,x]}\;\text{EllipticF}\left[\frac{1}{2}(c+d\,x),2\right]}{21\,d\,e^4\sqrt{e\,\text{Cos}[c+d\,x]}}+\frac{4\,a^7\,(e\,\text{Cos}[c+d\,x])^{5/2}}{7\,d\,e^7\,(a-a\,\text{Sin}[c+d\,x])^3}-\frac{20\,a^8\sqrt{e\,\text{Cos}[c+d\,x]}}{21\,d\,e^5\left(a^4-a^4\,\text{Sin}[c+d\,x]\right)}$$

Result (type 4, 1227 leaves):

$$\frac{\text{Cos}[c+d x]^5 \left(\frac{10}{21}+\frac{8}{7 \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]-\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^4}-\frac{32}{21 \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]-\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^2}\right) (a+a \text{Sin}[c+d x])^4}{d (e \text{Cos}[c+d x])^{9/2} \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^8}-$$

$$\left(10 \text{Cos}[c+d x]^4 \left(\frac{5 \text{Cos}\left[\frac{1}{2} (c+d x)\right] \sqrt{\text{Cos}[c+d x]}}{21 \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]-\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)}+\frac{5 \sqrt{\text{Cos}[c+d x]} \text{Sin}\left[\frac{1}{2} (c+d x)\right]}{21 \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]-\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)}\right)\right.$$

$$(a+a \text{Sin}[c+d x])^4 \left(\text{Cos}[c+d x]-2 \sqrt{2} \text{Cos}\left[\frac{1}{4} (c+d x)\right]^2 \sqrt{\frac{-1+\sqrt{2}-\left(-2+\sqrt{2}\right) \text{Cos}\left[\frac{1}{2} (c+d x)\right]}{1+\text{Cos}\left[\frac{1}{2} (c+d x)\right]}}\right.$$

$$\left.\left.\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4} (c+d x)\right]}{\sqrt{3-2 \sqrt{2}}}\right], 17-12 \sqrt{2}\right] \sqrt{3-2 \sqrt{2}-\text{Tan}\left[\frac{1}{4} (c+d x)\right]^2}\right)\right) \Big/$$

$$\left(21 d (e \text{Cos}[c+d x])^{9/2} \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^8 \left(-\frac{1}{21 \text{Cos}[c+d x]^{3/2}} 5 \text{Sin}[c+d x] \left(\text{Cos}[c+d x]-2 \sqrt{2} \text{Cos}\left[\frac{1}{4} (c+d x)\right]^2\right.\right.\right.$$

$$\left.\sqrt{\frac{-1+\sqrt{2}-\left(-2+\sqrt{2}\right) \text{Cos}\left[\frac{1}{2} (c+d x)\right]}{1+\text{Cos}\left[\frac{1}{2} (c+d x)\right]}} \text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4} (c+d x)\right]}{\sqrt{3-2 \sqrt{2}}}\right], 17-12 \sqrt{2}\right] \sqrt{3-2 \sqrt{2}-\text{Tan}\left[\frac{1}{4} (c+d x)\right]^2}\right)-$$

$$\frac{1}{21 \sqrt{\text{Cos}[c+d x]}} 10 \left(-\text{Sin}[c+d x]+\frac{\sqrt{\frac{-1+\sqrt{2}-\left(-2+\sqrt{2}\right) \text{Cos}\left[\frac{1}{2} (c+d x)\right]}{1+\text{Cos}\left[\frac{1}{2} (c+d x)\right]}} \text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4} (c+d x)\right]}{\sqrt{3-2 \sqrt{2}}}\right], 17-12 \sqrt{2}\right] \text{Tan}\left[\frac{1}{4} (c+d x)\right]}{\sqrt{2} \sqrt{3-2 \sqrt{2}-\text{Tan}\left[\frac{1}{4} (c+d x)\right]^2}}+\right.$$

$$\sqrt{2} \text{Cos}\left[\frac{1}{4} (c+d x)\right] \sqrt{\frac{-1+\sqrt{2}-\left(-2+\sqrt{2}\right) \text{Cos}\left[\frac{1}{2} (c+d x)\right]}{1+\text{Cos}\left[\frac{1}{2} (c+d x)\right]}} \text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4} (c+d x)\right]}{\sqrt{3-2 \sqrt{2}}}\right], 17-12 \sqrt{2}\right]$$

$$\mathrm{Sin}\left[\frac{1}{4}(c+d x)\right]\sqrt{3-2\sqrt{2}-\mathrm{Tan}\left[\frac{1}{4}(c+d x)\right]^2}-\left(\sqrt{2}\,\mathrm{Cos}\left[\frac{1}{4}(c+d x)\right]^2\mathrm{EllipticF}\left[\mathrm{ArcSin}\left[\frac{\mathrm{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]\right.$$

$$\left(\frac{\left(-2+\sqrt{2}\right)\mathrm{Sin}\left[\frac{1}{2}(c+d x)\right]}{2\left(1+\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]\right)}+\frac{\left(-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]\right)\mathrm{Sin}\left[\frac{1}{2}(c+d x)\right]}{2\left(1+\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]\right)^2}\right)\sqrt{3-2\sqrt{2}-\mathrm{Tan}\left[\frac{1}{4}(c+d x)\right]^2}\Bigg/$$

$$\left.\left(\sqrt{\frac{-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]}{1+\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]}}-\frac{\sqrt{\frac{-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]}{1+\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]}}\sqrt{3-2\sqrt{2}-\mathrm{Tan}\left[\frac{1}{4}(c+d x)\right]^2}}{\sqrt{2\left(3-2\sqrt{2}\right)}\sqrt{1-\frac{\mathrm{Tan}\left[\frac{1}{4}(c+d x)\right]^2}{3-2\sqrt{2}}}\sqrt{1-\frac{\left(17-12\sqrt{2}\right)\mathrm{Tan}\left[\frac{1}{4}(c+d x)\right]^2}{3-2\sqrt{2}}}}\right)\right)\right)$$

- **Problem 232: Result more than twice size of optimal antiderivative.**

$$\int\frac{(a+a\,\mathrm{Sin}[c+d x])^4}{(e\,\mathrm{Cos}[c+d x])^{13/2}}\,dx$$

Optimal (type 4, 169 leaves, 6 steps):

$$-\frac{2a^4\sqrt{\mathrm{Cos}[c+d x]}\,\mathrm{EllipticF}\left[\frac{1}{2}(c+d x),2\right]}{77\,d\,e^6\sqrt{e\,\mathrm{Cos}[c+d x]}}+\frac{4a^7\sqrt{e\,\mathrm{Cos}[c+d x]}}{11\,d\,e^7\,(a-a\,\mathrm{Sin}[c+d x])^3}-\frac{2a^8\sqrt{e\,\mathrm{Cos}[c+d x]}}{77\,d\,e^7\left(a^2-a^2\,\mathrm{Sin}[c+d x]\right)^2}-\frac{2a^8\sqrt{e\,\mathrm{Cos}[c+d x]}}{77\,d\,e^7\left(a^4-a^4\,\mathrm{Sin}[c+d x]\right)}$$

Result (type 4, 1256 leaves):

$$\left(\mathrm{Cos}[c+d x]^7\right.$$

$$\left(-\frac{2}{77}+\frac{4}{11\left(\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]-\mathrm{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^6}-\frac{2}{77\left(\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]-\mathrm{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^4}-\frac{2}{77\left(\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]-\mathrm{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2}\right)$$

$$\left.(a+a\,\mathrm{Sin}[c+d x])^4\right)\Bigg/\left(d\,(e\,\mathrm{Cos}[c+d x])^{13/2}\left(\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^8\right)+$$

$$\left(2\,\mathrm{Cos}[c+d x]^6\left(-\frac{\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]\sqrt{\mathrm{Cos}[c+d x]}}{77\left(\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]-\mathrm{Sin}\left[\frac{1}{2}(c+d x)\right]\right)}-\frac{\sqrt{\mathrm{Cos}[c+d x]}\,\mathrm{Sin}\left[\frac{1}{2}(c+d x)\right]}{77\left(\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]-\mathrm{Sin}\left[\frac{1}{2}(c+d x)\right]\right)}\right)\right.$$

$$(a+a\,\text{Sin}[c+d\,x])^4\ \Bigg(\text{Cos}[c+d\,x]-2\sqrt{2}\ \text{Cos}\Big[\frac{1}{4}\ (c+d\,x)\Big]^2\ \sqrt{\frac{-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\text{Cos}\big[\frac{1}{2}\ (c+d\,x)\big]}{1+\text{Cos}\big[\frac{1}{2}\ (c+d\,x)\big]}}$$

$$\text{EllipticF}\Big[\text{ArcSin}\Big[\frac{\text{Tan}\big[\frac{1}{4}\ (c+d\,x)\big]}{\sqrt{3-2\sqrt{2}}}\Big],\ 17-12\sqrt{2}\Big]\ \sqrt{3-2\sqrt{2}-\text{Tan}\Big[\frac{1}{4}\ (c+d\,x)\Big]^2}\ \Bigg)\Bigg)\Big/$$

$$\Bigg(77\,d\ (e\,\text{Cos}[c+d\,x])^{13/2}\ \Big(\text{Cos}\Big[\frac{1}{2}\ (c+d\,x)\Big]+\text{Sin}\Big[\frac{1}{2}\ (c+d\,x)\Big]\Big)^8\ \Bigg(\frac{1}{77\,\text{Cos}[c+d\,x]^{3/2}}\text{Sin}[c+d\,x]\ \Bigg(\text{Cos}[c+d\,x]-2\sqrt{2}\ \text{Cos}\Big[\frac{1}{4}\ (c+d\,x)\Big]^2$$

$$\sqrt{\frac{-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\text{Cos}\big[\frac{1}{2}\ (c+d\,x)\big]}{1+\text{Cos}\big[\frac{1}{2}\ (c+d\,x)\big]}}\ \text{EllipticF}\Big[\text{ArcSin}\Big[\frac{\text{Tan}\big[\frac{1}{4}\ (c+d\,x)\big]}{\sqrt{3-2\sqrt{2}}}\Big],\ 17-12\sqrt{2}\Big]\ \sqrt{3-2\sqrt{2}-\text{Tan}\Big[\frac{1}{4}\ (c+d\,x)\Big]^2}\ \Bigg)+$$

$$\frac{1}{77\sqrt{\text{Cos}[c+d\,x]}}\ 2\ \Bigg(-\text{Sin}[c+d\,x]+\frac{\sqrt{\frac{-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}\ (c+d\,x)\right]}{1+\text{Cos}\left[\frac{1}{2}\ (c+d\,x)\right]}}\ \text{EllipticF}\Big[\text{ArcSin}\Big[\frac{\text{Tan}\left[\frac{1}{4}\ (c+d\,x)\right]}{\sqrt{3-2\sqrt{2}}}\Big],\ 17-12\sqrt{2}\Big]\ \text{Tan}\big[\frac{1}{4}\ (c+d\,x)\big]}{\sqrt{2}\ \sqrt{3-2\sqrt{2}-\text{Tan}\big[\frac{1}{4}\ (c+d\,x)\big]^2}}+$$

$$\sqrt{2}\ \text{Cos}\Big[\frac{1}{4}\ (c+d\,x)\Big]\ \sqrt{\frac{-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\text{Cos}\big[\frac{1}{2}\ (c+d\,x)\big]}{1+\text{Cos}\big[\frac{1}{2}\ (c+d\,x)\big]}}\ \text{EllipticF}\Big[\text{ArcSin}\Big[\frac{\text{Tan}\big[\frac{1}{4}\ (c+d\,x)\big]}{\sqrt{3-2\sqrt{2}}}\Big],\ 17-12\sqrt{2}\Big]$$

$$\text{Sin}\Big[\frac{1}{4}\ (c+d\,x)\Big]\ \sqrt{3-2\sqrt{2}-\text{Tan}\Big[\frac{1}{4}\ (c+d\,x)\Big]^2}-\Bigg(\sqrt{2}\ \text{Cos}\Big[\frac{1}{4}\ (c+d\,x)\Big]^2\ \text{EllipticF}\Big[\text{ArcSin}\Big[\frac{\text{Tan}\big[\frac{1}{4}\ (c+d\,x)\big]}{\sqrt{3-2\sqrt{2}}}\Big],\ 17-12\sqrt{2}\Big]$$

$$\Bigg(\frac{\left(-2+\sqrt{2}\right)\text{Sin}\big[\frac{1}{2}\ (c+d\,x)\big]}{2\left(1+\text{Cos}\big[\frac{1}{2}\ (c+d\,x)\big]\right)}+\frac{\left(-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\text{Cos}\big[\frac{1}{2}\ (c+d\,x)\big]\right)\text{Sin}\big[\frac{1}{2}\ (c+d\,x)\big]}{2\left(1+\text{Cos}\big[\frac{1}{2}\ (c+d\,x)\big]\right)^2}\Bigg)\ \sqrt{3-2\sqrt{2}-\text{Tan}\Big[\frac{1}{4}\ (c+d\,x)\Big]^2}\ \Bigg)\Big/$$

$$\left(\sqrt{\frac{-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\operatorname{Cos}\left[\frac{1}{2}(c+dx)\right]}{1+\operatorname{Cos}\left[\frac{1}{2}(c+dx)\right]}}-\frac{\sqrt{\frac{-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\operatorname{Cos}\left[\frac{1}{2}(c+dx)\right]}{1+\operatorname{Cos}\left[\frac{1}{2}(c+dx)\right]}}\sqrt{3-2\sqrt{2}-\operatorname{Tan}\left[\frac{1}{4}(c+dx)\right]^2}}{\sqrt{2\left(3-2\sqrt{2}\right)}\sqrt{1-\frac{\operatorname{Tan}\left[\frac{1}{4}(c+dx)\right]^2}{3-2\sqrt{2}}}\sqrt{1-\frac{\left(17-12\sqrt{2}\right)\operatorname{Tan}\left[\frac{1}{4}(c+dx)\right]^2}{3-2\sqrt{2}}}}\right)\Bigg)\Bigg)$$

Problem 237: Result more than twice size of optimal antiderivative.

$$\int \frac{(e\operatorname{Cos}[c+dx])^{3/2}}{a+a\operatorname{Sin}[c+dx]}\,dx$$

Optimal (type 4, 66 leaves, 3 steps):

$$\frac{2e\sqrt{e\operatorname{Cos}[c+dx]}}{ad}+\frac{2e^2\sqrt{\operatorname{Cos}[c+dx]}\operatorname{EllipticF}\left[\frac{1}{2}(c+dx),2\right]}{ad\sqrt{e\operatorname{Cos}[c+dx]}}$$

Result (type 4, 1089 leaves):

$$\Bigg(2\,(e\operatorname{Cos}[c+dx])^{3/2}\operatorname{Sec}[c+dx]^2\left(\operatorname{Cos}\left[\frac{1}{2}(c+dx)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+dx)\right]\right)^2$$

$$\left(\frac{\operatorname{Cos}\left[\frac{1}{2}(c+dx)\right]\sqrt{\operatorname{Cos}[c+dx]}}{\operatorname{Cos}\left[\frac{1}{2}(c+dx)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+dx)\right]}-\frac{\sqrt{\operatorname{Cos}[c+dx]}\operatorname{Sin}\left[\frac{1}{2}(c+dx)\right]}{\operatorname{Cos}\left[\frac{1}{2}(c+dx)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+dx)\right]}\right)\Bigg(\operatorname{Cos}[c+dx]+2\sqrt{2}\operatorname{Cos}\left[\frac{1}{4}(c+dx)\right]^2$$

$$\sqrt{\frac{-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\operatorname{Cos}\left[\frac{1}{2}(c+dx)\right]}{1+\operatorname{Cos}\left[\frac{1}{2}(c+dx)\right]}}\operatorname{EllipticF}\left[\operatorname{ArcSin}\left[\frac{\operatorname{Tan}\left[\frac{1}{4}(c+dx)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]\sqrt{3-2\sqrt{2}-\operatorname{Tan}\left[\frac{1}{4}(c+dx)\right]^2}\Bigg)\Bigg)\Bigg/$$

$$\Bigg(d\,(a+a\operatorname{Sin}[c+dx])\Bigg(\frac{1}{\operatorname{Cos}[c+dx]^{3/2}}\operatorname{Sin}[c+dx]\Bigg(\operatorname{Cos}[c+dx]+2\sqrt{2}\operatorname{Cos}\left[\frac{1}{4}(c+dx)\right]^2\sqrt{\frac{-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\operatorname{Cos}\left[\frac{1}{2}(c+dx)\right]}{1+\operatorname{Cos}\left[\frac{1}{2}(c+dx)\right]}}$$

$$\operatorname{EllipticF}\left[\operatorname{ArcSin}\left[\frac{\operatorname{Tan}\left[\frac{1}{4}(c+dx)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]\sqrt{3-2\sqrt{2}-\operatorname{Tan}\left[\frac{1}{4}(c+dx)\right]^2}\Bigg)+$$

$$\frac{1}{\sqrt{\text{Cos}[c+d\,x]}}\,2\left(-\text{Sin}[c+d\,x]-\frac{\sqrt{\frac{-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]}{1+\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]}}\;\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]}{\sqrt{2}\,\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}}-\right.$$

$$\sqrt{2}\,\text{Cos}\left[\frac{1}{4}(c+d\,x)\right]\sqrt{\frac{-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]}{1+\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]}}\;\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]$$

$$\text{Sin}\left[\frac{1}{4}(c+d\,x)\right]\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}+\left(\sqrt{2}\,\text{Cos}\left[\frac{1}{4}(c+d\,x)\right]^2\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]\right.$$

$$\left.\left(\frac{\left(-2+\sqrt{2}\right)\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]}{2\left(1+\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]\right)}+\frac{\left(-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]\right)\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]}{2\left(1+\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]\right)^2}\right)\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\right)\Big/$$

$$\left.\left(\sqrt{\frac{-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]}{1+\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]}}+\frac{\sqrt{\frac{-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]}{1+\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]}}\;\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}}{\sqrt{2\left(3-2\sqrt{2}\right)}\;\sqrt{1-\frac{\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}{3-2\sqrt{2}}}\;\sqrt{1-\frac{\left(17-12\sqrt{2}\right)\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}{3-2\sqrt{2}}}}\right)\right)\right)$$

- **Problem 239: Result more than twice size of optimal antiderivative.**

$$\int\frac{1}{\sqrt{e\,\text{Cos}[c+d\,x]}\;(a+a\,\text{Sin}[c+d\,x])}\,dx$$

Optimal (type 4, 78 leaves, 3 steps):

$$\frac{2\sqrt{\text{Cos}[c+d\,x]}\;\text{EllipticF}\left[\frac{1}{2}(c+d\,x),2\right]}{3\,a\,d\sqrt{e\,\text{Cos}[c+d\,x]}}-\frac{2\sqrt{e\,\text{Cos}[c+d\,x]}}{3\,d\,e\,(a+a\,\text{Sin}[c+d\,x])}$$

Result (type 4, 1182 leaves):

$$\frac{\text{Cos}[c+d\,x]\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2\left(-\frac{2}{3}-\frac{2}{3\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2}\right)}{d\sqrt{e\,\text{Cos}[c+d\,x]}\;(a+a\,\text{Sin}[c+d\,x])}+$$

$$\left(2\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2\left(\frac{\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]\sqrt{\operatorname{Cos}[c+d x]}}{3\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)}-\frac{\sqrt{\operatorname{Cos}[c+d x]}\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]}{3\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)}\right)\right.$$

$$\left(\operatorname{Cos}[c+d x]+2\sqrt{2}\operatorname{Cos}\left[\frac{1}{4}(c+d x)\right]^2\sqrt{\frac{-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]}{1+\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]}}\right.$$

$$\left.\left.\operatorname{EllipticF}\left[\operatorname{ArcSin}\left[\frac{\operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]\sqrt{3-2\sqrt{2}-\operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]^2}\right)\right)\Big/$$

$$\left(3 d\sqrt{e\operatorname{Cos}[c+d x]}\,(a+a\operatorname{Sin}[c+d x])\right)\left(\frac{1}{3\operatorname{Cos}[c+d x]^{3/2}}\operatorname{Sin}[c+d x]\left(\operatorname{Cos}[c+d x]+2\sqrt{2}\operatorname{Cos}\left[\frac{1}{4}(c+d x)\right]^2\right.\right.$$

$$\left.\sqrt{\frac{-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]}{1+\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]}}\operatorname{EllipticF}\left[\operatorname{ArcSin}\left[\frac{\operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]\sqrt{3-2\sqrt{2}-\operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]^2}\right)+$$

$$\frac{1}{3\sqrt{\operatorname{Cos}[c+d x]}}2\left(-\operatorname{Sin}[c+d x]-\frac{\sqrt{\frac{-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]}{1+\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]}}\operatorname{EllipticF}\left[\operatorname{ArcSin}\left[\frac{\operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]\operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{2}\sqrt{3-2\sqrt{2}-\operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]^2}}-\right.$$

$$\sqrt{2}\operatorname{Cos}\left[\frac{1}{4}(c+d x)\right]\sqrt{\frac{-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]}{1+\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]}}\operatorname{EllipticF}\left[\operatorname{ArcSin}\left[\frac{\operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]$$

$$\operatorname{Sin}\left[\frac{1}{4}(c+d x)\right]\sqrt{3-2\sqrt{2}-\operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]^2}+\left(\sqrt{2}\operatorname{Cos}\left[\frac{1}{4}(c+d x)\right]^2\operatorname{EllipticF}\left[\operatorname{ArcSin}\left[\frac{\operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]\right.$$

$$\left(\frac{\left(-2+\sqrt{2}\right)\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]}{2\left(1+\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]\right)}+\frac{\left(-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]\right)\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]}{2\left(1+\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]\right)^2}\right)\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\Bigg/$$

$$\left(\sqrt{\frac{-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]}{1+\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]}}+\frac{\sqrt{\frac{-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]}{1+\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]}}\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}}{\sqrt{2\left(3-2\sqrt{2}\right)}\sqrt{1-\frac{\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}{3-2\sqrt{2}}}\sqrt{1-\frac{\left(17-12\sqrt{2}\right)\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}{3-2\sqrt{2}}}}\right)\Bigg)\Bigg)$$

■ Problem 247: Result more than twice size of optimal antiderivative.

$$\int\frac{(e\,\text{Cos}[c+d\,x])^{3/2}}{(a+a\,\text{Sin}[c+d\,x])^2}\,dx$$

Optimal (type 4, 83 leaves, 3 steps):

$$-\frac{2\,e^2\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticF}\left[\frac{1}{2}(c+d\,x),2\right]}{3\,a^2\,d\sqrt{e\,\text{Cos}[c+d\,x]}}-\frac{4\,e\sqrt{e\,\text{Cos}[c+d\,x]}}{3\,d\left(a^2+a^2\,\text{Sin}[c+d\,x]\right)}$$

Result (type 4, 1190 leaves):

$$\frac{(e\,\text{Cos}[c+d\,x])^{3/2}\,\text{Sec}[c+d\,x]\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4\left(\frac{2}{3}-\frac{4}{3\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2}\right)}{d\,(a+a\,\text{Sin}[c+d\,x])^2}-$$

$$\Bigg(2\,(e\,\text{Cos}[c+d\,x])^{3/2}\,\text{Sec}[c+d\,x]^2\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4$$

$$\left(-\frac{\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]\sqrt{\text{Cos}[c+d\,x]}}{3\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)}+\frac{\sqrt{\text{Cos}[c+d\,x]}\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]}{3\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)}\right)\left(\text{Cos}[c+d\,x]+2\sqrt{2}\,\text{Cos}\left[\frac{1}{4}(c+d\,x)\right]^2\right.$$

$$\left.\sqrt{\frac{-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]}{1+\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]}}\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\right)\Bigg)\Bigg/$$

$$\left(3\,d\,(a+a\,\mathrm{Sin}[c+d\,x])^2\left(-\frac{1}{3\,\mathrm{Cos}[c+d\,x]^{3/2}}\mathrm{Sin}[c+d\,x]\left(\mathrm{Cos}[c+d\,x]+2\sqrt{2}\,\mathrm{Cos}\left[\frac{1}{4}(c+d\,x)\right]^2\sqrt{\frac{-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]}{1+\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]}}\right.\right.\right.$$

$$\left.\mathrm{EllipticF}\left[\mathrm{ArcSin}\left[\frac{\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]\sqrt{3-2\sqrt{2}-\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\right)-$$

$$\frac{1}{3\sqrt{\mathrm{Cos}[c+d\,x]}}\,2\left(-\mathrm{Sin}[c+d\,x]-\frac{\sqrt{\frac{-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]}{1+\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]}}\,\mathrm{EllipticF}\left[\mathrm{ArcSin}\left[\frac{\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]}{\sqrt{2}\sqrt{3-2\sqrt{2}-\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}}-\right.$$

$$\sqrt{2}\,\mathrm{Cos}\left[\frac{1}{4}(c+d\,x)\right]\sqrt{\frac{-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]}{1+\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]}}\,\mathrm{EllipticF}\left[\mathrm{ArcSin}\left[\frac{\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]$$

$$\mathrm{Sin}\left[\frac{1}{4}(c+d\,x)\right]\sqrt{3-2\sqrt{2}-\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}+\left(\sqrt{2}\,\mathrm{Cos}\left[\frac{1}{4}(c+d\,x)\right]^2\mathrm{EllipticF}\left[\mathrm{ArcSin}\left[\frac{\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]\right.$$

$$\left(\frac{\left(-2+\sqrt{2}\right)\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]}{2\left(1+\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]\right)}+\frac{\left(-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]\right)\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]}{2\left(1+\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]\right)^2}\right)\left.\sqrt{3-2\sqrt{2}-\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\right)\Big/$$

$$\left.\left.\left.\left(\sqrt{\frac{-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]}{1+\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]}}\right)+\frac{\sqrt{\frac{-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]}{1+\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]}}\sqrt{3-2\sqrt{2}-\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}}{\sqrt{2\left(3-2\sqrt{2}\right)}\sqrt{1-\frac{\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}{3-2\sqrt{2}}}\sqrt{1-\frac{\left(17-12\sqrt{2}\right)\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}{3-2\sqrt{2}}}}\right)\right)\right)$$

- **Problem 249: Result more than twice size of optimal antiderivative.**

$$\int\frac{1}{\sqrt{e\,\mathrm{Cos}[c+d\,x]}\,(a+a\,\mathrm{Sin}[c+d\,x])^2}\,dx$$

Optimal (type 4, 116 leaves, 4 steps) :

$$\frac{2\sqrt{\text{Cos}[c+d x]}\ \text{EllipticF}\left[\frac{1}{2}(c+d x),2\right]}{7 a^2 d\sqrt{e\,\text{Cos}[c+d x]}}-\frac{2\sqrt{e\,\text{Cos}[c+d x]}}{7 d e\,(a+a\,\text{Sin}[c+d x])^2}-\frac{2\sqrt{e\,\text{Cos}[c+d x]}}{7 d e\left(a^2+a^2\,\text{Sin}[c+d x]\right)}$$

Result (type 4, 1209 leaves) :

$$\left(\text{Cos}[c+d x]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^4\left(-\frac{2}{7}-\frac{2}{7\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^4}-\frac{2}{7\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2}\right)\right)\Big/$$
$$\left(d\sqrt{e\,\text{Cos}[c+d x]}\ (a+a\,\text{Sin}[c+d x])^2\right)+$$
$$\left(2\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^4\left(\frac{\text{Cos}\left[\frac{1}{2}(c+d x)\right]\sqrt{\text{Cos}[c+d x]}}{7\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)}-\frac{\sqrt{\text{Cos}[c+d x]}\ \text{Sin}\left[\frac{1}{2}(c+d x)\right]}{7\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)}\right)\right.$$
$$\left(\text{Cos}[c+d x]+2\sqrt{2}\ \text{Cos}\left[\frac{1}{4}(c+d x)\right]^2\sqrt{\frac{-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]}{1+\text{Cos}\left[\frac{1}{2}(c+d x)\right]}}\right.$$
$$\left.\left.\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}\right)\right)\Big/$$
$$\left(7 d\sqrt{e\,\text{Cos}[c+d x]}\ (a+a\,\text{Sin}[c+d x])^2\left(\frac{1}{7\,\text{Cos}[c+d x]^{3/2}}\text{Sin}[c+d x]\left(\text{Cos}[c+d x]+2\sqrt{2}\ \text{Cos}\left[\frac{1}{4}(c+d x)\right]^2\right.\right.\right.$$
$$\left.\sqrt{\frac{-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]}{1+\text{Cos}\left[\frac{1}{2}(c+d x)\right]}}\ \text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}\right)+$$

$$\frac{1}{7\sqrt{\text{Cos}[c+d\,x]}}\,2\left(-\text{Sin}[c+d\,x]-\frac{\sqrt{\frac{-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]}{1+\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]}}\;\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]}{\sqrt{2}\,\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^{2}}}-\right.$$

$$\sqrt{2}\,\text{Cos}\left[\frac{1}{4}(c+d\,x)\right]\sqrt{\frac{-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]}{1+\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]}}\;\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]$$

$$\text{Sin}\left[\frac{1}{4}(c+d\,x)\right]\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^{2}}+\left(\sqrt{2}\,\text{Cos}\left[\frac{1}{4}(c+d\,x)\right]^{2}\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]\right.$$

$$\left(\frac{\left(-2+\sqrt{2}\right)\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]}{2\left(1+\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]\right)}+\frac{\left(-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]\right)\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]}{2\left(1+\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]\right)^{2}}\right)\left.\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^{2}}\right)\Big/$$

$$\left(\sqrt{\frac{-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]}{1+\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]}}+\frac{\sqrt{\frac{-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]}{1+\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]}}\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^{2}}}{\sqrt{2\left(3-2\sqrt{2}\right)}\sqrt{1-\frac{\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^{2}}{3-2\sqrt{2}}}\sqrt{1-\frac{\left(17-12\sqrt{2}\right)\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^{2}}{3-2\sqrt{2}}}}\right)\Bigg)\Bigg)\Bigg)$$

- **Problem 259: Result more than twice size of optimal antiderivative.**

$$\int\frac{(e\,\text{Cos}[c+d\,x])^{3/2}}{(a+a\,\text{Sin}[c+d\,x])^{3}}\,dx$$

Optimal (type 4, 118 leaves, 4 steps):

$$-\frac{2\,e^{2}\sqrt{\text{Cos}[c+d\,x]}\;\text{EllipticF}\left[\frac{1}{2}(c+d\,x),2\right]}{21\,a^{3}\,d\sqrt{e\,\text{Cos}[c+d\,x]}}-\frac{4\,e\sqrt{e\,\text{Cos}[c+d\,x]}}{7\,a\,d\,(a+a\,\text{Sin}[c+d\,x])^{2}}+\frac{2\,e\sqrt{e\,\text{Cos}[c+d\,x]}}{21\,d\left(a^{3}+a^{3}\,\text{Sin}[c+d\,x]\right)}$$

Result (type 4, 1217 leaves):

$$\frac{1}{d\,(a+a\,\text{Sin}[c+d\,x])^{3}}(e\,\text{Cos}[c+d\,x])^{3/2}\,\text{Sec}[c+d\,x]\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^{6}$$

$$\left(\frac{2}{21}-\frac{4}{7\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^{4}}+\frac{2}{21\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^{2}}\right)-$$

$$\Bigg(2\,(e\,\text{Cos}[c+d\,x])^{3/2}\,\text{Sec}[c+d\,x]^2\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^6$$

$$\left(-\frac{\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]\sqrt{\text{Cos}[c+d\,x]}}{21\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)}+\frac{\sqrt{\text{Cos}[c+d\,x]}\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]}{21\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)}\right)\Bigg(\text{Cos}[c+d\,x]+2\sqrt{2}\,\text{Cos}\left[\frac{1}{4}(c+d\,x)\right]^2$$

$$\sqrt{\frac{-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]}{1+\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]}}\;\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\Bigg)\Bigg)\Bigg/$$

$$\Bigg(21\,d\,(a+a\,\text{Sin}[c+d\,x])^3\Bigg(-\frac{1}{21\,\text{Cos}[c+d\,x]^{3/2}}\text{Sin}[c+d\,x]\Bigg(\text{Cos}[c+d\,x]+2\sqrt{2}\,\text{Cos}\left[\frac{1}{4}(c+d\,x)\right]^2\sqrt{\frac{-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]}{1+\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]}}$$

$$\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\Bigg)-$$

$$\frac{1}{21\sqrt{\text{Cos}[c+d\,x]}}\,2\Bigg(-\text{Sin}[c+d\,x]-\frac{\sqrt{\frac{-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]}{1+\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]}}\;\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]}{\sqrt{2}\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}}-$$

$$\sqrt{2}\,\text{Cos}\left[\frac{1}{4}(c+d\,x)\right]\sqrt{\frac{-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]}{1+\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]}}\;\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]$$

$$\text{Sin}\left[\frac{1}{4}(c+d\,x)\right]\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}+\Bigg(\sqrt{2}\,\text{Cos}\left[\frac{1}{4}(c+d\,x)\right]^2\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]$$

$$\left(\frac{\left(-2+\sqrt{2}\right) \text{Sin}\left[\frac{1}{2}(c+d x)\right]}{2\left(1+\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right)}+\frac{\left(-1+\sqrt{2}-\left(-2+\sqrt{2}\right) \text{Cos}\left[\frac{1}{2}(c+d x)\right]\right) \text{Sin}\left[\frac{1}{2}(c+d x)\right]}{2\left(1+\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right)^2}\right) \sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}\Bigg) \Bigg/$$

$$\left(\sqrt{\frac{-1+\sqrt{2}-\left(-2+\sqrt{2}\right) \text{Cos}\left[\frac{1}{2}(c+d x)\right]}{1+\text{Cos}\left[\frac{1}{2}(c+d x)\right]}}+\frac{\sqrt{\frac{-1+\sqrt{2}-\left(-2+\sqrt{2}\right) \text{Cos}\left[\frac{1}{2}(c+d x)\right]}{1+\text{Cos}\left[\frac{1}{2}(c+d x)\right]}} \sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}}{\sqrt{2\left(3-2\sqrt{2}\right)} \sqrt{1-\frac{\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}{3-2\sqrt{2}}} \sqrt{1-\frac{\left(17-12\sqrt{2}\right) \text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}{3-2\sqrt{2}}}}\right)\Bigg)\Bigg)$$

Problem 261: Result more than twice size of optimal antiderivative.

$$\int \frac{1}{\sqrt{e\, \text{Cos}[c+d x]} \; (a+a\, \text{Sin}[c+d x])^3} \, dx$$

Optimal (type 4, 153 leaves, 5 steps):

$$\frac{10 \sqrt{\text{Cos}[c+d x]} \; \text{EllipticF}\left[\frac{1}{2}(c+d x), 2\right]}{77 a^3 d \sqrt{e\, \text{Cos}[c+d x]}}-\frac{2 \sqrt{e\, \text{Cos}[c+d x]}}{11 d e\, (a+a\, \text{Sin}[c+d x])^3}-\frac{10 \sqrt{e\, \text{Cos}[c+d x]}}{77 a d e\, (a+a\, \text{Sin}[c+d x])^2}-\frac{10 \sqrt{e\, \text{Cos}[c+d x]}}{77 d e \left(a^3+a^3 \text{Sin}[c+d x]\right)}$$

Result (type 4, 1236 leaves):

$$\left(\text{Cos}[c+d x] \left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^6\right.$$

$$\left.\left(-\frac{10}{77}-\frac{2}{11\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^6}-\frac{10}{77\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^4}-\frac{10}{77\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2}\right)\right) \Bigg/$$

$$\left(d \sqrt{e\, \text{Cos}[c+d x]} \; (a+a\, \text{Sin}[c+d x])^3\right)+\left(10 \left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^6\right.$$

$$\left(\frac{5\, \text{Cos}\left[\frac{1}{2}(c+d x)\right] \sqrt{\text{Cos}[c+d x]}}{77\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)}-\frac{5 \sqrt{\text{Cos}[c+d x]} \; \text{Sin}\left[\frac{1}{2}(c+d x)\right]}{77\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)}\right) \left(\text{Cos}[c+d x]+2\sqrt{2}\, \text{Cos}\left[\frac{1}{4}(c+d x)\right]^2\right.$$

$$\left.\left.\sqrt{\frac{-1+\sqrt{2}-\left(-2+\sqrt{2}\right) \text{Cos}\left[\frac{1}{2}(c+d x)\right]}{1+\text{Cos}\left[\frac{1}{2}(c+d x)\right]}} \; \text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{3-2\sqrt{2}}}\right], 17-12\sqrt{2}\right] \sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}\right)\right) \Bigg/$$

$$\Bigg(77\, d\, \sqrt{e\, \text{Cos}[c+d\, x]}\, (a+a\, \text{Sin}[c+d\, x])^3 \Bigg(\frac{1}{77\, \text{Cos}[c+d\, x]^{3/2}} 5\, \text{Sin}[c+d\, x] \Big(\text{Cos}[c+d\, x]+2\sqrt{2}\, \text{Cos}\Big[\frac{1}{4}(c+d\, x)\Big]^2$$

$$\sqrt{\frac{-1+\sqrt{2}-\left(-2+\sqrt{2}\right) \text{Cos}\left[\frac{1}{2}(c+d\, x)\right]}{1+\text{Cos}\left[\frac{1}{2}(c+d\, x)\right]}}\ \text{EllipticF}\Big[\text{ArcSin}\Big[\frac{\text{Tan}\left[\frac{1}{4}(c+d\, x)\right]}{\sqrt{3-2\sqrt{2}}}\Big], 17-12\sqrt{2}\Big] \sqrt{3-2\sqrt{2}-\text{Tan}\Big[\frac{1}{4}(c+d\, x)\Big]^2}\Big)+$$

$$\frac{1}{77\sqrt{\text{Cos}[c+d\, x]}} 10 \Bigg(-\text{Sin}[c+d\, x]-\frac{\sqrt{\frac{-1+\sqrt{2}-\left(-2+\sqrt{2}\right) \text{Cos}\left[\frac{1}{2}(c+d\, x)\right]}{1+\text{Cos}\left[\frac{1}{2}(c+d\, x)\right]}}\ \text{EllipticF}\Big[\text{ArcSin}\Big[\frac{\text{Tan}\left[\frac{1}{4}(c+d\, x)\right]}{\sqrt{3-2\sqrt{2}}}\Big], 17-12\sqrt{2}\Big]\, \text{Tan}\left[\frac{1}{4}(c+d\, x)\right]}{\sqrt{2}\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d\, x)\right]^2}}-$$

$$\sqrt{2}\, \text{Cos}\Big[\frac{1}{4}(c+d\, x)\Big] \sqrt{\frac{-1+\sqrt{2}-\left(-2+\sqrt{2}\right) \text{Cos}\left[\frac{1}{2}(c+d\, x)\right]}{1+\text{Cos}\left[\frac{1}{2}(c+d\, x)\right]}}\ \text{EllipticF}\Big[\text{ArcSin}\Big[\frac{\text{Tan}\left[\frac{1}{4}(c+d\, x)\right]}{\sqrt{3-2\sqrt{2}}}\Big], 17-12\sqrt{2}\Big]$$

$$\text{Sin}\Big[\frac{1}{4}(c+d\, x)\Big] \sqrt{3-2\sqrt{2}-\text{Tan}\Big[\frac{1}{4}(c+d\, x)\Big]^2}+\Bigg(\sqrt{2}\, \text{Cos}\Big[\frac{1}{4}(c+d\, x)\Big]^2 \text{EllipticF}\Big[\text{ArcSin}\Big[\frac{\text{Tan}\left[\frac{1}{4}(c+d\, x)\right]}{\sqrt{3-2\sqrt{2}}}\Big], 17-12\sqrt{2}\Big]$$

$$\Bigg(\frac{\left(-2+\sqrt{2}\right) \text{Sin}\left[\frac{1}{2}(c+d\, x)\right]}{2\left(1+\text{Cos}\left[\frac{1}{2}(c+d\, x)\right]\right)}+\frac{\left(-1+\sqrt{2}-\left(-2+\sqrt{2}\right) \text{Cos}\left[\frac{1}{2}(c+d\, x)\right]\right) \text{Sin}\left[\frac{1}{2}(c+d\, x)\right]}{2\left(1+\text{Cos}\left[\frac{1}{2}(c+d\, x)\right]\right)^2}\Bigg) \sqrt{3-2\sqrt{2}-\text{Tan}\Big[\frac{1}{4}(c+d\, x)\Big]^2}\Bigg) \Big/$$

$$\Bigg(\sqrt{\frac{-1+\sqrt{2}-\left(-2+\sqrt{2}\right) \text{Cos}\left[\frac{1}{2}(c+d\, x)\right]}{1+\text{Cos}\left[\frac{1}{2}(c+d\, x)\right]}}+\frac{\sqrt{\frac{-1+\sqrt{2}-\left(-2+\sqrt{2}\right) \text{Cos}\left[\frac{1}{2}(c+d\, x)\right]}{1+\text{Cos}\left[\frac{1}{2}(c+d\, x)\right]}}\ \sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d\, x)\right]^2}}{\sqrt{2\left(3-2\sqrt{2}\right)}\ \sqrt{1-\frac{\text{Tan}\left[\frac{1}{4}(c+d\, x)\right]^2}{3-2\sqrt{2}}}\ \sqrt{1-\frac{\left(17-12\sqrt{2}\right) \text{Tan}\left[\frac{1}{4}(c+d\, x)\right]^2}{3-2\sqrt{2}}}}\Bigg)\Bigg)\Bigg)\Bigg)$$

- **Problem 267: Result more than twice size of optimal antiderivative.**

$$\int \frac{(e\, \text{Cos}[c+d\, x])^{7/2}}{(a+a\, \text{Sin}[c+d\, x])^4}\, dx$$

Optimal (type 4, 120 leaves, 4 steps):

$$\frac{10 e^4 \sqrt{\text{Cos}[c+d x]}\ \text{EllipticF}\left[\frac{1}{2}(c+d x), 2\right]}{21 a^4 d \sqrt{e \text{Cos}[c+d x]}}-\frac{4 e (e \text{Cos}[c+d x])^{5/2}}{7 a d (a+a \text{Sin}[c+d x])^3}+\frac{20 e^3 \sqrt{e \text{Cos}[c+d x]}}{21 d \left(a^4+a^4 \text{Sin}[c+d x]\right)}$$

Result (type 4, 1219 leaves):

$$\frac{1}{d (a+a \text{Sin}[c+d x])^4}(e \text{Cos}[c+d x])^{7/2} \text{Sec}[c+d x]^3 \left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^8$$
$$\left(-\frac{10}{21}-\frac{8}{7 \left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^4}+\frac{32}{21 \left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2}\right)+$$
$$\left(10 (e \text{Cos}[c+d x])^{7/2} \text{Sec}[c+d x]^4 \left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^8\right.$$
$$\left(\frac{5 \text{Cos}\left[\frac{1}{2}(c+d x)\right] \sqrt{\text{Cos}[c+d x]}}{21 \left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)}-\frac{5 \sqrt{\text{Cos}[c+d x]}\ \text{Sin}\left[\frac{1}{2}(c+d x)\right]}{21 \left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)}\right)\left(\text{Cos}[c+d x]+2 \sqrt{2}\ \text{Cos}\left[\frac{1}{4}(c+d x)\right]^2\right.$$
$$\left.\left.\sqrt{\frac{-1+\sqrt{2}-\left(-2+\sqrt{2}\right) \text{Cos}\left[\frac{1}{2}(c+d x)\right]}{1+\text{Cos}\left[\frac{1}{2}(c+d x)\right]}}\ \text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{3-2 \sqrt{2}}}\right], 17-12 \sqrt{2}\right] \sqrt{3-2 \sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}\right)\right) \Big/$$
$$\left(21 d (a+a \text{Sin}[c+d x])^4 \left(\frac{1}{21 \text{Cos}[c+d x]^{3/2}} 5 \text{Sin}[c+d x] \left(\text{Cos}[c+d x]+2 \sqrt{2}\ \text{Cos}\left[\frac{1}{4}(c+d x)\right]^2 \sqrt{\frac{-1+\sqrt{2}-\left(-2+\sqrt{2}\right) \text{Cos}\left[\frac{1}{2}(c+d x)\right]}{1+\text{Cos}\left[\frac{1}{2}(c+d x)\right]}}\right.\right.\right.$$
$$\left.\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{3-2 \sqrt{2}}}\right], 17-12 \sqrt{2}\right] \sqrt{3-2 \sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}\right)+$$

$$\frac{1}{21\sqrt{\text{Cos}[c+d x]}}\,10\left(-\text{Sin}[c+d x]-\frac{\sqrt{\frac{-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]}{1+\text{Cos}\left[\frac{1}{2}(c+d x)\right]}}\ \text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]\text{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{2}\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}}-\right.$$

$$\sqrt{2}\,\text{Cos}\left[\frac{1}{4}(c+d x)\right]\sqrt{\frac{-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]}{1+\text{Cos}\left[\frac{1}{2}(c+d x)\right]}}\ \text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]$$

$$\text{Sin}\left[\frac{1}{4}(c+d x)\right]\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}+\left(\sqrt{2}\,\text{Cos}\left[\frac{1}{4}(c+d x)\right]^2\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]\right.$$

$$\left.\left(\frac{\left(-2+\sqrt{2}\right)\text{Sin}\left[\frac{1}{2}(c+d x)\right]}{2\left(1+\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right)}+\frac{\left(-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right)\text{Sin}\left[\frac{1}{2}(c+d x)\right]}{2\left(1+\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right)^2}\right)\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}\right)\Bigg/$$

$$\left.\left.\left.\left(\sqrt{\frac{-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]}{1+\text{Cos}\left[\frac{1}{2}(c+d x)\right]}}+\frac{\sqrt{\frac{-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]}{1+\text{Cos}\left[\frac{1}{2}(c+d x)\right]}}\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}}{\sqrt{2\left(3-2\sqrt{2}\right)}\sqrt{1-\frac{\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}{3-2\sqrt{2}}}\sqrt{1-\frac{\left(17-12\sqrt{2}\right)\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}{3-2\sqrt{2}}}}\right)\right)\right)\right)$$

- **Problem 269: Result more than twice size of optimal antiderivative.**

$$\int \frac{(e\,\text{Cos}[c+d x])^{3/2}}{(a+a\,\text{Sin}[c+d x])^4}\,dx$$

Optimal (type 4, 154 leaves, 5 steps):

$$-\frac{2 e^2\sqrt{\text{Cos}[c+d x]}\ \text{EllipticF}\left[\frac{1}{2}(c+d x),2\right]}{77 a^4 d\sqrt{e\,\text{Cos}[c+d x]}}-\frac{4 e\sqrt{e\,\text{Cos}[c+d x]}}{11 a d\,(a+a\,\text{Sin}[c+d x])^3}+\frac{2 e\sqrt{e\,\text{Cos}[c+d x]}}{77 d\left(a^2+a^2\,\text{Sin}[c+d x]\right)^2}+\frac{2 e\sqrt{e\,\text{Cos}[c+d x]}}{77 d\left(a^4+a^4\,\text{Sin}[c+d x]\right)}$$

Result (type 4, 1244 leaves):

$$\frac{1}{d\,(a+a\,\text{Sin}[c+d x])^4}(e\,\text{Cos}[c+d x])^{3/2}\,\text{Sec}[c+d x]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^8$$

$$\left(\frac{2}{77}-\frac{4}{11\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^6}+\frac{2}{77\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^4}+\frac{2}{77\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2}\right)-$$

$$\Bigg(2\,(e\,\text{Cos}[c+d\,x])^{3/2}\,\text{Sec}[c+d\,x]^2\,\Big(\text{Cos}\Big[\frac{1}{2}\,(c+d\,x)\Big]+\text{Sin}\Big[\frac{1}{2}\,(c+d\,x)\Big]\Big)^8$$

$$\Bigg(-\frac{\text{Cos}\big[\frac{1}{2}\,(c+d\,x)\big]\,\sqrt{\text{Cos}[c+d\,x]}}{77\,\big(\text{Cos}\big[\frac{1}{2}\,(c+d\,x)\big]+\text{Sin}\big[\frac{1}{2}\,(c+d\,x)\big]\big)}+\frac{\sqrt{\text{Cos}[c+d\,x]}\,\text{Sin}\big[\frac{1}{2}\,(c+d\,x)\big]}{77\,\big(\text{Cos}\big[\frac{1}{2}\,(c+d\,x)\big]+\text{Sin}\big[\frac{1}{2}\,(c+d\,x)\big]\big)}\Bigg)\Bigg(\text{Cos}[c+d\,x]+2\,\sqrt{2}\,\text{Cos}\Big[\frac{1}{4}\,(c+d\,x)\Big]^2$$

$$\sqrt{\frac{-1+\sqrt{2}-\big(-2+\sqrt{2}\big)\,\text{Cos}\big[\frac{1}{2}\,(c+d\,x)\big]}{1+\text{Cos}\big[\frac{1}{2}\,(c+d\,x)\big]}}\;\text{EllipticF}\Big[\text{ArcSin}\Big[\frac{\text{Tan}\big[\frac{1}{4}\,(c+d\,x)\big]}{\sqrt{3-2\,\sqrt{2}}}\Big],\,17-12\,\sqrt{2}\Big]\,\sqrt{3-2\,\sqrt{2}-\text{Tan}\Big[\frac{1}{4}\,(c+d\,x)\Big]^2}\,\Bigg)\Bigg)\Bigg/$$

$$\Bigg(77\,d\,(a+a\,\text{Sin}[c+d\,x])^4\,\Bigg(-\frac{1}{77\,\text{Cos}[c+d\,x]^{3/2}}\text{Sin}[c+d\,x]\,\Bigg(\text{Cos}[c+d\,x]+2\,\sqrt{2}\,\text{Cos}\Big[\frac{1}{4}\,(c+d\,x)\Big]^2\,\sqrt{\frac{-1+\sqrt{2}-\big(-2+\sqrt{2}\big)\,\text{Cos}\big[\frac{1}{2}\,(c+d\,x)\big]}{1+\text{Cos}\big[\frac{1}{2}\,(c+d\,x)\big]}}$$

$$\text{EllipticF}\Big[\text{ArcSin}\Big[\frac{\text{Tan}\big[\frac{1}{4}\,(c+d\,x)\big]}{\sqrt{3-2\,\sqrt{2}}}\Big],\,17-12\,\sqrt{2}\Big]\,\sqrt{3-2\,\sqrt{2}-\text{Tan}\Big[\frac{1}{4}\,(c+d\,x)\Big]^2}\,\Bigg)-$$

$$\frac{1}{77\,\sqrt{\text{Cos}[c+d\,x]}}\,2\,\Bigg(-\text{Sin}[c+d\,x]-\frac{\sqrt{\frac{-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]}{1+\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]}}\;\text{EllipticF}\Big[\text{ArcSin}\Big[\frac{\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]}{\sqrt{3-2\sqrt{2}}}\Big],\,17-12\,\sqrt{2}\Big]\,\text{Tan}\big[\frac{1}{4}\,(c+d\,x)\big]}{\sqrt{2}\,\sqrt{3-2\,\sqrt{2}-\text{Tan}\big[\frac{1}{4}\,(c+d\,x)\big]^2}}-$$

$$\sqrt{2}\,\text{Cos}\Big[\frac{1}{4}\,(c+d\,x)\Big]\,\sqrt{\frac{-1+\sqrt{2}-\big(-2+\sqrt{2}\big)\,\text{Cos}\big[\frac{1}{2}\,(c+d\,x)\big]}{1+\text{Cos}\big[\frac{1}{2}\,(c+d\,x)\big]}}\;\text{EllipticF}\Big[\text{ArcSin}\Big[\frac{\text{Tan}\big[\frac{1}{4}\,(c+d\,x)\big]}{\sqrt{3-2\,\sqrt{2}}}\Big],\,17-12\,\sqrt{2}\Big]$$

$$\text{Sin}\Big[\frac{1}{4}\,(c+d\,x)\Big]\,\sqrt{3-2\,\sqrt{2}-\text{Tan}\Big[\frac{1}{4}\,(c+d\,x)\Big]^2}+\Bigg(\sqrt{2}\,\text{Cos}\Big[\frac{1}{4}\,(c+d\,x)\Big]^2\,\text{EllipticF}\Big[\text{ArcSin}\Big[\frac{\text{Tan}\big[\frac{1}{4}\,(c+d\,x)\big]}{\sqrt{3-2\,\sqrt{2}}}\Big],\,17-12\,\sqrt{2}\Big]$$

$$\left(\frac{\left(-2+\sqrt{2}\right)\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]}{2\left(1+\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]\right)}+\frac{\left(-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]\right)\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]}{2\left(1+\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]\right)^2}\right)\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\Bigg)\Bigg/$$

$$\left(\sqrt{\frac{-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]}{1+\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]}}+\frac{\sqrt{\frac{-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]}{1+\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]}}\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}}{\sqrt{2\left(3-2\sqrt{2}\right)}\sqrt{1-\frac{\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}{3-2\sqrt{2}}}\sqrt{1-\frac{\left(17-12\sqrt{2}\right)\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}{3-2\sqrt{2}}}}\right)\Bigg)\Bigg)$$

Problem 271: Result more than twice size of optimal antiderivative.

$$\int\frac{1}{\sqrt{e\,\text{Cos}[c+d\,x]}\,(a+a\,\text{Sin}[c+d\,x])^4}\,dx$$

Optimal (type 4, 191 leaves, 6 steps):

$$\frac{2\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticF}\left[\frac{1}{2}(c+d\,x),2\right]}{33\,a^4\,d\sqrt{e\,\text{Cos}[c+d\,x]}}-\frac{2\sqrt{e\,\text{Cos}[c+d\,x]}}{15\,d\,e\,(a+a\,\text{Sin}[c+d\,x])^4}-$$

$$\frac{14\sqrt{e\,\text{Cos}[c+d\,x]}}{165\,a\,d\,e\,(a+a\,\text{Sin}[c+d\,x])^3}-\frac{2\sqrt{e\,\text{Cos}[c+d\,x]}}{33\,d\,e\,\left(a^2+a^2\,\text{Sin}[c+d\,x]\right)^2}-\frac{2\sqrt{e\,\text{Cos}[c+d\,x]}}{33\,d\,e\,\left(a^4+a^4\,\text{Sin}[c+d\,x]\right)}$$

Result (type 4, 1263 leaves):

$$\Bigg(\text{Cos}[c+d\,x]\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^8\Bigg(-\frac{2}{33}-\frac{2}{15\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^8}-\frac{14}{165\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^6}-$$

$$\frac{2}{33\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4}-\frac{2}{33\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2}\Bigg)\Bigg)\Bigg/\left(d\sqrt{e\,\text{Cos}[c+d\,x]}\,(a+a\,\text{Sin}[c+d\,x])^4\right)+$$

$$\Bigg(2\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^8\left(\frac{\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]\sqrt{\text{Cos}[c+d\,x]}}{33\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)}-\frac{\sqrt{\text{Cos}[c+d\,x]}\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]}{33\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)}\right)$$

$$\left(\text{Cos}[c+d\,x]+2\sqrt{2}\,\text{Cos}\left[\frac{1}{4}(c+d\,x)\right]^2\sqrt{\frac{-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]}{1+\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]}}\right.$$

$$\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{3-2\sqrt{2}}}\right], 17-12\sqrt{2}\right]\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}\Bigg)\Bigg)\Bigg/$$

$$\Bigg(33\, d\sqrt{e\,\text{Cos}[c+d x]}\,(a+a\,\text{Sin}[c+d x])^4\Bigg(\frac{1}{33\,\text{Cos}[c+d x]^{3/2}}\text{Sin}[c+d x]\Bigg(\text{Cos}[c+d x]+2\sqrt{2}\,\text{Cos}\left[\frac{1}{4}(c+d x)\right]^2$$

$$\sqrt{\frac{-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]}{1+\text{Cos}\left[\frac{1}{2}(c+d x)\right]}}\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{3-2\sqrt{2}}}\right], 17-12\sqrt{2}\right]\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}\Bigg)+$$

$$\frac{1}{33\sqrt{\text{Cos}[c+d x]}}\,2\Bigg(-\text{Sin}[c+d x]-\frac{\sqrt{\frac{-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]}{1+\text{Cos}\left[\frac{1}{2}(c+d x)\right]}}\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{3-2\sqrt{2}}}\right], 17-12\sqrt{2}\right]\text{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{2}\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}}-$$

$$\sqrt{2}\,\text{Cos}\left[\frac{1}{4}(c+d x)\right]\sqrt{\frac{-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]}{1+\text{Cos}\left[\frac{1}{2}(c+d x)\right]}}\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{3-2\sqrt{2}}}\right], 17-12\sqrt{2}\right]$$

$$\text{Sin}\left[\frac{1}{4}(c+d x)\right]\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}+\Bigg(\sqrt{2}\,\text{Cos}\left[\frac{1}{4}(c+d x)\right]^2\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{3-2\sqrt{2}}}\right], 17-12\sqrt{2}\right]$$

$$\left(\frac{\left(-2+\sqrt{2}\right)\text{Sin}\left[\frac{1}{2}(c+d x)\right]}{2\left(1+\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right)}+\frac{\left(-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right)\text{Sin}\left[\frac{1}{2}(c+d x)\right]}{2\left(1+\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right)^2}\right)\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}\Bigg)\Bigg/$$

$$\left(\sqrt{\frac{-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]}{1+\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]}}+\frac{\sqrt{\frac{-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]}{1+\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]}}\sqrt{3-2\sqrt{2}-\operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]^2}}{\sqrt{2\left(3-2\sqrt{2}\right)}\sqrt{1-\frac{\operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]^2}{3-2\sqrt{2}}}\sqrt{1-\frac{\left(17-12\sqrt{2}\right)\operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]^2}{3-2\sqrt{2}}}}\right)\Bigg)\Bigg)$$

■ **Problem 273: Result unnecessarily involves imaginary or complex numbers.**

$$\int (e\operatorname{Cos}[c+d x])^{3/2}\sqrt{a+a\operatorname{Sin}[c+d x]}\,dx$$

Optimal (type 3, 236 leaves, 8 steps):

$$-\frac{a\,(e\operatorname{Cos}[c+d x])^{5/2}}{2 d e\sqrt{a+a\operatorname{Sin}[c+d x]}}+\frac{3 e\sqrt{e\operatorname{Cos}[c+d x]}\sqrt{a+a\operatorname{Sin}[c+d x]}}{4 d}-\frac{3 e^{3/2}\operatorname{ArcSinh}\left[\frac{\sqrt{e\operatorname{Cos}[c+d x]}}{\sqrt{e}}\right]\sqrt{1+\operatorname{Cos}[c+d x]}\sqrt{a+a\operatorname{Sin}[c+d x]}}{4 d\,(1+\operatorname{Cos}[c+d x]+\operatorname{Sin}[c+d x])}+\frac{3 e^{3/2}\operatorname{ArcTan}\left[\frac{\sqrt{e}\operatorname{Sin}[c+d x]}{\sqrt{e\operatorname{Cos}[c+d x]}\sqrt{1+\operatorname{Cos}[c+d x]}}\right]\sqrt{1+\operatorname{Cos}[c+d x]}\sqrt{a+a\operatorname{Sin}[c+d x]}}{4 d\,(1+\operatorname{Cos}[c+d x]+\operatorname{Sin}[c+d x])}$$

Result (type 3, 269 leaves):

$$-\Bigg(i\,e\,e^{-i(c+d x)}\sqrt{e\operatorname{Cos}[c+d x]}\Big(-i\sqrt{1+e^{2 i(c+d x)}}-2 e^{i(c+d x)}\sqrt{1+e^{2 i(c+d x)}}+2 i\,e^{2 i(c+d x)}\sqrt{1+e^{2 i(c+d x)}}+e^{3 i(c+d x)}\sqrt{1+e^{2 i(c+d x)}}-3 d\,e^{2 i(c+d x)}x+3 e^{2 i(c+d x)}\operatorname{ArcSinh}\left[e^{i(c+d x)}\right]-3 i\,e^{2 i(c+d x)}\operatorname{Log}\left[1+\sqrt{1+e^{2 i(c+d x)}}\right]\Big)\sqrt{a\,(1+\operatorname{Sin}[c+d x])}\Bigg)\Bigg/\left(4 d\left(i+e^{i(c+d x)}\right)\sqrt{1+e^{2 i(c+d x)}}\right)$$

■ **Problem 274: Result unnecessarily involves imaginary or complex numbers.**

$$\int\sqrt{e\operatorname{Cos}[c+d x]}\sqrt{a+a\operatorname{Sin}[c+d x]}\,dx$$

Optimal (type 3, 194 leaves, 7 steps):

$$-\frac{a\,(e\operatorname{Cos}[c+d x])^{3/2}}{d e\sqrt{a+a\operatorname{Sin}[c+d x]}}+\frac{\sqrt{e}\operatorname{ArcSinh}\left[\frac{\sqrt{e\operatorname{Cos}[c+d x]}}{\sqrt{e}}\right]\sqrt{1+\operatorname{Cos}[c+d x]}\sqrt{a+a\operatorname{Sin}[c+d x]}}{d\,(1+\operatorname{Cos}[c+d x]+\operatorname{Sin}[c+d x])}+\frac{\sqrt{e}\operatorname{ArcTan}\left[\frac{\sqrt{e}\operatorname{Sin}[c+d x]}{\sqrt{e\operatorname{Cos}[c+d x]}\sqrt{1+\operatorname{Cos}[c+d x]}}\right]\sqrt{1+\operatorname{Cos}[c+d x]}\sqrt{a+a\operatorname{Sin}[c+d x]}}{d\,(1+\operatorname{Cos}[c+d x]+\operatorname{Sin}[c+d x])}$$

Result (type 3, 195 leaves):

$$-\left(i\sqrt{e\,\mathrm{Cos}[c+d\,x]}\left(-i\sqrt{1+e^{2\,i\,(c+d\,x)}}+e^{i\,(c+d\,x)}\sqrt{1+e^{2\,i\,(c+d\,x)}}+i\,d\,e^{i\,(c+d\,x)}\,x+i\,e^{i\,(c+d\,x)}\,\mathrm{ArcSinh}\left[e^{i\,(c+d\,x)}\right]-e^{i\,(c+d\,x)}\,\mathrm{Log}\left[1+\sqrt{1+e^{2\,i\,(c+d\,x)}}\right]\right)\sqrt{a\,(1+\mathrm{Sin}[c+d\,x])}\right)\Big/\left(d\left(i+e^{i\,(c+d\,x)}\right)\sqrt{1+e^{2\,i\,(c+d\,x)}}\right)$$

- **Problem 275: Result unnecessarily involves imaginary or complex numbers.**

$$\int\frac{\sqrt{a+a\,\mathrm{Sin}[c+d\,x]}}{\sqrt{e\,\mathrm{Cos}[c+d\,x]}}\,dx$$

Optimal (type 3, 161 leaves, 6 steps):

$$-\frac{2\,\mathrm{ArcSinh}\left[\frac{\sqrt{e\,\mathrm{Cos}[c+d\,x]}}{\sqrt{e}}\right]\sqrt{1+\mathrm{Cos}[c+d\,x]}\,\sqrt{a+a\,\mathrm{Sin}[c+d\,x]}}{d\sqrt{e}\,(1+\mathrm{Cos}[c+d\,x]+\mathrm{Sin}[c+d\,x])}+\frac{2\,\mathrm{ArcTan}\left[\frac{\sqrt{e}\,\mathrm{Sin}[c+d\,x]}{\sqrt{e\,\mathrm{Cos}[c+d\,x]}\,\sqrt{1+\mathrm{Cos}[c+d\,x]}}\right]\sqrt{1+\mathrm{Cos}[c+d\,x]}\,\sqrt{a+a\,\mathrm{Sin}[c+d\,x]}}{d\sqrt{e}\,(1+\mathrm{Cos}[c+d\,x]+\mathrm{Sin}[c+d\,x])}$$

Result (type 3, 108 leaves):

$$\frac{\sqrt{1+e^{2\,i\,(c+d\,x)}}\left(d\,x-\mathrm{ArcSinh}\left[e^{i\,(c+d\,x)}\right]+i\,\mathrm{Log}\left[1+\sqrt{1+e^{2\,i\,(c+d\,x)}}\right]\right)\sqrt{a\,(1+\mathrm{Sin}[c+d\,x])}}{d\left(1-i\,e^{i\,(c+d\,x)}\right)\sqrt{e\,\mathrm{Cos}[c+d\,x]}}$$

- **Problem 280: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int(e\,\mathrm{Cos}[c+d\,x])^{5/2}\,(a+a\,\mathrm{Sin}[c+d\,x])^{3/2}\,dx$$

Optimal (type 3, 319 leaves, 10 steps):

$$-\frac{15\,a^3\,(e\,\mathrm{Cos}[c+d\,x])^{7/2}}{32\,d\,e\,(a+a\,\mathrm{Sin}[c+d\,x])^{3/2}}+\frac{15\,a^2\,e\,(e\,\mathrm{Cos}[c+d\,x])^{3/2}}{64\,d\sqrt{a+a\,\mathrm{Sin}[c+d\,x]}}-\frac{3\,a^2\,(e\,\mathrm{Cos}[c+d\,x])^{7/2}}{8\,d\,e\sqrt{a+a\,\mathrm{Sin}[c+d\,x]}}-\frac{a\,(e\,\mathrm{Cos}[c+d\,x])^{7/2}\sqrt{a+a\,\mathrm{Sin}[c+d\,x]}}{4\,d\,e}+\frac{45\,a\,e^{5/2}\,\mathrm{ArcSinh}\left[\frac{\sqrt{e\,\mathrm{Cos}[c+d\,x]}}{\sqrt{e}}\right]\sqrt{1+\mathrm{Cos}[c+d\,x]}\,\sqrt{a+a\,\mathrm{Sin}[c+d\,x]}}{64\,d\,(1+\mathrm{Cos}[c+d\,x]+\mathrm{Sin}[c+d\,x])}+\frac{45\,a\,e^{5/2}\,\mathrm{ArcTan}\left[\frac{\sqrt{e}\,\mathrm{Sin}[c+d\,x]}{\sqrt{e\,\mathrm{Cos}[c+d\,x]}\,\sqrt{1+\mathrm{Cos}[c+d\,x]}}\right]\sqrt{1+\mathrm{Cos}[c+d\,x]}\,\sqrt{a+a\,\mathrm{Sin}[c+d\,x]}}{64\,d\,(1+\mathrm{Cos}[c+d\,x]+\mathrm{Sin}[c+d\,x])}$$

Result (type 4, 2816 leaves):

$$\left((e\,\mathrm{Cos}[c+d\,x])^{5/2}\,\mathrm{Sec}[c+d\,x]^2\,(a\,(1+\mathrm{Sin}[c+d\,x]))^{3/2}\left(-\frac{3}{4}\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\frac{3}{64}\mathrm{Cos}\left[\frac{3}{2}(c+d\,x)\right]-\frac{1}{8}\mathrm{Cos}\left[\frac{5}{2}(c+d\,x)\right]-\frac{1}{32}\mathrm{Cos}\left[\frac{7}{2}(c+d\,x)\right]+\frac{3}{4}\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]+\frac{3}{64}\mathrm{Sin}\left[\frac{3}{2}(c+d\,x)\right]+\frac{1}{8}\mathrm{Sin}\left[\frac{5}{2}(c+d\,x)\right]-\frac{1}{32}\mathrm{Sin}\left[\frac{7}{2}(c+d\,x)\right]\right)\right)\Big/\left(d\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^3\right)+$$

$$\left(45\sqrt{3-2\sqrt{2}}\ (e\,\text{Cos}[c+d\,x])^{5/2}\,\text{Sec}[c+d\,x]^2\,(a\,(1+\text{Sin}[c+d\,x]))^{3/2}\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\left(1+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2\right)\right.$$

$$\sqrt{\frac{-3+2\sqrt{2}+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}{-3+2\sqrt{2}}}\ \sqrt{\frac{-3+2\sqrt{2}+17\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2-12\sqrt{2}\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}{-3+2\sqrt{2}}}$$

$$\sqrt{1-3\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+2\sqrt{2}\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\left(2-2\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\sqrt{2}\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4}\right)$$

$$\left(4\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\sqrt{1+\left(-3+2\sqrt{2}\right)\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\right.$$

$$\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4}+8\,\text{EllipticPi}\left[-3+2\sqrt{2},-\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]$$

$$\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\sqrt{1+\left(-3+2\sqrt{2}\right)\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4}+$$

$$\sqrt{2}\left(\text{Log}\left[1+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2\right]-\text{Log}\left[2-2\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\sqrt{2}\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4}\right]\right)$$

$$\left.\left.\left(1-6\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4\right)\right)\right)\Big/$$

$$\left(128\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4\left(4\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2-3\sqrt{2}\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2-52\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\right.\right.$$

$$39\sqrt{2}\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+200\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4-150\sqrt{2}\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4-$$

$$200\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^6+150\sqrt{2}\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^6+52\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^8-$$

$$39\sqrt{2}\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^8-4\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^{10}+3\sqrt{2}\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^{10}+$$

$$2\sqrt{2\left(3-2\sqrt{2}\right)}\ \mathrm{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2 \mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]\sqrt{3-2\sqrt{2}-\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\sqrt{\frac{-3+2\sqrt{2}+\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}{-3+2\sqrt{2}}}$$

$$\sqrt{\frac{-3+2\sqrt{2}+17\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2-12\sqrt{2}\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}{-3+2\sqrt{2}}}\sqrt{1-3\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+2\sqrt{2}\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\ -$$

$$12\sqrt{2\left(3-2\sqrt{2}\right)}\ \mathrm{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2 \mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^3\sqrt{3-2\sqrt{2}-\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\sqrt{\frac{-3+2\sqrt{2}+\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}{-3+2\sqrt{2}}}$$

$$\sqrt{\frac{-3+2\sqrt{2}+17\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2-12\sqrt{2}\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}{-3+2\sqrt{2}}}\sqrt{1-3\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+2\sqrt{2}\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\ +$$

$$2\sqrt{2\left(3-2\sqrt{2}\right)}\ \mathrm{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2 \mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^5\sqrt{3-2\sqrt{2}-\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\sqrt{\frac{-3+2\sqrt{2}+\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}{-3+2\sqrt{2}}}$$

$$\sqrt{\frac{-3+2\sqrt{2}+17\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2-12\sqrt{2}\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}{-3+2\sqrt{2}}}\sqrt{1-3\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+2\sqrt{2}\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\ -$$

$$6\,\mathrm{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\sqrt{1-6\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4}+4\sqrt{2}\,\mathrm{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\sqrt{1-6\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4}\ +$$

$$48\,\mathrm{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2\sqrt{1-6\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4}\ -$$

$$32\sqrt{2}\,\mathrm{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2\sqrt{1-6\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4}\ -$$

$$84\,\mathrm{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4\sqrt{1-6\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4}+56\sqrt{2}\,\mathrm{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4$$

$$\sqrt{1-6\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4}+48\,\mathrm{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^6\sqrt{1-6\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4}\ -$$

$$32\sqrt{2}\,\mathrm{Sec}\left[\frac{1}{4}(c+dx)\right]^2\mathrm{Tan}\left[\frac{1}{4}(c+dx)\right]^6\sqrt{1-6\,\mathrm{Tan}\left[\frac{1}{4}(c+dx)\right]^2+\mathrm{Tan}\left[\frac{1}{4}(c+dx)\right]^4}-6\,\mathrm{Sec}\left[\frac{1}{4}(c+dx)\right]^2\mathrm{Tan}\left[\frac{1}{4}(c+dx)\right]^8$$

$$\sqrt{1-6\,\mathrm{Tan}\left[\frac{1}{4}(c+dx)\right]^2+\mathrm{Tan}\left[\frac{1}{4}(c+dx)\right]^4}+4\sqrt{2}\,\mathrm{Sec}\left[\frac{1}{4}(c+dx)\right]^2\mathrm{Tan}\left[\frac{1}{4}(c+dx)\right]^8\sqrt{1-6\,\mathrm{Tan}\left[\frac{1}{4}(c+dx)\right]^2+\mathrm{Tan}\left[\frac{1}{4}(c+dx)\right]^4}+$$

$$4\sqrt{3-2\sqrt{2}}\,\mathrm{Sec}\left[\frac{1}{4}(c+dx)\right]^2\mathrm{Tan}\left[\frac{1}{4}(c+dx)\right]\sqrt{3-2\sqrt{2}-\mathrm{Tan}\left[\frac{1}{4}(c+dx)\right]^2}\sqrt{\frac{-3+2\sqrt{2}+\mathrm{Tan}\left[\frac{1}{4}(c+dx)\right]^2}{-3+2\sqrt{2}}}$$

$$\sqrt{\frac{-3+2\sqrt{2}+17\,\mathrm{Tan}\left[\frac{1}{4}(c+dx)\right]^2-12\sqrt{2}\,\mathrm{Tan}\left[\frac{1}{4}(c+dx)\right]^2}{-3+2\sqrt{2}}}\sqrt{1-3\,\mathrm{Tan}\left[\frac{1}{4}(c+dx)\right]^2+2\sqrt{2}\,\mathrm{Tan}\left[\frac{1}{4}(c+dx)\right]^2}$$

$$\sqrt{1-6\,\mathrm{Tan}\left[\frac{1}{4}(c+dx)\right]^2+\mathrm{Tan}\left[\frac{1}{4}(c+dx)\right]^4}-4\sqrt{3-2\sqrt{2}}\,\mathrm{Sec}\left[\frac{1}{4}(c+dx)\right]^2\mathrm{Tan}\left[\frac{1}{4}(c+dx)\right]^3$$

$$\sqrt{3-2\sqrt{2}-\mathrm{Tan}\left[\frac{1}{4}(c+dx)\right]^2}\sqrt{\frac{-3+2\sqrt{2}+\mathrm{Tan}\left[\frac{1}{4}(c+dx)\right]^2}{-3+2\sqrt{2}}}\sqrt{\frac{-3+2\sqrt{2}+17\,\mathrm{Tan}\left[\frac{1}{4}(c+dx)\right]^2-12\sqrt{2}\,\mathrm{Tan}\left[\frac{1}{4}(c+dx)\right]^2}{-3+2\sqrt{2}}}$$

$$\left.\left.\sqrt{1-3\,\mathrm{Tan}\left[\frac{1}{4}(c+dx)\right]^2+2\sqrt{2}\,\mathrm{Tan}\left[\frac{1}{4}(c+dx)\right]^2}\sqrt{1-6\,\mathrm{Tan}\left[\frac{1}{4}(c+dx)\right]^2+\mathrm{Tan}\left[\frac{1}{4}(c+dx)\right]^4}\right)\right)$$

- **Problem 281: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int(e\,\mathrm{Cos}[c+dx])^{3/2}(a+a\,\mathrm{Sin}[c+dx])^{3/2}\,dx$$

Optimal (type 3, 278 leaves, 9 steps):

$$-\frac{7a^2(e\,\mathrm{Cos}[c+dx])^{5/2}}{12\,d\,e\sqrt{a+a\,\mathrm{Sin}[c+dx]}}+\frac{7\,a\,e\sqrt{e\,\mathrm{Cos}[c+dx]}\sqrt{a+a\,\mathrm{Sin}[c+dx]}}{8\,d}-$$

$$\frac{a(e\,\mathrm{Cos}[c+dx])^{5/2}\sqrt{a+a\,\mathrm{Sin}[c+dx]}}{3\,d\,e}-\frac{7\,a\,e^{3/2}\,\mathrm{ArcSinh}\left[\frac{\sqrt{e\,\mathrm{Cos}[c+dx]}}{\sqrt{e}}\right]\sqrt{1+\mathrm{Cos}[c+dx]}\sqrt{a+a\,\mathrm{Sin}[c+dx]}}{8\,d\,(1+\mathrm{Cos}[c+dx]+\mathrm{Sin}[c+dx])}+$$

$$\frac{7\,a\,e^{3/2}\,\mathrm{ArcTan}\left[\frac{\sqrt{e}\,\mathrm{Sin}[c+dx]}{\sqrt{e\,\mathrm{Cos}[c+dx]}\sqrt{1+\mathrm{Cos}[c+dx]}}\right]\sqrt{1+\mathrm{Cos}[c+dx]}\sqrt{a+a\,\mathrm{Sin}[c+dx]}}{8\,d\,(1+\mathrm{Cos}[c+dx]+\mathrm{Sin}[c+dx])}$$

Result (type 4, 2810 leaves):

$$\Big((e\,\mathrm{Cos}[c+d\,x])^{3/2}\,\mathrm{Sec}[c+d\,x]\,(a\,(1+\mathrm{Sin}[c+d\,x]))^{3/2}$$

$$\left(\frac{5}{12}\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\frac{3}{8}\mathrm{Cos}\left[\frac{3}{2}(c+d\,x)\right]-\frac{1}{12}\mathrm{Cos}\left[\frac{5}{2}(c+d\,x)\right]+\frac{5}{12}\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]+\frac{3}{8}\mathrm{Sin}\left[\frac{3}{2}(c+d\,x)\right]-\frac{1}{12}\mathrm{Sin}\left[\frac{5}{2}(c+d\,x)\right]\right)\Big)\Big/$$

$$\left(d\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^3\right)-$$

$$\Big(7\sqrt{3-2\sqrt{2}}\,(e\,\mathrm{Cos}[c+d\,x])^{3/2}\,\mathrm{Sec}[c+d\,x]\,(a\,(1+\mathrm{Sin}[c+d\,x]))^{3/2}\sqrt{3-2\sqrt{2}-\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}$$

$$\left(1+\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2\right)\sqrt{\frac{-3+2\sqrt{2}+\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}{-3+2\sqrt{2}}}\sqrt{\frac{-3+2\sqrt{2}+17\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2-12\sqrt{2}\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}{-3+2\sqrt{2}}}$$

$$\sqrt{1-3\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+2\sqrt{2}\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\left(2-2\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\sqrt{2}\sqrt{1-6\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4}\right)$$

$$\Bigg(4\,\mathrm{EllipticF}\left[\mathrm{ArcSin}\left[\frac{\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]\sqrt{3-2\sqrt{2}-\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\sqrt{1+\left(-3+2\sqrt{2}\right)\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}$$

$$\sqrt{1-6\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4}+8\,\mathrm{EllipticPi}\left[-3+2\sqrt{2},-\mathrm{ArcSin}\left[\frac{\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]$$

$$\sqrt{3-2\sqrt{2}-\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\sqrt{1+\left(-3+2\sqrt{2}\right)\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\sqrt{1-6\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4}-$$

$$\sqrt{2}\left(\mathrm{Log}\left[1+\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2\right]-\mathrm{Log}\left[2-2\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\sqrt{2}\sqrt{1-6\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4}\right]\right)$$

$$\left(1-6\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4\right)\Bigg)\Big)\Big/$$

$$\left(16\,d\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^3\right.$$

$$\left(-4\,\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2+3\sqrt{2}\,\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2+52\,\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2-39\sqrt{2}\,\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2-\right.$$

$$200\,\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d x)\right]^4+150\sqrt{2}\,\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d x)\right]^4+200\,\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d x)\right]^6-$$

$$150\sqrt{2}\,\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d x)\right]^6-52\,\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d x)\right]^8+$$

$$39\sqrt{2}\,\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d x)\right]^8+4\,\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d x)\right]^{10}-3\sqrt{2}\,\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d x)\right]^{10}+$$

$$2\sqrt{2\left(3-2\sqrt{2}\right)}\,\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d x)\right]\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}\sqrt{\frac{-3+2\sqrt{2}+\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}{-3+2\sqrt{2}}}$$

$$\sqrt{\frac{-3+2\sqrt{2}+17\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2-12\sqrt{2}\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}{-3+2\sqrt{2}}}\sqrt{1-3\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2+2\sqrt{2}\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}-$$

$$12\sqrt{2\left(3-2\sqrt{2}\right)}\,\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d x)\right]^3\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}\sqrt{\frac{-3+2\sqrt{2}+\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}{-3+2\sqrt{2}}}$$

$$\sqrt{\frac{-3+2\sqrt{2}+17\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2-12\sqrt{2}\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}{-3+2\sqrt{2}}}\sqrt{1-3\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2+2\sqrt{2}\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}+$$

$$2\sqrt{2\left(3-2\sqrt{2}\right)}\,\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d x)\right]^5\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}\sqrt{\frac{-3+2\sqrt{2}+\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}{-3+2\sqrt{2}}}$$

$$\sqrt{\frac{-3+2\sqrt{2}+17\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2-12\sqrt{2}\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}{-3+2\sqrt{2}}}\sqrt{1-3\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2+2\sqrt{2}\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}+$$

$$6\,\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d x)\right]^4}-4\sqrt{2}\,\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d x)\right]^4}-$$

$$48\,\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d x)\right]^4}+$$

$$32\sqrt{2}\,\mathrm{Sec}\left[\frac{1}{4}(c+d x)\right]^2\mathrm{Tan}\left[\frac{1}{4}(c+d x)\right]^2\sqrt{1-6\,\mathrm{Tan}\left[\frac{1}{4}(c+d x)\right]^2+\mathrm{Tan}\left[\frac{1}{4}(c+d x)\right]^4}+$$

$$84\,\mathrm{Sec}\left[\frac{1}{4}(c+d x)\right]^2\mathrm{Tan}\left[\frac{1}{4}(c+d x)\right]^4\sqrt{1-6\,\mathrm{Tan}\left[\frac{1}{4}(c+d x)\right]^2+\mathrm{Tan}\left[\frac{1}{4}(c+d x)\right]^4}-56\sqrt{2}\,\mathrm{Sec}\left[\frac{1}{4}(c+d x)\right]^2\mathrm{Tan}\left[\frac{1}{4}(c+d x)\right]^4$$

$$\sqrt{1-6\,\mathrm{Tan}\left[\frac{1}{4}(c+d x)\right]^2+\mathrm{Tan}\left[\frac{1}{4}(c+d x)\right]^4}-48\,\mathrm{Sec}\left[\frac{1}{4}(c+d x)\right]^2\mathrm{Tan}\left[\frac{1}{4}(c+d x)\right]^6\sqrt{1-6\,\mathrm{Tan}\left[\frac{1}{4}(c+d x)\right]^2+\mathrm{Tan}\left[\frac{1}{4}(c+d x)\right]^4}+$$

$$32\sqrt{2}\,\mathrm{Sec}\left[\frac{1}{4}(c+d x)\right]^2\mathrm{Tan}\left[\frac{1}{4}(c+d x)\right]^6\sqrt{1-6\,\mathrm{Tan}\left[\frac{1}{4}(c+d x)\right]^2+\mathrm{Tan}\left[\frac{1}{4}(c+d x)\right]^4}+6\,\mathrm{Sec}\left[\frac{1}{4}(c+d x)\right]^2\mathrm{Tan}\left[\frac{1}{4}(c+d x)\right]^8$$

$$\sqrt{1-6\,\mathrm{Tan}\left[\frac{1}{4}(c+d x)\right]^2+\mathrm{Tan}\left[\frac{1}{4}(c+d x)\right]^4}-4\sqrt{2}\,\mathrm{Sec}\left[\frac{1}{4}(c+d x)\right]^2\mathrm{Tan}\left[\frac{1}{4}(c+d x)\right]^8\sqrt{1-6\,\mathrm{Tan}\left[\frac{1}{4}(c+d x)\right]^2+\mathrm{Tan}\left[\frac{1}{4}(c+d x)\right]^4}+$$

$$4\sqrt{3-2\sqrt{2}}\,\mathrm{Sec}\left[\frac{1}{4}(c+d x)\right]^2\mathrm{Tan}\left[\frac{1}{4}(c+d x)\right]\sqrt{3-2\sqrt{2}-\mathrm{Tan}\left[\frac{1}{4}(c+d x)\right]^2}\sqrt{\frac{-3+2\sqrt{2}+\mathrm{Tan}\left[\frac{1}{4}(c+d x)\right]^2}{-3+2\sqrt{2}}}$$

$$\sqrt{\frac{-3+2\sqrt{2}+17\,\mathrm{Tan}\left[\frac{1}{4}(c+d x)\right]^2-12\sqrt{2}\,\mathrm{Tan}\left[\frac{1}{4}(c+d x)\right]^2}{-3+2\sqrt{2}}}\sqrt{1-3\,\mathrm{Tan}\left[\frac{1}{4}(c+d x)\right]^2+2\sqrt{2}\,\mathrm{Tan}\left[\frac{1}{4}(c+d x)\right]^2}$$

$$\sqrt{1-6\,\mathrm{Tan}\left[\frac{1}{4}(c+d x)\right]^2+\mathrm{Tan}\left[\frac{1}{4}(c+d x)\right]^4}-4\sqrt{3-2\sqrt{2}}\,\mathrm{Sec}\left[\frac{1}{4}(c+d x)\right]^2\mathrm{Tan}\left[\frac{1}{4}(c+d x)\right]^3$$

$$\sqrt{3-2\sqrt{2}-\mathrm{Tan}\left[\frac{1}{4}(c+d x)\right]^2}\sqrt{\frac{-3+2\sqrt{2}+\mathrm{Tan}\left[\frac{1}{4}(c+d x)\right]^2}{-3+2\sqrt{2}}}\sqrt{\frac{-3+2\sqrt{2}+17\,\mathrm{Tan}\left[\frac{1}{4}(c+d x)\right]^2-12\sqrt{2}\,\mathrm{Tan}\left[\frac{1}{4}(c+d x)\right]^2}{-3+2\sqrt{2}}}$$

$$\left.\left.\sqrt{1-3\,\mathrm{Tan}\left[\frac{1}{4}(c+d x)\right]^2+2\sqrt{2}\,\mathrm{Tan}\left[\frac{1}{4}(c+d x)\right]^2}\sqrt{1-6\,\mathrm{Tan}\left[\frac{1}{4}(c+d x)\right]^2+\mathrm{Tan}\left[\frac{1}{4}(c+d x)\right]^4}\right)\right)$$

- **Problem 282: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int\sqrt{e\,\mathrm{Cos}[c+d x]}\,(a+a\,\mathrm{Sin}[c+d x])^{3/2}\,dx$$

Optimal (type 3, 243 leaves, 8 steps):

$$-\frac{5 a^2 (e \operatorname{Cos}[c+d x])^{3/2}}{4 d e \sqrt{a+a \operatorname{Sin}[c+d x]}}-\frac{a (e \operatorname{Cos}[c+d x])^{3/2} \sqrt{a+a \operatorname{Sin}[c+d x]}}{2 d e}+\frac{5 a \sqrt{e} \operatorname{ArcSinh}\left[\frac{\sqrt{e \operatorname{Cos}[c+d x]}}{\sqrt{e}}\right] \sqrt{1+\operatorname{Cos}[c+d x]} \sqrt{a+a \operatorname{Sin}[c+d x]}}{4 d (1+\operatorname{Cos}[c+d x]+\operatorname{Sin}[c+d x])}+$$
$$\frac{5 a \sqrt{e} \operatorname{ArcTan}\left[\frac{\sqrt{e} \operatorname{Sin}[c+d x]}{\sqrt{e \operatorname{Cos}[c+d x]} \sqrt{1+\operatorname{Cos}[c+d x]}}\right] \sqrt{1+\operatorname{Cos}[c+d x]} \sqrt{a+a \operatorname{Sin}[c+d x]}}{4 d (1+\operatorname{Cos}[c+d x]+\operatorname{Sin}[c+d x])}$$

Result (type 4, 2322 leaves):

$$\left(\sqrt{e \operatorname{Cos}[c+d x]} (a (1+\operatorname{Sin}[c+d x]))^{3/2} \left(-\frac{3}{2} \operatorname{Cos}\left[\frac{1}{2} (c+d x)\right]-\frac{1}{4} \operatorname{Cos}\left[\frac{3}{2} (c+d x)\right]+\frac{3}{2} \operatorname{Sin}\left[\frac{1}{2} (c+d x)\right]-\frac{1}{4} \operatorname{Sin}\left[\frac{3}{2} (c+d x)\right]\right)\right) \Big/$$
$$\left(d \left(\operatorname{Cos}\left[\frac{1}{2} (c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^3\right)-\left(25 \operatorname{Cos}\left[\frac{1}{4} (c+d x)\right]^2 \sqrt{e \operatorname{Cos}[c+d x]} (a (1+\operatorname{Sin}[c+d x]))^{3/2}\right.$$
$$\left(\sqrt{2} \left(\operatorname{Log}\left[\operatorname{Sec}\left[\frac{1}{4} (c+d x)\right]^2\right]-\operatorname{Log}\left[2+\sqrt{2} \sqrt{\operatorname{Cos}[c+d x] \operatorname{Sec}\left[\frac{1}{4} (c+d x)\right]^4}-2 \operatorname{Tan}\left[\frac{1}{4} (c+d x)\right]^2\right]\right) \sqrt{\operatorname{Cos}[c+d x] \operatorname{Sec}\left[\frac{1}{4} (c+d x)\right]^4}+\right.$$
$$4 \operatorname{EllipticF}\left[\operatorname{ArcSin}\left[\frac{\operatorname{Tan}\left[\frac{1}{4} (c+d x)\right]}{\sqrt{3-2 \sqrt{2}}}\right], 17-12 \sqrt{2}\right] \sqrt{3-2 \sqrt{2}-\operatorname{Tan}\left[\frac{1}{4} (c+d x)\right]^2} \sqrt{1+\left(-3+2 \sqrt{2}\right) \operatorname{Tan}\left[\frac{1}{4} (c+d x)\right]^2}+8$$
$$\left.\left.\operatorname{EllipticPi}\left[-3+2 \sqrt{2}, -\operatorname{ArcSin}\left[\frac{\operatorname{Tan}\left[\frac{1}{4} (c+d x)\right]}{\sqrt{3-2 \sqrt{2}}}\right], 17-12 \sqrt{2}\right] \sqrt{3-2 \sqrt{2}-\operatorname{Tan}\left[\frac{1}{4} (c+d x)\right]^2} \sqrt{1+\left(-3+2 \sqrt{2}\right) \operatorname{Tan}\left[\frac{1}{4} (c+d x)\right]^2}\right)\right) \Big/$$
$$\left(64 d \sqrt{\operatorname{Cos}[c+d x]} \left(\operatorname{Cos}\left[\frac{1}{2} (c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^4\right)\left(\frac{1}{16 \sqrt{\operatorname{Cos}[c+d x]}} 5 \operatorname{Cos}\left[\frac{1}{4} (c+d x)\right] \operatorname{Sin}\left[\frac{1}{4} (c+d x)\right]\right.$$
$$\left(\sqrt{2} \left(\operatorname{Log}\left[\operatorname{Sec}\left[\frac{1}{4} (c+d x)\right]^2\right]-\operatorname{Log}\left[2+\sqrt{2} \sqrt{\operatorname{Cos}[c+d x] \operatorname{Sec}\left[\frac{1}{4} (c+d x)\right]^4}-2 \operatorname{Tan}\left[\frac{1}{4} (c+d x)\right]^2\right]\right) \sqrt{\operatorname{Cos}[c+d x] \operatorname{Sec}\left[\frac{1}{4} (c+d x)\right]^4}+\right.$$
$$4 \operatorname{EllipticF}\left[\operatorname{ArcSin}\left[\frac{\operatorname{Tan}\left[\frac{1}{4} (c+d x)\right]}{\sqrt{3-2 \sqrt{2}}}\right], 17-12 \sqrt{2}\right] \sqrt{3-2 \sqrt{2}-\operatorname{Tan}\left[\frac{1}{4} (c+d x)\right]^2} \sqrt{1+\left(-3+2 \sqrt{2}\right) \operatorname{Tan}\left[\frac{1}{4} (c+d x)\right]^2}+$$

$$8\,\text{EllipticPi}\left[-3+2\sqrt{2},\,-\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]}{\sqrt{3-2\sqrt{2}}}\right],\,17-12\sqrt{2}\right]\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}$$

$$\sqrt{1+\left(-3+2\sqrt{2}\right)\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\Bigg)-\frac{1}{16\,\text{Cos}[c+d\,x]^{3/2}}\,5\,\text{Cos}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Sin}[c+d\,x]$$

$$\left(\sqrt{2}\left(\text{Log}\left[\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\right]-\text{Log}\left[2+\sqrt{2}\sqrt{\text{Cos}[c+d\,x]\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^4}-2\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2\right]\right)\sqrt{\text{Cos}[c+d\,x]\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^4}\right.+$$

$$4\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]}{\sqrt{3-2\sqrt{2}}}\right],\,17-12\sqrt{2}\right]\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\sqrt{1+\left(-3+2\sqrt{2}\right)\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}+$$

$$8\,\text{EllipticPi}\left[-3+2\sqrt{2},\,-\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]}{\sqrt{3-2\sqrt{2}}}\right],\,17-12\sqrt{2}\right]$$

$$\left.\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\sqrt{1+\left(-3+2\sqrt{2}\right)\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\right)-$$

$$\frac{1}{8\sqrt{\text{Cos}[c+d\,x]}}\,5\,\text{Cos}\left[\frac{1}{4}(c+d\,x)\right]^2\left(\left(\left(\text{Log}\left[\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\right]-\text{Log}\left[2+\sqrt{2}\sqrt{\text{Cos}[c+d\,x]\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^4}-2\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2\right]\right)\right.\right.$$

$$\left.\left(-\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^4\text{Sin}[c+d\,x]+\text{Cos}[c+d\,x]\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^4\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]\right)\right)\Big/\left(\sqrt{2}\sqrt{\text{Cos}[c+d\,x]\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^4}\right)+$$

$$\left(\left(-3+2\sqrt{2}\right)\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]}{\sqrt{3-2\sqrt{2}}}\right],\,17-12\sqrt{2}\right]\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]\right.$$

$$\left.\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\right)\Big/\left(\sqrt{1+\left(-3+2\sqrt{2}\right)\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\right)+$$

$$\left(2\left(-3+2\sqrt{2}\right)\text{EllipticPi}\left[-3+2\sqrt{2},\,-\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]}{\sqrt{3-2\sqrt{2}}}\right],\,17-12\sqrt{2}\right]\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\right.$$

$$\left.\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\right)\Big/\left(\sqrt{1+\left(-3+2\sqrt{2}\right)\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\right)-$$

$$\left(\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]}{\sqrt{3-2\sqrt{2}}}\right],\,17-12\sqrt{2}\right]\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]\sqrt{1+\left(-3+2\sqrt{2}\right)\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\right)\Big/$$

$$\left(\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\right)-\left(2\,\text{EllipticPi}\left[-3+2\sqrt{2},\,-\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]}{\sqrt{3-2\sqrt{2}}}\right],\,17-12\sqrt{2}\right]\right.$$

$$\left.\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]\sqrt{1+\left(-3+2\sqrt{2}\right)\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\right)\Big/\left(\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\right)+$$

$$\frac{\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\sqrt{1+\left(-3+2\sqrt{2}\right)\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}}{\sqrt{3-2\sqrt{2}}\sqrt{1-\frac{\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}{3-2\sqrt{2}}}\sqrt{1-\frac{\left(17-12\sqrt{2}\right)\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}{3-2\sqrt{2}}}}-$$

$$\frac{2\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\sqrt{1+\left(-3+2\sqrt{2}\right)\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}}{\sqrt{3-2\sqrt{2}}\sqrt{1-\frac{\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}{3-2\sqrt{2}}}\sqrt{1-\frac{\left(17-12\sqrt{2}\right)\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}{3-2\sqrt{2}}}\left(1-\frac{\left(-3+2\sqrt{2}\right)\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}{3-2\sqrt{2}}\right)}+$$

$$\sqrt{2}\sqrt{\text{Cos}[c+d\,x]\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^4}\left(\frac{1}{2}\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]-\right.$$

$$\left(-\mathrm{Sec}\left[\frac{1}{4}(c+d x)\right]^2 \mathrm{Tan}\left[\frac{1}{4}(c+d x)\right]+\frac{-\mathrm{Sec}\left[\frac{1}{4}(c+d x)\right]^4 \mathrm{Sin}[c+d x]+\mathrm{Cos}[c+d x]\,\mathrm{Sec}\left[\frac{1}{4}(c+d x)\right]^4 \mathrm{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{2}\sqrt{\mathrm{Cos}[c+d x]\,\mathrm{Sec}\left[\frac{1}{4}(c+d x)\right]^4}}\right)\Bigg/$$

$$\left.\left.\left.\left.\left(2+\sqrt{2}\sqrt{\mathrm{Cos}[c+d x]\,\mathrm{Sec}\left[\frac{1}{4}(c+d x)\right]^4}-2\,\mathrm{Tan}\left[\frac{1}{4}(c+d x)\right]^2\right)\right)\right)\right)\right)$$

- **Problem 283: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int \frac{(a+a\,\mathrm{Sin}[c+d x])^{3/2}}{\sqrt{e\,\mathrm{Cos}[c+d x]}}\,dx$$

Optimal (type 3, 198 leaves, 7 steps):

$$-\frac{a\sqrt{e\,\mathrm{Cos}[c+d x]}\sqrt{a+a\,\mathrm{Sin}[c+d x]}}{d\,e}-\frac{3\,a\,\mathrm{ArcSinh}\left[\frac{\sqrt{e\,\mathrm{Cos}[c+d x]}}{\sqrt{e}}\right]\sqrt{1+\mathrm{Cos}[c+d x]}\sqrt{a+a\,\mathrm{Sin}[c+d x]}}{d\sqrt{e}\,(1+\mathrm{Cos}[c+d x]+\mathrm{Sin}[c+d x])}+$$

$$\frac{3\,a\,\mathrm{ArcTan}\left[\frac{\sqrt{e}\,\mathrm{Sin}[c+d x]}{\sqrt{e\,\mathrm{Cos}[c+d x]}\sqrt{1+\mathrm{Cos}[c+d x]}}\right]\sqrt{1+\mathrm{Cos}[c+d x]}\sqrt{a+a\,\mathrm{Sin}[c+d x]}}{d\sqrt{e}\,(1+\mathrm{Cos}[c+d x]+\mathrm{Sin}[c+d x])}$$

Result (type 4, 2750 leaves):

$$\frac{\mathrm{Cos}[c+d x]\left(-\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]-\mathrm{Sin}\left[\frac{1}{2}(c+d x)\right]\right)(a\,(1+\mathrm{Sin}[c+d x]))^{3/2}}{d\sqrt{e\,\mathrm{Cos}[c+d x]}\left(\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3}-$$

$$\left(3\sqrt{3-2\sqrt{2}}\,\mathrm{Cos}[c+d x]\,(a\,(1+\mathrm{Sin}[c+d x]))^{3/2}\sqrt{3-2\sqrt{2}-\mathrm{Tan}\left[\frac{1}{4}(c+d x)\right]^2}\left(1+\mathrm{Tan}\left[\frac{1}{4}(c+d x)\right]^2\right)\right.$$

$$\sqrt{\frac{-3+2\sqrt{2}+\mathrm{Tan}\left[\frac{1}{4}(c+d x)\right]^2}{-3+2\sqrt{2}}}\sqrt{\frac{-3+2\sqrt{2}+17\,\mathrm{Tan}\left[\frac{1}{4}(c+d x)\right]^2-12\sqrt{2}\,\mathrm{Tan}\left[\frac{1}{4}(c+d x)\right]^2}{-3+2\sqrt{2}}}$$

$$\sqrt{1-3\,\mathrm{Tan}\left[\frac{1}{4}(c+d x)\right]^2+2\sqrt{2}\,\mathrm{Tan}\left[\frac{1}{4}(c+d x)\right]^2}\left(2-2\,\mathrm{Tan}\left[\frac{1}{4}(c+d x)\right]^2+\sqrt{2}\sqrt{1-6\,\mathrm{Tan}\left[\frac{1}{4}(c+d x)\right]^2+\mathrm{Tan}\left[\frac{1}{4}(c+d x)\right]^4}\right)$$

$$\Bigg(4\,\text{EllipticF}\Big[\text{ArcSin}\Big[\frac{\text{Tan}\big[\frac{1}{4}(c+d x)\big]}{\sqrt{3-2\sqrt{2}}}\Big],\,17-12\sqrt{2}\Big]\sqrt{3-2\sqrt{2}-\text{Tan}\Big[\frac{1}{4}(c+d x)\Big]^2}\,\sqrt{1+\left(-3+2\sqrt{2}\right)\text{Tan}\Big[\frac{1}{4}(c+d x)\Big]^2}$$

$$\sqrt{1-6\,\text{Tan}\Big[\frac{1}{4}(c+d x)\Big]^2+\text{Tan}\Big[\frac{1}{4}(c+d x)\Big]^4}+8\,\text{EllipticPi}\Big[-3+2\sqrt{2},\,-\text{ArcSin}\Big[\frac{\text{Tan}\big[\frac{1}{4}(c+d x)\big]}{\sqrt{3-2\sqrt{2}}}\Big],\,17-12\sqrt{2}\Big]$$

$$\sqrt{3-2\sqrt{2}-\text{Tan}\Big[\frac{1}{4}(c+d x)\Big]^2}\,\sqrt{1+\left(-3+2\sqrt{2}\right)\text{Tan}\Big[\frac{1}{4}(c+d x)\Big]^2}\,\sqrt{1-6\,\text{Tan}\Big[\frac{1}{4}(c+d x)\Big]^2+\text{Tan}\Big[\frac{1}{4}(c+d x)\Big]^4}\,-$$

$$\sqrt{2}\,\Bigg(\text{Log}\Big[1+\text{Tan}\Big[\frac{1}{4}(c+d x)\Big]^2\Big]-\text{Log}\Big[2-2\,\text{Tan}\Big[\frac{1}{4}(c+d x)\Big]^2+\sqrt{2}\,\sqrt{1-6\,\text{Tan}\Big[\frac{1}{4}(c+d x)\Big]^2+\text{Tan}\Big[\frac{1}{4}(c+d x)\Big]^4}\,\Big]\Bigg)$$

$$\left(1-6\,\text{Tan}\Big[\frac{1}{4}(c+d x)\Big]^2+\text{Tan}\Big[\frac{1}{4}(c+d x)\Big]^4\right)\Bigg)\Bigg)\Bigg/$$

$$\Bigg(2\,d\,\sqrt{e\,\text{Cos}[c+d x]}\,\left(\text{Cos}\Big[\frac{1}{2}(c+d x)\Big]-\text{Sin}\Big[\frac{1}{2}(c+d x)\Big]\right)\left(\text{Cos}\Big[\frac{1}{2}(c+d x)\Big]+\text{Sin}\Big[\frac{1}{2}(c+d x)\Big]\right)^3$$

$$\Bigg(-4\,\text{Sec}\Big[\frac{1}{4}(c+d x)\Big]^2+3\sqrt{2}\,\text{Sec}\Big[\frac{1}{4}(c+d x)\Big]^2+52\,\text{Sec}\Big[\frac{1}{4}(c+d x)\Big]^2\,\text{Tan}\Big[\frac{1}{4}(c+d x)\Big]^2-$$

$$39\sqrt{2}\,\text{Sec}\Big[\frac{1}{4}(c+d x)\Big]^2\,\text{Tan}\Big[\frac{1}{4}(c+d x)\Big]^2-200\,\text{Sec}\Big[\frac{1}{4}(c+d x)\Big]^2\,\text{Tan}\Big[\frac{1}{4}(c+d x)\Big]^4+150\sqrt{2}\,\text{Sec}\Big[\frac{1}{4}(c+d x)\Big]^2\,\text{Tan}\Big[\frac{1}{4}(c+d x)\Big]^4+$$

$$200\,\text{Sec}\Big[\frac{1}{4}(c+d x)\Big]^2\,\text{Tan}\Big[\frac{1}{4}(c+d x)\Big]^6-150\sqrt{2}\,\text{Sec}\Big[\frac{1}{4}(c+d x)\Big]^2\,\text{Tan}\Big[\frac{1}{4}(c+d x)\Big]^6-52\,\text{Sec}\Big[\frac{1}{4}(c+d x)\Big]^2\,\text{Tan}\Big[\frac{1}{4}(c+d x)\Big]^8+$$

$$39\sqrt{2}\,\text{Sec}\Big[\frac{1}{4}(c+d x)\Big]^2\,\text{Tan}\Big[\frac{1}{4}(c+d x)\Big]^8+4\,\text{Sec}\Big[\frac{1}{4}(c+d x)\Big]^2\,\text{Tan}\Big[\frac{1}{4}(c+d x)\Big]^{10}-3\sqrt{2}\,\text{Sec}\Big[\frac{1}{4}(c+d x)\Big]^2\,\text{Tan}\Big[\frac{1}{4}(c+d x)\Big]^{10}+$$

$$2\sqrt{2\left(3-2\sqrt{2}\right)}\,\text{Sec}\Big[\frac{1}{4}(c+d x)\Big]^2\,\text{Tan}\Big[\frac{1}{4}(c+d x)\Big]\sqrt{3-2\sqrt{2}-\text{Tan}\Big[\frac{1}{4}(c+d x)\Big]^2}\,\sqrt{\frac{-3+2\sqrt{2}+\text{Tan}\big[\frac{1}{4}(c+d x)\big]^2}{-3+2\sqrt{2}}}$$

$$\sqrt{\frac{-3+2\sqrt{2}+17\,\text{Tan}\big[\frac{1}{4}(c+d x)\big]^2-12\sqrt{2}\,\text{Tan}\big[\frac{1}{4}(c+d x)\big]^2}{-3+2\sqrt{2}}}\,\sqrt{1-3\,\text{Tan}\Big[\frac{1}{4}(c+d x)\Big]^2+2\sqrt{2}\,\text{Tan}\Big[\frac{1}{4}(c+d x)\Big]^2}\,-$$

$$12\sqrt{2\left(3-2\sqrt{2}\right)}\ \text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^3\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\ \sqrt{\frac{-3+2\sqrt{2}+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}{-3+2\sqrt{2}}}$$

$$\sqrt{\frac{-3+2\sqrt{2}+17\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2-12\sqrt{2}\ \text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}{-3+2\sqrt{2}}}\ \sqrt{1-3\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+2\sqrt{2}\ \text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\ +$$

$$2\sqrt{2\left(3-2\sqrt{2}\right)}\ \text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^5\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\ \sqrt{\frac{-3+2\sqrt{2}+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}{-3+2\sqrt{2}}}$$

$$\sqrt{\frac{-3+2\sqrt{2}+17\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2-12\sqrt{2}\ \text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}{-3+2\sqrt{2}}}\ \sqrt{1-3\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+2\sqrt{2}\ \text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\ +$$

$$6\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4}\ -4\sqrt{2}\ \text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4}\ -$$

$$48\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4}\ +$$

$$32\sqrt{2}\ \text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4}\ +$$

$$84\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4}\ -56\sqrt{2}\ \text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4$$

$$\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4}\ -48\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^6\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4}\ +$$

$$32\sqrt{2}\ \text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^6\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4}\ +6\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^8$$

$$\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4}\ -4\sqrt{2}\ \text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^8\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4}\ +$$

$$4\sqrt{3-2\sqrt{2}}\ \mathrm{Sec}\left[\frac{1}{4}(c+dx)\right]^2 \mathrm{Tan}\left[\frac{1}{4}(c+dx)\right]\sqrt{3-2\sqrt{2}-\mathrm{Tan}\left[\frac{1}{4}(c+dx)\right]^2}\ \sqrt{\frac{-3+2\sqrt{2}+\mathrm{Tan}\left[\frac{1}{4}(c+dx)\right]^2}{-3+2\sqrt{2}}}$$

$$\sqrt{\frac{-3+2\sqrt{2}+17\,\mathrm{Tan}\left[\frac{1}{4}(c+dx)\right]^2-12\sqrt{2}\ \mathrm{Tan}\left[\frac{1}{4}(c+dx)\right]^2}{-3+2\sqrt{2}}}\ \sqrt{1-3\,\mathrm{Tan}\left[\frac{1}{4}(c+dx)\right]^2+2\sqrt{2}\ \mathrm{Tan}\left[\frac{1}{4}(c+dx)\right]^2}$$

$$\sqrt{1-6\,\mathrm{Tan}\left[\frac{1}{4}(c+dx)\right]^2+\mathrm{Tan}\left[\frac{1}{4}(c+dx)\right]^4}\ -4\sqrt{3-2\sqrt{2}}\ \mathrm{Sec}\left[\frac{1}{4}(c+dx)\right]^2 \mathrm{Tan}\left[\frac{1}{4}(c+dx)\right]^3$$

$$\sqrt{3-2\sqrt{2}-\mathrm{Tan}\left[\frac{1}{4}(c+dx)\right]^2}\ \sqrt{\frac{-3+2\sqrt{2}+\mathrm{Tan}\left[\frac{1}{4}(c+dx)\right]^2}{-3+2\sqrt{2}}}\ \sqrt{\frac{-3+2\sqrt{2}+17\,\mathrm{Tan}\left[\frac{1}{4}(c+dx)\right]^2-12\sqrt{2}\ \mathrm{Tan}\left[\frac{1}{4}(c+dx)\right]^2}{-3+2\sqrt{2}}}$$

$$\left.\left.\sqrt{1-3\,\mathrm{Tan}\left[\frac{1}{4}(c+dx)\right]^2+2\sqrt{2}\ \mathrm{Tan}\left[\frac{1}{4}(c+dx)\right]^2}\ \sqrt{1-6\,\mathrm{Tan}\left[\frac{1}{4}(c+dx)\right]^2+\mathrm{Tan}\left[\frac{1}{4}(c+dx)\right]^4}\right)\right)$$

- **Problem 284: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int \frac{(a+a\,\mathrm{Sin}[c+dx])^{3/2}}{(e\,\mathrm{Cos}[c+dx])^{3/2}}\,dx$$

Optimal (type 3, 210 leaves, 7 steps):

$$\frac{4a\sqrt{a+a\,\mathrm{Sin}[c+dx]}}{de\sqrt{e\,\mathrm{Cos}[c+dx]}}-\frac{2a^2\,\mathrm{ArcSinh}\left[\frac{\sqrt{e\,\mathrm{Cos}[c+dx]}}{\sqrt{e}}\right]\sqrt{1+\mathrm{Cos}[c+dx]}\ \sqrt{a+a\,\mathrm{Sin}[c+dx]}}{d\,e^{3/2}\,(a+a\,\mathrm{Cos}[c+dx]+a\,\mathrm{Sin}[c+dx])}-$$

$$\frac{2a^2\,\mathrm{ArcTan}\left[\frac{\sqrt{e}\ \mathrm{Sin}[c+dx]}{\sqrt{e\,\mathrm{Cos}[c+dx]}\ \sqrt{1+\mathrm{Cos}[c+dx]}}\right]\sqrt{1+\mathrm{Cos}[c+dx]}\ \sqrt{a+a\,\mathrm{Sin}[c+dx]}}{d\,e^{3/2}\,(a+a\,\mathrm{Cos}[c+dx]+a\,\mathrm{Sin}[c+dx])}$$

Result (type 4, 2727 leaves):

$$\frac{4\,\mathrm{Cos}[c+dx]^2\,(a\,(1+\mathrm{Sin}[c+dx]))^{3/2}}{d\,(e\,\mathrm{Cos}[c+dx])^{3/2}\left(\mathrm{Cos}\left[\frac{1}{2}(c+dx)\right]-\mathrm{Sin}\left[\frac{1}{2}(c+dx)\right]\right)\left(\mathrm{Cos}\left[\frac{1}{2}(c+dx)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+dx)\right]\right)^3}-$$

$$\left(\sqrt{3-2\sqrt{2}}\ \mathrm{Cos}[c+dx]^2\,(a\,(1+\mathrm{Sin}[c+dx]))^{3/2}\sqrt{3-2\sqrt{2}-\mathrm{Tan}\left[\frac{1}{4}(c+dx)\right]^2}\ \left(1+\mathrm{Tan}\left[\frac{1}{4}(c+dx)\right]^2\right)\right.$$

$$\sqrt{\frac{-3+2\sqrt{2}+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}{-3+2\sqrt{2}}}\ \sqrt{\frac{-3+2\sqrt{2}+17\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2-12\sqrt{2}\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}{-3+2\sqrt{2}}}$$

$$\sqrt{1-3\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+2\sqrt{2}\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\ \left(2-2\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\sqrt{2}\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4}\right)$$

$$\Bigg(4\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\ \sqrt{1+\left(-3+2\sqrt{2}\right)\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}$$

$$\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4}+8\,\text{EllipticPi}\left[-3+2\sqrt{2},-\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]$$

$$\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\ \sqrt{1+\left(-3+2\sqrt{2}\right)\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\ \sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4}+$$

$$\sqrt{2}\left(\text{Log}\left[1+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2\right]-\text{Log}\left[2-2\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\sqrt{2}\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4}\right]\right)$$

$$\left.\left.\left.\left(1-6\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4\right)\right)\right)\right)\Big/\left(d\,(e\,\text{Cos}[c+d\,x])^{3/2}\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4\right.$$

$$\Bigg(4\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2-3\sqrt{2}\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2-52\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+39\sqrt{2}\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+$$

$$200\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4-150\sqrt{2}\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4-$$

$$200\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^6+150\sqrt{2}\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^6+52\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^8-$$

$$39\sqrt{2}\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^8-4\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^{10}+3\sqrt{2}\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^{10}+$$

$$2\sqrt{2\left(3-2\sqrt{2}\right)}\ \text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\ \sqrt{\frac{-3+2\sqrt{2}+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}{-3+2\sqrt{2}}}$$

$$\sqrt{\frac{-3+2\sqrt{2}+17\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2-12\sqrt{2}\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}{-3+2\sqrt{2}}}\,\sqrt{1-3\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+2\sqrt{2}\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\,-$$

$$12\sqrt{2\left(3-2\sqrt{2}\right)}\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^3\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\,\sqrt{\frac{-3+2\sqrt{2}+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}{-3+2\sqrt{2}}}$$

$$\sqrt{\frac{-3+2\sqrt{2}+17\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2-12\sqrt{2}\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}{-3+2\sqrt{2}}}\,\sqrt{1-3\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+2\sqrt{2}\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\,+$$

$$2\sqrt{2\left(3-2\sqrt{2}\right)}\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^5\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\,\sqrt{\frac{-3+2\sqrt{2}+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}{-3+2\sqrt{2}}}$$

$$\sqrt{\frac{-3+2\sqrt{2}+17\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2-12\sqrt{2}\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}{-3+2\sqrt{2}}}\,\sqrt{1-3\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+2\sqrt{2}\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\,-$$

$$6\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4}\,+4\sqrt{2}\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4}\,+$$

$$48\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4}\,-$$

$$32\sqrt{2}\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4}\,-$$

$$84\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4}\,+56\sqrt{2}\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4$$

$$\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4}\,+48\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^6\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4}\,-$$

$$32\sqrt{2}\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^6\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4}\,-6\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^8$$

$$\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d x)\right]^4}+4\sqrt{2}\,\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d x)\right]^8\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d x)\right]^4}+$$

$$4\sqrt{3-2\sqrt{2}}\,\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d x)\right]\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}\sqrt{\frac{-3+2\sqrt{2}+\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}{-3+2\sqrt{2}}}$$

$$\sqrt{\frac{-3+2\sqrt{2}+17\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2-12\sqrt{2}\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}{-3+2\sqrt{2}}}\sqrt{1-3\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2+2\sqrt{2}\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}$$

$$\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d x)\right]^4}-4\sqrt{3-2\sqrt{2}}\,\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d x)\right]^3$$

$$\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}\sqrt{\frac{-3+2\sqrt{2}+\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}{-3+2\sqrt{2}}}\sqrt{\frac{-3+2\sqrt{2}+17\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2-12\sqrt{2}\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}{-3+2\sqrt{2}}}$$

$$\left.\left.\sqrt{1-3\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2+2\sqrt{2}\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d x)\right]^4}\right)\right)$$

- **Problem 289: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int (e\,\text{Cos}[c+d x])^{3/2}\,(a+a\,\text{Sin}[c+d x])^{5/2}\,dx$$

Optimal (type 3, 323 leaves, 10 steps):

$$-\frac{77 a^3 (e\,\text{Cos}[c+d x])^{5/2}}{96\,d\,e\sqrt{a+a\,\text{Sin}[c+d x]}}+\frac{77 a^2 e\sqrt{e\,\text{Cos}[c+d x]}\sqrt{a+a\,\text{Sin}[c+d x]}}{64\,d}-$$

$$\frac{11 a^2 (e\,\text{Cos}[c+d x])^{5/2}\sqrt{a+a\,\text{Sin}[c+d x]}}{24\,d\,e}-\frac{77 a^2 e^{3/2}\,\text{ArcSinh}\left[\frac{\sqrt{e\,\text{Cos}[c+d x]}}{\sqrt{e}}\right]\sqrt{1+\text{Cos}[c+d x]}\sqrt{a+a\,\text{Sin}[c+d x]}}{64\,d\,(1+\text{Cos}[c+d x]+\text{Sin}[c+d x])}+$$

$$\frac{77 a^2 e^{3/2}\,\text{ArcTan}\left[\frac{\sqrt{e}\,\text{Sin}[c+d x]}{\sqrt{e\,\text{Cos}[c+d x]}\sqrt{1+\text{Cos}[c+d x]}}\right]\sqrt{1+\text{Cos}[c+d x]}\sqrt{a+a\,\text{Sin}[c+d x]}}{64\,d\,(1+\text{Cos}[c+d x]+\text{Sin}[c+d x])}-\frac{a (e\,\text{Cos}[c+d x])^{5/2}(a+a\,\text{Sin}[c+d x])^{3/2}}{4\,d\,e}$$

Result (type 4, 2838 leaves):

$$\left((e\,\text{Cos}[c+d x])^{3/2}\,\text{Sec}[c+d x]\,(a\,(1+\text{Sin}[c+d x]))^{5/2}\left(\frac{5}{12}\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\frac{35}{64}\text{Cos}\left[\frac{3}{2}(c+d x)\right]-\frac{5}{24}\text{Cos}\left[\frac{5}{2}(c+d x)\right]+\frac{1}{32}\text{Cos}\left[\frac{7}{2}(c+d x)\right]+\right.\right.$$

$$\frac{5}{12}\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]+\frac{35}{64}\,\text{Sin}\left[\frac{3}{2}\,(c+d\,x)\right]-\frac{5}{24}\,\text{Sin}\left[\frac{5}{2}\,(c+d\,x)\right]-\frac{1}{32}\,\text{Sin}\left[\frac{7}{2}\,(c+d\,x)\right]\Big)\Big)\Big/\left(d\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^5\right)-$$

$$\Big(77\sqrt{3-2\sqrt{2}}\,(e\,\text{Cos}[c+d\,x])^{3/2}\,\text{Sec}[c+d\,x]\,(a\,(1+\text{Sin}[c+d\,x]))^{5/2}\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]^2}\,\left(1+\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]^2\right)$$

$$\sqrt{\frac{-3+2\sqrt{2}+\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]^2}{-3+2\sqrt{2}}}\,\sqrt{\frac{-3+2\sqrt{2}+17\,\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]^2-12\sqrt{2}\,\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]^2}{-3+2\sqrt{2}}}$$

$$\sqrt{1-3\,\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]^2+2\sqrt{2}\,\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]^2}\,\left(2-2\,\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]^2+\sqrt{2}\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]^2+\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]^4}\right)$$

$$\Big(4\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]}{\sqrt{3-2\sqrt{2}}}\right],\,17-12\sqrt{2}\right]\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]^2}\,\sqrt{1+\left(-3+2\sqrt{2}\right)\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]^2}$$

$$\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]^2+\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]^4}\,+8\,\text{EllipticPi}\left[-3+2\sqrt{2},\,-\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]}{\sqrt{3-2\sqrt{2}}}\right],\,17-12\sqrt{2}\right]$$

$$\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]^2}\,\sqrt{1+\left(-3+2\sqrt{2}\right)\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]^2}\,\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]^2+\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]^4}\,-$$

$$\sqrt{2}\left(\text{Log}\left[1+\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]^2\right]-\text{Log}\left[2-2\,\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]^2+\sqrt{2}\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]^2+\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]^4}\right]\right)$$

$$\left(1-6\,\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]^2+\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]^4\right)\Big)\Big)\Big/$$

$$\Big(128\,d\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^5$$

$$\Big(-4\,\text{Sec}\left[\frac{1}{4}\,(c+d\,x)\right]^2+3\sqrt{2}\,\text{Sec}\left[\frac{1}{4}\,(c+d\,x)\right]^2+52\,\text{Sec}\left[\frac{1}{4}\,(c+d\,x)\right]^2\,\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]^2-$$

$$39\sqrt{2}\,\mathrm{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2-200\,\mathrm{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4+150\sqrt{2}\,\mathrm{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4+$$

$$200\,\mathrm{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^6-150\sqrt{2}\,\mathrm{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^6-52\,\mathrm{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^8+$$

$$39\sqrt{2}\,\mathrm{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^8+4\,\mathrm{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^{10}-3\sqrt{2}\,\mathrm{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^{10}+$$

$$2\sqrt{2\left(3-2\sqrt{2}\right)}\,\mathrm{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]\sqrt{3-2\sqrt{2}-\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\,\sqrt{\frac{-3+2\sqrt{2}+\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}{-3+2\sqrt{2}}}$$

$$\sqrt{\frac{-3+2\sqrt{2}+17\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2-12\sqrt{2}\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}{-3+2\sqrt{2}}}\,\sqrt{1-3\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+2\sqrt{2}\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}-$$

$$12\sqrt{2\left(3-2\sqrt{2}\right)}\,\mathrm{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^3\sqrt{3-2\sqrt{2}-\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\,\sqrt{\frac{-3+2\sqrt{2}+\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}{-3+2\sqrt{2}}}$$

$$\sqrt{\frac{-3+2\sqrt{2}+17\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2-12\sqrt{2}\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}{-3+2\sqrt{2}}}\,\sqrt{1-3\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+2\sqrt{2}\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}+$$

$$2\sqrt{2\left(3-2\sqrt{2}\right)}\,\mathrm{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^5\sqrt{3-2\sqrt{2}-\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\,\sqrt{\frac{-3+2\sqrt{2}+\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}{-3+2\sqrt{2}}}$$

$$\sqrt{\frac{-3+2\sqrt{2}+17\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2-12\sqrt{2}\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}{-3+2\sqrt{2}}}\,\sqrt{1-3\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+2\sqrt{2}\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}+$$

$$6\,\mathrm{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\sqrt{1-6\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4}-4\sqrt{2}\,\mathrm{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\sqrt{1-6\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4}-$$

$$48\,\mathrm{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2\sqrt{1-6\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4}+$$

$$32\sqrt{2}\,\mathrm{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2\sqrt{1-6\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4}+$$

$$84 \operatorname{Sec}\left[\frac{1}{4}(c+d x)\right]^2 \operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]^4 \sqrt{1-6 \operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]^2+\operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]^4}-56 \sqrt{2} \operatorname{Sec}\left[\frac{1}{4}(c+d x)\right]^2 \operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]^4$$

$$\sqrt{1-6 \operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]^2+\operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]^4}-48 \operatorname{Sec}\left[\frac{1}{4}(c+d x)\right]^2 \operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]^6 \sqrt{1-6 \operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]^2+\operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]^4}+$$

$$32 \sqrt{2} \operatorname{Sec}\left[\frac{1}{4}(c+d x)\right]^2 \operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]^6 \sqrt{1-6 \operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]^2+\operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]^4}+6 \operatorname{Sec}\left[\frac{1}{4}(c+d x)\right]^2 \operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]^8$$

$$\sqrt{1-6 \operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]^2+\operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]^4}-4 \sqrt{2} \operatorname{Sec}\left[\frac{1}{4}(c+d x)\right]^2 \operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]^8 \sqrt{1-6 \operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]^2+\operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]^4}+$$

$$4 \sqrt{3-2 \sqrt{2}} \operatorname{Sec}\left[\frac{1}{4}(c+d x)\right]^2 \operatorname{Tan}\left[\frac{1}{4}(c+d x)\right] \sqrt{3-2 \sqrt{2}-\operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]^2} \sqrt{\frac{-3+2 \sqrt{2}+\operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]^2}{-3+2 \sqrt{2}}}$$

$$\sqrt{\frac{-3+2 \sqrt{2}+17 \operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]^2-12 \sqrt{2} \operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]^2}{-3+2 \sqrt{2}}} \sqrt{1-3 \operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]^2+2 \sqrt{2} \operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]^2}$$

$$\sqrt{1-6 \operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]^2+\operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]^4}-4 \sqrt{3-2 \sqrt{2}} \operatorname{Sec}\left[\frac{1}{4}(c+d x)\right]^2 \operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]^3$$

$$\sqrt{3-2 \sqrt{2}-\operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]^2} \sqrt{\frac{-3+2 \sqrt{2}+\operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]^2}{-3+2 \sqrt{2}}} \sqrt{\frac{-3+2 \sqrt{2}+17 \operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]^2-12 \sqrt{2} \operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]^2}{-3+2 \sqrt{2}}}$$

$$\left.\left.\sqrt{1-3 \operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]^2+2 \sqrt{2} \operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]^2} \sqrt{1-6 \operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]^2+\operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]^4}\right)\right)$$

- **Problem 290: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int \sqrt{e \operatorname{Cos}[c+d x]} \,(a+a \operatorname{Sin}[c+d x])^{5/2} \, dx$$

Optimal (type 3, 286 leaves, 9 steps) :

$$-\frac{15 a^3 (e \text{Cos}[c+d x])^{3/2}}{8 d e \sqrt{a+a \text{Sin}[c+d x]}}-\frac{3 a^2 (e \text{Cos}[c+d x])^{3/2} \sqrt{a+a \text{Sin}[c+d x]}}{4 d e}+\frac{15 a^2 \sqrt{e} \text{ArcSinh}\left[\frac{\sqrt{e \text{Cos}[c+d x]}}{\sqrt{e}}\right] \sqrt{1+\text{Cos}[c+d x]} \sqrt{a+a \text{Sin}[c+d x]}}{8 d (1+\text{Cos}[c+d x]+\text{Sin}[c+d x])}+$$

$$\frac{15 a^2 \sqrt{e} \text{ArcTan}\left[\frac{\sqrt{e} \text{Sin}[c+d x]}{\sqrt{e \text{Cos}[c+d x]} \sqrt{1+\text{Cos}[c+d x]}}\right] \sqrt{1+\text{Cos}[c+d x]} \sqrt{a+a \text{Sin}[c+d x]}}{8 d (1+\text{Cos}[c+d x]+\text{Sin}[c+d x])}-\frac{a (e \text{Cos}[c+d x])^{3/2} (a+a \text{Sin}[c+d x])^{3/2}}{3 d e}$$

Result (type 4, 2350 leaves):

$$\left(\sqrt{e \text{Cos}[c+d x]} (a (1+\text{Sin}[c+d x]))^{5/2} \left(-\frac{29}{12} \text{Cos}\left[\frac{1}{2} (c+d x)\right]-\frac{5}{8} \text{Cos}\left[\frac{3}{2} (c+d x)\right]+\frac{1}{12} \text{Cos}\left[\frac{5}{2} (c+d x)\right]+\frac{29}{12} \text{Sin}\left[\frac{1}{2} (c+d x)\right]-\frac{5}{8} \text{Sin}\left[\frac{3}{2} (c+d x)\right]-\frac{1}{12} \text{Sin}\left[\frac{5}{2} (c+d x)\right]\right)\right) \Big/$$

$$\left(d \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^5\right)-\left(225 \text{Cos}\left[\frac{1}{4} (c+d x)\right]^2 \sqrt{e \text{Cos}[c+d x]} (a (1+\text{Sin}[c+d x]))^{5/2}\right.$$

$$\left(\sqrt{2} \left(\text{Log}\left[\text{Sec}\left[\frac{1}{4} (c+d x)\right]^2\right]-\text{Log}\left[2+\sqrt{2} \sqrt{\text{Cos}[c+d x] \text{Sec}\left[\frac{1}{4} (c+d x)\right]^4}-2 \text{Tan}\left[\frac{1}{4} (c+d x)\right]^2\right]\right) \sqrt{\text{Cos}[c+d x] \text{Sec}\left[\frac{1}{4} (c+d x)\right]^4}+\right.$$

$$4 \text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4} (c+d x)\right]}{\sqrt{3-2 \sqrt{2}}}\right], 17-12 \sqrt{2}\right] \sqrt{3-2 \sqrt{2}-\text{Tan}\left[\frac{1}{4} (c+d x)\right]^2} \sqrt{1+\left(-3+2 \sqrt{2}\right) \text{Tan}\left[\frac{1}{4} (c+d x)\right]^2}+8$$

$$\left.\left.\text{EllipticPi}\left[-3+2 \sqrt{2}, -\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4} (c+d x)\right]}{\sqrt{3-2 \sqrt{2}}}\right], 17-12 \sqrt{2}\right] \sqrt{3-2 \sqrt{2}-\text{Tan}\left[\frac{1}{4} (c+d x)\right]^2} \sqrt{1+\left(-3+2 \sqrt{2}\right) \text{Tan}\left[\frac{1}{4} (c+d x)\right]^2}\right)\right) \Big/$$

$$\left(256 d \sqrt{\text{Cos}[c+d x]} \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^6 \left(\frac{1}{32 \sqrt{\text{Cos}[c+d x]}} 15 \text{Cos}\left[\frac{1}{4} (c+d x)\right] \text{Sin}\left[\frac{1}{4} (c+d x)\right]\right.\right.$$

$$\left(\sqrt{2} \left(\text{Log}\left[\text{Sec}\left[\frac{1}{4} (c+d x)\right]^2\right]-\text{Log}\left[2+\sqrt{2} \sqrt{\text{Cos}[c+d x] \text{Sec}\left[\frac{1}{4} (c+d x)\right]^4}-2 \text{Tan}\left[\frac{1}{4} (c+d x)\right]^2\right]\right) \sqrt{\text{Cos}[c+d x] \text{Sec}\left[\frac{1}{4} (c+d x)\right]^4}+\right.$$

$$4\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]^2}\,\sqrt{1+\left(-3+2\sqrt{2}\right)\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]^2}\,+$$

$$8\,\text{EllipticPi}\left[-3+2\sqrt{2},-\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]^2}$$

$$\left.\sqrt{1+\left(-3+2\sqrt{2}\right)\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]^2}\right)-\frac{1}{32\,\text{Cos}[c+d\,x]^{3/2}}\,15\,\text{Cos}\left[\frac{1}{4}\,(c+d\,x)\right]^2\text{Sin}[c+d\,x]$$

$$\left(\sqrt{2}\left(\text{Log}\left[\text{Sec}\left[\frac{1}{4}\,(c+d\,x)\right]^2\right]-\text{Log}\left[2+\sqrt{2}\,\sqrt{\text{Cos}[c+d\,x]\,\text{Sec}\left[\frac{1}{4}\,(c+d\,x)\right]^4}-2\,\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]^2\right]\right)\sqrt{\text{Cos}[c+d\,x]\,\text{Sec}\left[\frac{1}{4}\,(c+d\,x)\right]^4}\,+\right.$$

$$4\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]^2}\,\sqrt{1+\left(-3+2\sqrt{2}\right)\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]^2}\,+$$

$$8\,\text{EllipticPi}\left[-3+2\sqrt{2},-\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]$$

$$\left.\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]^2}\,\sqrt{1+\left(-3+2\sqrt{2}\right)\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]^2}\right)-$$

$$\frac{1}{16\sqrt{\text{Cos}[c+d\,x]}}\,15\,\text{Cos}\left[\frac{1}{4}\,(c+d\,x)\right]^2\left(\left(\left(\left(\text{Log}\left[\text{Sec}\left[\frac{1}{4}\,(c+d\,x)\right]^2\right]-\text{Log}\left[2+\sqrt{2}\,\sqrt{\text{Cos}[c+d\,x]\,\text{Sec}\left[\frac{1}{4}\,(c+d\,x)\right]^4}-2\,\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]^2\right]\right)\right.\right.\right.$$

$$\left.\left.\left(-\text{Sec}\left[\frac{1}{4}\,(c+d\,x)\right]^4\text{Sin}[c+d\,x]+\text{Cos}[c+d\,x]\,\text{Sec}\left[\frac{1}{4}\,(c+d\,x)\right]^4\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]\right)\right)\right/\left(\sqrt{2}\,\sqrt{\text{Cos}[c+d\,x]\,\text{Sec}\left[\frac{1}{4}\,(c+d\,x)\right]^4}\right)+$$

$$\left(\left(-3+2\sqrt{2}\right)\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]\text{Sec}\left[\frac{1}{4}\,(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]\right.$$

$$\sqrt{3-2\sqrt{2}-\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\Bigg)\Big/\left(\sqrt{1+\left(-3+2\sqrt{2}\right)\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\right)+$$

$$\Bigg(2\left(-3+2\sqrt{2}\right)\mathrm{EllipticPi}\left[-3+2\sqrt{2},\,-\mathrm{ArcSin}\left[\frac{\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]}{\sqrt{3-2\sqrt{2}}}\right],\,17-12\sqrt{2}\right]\mathrm{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2$$

$$\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]\sqrt{3-2\sqrt{2}-\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\Bigg)\Big/\left(\sqrt{1+\left(-3+2\sqrt{2}\right)\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\right)-$$

$$\left(\mathrm{EllipticF}\left[\mathrm{ArcSin}\left[\frac{\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]}{\sqrt{3-2\sqrt{2}}}\right],\,17-12\sqrt{2}\right]\mathrm{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]\sqrt{1+\left(-3+2\sqrt{2}\right)\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\right)\Big/$$

$$\left(\sqrt{3-2\sqrt{2}-\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\right)-\Bigg(2\,\mathrm{EllipticPi}\left[-3+2\sqrt{2},\,-\mathrm{ArcSin}\left[\frac{\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]}{\sqrt{3-2\sqrt{2}}}\right],\,17-12\sqrt{2}\right]$$

$$\mathrm{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]\sqrt{1+\left(-3+2\sqrt{2}\right)\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\Bigg)\Big/\left(\sqrt{3-2\sqrt{2}-\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\right)+$$

$$\frac{\mathrm{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\sqrt{3-2\sqrt{2}-\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\sqrt{1+\left(-3+2\sqrt{2}\right)\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}}{\sqrt{3-2\sqrt{2}}\sqrt{1-\frac{\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}{3-2\sqrt{2}}}\sqrt{1-\frac{\left(17-12\sqrt{2}\right)\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}{3-2\sqrt{2}}}}-$$

$$\frac{2\,\mathrm{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\sqrt{3-2\sqrt{2}-\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\sqrt{1+\left(-3+2\sqrt{2}\right)\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}}{\sqrt{3-2\sqrt{2}}\sqrt{1-\frac{\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}{3-2\sqrt{2}}}\sqrt{1-\frac{\left(17-12\sqrt{2}\right)\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}{3-2\sqrt{2}}}\left(1-\frac{\left(-3+2\sqrt{2}\right)\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}{3-2\sqrt{2}}\right)}+$$

$$\sqrt{2}\sqrt{\mathrm{Cos}[c+d\,x]\,\mathrm{Sec}\left[\frac{1}{4}(c+d\,x)\right]^4}\left(\frac{1}{2}\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]-\right.$$

$$\left(-\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{4}(c+d x)\right]+\frac{-\text{Sec}\left[\frac{1}{4}(c+d x)\right]^4 \text{Sin}[c+d x]+\text{Cos}[c+d x] \text{Sec}\left[\frac{1}{4}(c+d x)\right]^4 \text{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{2} \sqrt{\text{Cos}[c+d x] \text{Sec}\left[\frac{1}{4}(c+d x)\right]^4}}\right) \Big/$$

$$\left(2+\sqrt{2} \sqrt{\text{Cos}[c+d x] \text{Sec}\left[\frac{1}{4}(c+d x)\right]^4}-2 \text{Tan}\left[\frac{1}{4}(c+d x)\right]^2\right)\Bigg)\Bigg)\Bigg)\Bigg)$$

- **Problem 291: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int \frac{(a+a \text{Sin}[c+d x])^{5/2}}{\sqrt{e \text{Cos}[c+d x]}} \, dx$$

Optimal (type 3, 247 leaves, 8 steps):

$$-\frac{7 a^2 \sqrt{e \text{Cos}[c+d x]} \sqrt{a+a \text{Sin}[c+d x]}}{4 d e}-\frac{21 a^2 \text{ArcSinh}\left[\frac{\sqrt{e \text{Cos}[c+d x]}}{\sqrt{e}}\right] \sqrt{1+\text{Cos}[c+d x]} \sqrt{a+a \text{Sin}[c+d x]}}{4 d \sqrt{e} (1+\text{Cos}[c+d x]+\text{Sin}[c+d x])}+$$

$$\frac{21 a^2 \text{ArcTan}\left[\frac{\sqrt{e} \text{Sin}[c+d x]}{\sqrt{e \text{Cos}[c+d x]} \sqrt{1+\text{Cos}[c+d x]}}\right] \sqrt{1+\text{Cos}[c+d x]} \sqrt{a+a \text{Sin}[c+d x]}}{4 d \sqrt{e} (1+\text{Cos}[c+d x]+\text{Sin}[c+d x])}-\frac{a \sqrt{e \text{Cos}[c+d x]} (a+a \text{Sin}[c+d x])^{3/2}}{2 d e}$$

Result (type 4, 2782 leaves):

$$\left(\text{Cos}[c+d x] (a (1+\text{Sin}[c+d x]))^{5/2} \left(-\frac{5}{2} \text{Cos}\left[\frac{1}{2}(c+d x)\right]+\frac{1}{4} \text{Cos}\left[\frac{3}{2}(c+d x)\right]-\frac{5}{2} \text{Sin}\left[\frac{1}{2}(c+d x)\right]-\frac{1}{4} \text{Sin}\left[\frac{3}{2}(c+d x)\right]\right)\right) \Big/$$

$$\left(d \sqrt{e \text{Cos}[c+d x]} \left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^5\right)-$$

$$\Bigg(21 \sqrt{3-2 \sqrt{2}} \text{Cos}[c+d x] (a (1+\text{Sin}[c+d x]))^{5/2} \sqrt{3-2 \sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2} \left(1+\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2\right)$$

$$\sqrt{\frac{-3+2 \sqrt{2}+\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}{-3+2 \sqrt{2}}} \sqrt{\frac{-3+2 \sqrt{2}+17 \text{Tan}\left[\frac{1}{4}(c+d x)\right]^2-12 \sqrt{2} \text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}{-3+2 \sqrt{2}}}$$

$$\sqrt{1-3\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+2\sqrt{2}\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\left(2-2\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\sqrt{2}\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4}\right)$$

$$\left(4\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\sqrt{1+\left(-3+2\sqrt{2}\right)\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\right.$$

$$\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4}+8\,\text{EllipticPi}\left[-3+2\sqrt{2},-\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]$$

$$\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\sqrt{1+\left(-3+2\sqrt{2}\right)\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4}-$$

$$\sqrt{2}\left(\text{Log}\left[1+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2\right]-\text{Log}\left[2-2\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\sqrt{2}\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4}\right]\right)$$

$$\left.\left.\left(1-6\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4\right)\right)\right)\Big/$$

$$\left(8\,d\sqrt{e\,\text{Cos}[c+d\,x]}\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^5\right.$$

$$\left(-4\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2+3\sqrt{2}\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2+52\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2-\right.$$

$$39\sqrt{2}\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2-200\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4+150\sqrt{2}\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4+$$

$$200\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^6-150\sqrt{2}\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^6-52\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^8+$$

$$39\sqrt{2}\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^8+4\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^{10}-3\sqrt{2}\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^{10}+$$

$$2\sqrt{2\left(3-2\sqrt{2}\right)}\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\sqrt{\frac{-3+2\sqrt{2}+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}{-3+2\sqrt{2}}}$$

$$\sqrt{\frac{-3+2\sqrt{2}+17\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2-12\sqrt{2}\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}{-3+2\sqrt{2}}}\,\sqrt{1-3\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+2\sqrt{2}\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\;-$$

$$12\sqrt{2\left(3-2\sqrt{2}\right)}\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^3\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\,\sqrt{\frac{-3+2\sqrt{2}+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}{-3+2\sqrt{2}}}$$

$$\sqrt{\frac{-3+2\sqrt{2}+17\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2-12\sqrt{2}\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}{-3+2\sqrt{2}}}\,\sqrt{1-3\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+2\sqrt{2}\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\;+$$

$$2\sqrt{2\left(3-2\sqrt{2}\right)}\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^5\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\,\sqrt{\frac{-3+2\sqrt{2}+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}{-3+2\sqrt{2}}}$$

$$\sqrt{\frac{-3+2\sqrt{2}+17\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2-12\sqrt{2}\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}{-3+2\sqrt{2}}}\,\sqrt{1-3\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+2\sqrt{2}\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\;+$$

$$6\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4}-4\sqrt{2}\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4}\;-$$

$$48\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4}\;+$$

$$32\sqrt{2}\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4}\;+$$

$$84\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4}-56\sqrt{2}\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4$$

$$\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4}-48\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^6\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4}\;+$$

$$32\sqrt{2}\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^6\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4}+6\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^8$$

$$\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4}\;-4\sqrt{2}\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^8\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4}\;+$$

$$4\sqrt{3-2\sqrt{2}}\;\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\sqrt{\frac{-3+2\sqrt{2}+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}{-3+2\sqrt{2}}}$$

$$\sqrt{\frac{-3+2\sqrt{2}+17\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2-12\sqrt{2}\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}{-3+2\sqrt{2}}}\sqrt{1-3\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+2\sqrt{2}\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}$$

$$\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4}\;-4\sqrt{3-2\sqrt{2}}\;\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^3$$

$$\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\sqrt{\frac{-3+2\sqrt{2}+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}{-3+2\sqrt{2}}}\sqrt{\frac{-3+2\sqrt{2}+17\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2-12\sqrt{2}\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}{-3+2\sqrt{2}}}$$

$$\left.\left.\sqrt{1-3\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+2\sqrt{2}\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4}\right)\right)$$

- **Problem 292: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int\frac{(a+a\,\text{Sin}[c+d\,x])^{5/2}}{(e\,\text{Cos}[c+d\,x])^{3/2}}\,dx$$

Optimal (type 3, 239 leaves, 8 steps):

$$\frac{5\,a^3\,(e\,\text{Cos}[c+d\,x])^{3/2}}{d\,e^3\sqrt{a+a\,\text{Sin}[c+d\,x]}}-\frac{5\,a^2\,\text{ArcSinh}\left[\frac{\sqrt{e\,\text{Cos}[c+d\,x]}}{\sqrt{e}}\right]\sqrt{1+\text{Cos}[c+d\,x]}\;\sqrt{a+a\,\text{Sin}[c+d\,x]}}{d\,e^{3/2}\,(1+\text{Cos}[c+d\,x]+\text{Sin}[c+d\,x])}-$$

$$\frac{5\,a^2\,\text{ArcTan}\left[\frac{\sqrt{e}\;\text{Sin}[c+d\,x]}{\sqrt{e\,\text{Cos}[c+d\,x]}\;\sqrt{1+\text{Cos}[c+d\,x]}}\right]\sqrt{1+\text{Cos}[c+d\,x]}\;\sqrt{a+a\,\text{Sin}[c+d\,x]}}{d\,e^{3/2}\,(1+\text{Cos}[c+d\,x]+\text{Sin}[c+d\,x])}+\frac{4\,a\,(a+a\,\text{Sin}[c+d\,x])^{3/2}}{d\,e\,\sqrt{e\,\text{Cos}[c+d\,x]}}$$

Result (type 4, 2753 leaves):

$$\frac{\text{Cos}[c+d\,x]^2\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\frac{8}{\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]}-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)(a\,(1+\text{Sin}[c+d\,x]))^{5/2}}{d\,(e\,\text{Cos}[c+d\,x])^{3/2}\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^5}-$$

$$\Bigg(5\sqrt{3-2\sqrt{2}}\,\text{Cos}[c+d\,x]^2\,(a\,(1+\text{Sin}[c+d\,x]))^{5/2}\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}$$

$$\left(1+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2\right)\sqrt{\frac{-3+2\sqrt{2}+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}{-3+2\sqrt{2}}}\sqrt{\frac{-3+2\sqrt{2}+17\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2-12\sqrt{2}\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}{-3+2\sqrt{2}}}$$

$$\sqrt{1-3\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+2\sqrt{2}\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\left(2-2\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\sqrt{2}\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4}\right)$$

$$\Bigg(4\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\sqrt{1+\left(-3+2\sqrt{2}\right)\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}$$

$$\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4}+8\,\text{EllipticPi}\left[-3+2\sqrt{2},-\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]$$

$$\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\sqrt{1+\left(-3+2\sqrt{2}\right)\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4}+$$

$$\sqrt{2}\left(\text{Log}\left[1+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2\right]-\text{Log}\left[2-2\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\sqrt{2}\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4}\right]\right)$$

$$\left(1-6\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4\right)\Bigg)\Bigg)\Bigg/\left(2\,d\,(e\,\text{Cos}[c+d\,x])^{3/2}\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^6\right.$$

$$\Bigg(4\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2-3\sqrt{2}\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2-52\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+39\sqrt{2}\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+$$

$$200\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4-150\sqrt{2}\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4-$$

$$200\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^6+150\sqrt{2}\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^6+52\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^8-$$

$$39\sqrt{2}\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^8-4\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^{10}+3\sqrt{2}\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^{10}+$$

$$2\sqrt{2\left(3-2\sqrt{2}\right)}\ \text{Sec}\left[\frac{1}{4}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{4}(c+d x)\right]\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}\ \sqrt{\frac{-3+2\sqrt{2}+\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}{-3+2\sqrt{2}}}$$

$$\sqrt{\frac{-3+2\sqrt{2}+17\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2-12\sqrt{2}\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}{-3+2\sqrt{2}}}\ \sqrt{1-3\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2+2\sqrt{2}\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}\ -$$

$$12\sqrt{2\left(3-2\sqrt{2}\right)}\ \text{Sec}\left[\frac{1}{4}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{4}(c+d x)\right]^3\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}\ \sqrt{\frac{-3+2\sqrt{2}+\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}{-3+2\sqrt{2}}}$$

$$\sqrt{\frac{-3+2\sqrt{2}+17\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2-12\sqrt{2}\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}{-3+2\sqrt{2}}}\ \sqrt{1-3\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2+2\sqrt{2}\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}\ +$$

$$2\sqrt{2\left(3-2\sqrt{2}\right)}\ \text{Sec}\left[\frac{1}{4}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{4}(c+d x)\right]^5\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}\ \sqrt{\frac{-3+2\sqrt{2}+\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}{-3+2\sqrt{2}}}$$

$$\sqrt{\frac{-3+2\sqrt{2}+17\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2-12\sqrt{2}\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}{-3+2\sqrt{2}}}\ \sqrt{1-3\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2+2\sqrt{2}\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}\ -$$

$$6\,\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d x)\right]^4}\ +4\sqrt{2}\,\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d x)\right]^4}\ +$$

$$48\,\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d x)\right]^4}\ -$$

$$32\sqrt{2}\,\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d x)\right]^4}\ -$$

$$84\,\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d x)\right]^4\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d x)\right]^4}\ +56\sqrt{2}\,\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d x)\right]^4$$

$$\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d x)\right]^4}\ +48\,\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d x)\right]^6\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d x)\right]^4}\ -$$

$$32\sqrt{2}\,\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d x)\right]^6\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d x)\right]^4}-6\,\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d x)\right]^8$$

$$\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d x)\right]^4}+4\sqrt{2}\,\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d x)\right]^8\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d x)\right]^4}+$$

$$4\sqrt{3-2\sqrt{2}}\,\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d x)\right]\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}\sqrt{\frac{-3+2\sqrt{2}+\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}{-3+2\sqrt{2}}}$$

$$\sqrt{\frac{-3+2\sqrt{2}+17\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2-12\sqrt{2}\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}{-3+2\sqrt{2}}}\sqrt{1-3\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2+2\sqrt{2}\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}$$

$$\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d x)\right]^4}-4\sqrt{3-2\sqrt{2}}\,\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d x)\right]^3$$

$$\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}\sqrt{\frac{-3+2\sqrt{2}+\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}{-3+2\sqrt{2}}}\sqrt{\frac{-3+2\sqrt{2}+17\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2-12\sqrt{2}\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}{-3+2\sqrt{2}}}$$

$$\left.\left.\sqrt{1-3\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2+2\sqrt{2}\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d x)\right]^4}\right)\right)$$

- **Problem 293: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int\frac{(a+a\,\text{Sin}[c+d x])^{5/2}}{(e\,\text{Cos}[c+d x])^{5/2}}\,dx$$

Optimal (type 3, 204 leaves, 7 steps):

$$\frac{2 a^2\,\text{ArcSinh}\left[\frac{\sqrt{e\,\text{Cos}[c+d x]}}{\sqrt{e}}\right]\sqrt{1+\text{Cos}[c+d x]}\,\sqrt{a+a\,\text{Sin}[c+d x]}}{d\,e^{5/2}\,(1+\text{Cos}[c+d x]+\text{Sin}[c+d x])}-$$

$$\frac{2 a^2\,\text{ArcTan}\left[\frac{\sqrt{e}\,\text{Sin}[c+d x]}{\sqrt{e\,\text{Cos}[c+d x]}\,\sqrt{1+\text{Cos}[c+d x]}}\right]\sqrt{1+\text{Cos}[c+d x]}\,\sqrt{a+a\,\text{Sin}[c+d x]}}{d\,e^{5/2}\,(1+\text{Cos}[c+d x]+\text{Sin}[c+d x])}+\frac{4 a\,(a+a\,\text{Sin}[c+d x])^{3/2}}{3 d e\,(e\,\text{Cos}[c+d x])^{3/2}}$$

Result (type 4, 2795 leaves):

$$\frac{\text{Cos}[c+d\,x]^3\left(\frac{4}{3\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)}+\frac{8\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]}{3\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2}\right)(a\,(1+\text{Sin}[c+d\,x]))^{5/2}}{d\,(e\,\text{Cos}[c+d\,x])^{5/2}\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^5}+$$

$$\Bigg(\sqrt{3-2\sqrt{2}}\;\text{Cos}[c+d\,x]^3\,(a\,(1+\text{Sin}[c+d\,x]))^{5/2}\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\left(1+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2\right)$$

$$\sqrt{\frac{-3+2\sqrt{2}+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}{-3+2\sqrt{2}}}\sqrt{\frac{-3+2\sqrt{2}+17\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2-12\sqrt{2}\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}{-3+2\sqrt{2}}}$$

$$\sqrt{1-3\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+2\sqrt{2}\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\left(2-2\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\sqrt{2}\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4}\right)$$

$$\Bigg(4\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\sqrt{1+\left(-3+2\sqrt{2}\right)\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}$$

$$\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4}+8\,\text{EllipticPi}\left[-3+2\sqrt{2},-\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]$$

$$\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\sqrt{1+\left(-3+2\sqrt{2}\right)\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4}-$$

$$\sqrt{2}\left(\text{Log}\left[1+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2\right]-\text{Log}\left[2-2\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\sqrt{2}\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4}\right]\right)$$

$$\left(1-6\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4\right)\Bigg)\Bigg)\Big/$$

$$\Bigg(d\,(e\,\text{Cos}[c+d\,x])^{5/2}\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^5$$

$$\Big(-4\,\mathrm{Sec}\big[\tfrac{1}{4}(c+d\,x)\big]^2+3\sqrt{2}\,\mathrm{Sec}\big[\tfrac{1}{4}(c+d\,x)\big]^2+52\,\mathrm{Sec}\big[\tfrac{1}{4}(c+d\,x)\big]^2\,\mathrm{Tan}\big[\tfrac{1}{4}(c+d\,x)\big]^2-$$

$$39\sqrt{2}\,\mathrm{Sec}\big[\tfrac{1}{4}(c+d\,x)\big]^2\,\mathrm{Tan}\big[\tfrac{1}{4}(c+d\,x)\big]^2-200\,\mathrm{Sec}\big[\tfrac{1}{4}(c+d\,x)\big]^2\,\mathrm{Tan}\big[\tfrac{1}{4}(c+d\,x)\big]^4+150\sqrt{2}\,\mathrm{Sec}\big[\tfrac{1}{4}(c+d\,x)\big]^2\,\mathrm{Tan}\big[\tfrac{1}{4}(c+d\,x)\big]^4+$$

$$200\,\mathrm{Sec}\big[\tfrac{1}{4}(c+d\,x)\big]^2\,\mathrm{Tan}\big[\tfrac{1}{4}(c+d\,x)\big]^6-150\sqrt{2}\,\mathrm{Sec}\big[\tfrac{1}{4}(c+d\,x)\big]^2\,\mathrm{Tan}\big[\tfrac{1}{4}(c+d\,x)\big]^6-52\,\mathrm{Sec}\big[\tfrac{1}{4}(c+d\,x)\big]^2\,\mathrm{Tan}\big[\tfrac{1}{4}(c+d\,x)\big]^8+$$

$$39\sqrt{2}\,\mathrm{Sec}\big[\tfrac{1}{4}(c+d\,x)\big]^2\,\mathrm{Tan}\big[\tfrac{1}{4}(c+d\,x)\big]^8+4\,\mathrm{Sec}\big[\tfrac{1}{4}(c+d\,x)\big]^2\,\mathrm{Tan}\big[\tfrac{1}{4}(c+d\,x)\big]^{10}-3\sqrt{2}\,\mathrm{Sec}\big[\tfrac{1}{4}(c+d\,x)\big]^2\,\mathrm{Tan}\big[\tfrac{1}{4}(c+d\,x)\big]^{10}+$$

$$2\sqrt{2\left(3-2\sqrt{2}\right)}\,\mathrm{Sec}\big[\tfrac{1}{4}(c+d\,x)\big]^2\,\mathrm{Tan}\big[\tfrac{1}{4}(c+d\,x)\big]\sqrt{3-2\sqrt{2}-\mathrm{Tan}\big[\tfrac{1}{4}(c+d\,x)\big]^2}\,\sqrt{\frac{-3+2\sqrt{2}+\mathrm{Tan}\big[\frac{1}{4}(c+d\,x)\big]^2}{-3+2\sqrt{2}}}$$

$$\sqrt{\frac{-3+2\sqrt{2}+17\,\mathrm{Tan}\big[\frac{1}{4}(c+d\,x)\big]^2-12\sqrt{2}\,\mathrm{Tan}\big[\frac{1}{4}(c+d\,x)\big]^2}{-3+2\sqrt{2}}}\,\sqrt{1-3\,\mathrm{Tan}\big[\tfrac{1}{4}(c+d\,x)\big]^2+2\sqrt{2}\,\mathrm{Tan}\big[\tfrac{1}{4}(c+d\,x)\big]^2}-$$

$$12\sqrt{2\left(3-2\sqrt{2}\right)}\,\mathrm{Sec}\big[\tfrac{1}{4}(c+d\,x)\big]^2\,\mathrm{Tan}\big[\tfrac{1}{4}(c+d\,x)\big]^3\sqrt{3-2\sqrt{2}-\mathrm{Tan}\big[\tfrac{1}{4}(c+d\,x)\big]^2}\,\sqrt{\frac{-3+2\sqrt{2}+\mathrm{Tan}\big[\frac{1}{4}(c+d\,x)\big]^2}{-3+2\sqrt{2}}}$$

$$\sqrt{\frac{-3+2\sqrt{2}+17\,\mathrm{Tan}\big[\frac{1}{4}(c+d\,x)\big]^2-12\sqrt{2}\,\mathrm{Tan}\big[\frac{1}{4}(c+d\,x)\big]^2}{-3+2\sqrt{2}}}\,\sqrt{1-3\,\mathrm{Tan}\big[\tfrac{1}{4}(c+d\,x)\big]^2+2\sqrt{2}\,\mathrm{Tan}\big[\tfrac{1}{4}(c+d\,x)\big]^2}+$$

$$2\sqrt{2\left(3-2\sqrt{2}\right)}\,\mathrm{Sec}\big[\tfrac{1}{4}(c+d\,x)\big]^2\,\mathrm{Tan}\big[\tfrac{1}{4}(c+d\,x)\big]^5\sqrt{3-2\sqrt{2}-\mathrm{Tan}\big[\tfrac{1}{4}(c+d\,x)\big]^2}\,\sqrt{\frac{-3+2\sqrt{2}+\mathrm{Tan}\big[\frac{1}{4}(c+d\,x)\big]^2}{-3+2\sqrt{2}}}$$

$$\sqrt{\frac{-3+2\sqrt{2}+17\,\mathrm{Tan}\big[\frac{1}{4}(c+d\,x)\big]^2-12\sqrt{2}\,\mathrm{Tan}\big[\frac{1}{4}(c+d\,x)\big]^2}{-3+2\sqrt{2}}}\,\sqrt{1-3\,\mathrm{Tan}\big[\tfrac{1}{4}(c+d\,x)\big]^2+2\sqrt{2}\,\mathrm{Tan}\big[\tfrac{1}{4}(c+d\,x)\big]^2}+$$

$$6\,\mathrm{Sec}\big[\tfrac{1}{4}(c+d\,x)\big]^2\sqrt{1-6\,\mathrm{Tan}\big[\tfrac{1}{4}(c+d\,x)\big]^2+\mathrm{Tan}\big[\tfrac{1}{4}(c+d\,x)\big]^4}-4\sqrt{2}\,\mathrm{Sec}\big[\tfrac{1}{4}(c+d\,x)\big]^2\sqrt{1-6\,\mathrm{Tan}\big[\tfrac{1}{4}(c+d\,x)\big]^2+\mathrm{Tan}\big[\tfrac{1}{4}(c+d\,x)\big]^4}-$$

$$48\,\mathrm{Sec}\big[\tfrac{1}{4}(c+d\,x)\big]^2\,\mathrm{Tan}\big[\tfrac{1}{4}(c+d\,x)\big]^2\sqrt{1-6\,\mathrm{Tan}\big[\tfrac{1}{4}(c+d\,x)\big]^2+\mathrm{Tan}\big[\tfrac{1}{4}(c+d\,x)\big]^4}+$$

$$32\sqrt{2}\,\text{Sec}\left[\frac{1}{4}(c+dx)\right]^2\text{Tan}\left[\frac{1}{4}(c+dx)\right]^2\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+dx)\right]^2+\text{Tan}\left[\frac{1}{4}(c+dx)\right]^4}+$$

$$84\,\text{Sec}\left[\frac{1}{4}(c+dx)\right]^2\text{Tan}\left[\frac{1}{4}(c+dx)\right]^4\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+dx)\right]^2+\text{Tan}\left[\frac{1}{4}(c+dx)\right]^4}-56\sqrt{2}\,\text{Sec}\left[\frac{1}{4}(c+dx)\right]^2\text{Tan}\left[\frac{1}{4}(c+dx)\right]^4$$

$$\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+dx)\right]^2+\text{Tan}\left[\frac{1}{4}(c+dx)\right]^4}-48\,\text{Sec}\left[\frac{1}{4}(c+dx)\right]^2\text{Tan}\left[\frac{1}{4}(c+dx)\right]^6\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+dx)\right]^2+\text{Tan}\left[\frac{1}{4}(c+dx)\right]^4}+$$

$$32\sqrt{2}\,\text{Sec}\left[\frac{1}{4}(c+dx)\right]^2\text{Tan}\left[\frac{1}{4}(c+dx)\right]^6\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+dx)\right]^2+\text{Tan}\left[\frac{1}{4}(c+dx)\right]^4}+6\,\text{Sec}\left[\frac{1}{4}(c+dx)\right]^2\text{Tan}\left[\frac{1}{4}(c+dx)\right]^8$$

$$\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+dx)\right]^2+\text{Tan}\left[\frac{1}{4}(c+dx)\right]^4}-4\sqrt{2}\,\text{Sec}\left[\frac{1}{4}(c+dx)\right]^2\text{Tan}\left[\frac{1}{4}(c+dx)\right]^8\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+dx)\right]^2+\text{Tan}\left[\frac{1}{4}(c+dx)\right]^4}+$$

$$4\sqrt{3-2\sqrt{2}}\,\text{Sec}\left[\frac{1}{4}(c+dx)\right]^2\text{Tan}\left[\frac{1}{4}(c+dx)\right]\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+dx)\right]^2}\sqrt{\frac{-3+2\sqrt{2}+\text{Tan}\left[\frac{1}{4}(c+dx)\right]^2}{-3+2\sqrt{2}}}$$

$$\sqrt{\frac{-3+2\sqrt{2}+17\,\text{Tan}\left[\frac{1}{4}(c+dx)\right]^2-12\sqrt{2}\,\text{Tan}\left[\frac{1}{4}(c+dx)\right]^2}{-3+2\sqrt{2}}}\sqrt{1-3\,\text{Tan}\left[\frac{1}{4}(c+dx)\right]^2+2\sqrt{2}\,\text{Tan}\left[\frac{1}{4}(c+dx)\right]^2}$$

$$\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+dx)\right]^2+\text{Tan}\left[\frac{1}{4}(c+dx)\right]^4}-4\sqrt{3-2\sqrt{2}}\,\text{Sec}\left[\frac{1}{4}(c+dx)\right]^2\text{Tan}\left[\frac{1}{4}(c+dx)\right]^3$$

$$\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+dx)\right]^2}\sqrt{\frac{-3+2\sqrt{2}+\text{Tan}\left[\frac{1}{4}(c+dx)\right]^2}{-3+2\sqrt{2}}}\sqrt{\frac{-3+2\sqrt{2}+17\,\text{Tan}\left[\frac{1}{4}(c+dx)\right]^2-12\sqrt{2}\,\text{Tan}\left[\frac{1}{4}(c+dx)\right]^2}{-3+2\sqrt{2}}}$$

$$\left.\left.\sqrt{1-3\,\text{Tan}\left[\frac{1}{4}(c+dx)\right]^2+2\sqrt{2}\,\text{Tan}\left[\frac{1}{4}(c+dx)\right]^2}\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+dx)\right]^2+\text{Tan}\left[\frac{1}{4}(c+dx)\right]^4}\right)\right)$$

- **Problem 294: Result more than twice size of optimal antiderivative.**

$$\int\frac{(a+a\,\text{Sin}[c+dx])^{5/2}}{(e\,\text{Cos}[c+dx])^{7/2}}\,dx$$

Optimal (type 3, 36 leaves, 1 step) :

$$\frac{2\,(a+a\,\text{Sin}[c+d\,x])^{5/2}}{5\,d\,e\,(e\,\text{Cos}[c+d\,x])^{5/2}}$$

Result (type 3, 87 leaves):

$$\frac{2\,a^2\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2\,\sqrt{a\,(1+\text{Sin}[c+d\,x])}}{5\,d\,e^3\,\sqrt{e\,\text{Cos}[c+d\,x]}\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}$$

- **Problem 298: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int\frac{(e\,\text{Cos}[c+d\,x])^{5/2}}{\sqrt{a+a\,\text{Sin}[c+d\,x]}}\,dx$$

Optimal (type 3, 244 leaves, 8 steps):

$$-\frac{a\,(e\,\text{Cos}[c+d\,x])^{7/2}}{2\,d\,e\,(a+a\,\text{Sin}[c+d\,x])^{3/2}}+\frac{e\,(e\,\text{Cos}[c+d\,x])^{3/2}}{4\,d\,\sqrt{a+a\,\text{Sin}[c+d\,x]}}+\frac{3\,e^{5/2}\,\text{ArcSinh}\left[\frac{\sqrt{e\,\text{Cos}[c+d\,x]}}{\sqrt{e}}\right]\,\sqrt{1+\text{Cos}[c+d\,x]}\,\sqrt{a+a\,\text{Sin}[c+d\,x]}}{4\,d\,(a+a\,\text{Cos}[c+d\,x]+a\,\text{Sin}[c+d\,x])}+$$
$$\frac{3\,e^{5/2}\,\text{ArcTan}\left[\frac{\sqrt{e}\,\text{Sin}[c+d\,x]}{\sqrt{e\,\text{Cos}[c+d\,x]}\,\sqrt{1+\text{Cos}[c+d\,x]}}\right]\,\sqrt{1+\text{Cos}[c+d\,x]}\,\sqrt{a+a\,\text{Sin}[c+d\,x]}}{4\,d\,(a+a\,\text{Cos}[c+d\,x]+a\,\text{Sin}[c+d\,x])}$$

Result (type 4, 2305 leaves):

$$\frac{1}{d\,\sqrt{a\,(1+\text{Sin}[c+d\,x])}}(e\,\text{Cos}[c+d\,x])^{5/2}\,\text{Sec}[c+d\,x]^2\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)$$
$$\left(-\frac{1}{2}\,\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\frac{1}{4}\,\text{Cos}\left[\frac{3}{2}\,(c+d\,x)\right]+\frac{1}{2}\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]+\frac{1}{4}\,\text{Sin}\left[\frac{3}{2}\,(c+d\,x)\right]\right)-\left(9\,\text{Cos}\left[\frac{1}{4}\,(c+d\,x)\right]^2\,(e\,\text{Cos}[c+d\,x])^{5/2}\right.$$
$$\left(\sqrt{2}\,\left(\text{Log}\left[\text{Sec}\left[\frac{1}{4}\,(c+d\,x)\right]^2\right]-\text{Log}\left[2+\sqrt{2}\,\sqrt{\text{Cos}[c+d\,x]\,\text{Sec}\left[\frac{1}{4}\,(c+d\,x)\right]^4}-2\,\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]^2\right]\right)\,\sqrt{\text{Cos}[c+d\,x]\,\text{Sec}\left[\frac{1}{4}\,(c+d\,x)\right]^4}+\right.$$
$$4\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]}{\sqrt{3-2\,\sqrt{2}}}\right],17-12\,\sqrt{2}\right]\,\sqrt{3-2\,\sqrt{2}-\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]^2}\,\sqrt{1+\left(-3+2\,\sqrt{2}\right)\,\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]^2}+8$$
$$\left.\left.\text{EllipticPi}\left[-3+2\,\sqrt{2},-\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]}{\sqrt{3-2\,\sqrt{2}}}\right],17-12\,\sqrt{2}\right]\,\sqrt{3-2\,\sqrt{2}-\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]^2}\,\sqrt{1+\left(-3+2\,\sqrt{2}\right)\,\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]^2}\right)\right)\Big/$$

$$\left(64\, d \operatorname{Cos}[c+d x]^{5/2} \sqrt{a\,(1+\operatorname{Sin}[c+d x])}\right. \left(\frac{1}{16 \sqrt{\operatorname{Cos}[c+d x]}}\, 3 \operatorname{Cos}\left[\frac{1}{4}(c+d x)\right] \operatorname{Sin}\left[\frac{1}{4}(c+d x)\right]\right.$$

$$\left(\sqrt{2}\left(\operatorname{Log}\left[\operatorname{Sec}\left[\frac{1}{4}(c+d x)\right]^2\right]-\operatorname{Log}\left[2+\sqrt{2}\sqrt{\operatorname{Cos}[c+d x] \operatorname{Sec}\left[\frac{1}{4}(c+d x)\right]^4}-2 \operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]^2\right]\right) \sqrt{\operatorname{Cos}[c+d x] \operatorname{Sec}\left[\frac{1}{4}(c+d x)\right]^4}+\right.$$

$$4 \operatorname{EllipticF}\left[\operatorname{ArcSin}\left[\frac{\operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{3-2\sqrt{2}}}\right], 17-12\sqrt{2}\right] \sqrt{3-2\sqrt{2}-\operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]^2} \sqrt{1+\left(-3+2\sqrt{2}\right) \operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]^2}+$$

$$8 \operatorname{EllipticPi}\left[-3+2\sqrt{2}, -\operatorname{ArcSin}\left[\frac{\operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{3-2\sqrt{2}}}\right], 17-12\sqrt{2}\right] \sqrt{3-2\sqrt{2}-\operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]^2}$$

$$\left.\sqrt{1+\left(-3+2\sqrt{2}\right) \operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]^2}\right)-\frac{1}{16 \operatorname{Cos}[c+d x]^{3/2}}\, 3 \operatorname{Cos}\left[\frac{1}{4}(c+d x)\right]^2 \operatorname{Sin}[c+d x]$$

$$\left(\sqrt{2}\left(\operatorname{Log}\left[\operatorname{Sec}\left[\frac{1}{4}(c+d x)\right]^2\right]-\operatorname{Log}\left[2+\sqrt{2}\sqrt{\operatorname{Cos}[c+d x] \operatorname{Sec}\left[\frac{1}{4}(c+d x)\right]^4}-2 \operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]^2\right]\right) \sqrt{\operatorname{Cos}[c+d x] \operatorname{Sec}\left[\frac{1}{4}(c+d x)\right]^4}+\right.$$

$$4 \operatorname{EllipticF}\left[\operatorname{ArcSin}\left[\frac{\operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{3-2\sqrt{2}}}\right], 17-12\sqrt{2}\right] \sqrt{3-2\sqrt{2}-\operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]^2} \sqrt{1+\left(-3+2\sqrt{2}\right) \operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]^2}+$$

$$8 \operatorname{EllipticPi}\left[-3+2\sqrt{2}, -\operatorname{ArcSin}\left[\frac{\operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{3-2\sqrt{2}}}\right], 17-12\sqrt{2}\right]$$

$$\left.\sqrt{3-2\sqrt{2}-\operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]^2} \sqrt{1+\left(-3+2\sqrt{2}\right) \operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]^2}\right)-$$

$$\frac{1}{8\sqrt{\text{Cos}[c+d\,x]}}\,3\,\text{Cos}\left[\frac{1}{4}(c+d\,x)\right]^2\left(\left(\left(\text{Log}\left[\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\right]-\text{Log}\left[2+\sqrt{2}\,\sqrt{\text{Cos}[c+d\,x]\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^4}-2\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2\right]\right)\right.\right.$$

$$\left.\left(-\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^4\text{Sin}[c+d\,x]+\text{Cos}[c+d\,x]\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^4\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]\right)\right)\Big/\left(\sqrt{2}\,\sqrt{\text{Cos}[c+d\,x]\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^4}\right)+$$

$$\left(\left(-3+2\sqrt{2}\right)\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]\right.$$

$$\left.\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\right)\Big/\left(\sqrt{1+\left(-3+2\sqrt{2}\right)\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\right)+$$

$$\left(2\left(-3+2\sqrt{2}\right)\text{EllipticPi}\left[-3+2\sqrt{2},-\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\right.$$

$$\left.\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\right)\Big/\left(\sqrt{1+\left(-3+2\sqrt{2}\right)\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\right)-$$

$$\left(\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]\sqrt{1+\left(-3+2\sqrt{2}\right)\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\right)\Big/$$

$$\left(\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\right)-\left(2\,\text{EllipticPi}\left[-3+2\sqrt{2},-\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]\right.$$

$$\left.\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]\sqrt{1+\left(-3+2\sqrt{2}\right)\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\right)\Big/\left(\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\right)+$$

$$\frac{\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2 \sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}\ \sqrt{1+\left(-3+2\sqrt{2}\right)\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}}{\sqrt{3-2\sqrt{2}}\ \sqrt{1-\frac{\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}{3-2\sqrt{2}}}\ \sqrt{1-\frac{\left(17-12\sqrt{2}\right)\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}{3-2\sqrt{2}}}}-$$

$$\frac{2\,\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2 \sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}\ \sqrt{1+\left(-3+2\sqrt{2}\right)\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}}{\sqrt{3-2\sqrt{2}}\ \sqrt{1-\frac{\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}{3-2\sqrt{2}}}\ \sqrt{1-\frac{\left(17-12\sqrt{2}\right)\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}{3-2\sqrt{2}}}\ \left(1-\frac{\left(-3+2\sqrt{2}\right)\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}{3-2\sqrt{2}}\right)}+$$

$$\sqrt{2}\ \sqrt{\text{Cos}[c+d x]\ \text{Sec}\left[\frac{1}{4}(c+d x)\right]^4}\ \left(\frac{1}{2}\text{Tan}\left[\frac{1}{4}(c+d x)\right]-\right.$$

$$\left(-\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d x)\right]+\frac{-\text{Sec}\left[\frac{1}{4}(c+d x)\right]^4\text{Sin}[c+d x]+\text{Cos}[c+d x]\ \text{Sec}\left[\frac{1}{4}(c+d x)\right]^4\text{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{2}\ \sqrt{\text{Cos}[c+d x]\ \text{Sec}\left[\frac{1}{4}(c+d x)\right]^4}}\right)\Big/$$

$$\left.\left.\left.\left.\left(2+\sqrt{2}\ \sqrt{\text{Cos}[c+d x]\ \text{Sec}\left[\frac{1}{4}(c+d x)\right]^4}-2\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2\right)\right)\right)\right)\right)$$

- **Problem 299: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int \frac{(e\,\text{Cos}[c+d x])^{3/2}}{\sqrt{a+a\,\text{Sin}[c+d x]}}\,dx$$

Optimal (type 3, 200 leaves, 7 steps) :

$$\frac{e\sqrt{e\,\mathrm{Cos}[c+d\,x]}\,\sqrt{a+a\,\mathrm{Sin}[c+d\,x]}}{a\,d}-\frac{e^{3/2}\,\mathrm{ArcSinh}\left[\frac{\sqrt{e\,\mathrm{Cos}[c+d\,x]}}{\sqrt{e}}\right]\sqrt{1+\mathrm{Cos}[c+d\,x]}\,\sqrt{a+a\,\mathrm{Sin}[c+d\,x]}}{a\,d\,(1+\mathrm{Cos}[c+d\,x]+\mathrm{Sin}[c+d\,x])}+\frac{e^{3/2}\,\mathrm{ArcTan}\left[\frac{\sqrt{e}\,\mathrm{Sin}[c+d\,x]}{\sqrt{e\,\mathrm{Cos}[c+d\,x]}\,\sqrt{1+\mathrm{Cos}[c+d\,x]}}\right]\sqrt{1+\mathrm{Cos}[c+d\,x]}\,\sqrt{a+a\,\mathrm{Sin}[c+d\,x]}}{a\,d\,(1+\mathrm{Cos}[c+d\,x]+\mathrm{Sin}[c+d\,x])}$$

Result (type 4, 2723 leaves) :

$$\frac{(e\,\mathrm{Cos}[c+d\,x])^{3/2}\,\mathrm{Sec}[c+d\,x]\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2}{d\sqrt{a\,(1+\mathrm{Sin}[c+d\,x])}}-$$

$$\Bigg(\sqrt{3-2\sqrt{2}}\,(e\,\mathrm{Cos}[c+d\,x])^{3/2}\,\mathrm{Sec}[c+d\,x]\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)\sqrt{3-2\sqrt{2}-\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}$$

$$\left(1+\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2\right)\sqrt{\frac{-3+2\sqrt{2}+\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}{-3+2\sqrt{2}}}\sqrt{\frac{-3+2\sqrt{2}+17\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2-12\sqrt{2}\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}{-3+2\sqrt{2}}}$$

$$\sqrt{1-3\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+2\sqrt{2}\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\left(2-2\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\sqrt{2}\sqrt{1-6\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4}\right)$$

$$\Bigg(4\,\mathrm{EllipticF}\left[\mathrm{ArcSin}\left[\frac{\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]\sqrt{3-2\sqrt{2}-\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\,\sqrt{1+\left(-3+2\sqrt{2}\right)\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}$$

$$\sqrt{1-6\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4}+8\,\mathrm{EllipticPi}\left[-3+2\sqrt{2},-\mathrm{ArcSin}\left[\frac{\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]$$

$$\sqrt{3-2\sqrt{2}-\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\,\sqrt{1+\left(-3+2\sqrt{2}\right)\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\,\sqrt{1-6\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4}-$$

$$\sqrt{2}\left(\mathrm{Log}\left[1+\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2\right]-\mathrm{Log}\left[2-2\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\sqrt{2}\sqrt{1-6\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4}\right]\right)$$

$$\left(1-6\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4\right)\Bigg)\Bigg)\Bigg/\left(2\,d\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)\right)$$

$$\sqrt{a\,(1+\mathrm{Sin}[c+d\,x])}\,\Bigg(-4\,\mathrm{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2+3\sqrt{2}\,\mathrm{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2+52\,\mathrm{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2-$$

$$39\sqrt{2}\,\mathrm{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2-200\,\mathrm{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4+150\sqrt{2}\,\mathrm{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4+$$

$$200\,\mathrm{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^6-150\sqrt{2}\,\mathrm{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^6-52\,\mathrm{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^8+$$

$$39\sqrt{2}\,\mathrm{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^8+4\,\mathrm{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^{10}-3\sqrt{2}\,\mathrm{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^{10}+$$

$$2\sqrt{2\left(3-2\sqrt{2}\right)}\,\mathrm{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]\sqrt{3-2\sqrt{2}-\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\,\sqrt{\frac{-3+2\sqrt{2}+\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}{-3+2\sqrt{2}}}$$

$$\sqrt{\frac{-3+2\sqrt{2}+17\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2-12\sqrt{2}\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}{-3+2\sqrt{2}}}\,\sqrt{1-3\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+2\sqrt{2}\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\,-$$

$$12\sqrt{2\left(3-2\sqrt{2}\right)}\,\mathrm{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^3\sqrt{3-2\sqrt{2}-\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\,\sqrt{\frac{-3+2\sqrt{2}+\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}{-3+2\sqrt{2}}}$$

$$\sqrt{\frac{-3+2\sqrt{2}+17\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2-12\sqrt{2}\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}{-3+2\sqrt{2}}}\,\sqrt{1-3\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+2\sqrt{2}\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\,+$$

$$2\sqrt{2\left(3-2\sqrt{2}\right)}\,\mathrm{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^5\sqrt{3-2\sqrt{2}-\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\,\sqrt{\frac{-3+2\sqrt{2}+\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}{-3+2\sqrt{2}}}$$

$$\sqrt{\frac{-3+2\sqrt{2}+17\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2-12\sqrt{2}\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}{-3+2\sqrt{2}}}\,\sqrt{1-3\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+2\sqrt{2}\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\,+$$

$$6\,\mathrm{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\sqrt{1-6\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4}-4\sqrt{2}\,\mathrm{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\sqrt{1-6\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4}\,-$$

$$48\,\mathrm{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2\sqrt{1-6\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4}\,+$$

$$32\sqrt{2}\,\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d x)\right]^4}+$$

$$84\,\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d x)\right]^4\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d x)\right]^4}-56\sqrt{2}\,\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d x)\right]^4$$

$$\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d x)\right]^4}-48\,\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d x)\right]^6\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d x)\right]^4}+$$

$$32\sqrt{2}\,\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d x)\right]^6\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d x)\right]^4}+6\,\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d x)\right]^8$$

$$\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d x)\right]^4}-4\sqrt{2}\,\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d x)\right]^8\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d x)\right]^4}+$$

$$4\sqrt{3-2\sqrt{2}}\,\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d x)\right]\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}\sqrt{\frac{-3+2\sqrt{2}+\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}{-3+2\sqrt{2}}}$$

$$\sqrt{\frac{-3+2\sqrt{2}+17\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2-12\sqrt{2}\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}{-3+2\sqrt{2}}}\sqrt{1-3\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2+2\sqrt{2}\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}$$

$$\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d x)\right]^4}-4\sqrt{3-2\sqrt{2}}\,\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d x)\right]^3$$

$$\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}\sqrt{\frac{-3+2\sqrt{2}+\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}{-3+2\sqrt{2}}}\sqrt{\frac{-3+2\sqrt{2}+17\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2-12\sqrt{2}\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}{-3+2\sqrt{2}}}$$

$$\left.\left.\sqrt{1-3\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2+2\sqrt{2}\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d x)\right]^4}\right)\right)$$

- **Problem 300: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int \frac{\sqrt{e\,\text{Cos}[c+d x]}}{\sqrt{a+a\,\text{Sin}[c+d x]}}\,dx$$

Optimal (type 3, 169 leaves, 6 steps) :

$$\frac{2\sqrt{e}\,\text{ArcSinh}\left[\frac{\sqrt{e\,\text{Cos}[c+d\,x]}}{\sqrt{e}}\right]\sqrt{1+\text{Cos}[c+d\,x]}\,\sqrt{a+a\,\text{Sin}[c+d\,x]}}{d\,(a+a\,\text{Cos}[c+d\,x]+a\,\text{Sin}[c+d\,x])}+\frac{2\sqrt{e}\,\text{ArcTan}\left[\frac{\sqrt{e}\,\text{Sin}[c+d\,x]}{\sqrt{e\,\text{Cos}[c+d\,x]}\,\sqrt{1+\text{Cos}[c+d\,x]}}\right]\sqrt{1+\text{Cos}[c+d\,x]}\,\sqrt{a+a\,\text{Sin}[c+d\,x]}}{d\,(a+a\,\text{Cos}[c+d\,x]+a\,\text{Sin}[c+d\,x])}$$

Result (type 4, 2607 leaves) :

$$\left(\sqrt{3-2\sqrt{2}}\,\sqrt{e\,\text{Cos}[c+d\,x]}\,\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\left(1+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2\right)\right.$$

$$\sqrt{\frac{-3+2\sqrt{2}+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}{-3+2\sqrt{2}}}\,\sqrt{\frac{-3+2\sqrt{2}+17\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2-12\sqrt{2}\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}{-3+2\sqrt{2}}}$$

$$\sqrt{1-3\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+2\sqrt{2}\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\left(2-2\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\sqrt{2}\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4}\right)$$

$$\left(4\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\,\sqrt{1+\left(-3+2\sqrt{2}\right)\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\right.$$

$$\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4}+8\,\text{EllipticPi}\left[-3+2\sqrt{2},-\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]$$

$$\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\,\sqrt{1+\left(-3+2\sqrt{2}\right)\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\,\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4}+$$

$$\sqrt{2}\left(\text{Log}\left[1+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2\right]-\text{Log}\left[2-2\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\sqrt{2}\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4}\right]\right)$$

$$\left.\left.\left(1-6\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4\right)\right)\right)\Big/$$

$$\left(d\sqrt{a\,(1+\text{Sin}[c+d\,x])}\left(4\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2-3\sqrt{2}\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2-52\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\right.\right.$$

$$39\sqrt{2}\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+200\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4-150\sqrt{2}\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4-$$

$$200\,\mathrm{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^6+150\sqrt{2}\,\mathrm{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^6+52\,\mathrm{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^8-$$

$$39\sqrt{2}\,\mathrm{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^8-4\,\mathrm{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^{10}+3\sqrt{2}\,\mathrm{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^{10}+$$

$$2\sqrt{2\left(3-2\sqrt{2}\right)}\,\mathrm{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]\sqrt{3-2\sqrt{2}-\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\sqrt{\frac{-3+2\sqrt{2}+\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}{-3+2\sqrt{2}}}$$

$$\sqrt{\frac{-3+2\sqrt{2}+17\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2-12\sqrt{2}\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}{-3+2\sqrt{2}}}\sqrt{1-3\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+2\sqrt{2}\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}-$$

$$12\sqrt{2\left(3-2\sqrt{2}\right)}\,\mathrm{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^3\sqrt{3-2\sqrt{2}-\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\sqrt{\frac{-3+2\sqrt{2}+\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}{-3+2\sqrt{2}}}$$

$$\sqrt{\frac{-3+2\sqrt{2}+17\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2-12\sqrt{2}\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}{-3+2\sqrt{2}}}\sqrt{1-3\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+2\sqrt{2}\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}+$$

$$2\sqrt{2\left(3-2\sqrt{2}\right)}\,\mathrm{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^5\sqrt{3-2\sqrt{2}-\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\sqrt{\frac{-3+2\sqrt{2}+\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}{-3+2\sqrt{2}}}$$

$$\sqrt{\frac{-3+2\sqrt{2}+17\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2-12\sqrt{2}\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}{-3+2\sqrt{2}}}\sqrt{1-3\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+2\sqrt{2}\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}-$$

$$6\,\mathrm{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\sqrt{1-6\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4}+4\sqrt{2}\,\mathrm{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\sqrt{1-6\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4}+$$

$$48\,\mathrm{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2\sqrt{1-6\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4}-$$

$$32\sqrt{2}\,\mathrm{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2\sqrt{1-6\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4}-$$

$$84\,\mathrm{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4\sqrt{1-6\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4}+$$

$$56\sqrt{2}\,\mathrm{Sec}\left[\frac{1}{4}(c+d x)\right]^2 \mathrm{Tan}\left[\frac{1}{4}(c+d x)\right]^4 \sqrt{1-6\,\mathrm{Tan}\left[\frac{1}{4}(c+d x)\right]^2+\mathrm{Tan}\left[\frac{1}{4}(c+d x)\right]^4}\;+$$

$$48\,\mathrm{Sec}\left[\frac{1}{4}(c+d x)\right]^2 \mathrm{Tan}\left[\frac{1}{4}(c+d x)\right]^6 \sqrt{1-6\,\mathrm{Tan}\left[\frac{1}{4}(c+d x)\right]^2+\mathrm{Tan}\left[\frac{1}{4}(c+d x)\right]^4}\;-$$

$$32\sqrt{2}\,\mathrm{Sec}\left[\frac{1}{4}(c+d x)\right]^2 \mathrm{Tan}\left[\frac{1}{4}(c+d x)\right]^6 \sqrt{1-6\,\mathrm{Tan}\left[\frac{1}{4}(c+d x)\right]^2+\mathrm{Tan}\left[\frac{1}{4}(c+d x)\right]^4}\;-$$

$$6\,\mathrm{Sec}\left[\frac{1}{4}(c+d x)\right]^2 \mathrm{Tan}\left[\frac{1}{4}(c+d x)\right]^8 \sqrt{1-6\,\mathrm{Tan}\left[\frac{1}{4}(c+d x)\right]^2+\mathrm{Tan}\left[\frac{1}{4}(c+d x)\right]^4}\;+$$

$$4\sqrt{2}\,\mathrm{Sec}\left[\frac{1}{4}(c+d x)\right]^2 \mathrm{Tan}\left[\frac{1}{4}(c+d x)\right]^8 \sqrt{1-6\,\mathrm{Tan}\left[\frac{1}{4}(c+d x)\right]^2+\mathrm{Tan}\left[\frac{1}{4}(c+d x)\right]^4}\;+$$

$$4\sqrt{3-2\sqrt{2}}\,\mathrm{Sec}\left[\frac{1}{4}(c+d x)\right]^2 \mathrm{Tan}\left[\frac{1}{4}(c+d x)\right] \sqrt{3-2\sqrt{2}-\mathrm{Tan}\left[\frac{1}{4}(c+d x)\right]^2}\;\sqrt{\frac{-3+2\sqrt{2}+\mathrm{Tan}\left[\frac{1}{4}(c+d x)\right]^2}{-3+2\sqrt{2}}}$$

$$\sqrt{\frac{-3+2\sqrt{2}+17\,\mathrm{Tan}\left[\frac{1}{4}(c+d x)\right]^2-12\sqrt{2}\,\mathrm{Tan}\left[\frac{1}{4}(c+d x)\right]^2}{-3+2\sqrt{2}}}\;\sqrt{1-3\,\mathrm{Tan}\left[\frac{1}{4}(c+d x)\right]^2+2\sqrt{2}\,\mathrm{Tan}\left[\frac{1}{4}(c+d x)\right]^2}$$

$$\sqrt{1-6\,\mathrm{Tan}\left[\frac{1}{4}(c+d x)\right]^2+\mathrm{Tan}\left[\frac{1}{4}(c+d x)\right]^4}\;-4\sqrt{3-2\sqrt{2}}\,\mathrm{Sec}\left[\frac{1}{4}(c+d x)\right]^2 \mathrm{Tan}\left[\frac{1}{4}(c+d x)\right]^3$$

$$\sqrt{3-2\sqrt{2}-\mathrm{Tan}\left[\frac{1}{4}(c+d x)\right]^2}\;\sqrt{\frac{-3+2\sqrt{2}+\mathrm{Tan}\left[\frac{1}{4}(c+d x)\right]^2}{-3+2\sqrt{2}}}\;\sqrt{\frac{-3+2\sqrt{2}+17\,\mathrm{Tan}\left[\frac{1}{4}(c+d x)\right]^2-12\sqrt{2}\,\mathrm{Tan}\left[\frac{1}{4}(c+d x)\right]^2}{-3+2\sqrt{2}}}$$

$$\left.\left.\sqrt{1-3\,\mathrm{Tan}\left[\frac{1}{4}(c+d x)\right]^2+2\sqrt{2}\,\mathrm{Tan}\left[\frac{1}{4}(c+d x)\right]^2}\;\sqrt{1-6\,\mathrm{Tan}\left[\frac{1}{4}(c+d x)\right]^2+\mathrm{Tan}\left[\frac{1}{4}(c+d x)\right]^4}\right)\right)$$

- **Problem 305: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int \frac{(e\,\mathrm{Cos}[c+d x])^{7/2}}{(a+a\,\mathrm{Sin}[c+d x])^{3/2}}\,dx$$

Optimal (type 3, 247 leaves, 8 steps) :

$$\frac{e\,(e\,\text{Cos}[c+d\,x])^{5/2}}{2\,a\,d\,\sqrt{a+a\,\text{Sin}[c+d\,x]}}+\frac{5\,e^3\,\sqrt{e\,\text{Cos}[c+d\,x]}\,\sqrt{a+a\,\text{Sin}[c+d\,x]}}{4\,a^2\,d}-$$

$$\frac{5\,e^{7/2}\,\text{ArcSinh}\left[\frac{\sqrt{e\,\text{Cos}[c+d\,x]}}{\sqrt{e}}\right]\,\sqrt{1+\text{Cos}[c+d\,x]}\,\sqrt{a+a\,\text{Sin}[c+d\,x]}}{4\,a^2\,d\,(1+\text{Cos}[c+d\,x]+\text{Sin}[c+d\,x])}+\frac{5\,e^{7/2}\,\text{ArcTan}\left[\frac{\sqrt{e}\,\text{Sin}[c+d\,x]}{\sqrt{e\,\text{Cos}[c+d\,x]}\,\sqrt{1+\text{Cos}[c+d\,x]}}\right]\,\sqrt{1+\text{Cos}[c+d\,x]}\,\sqrt{a+a\,\text{Sin}[c+d\,x]}}{4\,a^2\,d\,(1+\text{Cos}[c+d\,x]+\text{Sin}[c+d\,x])}$$

Result (type 4, 2786 leaves) :

$$\frac{1}{d\,(a\,(1+\text{Sin}[c+d\,x]))^{3/2}}(e\,\text{Cos}[c+d\,x])^{7/2}\,\text{Sec}[c+d\,x]^3\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^3$$
$$\left(\frac{3}{2}\,\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\frac{1}{4}\,\text{Cos}\left[\frac{3}{2}\,(c+d\,x)\right]+\frac{3}{2}\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]-\frac{1}{4}\,\text{Sin}\left[\frac{3}{2}\,(c+d\,x)\right]\right)-$$
$$\left(5\,\sqrt{3-2\,\sqrt{2}}\,(e\,\text{Cos}[c+d\,x])^{7/2}\,\text{Sec}[c+d\,x]^3\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^3\sqrt{3-2\,\sqrt{2}-\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]^2}\right.$$
$$\left(1+\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]^2\right)\sqrt{\frac{-3+2\,\sqrt{2}+\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]^2}{-3+2\,\sqrt{2}}}\,\sqrt{\frac{-3+2\,\sqrt{2}+17\,\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]^2-12\,\sqrt{2}\,\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]^2}{-3+2\,\sqrt{2}}}$$
$$\sqrt{1-3\,\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]^2+2\,\sqrt{2}\,\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]^2}\left(2-2\,\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]^2+\sqrt{2}\,\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]^2+\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]^4}\right)$$
$$\left(4\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]}{\sqrt{3-2\,\sqrt{2}}}\right],17-12\,\sqrt{2}\right]\sqrt{3-2\,\sqrt{2}-\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]^2}\,\sqrt{1+\left(-3+2\,\sqrt{2}\right)\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]^2}\right.$$
$$\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]^2+\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]^4}+8\,\text{EllipticPi}\left[-3+2\,\sqrt{2},-\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]}{\sqrt{3-2\,\sqrt{2}}}\right],17-12\,\sqrt{2}\right]$$
$$\sqrt{3-2\,\sqrt{2}-\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]^2}\,\sqrt{1+\left(-3+2\,\sqrt{2}\right)\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]^2}\,\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]^2+\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]^4}-$$
$$\sqrt{2}\left(\text{Log}\left[1+\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]^2\right]-\text{Log}\left[2-2\,\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]^2+\sqrt{2}\,\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]^2+\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]^4}\right]\right)$$

$$\left(1-6\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4\right)\Bigg)\Bigg)\Bigg/\left(8\,d\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)\right.$$

$$(a\,(1+\mathrm{Sin}[c+d\,x]))^{3/2}\left(-4\,\mathrm{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2+3\sqrt{2}\,\mathrm{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2+52\,\mathrm{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2-\right.$$

$$39\sqrt{2}\,\mathrm{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2-200\,\mathrm{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4+150\sqrt{2}\,\mathrm{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4+$$

$$200\,\mathrm{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^6-150\sqrt{2}\,\mathrm{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^6-52\,\mathrm{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^8+$$

$$39\sqrt{2}\,\mathrm{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^8+4\,\mathrm{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^{10}-3\sqrt{2}\,\mathrm{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^{10}+$$

$$2\sqrt{2\left(3-2\sqrt{2}\right)}\,\mathrm{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]\sqrt{3-2\sqrt{2}-\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\,\sqrt{\frac{-3+2\sqrt{2}+\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}{-3+2\sqrt{2}}}$$

$$\sqrt{\frac{-3+2\sqrt{2}+17\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2-12\sqrt{2}\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}{-3+2\sqrt{2}}}\,\sqrt{1-3\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+2\sqrt{2}\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\,-$$

$$12\sqrt{2\left(3-2\sqrt{2}\right)}\,\mathrm{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^3\sqrt{3-2\sqrt{2}-\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\,\sqrt{\frac{-3+2\sqrt{2}+\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}{-3+2\sqrt{2}}}$$

$$\sqrt{\frac{-3+2\sqrt{2}+17\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2-12\sqrt{2}\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}{-3+2\sqrt{2}}}\,\sqrt{1-3\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+2\sqrt{2}\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\,+$$

$$2\sqrt{2\left(3-2\sqrt{2}\right)}\,\mathrm{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^5\sqrt{3-2\sqrt{2}-\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\,\sqrt{\frac{-3+2\sqrt{2}+\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}{-3+2\sqrt{2}}}$$

$$\sqrt{\frac{-3+2\sqrt{2}+17\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2-12\sqrt{2}\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}{-3+2\sqrt{2}}}\,\sqrt{1-3\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+2\sqrt{2}\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\,+$$

$$6\,\mathrm{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\sqrt{1-6\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4}-4\sqrt{2}\,\mathrm{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\sqrt{1-6\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4}\,-$$

$$48\,\mathrm{Sec}\left[\frac{1}{4}(c+dx)\right]^2\mathrm{Tan}\left[\frac{1}{4}(c+dx)\right]^2\sqrt{1-6\,\mathrm{Tan}\left[\frac{1}{4}(c+dx)\right]^2+\mathrm{Tan}\left[\frac{1}{4}(c+dx)\right]^4}+$$

$$32\sqrt{2}\,\mathrm{Sec}\left[\frac{1}{4}(c+dx)\right]^2\mathrm{Tan}\left[\frac{1}{4}(c+dx)\right]^2\sqrt{1-6\,\mathrm{Tan}\left[\frac{1}{4}(c+dx)\right]^2+\mathrm{Tan}\left[\frac{1}{4}(c+dx)\right]^4}+$$

$$84\,\mathrm{Sec}\left[\frac{1}{4}(c+dx)\right]^2\mathrm{Tan}\left[\frac{1}{4}(c+dx)\right]^4\sqrt{1-6\,\mathrm{Tan}\left[\frac{1}{4}(c+dx)\right]^2+\mathrm{Tan}\left[\frac{1}{4}(c+dx)\right]^4}-56\sqrt{2}\,\mathrm{Sec}\left[\frac{1}{4}(c+dx)\right]^2\mathrm{Tan}\left[\frac{1}{4}(c+dx)\right]^4$$

$$\sqrt{1-6\,\mathrm{Tan}\left[\frac{1}{4}(c+dx)\right]^2+\mathrm{Tan}\left[\frac{1}{4}(c+dx)\right]^4}-48\,\mathrm{Sec}\left[\frac{1}{4}(c+dx)\right]^2\mathrm{Tan}\left[\frac{1}{4}(c+dx)\right]^6\sqrt{1-6\,\mathrm{Tan}\left[\frac{1}{4}(c+dx)\right]^2+\mathrm{Tan}\left[\frac{1}{4}(c+dx)\right]^4}+$$

$$32\sqrt{2}\,\mathrm{Sec}\left[\frac{1}{4}(c+dx)\right]^2\mathrm{Tan}\left[\frac{1}{4}(c+dx)\right]^6\sqrt{1-6\,\mathrm{Tan}\left[\frac{1}{4}(c+dx)\right]^2+\mathrm{Tan}\left[\frac{1}{4}(c+dx)\right]^4}+6\,\mathrm{Sec}\left[\frac{1}{4}(c+dx)\right]^2\mathrm{Tan}\left[\frac{1}{4}(c+dx)\right]^8$$

$$\sqrt{1-6\,\mathrm{Tan}\left[\frac{1}{4}(c+dx)\right]^2+\mathrm{Tan}\left[\frac{1}{4}(c+dx)\right]^4}-4\sqrt{2}\,\mathrm{Sec}\left[\frac{1}{4}(c+dx)\right]^2\mathrm{Tan}\left[\frac{1}{4}(c+dx)\right]^8\sqrt{1-6\,\mathrm{Tan}\left[\frac{1}{4}(c+dx)\right]^2+\mathrm{Tan}\left[\frac{1}{4}(c+dx)\right]^4}+$$

$$4\sqrt{3-2\sqrt{2}}\,\mathrm{Sec}\left[\frac{1}{4}(c+dx)\right]^2\mathrm{Tan}\left[\frac{1}{4}(c+dx)\right]\sqrt{3-2\sqrt{2}-\mathrm{Tan}\left[\frac{1}{4}(c+dx)\right]^2}\sqrt{\frac{-3+2\sqrt{2}+\mathrm{Tan}\left[\frac{1}{4}(c+dx)\right]^2}{-3+2\sqrt{2}}}$$

$$\sqrt{\frac{-3+2\sqrt{2}+17\,\mathrm{Tan}\left[\frac{1}{4}(c+dx)\right]^2-12\sqrt{2}\,\mathrm{Tan}\left[\frac{1}{4}(c+dx)\right]^2}{-3+2\sqrt{2}}}\sqrt{1-3\,\mathrm{Tan}\left[\frac{1}{4}(c+dx)\right]^2+2\sqrt{2}\,\mathrm{Tan}\left[\frac{1}{4}(c+dx)\right]^2}$$

$$\sqrt{1-6\,\mathrm{Tan}\left[\frac{1}{4}(c+dx)\right]^2+\mathrm{Tan}\left[\frac{1}{4}(c+dx)\right]^4}-4\sqrt{3-2\sqrt{2}}\,\mathrm{Sec}\left[\frac{1}{4}(c+dx)\right]^2\mathrm{Tan}\left[\frac{1}{4}(c+dx)\right]^3$$

$$\sqrt{3-2\sqrt{2}-\mathrm{Tan}\left[\frac{1}{4}(c+dx)\right]^2}\sqrt{\frac{-3+2\sqrt{2}+\mathrm{Tan}\left[\frac{1}{4}(c+dx)\right]^2}{-3+2\sqrt{2}}}\sqrt{\frac{-3+2\sqrt{2}+17\,\mathrm{Tan}\left[\frac{1}{4}(c+dx)\right]^2-12\sqrt{2}\,\mathrm{Tan}\left[\frac{1}{4}(c+dx)\right]^2}{-3+2\sqrt{2}}}$$

$$\sqrt{1-3\,\mathrm{Tan}\left[\frac{1}{4}(c+dx)\right]^2+2\sqrt{2}\,\mathrm{Tan}\left[\frac{1}{4}(c+dx)\right]^2}\sqrt{1-6\,\mathrm{Tan}\left[\frac{1}{4}(c+dx)\right]^2+\mathrm{Tan}\left[\frac{1}{4}(c+dx)\right]^4}\Bigg)\Bigg)$$

- **Problem 306: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int \frac{(e \operatorname{Cos}[c+d x])^{5/2}}{(a+a \operatorname{Sin}[c+d x])^{3/2}} \, dx$$

Optimal (type 3, 215 leaves, 7 steps):

$$\frac{e\,(e \operatorname{Cos}[c+d x])^{3/2}}{a\,d\,\sqrt{a+a \operatorname{Sin}[c+d x]}}+\frac{3\,e^{5/2} \operatorname{ArcSinh}\left[\frac{\sqrt{e \operatorname{Cos}[c+d x]}}{\sqrt{e}}\right] \sqrt{1+\operatorname{Cos}[c+d x]}\,\sqrt{a+a \operatorname{Sin}[c+d x]}}{d\left(a^2+a^2 \operatorname{Cos}[c+d x]+a^2 \operatorname{Sin}[c+d x]\right)}+$$
$$\frac{3\,e^{5/2} \operatorname{ArcTan}\left[\frac{\sqrt{e}\,\operatorname{Sin}[c+d x]}{\sqrt{e \operatorname{Cos}[c+d x]}\,\sqrt{1+\operatorname{Cos}[c+d x]}}\right] \sqrt{1+\operatorname{Cos}[c+d x]}\,\sqrt{a+a \operatorname{Sin}[c+d x]}}{d\left(a^2+a^2 \operatorname{Cos}[c+d x]+a^2 \operatorname{Sin}[c+d x]\right)}$$

Result (type 4, 2726 leaves):

$$\frac{1}{d\,(a\,(1+\operatorname{Sin}[c+d x]))^{3/2}}(e \operatorname{Cos}[c+d x])^{5/2} \operatorname{Sec}[c+d x]^2\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]-\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3+$$
$$\left(3\sqrt{3-2\sqrt{2}}\,(e \operatorname{Cos}[c+d x])^{5/2} \operatorname{Sec}[c+d x]^2\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2\sqrt{3-2\sqrt{2}-\operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]^2}\right.$$
$$\left(1+\operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]^2\right)\sqrt{\frac{-3+2\sqrt{2}+\operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]^2}{-3+2\sqrt{2}}}\sqrt{\frac{-3+2\sqrt{2}+17 \operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]^2-12\sqrt{2}\operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]^2}{-3+2\sqrt{2}}}$$
$$\sqrt{1-3\operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]^2+2\sqrt{2}\operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]^2}\left(2-2\operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]^2+\sqrt{2}\sqrt{1-6\operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]^2+\operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]^4}\right)$$
$$\left(4 \operatorname{EllipticF}\left[\operatorname{ArcSin}\left[\frac{\operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]\sqrt{3-2\sqrt{2}-\operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]^2}\sqrt{1+\left(-3+2\sqrt{2}\right)\operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]^2}\right.$$
$$\sqrt{1-6\operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]^2+\operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]^4}+8 \operatorname{EllipticPi}\left[-3+2\sqrt{2},-\operatorname{ArcSin}\left[\frac{\operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]$$
$$\sqrt{3-2\sqrt{2}-\operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]^2}\sqrt{1+\left(-3+2\sqrt{2}\right)\operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]^2}\sqrt{1-6\operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]^2+\operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]^4}+$$
$$\sqrt{2}\left(\operatorname{Log}\left[1+\operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]^2\right]-\operatorname{Log}\left[2-2\operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]^2+\sqrt{2}\sqrt{1-6\operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]^2+\operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]^4}\right]\right)$$

$$\left(1-6\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4\right)\Bigg)\Bigg)\Bigg/$$

$$\Bigg(2\,d\,(a\,(1+\text{Sin}[c+d\,x]))^{3/2}\Bigg(4\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2-3\sqrt{2}\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2-52\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+$$

$$39\sqrt{2}\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+200\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4-150\sqrt{2}\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4-$$

$$200\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^6+150\sqrt{2}\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^6+52\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^8-$$

$$39\sqrt{2}\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^8-4\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^{10}+3\sqrt{2}\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^{10}+$$

$$2\sqrt{2\left(3-2\sqrt{2}\right)}\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\,\sqrt{\frac{-3+2\sqrt{2}+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}{-3+2\sqrt{2}}}$$

$$\sqrt{\frac{-3+2\sqrt{2}+17\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2-12\sqrt{2}\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}{-3+2\sqrt{2}}}\,\sqrt{1-3\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+2\sqrt{2}\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\;-$$

$$12\sqrt{2\left(3-2\sqrt{2}\right)}\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^3\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\,\sqrt{\frac{-3+2\sqrt{2}+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}{-3+2\sqrt{2}}}$$

$$\sqrt{\frac{-3+2\sqrt{2}+17\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2-12\sqrt{2}\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}{-3+2\sqrt{2}}}\,\sqrt{1-3\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+2\sqrt{2}\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\;+$$

$$2\sqrt{2\left(3-2\sqrt{2}\right)}\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^5\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\,\sqrt{\frac{-3+2\sqrt{2}+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}{-3+2\sqrt{2}}}$$

$$\sqrt{\frac{-3+2\sqrt{2}+17\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2-12\sqrt{2}\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}{-3+2\sqrt{2}}}\,\sqrt{1-3\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+2\sqrt{2}\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\;-$$

$$6\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4}+4\sqrt{2}\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4}\;+$$

$$48\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4}\;-$$

$$32\sqrt{2}\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4}\;-$$

$$84\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4}+56\sqrt{2}\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4$$

$$\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4}+48\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^6\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4}\;-$$

$$32\sqrt{2}\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^6\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4}-6\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^8$$

$$\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4}+4\sqrt{2}\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^8\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4}\;+$$

$$4\sqrt{3-2\sqrt{2}}\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\sqrt{\frac{-3+2\sqrt{2}+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}{-3+2\sqrt{2}}}$$

$$\sqrt{\frac{-3+2\sqrt{2}+17\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2-12\sqrt{2}\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}{-3+2\sqrt{2}}}\sqrt{1-3\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+2\sqrt{2}\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}$$

$$\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4}-4\sqrt{3-2\sqrt{2}}\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^3$$

$$\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\sqrt{\frac{-3+2\sqrt{2}+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}{-3+2\sqrt{2}}}\sqrt{\frac{-3+2\sqrt{2}+17\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2-12\sqrt{2}\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}{-3+2\sqrt{2}}}$$

$$\left.\left.\sqrt{1-3\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+2\sqrt{2}\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4}\right)\right)$$

- **Problem 307: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int \frac{(e \operatorname{Cos}[c+d x])^{3/2}}{(a+a \operatorname{Sin}[c+d x])^{3/2}} \, dx$$

Optimal (type 3, 236 leaves, 8 steps):

$$-\frac{2 (e \operatorname{Cos}[c+d x])^{5/2}}{d e (a+a \operatorname{Sin}[c+d x])^{3/2}}-\frac{2 e \sqrt{e \operatorname{Cos}[c+d x]} \sqrt{a+a \operatorname{Sin}[c+d x]}}{a^2 d}+\frac{2 e^{3/2} \operatorname{ArcSinh}\left[\frac{\sqrt{e \operatorname{Cos}[c+d x]}}{\sqrt{e}}\right] \sqrt{1+\operatorname{Cos}[c+d x]} \sqrt{a+a \operatorname{Sin}[c+d x]}}{a^2 d (1+\operatorname{Cos}[c+d x]+\operatorname{Sin}[c+d x])}-\frac{2 e^{3/2} \operatorname{ArcTan}\left[\frac{\sqrt{e} \operatorname{Sin}[c+d x]}{\sqrt{e \operatorname{Cos}[c+d x]} \sqrt{1+\operatorname{Cos}[c+d x]}}\right] \sqrt{1+\operatorname{Cos}[c+d x]} \sqrt{a+a \operatorname{Sin}[c+d x]}}{a^2 d (1+\operatorname{Cos}[c+d x]+\operatorname{Sin}[c+d x])}$$

Result (type 4, 2723 leaves):

$$-\frac{4 (e \operatorname{Cos}[c+d x])^{3/2} \operatorname{Sec}[c+d x] \left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2}{d (a (1+\operatorname{Sin}[c+d x]))^{3/2}}+$$

$$\left(\sqrt{3-2\sqrt{2}} (e \operatorname{Cos}[c+d x])^{3/2} \operatorname{Sec}[c+d x] \left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3 \sqrt{3-2\sqrt{2}-\operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]^2}\right.$$

$$\left(1+\operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]^2\right) \sqrt{\frac{-3+2\sqrt{2}+\operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]^2}{-3+2\sqrt{2}}} \sqrt{\frac{-3+2\sqrt{2}+17 \operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]^2-12\sqrt{2} \operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]^2}{-3+2\sqrt{2}}}$$

$$\sqrt{1-3 \operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]^2+2\sqrt{2} \operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]^2} \left(2-2 \operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]^2+\sqrt{2} \sqrt{1-6 \operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]^2+\operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]^4}\right)$$

$$\left(4 \operatorname{EllipticF}\left[\operatorname{ArcSin}\left[\frac{\operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{3-2\sqrt{2}}}\right], 17-12\sqrt{2}\right] \sqrt{3-2\sqrt{2}-\operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]^2} \sqrt{1+\left(-3+2\sqrt{2}\right) \operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]^2}\right.$$

$$\sqrt{1-6 \operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]^2+\operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]^4}+8 \operatorname{EllipticPi}\left[-3+2\sqrt{2}, -\operatorname{ArcSin}\left[\frac{\operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{3-2\sqrt{2}}}\right], 17-12\sqrt{2}\right]$$

$$\sqrt{3-2\sqrt{2}-\operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]^2} \sqrt{1+\left(-3+2\sqrt{2}\right) \operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]^2} \sqrt{1-6 \operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]^2+\operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]^4}-$$

$$\sqrt{2} \left(\operatorname{Log}\left[1+\operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]^2\right]-\operatorname{Log}\left[2-2 \operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]^2+\sqrt{2} \sqrt{1-6 \operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]^2+\operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]^4}\right]\right)$$

$$\left.\left.\left(1-6\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4\right)\right)\right)\Big/\left(d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)\right)$$

$$(a\,(1+\text{Sin}[c+d\,x]))^{3/2}\left(-4\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2+3\sqrt{2}\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2+52\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2-\right.$$

$$39\sqrt{2}\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2-200\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4+150\sqrt{2}\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4+$$

$$200\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^6-150\sqrt{2}\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^6-52\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^8+$$

$$39\sqrt{2}\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^8+4\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^{10}-3\sqrt{2}\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^{10}+$$

$$2\sqrt{2\left(3-2\sqrt{2}\right)}\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\sqrt{\frac{-3+2\sqrt{2}+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}{-3+2\sqrt{2}}}$$

$$\sqrt{\frac{-3+2\sqrt{2}+17\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2-12\sqrt{2}\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}{-3+2\sqrt{2}}}\sqrt{1-3\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+2\sqrt{2}\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}-$$

$$12\sqrt{2\left(3-2\sqrt{2}\right)}\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^3\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\sqrt{\frac{-3+2\sqrt{2}+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}{-3+2\sqrt{2}}}$$

$$\sqrt{\frac{-3+2\sqrt{2}+17\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2-12\sqrt{2}\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}{-3+2\sqrt{2}}}\sqrt{1-3\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+2\sqrt{2}\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}+$$

$$2\sqrt{2\left(3-2\sqrt{2}\right)}\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^5\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\sqrt{\frac{-3+2\sqrt{2}+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}{-3+2\sqrt{2}}}$$

$$\sqrt{\frac{-3+2\sqrt{2}+17\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2-12\sqrt{2}\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}{-3+2\sqrt{2}}}\sqrt{1-3\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+2\sqrt{2}\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}+$$

$$6\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4}-4\sqrt{2}\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4}-$$

$$48\,\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{4}(c+d x)\right]^2 \sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d x)\right]^4}\,+$$

$$32\sqrt{2}\,\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{4}(c+d x)\right]^2 \sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d x)\right]^4}\,+$$

$$84\,\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{4}(c+d x)\right]^4 \sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d x)\right]^4}-56\sqrt{2}\,\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{4}(c+d x)\right]^4$$

$$\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d x)\right]^4}-48\,\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{4}(c+d x)\right]^6 \sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d x)\right]^4}\,+$$

$$32\sqrt{2}\,\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{4}(c+d x)\right]^6 \sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d x)\right]^4}+6\,\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{4}(c+d x)\right]^8$$

$$\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d x)\right]^4}-4\sqrt{2}\,\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{4}(c+d x)\right]^8 \sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d x)\right]^4}\,+$$

$$4\sqrt{3-2\sqrt{2}}\,\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{4}(c+d x)\right] \sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2} \sqrt{\frac{-3+2\sqrt{2}+\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}{-3+2\sqrt{2}}}$$

$$\sqrt{\frac{-3+2\sqrt{2}+17\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2-12\sqrt{2}\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}{-3+2\sqrt{2}}} \sqrt{1-3\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2+2\sqrt{2}\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}$$

$$\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d x)\right]^4}-4\sqrt{3-2\sqrt{2}}\,\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{4}(c+d x)\right]^3$$

$$\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2} \sqrt{\frac{-3+2\sqrt{2}+\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}{-3+2\sqrt{2}}} \sqrt{\frac{-3+2\sqrt{2}+17\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2-12\sqrt{2}\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}{-3+2\sqrt{2}}}$$

$$\left.\left.\sqrt{1-3\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2+2\sqrt{2}\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2} \sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d x)\right]^4}\right)\right)$$

- **Problem 313: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int \frac{(e \operatorname{Cos}[c+d x])^{9/2}}{(a+a \operatorname{Sin}[c+d x])^{5/2}} \, dx$$

Optimal (type 3, 261 leaves, 9 steps):

$$\frac{e\,(e \operatorname{Cos}[c+d x])^{7/2}}{2 a d\,(a+a \operatorname{Sin}[c+d x])^{3/2}}+\frac{7 e^3\,(e \operatorname{Cos}[c+d x])^{3/2}}{4 a^2 d \sqrt{a+a \operatorname{Sin}[c+d x]}}+\frac{21 e^{9/2} \operatorname{ArcSinh}\left[\frac{\sqrt{e \operatorname{Cos}[c+d x]}}{\sqrt{e}}\right] \sqrt{1+\operatorname{Cos}[c+d x]} \sqrt{a+a \operatorname{Sin}[c+d x]}}{4 d\left(a^3+a^3 \operatorname{Cos}[c+d x]+a^3 \operatorname{Sin}[c+d x]\right)}+$$
$$\frac{21 e^{9/2} \operatorname{ArcTan}\left[\frac{\sqrt{e} \operatorname{Sin}[c+d x]}{\sqrt{e \operatorname{Cos}[c+d x]} \sqrt{1+\operatorname{Cos}[c+d x]}}\right] \sqrt{1+\operatorname{Cos}[c+d x]} \sqrt{a+a \operatorname{Sin}[c+d x]}}{4 d\left(a^3+a^3 \operatorname{Cos}[c+d x]+a^3 \operatorname{Sin}[c+d x]\right)}$$

Result (type 4, 2330 leaves):

$$\frac{1}{d\,(a\,(1+\operatorname{Sin}[c+d x]))^{5/2}} (e \operatorname{Cos}[c+d x])^{9/2} \operatorname{Sec}[c+d x]^4 \left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^5$$
$$\left(\frac{5}{2} \operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]-\frac{1}{4} \operatorname{Cos}\left[\frac{3}{2}(c+d x)\right]-\frac{5}{2} \operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]-\frac{1}{4} \operatorname{Sin}\left[\frac{3}{2}(c+d x)\right]\right)-$$
$$\left(441 \operatorname{Cos}\left[\frac{1}{4}(c+d x)\right]^2 (e \operatorname{Cos}[c+d x])^{9/2} \left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^4\right.$$
$$\left(\sqrt{2}\left(\operatorname{Log}\left[\operatorname{Sec}\left[\frac{1}{4}(c+d x)\right]^2\right]-\operatorname{Log}\left[2+\sqrt{2} \sqrt{\operatorname{Cos}[c+d x] \operatorname{Sec}\left[\frac{1}{4}(c+d x)\right]^4}-2 \operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]^2\right]\right) \sqrt{\operatorname{Cos}[c+d x] \operatorname{Sec}\left[\frac{1}{4}(c+d x)\right]^4}+\right.$$
$$4 \operatorname{EllipticF}\left[\operatorname{ArcSin}\left[\frac{\operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{3-2\sqrt{2}}}\right], 17-12\sqrt{2}\right] \sqrt{3-2\sqrt{2}-\operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]^2} \sqrt{1+\left(-3+2\sqrt{2}\right) \operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]^2}+8$$
$$\left.\left.\operatorname{EllipticPi}\left[-3+2\sqrt{2}, -\operatorname{ArcSin}\left[\frac{\operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{3-2\sqrt{2}}}\right], 17-12\sqrt{2}\right] \sqrt{3-2\sqrt{2}-\operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]^2} \sqrt{1+\left(-3+2\sqrt{2}\right) \operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]^2}\right)\right) \Big/$$
$$\left(64 d \operatorname{Cos}[c+d x]^{9/2} (a\,(1+\operatorname{Sin}[c+d x]))^{5/2} \left(\frac{1}{16 \sqrt{\operatorname{Cos}[c+d x]}} 21 \operatorname{Cos}\left[\frac{1}{4}(c+d x)\right] \operatorname{Sin}\left[\frac{1}{4}(c+d x)\right]\right.\right.$$

$$\left(\sqrt{2}\left(\text{Log}\left[\text{Sec}\left[\frac{1}{4}(c+dx)\right]^2\right]-\text{Log}\left[2+\sqrt{2}\sqrt{\text{Cos}[c+dx]\,\text{Sec}\left[\frac{1}{4}(c+dx)\right]^4}-2\,\text{Tan}\left[\frac{1}{4}(c+dx)\right]^2\right]\right)\sqrt{\text{Cos}[c+dx]\,\text{Sec}\left[\frac{1}{4}(c+dx)\right]^4}+\right.$$

$$4\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+dx)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+dx)\right]^2}\sqrt{1+\left(-3+2\sqrt{2}\right)\text{Tan}\left[\frac{1}{4}(c+dx)\right]^2}+$$

$$8\,\text{EllipticPi}\left[-3+2\sqrt{2},-\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+dx)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+dx)\right]^2}$$

$$\left.\sqrt{1+\left(-3+2\sqrt{2}\right)\text{Tan}\left[\frac{1}{4}(c+dx)\right]^2}\right)-\frac{1}{16\,\text{Cos}[c+dx]^{3/2}}\,21\,\text{Cos}\left[\frac{1}{4}(c+dx)\right]^2\text{Sin}[c+dx]$$

$$\left(\sqrt{2}\left(\text{Log}\left[\text{Sec}\left[\frac{1}{4}(c+dx)\right]^2\right]-\text{Log}\left[2+\sqrt{2}\sqrt{\text{Cos}[c+dx]\,\text{Sec}\left[\frac{1}{4}(c+dx)\right]^4}-2\,\text{Tan}\left[\frac{1}{4}(c+dx)\right]^2\right]\right)\sqrt{\text{Cos}[c+dx]\,\text{Sec}\left[\frac{1}{4}(c+dx)\right]^4}+\right.$$

$$4\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+dx)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+dx)\right]^2}\sqrt{1+\left(-3+2\sqrt{2}\right)\text{Tan}\left[\frac{1}{4}(c+dx)\right]^2}+$$

$$8\,\text{EllipticPi}\left[-3+2\sqrt{2},-\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+dx)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]$$

$$\left.\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+dx)\right]^2}\sqrt{1+\left(-3+2\sqrt{2}\right)\text{Tan}\left[\frac{1}{4}(c+dx)\right]^2}\right)-$$

$$\frac{1}{8\sqrt{\text{Cos}[c+dx]}}\,21\,\text{Cos}\left[\frac{1}{4}(c+dx)\right]^2\left(\left(\left(\text{Log}\left[\text{Sec}\left[\frac{1}{4}(c+dx)\right]^2\right]-\text{Log}\left[2+\sqrt{2}\sqrt{\text{Cos}[c+dx]\,\text{Sec}\left[\frac{1}{4}(c+dx)\right]^4}-2\,\text{Tan}\left[\frac{1}{4}(c+dx)\right]^2\right]\right)\right.\right.$$

$$\left.\left(-\text{Sec}\left[\frac{1}{4}(c+dx)\right]^4\text{Sin}[c+dx]+\text{Cos}[c+dx]\,\text{Sec}\left[\frac{1}{4}(c+dx)\right]^4\text{Tan}\left[\frac{1}{4}(c+dx)\right]\right)\right)\Big/\left(\sqrt{2}\sqrt{\text{Cos}[c+dx]\,\text{Sec}\left[\frac{1}{4}(c+dx)\right]^4}\right)+$$

$$\left(\left(-3+2\sqrt{2}\right)\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]\right.$$

$$\left.\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\right)\Big/\left(\sqrt{1+\left(-3+2\sqrt{2}\right)\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\right)+$$

$$\left(2\left(-3+2\sqrt{2}\right)\text{EllipticPi}\left[-3+2\sqrt{2},-\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\right.$$

$$\left.\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\right)\Big/\left(\sqrt{1+\left(-3+2\sqrt{2}\right)\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\right)-$$

$$\left(\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]\sqrt{1+\left(-3+2\sqrt{2}\right)\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\right)\Big/$$

$$\left(\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\right)-\left(2\,\text{EllipticPi}\left[-3+2\sqrt{2},-\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]\right.$$

$$\left.\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]\sqrt{1+\left(-3+2\sqrt{2}\right)\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\right)\Big/\left(\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\right)+$$

$$\frac{\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\sqrt{1+\left(-3+2\sqrt{2}\right)\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}}{\sqrt{3-2\sqrt{2}}\sqrt{1-\frac{\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}{3-2\sqrt{2}}}\sqrt{1-\frac{\left(17-12\sqrt{2}\right)\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}{3-2\sqrt{2}}}}-$$

$$\frac{2\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\sqrt{1+\left(-3+2\sqrt{2}\right)\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}}{\sqrt{3-2\sqrt{2}}\sqrt{1-\frac{\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}{3-2\sqrt{2}}}\sqrt{1-\frac{\left(17-12\sqrt{2}\right)\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}{3-2\sqrt{2}}}\left(1-\frac{\left(-3+2\sqrt{2}\right)\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}{3-2\sqrt{2}}\right)}+$$

$$\sqrt{2}\,\sqrt{\text{Cos}[c+d\,x]\,\text{Sec}\left[\frac{1}{4}\,(c+d\,x)\right]^4}\,\left(\frac{1}{2}\,\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]-\right.$$

$$\left(-\text{Sec}\left[\frac{1}{4}\,(c+d\,x)\right]^2\,\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]+\frac{-\text{Sec}\left[\frac{1}{4}\,(c+d\,x)\right]^4\,\text{Sin}[c+d\,x]+\text{Cos}[c+d\,x]\,\text{Sec}\left[\frac{1}{4}\,(c+d\,x)\right]^4\,\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]}{\sqrt{2}\,\sqrt{\text{Cos}[c+d\,x]\,\text{Sec}\left[\frac{1}{4}\,(c+d\,x)\right]^4}}\right)\Big/$$

$$\left.\left(2+\sqrt{2}\,\sqrt{\text{Cos}[c+d\,x]\,\text{Sec}\left[\frac{1}{4}\,(c+d\,x)\right]^4}-2\,\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]^2\right)\right)\Bigg)\Bigg)\Bigg)$$

Problem 314: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{(e\,\text{Cos}[c+d\,x])^{7/2}}{(a+a\,\text{Sin}[c+d\,x])^{5/2}}\,dx$$

Optimal (type 3, 239 leaves, 8 steps) :

$$-\frac{4\,e\,(e\,\text{Cos}[c+d\,x])^{5/2}}{a\,d\,(a+a\,\text{Sin}[c+d\,x])^{3/2}}-\frac{5\,e^3\,\sqrt{e\,\text{Cos}[c+d\,x]}\,\sqrt{a+a\,\text{Sin}[c+d\,x]}}{a^3\,d}+$$

$$\frac{5\,e^{7/2}\,\text{ArcSinh}\left[\frac{\sqrt{e\,\text{Cos}[c+d\,x]}}{\sqrt{e}}\right]\sqrt{1+\text{Cos}[c+d\,x]}\,\sqrt{a+a\,\text{Sin}[c+d\,x]}}{a^3\,d\,(1+\text{Cos}[c+d\,x]+\text{Sin}[c+d\,x])}-\frac{5\,e^{7/2}\,\text{ArcTan}\left[\frac{\sqrt{e}\,\text{Sin}[c+d\,x]}{\sqrt{e\,\text{Cos}[c+d\,x]}\,\sqrt{1+\text{Cos}[c+d\,x]}}\right]\sqrt{1+\text{Cos}[c+d\,x]}\,\sqrt{a+a\,\text{Sin}[c+d\,x]}}{a^3\,d\,(1+\text{Cos}[c+d\,x]+\text{Sin}[c+d\,x])}$$

Result (type 4, 2779 leaves) :

$$\frac{1}{d\,(a\,(1+\text{Sin}[c+d\,x]))^{5/2}}\,(e\,\text{Cos}[c+d\,x])^{7/2}\,\text{Sec}[c+d\,x]^3$$

$$\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^5\left(-\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]-\frac{8}{\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]}\right)+$$

$$\left(5\,\sqrt{3-2\,\sqrt{2}}\,(e\,\text{Cos}[c+d\,x])^{7/2}\,\text{Sec}[c+d\,x]^3\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^5\sqrt{3-2\,\sqrt{2}-\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]^2}\right.$$

$$\left(1+\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2\right)\sqrt{\frac{-3+2\sqrt{2}+\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}{-3+2\sqrt{2}}}\sqrt{\frac{-3+2\sqrt{2}+17\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2-12\sqrt{2}\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}{-3+2\sqrt{2}}}$$

$$\sqrt{1-3\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2+2\sqrt{2}\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}\left(2-2\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2+\sqrt{2}\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d x)\right]^4}\right)$$

$$\left(4\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}\sqrt{1+\left(-3+2\sqrt{2}\right)\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}\right.$$

$$\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d x)\right]^4}+8\,\text{EllipticPi}\left[-3+2\sqrt{2},-\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]$$

$$\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}\sqrt{1+\left(-3+2\sqrt{2}\right)\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d x)\right]^4}-$$

$$\sqrt{2}\left(\text{Log}\left[1+\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2\right]-\text{Log}\left[2-2\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2+\sqrt{2}\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d x)\right]^4}\right]\right)$$

$$\left.\left(1-6\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d x)\right]^4\right)\right)\Bigg)\Bigg/\left(2\,d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)\right.$$

$$(a\,(1+\text{Sin}[c+d x]))^{5/2}\left(-4\,\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2+3\sqrt{2}\,\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2+52\,\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2-\right.$$

$$39\sqrt{2}\,\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2-200\,\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d x)\right]^4+150\sqrt{2}\,\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d x)\right]^4+$$

$$200\,\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d x)\right]^6-150\sqrt{2}\,\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d x)\right]^6-52\,\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d x)\right]^8+$$

$$39\sqrt{2}\,\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d x)\right]^8+4\,\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d x)\right]^{10}-3\sqrt{2}\,\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d x)\right]^{10}+$$

$$2\sqrt{2\left(3-2\sqrt{2}\right)}\,\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d x)\right]\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}\sqrt{\frac{-3+2\sqrt{2}+\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}{-3+2\sqrt{2}}}$$

$$\sqrt{\frac{-3+2\sqrt{2}+17\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2-12\sqrt{2}\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}{-3+2\sqrt{2}}}\ \sqrt{1-3\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2+2\sqrt{2}\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}\ -$$

$$12\sqrt{2\left(3-2\sqrt{2}\right)}\ \text{Sec}\left[\frac{1}{4}(c+d x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d x)\right]^3\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}\ \sqrt{\frac{-3+2\sqrt{2}+\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}{-3+2\sqrt{2}}}$$

$$\sqrt{\frac{-3+2\sqrt{2}+17\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2-12\sqrt{2}\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}{-3+2\sqrt{2}}}\ \sqrt{1-3\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2+2\sqrt{2}\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}\ +$$

$$2\sqrt{2\left(3-2\sqrt{2}\right)}\ \text{Sec}\left[\frac{1}{4}(c+d x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d x)\right]^5\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}\ \sqrt{\frac{-3+2\sqrt{2}+\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}{-3+2\sqrt{2}}}$$

$$\sqrt{\frac{-3+2\sqrt{2}+17\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2-12\sqrt{2}\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}{-3+2\sqrt{2}}}\ \sqrt{1-3\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2+2\sqrt{2}\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}\ +$$

$$6\,\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d x)\right]^4}\ -4\sqrt{2}\,\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d x)\right]^4}\ -$$

$$48\,\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d x)\right]^4}\ +$$

$$32\sqrt{2}\,\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d x)\right]^4}\ +$$

$$84\,\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d x)\right]^4\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d x)\right]^4}\ -56\sqrt{2}\,\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d x)\right]^4$$

$$\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d x)\right]^4}\ -48\,\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d x)\right]^6\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d x)\right]^4}\ +$$

$$32\sqrt{2}\,\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d x)\right]^6\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d x)\right]^4}\ +6\,\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d x)\right]^8$$

$$\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d x)\right]^4}-4\sqrt{2}\,\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d x)\right]^8\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d x)\right]^4}+$$

$$4\sqrt{3-2\sqrt{2}}\,\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d x)\right]\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}\sqrt{\frac{-3+2\sqrt{2}+\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}{-3+2\sqrt{2}}}$$

$$\sqrt{\frac{-3+2\sqrt{2}+17\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2-12\sqrt{2}\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}{-3+2\sqrt{2}}}\sqrt{1-3\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2+2\sqrt{2}\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}$$

$$\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d x)\right]^4}-4\sqrt{3-2\sqrt{2}}\,\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2\text{Tan}\left[\frac{1}{4}(c+d x)\right]^3$$

$$\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}\sqrt{\frac{-3+2\sqrt{2}+\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}{-3+2\sqrt{2}}}\sqrt{\frac{-3+2\sqrt{2}+17\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2-12\sqrt{2}\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}{-3+2\sqrt{2}}}$$

$$\left.\left.\sqrt{1-3\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2+2\sqrt{2}\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2+\text{Tan}\left[\frac{1}{4}(c+d x)\right]^4}\right)\right)$$

- **Problem 315: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int\frac{(e\,\text{Cos}[c+d x])^{5/2}}{(a+a\,\text{Sin}[c+d x])^{5/2}}\,dx$$

Optimal (type 3, 218 leaves, 7 steps):

$$-\frac{4 e\,(e\,\text{Cos}[c+d x])^{3/2}}{3 a d\,(a+a\,\text{Sin}[c+d x])^{3/2}}-\frac{2 e^{5/2}\,\text{ArcSinh}\left[\frac{\sqrt{e\,\text{Cos}[c+d x]}}{\sqrt{e}}\right]\sqrt{1+\text{Cos}[c+d x]}\,\sqrt{a+a\,\text{Sin}[c+d x]}}{d\left(a^3+a^3\,\text{Cos}[c+d x]+a^3\,\text{Sin}[c+d x]\right)}-$$

$$\frac{2 e^{5/2}\,\text{ArcTan}\left[\frac{\sqrt{e}\,\text{Sin}[c+d x]}{\sqrt{e\,\text{Cos}[c+d x]}\,\sqrt{1+\text{Cos}[c+d x]}}\right]\sqrt{1+\text{Cos}[c+d x]}\,\sqrt{a+a\,\text{Sin}[c+d x]}}{d\left(a^3+a^3\,\text{Cos}[c+d x]+a^3\,\text{Sin}[c+d x]\right)}$$

Result (type 4, 2766 leaves):

$$\frac{1}{d\,(a\,(1+\text{Sin}[c+d x]))^{5/2}}(e\,\text{Cos}[c+d x])^{5/2}\,\text{Sec}[c+d x]^2\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^5$$

$$\left(\frac{8\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]}{3\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2}-\frac{4}{3\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)}\right)-$$

$$\Bigg(\sqrt{3-2\sqrt{2}}\,(e\,\mathrm{Cos}[c+d\,x])^{5/2}\,\mathrm{Sec}[c+d\,x]^2\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4\sqrt{3-2\sqrt{2}-\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}$$

$$\left(1+\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2\right)\sqrt{\frac{-3+2\sqrt{2}+\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}{-3+2\sqrt{2}}}\,\sqrt{\frac{-3+2\sqrt{2}+17\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2-12\sqrt{2}\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}{-3+2\sqrt{2}}}$$

$$\sqrt{1-3\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+2\sqrt{2}\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\left(2-2\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\sqrt{2}\sqrt{1-6\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4}\right)$$

$$\Bigg(4\,\mathrm{EllipticF}\left[\mathrm{ArcSin}\left[\frac{\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]\sqrt{3-2\sqrt{2}-\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\,\sqrt{1+\left(-3+2\sqrt{2}\right)\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}$$

$$\sqrt{1-6\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4}+8\,\mathrm{EllipticPi}\left[-3+2\sqrt{2},-\mathrm{ArcSin}\left[\frac{\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]$$

$$\sqrt{3-2\sqrt{2}-\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\,\sqrt{1+\left(-3+2\sqrt{2}\right)\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\,\sqrt{1-6\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4}+$$

$$\sqrt{2}\left(\mathrm{Log}\left[1+\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2\right]-\mathrm{Log}\left[2-2\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\sqrt{2}\sqrt{1-6\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4}\right]\right)$$

$$\left(1-6\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4\right)\Bigg)\Bigg)\Bigg/$$

$$\Bigg(d\,(a\,(1+\mathrm{Sin}[c+d\,x]))^{5/2}\Bigg(4\,\mathrm{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2-3\sqrt{2}\,\mathrm{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2-52\,\mathrm{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+$$

$$39\sqrt{2}\,\mathrm{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+200\,\mathrm{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4-150\sqrt{2}\,\mathrm{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4-$$

$$200\,\mathrm{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^6+150\sqrt{2}\,\mathrm{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^6+52\,\mathrm{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^8-$$

$$39\sqrt{2}\,\mathrm{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^8-4\,\mathrm{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^{10}+3\sqrt{2}\,\mathrm{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^{10}+$$

$$2\sqrt{2\left(3-2\sqrt{2}\right)}\ \mathrm{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2 \mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]\sqrt{3-2\sqrt{2}-\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\ \sqrt{\frac{-3+2\sqrt{2}+\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}{-3+2\sqrt{2}}}$$

$$\sqrt{\frac{-3+2\sqrt{2}+17\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2-12\sqrt{2}\ \mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}{-3+2\sqrt{2}}}\ \sqrt{1-3\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+2\sqrt{2}\ \mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\ -$$

$$12\sqrt{2\left(3-2\sqrt{2}\right)}\ \mathrm{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2 \mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^3\sqrt{3-2\sqrt{2}-\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\ \sqrt{\frac{-3+2\sqrt{2}+\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}{-3+2\sqrt{2}}}$$

$$\sqrt{\frac{-3+2\sqrt{2}+17\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2-12\sqrt{2}\ \mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}{-3+2\sqrt{2}}}\ \sqrt{1-3\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+2\sqrt{2}\ \mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\ +$$

$$2\sqrt{2\left(3-2\sqrt{2}\right)}\ \mathrm{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2 \mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^5\sqrt{3-2\sqrt{2}-\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\ \sqrt{\frac{-3+2\sqrt{2}+\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}{-3+2\sqrt{2}}}$$

$$\sqrt{\frac{-3+2\sqrt{2}+17\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2-12\sqrt{2}\ \mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}{-3+2\sqrt{2}}}\ \sqrt{1-3\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+2\sqrt{2}\ \mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2}\ -$$

$$6\,\mathrm{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\sqrt{1-6\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4}\ +4\sqrt{2}\ \mathrm{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\sqrt{1-6\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4}\ +$$

$$48\,\mathrm{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2\sqrt{1-6\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4}\ -$$

$$32\sqrt{2}\ \mathrm{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2\sqrt{1-6\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4}\ -$$

$$84\,\mathrm{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4\sqrt{1-6\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4}\ +56\sqrt{2}\ \mathrm{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4$$

$$\sqrt{1-6\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4}\ +48\,\mathrm{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^6\sqrt{1-6\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2+\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^4}\ -$$

$$32\sqrt{2}\,\text{Sec}\left[\frac{1}{4}(c+dx)\right]^2\text{Tan}\left[\frac{1}{4}(c+dx)\right]^6\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+dx)\right]^2+\text{Tan}\left[\frac{1}{4}(c+dx)\right]^4}-6\,\text{Sec}\left[\frac{1}{4}(c+dx)\right]^2\text{Tan}\left[\frac{1}{4}(c+dx)\right]^8$$

$$\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+dx)\right]^2+\text{Tan}\left[\frac{1}{4}(c+dx)\right]^4}+4\sqrt{2}\,\text{Sec}\left[\frac{1}{4}(c+dx)\right]^2\text{Tan}\left[\frac{1}{4}(c+dx)\right]^8\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+dx)\right]^2+\text{Tan}\left[\frac{1}{4}(c+dx)\right]^4}+$$

$$4\sqrt{3-2\sqrt{2}}\,\text{Sec}\left[\frac{1}{4}(c+dx)\right]^2\text{Tan}\left[\frac{1}{4}(c+dx)\right]\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+dx)\right]^2}\sqrt{\frac{-3+2\sqrt{2}+\text{Tan}\left[\frac{1}{4}(c+dx)\right]^2}{-3+2\sqrt{2}}}$$

$$\sqrt{\frac{-3+2\sqrt{2}+17\,\text{Tan}\left[\frac{1}{4}(c+dx)\right]^2-12\sqrt{2}\,\text{Tan}\left[\frac{1}{4}(c+dx)\right]^2}{-3+2\sqrt{2}}}\sqrt{1-3\,\text{Tan}\left[\frac{1}{4}(c+dx)\right]^2+2\sqrt{2}\,\text{Tan}\left[\frac{1}{4}(c+dx)\right]^2}$$

$$\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+dx)\right]^2+\text{Tan}\left[\frac{1}{4}(c+dx)\right]^4}-4\sqrt{3-2\sqrt{2}}\,\text{Sec}\left[\frac{1}{4}(c+dx)\right]^2\text{Tan}\left[\frac{1}{4}(c+dx)\right]^3$$

$$\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+dx)\right]^2}\sqrt{\frac{-3+2\sqrt{2}+\text{Tan}\left[\frac{1}{4}(c+dx)\right]^2}{-3+2\sqrt{2}}}\sqrt{\frac{-3+2\sqrt{2}+17\,\text{Tan}\left[\frac{1}{4}(c+dx)\right]^2-12\sqrt{2}\,\text{Tan}\left[\frac{1}{4}(c+dx)\right]^2}{-3+2\sqrt{2}}}$$

$$\left.\left.\sqrt{1-3\,\text{Tan}\left[\frac{1}{4}(c+dx)\right]^2+2\sqrt{2}\,\text{Tan}\left[\frac{1}{4}(c+dx)\right]^2}\sqrt{1-6\,\text{Tan}\left[\frac{1}{4}(c+dx)\right]^2+\text{Tan}\left[\frac{1}{4}(c+dx)\right]^4}\right)\right)$$

- **Problem 327: Attempted integration timed out after 120 seconds.**

$$\int(e\,\text{Cos}[c+dx])^p\,(a+a\,\text{Sin}[c+dx])^8\,dx$$

Optimal (type 5, 95 leaves, 2 steps):

$$-\frac{1}{d\,e\,(1+p)}2^{\frac{17}{2}+\frac{p}{2}}a^8\,(e\,\text{Cos}[c+dx])^{1+p}\,\text{Hypergeometric2F1}\left[\frac{1}{2}(-15-p),\frac{1+p}{2},\frac{3+p}{2},\frac{1}{2}(1-\text{Sin}[c+dx])\right](1+\text{Sin}[c+dx])^{\frac{1}{2}(-1-p)}$$

Result (type 1, 1 leaves):

???

- **Problem 328: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int(e\,\text{Cos}[c+dx])^p\,(a+a\,\text{Sin}[c+dx])^3\,dx$$

Optimal (type 5, 95 leaves, 2 steps):

$$-\frac{1}{d\,e\,(1+p)}2^{\frac{7}{2}+\frac{p}{2}}a^3\,(e\,\text{Cos}[c+d\,x])^{1+p}\,\text{Hypergeometric2F1}\left[\frac{1}{2}\,(-5-p),\,\frac{1+p}{2},\,\frac{3+p}{2},\,\frac{1}{2}\,(1-\text{Sin}[c+d\,x])\right]\,(1+\text{Sin}[c+d\,x])^{\frac{1}{2}\,(-1-p)}$$

Result (type 5, 462 leaves) :

$$\frac{1}{d\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^6}\,i\,2^{-3-p}\left(e^{-i\,(c+d\,x)}+e^{i\,(c+d\,x)}\right)^p\left(1+e^{2\,i\,(c+d\,x)}\right)^{-p}$$
$$\text{Cos}[c+d\,x]^{-p}\,(e\,\text{Cos}[c+d\,x])^p\left(-\frac{i\,e^{-3\,i\,(c+d\,x)}\,\text{Hypergeometric2F1}\left[-\frac{3}{2}-\frac{p}{2},\,-p,\,-\frac{1}{2}-\frac{p}{2},\,-e^{2\,i\,(c+d\,x)}\right]}{3+p}-\right.$$
$$\frac{6\,e^{-2\,i\,(c+d\,x)}\,\text{Hypergeometric2F1}\left[-1-\frac{p}{2},\,-p,\,-\frac{p}{2},\,-e^{2\,i\,(c+d\,x)}\right]}{2+p}+\frac{15\,i\,e^{-i\,(c+d\,x)}\,\text{Hypergeometric2F1}\left[-\frac{1}{2}-\frac{p}{2},\,-p,\,\frac{1}{2}-\frac{p}{2},\,-e^{2\,i\,(c+d\,x)}\right]}{1+p}-$$
$$\frac{15\,i\,e^{i\,(c+d\,x)}\,\text{Hypergeometric2F1}\left[\frac{1}{2}-\frac{p}{2},\,-p,\,\frac{3}{2}-\frac{p}{2},\,-e^{2\,i\,(c+d\,x)}\right]}{-1+p}-\frac{6\,e^{2\,i\,(c+d\,x)}\,\text{Hypergeometric2F1}\left[1-\frac{p}{2},\,-p,\,2-\frac{p}{2},\,-e^{2\,i\,(c+d\,x)}\right]}{-2+p}+$$
$$\left.\frac{i\,e^{3\,i\,(c+d\,x)}\,\text{Hypergeometric2F1}\left[\frac{3}{2}-\frac{p}{2},\,-p,\,\frac{5}{2}-\frac{p}{2},\,-e^{2\,i\,(c+d\,x)}\right]}{-3+p}+\frac{20\,\text{Hypergeometric2F1}\left[-p,\,-\frac{p}{2},\,1-\frac{p}{2},\,-e^{2\,i\,(c+d\,x)}\right]}{p}\right)(a+a\,\text{Sin}[c+d\,x])^3$$

- **Problem 329: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int(e\,\text{Cos}[c+d\,x])^p\,(a+a\,\text{Sin}[c+d\,x])^2\,dx$$

Optimal (type 5, 95 leaves, 2 steps) :

$$-\frac{1}{d\,e\,(1+p)}2^{\frac{5}{2}+\frac{p}{2}}a^2\,(e\,\text{Cos}[c+d\,x])^{1+p}\,\text{Hypergeometric2F1}\left[\frac{1}{2}\,(-3-p),\,\frac{1+p}{2},\,\frac{3+p}{2},\,\frac{1}{2}\,(1-\text{Sin}[c+d\,x])\right]\,(1+\text{Sin}[c+d\,x])^{\frac{1}{2}\,(-1-p)}$$

Result (type 5, 351 leaves) :

$$\frac{1}{d\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^4}$$
$$2^{-2-p}\left(e^{-i\,(c+d\,x)}+e^{i\,(c+d\,x)}\right)^p\left(1+e^{2\,i\,(c+d\,x)}\right)^{-p}\text{Cos}[c+d\,x]^{-p}\,(e\,\text{Cos}[c+d\,x])^p\left(-\frac{i\,e^{-2\,i\,(c+d\,x)}\,\text{Hypergeometric2F1}\left[-1-\frac{p}{2},\,-p,\,-\frac{p}{2},\,-e^{2\,i\,(c+d\,x)}\right]}{2+p}-\right.$$
$$\frac{4\,e^{-i\,(c+d\,x)}\,\text{Hypergeometric2F1}\left[-\frac{1}{2}-\frac{p}{2},\,-p,\,\frac{1}{2}-\frac{p}{2},\,-e^{2\,i\,(c+d\,x)}\right]}{1+p}+\frac{4\,e^{i\,(c+d\,x)}\,\text{Hypergeometric2F1}\left[\frac{1}{2}-\frac{p}{2},\,-p,\,\frac{3}{2}-\frac{p}{2},\,-e^{2\,i\,(c+d\,x)}\right]}{-1+p}-$$
$$\left.\frac{i\,e^{2\,i\,(c+d\,x)}\,\text{Hypergeometric2F1}\left[1-\frac{p}{2},\,-p,\,2-\frac{p}{2},\,-e^{2\,i\,(c+d\,x)}\right]}{-2+p}+\frac{6\,i\,\text{Hypergeometric2F1}\left[-p,\,-\frac{p}{2},\,1-\frac{p}{2},\,-e^{2\,i\,(c+d\,x)}\right]}{p}\right)(a+a\,\text{Sin}[c+d\,x])^2$$

- **Problem 330: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int (e \operatorname{Cos}[c+d x])^p (a+a \operatorname{Sin}[c+d x])\, dx$$

Optimal (type 5, 93 leaves, 2 steps):

$$-\frac{1}{d e (1+p)} 2^{\frac{3}{2}+\frac{p}{2}} a (e \operatorname{Cos}[c+d x])^{1+p} \operatorname{Hypergeometric2F1}\left[\frac{1}{2}(-1-p), \frac{1+p}{2}, \frac{3+p}{2}, \frac{1}{2}(1-\operatorname{Sin}[c+d x])\right] (1+\operatorname{Sin}[c+d x])^{\frac{1}{2}(-1-p)}$$

Result (type 5, 266 leaves):

$$\frac{1}{d (-1+p) p (1+p) \left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2} 2^{-1-p} a \left(1+e^{2 i (c+d x)}\right)^{-1-p} \left(e^{-i (c+d x)} \left(1+e^{2 i (c+d x)}\right)\right)^{1+p}$$
$$\operatorname{Cos}[c+d x]^{-p} (e \operatorname{Cos}[c+d x])^p \left(-(-1+p) p \operatorname{Hypergeometric2F1}\left[\frac{1}{2}(-1-p), -p, \frac{1-p}{2}, -e^{2 i (c+d x)}\right]+\right.$$
$$e^{i (c+d x)} (1+p) \left(e^{i (c+d x)} p \operatorname{Hypergeometric2F1}\left[\frac{1-p}{2}, -p, \frac{3-p}{2}, -e^{2 i (c+d x)}\right]+\right.$$
$$\left.\left.2 i (-1+p) \operatorname{Hypergeometric2F1}\left[-p, -\frac{p}{2}, 1-\frac{p}{2}, -e^{2 i (c+d x)}\right]\right)\right) (1+\operatorname{Sin}[c+d x])$$

- **Problem 331: Unable to integrate problem.**

$$\int \frac{(e \operatorname{Cos}[c+d x])^p}{a+a \operatorname{Sin}[c+d x]}\, dx$$

Optimal (type 5, 95 leaves, 2 steps):

$$-\frac{1}{a d e (1+p)} 2^{-\frac{1}{2}+\frac{p}{2}} (e \operatorname{Cos}[c+d x])^{1+p} \operatorname{Hypergeometric2F1}\left[\frac{3-p}{2}, \frac{1+p}{2}, \frac{3+p}{2}, \frac{1}{2}(1-\operatorname{Sin}[c+d x])\right] (1+\operatorname{Sin}[c+d x])^{\frac{1}{2}(-1-p)}$$

Result (type 8, 25 leaves):

$$\int \frac{(e \operatorname{Cos}[c+d x])^p}{a+a \operatorname{Sin}[c+d x]}\, dx$$

- **Problem 332: Unable to integrate problem.**

$$\int \frac{(e \operatorname{Cos}[c+d x])^p}{(a+a \operatorname{Sin}[c+d x])^2}\, dx$$

Optimal (type 5, 93 leaves, 2 steps):

$$-\frac{1}{a^2 d e (1+p)} 2^{\frac{1}{2}(-3+p)} (e \operatorname{Cos}[c+d x])^{1+p} \operatorname{Hypergeometric2F1}\left[\frac{5-p}{2}, \frac{1+p}{2}, \frac{3+p}{2}, \frac{1}{2}(1-\operatorname{Sin}[c+d x])\right] (1+\operatorname{Sin}[c+d x])^{\frac{1}{2}(-1-p)}$$

Result (type 8, 25 leaves):

$$\int \frac{(e \operatorname{Cos}[c+d x])^p}{(a+a \operatorname{Sin}[c+d x])^2}\, dx$$

- **Problem 333: Unable to integrate problem.**

$$\int \frac{(e \operatorname{Cos}[c+d x])^p}{(a+a \operatorname{Sin}[c+d x])^3} \, dx$$

Optimal (type 5, 93 leaves, 2 steps):

$$-\frac{1}{a^3 d e (1+p)} 2^{\frac{1}{2}(-5+p)} (e \operatorname{Cos}[c+d x])^{1+p} \operatorname{Hypergeometric2F1}\left[\frac{7-p}{2}, \frac{1+p}{2}, \frac{3+p}{2}, \frac{1}{2}(1-\operatorname{Sin}[c+d x])\right] (1+\operatorname{Sin}[c+d x])^{\frac{1}{2}(-1-p)}$$

Result (type 8, 25 leaves):

$$\int \frac{(e \operatorname{Cos}[c+d x])^p}{(a+a \operatorname{Sin}[c+d x])^3} \, dx$$

- **Problem 334: Unable to integrate problem.**

$$\int \frac{(e \operatorname{Cos}[c+d x])^p}{(a+a \operatorname{Sin}[c+d x])^8} \, dx$$

Optimal (type 5, 93 leaves, 2 steps):

$$-\frac{1}{a^8 d e (1+p)} 2^{\frac{1}{2}(-15+p)} (e \operatorname{Cos}[c+d x])^{1+p} \operatorname{Hypergeometric2F1}\left[\frac{17-p}{2}, \frac{1+p}{2}, \frac{3+p}{2}, \frac{1}{2}(1-\operatorname{Sin}[c+d x])\right] (1+\operatorname{Sin}[c+d x])^{\frac{1}{2}(-1-p)}$$

Result (type 8, 25 leaves):

$$\int \frac{(e \operatorname{Cos}[c+d x])^p}{(a+a \operatorname{Sin}[c+d x])^8} \, dx$$

- **Problem 335: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int (e \operatorname{Cos}[c+d x])^p (a+a \operatorname{Sin}[c+d x])^{7/2} \, dx$$

Optimal (type 5, 103 leaves, 3 steps):

$$-\left(2^{4+\frac{p}{2}} a^4 (e \operatorname{Cos}[c+d x])^{1+p} \operatorname{Hypergeometric2F1}\left[\frac{1}{2}(-6-p), \frac{1+p}{2}, \frac{3+p}{2}, \frac{1}{2}(1-\operatorname{Sin}[c+d x])\right] (1+\operatorname{Sin}[c+d x])^{-p/2}\right) \Big/ \left(d e (1+p) \sqrt{a+a \operatorname{Sin}[c+d x]}\right)$$

Result (type 5, 629 leaves):

$$\frac{1}{d\left(\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^7}(1+i)\,2^{-3-p}\,e^{i p (c+d x)}\left(e^{-i(c+d x)}+e^{i(c+d x)}\right)^p\left(1+e^{2 i (c+d x)}\right)^{-p}$$

$$\mathrm{Cos}[c+d x]^{-p}\,(e\,\mathrm{Cos}[c+d x])^p\left(\frac{e^{-\frac{1}{2} i (7+2 p)(c+d x)}\,\mathrm{Hypergeometric2F1}\left[-\frac{7}{4}-\frac{p}{2},-p,-\frac{3}{4}-\frac{p}{2},-e^{2 i (c+d x)}\right]}{7+2 p}-\right.$$

$$\frac{7 i\,e^{-\frac{1}{2} i (5+2 p)(c+d x)}\,\mathrm{Hypergeometric2F1}\left[-\frac{5}{4}-\frac{p}{2},-p,-\frac{1}{4}-\frac{p}{2},-e^{2 i (c+d x)}\right]}{5+2 p}-$$

$$\frac{21\,e^{-\frac{1}{2} i (3+2 p)(c+d x)}\,\mathrm{Hypergeometric2F1}\left[-\frac{3}{4}-\frac{p}{2},-p,\frac{1}{4}-\frac{p}{2},-e^{2 i (c+d x)}\right]}{3+2 p}+$$

$$\frac{35 i\,e^{-\frac{1}{2} i (1+2 p)(c+d x)}\,\mathrm{Hypergeometric2F1}\left[-\frac{1}{4}-\frac{p}{2},-p,\frac{3}{4}-\frac{p}{2},-e^{2 i (c+d x)}\right]}{1+2 p}+$$

$$\frac{35\,e^{-\frac{1}{2} i (-1+2 p)(c+d x)}\,\mathrm{Hypergeometric2F1}\left[\frac{1}{4}-\frac{p}{2},-p,\frac{5}{4}-\frac{p}{2},-e^{2 i (c+d x)}\right]}{-1+2 p}-$$

$$\frac{21 i\,e^{\frac{1}{2} i (3-2 p)(c+d x)}\,\mathrm{Hypergeometric2F1}\left[\frac{3}{4}-\frac{p}{2},-p,\frac{7}{4}-\frac{p}{2},-e^{2 i (c+d x)}\right]}{-3+2 p}-\frac{7\,e^{\frac{1}{2} i (5-2 p)(c+d x)}\,\mathrm{Hypergeometric2F1}\left[\frac{5}{4}-\frac{p}{2},-p,\frac{9}{4}-\frac{p}{2},-e^{2 i (c+d x)}\right]}{-5+2 p}+$$

$$\left.\frac{i\,e^{-\frac{1}{2} i (-7+2 p)(c+d x)}\,\mathrm{Hypergeometric2F1}\left[\frac{7}{4}-\frac{p}{2},-p,\frac{11}{4}-\frac{p}{2},-e^{2 i (c+d x)}\right]}{-7+2 p}\right)(a\,(1+\mathrm{Sin}[c+d x]))^{7/2}$$

Problem 336: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int (e\,\mathrm{Cos}[c+d x])^p\,(a+a\,\mathrm{Sin}[c+d x])^{5/2}\,dx$$

Optimal (type 5, 103 leaves, 3 steps):

$$-\left(2^{3+\frac{p}{2}}\,a^3\,(e\,\mathrm{Cos}[c+d x])^{1+p}\,\mathrm{Hypergeometric2F1}\left[\frac{1}{2}(-4-p),\frac{1+p}{2},\frac{3+p}{2},\frac{1}{2}(1-\mathrm{Sin}[c+d x])\right](1+\mathrm{Sin}[c+d x])^{-p/2}\right)\Big/$$
$$\left(d\,e\,(1+p)\,\sqrt{a+a\,\mathrm{Sin}[c+d x]}\right)$$

Result (type 5, 504 leaves):

$$-\frac{1}{d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^5}(1-i)\,2^{-3-p}\,e^{i p (c+d x)}\left(e^{-i(c+d x)}+e^{i(c+d x)}\right)^p\left(1+e^{2 i (c+d x)}\right)^{-p}$$

$$\text{Cos}[c+d x]^{-p}\,(e\,\text{Cos}[c+d x])^p\left(-\frac{2\,e^{-\frac{1}{2} i (5+2 p)(c+d x)}\,\text{Hypergeometric2F1}\left[-\frac{5}{4}-\frac{p}{2},-p,-\frac{1}{4}-\frac{p}{2},-e^{2 i (c+d x)}\right]}{5+2 p}+\right.$$

$$\frac{10\,i\,e^{-\frac{1}{2} i (3+2 p)(c+d x)}\,\text{Hypergeometric2F1}\left[-\frac{3}{4}-\frac{p}{2},-p,\frac{1}{4}-\frac{p}{2},-e^{2 i (c+d x)}\right]}{3+2 p}+$$

$$\frac{20\,e^{-\frac{1}{2} i (1+2 p)(c+d x)}\,\text{Hypergeometric2F1}\left[-\frac{1}{4}-\frac{p}{2},-p,\frac{3}{4}-\frac{p}{2},-e^{2 i (c+d x)}\right]}{1+2 p}-$$

$$\frac{20\,i\,e^{\frac{1}{2} i (1-2 p)(c+d x)}\,\text{Hypergeometric2F1}\left[\frac{1}{4}-\frac{p}{2},-p,\frac{5}{4}-\frac{p}{2},-e^{2 i (c+d x)}\right]}{-1+2 p}-$$

$$\frac{10\,e^{\frac{1}{2} i (3-2 p)(c+d x)}\,\text{Hypergeometric2F1}\left[\frac{3}{4}-\frac{p}{2},-p,\frac{7}{4}-\frac{p}{2},-e^{2 i (c+d x)}\right]}{-3+2 p}+$$

$$\left.\frac{2\,i\,e^{-\frac{1}{2} i (-5+2 p)(c+d x)}\,\text{Hypergeometric2F1}\left[\frac{5}{4}-\frac{p}{2},-p,\frac{9}{4}-\frac{p}{2},-e^{2 i (c+d x)}\right]}{-5+2 p}\right)(a\,(1+\text{Sin}[c+d x]))^{5/2}$$

- **Problem 337: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int (e\,\text{Cos}[c+d x])^p\,(a+a\,\text{Sin}[c+d x])^{3/2}\,dx$$

Optimal (type 5, 103 leaves, 3 steps):

$$-\left(2^{2+\frac{p}{2}}\,a^2\,(e\,\text{Cos}[c+d x])^{1+p}\,\text{Hypergeometric2F1}\left[\frac{1}{2}(-2-p),\frac{1+p}{2},\frac{3+p}{2},\frac{1}{2}(1-\text{Sin}[c+d x])\right](1+\text{Sin}[c+d x])^{-p/2}\right)\Big/$$
$$\left(d\,e\,(1+p)\,\sqrt{a+a\,\text{Sin}[c+d x]}\right)$$

Result (type 5, 378 leaves):

$$-\frac{1}{d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3}(1+i)\, 2^{-2-p} e^{i p (c+d x)} \left(e^{-i(c+d x)}+e^{i(c+d x)}\right)^p$$

$$\left(1+e^{2 i (c+d x)}\right)^{-p} \text{Cos}[c+d x]^{-p} (e\, \text{Cos}[c+d x])^p \left(\frac{2 e^{-\frac{1}{2} i (3+2 p)(c+d x)} \text{Hypergeometric2F1}\left[-\frac{3}{4}-\frac{p}{2}, -p, \frac{1}{4}-\frac{p}{2}, -e^{2 i (c+d x)}\right]}{3+2 p}-\right.$$

$$\frac{6 i e^{-\frac{1}{2} i (1+2 p)(c+d x)} \text{Hypergeometric2F1}\left[-\frac{1}{4}-\frac{p}{2}, -p, \frac{3}{4}-\frac{p}{2}, -e^{2 i (c+d x)}\right]}{1+2 p}-$$

$$\frac{6 e^{\frac{1}{2} i (1-2 p)(c+d x)} \text{Hypergeometric2F1}\left[\frac{1}{4}-\frac{p}{2}, -p, \frac{5}{4}-\frac{p}{2}, -e^{2 i (c+d x)}\right]}{-1+2 p}+$$

$$\left.\frac{2 i e^{-\frac{1}{2} i (-3+2 p)(c+d x)} \text{Hypergeometric2F1}\left[\frac{3}{4}-\frac{p}{2}, -p, \frac{7}{4}-\frac{p}{2}, -e^{2 i (c+d x)}\right]}{-3+2 p}\right) (a (1+\text{Sin}[c+d x]))^{3/2}$$

- **Problem 338: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int (e\, \text{Cos}[c+d x])^p \sqrt{a+a\, \text{Sin}[c+d x]}\, dx$$

Optimal (type 5, 97 leaves, 3 steps) :

$$-\frac{2^{1+\frac{p}{2}} a (e\, \text{Cos}[c+d x])^{1+p} \text{Hypergeometric2F1}\left[-\frac{p}{2}, \frac{1+p}{2}, \frac{3+p}{2}, \frac{1}{2}(1-\text{Sin}[c+d x])\right] (1+\text{Sin}[c+d x])^{-p/2}}{d e (1+p) \sqrt{a+a\, \text{Sin}[c+d x]}}$$

Result (type 5, 310 leaves) :

$$\frac{1}{d (-1+2 p)(1+2 p)\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)}(1+i)\, 2^{-p} e^{-\frac{1}{2} i d x} \text{Cos}[c+d x]^{-p} (e\, \text{Cos}[c+d x])^p$$

$$\left(e^{i d x}(1+2 p) \text{Hypergeometric2F1}\left[\frac{1}{4}(1-2 p), -p, \frac{1}{4}(5-2 p), -e^{2 i d x}(\text{Cos}[c]+i\, \text{Sin}[c])^2\right] \left(\text{Cos}\left[\frac{c}{2}\right]+i\, \text{Sin}\left[\frac{c}{2}\right]\right)+\right.$$

$$\left.(-1+2 p) \text{Hypergeometric2F1}\left[\frac{1}{4}(-1-2 p), -p, \frac{1}{4}(3-2 p), -e^{2 i d x}(\text{Cos}[c]+i\, \text{Sin}[c])^2\right] \left(i\, \text{Cos}\left[\frac{c}{2}\right]+\text{Sin}\left[\frac{c}{2}\right]\right)\right)$$

$$\left(e^{-i d x}\left(\left(1+e^{2 i d x}\right) \text{Cos}[c]+i\left(-1+e^{2 i d x}\right) \text{Sin}[c]\right)\right)^p \left(1+e^{2 i d x} \text{Cos}[2 c]+i e^{2 i d x} \text{Sin}[2 c]\right)^{-p} \sqrt{a(1+\text{Sin}[c+d x])}$$

- **Problem 340: Result more than twice size of optimal antiderivative.**

$$\int \frac{(e\, \text{Cos}[c+d x])^p}{(a+a\, \text{Sin}[c+d x])^{3/2}} dx$$

Optimal (type 5, 102 leaves, 3 steps) :

$$-\frac{2^{-1+\frac{p}{2}}\,(e\,\text{Cos}[c+d\,x])^{1+p}\,\text{Hypergeometric2F1}\left[\frac{4-p}{2},\frac{1+p}{2},\frac{3+p}{2},\frac{1}{2}\,(1-\text{Sin}[c+d\,x])\right]\,(1+\text{Sin}[c+d\,x])^{1-\frac{p}{2}}}{d\,e\,(1+p)\,(a+a\,\text{Sin}[c+d\,x])^{3/2}}$$

Result (type 5, 228 leaves) :

$$\frac{1}{a\,d\,p\,\left(-4+p^2\right)\,\sqrt{2-2\,\text{Sin}[c+d\,x]}\,\,(a\,(1+\text{Sin}[c+d\,x]))^{3/2}}$$
$$2^{-1+\frac{p}{2}}\,\text{Cos}[c+d\,x]\,(e\,\text{Cos}[c+d\,x])^{p}\,(1-\text{Sin}[c+d\,x])^{-p/2}\,\left(4\,a\,p\,(2+p)\,\text{Hypergeometric2F1}\left[\frac{1}{2}\,(-1-p),\frac{1}{2}\,(-2+p),\frac{p}{2},\frac{1}{2}\,(1+\text{Sin}[c+d\,x])\right]+\right.$$
$$(-2+p)\,(1+\text{Sin}[c+d\,x])\,\left(2\,a\,(2+p)\,\text{Hypergeometric2F1}\left[\frac{1}{2}\,(-1-p),\frac{p}{2},\frac{2+p}{2},\frac{1}{2}\,(1+\text{Sin}[c+d\,x])\right]+\right.$$
$$\left.\left.a\,p\,\text{Hypergeometric2F1}\left[\frac{1-p}{2},\frac{2+p}{2},\frac{4+p}{2},\frac{1}{2}\,(1+\text{Sin}[c+d\,x])\right]\,(1+\text{Sin}[c+d\,x])\right)\right)$$

- **Problem 341: Result more than twice size of optimal antiderivative.**

$$\int\frac{(e\,\text{Cos}[c+d\,x])^{p}}{(a+a\,\text{Sin}[c+d\,x])^{5/2}}\,dx$$

Optimal (type 5, 105 leaves, 3 steps) :

$$-\frac{2^{-2+\frac{p}{2}}\,(e\,\text{Cos}[c+d\,x])^{1+p}\,\text{Hypergeometric2F1}\left[\frac{6-p}{2},\frac{1+p}{2},\frac{3+p}{2},\frac{1}{2}\,(1-\text{Sin}[c+d\,x])\right]\,(1+\text{Sin}[c+d\,x])^{1-\frac{p}{2}}}{a\,d\,e\,(1+p)\,(a+a\,\text{Sin}[c+d\,x])^{3/2}}$$

Result (type 5, 304 leaves) :

$$\frac{1}{a^4\,d\,(-4+p)\,(-2+p)\,p\,(2+p)\,\sqrt{2-2\,\text{Sin}[c+d\,x]}\,\,(1+\text{Sin}[c+d\,x])^{3}}\,2^{-2+\frac{p}{2}}\,\text{Cos}[c+d\,x]\,(e\,\text{Cos}[c+d\,x])^{p}\,(1-\text{Sin}[c+d\,x])^{-p/2}$$
$$\sqrt{a\,(1+\text{Sin}[c+d\,x])}\,\left(8\,a\,p\,\left(-4+p^2\right)\,\text{Hypergeometric2F1}\left[\frac{1}{2}\,(-1-p),\frac{1}{2}\,(-4+p),\frac{1}{2}\,(-2+p),\frac{1}{2}\,(1+\text{Sin}[c+d\,x])\right]+\right.$$
$$(-4+p)\,(1+\text{Sin}[c+d\,x])\,\left(4\,a\,p\,(2+p)\,\text{Hypergeometric2F1}\left[\frac{1}{2}\,(-1-p),\frac{1}{2}\,(-2+p),\frac{p}{2},\frac{1}{2}\,(1+\text{Sin}[c+d\,x])\right]+\right.$$
$$(-2+p)\,(1+\text{Sin}[c+d\,x])\,\left(2\,a\,(2+p)\,\text{Hypergeometric2F1}\left[\frac{1}{2}\,(-1-p),\frac{p}{2},\frac{2+p}{2},\frac{1}{2}\,(1+\text{Sin}[c+d\,x])\right]+\right.$$
$$\left.\left.\left.a\,p\,\text{Hypergeometric2F1}\left[\frac{1-p}{2},\frac{2+p}{2},\frac{4+p}{2},\frac{1}{2}\,(1+\text{Sin}[c+d\,x])\right]\,(1+\text{Sin}[c+d\,x])\right)\right)\right)$$

- **Problem 343: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int\text{Cos}[c+d\,x]^{7}\,(a+a\,\text{Sin}[c+d\,x])^{m}\,dx$$

Optimal (type 3, 109 leaves, 3 steps) :

$$\frac{8\,(a+a\,\mathrm{Sin}[c+d\,x])^{4+m}}{a^4\,d\,(4+m)}-\frac{12\,(a+a\,\mathrm{Sin}[c+d\,x])^{5+m}}{a^5\,d\,(5+m)}+\frac{6\,(a+a\,\mathrm{Sin}[c+d\,x])^{6+m}}{a^6\,d\,(6+m)}-\frac{(a+a\,\mathrm{Sin}[c+d\,x])^{7+m}}{a^7\,d\,(7+m)}$$

Result (type 3, 796 leaves) :

$$\frac{1}{d}(a\,(1+\mathrm{Sin}[c+d\,x]))^m\left(\frac{6144+1084\,m+117\,m^2+5\,m^3}{16\,(4+m)\,(5+m)\,(6+m)\,(7+m)}+\frac{(29400+2578\,m+171\,m^2+5\,m^3)\left(-\frac{1}{128}\,i\,\mathrm{Cos}[c+d\,x]+\frac{1}{128}\,\mathrm{Sin}[c+d\,x]\right)}{(4+m)\,(5+m)\,(6+m)\,(7+m)}+\frac{(29400+2578\,m+171\,m^2+5\,m^3)\left(\frac{1}{128}\,i\,\mathrm{Cos}[c+d\,x]+\frac{1}{128}\,\mathrm{Sin}[c+d\,x]\right)}{(4+m)\,(5+m)\,(6+m)\,(7+m)}+\frac{(804\,m+109\,m^2+5\,m^3)\left(\frac{3}{64}\,\mathrm{Cos}[2\,(c+d\,x)]-\frac{3}{64}\,i\,\mathrm{Sin}[2\,(c+d\,x)]\right)}{(4+m)\,(5+m)\,(6+m)\,(7+m)}+\frac{(804\,m+109\,m^2+5\,m^3)\left(\frac{3}{64}\,\mathrm{Cos}[2\,(c+d\,x)]+\frac{3}{64}\,i\,\mathrm{Sin}[2\,(c+d\,x)]\right)}{(4+m)\,(5+m)\,(6+m)\,(7+m)}+\frac{(1960+1070\,m+93\,m^2+3\,m^3)\left(-\frac{3}{128}\,i\,\mathrm{Cos}[3\,(c+d\,x)]+\frac{3}{128}\,\mathrm{Sin}[3\,(c+d\,x)]\right)}{(4+m)\,(5+m)\,(6+m)\,(7+m)}+\frac{(1960+1070\,m+93\,m^2+3\,m^3)\left(\frac{3}{128}\,i\,\mathrm{Cos}[3\,(c+d\,x)]+\frac{3}{128}\,\mathrm{Sin}[3\,(c+d\,x)]\right)}{(4+m)\,(5+m)\,(6+m)\,(7+m)}+\frac{(44\,m+17\,m^2+m^3)\left(\frac{3}{32}\,\mathrm{Cos}[4\,(c+d\,x)]-\frac{3}{32}\,i\,\mathrm{Sin}[4\,(c+d\,x)]\right)}{(4+m)\,(5+m)\,(6+m)\,(7+m)}+\frac{(44\,m+17\,m^2+m^3)\left(\frac{3}{32}\,\mathrm{Cos}[4\,(c+d\,x)]+\frac{3}{32}\,i\,\mathrm{Sin}[4\,(c+d\,x)]\right)}{(4+m)\,(5+m)\,(6+m)\,(7+m)}+\frac{(294+103\,m+5\,m^2)\left(-\frac{1}{128}\,i\,\mathrm{Cos}[5\,(c+d\,x)]+\frac{1}{128}\,\mathrm{Sin}[5\,(c+d\,x)]\right)}{(5+m)\,(6+m)\,(7+m)}+\frac{(294+103\,m+5\,m^2)\left(\frac{1}{128}\,i\,\mathrm{Cos}[5\,(c+d\,x)]+\frac{1}{128}\,\mathrm{Sin}[5\,(c+d\,x)]\right)}{(5+m)\,(6+m)\,(7+m)}+\frac{\frac{1}{64}\,m\,\mathrm{Cos}[6\,(c+d\,x)]-\frac{1}{64}\,i\,m\,\mathrm{Sin}[6\,(c+d\,x)]}{(6+m)\,(7+m)}+\frac{\frac{1}{64}\,m\,\mathrm{Cos}[6\,(c+d\,x)]+\frac{1}{64}\,i\,m\,\mathrm{Sin}[6\,(c+d\,x)]}{(6+m)\,(7+m)}+\frac{-\frac{1}{128}\,i\,\mathrm{Cos}[7\,(c+d\,x)]+\frac{1}{128}\,\mathrm{Sin}[7\,(c+d\,x)]}{7+m}+\frac{\frac{1}{128}\,i\,\mathrm{Cos}[7\,(c+d\,x)]+\frac{1}{128}\,\mathrm{Sin}[7\,(c+d\,x)]}{7+m}\right)$$

- **Problem 347: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int \mathrm{Sec}[c+d\,x]\,(a+a\,\mathrm{Sin}[c+d\,x])^m\,dx$$

Optimal (type 5, 40 leaves, 2 steps) :

$$\frac{\mathrm{Hypergeometric2F1}\left[1,\,m,\,1+m,\,\frac{1}{2}\,(1+\mathrm{Sin}[c+d\,x])\right]\,(a+a\,\mathrm{Sin}[c+d\,x])^m}{2\,d\,m}$$

Result (type 6, 6933 leaves) :

$$-\left(\left(\mathrm{Cos}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^{2\,m}\mathrm{Cot}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2(a+a\,\mathrm{Sin}[c+d\,x])^m\right.\right.$$

$$\left(\left(2\,\mathrm{AppellF1}\left[1,\,1-2\,m,\,2\,m,\,2,\,\mathrm{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\mathrm{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\mathrm{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^4\right)\Big/\right.$$

$$\Big(2\,\text{AppellF1}\Big[1,\ 1-2m,\ 2m,\ 2,\ \text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]+$$

$$\Big(-2m\,\text{AppellF1}\Big[2,\ 1-2m,\ 1+2m,\ 3,\ \text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]+$$

$$(1-2m)\,\text{AppellF1}\Big[2,\ 2-2m,\ 2m,\ 3,\ \text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]\Big)\ \text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big)+$$

$$\Big((1+m)\,\text{AppellF1}\Big[1+2m,\ 2m,\ 1,\ 2+2m,\ \frac{1}{2}\Big(1-\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big),\ 1-\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]\ \Big(-1+\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big)^2\Big)\Big/$$

$$\Big((1+2m)\ \Big(-2\,(1+m)\,\text{AppellF1}\Big[1+2m,\ 2m,\ 1,\ 2+2m,\ \frac{1}{2}\Big(1-\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big),\ 1-\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]+$$

$$\Big(\text{AppellF1}\Big[2+2m,\ 2m,\ 2,\ 3+2m,\ \frac{1}{2}\Big(1-\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big),\ 1-\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]+m\,\text{AppellF1}\Big[2+2m,\ 1+2m,$$

$$1,\ 3+2m,\ \frac{1}{2}\Big(1-\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big),\ 1-\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]\Big)\ \Big(-1+\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big)\Big)\Big)\Big)\Big)\Big)\Big/$$

$$\Big(d\ \Big(\text{Cos}\Big[\frac{\pi}{4}+\frac{1}{2}\Big(c-\frac{\pi}{2}+d\,x\Big)\Big]-\text{Sin}\Big[\frac{\pi}{4}+\frac{1}{2}\Big(c-\frac{\pi}{2}+d\,x\Big)\Big]\Big)\ \Big(\text{Cos}\Big[\frac{\pi}{4}+\frac{1}{2}\Big(c-\frac{\pi}{2}+d\,x\Big)\Big]+\text{Sin}\Big[\frac{\pi}{4}+\frac{1}{2}\Big(c-\frac{\pi}{2}+d\,x\Big)\Big]\Big)$$

$$\Big(1-\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big)$$

$$\Big(\frac{1}{2\Big(1-\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big)^2}\ \text{Cos}\Big[\frac{1}{2}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^{2m}\ \text{Csc}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]\ \text{Sec}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]$$

$$\Big(\Big(2\,\text{AppellF1}\Big[1,\ 1-2m,\ 2m,\ 2,\ \text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]\ \text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^4\Big)\Big/$$

$$\Big(2\,\text{AppellF1}\Big[1,\ 1-2m,\ 2m,\ 2,\ \text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]+$$

$$\Big(-2m\,\text{AppellF1}\Big[2,\ 1-2m,\ 1+2m,\ 3,\ \text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]+$$

$$(1-2m)\,\text{AppellF1}\Big[2,\ 2-2m,\ 2m,\ 3,\ \text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]\Big)\ \text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big)+\Big((1+m)$$

$$\text{AppellF1}\Big[1+2m,\ 2m,\ 1,\ 2+2m,\ \frac{1}{2}\Big(1-\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big),\ 1-\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]\ \Big(-1+\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big)^2\Big)\Big/$$

$$\Big((1+2m)\ \Big(-2\,(1+m)\,\text{AppellF1}\Big[1+2m,\ 2m,\ 1,\ 2+2m,\ \frac{1}{2}\Big(1-\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big),\ 1-\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]+$$

$$\Bigl(\text{AppellF1}\Bigl[2+2\,m,\,2\,m,\,2,\,3+2\,m,\,\frac{1}{2}\Bigl(1-\text{Tan}\Bigl[\frac{1}{4}\Bigl(-c+\frac{\pi}{2}-d\,x\Bigr)\Bigr]^2\Bigr),\,1-\text{Tan}\Bigl[\frac{1}{4}\Bigl(-c+\frac{\pi}{2}-d\,x\Bigr)\Bigr]^2\Bigr]+m\,\text{AppellF1}\Bigl[2+2\,m,$$

$$1+2\,m,\,1,\,3+2\,m,\,\frac{1}{2}\Bigl(1-\text{Tan}\Bigl[\frac{1}{4}\Bigl(-c+\frac{\pi}{2}-d\,x\Bigr)\Bigr]^2\Bigr),\,1-\text{Tan}\Bigl[\frac{1}{4}\Bigl(-c+\frac{\pi}{2}-d\,x\Bigr)\Bigr]^2\Bigr]\Bigr)\Bigl(-1+\text{Tan}\Bigl[\frac{1}{4}\Bigl(-c+\frac{\pi}{2}-d\,x\Bigr)\Bigr]^2\Bigr)\Bigr)\Bigr)\Bigr)-$$

$$\frac{1}{2\Bigl(1-\text{Tan}\bigl[\frac{1}{4}\bigl(-c+\frac{\pi}{2}-d\,x\bigr)\bigr]^2\Bigr)}\,\text{Cos}\Bigl[\frac{1}{2}\Bigl(-c+\frac{\pi}{2}-d\,x\Bigr)\Bigr]^{2\,m}\,\text{Cot}\Bigl[\frac{1}{4}\Bigl(-c+\frac{\pi}{2}-d\,x\Bigr)\Bigr]\,\text{Csc}\Bigl[\frac{1}{4}\Bigl(-c+\frac{\pi}{2}-d\,x\Bigr)\Bigr]^2$$

$$\Bigl(\Bigl(2\,\text{AppellF1}\Bigl[1,\,1-2\,m,\,2\,m,\,2,\,\text{Tan}\Bigl[\frac{1}{4}\Bigl(-c+\frac{\pi}{2}-d\,x\Bigr)\Bigr]^2,\,-\text{Tan}\Bigl[\frac{1}{4}\Bigl(-c+\frac{\pi}{2}-d\,x\Bigr)\Bigr]^2\Bigr]\,\text{Tan}\Bigl[\frac{1}{4}\Bigl(-c+\frac{\pi}{2}-d\,x\Bigr)\Bigr]^4\Bigr)\Big/$$

$$\Bigl(2\,\text{AppellF1}\Bigl[1,\,1-2\,m,\,2\,m,\,2,\,\text{Tan}\Bigl[\frac{1}{4}\Bigl(-c+\frac{\pi}{2}-d\,x\Bigr)\Bigr]^2,\,-\text{Tan}\Bigl[\frac{1}{4}\Bigl(-c+\frac{\pi}{2}-d\,x\Bigr)\Bigr]^2\Bigr]+$$

$$\Bigl(-2\,m\,\text{AppellF1}\Bigl[2,\,1-2\,m,\,1+2\,m,\,3,\,\text{Tan}\Bigl[\frac{1}{4}\Bigl(-c+\frac{\pi}{2}-d\,x\Bigr)\Bigr]^2,\,-\text{Tan}\Bigl[\frac{1}{4}\Bigl(-c+\frac{\pi}{2}-d\,x\Bigr)\Bigr]^2\Bigr]+$$

$$(1-2\,m)\,\text{AppellF1}\Bigl[2,\,2-2\,m,\,2\,m,\,3,\,\text{Tan}\Bigl[\frac{1}{4}\Bigl(-c+\frac{\pi}{2}-d\,x\Bigr)\Bigr]^2,\,-\text{Tan}\Bigl[\frac{1}{4}\Bigl(-c+\frac{\pi}{2}-d\,x\Bigr)\Bigr]^2\Bigr]\Bigr)\,\text{Tan}\Bigl[\frac{1}{4}\Bigl(-c+\frac{\pi}{2}-d\,x\Bigr)\Bigr]^2\Bigr)+\Bigl((1+m)$$

$$\text{AppellF1}\Bigl[1+2\,m,\,2\,m,\,1,\,2+2\,m,\,\frac{1}{2}\Bigl(1-\text{Tan}\Bigl[\frac{1}{4}\Bigl(-c+\frac{\pi}{2}-d\,x\Bigr)\Bigr]^2\Bigr),\,1-\text{Tan}\Bigl[\frac{1}{4}\Bigl(-c+\frac{\pi}{2}-d\,x\Bigr)\Bigr]^2\Bigr]\Bigl(-1+\text{Tan}\Bigl[\frac{1}{4}\Bigl(-c+\frac{\pi}{2}-d\,x\Bigr)\Bigr]^2\Bigr)^2\Bigr)\Big/$$

$$\Bigl((1+2\,m)\Bigl(-2\,(1+m)\,\text{AppellF1}\Bigl[1+2\,m,\,2\,m,\,1,\,2+2\,m,\,\frac{1}{2}\Bigl(1-\text{Tan}\Bigl[\frac{1}{4}\Bigl(-c+\frac{\pi}{2}-d\,x\Bigr)\Bigr]^2\Bigr),\,1-\text{Tan}\Bigl[\frac{1}{4}\Bigl(-c+\frac{\pi}{2}-d\,x\Bigr)\Bigr]^2\Bigr]+$$

$$\Bigl(\text{AppellF1}\Bigl[2+2\,m,\,2\,m,\,2,\,3+2\,m,\,\frac{1}{2}\Bigl(1-\text{Tan}\Bigl[\frac{1}{4}\Bigl(-c+\frac{\pi}{2}-d\,x\Bigr)\Bigr]^2\Bigr),\,1-\text{Tan}\Bigl[\frac{1}{4}\Bigl(-c+\frac{\pi}{2}-d\,x\Bigr)\Bigr]^2\Bigr]+m\,\text{AppellF1}\Bigl[2+2\,m,$$

$$1+2\,m,\,1,\,3+2\,m,\,\frac{1}{2}\Bigl(1-\text{Tan}\Bigl[\frac{1}{4}\Bigl(-c+\frac{\pi}{2}-d\,x\Bigr)\Bigr]^2\Bigr),\,1-\text{Tan}\Bigl[\frac{1}{4}\Bigl(-c+\frac{\pi}{2}-d\,x\Bigr)\Bigr]^2\Bigr]\Bigr)\Bigl(-1+\text{Tan}\Bigl[\frac{1}{4}\Bigl(-c+\frac{\pi}{2}-d\,x\Bigr)\Bigr]^2\Bigr)\Bigr)\Bigr)\Bigr)-$$

$$\frac{1}{1-\text{Tan}\bigl[\frac{1}{4}\bigl(-c+\frac{\pi}{2}-d\,x\bigr)\bigr]^2}\,m\,\text{Cos}\Bigl[\frac{1}{2}\Bigl(-c+\frac{\pi}{2}-d\,x\Bigr)\Bigr]^{-1+2\,m}\,\text{Cot}\Bigl[\frac{1}{4}\Bigl(-c+\frac{\pi}{2}-d\,x\Bigr)\Bigr]^2\,\text{Sin}\Bigl[\frac{1}{2}\Bigl(-c+\frac{\pi}{2}-d\,x\Bigr)\Bigr]$$

$$\Bigl(\Bigl(2\,\text{AppellF1}\Bigl[1,\,1-2\,m,\,2\,m,\,2,\,\text{Tan}\Bigl[\frac{1}{4}\Bigl(-c+\frac{\pi}{2}-d\,x\Bigr)\Bigr]^2,\,-\text{Tan}\Bigl[\frac{1}{4}\Bigl(-c+\frac{\pi}{2}-d\,x\Bigr)\Bigr]^2\Bigr]\,\text{Tan}\Bigl[\frac{1}{4}\Bigl(-c+\frac{\pi}{2}-d\,x\Bigr)\Bigr]^4\Bigr)\Big/$$

$$\Bigl(2\,\text{AppellF1}\Bigl[1,\,1-2\,m,\,2\,m,\,2,\,\text{Tan}\Bigl[\frac{1}{4}\Bigl(-c+\frac{\pi}{2}-d\,x\Bigr)\Bigr]^2,\,-\text{Tan}\Bigl[\frac{1}{4}\Bigl(-c+\frac{\pi}{2}-d\,x\Bigr)\Bigr]^2\Bigr]+$$

$$\Bigl(-2\,m\,\text{AppellF1}\Bigl[2,\,1-2\,m,\,1+2\,m,\,3,\,\text{Tan}\Bigl[\frac{1}{4}\Bigl(-c+\frac{\pi}{2}-d\,x\Bigr)\Bigr]^2,\,-\text{Tan}\Bigl[\frac{1}{4}\Bigl(-c+\frac{\pi}{2}-d\,x\Bigr)\Bigr]^2\Bigr]+$$

$$(1-2\,m)\,\text{AppellF1}\Bigl[2,\,2-2\,m,\,2\,m,\,3,\,\text{Tan}\Bigl[\frac{1}{4}\Bigl(-c+\frac{\pi}{2}-d\,x\Bigr)\Bigr]^2,\,-\text{Tan}\Bigl[\frac{1}{4}\Bigl(-c+\frac{\pi}{2}-d\,x\Bigr)\Bigr]^2\Bigr]\Bigr)\,\text{Tan}\Bigl[\frac{1}{4}\Bigl(-c+\frac{\pi}{2}-d\,x\Bigr)\Bigr]^2\Bigr)+\Bigl((1+m)$$

$$\text{AppellF1}\Bigl[1+2\,m,\,2\,m,\,1,\,2+2\,m,\,\frac{1}{2}\Bigl(1-\text{Tan}\Bigl[\frac{1}{4}\Bigl(-c+\frac{\pi}{2}-d\,x\Bigr)\Bigr]^2\Bigr),\,1-\text{Tan}\Bigl[\frac{1}{4}\Bigl(-c+\frac{\pi}{2}-d\,x\Bigr)\Bigr]^2\Bigr]\Bigl(-1+\text{Tan}\Bigl[\frac{1}{4}\Bigl(-c+\frac{\pi}{2}-d\,x\Bigr)\Bigr]^2\Bigr)^2\Bigr)\Big/$$

$$\Big((1+2\,m)\;\Big(-2\,(1+m)\;\text{AppellF1}\Big[1+2\,m,\,2\,m,\,1,\,2+2\,m,\;\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right),\;1-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Big]\;+$$

$$\Big(\text{AppellF1}\Big[2+2\,m,\,2\,m,\,2,\,3+2\,m,\;\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right),\;1-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Big]\;+m\,\text{AppellF1}\Big[2+2\,m,$$

$$1+2\,m,\,1,\,3+2\,m,\;\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right),\;1-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Big]\Big)\;\left(-1+\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)\Big)\Big)\;+$$

$$\frac{1}{1-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2}\;\text{Cos}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^{2\,m}\;\text{Cot}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\;\Big(\Big(2\,\text{AppellF1}\Big[1,\,1-2\,m,\,2\,m,\,2,$$

$$\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\;-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Big]\;\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\;\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^3\Big)\Big/$$

$$\Big(2\,\text{AppellF1}\Big[1,\,1-2\,m,\,2\,m,\,2,\;\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\;-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Big]\;+$$

$$\Big(-2\,m\,\text{AppellF1}\Big[2,\,1-2\,m,\,1+2\,m,\,3,\;\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\;-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Big]\;+$$

$$(1-2\,m)\;\text{AppellF1}\Big[2,\,2-2\,m,\,2\,m,\,3,\;\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\;-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Big]\Big)\;\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Big)\;+$$

$$\Big(2\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^4\;\Big(-\frac{1}{2}\,m\,\text{AppellF1}\Big[2,\,1-2\,m,\,1+2\,m,\,3,\;\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\;-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Big]$$

$$\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\;\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\;+\;\frac{1}{4}\;(1-2\,m)\;\text{AppellF1}\Big[2,\,2-2\,m,\,2\,m,\,3,$$

$$\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\;-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Big]\;\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\;\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\Big)\Big)\Big/$$

$$\Big(2\,\text{AppellF1}\Big[1,\,1-2\,m,\,2\,m,\,2,\;\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\;-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Big]\;+$$

$$\Big(-2\,m\,\text{AppellF1}\Big[2,\,1-2\,m,\,1+2\,m,\,3,\;\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\;-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Big]\;+$$

$$(1-2\,m)\;\text{AppellF1}\Big[2,\,2-2\,m,\,2\,m,\,3,\;\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\;-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Big]\Big)\;\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Big)\;+$$

$$\Big((1+m)\;\text{AppellF1}\Big[1+2\,m,\,2\,m,\,1,\,2+2\,m,\;\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right),\;1-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Big]$$

$$\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\;\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\;\left(-1+\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)\Big)\Big/$$

$$\Big((1+2\,m)\;\Big(-2\,(1+m)\;\text{AppellF1}\Big[1+2\,m,\,2\,m,\,1,\,2+2\,m,\;\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right),\;1-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Big]\;+$$

$$\Big(\text{AppellF1}\Big[2+2\,m,\,2\,m,\,2,\,3+2\,m,\;\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right),\;1-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Big]\;+m\,\text{AppellF1}\Big[2+2\,m,$$

$$1+2\,m,\ 1,\ 3+2\,m,\ \frac{1}{2}\,(1-\text{Tan}[\tfrac{1}{4}\,(-c+\tfrac{\pi}{2}-d\,x)]^2),\ 1-\text{Tan}[\tfrac{1}{4}\,(-c+\tfrac{\pi}{2}-d\,x)]^2])\ (-1+\text{Tan}[\tfrac{1}{4}\,(-c+\tfrac{\pi}{2}-d\,x)]^2)))\ +$$

$$((1+m)\ (-\frac{1}{2\,(2+2\,m)}\,(1+2\,m)\ \text{AppellF1}[2+2\,m,\ 2\,m,\ 2,\ 3+2\,m,\ \frac{1}{2}\,(1-\text{Tan}[\tfrac{1}{4}\,(-c+\tfrac{\pi}{2}-d\,x)]^2),\ 1-\text{Tan}[\tfrac{1}{4}\,(-c+\tfrac{\pi}{2}-d\,x)]^2]$$

$$\text{Sec}[\tfrac{1}{4}\,(-c+\tfrac{\pi}{2}-d\,x)]^2\ \text{Tan}[\tfrac{1}{4}\,(-c+\tfrac{\pi}{2}-d\,x)]-\frac{1}{2\,(2+2\,m)}$$

$$m\,(1+2\,m)\ \text{AppellF1}[2+2\,m,\ 1+2\,m,\ 1,\ 3+2\,m,\ \frac{1}{2}\,(1-\text{Tan}[\tfrac{1}{4}\,(-c+\tfrac{\pi}{2}-d\,x)]^2),\ 1-\text{Tan}[\tfrac{1}{4}\,(-c+\tfrac{\pi}{2}-d\,x)]^2]$$

$$\text{Sec}[\tfrac{1}{4}\,(-c+\tfrac{\pi}{2}-d\,x)]^2\ \text{Tan}[\tfrac{1}{4}\,(-c+\tfrac{\pi}{2}-d\,x)])\ (-1+\text{Tan}[\tfrac{1}{4}\,(-c+\tfrac{\pi}{2}-d\,x)]^2)^2)\Big/$$

$$((1+2\,m)\ (-2\,(1+m)\ \text{AppellF1}[1+2\,m,\ 2\,m,\ 1,\ 2+2\,m,\ \frac{1}{2}\,(1-\text{Tan}[\tfrac{1}{4}\,(-c+\tfrac{\pi}{2}-d\,x)]^2),\ 1-\text{Tan}[\tfrac{1}{4}\,(-c+\tfrac{\pi}{2}-d\,x)]^2]\ +$$

$$(\text{AppellF1}[2+2\,m,\ 2\,m,\ 2,\ 3+2\,m,\ \frac{1}{2}\,(1-\text{Tan}[\tfrac{1}{4}\,(-c+\tfrac{\pi}{2}-d\,x)]^2),\ 1-\text{Tan}[\tfrac{1}{4}\,(-c+\tfrac{\pi}{2}-d\,x)]^2]+m\,\text{AppellF1}[2+2\,m,$$

$$1+2\,m,\ 1,\ 3+2\,m,\ \frac{1}{2}\,(1-\text{Tan}[\tfrac{1}{4}\,(-c+\tfrac{\pi}{2}-d\,x)]^2),\ 1-\text{Tan}[\tfrac{1}{4}\,(-c+\tfrac{\pi}{2}-d\,x)]^2])\ (-1+\text{Tan}[\tfrac{1}{4}\,(-c+\tfrac{\pi}{2}-d\,x)]^2)))\ -$$

$$(2\,\text{AppellF1}[1,\ 1-2\,m,\ 2\,m,\ 2,\ \text{Tan}[\tfrac{1}{4}\,(-c+\tfrac{\pi}{2}-d\,x)]^2,\ -\text{Tan}[\tfrac{1}{4}\,(-c+\tfrac{\pi}{2}-d\,x)]^2]\ \text{Tan}[\tfrac{1}{4}\,(-c+\tfrac{\pi}{2}-d\,x)]^4$$

$$(\frac{1}{2}\,(-2\,m\,\text{AppellF1}[2,\ 1-2\,m,\ 1+2\,m,\ 3,\ \text{Tan}[\tfrac{1}{4}\,(-c+\tfrac{\pi}{2}-d\,x)]^2,\ -\text{Tan}[\tfrac{1}{4}\,(-c+\tfrac{\pi}{2}-d\,x)]^2]+(1-2\,m)\ \text{AppellF1}[2,\ 2-2\,m,$$

$$2\,m,\ 3,\ \text{Tan}[\tfrac{1}{4}\,(-c+\tfrac{\pi}{2}-d\,x)]^2,\ -\text{Tan}[\tfrac{1}{4}\,(-c+\tfrac{\pi}{2}-d\,x)]^2])\ \text{Sec}[\tfrac{1}{4}\,(-c+\tfrac{\pi}{2}-d\,x)]^2\ \text{Tan}[\tfrac{1}{4}\,(-c+\tfrac{\pi}{2}-d\,x)]\ +$$

$$2\,(-\frac{1}{2}\,m\,\text{AppellF1}[2,\ 1-2\,m,\ 1+2\,m,\ 3,\ \text{Tan}[\tfrac{1}{4}\,(-c+\tfrac{\pi}{2}-d\,x)]^2,\ -\text{Tan}[\tfrac{1}{4}\,(-c+\tfrac{\pi}{2}-d\,x)]^2]\ \text{Sec}[\tfrac{1}{4}\,(-c+\tfrac{\pi}{2}-d\,x)]^2$$

$$\text{Tan}[\tfrac{1}{4}\,(-c+\tfrac{\pi}{2}-d\,x)]+\frac{1}{4}\,(1-2\,m)\ \text{AppellF1}[2,\ 2-2\,m,\ 2\,m,\ 3,\ \text{Tan}[\tfrac{1}{4}\,(-c+\tfrac{\pi}{2}-d\,x)]^2,\ -\text{Tan}[\tfrac{1}{4}\,(-c+\tfrac{\pi}{2}-d\,x)]^2]$$

$$\text{Sec}[\tfrac{1}{4}\,(-c+\tfrac{\pi}{2}-d\,x)]^2\ \text{Tan}[\tfrac{1}{4}\,(-c+\tfrac{\pi}{2}-d\,x)])+\text{Tan}[\tfrac{1}{4}\,(-c+\tfrac{\pi}{2}-d\,x)]^2\ (-2\,m\ (-\frac{1}{3}\,(1+2\,m)\ \text{AppellF1}[3,\ 1-2\,m,$$

$$2+2\,m,\ 4,\ \text{Tan}[\tfrac{1}{4}\,(-c+\tfrac{\pi}{2}-d\,x)]^2,\ -\text{Tan}[\tfrac{1}{4}\,(-c+\tfrac{\pi}{2}-d\,x)]^2]\ \text{Sec}[\tfrac{1}{4}\,(-c+\tfrac{\pi}{2}-d\,x)]^2\ \text{Tan}[\tfrac{1}{4}\,(-c+\tfrac{\pi}{2}-d\,x)]\ +$$

$$\frac{1}{3}\,(1-2\,m)\ \text{AppellF1}[3,\ 2-2\,m,\ 1+2\,m,\ 4,\ \text{Tan}[\tfrac{1}{4}\,(-c+\tfrac{\pi}{2}-d\,x)]^2,\ -\text{Tan}[\tfrac{1}{4}\,(-c+\tfrac{\pi}{2}-d\,x)]^2]\ \text{Sec}[\tfrac{1}{4}\,(-c+\tfrac{\pi}{2}-d\,x)]^2$$

$$\text{Tan}[\tfrac{1}{4}\,(-c+\tfrac{\pi}{2}-d\,x)])+(1-2\,m)\ (-\frac{2}{3}\,m\,\text{AppellF1}[3,\ 2-2\,m,\ 1+2\,m,\ 4,\ \text{Tan}[\tfrac{1}{4}\,(-c+\tfrac{\pi}{2}-d\,x)]^2,$$

$$-\text{Tan}[\tfrac{1}{4}\,(-c+\tfrac{\pi}{2}-d\,x)]^2]\ \text{Sec}[\tfrac{1}{4}\,(-c+\tfrac{\pi}{2}-d\,x)]^2\ \text{Tan}[\tfrac{1}{4}\,(-c+\tfrac{\pi}{2}-d\,x)]+\frac{1}{3}\,(2-2\,m)\ \text{AppellF1}[3,\ 3-2\,m,\ 2\,m,$$

$$4,\ \text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Big]\ \text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\ \text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\Big)\Big)\Big)\Big)\Big)\Big/$$

$$\Big(2\,\text{AppellF1}\Big[1,\ 1-2\,m,\ 2\,m,\ 2,\ \text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Big]+\Big(-2\,m\,\text{AppellF1}\Big[2,\ 1-2\,m,$$

$$1+2\,m,\ 3,\ \text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Big]+(1-2\,m)$$

$$\text{AppellF1}\Big[2,\ 2-2\,m,\ 2\,m,\ 3,\ \text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Big]\Big)\ \text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Big)^2-$$

$$\Big((1+m)\ \text{AppellF1}\Big[1+2\,m,\ 2\,m,\ 1,\ 2+2\,m,\ \frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right),\ 1-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Big]$$

$$\left(-1+\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)^2\ \Big(\frac{1}{2}\Big(\text{AppellF1}\Big[2+2\,m,\ 2\,m,\ 2,\ 3+2\,m,\ \frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right),\ 1-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Big]+$$

$$m\,\text{AppellF1}\Big[2+2\,m,\ 1+2\,m,\ 1,\ 3+2\,m,\ \frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right),\ 1-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Big]\Big)\ \text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2$$

$$\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]-2\,(1+m)\ \Big(-\frac{1}{2\,(2+2\,m)}(1+2\,m)\ \text{AppellF1}\Big[2+2\,m,\ 2\,m,\ 2,\ 3+2\,m,\ \frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right),\ 1-$$

$$\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Big]\ \text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\ \text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]-\frac{1}{2\,(2+2\,m)}m\ (1+2\,m)\ \text{AppellF1}\Big[2+2\,m,\ 1+2\,m,$$

$$1,\ 3+2\,m,\ \frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right),\ 1-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Big]\ \text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\ \text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\Big)+$$

$$\left(-1+\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)\ \Big(-\frac{1}{3+2\,m}(2+2\,m)\ \text{AppellF1}\Big[3+2\,m,\ 2\,m,\ 3,\ 4+2\,m,\ \frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right),\ 1-$$

$$\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Big]\ \text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\ \text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]-\frac{1}{2\,(3+2\,m)}m\ (2+2\,m)\ \text{AppellF1}\Big[3+2\,m,\ 1+2\,m,$$

$$2,\ 4+2\,m,\ \frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right),\ 1-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Big]\ \text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\ \text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]+$$

$$m\ \Big(-\frac{1}{2\,(3+2\,m)}(2+2\,m)\ \text{AppellF1}\Big[3+2\,m,\ 1+2\,m,\ 2,\ 4+2\,m,\ \frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right),\ 1-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Big]$$

$$\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\ \text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]-\frac{1}{4\,(3+2\,m)}(1+2\,m)\ (2+2\,m)\ \text{AppellF1}\Big[3+2\,m,\ 2+2\,m,\ 1,\ 4+2\,m,$$

$$\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right),\ 1-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Big]\ \text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\ \text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\Big)\Big)\Big)\Big)\Big)\Big/$$

$$\Big((1+2\,m)\ \Big(-2\,(1+m)\ \text{AppellF1}\Big[1+2\,m,\ 2\,m,\ 1,\ 2+2\,m,\ \frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right),\ 1-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Big]+$$

$$\Big(\text{AppellF1}\Big[2+2\,m,\ 2\,m,\ 2,\ 3+2\,m,\ \frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right),\ 1-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Big]+m\,\text{AppellF1}\Big[2+2\,m,\ 1+2\,m,$$

$$1,\ 3+2m,\ \frac{1}{2}\left(1-\mathrm{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right),\ 1-\mathrm{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\Big]\right)\left(-1+\mathrm{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right)^2\Bigg)\Bigg)\Bigg)\Bigg)$$

Problem 348: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \mathrm{Sec}[c+d x]^3\,(a+a\,\mathrm{Sin}[c+d x])^m\,dx$$

Optimal (type 5, 47 leaves, 2 steps):

$$-\frac{a\,\mathrm{Hypergeometric2F1}\left[2,\,-1+m,\,m,\,\frac{1}{2}(1+\mathrm{Sin}[c+d x])\right](a+a\,\mathrm{Sin}[c+d x])^{-1+m}}{4 d (1-m)}$$

Result (type 6, 27 160 leaves): Display of huge result suppressed!

Problem 349: Result more than twice size of optimal antiderivative.

$$\int \mathrm{Sec}[c+d x]^5\,(a+a\,\mathrm{Sin}[c+d x])^m\,dx$$

Optimal (type 5, 51 leaves, 2 steps):

$$-\frac{a^2\,\mathrm{Hypergeometric2F1}\left[3,\,-2+m,\,-1+m,\,\frac{1}{2}(1+\mathrm{Sin}[c+d x])\right](a+a\,\mathrm{Sin}[c+d x])^{-2+m}}{8 d (2-m)}$$

Result (type 5, 443 leaves):

$$-\frac{1}{32 d}\left(\mathrm{Sec}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right)^m (a+a\,\mathrm{Sin}[c+d x])^m\left(1+\mathrm{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right)^{-m}$$

$$\Bigg(-\frac{6\left(1+\mathrm{Cot}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right)^m \mathrm{Hypergeometric2F1}\left[m,\,m,\,1+m,\,-\mathrm{Cot}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right]}{m}-\frac{1}{1+m}$$

$$4\,\mathrm{Cot}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\left(1+\mathrm{Cot}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right)^m \mathrm{Hypergeometric2F1}\left[m,\,1+m,\,2+m,\,-\mathrm{Cot}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right]-$$

$$\frac{1}{2+m}\mathrm{Cot}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]^4\left(1+\mathrm{Cot}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right)^m \mathrm{Hypergeometric2F1}\left[m,\,2+m,\,3+m,\,-\mathrm{Cot}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right]+$$

$$\frac{4\left(-1-\mathrm{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]^2+\left(1+\mathrm{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right)^m\right)}{-1+m}+\frac{1}{(-2+m)(-1+m)}$$

$$\left(-1+\mathrm{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]^4+\left(1+\mathrm{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right)^m-m\left(\mathrm{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]^2+\mathrm{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]^4\right)\right)\Bigg)$$

Problem 350: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d\,x]^4\,(a+a\,\text{Sin}[c+d\,x])^m\,dx$$

Optimal (type 5, 83 leaves, 3 steps):

$$-\frac{1}{5\,d}2^{\frac{5}{2}+m}\,a^2\,\text{Cos}[c+d\,x]^5\,\text{Hypergeometric2F1}\left[\frac{5}{2},\,-\frac{3}{2}-m,\,\frac{7}{2},\,\frac{1}{2}\,(1-\text{Sin}[c+d\,x])\right]\,(1+\text{Sin}[c+d\,x])^{-\frac{1}{2}-m}\,(a+a\,\text{Sin}[c+d\,x])^{-2+m}$$

Result (type 6, 9362 leaves):

$$-\left(\left(3072\,\text{Cos}[c+d\,x]^4\,(a+a\,\text{Sin}[c+d\,x])^m\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\left(1-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)^{2\,(2+m)}\left(\frac{1}{1+\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2}\right)^{9+2\,m}\right.\right.$$

$$\left(\left(\text{AppellF1}\left[\frac{1}{2},\,-2\,(2+m),\,7+2\,m,\,\frac{3}{2},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)^2\right)\right/$$

$$\left(3\,\text{AppellF1}\left[\frac{1}{2},\,-2\,(2+m),\,7+2\,m,\,\frac{3}{2},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]-\right.$$

$$2\left(2\,(2+m)\,\text{AppellF1}\left[\frac{3}{2},\,-3-2\,m,\,7+2\,m,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]+\right.$$

$$\left.\left.(7+2\,m)\,\text{AppellF1}\left[\frac{3}{2},\,-2\,(2+m),\,2\,(4+m),\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)+$$

$$\text{AppellF1}\left[\frac{1}{2},\,-2\,(2+m),\,9+2\,m,\,\frac{3}{2},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\Big/$$

$$\left(3\,\text{AppellF1}\left[\frac{1}{2},\,-2\,(2+m),\,9+2\,m,\,\frac{3}{2},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]-\right.$$

$$2\left(2\,(2+m)\,\text{AppellF1}\left[\frac{3}{2},\,-3-2\,m,\,9+2\,m,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]+\right.$$

$$\left.\left.(9+2\,m)\,\text{AppellF1}\left[\frac{3}{2},\,-2\,(2+m),\,2\,(5+m),\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)+$$

$$\left(2\,\text{AppellF1}\left[\frac{1}{2},\,-2\,(2+m),\,2\,(4+m),\,\frac{3}{2},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)\right)\Big/$$

$$\left(-3\,\text{AppellF1}\left[\frac{1}{2},\,-2\,(2+m),\,2\,(4+m),\,\frac{3}{2},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]+\right.$$

$$4\left((2+m)\,\text{AppellF1}\left[\frac{3}{2},\,-3-2\,m,\,8+2\,m,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]+\right.$$

$$\left.\left.\left.(4+m)\,\text{AppellF1}\left[\frac{3}{2},\,-2\,(2+m),\,9+2\,m,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)\right)\Big/$$

$$\Bigg(d\Bigg(768\,\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\left(1-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)^{2\,(2+m)}\left(\frac{1}{1+\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2}\right)^{9+2\,m}$$

$$\Bigg(\Bigg(\text{AppellF1}\left[\frac{1}{2},-2\,(2+m),7+2\,m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)^2\Bigg)\Bigg/$$

$$\Bigg(3\,\text{AppellF1}\left[\frac{1}{2},-2\,(2+m),7+2\,m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]-$$

$$2\Bigg(2\,(2+m)\,\text{AppellF1}\left[\frac{3}{2},-3-2\,m,7+2\,m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]+$$

$$(7+2\,m)\,\text{AppellF1}\left[\frac{3}{2},-2\,(2+m),2\,(4+m),\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\Bigg)\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Bigg)+$$

$$\text{AppellF1}\left[\frac{1}{2},-2\,(2+m),9+2\,m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\Bigg/$$

$$\Bigg(3\,\text{AppellF1}\left[\frac{1}{2},-2\,(2+m),9+2\,m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]-$$

$$2\Bigg(2\,(2+m)\,\text{AppellF1}\left[\frac{3}{2},-3-2\,m,9+2\,m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]+$$

$$(9+2\,m)\,\text{AppellF1}\left[\frac{3}{2},-2\,(2+m),2\,(5+m),\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\Bigg)\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Bigg)+$$

$$\Bigg(2\,\text{AppellF1}\left[\frac{1}{2},-2\,(2+m),2\,(4+m),\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)\Bigg)\Bigg/$$

$$\Bigg(-3\,\text{AppellF1}\left[\frac{1}{2},-2\,(2+m),2\,(4+m),\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]+$$

$$4\Bigg((2+m)\,\text{AppellF1}\left[\frac{3}{2},-3-2\,m,8+2\,m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]+$$

$$(4+m)\,\text{AppellF1}\left[\frac{3}{2},-2\,(2+m),9+2\,m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\Bigg)\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Bigg)\Bigg)-$$

$$3072\,(2+m)\,\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\left(1-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)^{-1+2\,(2+m)}\left(\frac{1}{1+\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2}\right)^{9+2\,m}$$

$$\Bigg(\Bigg(\text{AppellF1}\left[\frac{1}{2},-2\,(2+m),7+2\,m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)^2\Bigg)\Bigg/$$

$$\Bigg(3\,\text{AppellF1}\left[\frac{1}{2},-2\,(2+m),7+2\,m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]-$$

$$2\Bigg(2\,(2+m)\,\text{AppellF1}\left[\frac{3}{2},-3-2\,m,7+2\,m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]+$$

$$(7+2m)\,\text{AppellF1}\left[\frac{3}{2},-2(2+m),2(4+m),\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right)+$$

$$\text{AppellF1}\left[\frac{1}{2},-2(2+m),9+2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]\Big/$$

$$\left(3\,\text{AppellF1}\left[\frac{1}{2},-2(2+m),9+2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]-\right.$$

$$2\left(2(2+m)\,\text{AppellF1}\left[\frac{3}{2},-3-2m,9+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]+\right.$$

$$(9+2m)\,\text{AppellF1}\left[\frac{3}{2},-2(2+m),2(5+m),\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right)+$$

$$\left(2\,\text{AppellF1}\left[\frac{1}{2},-2(2+m),2(4+m),\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right)\right)\Big/$$

$$\left(-3\,\text{AppellF1}\left[\frac{1}{2},-2(2+m),2(4+m),\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]+\right.$$

$$4\left((2+m)\,\text{AppellF1}\left[\frac{3}{2},-3-2m,8+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]+\right.$$

$$(4+m)\,\text{AppellF1}\left[\frac{3}{2},-2(2+m),9+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right)\right)-$$

$$1536(9+2m)\,\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\left(1-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right)^{2(2+m)}\left(\frac{1}{1+\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2}\right)^{10+2m}$$

$$\left(\left(\text{AppellF1}\left[\frac{1}{2},-2(2+m),7+2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right)^2\right)\Big/\right.$$

$$\left(3\,\text{AppellF1}\left[\frac{1}{2},-2(2+m),7+2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]-\right.$$

$$2\left(2(2+m)\,\text{AppellF1}\left[\frac{3}{2},-3-2m,7+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]+\right.$$

$$(7+2m)\,\text{AppellF1}\left[\frac{3}{2},-2(2+m),2(4+m),\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right)+$$

$$\text{AppellF1}\left[\frac{1}{2},-2(2+m),9+2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]\Big/$$

$$\left(3\,\text{AppellF1}\left[\frac{1}{2},-2(2+m),9+2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]-\right.$$

$$2\left(2(2+m)\,\text{AppellF1}\left[\frac{3}{2},-3-2m,9+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]+\right.$$

$$(9+2 m)\, \text{AppellF1}\left[\frac{3}{2}, -2 (2+m), 2 (5+m), \frac{5}{2}, \text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right]\Big)\, \text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\Big) +$$

$$\Big(2\, \text{AppellF1}\left[\frac{1}{2}, -2 (2+m), 2 (4+m), \frac{3}{2}, \text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right] \left(1+\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right)\Big) \Big/$$

$$\Big(-3\, \text{AppellF1}\left[\frac{1}{2}, -2 (2+m), 2 (4+m), \frac{3}{2}, \text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right] +$$

$$4 \Big((2+m)\, \text{AppellF1}\left[\frac{3}{2}, -3-2 m, 8+2 m, \frac{5}{2}, \text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right] +$$

$$(4+m)\, \text{AppellF1}\left[\frac{3}{2}, -2 (2+m), 9+2 m, \frac{5}{2}, \text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right]\Big)\, \text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\Big)\Big) +$$

$$3072\, \text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right] \left(1-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right)^{2 (2+m)} \left(\frac{1}{1+\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2}\right)^{9+2 m}$$

$$\Big(\Big(\text{AppellF1}\left[\frac{1}{2}, -2 (2+m), 7+2 m, \frac{3}{2}, \text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right] \text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2 \text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]$$

$$\left(1+\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right)\Big) \Big/ \Big(3\, \text{AppellF1}\left[\frac{1}{2}, -2 (2+m), 7+2 m, \frac{3}{2}, \text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right] -$$

$$2 \Big(2 (2+m)\, \text{AppellF1}\left[\frac{3}{2}, -3-2 m, 7+2 m, \frac{5}{2}, \text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right] +$$

$$(7+2 m)\, \text{AppellF1}\left[\frac{3}{2}, -2 (2+m), 2 (4+m), \frac{5}{2}, \text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right]\Big)\, \text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\Big) +$$

$$\Big(\Big(-\frac{1}{6} (7+2 m)\, \text{AppellF1}\left[\frac{3}{2}, -2 (2+m), 8+2 m, \frac{5}{2}, \text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right] \text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2$$

$$\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right] - \frac{1}{3} (2+m)\, \text{AppellF1}\left[\frac{3}{2}, 1-2 (2+m), 7+2 m, \frac{5}{2}, \text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2 \text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]\Big) \left(1+\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right)^2\Big) \Big/$$

$$\Big(3\, \text{AppellF1}\left[\frac{1}{2}, -2 (2+m), 7+2 m, \frac{3}{2}, \text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right] -$$

$$2 \Big(2 (2+m)\, \text{AppellF1}\left[\frac{3}{2}, -3-2 m, 7+2 m, \frac{5}{2}, \text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right] +$$

$$(7+2 m)\, \text{AppellF1}\left[\frac{3}{2}, -2 (2+m), 2 (4+m), \frac{5}{2}, \text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right]\Big)\, \text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\Big) +$$

$$\Big(-\frac{1}{6} (9+2 m)\, \text{AppellF1}\left[\frac{3}{2}, -2 (2+m), 10+2 m, \frac{5}{2}, \text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right] \text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2$$

$$\mathrm{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]\Big]-\frac{1}{3}(2+m)\,\mathrm{AppellF1}\Big[\frac{3}{2},1-2(2+m),9+2m,\frac{5}{2},\mathrm{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2,-\mathrm{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]$$

$$\mathrm{Sec}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\mathrm{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]\Big]\Big)\Big/\Big(3\,\mathrm{AppellF1}\Big[\frac{1}{2},-2(2+m),9+2m,\frac{3}{2},\mathrm{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2,$$

$$-\mathrm{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]-2\Big(2(2+m)\,\mathrm{AppellF1}\Big[\frac{3}{2},-3-2m,9+2m,\frac{5}{2},\mathrm{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2,-\mathrm{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]+$$

$$(9+2m)\,\mathrm{AppellF1}\Big[\frac{3}{2},-2(2+m),2(5+m),\frac{5}{2},\mathrm{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2,-\mathrm{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]\Big)\mathrm{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big)+$$

$$\Big(\mathrm{AppellF1}\Big[\frac{1}{2},-2(2+m),2(4+m),\frac{3}{2},\mathrm{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2,-\mathrm{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]\mathrm{Sec}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2$$

$$\mathrm{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]\Big)\Big/\Big(-3\,\mathrm{AppellF1}\Big[\frac{1}{2},-2(2+m),2(4+m),\frac{3}{2},\mathrm{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2,-\mathrm{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]+$$

$$4\Big((2+m)\,\mathrm{AppellF1}\Big[\frac{3}{2},-3-2m,8+2m,\frac{5}{2},\mathrm{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2,-\mathrm{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]+$$

$$(4+m)\,\mathrm{AppellF1}\Big[\frac{3}{2},-2(2+m),9+2m,\frac{5}{2},\mathrm{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2,-\mathrm{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]\Big)\mathrm{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big)+$$

$$\Big(2\Big(-\frac{1}{3}(4+m)\,\mathrm{AppellF1}\Big[\frac{3}{2},-2(2+m),1+2(4+m),\frac{5}{2},\mathrm{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2,-\mathrm{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]$$

$$\mathrm{Sec}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\mathrm{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]-\frac{1}{3}(2+m)\,\mathrm{AppellF1}\Big[\frac{3}{2},1-2(2+m),2(4+m),\frac{5}{2},\mathrm{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2,$$

$$-\mathrm{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]\mathrm{Sec}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\mathrm{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]\Big)\Big(1+\mathrm{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big)\Big)\Big/$$

$$\Big(-3\,\mathrm{AppellF1}\Big[\frac{1}{2},-2(2+m),2(4+m),\frac{3}{2},\mathrm{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2,-\mathrm{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]+$$

$$4\Big((2+m)\,\mathrm{AppellF1}\Big[\frac{3}{2},-3-2m,8+2m,\frac{5}{2},\mathrm{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2,-\mathrm{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]+$$

$$(4+m)\,\mathrm{AppellF1}\Big[\frac{3}{2},-2(2+m),9+2m,\frac{5}{2},\mathrm{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2,-\mathrm{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]\Big)\mathrm{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big)-$$

$$\Big(\mathrm{AppellF1}\Big[\frac{1}{2},-2(2+m),7+2m,\frac{3}{2},\mathrm{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2,-\mathrm{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]\Big(1+\mathrm{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big)^2$$

$$\Big(-\Big(2(2+m)\,\mathrm{AppellF1}\Big[\frac{3}{2},-3-2m,7+2m,\frac{5}{2},\mathrm{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2,-\mathrm{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]+$$

$$(7+2m)\,\mathrm{AppellF1}\Big[\frac{3}{2},-2(2+m),2(4+m),\frac{5}{2},\mathrm{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2,-\mathrm{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]\Big)\mathrm{Sec}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2$$

$$\mathrm{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]+3\Big(-\frac{1}{6}(7+2m)\,\mathrm{AppellF1}\Big[\frac{3}{2},-2(2+m),8+2m,\frac{5}{2},\mathrm{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2,-\mathrm{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]$$

$$\text{Sec}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d x)]^2\,\text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d x)]-\frac{1}{3}(2+m)\,\text{AppellF1}[\tfrac{3}{2},1-2(2+m),7+2m,\tfrac{5}{2},\text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d x)]^2,$$

$$-\text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d x)]^2]\,\text{Sec}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d x)]^2\,\text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d x)]))-2\,\text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d x)]^2$$

$$(2(2+m)(-\frac{3}{10}(7+2m)\,\text{AppellF1}[\tfrac{5}{2},-3-2m,8+2m,\tfrac{7}{2},\text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d x)]^2,-\text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d x)]^2]$$

$$\text{Sec}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d x)]^2\,\text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d x)]+\frac{3}{10}(-3-2m)\,\text{AppellF1}[\tfrac{5}{2},-2-2m,7+2m,\tfrac{7}{2},$$

$$\text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d x)]^2,-\text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d x)]^2]\,\text{Sec}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d x)]^2\,\text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d x)])+$$

$$(7+2m)(-\frac{3}{5}(4+m)\,\text{AppellF1}[\tfrac{5}{2},-2(2+m),1+2(4+m),\tfrac{7}{2},\text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d x)]^2,-\text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d x)]^2]$$

$$\text{Sec}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d x)]^2\,\text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d x)]-\frac{3}{5}(2+m)\,\text{AppellF1}[\tfrac{5}{2},1-2(2+m),2(4+m),\tfrac{7}{2},$$

$$\text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d x)]^2,-\text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d x)]^2]\,\text{Sec}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d x)]^2\,\text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d x)])))))\Big/$$

$$(3\,\text{AppellF1}[\tfrac{1}{2},-2(2+m),7+2m,\tfrac{3}{2},\text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d x)]^2,-\text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d x)]^2]-2$$

$$(2(2+m)\,\text{AppellF1}[\tfrac{3}{2},-3-2m,7+2m,\tfrac{5}{2},\text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d x)]^2,-\text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d x)]^2]+(7+2m)$$

$$\text{AppellF1}[\tfrac{3}{2},-2(2+m),2(4+m),\tfrac{5}{2},\text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d x)]^2,-\text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d x)]^2])\,\text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d x)]^2)^2-$$

$$(\text{AppellF1}[\tfrac{1}{2},-2(2+m),9+2m,\tfrac{3}{2},\text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d x)]^2,-\text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d x)]^2]$$

$$(-(2(2+m)\,\text{AppellF1}[\tfrac{3}{2},-3-2m,9+2m,\tfrac{5}{2},\text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d x)]^2,-\text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d x)]^2]+$$

$$(9+2m)\,\text{AppellF1}[\tfrac{3}{2},-2(2+m),2(5+m),\tfrac{5}{2},\text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d x)]^2,-\text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d x)]^2])\,\text{Sec}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d x)]^2$$

$$\text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d x)]+3(-\frac{1}{6}(9+2m)\,\text{AppellF1}[\tfrac{3}{2},-2(2+m),10+2m,\tfrac{5}{2},\text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d x)]^2,$$

$$-\text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d x)]^2]\,\text{Sec}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d x)]^2\,\text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d x)]-\frac{1}{3}(2+m)\,\text{AppellF1}[\tfrac{3}{2},1-2(2+m),$$

$$9+2m,\tfrac{5}{2},\text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d x)]^2,-\text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d x)]^2]\,\text{Sec}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d x)]^2\,\text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d x)])-2$$

$$\text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d x)]^2\,(2(2+m)(-\frac{3}{10}(9+2m)\,\text{AppellF1}[\tfrac{5}{2},-3-2m,10+2m,\tfrac{7}{2},\text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d x)]^2,$$

$$-\mathrm{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Big]\,\mathrm{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\mathrm{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]+\frac{3}{10}\,(-3-2\,m)\,\mathrm{AppellF1}\Big[\frac{5}{2},-2-2\,m,$$

$$9+2\,m,\frac{7}{2},\mathrm{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Big]\,\mathrm{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\mathrm{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\Big)+$$

$$(9+2\,m)\,\Big(-\frac{3}{5}\,(5+m)\,\mathrm{AppellF1}\Big[\frac{5}{2},-2\,(2+m),1+2\,(5+m),\frac{7}{2},\mathrm{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Big]$$

$$\mathrm{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\mathrm{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]-\frac{3}{5}\,(2+m)\,\mathrm{AppellF1}\Big[\frac{5}{2},1-2\,(2+m),2\,(5+m),\frac{7}{2},$$

$$\mathrm{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Big]\,\mathrm{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\mathrm{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\Big)\Big)\Big)\Big)\Big)\Big/$$

$$\Big(3\,\mathrm{AppellF1}\Big[\frac{1}{2},-2\,(2+m),9+2\,m,\frac{3}{2},\mathrm{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Big]-2$$

$$\Big(2\,(2+m)\,\mathrm{AppellF1}\Big[\frac{3}{2},-3-2\,m,9+2\,m,\frac{5}{2},\mathrm{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Big]+(9+2\,m)$$

$$\mathrm{AppellF1}\Big[\frac{3}{2},-2\,(2+m),2\,(5+m),\frac{5}{2},\mathrm{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Big]\Big)\,\mathrm{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Big)^2-$$

$$\Big(2\,\mathrm{AppellF1}\Big[\frac{1}{2},-2\,(2+m),2\,(4+m),\frac{3}{2},\mathrm{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Big]\,\Big(1+\mathrm{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Big)$$

$$\Big(2\,\Big((2+m)\,\mathrm{AppellF1}\Big[\frac{3}{2},-3-2\,m,8+2\,m,\frac{5}{2},\mathrm{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Big]+$$

$$(4+m)\,\mathrm{AppellF1}\Big[\frac{3}{2},-2\,(2+m),9+2\,m,\frac{5}{2},\mathrm{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Big]\Big)\,\mathrm{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2$$

$$\mathrm{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]-3\,\Big(-\frac{1}{3}\,(4+m)\,\mathrm{AppellF1}\Big[\frac{3}{2},-2\,(2+m),1+2\,(4+m),\frac{5}{2},\mathrm{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,$$

$$-\mathrm{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Big]\,\mathrm{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\mathrm{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]-\frac{1}{3}\,(2+m)\,\mathrm{AppellF1}\Big[\frac{3}{2},1-2\,(2+m),$$

$$2\,(4+m),\frac{5}{2},\mathrm{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Big]\,\mathrm{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\mathrm{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\Big)+4$$

$$\mathrm{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Big((2+m)\,\Big(-\frac{3}{10}\,(8+2\,m)\,\mathrm{AppellF1}\Big[\frac{5}{2},-3-2\,m,9+2\,m,\frac{7}{2},\mathrm{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,$$

$$-\mathrm{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Big]\,\mathrm{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\mathrm{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]+\frac{3}{10}\,(-3-2\,m)\,\mathrm{AppellF1}\Big[\frac{5}{2},-2-2\,m,$$

$$8+2\,m,\frac{7}{2},\mathrm{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Big]\,\mathrm{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\mathrm{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\Big)+$$

$$(4+m)\,\Big(-\frac{3}{10}\,(9+2\,m)\,\mathrm{AppellF1}\Big[\frac{5}{2},-2\,(2+m),10+2\,m,\frac{7}{2},\mathrm{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Big]$$

$$\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2 \text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right] - \frac{3}{5}(2+m)\,\text{AppellF1}\left[\frac{5}{2},\,1-2(2+m),\,9+2m,\,\frac{7}{2},\right.$$

$$\left.\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right] \text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2 \text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\Bigg)\Bigg)\Bigg)\Bigg)\Bigg) \Big/$$

$$\Bigg(-3\,\text{AppellF1}\left[\frac{1}{2},\,-2(2+m),\,2(4+m),\,\frac{3}{2},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right] + 4$$

$$\Bigg((2+m)\,\text{AppellF1}\left[\frac{3}{2},\,-3-2m,\,8+2m,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right] +$$

$$(4+m)\,\text{AppellF1}\left[\frac{3}{2},\,-2(2+m),\,9+2m,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\Bigg) \text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Bigg)^2\Bigg)\Bigg)\Bigg)\Bigg)$$

- **Problem 351: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int \text{Cos}[c+d\,x]^2\,(a+a\,\text{Sin}[c+d\,x])^m\,dx$$

Optimal (type 5, 81 leaves, 3 steps):

$$-\frac{1}{3\,d}2^{\frac{3}{2}+m}\,a\,\text{Cos}[c+d\,x]^3\,\text{Hypergeometric2F1}\left[\frac{3}{2},\,-\frac{1}{2}-m,\,\frac{5}{2},\,\frac{1}{2}(1-\text{Sin}[c+d\,x])\right](1+\text{Sin}[c+d\,x])^{-\frac{1}{2}-m}(a+a\,\text{Sin}[c+d\,x])^{-1+m}$$

Result (type 6, 6167 leaves):

$$-\Bigg(\Bigg(192\left(\text{Cos}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)^{5+2m}\text{Cos}[c+d\,x]^2\,(a+a\,\text{Sin}[c+d\,x])^m\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]$$

$$\left(1-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)^{2(1+m)}\Bigg(-\Bigg(\text{AppellF1}\left[\frac{1}{2},\,-2(1+m),\,5+2m,\,\frac{3}{2},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right] \Big/$$

$$\Bigg(3\,\text{AppellF1}\left[\frac{1}{2},\,-2(1+m),\,5+2m,\,\frac{3}{2},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right] -$$

$$2\Bigg(2(1+m)\,\text{AppellF1}\left[\frac{3}{2},\,-1-2m,\,5+2m,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right] + (5+2m)$$

$$\text{AppellF1}\left[\frac{3}{2},\,-2(1+m),\,2(3+m),\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\Bigg) \text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Bigg)\Bigg) +$$

$$\Bigg(\text{AppellF1}\left[\frac{1}{2},\,-2(1+m),\,2(2+m),\,\frac{3}{2},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right] \text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Bigg) \Big/$$

$$\Bigg(3\,\text{AppellF1}\left[\frac{1}{2},\,-2(1+m),\,2(2+m),\,\frac{3}{2},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right] -$$

$$4\Bigg((1+m)\,\text{AppellF1}\left[\frac{3}{2},\,-1-2m,\,4+2m,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right] +$$

$$(2+m)\,\text{AppellF1}\left[\frac{3}{2},\,-2(1+m),\,5+2m,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\Bigg) \text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Bigg)\Bigg)\Big/$$

$$\left(d\left(48\,\text{Cos}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^8\left(\text{Cos}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)^{2\,m}\left(1-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)^{2\,(1+m)}\right.\right.$$

$$\left(-\left(\text{AppellF1}\left[\frac{1}{2},-2\,(1+m),5+2\,m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\right/\right.$$

$$\left(3\,\text{AppellF1}\left[\frac{1}{2},-2\,(1+m),5+2\,m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]-2\right.$$

$$\left(2\,(1+m)\,\text{AppellF1}\left[\frac{3}{2},-1-2\,m,5+2\,m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]+(5+2\,m)\right.$$

$$\left.\left.\text{AppellF1}\left[\frac{3}{2},-2\,(1+m),2\,(3+m),\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)\right)+$$

$$\left(\text{AppellF1}\left[\frac{1}{2},-2\,(1+m),2\,(2+m),\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)\Big/$$

$$\left(3\,\text{AppellF1}\left[\frac{1}{2},-2\,(1+m),2\,(2+m),\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]-\right.$$

$$4\left((1+m)\,\text{AppellF1}\left[\frac{3}{2},-1-2\,m,4+2\,m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]+\right.$$

$$\left.\left.\left.(2+m)\,\text{AppellF1}\left[\frac{3}{2},-2\,(1+m),5+2\,m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)\right)-$$

$$96\,(5+2\,m)\left(\text{Cos}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)^{4+2\,m}\text{Sin}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\left(1-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)^{2\,(1+m)}$$

$$\left(-\left(\text{AppellF1}\left[\frac{1}{2},-2\,(1+m),5+2\,m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\right/\right.$$

$$\left(3\,\text{AppellF1}\left[\frac{1}{2},-2\,(1+m),5+2\,m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]-2\right.$$

$$\left(2\,(1+m)\,\text{AppellF1}\left[\frac{3}{2},-1-2\,m,5+2\,m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]+(5+2\,m)\right.$$

$$\left.\left.\text{AppellF1}\left[\frac{3}{2},-2\,(1+m),2\,(3+m),\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)\right)+$$

$$\left(\text{AppellF1}\left[\frac{1}{2},-2\,(1+m),2\,(2+m),\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)\Big/$$

$$\left(3\,\text{AppellF1}\left[\frac{1}{2},-2\,(1+m),2\,(2+m),\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]-\right.$$

$$4\left((1+m)\,\text{AppellF1}\left[\frac{3}{2},-1-2\,m,4+2\,m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]+\right.$$

$$\left.\left.\left.(2+m)\,\text{AppellF1}\left[\frac{3}{2},-2\,(1+m),5+2\,m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)\right)-$$

$$192\,(1+m)\,\text{Cos}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^6\left(\text{Cos}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)^{2\,m}\text{Sin}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\left(1-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)^{-1+2\,(1+m)}$$

$$\Bigg(-\Bigg(\text{AppellF1}\left[\frac{1}{2},-2\,(1+m),5+2\,m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\Bigg/$$

$$\Bigg(3\,\text{AppellF1}\left[\frac{1}{2},-2\,(1+m),5+2\,m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]-2$$

$$\Bigg(2\,(1+m)\,\text{AppellF1}\left[\frac{3}{2},-1-2\,m,5+2\,m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]+(5+2\,m)$$

$$\text{AppellF1}\left[\frac{3}{2},-2\,(1+m),2\,(3+m),\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\Bigg)\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Bigg)\Bigg)+$$

$$\Bigg(\text{AppellF1}\left[\frac{1}{2},-2\,(1+m),2\,(2+m),\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\,\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Bigg)\Bigg/$$

$$\Bigg(3\,\text{AppellF1}\left[\frac{1}{2},-2\,(1+m),2\,(2+m),\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]-$$

$$4\,\Bigg((1+m)\,\text{AppellF1}\left[\frac{3}{2},-1-2\,m,4+2\,m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]+$$

$$(2+m)\,\text{AppellF1}\left[\frac{3}{2},-2\,(1+m),5+2\,m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\Bigg)\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Bigg)\Bigg)+$$

$$192\left(\text{Cos}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)^{5+2\,m}\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\left(1-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)^{2\,(1+m)}$$

$$\Bigg(-\Bigg(\Bigg(-\frac{1}{6}\,(5+2\,m)\,\text{AppellF1}\left[\frac{3}{2},-2\,(1+m),6+2\,m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]-\frac{1}{3}\,(1+m)\,\text{AppellF1}\Bigg[\frac{3}{2},1-2\,(1+m),5+2\,m,\frac{5}{2},$$

$$\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Bigg]\,\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\Bigg)\Bigg/$$

$$\Bigg(3\,\text{AppellF1}\left[\frac{1}{2},-2\,(1+m),5+2\,m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]-2$$

$$\Bigg(2\,(1+m)\,\text{AppellF1}\left[\frac{3}{2},-1-2\,m,5+2\,m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]+(5+2\,m)$$

$$\text{AppellF1}\left[\frac{3}{2},-2\,(1+m),2\,(3+m),\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\Bigg)\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Bigg)\Bigg)+$$

$$\Bigg(\text{AppellF1}\left[\frac{1}{2},-2\,(1+m),2\,(2+m),\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\,\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2$$

$$\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\Bigg)\Bigg/\Bigg(2\,\Bigg(3\,\text{AppellF1}\left[\frac{1}{2},-2\,(1+m),2\,(2+m),\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]-4$$

$$\left((1+m)\,\text{AppellF1}\left[\frac{3}{2},-1-2m,4+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]+\right.$$

$$\left.(2+m)\,\text{AppellF1}\left[\frac{3}{2},-2(1+m),5+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Bigg)+$$

$$\left(\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\left(-\frac{1}{3}(2+m)\,\text{AppellF1}\left[\frac{3}{2},-2(1+m),1+2(2+m),\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\right.\right.$$

$$\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]-\frac{1}{3}(1+m)\,\text{AppellF1}\left[\frac{3}{2},1-2(1+m),2(2+m),\frac{5}{2},\right.$$

$$\left.\left.\left.\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\right)\right)\Big/$$

$$\left(3\,\text{AppellF1}\left[\frac{1}{2},-2(1+m),2(2+m),\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]-\right.$$

$$4\left((1+m)\,\text{AppellF1}\left[\frac{3}{2},-1-2m,4+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]+\right.$$

$$\left.(2+m)\,\text{AppellF1}\left[\frac{3}{2},-2(1+m),5+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Bigg)+$$

$$\left(\text{AppellF1}\left[\frac{1}{2},-2(1+m),5+2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\right.$$

$$\left(-\left(2(1+m)\,\text{AppellF1}\left[\frac{3}{2},-1-2m,5+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]+\right.\right.$$

$$\left.(5+2m)\,\text{AppellF1}\left[\frac{3}{2},-2(1+m),2(3+m),\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\right)\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2$$

$$\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]+3\left(-\frac{1}{6}(5+2m)\,\text{AppellF1}\left[\frac{3}{2},-2(1+m),6+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\right.$$

$$\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]-\frac{1}{3}(1+m)\,\text{AppellF1}\left[\frac{3}{2},1-2(1+m),5+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\right.$$

$$\left.\left.-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\right)-2\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2$$

$$\left(2(1+m)\left(-\frac{3}{10}(5+2m)\,\text{AppellF1}\left[\frac{5}{2},-1-2m,6+2m,\frac{7}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\right.\right.$$

$$\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]+\frac{3}{10}(-1-2m)\,\text{AppellF1}\left[\frac{5}{2},-2m,5+2m,\frac{7}{2},\right.$$

$$\left.\left.\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\right)+$$

$$(5+2m)\left(-\frac{3}{5}(3+m)\,\text{AppellF1}\left[\frac{5}{2},-2(1+m),1+2(3+m),\frac{7}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\right.$$

$$\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]-\frac{3}{5}\,(1+m)\,\text{AppellF1}\Big[\frac{5}{2},\,1-2\,(1+m),\,2\,(3+m),\,\frac{7}{2},$$

$$\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Big]\,\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\Big)\Big)\Big)\Big)\Big)\Big/$$

$$\Big(3\,\text{AppellF1}\Big[\frac{1}{2},\,-2\,(1+m),\,5+2\,m,\,\frac{3}{2},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Big]-2$$

$$\Big(2\,(1+m)\,\text{AppellF1}\Big[\frac{3}{2},\,-1-2\,m,\,5+2\,m,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Big]+(5+2\,m)$$

$$\text{AppellF1}\Big[\frac{3}{2},\,-2\,(1+m),\,2\,(3+m),\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Big]\Big)\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Big)^2-$$

$$\Big(\text{AppellF1}\Big[\frac{1}{2},\,-2\,(1+m),\,2\,(2+m),\,\frac{3}{2},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Big]\,\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2$$

$$\Big(-2\,\Big((1+m)\,\text{AppellF1}\Big[\frac{3}{2},\,-1-2\,m,\,4+2\,m,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Big]+$$

$$(2+m)\,\text{AppellF1}\Big[\frac{3}{2},\,-2\,(1+m),\,5+2\,m,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Big]\Big)\,\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2$$

$$\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]+3\,\Big(-\frac{1}{3}\,(2+m)\,\text{AppellF1}\Big[\frac{3}{2},\,-2\,(1+m),\,1+2\,(2+m),\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,$$

$$-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Big]\,\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]-\frac{1}{3}\,(1+m)\,\text{AppellF1}\Big[\frac{3}{2},\,1-2\,(1+m),$$

$$2\,(2+m),\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Big]\,\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\Big)-4$$

$$\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Big((1+m)\,\Big(-\frac{3}{10}\,(4+2\,m)\,\text{AppellF1}\Big[\frac{5}{2},\,-1-2\,m,\,5+2\,m,\,\frac{7}{2},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,$$

$$-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Big]\,\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]+\frac{3}{10}\,(-1-2\,m)\,\text{AppellF1}\Big[\frac{5}{2},\,-2\,m,$$

$$4+2\,m,\,\frac{7}{2},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Big]\,\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\Big)+$$

$$(2+m)\,\Big(-\frac{3}{10}\,(5+2\,m)\,\text{AppellF1}\Big[\frac{5}{2},\,-2\,(1+m),\,6+2\,m,\,\frac{7}{2},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Big]$$

$$\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]-\frac{3}{5}\,(1+m)\,\text{AppellF1}\Big[\frac{5}{2},\,1-2\,(1+m),\,5+2\,m,\,\frac{7}{2},$$

$$\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Big]\,\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\Big)\Big)\Big)\Big)\Big)\Big/$$

$$\Big(3\,\text{AppellF1}\Big[\frac{1}{2},\,-2\,(1+m),\,2\,(2+m),\,\frac{3}{2},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Big]-4$$

$$\left((1+m)\,\text{AppellF1}\left[\frac{3}{2},-1-2m,4+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]+\right.$$

$$\left.(2+m)\,\text{AppellF1}\left[\frac{3}{2},-2(1+m),5+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Bigg)^2\Bigg)\Bigg)\Bigg)\Bigg)$$

- **Problem 352: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int \text{Sec}[c+d\,x]^2\,(a+a\,\text{Sin}[c+d\,x])^m\,dx$$

Optimal (type 5, 73 leaves, 3 steps):

$$\frac{1}{d}2^{-\frac{1}{2}+m}\,\text{Hypergeometric2F1}\left[-\frac{1}{2},\frac{3}{2}-m,\frac{1}{2},\frac{1}{2}(1-\text{Sin}[c+d\,x])\right]\text{Sec}[c+d\,x]\,(1+\text{Sin}[c+d\,x])^{\frac{1}{2}-m}\,(a+a\,\text{Sin}[c+d\,x])^m$$

Result (type 6, 12 061 leaves):

$$-\left(\left(\left(\text{Cot}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right](a+a\,\text{Sin}[c+d\,x])^m\left(1-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)^{2(-1+m)}\right.\right.\right.$$

$$\left(\frac{1}{1+\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2}\right)^{2m}\left(-\left(\left(5\,\text{AppellF1}\left[-\frac{1}{2},2-2m,2m,\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\right)\right/\right.$$

$$\left(\text{AppellF1}\left[-\frac{1}{2},2-2m,2m,\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]-\right.$$

$$4\left(m\,\text{AppellF1}\left[\frac{1}{2},2-2m,1+2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]+(-1+m)\right.$$

$$\left.\left.\left.\text{AppellF1}\left[\frac{1}{2},3-2m,2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)\right)+$$

$$\left(15\,\text{AppellF1}\left[\frac{1}{2},2-2m,2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)\Big/$$

$$\left(\text{AppellF1}\left[\frac{1}{2},2-2m,2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]-\right.$$

$$\frac{4}{3}\left(m\,\text{AppellF1}\left[\frac{3}{2},2-2m,1+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]+\right.$$

$$\left.\left.(-1+m)\,\text{AppellF1}\left[\frac{3}{2},3-2m,2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)+$$

$$\left(25\,\text{AppellF1}\left[\frac{3}{2},2-2m,2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^4\right)\Big/$$

$$\left(5\,\text{AppellF1}\left[\frac{3}{2},2-2m,2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]-\right.$$

$$4\left(m\,\text{AppellF1}\left[\frac{5}{2},2-2m,1+2m,\frac{7}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]+\right.$$

$$\left.(-1+m)\,\text{AppellF1}\left[\frac{5}{2},3-2m,2m,\frac{7}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Big)+$$

$$\left(7\,\text{AppellF1}\left[\frac{5}{2},2-2m,2m,\frac{7}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^6\right)\Big/$$

$$\left(7\,\text{AppellF1}\left[\frac{5}{2},2-2m,2m,\frac{7}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]-\right.$$

$$4\left(m\,\text{AppellF1}\left[\frac{7}{2},2-2m,1+2m,\frac{9}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]+\right.$$

$$\left.\left.(-1+m)\,\text{AppellF1}\left[\frac{7}{2},3-2m,2m,\frac{9}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)\right)\Big/$$

$$\left(20\,d\left(\text{Cos}\left[\frac{\pi}{4}+\frac{1}{2}\left(c-\frac{\pi}{2}+d\,x\right)\right]-\text{Sin}\left[\frac{\pi}{4}+\frac{1}{2}\left(c-\frac{\pi}{2}+d\,x\right)\right]\right)^2\left(\text{Cos}\left[\frac{\pi}{4}+\frac{1}{2}\left(c-\frac{\pi}{2}+d\,x\right)\right]+\text{Sin}\left[\frac{\pi}{4}+\frac{1}{2}\left(c-\frac{\pi}{2}+d\,x\right)\right]\right)^2\right.$$

$$\left(-\frac{1}{20}(-1+m)\,\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\left(1-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)^{-1+2(-1+m)}\left(\frac{1}{1+\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2}\right)^{2m}\right.$$

$$\left(-\left(\left(5\,\text{AppellF1}\left[-\frac{1}{2},2-2m,2m,\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\right)\Big/\right.\right.$$

$$\left(\text{AppellF1}\left[-\frac{1}{2},2-2m,2m,\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]-4\right.$$

$$\left(m\,\text{AppellF1}\left[\frac{1}{2},2-2m,1+2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]+\right.$$

$$\left.\left.(-1+m)\,\text{AppellF1}\left[\frac{1}{2},3-2m,2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)\right)+$$

$$\left(15\,\text{AppellF1}\left[\frac{1}{2},2-2m,2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)\Big/$$

$$\left(\text{AppellF1}\left[\frac{1}{2},2-2m,2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]-\right.$$

$$\frac{4}{3}\left(m\,\text{AppellF1}\left[\frac{3}{2},2-2m,1+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]+\right.$$

$$\left.(-1+m)\,\text{AppellF1}\left[\frac{3}{2},3-2m,2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Big)+$$

$$\left(25\,\text{AppellF1}\left[\frac{3}{2},\,2-2\,m,\,2\,m,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^4\right)\Big/$$

$$\left(5\,\text{AppellF1}\left[\frac{3}{2},\,2-2\,m,\,2\,m,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]-\right.$$

$$4\left(m\,\text{AppellF1}\left[\frac{5}{2},\,2-2\,m,\,1+2\,m,\,\frac{7}{2},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]+\right.$$

$$\left.\left.(-1+m)\,\text{AppellF1}\left[\frac{5}{2},\,3-2\,m,\,2\,m,\,\frac{7}{2},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)+$$

$$\left(7\,\text{AppellF1}\left[\frac{5}{2},\,2-2\,m,\,2\,m,\,\frac{7}{2},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^6\right)\Big/$$

$$\left(7\,\text{AppellF1}\left[\frac{5}{2},\,2-2\,m,\,2\,m,\,\frac{7}{2},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]-\right.$$

$$4\left(m\,\text{AppellF1}\left[\frac{7}{2},\,2-2\,m,\,1+2\,m,\,\frac{9}{2},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]+\right.$$

$$\left.\left.\left.(-1+m)\,\text{AppellF1}\left[\frac{7}{2},\,3-2\,m,\,2\,m,\,\frac{9}{2},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)\right)-$$

$$\frac{1}{80}\,\text{Csc}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\left(1-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)^{2\,(-1+m)}\left(\frac{1}{1+\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2}\right)^{2\,m}$$

$$\left(-\left(\left(5\,\text{AppellF1}\left[-\frac{1}{2},\,2-2\,m,\,2\,m,\,\frac{1}{2},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\right)\Big/\right.\right.$$

$$\left(\text{AppellF1}\left[-\frac{1}{2},\,2-2\,m,\,2\,m,\,\frac{1}{2},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]-4\right.$$

$$\left(m\,\text{AppellF1}\left[\frac{1}{2},\,2-2\,m,\,1+2\,m,\,\frac{3}{2},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]+\right.$$

$$\left.\left.\left.(-1+m)\,\text{AppellF1}\left[\frac{1}{2},\,3-2\,m,\,2\,m,\,\frac{3}{2},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)\right)+$$

$$\left(15\,\text{AppellF1}\left[\frac{1}{2},\,2-2\,m,\,2\,m,\,\frac{3}{2},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)\Big/$$

$$\left(\text{AppellF1}\left[\frac{1}{2},\,2-2\,m,\,2\,m,\,\frac{3}{2},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]-\right.$$

$$\frac{4}{3}\left(m\,\text{AppellF1}\left[\frac{3}{2},\,2-2\,m,\,1+2\,m,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]+\right.$$

$$\left.\left.(-1+m)\,\text{AppellF1}\left[\frac{3}{2},\,3-2\,m,\,2\,m,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)+$$

$$\left(25\,\text{AppellF1}\left[\frac{3}{2},2-2m,2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^4\right)\Big/$$

$$\left(5\,\text{AppellF1}\left[\frac{3}{2},2-2m,2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]-\right.$$

$$4\left(m\,\text{AppellF1}\left[\frac{5}{2},2-2m,1+2m,\frac{7}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]+\right.$$

$$\left.\left.(-1+m)\,\text{AppellF1}\left[\frac{5}{2},3-2m,2m,\frac{7}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)+$$

$$\left(7\,\text{AppellF1}\left[\frac{5}{2},2-2m,2m,\frac{7}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^6\right)\Big/$$

$$\left(7\,\text{AppellF1}\left[\frac{5}{2},2-2m,2m,\frac{7}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]-\right.$$

$$4\left(m\,\text{AppellF1}\left[\frac{7}{2},2-2m,1+2m,\frac{9}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]+\right.$$

$$\left.\left.\left.(-1+m)\,\text{AppellF1}\left[\frac{7}{2},3-2m,2m,\frac{9}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)\right)-$$

$$\frac{1}{20}\,m\,\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\left(1-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)^{2(-1+m)}\left(\frac{1}{1+\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2}\right)^{1+2m}$$

$$\left(-\left(\left(5\,\text{AppellF1}\left[-\frac{1}{2},2-2m,2m,\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\right)\Big/\right.\right.$$

$$\left(\text{AppellF1}\left[-\frac{1}{2},2-2m,2m,\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]-4\right.$$

$$\left(m\,\text{AppellF1}\left[\frac{1}{2},2-2m,1+2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]+\right.$$

$$\left.\left.\left.(-1+m)\,\text{AppellF1}\left[\frac{1}{2},3-2m,2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)\right)+$$

$$\left(15\,\text{AppellF1}\left[\frac{1}{2},2-2m,2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)\Big/$$

$$\left(\text{AppellF1}\left[\frac{1}{2},2-2m,2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]-\right.$$

$$\frac{4}{3}\left(m\,\text{AppellF1}\left[\frac{3}{2},2-2m,1+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]+\right.$$

$$\left.\left.(-1+m)\,\text{AppellF1}\left[\frac{3}{2},3-2m,2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)+$$

$$\left(25\,\text{AppellF1}\left[\frac{3}{2},\,2-2\,m,\,2\,m,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^4\right)\Big/$$

$$\left(5\,\text{AppellF1}\left[\frac{3}{2},\,2-2\,m,\,2\,m,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]-\right.$$

$$4\left(m\,\text{AppellF1}\left[\frac{5}{2},\,2-2\,m,\,1+2\,m,\,\frac{7}{2},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]+\right.$$

$$\left.\left.(-1+m)\,\text{AppellF1}\left[\frac{5}{2},\,3-2\,m,\,2\,m,\,\frac{7}{2},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)+$$

$$\left(7\,\text{AppellF1}\left[\frac{5}{2},\,2-2\,m,\,2\,m,\,\frac{7}{2},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^6\right)\Big/$$

$$\left(7\,\text{AppellF1}\left[\frac{5}{2},\,2-2\,m,\,2\,m,\,\frac{7}{2},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]-\right.$$

$$4\left(m\,\text{AppellF1}\left[\frac{7}{2},\,2-2\,m,\,1+2\,m,\,\frac{9}{2},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]+\right.$$

$$\left.\left.(-1+m)\,\text{AppellF1}\left[\frac{7}{2},\,3-2\,m,\,2\,m,\,\frac{9}{2},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)\right)+$$

$$\frac{1}{20}\,\text{Cot}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\left(1-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)^{2\,(-1+m)}\left(\frac{1}{1+\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2}\right)^{2\,m}$$

$$\left(-\left(\left(5\left(m\,\text{AppellF1}\left[\frac{1}{2},\,2-2\,m,\,1+2\,m,\,\frac{3}{2},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\,\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right.\right.\right.\right.$$

$$\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]-\frac{1}{2}\,(2-2\,m)\,\text{AppellF1}\left[\frac{1}{2},\,3-2\,m,\,2\,m,\,\frac{3}{2},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]$$

$$\left.\left.\left.\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\right)\right)\Big/\left(\text{AppellF1}\left[-\frac{1}{2},\,2-2\,m,\,2\,m,\,\frac{1}{2},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\right.\right.$$

$$\left.-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]-4\left(m\,\text{AppellF1}\left[\frac{1}{2},\,2-2\,m,\,1+2\,m,\,\frac{3}{2},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]+\right.$$

$$\left.\left.\left.(-1+m)\,\text{AppellF1}\left[\frac{1}{2},\,3-2\,m,\,2\,m,\,\frac{3}{2},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)\right)+$$

$$\left(15\,\text{AppellF1}\left[\frac{1}{2},\,2-2\,m,\,2\,m,\,\frac{3}{2},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\,\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\right)\Big/$$

$$\left(2\left(\text{AppellF1}\left[\frac{1}{2},\,2-2\,m,\,2\,m,\,\frac{3}{2},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]-\frac{4}{3}\right.\right.$$

$$\left(m\,\text{AppellF1}\left[\frac{3}{2},\,2-2\,m,\,1+2\,m,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]+\right.$$

$$(-1+m)\,\text{AppellF1}\Big[\frac{3}{2},\,3-2m,\,2m,\,\frac{5}{2},\,\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big)\Big)+$$

$$\Big(15\,\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\,\Big(-\frac{1}{3}\,m\,\text{AppellF1}\Big[\frac{3}{2},\,2-2m,\,1+2m,\,\frac{5}{2},\,\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]$$

$$\text{Sec}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]+\frac{1}{6}\,(2-2m)\,\text{AppellF1}\Big[\frac{3}{2},\,3-2m,\,2m,\,\frac{5}{2},$$

$$\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]\Big)\Big)\Big)\Big/$$

$$\Big(\text{AppellF1}\Big[\frac{1}{2},\,2-2m,\,2m,\,\frac{3}{2},\,\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]-$$

$$\frac{4}{3}\Big(m\,\text{AppellF1}\Big[\frac{3}{2},\,2-2m,\,1+2m,\,\frac{5}{2},\,\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]+$$

$$(-1+m)\,\text{AppellF1}\Big[\frac{3}{2},\,3-2m,\,2m,\,\frac{5}{2},\,\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big)+$$

$$\Big(25\,\text{AppellF1}\Big[\frac{3}{2},\,2-2m,\,2m,\,\frac{5}{2},\,\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^3\Big)\Big/$$

$$\Big(5\,\text{AppellF1}\Big[\frac{3}{2},\,2-2m,\,2m,\,\frac{5}{2},\,\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]-$$

$$4\,\Big(m\,\text{AppellF1}\Big[\frac{5}{2},\,2-2m,\,1+2m,\,\frac{7}{2},\,\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]+$$

$$(-1+m)\,\text{AppellF1}\Big[\frac{5}{2},\,3-2m,\,2m,\,\frac{7}{2},\,\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big)+$$

$$\Big(25\,\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^4\,\Big(-\frac{3}{5}\,m\,\text{AppellF1}\Big[\frac{5}{2},\,2-2m,\,1+2m,\,\frac{7}{2},\,\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]$$

$$\text{Sec}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]+\frac{3}{10}\,(2-2m)\,\text{AppellF1}\Big[\frac{5}{2},\,3-2m,\,2m,\,\frac{7}{2},$$

$$\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]\Big)\Big)\Big)\Big/$$

$$\Big(5\,\text{AppellF1}\Big[\frac{3}{2},\,2-2m,\,2m,\,\frac{5}{2},\,\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]-$$

$$4\,\Big(m\,\text{AppellF1}\Big[\frac{5}{2},\,2-2m,\,1+2m,\,\frac{7}{2},\,\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]+$$

$$(-1+m)\,\text{AppellF1}\Big[\frac{5}{2},\,3-2m,\,2m,\,\frac{7}{2},\,\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big)+$$

$$\Big(21\,\text{AppellF1}\Big[\frac{5}{2},\,2-2m,\,2m,\,\frac{7}{2},\,\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^5\Big)\Big/$$

$$\Bigg(2\,\bigg(7\,\text{AppellF1}\left[\frac{5}{2},\,2-2m,\,2m,\,\frac{7}{2},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]-4$$

$$\bigg(m\,\text{AppellF1}\left[\frac{7}{2},\,2-2m,\,1+2m,\,\frac{9}{2},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]+$$

$$(-1+m)\,\text{AppellF1}\left[\frac{7}{2},\,3-2m,\,2m,\,\frac{9}{2},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\bigg)\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\bigg)+$$

$$\bigg(7\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^6\,\bigg(-\frac{5}{7}\,m\,\text{AppellF1}\left[\frac{7}{2},\,2-2m,\,1+2m,\,\frac{9}{2},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]+\frac{5}{14}\,(2-2m)\,\text{AppellF1}\left[\frac{7}{2},\,3-2m,\,2m,\,\frac{9}{2},\right.$$

$$\left.\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\,\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\bigg)\bigg)\Bigg)\Bigg/$$

$$\bigg(7\,\text{AppellF1}\left[\frac{5}{2},\,2-2m,\,2m,\,\frac{7}{2},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]-$$

$$4\,\bigg(m\,\text{AppellF1}\left[\frac{7}{2},\,2-2m,\,1+2m,\,\frac{9}{2},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]+$$

$$(-1+m)\,\text{AppellF1}\left[\frac{7}{2},\,3-2m,\,2m,\,\frac{9}{2},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\bigg)\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\bigg)+$$

$$\bigg(5\,\text{AppellF1}\left[-\frac{1}{2},\,2-2m,\,2m,\,\frac{1}{2},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\,\bigg(m\,\text{AppellF1}\left[\frac{1}{2},\,2-2m,\,1+2m,\right.$$

$$\left.\frac{3}{2},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\,\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]-\frac{1}{2}\,(2-2m)$$

$$\text{AppellF1}\left[\frac{1}{2},\,3-2m,\,2m,\,\frac{3}{2},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\,\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2$$

$$\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]-2\,\bigg(m\,\text{AppellF1}\left[\frac{1}{2},\,2-2m,\,1+2m,\,\frac{3}{2},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]+$$

$$(-1+m)\,\text{AppellF1}\left[\frac{1}{2},\,3-2m,\,2m,\,\frac{3}{2},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\bigg)\,\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2$$

$$\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]-4\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\,\bigg(m\,\bigg(-\frac{1}{6}\,(1+2m)\,\text{AppellF1}\left[\frac{3}{2},\,2-2m,\,2+2m,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\right.$$

$$\left.-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\,\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]+\frac{1}{6}\,(2-2m)\,\text{AppellF1}\left[\frac{3}{2},\,3-2m,\,1+2m,\right.$$

$$\left.\frac{5}{2},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\,\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\bigg)+(-1+m)$$

$$\bigg(-\frac{1}{3}\,m\,\text{AppellF1}\left[\frac{3}{2},\,3-2m,\,1+2m,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\,\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2$$

$$\operatorname{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]+\frac{1}{6}(3-2 m) \operatorname{AppellF1}\left[\frac{3}{2}, 4-2 m, 2 m, \frac{5}{2}, \operatorname{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2,-\operatorname{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right]$$

$$\left.\left.\left.\left.\left.\operatorname{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2 \operatorname{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]\right)\right)\right)\right)\right) \Big/ \left(\operatorname{AppellF1}\left[-\frac{1}{2}, 2-2 m, 2 m, \frac{1}{2}, \operatorname{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2,\right.\right.$$

$$\left.-\operatorname{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right]-4\left(m \operatorname{AppellF1}\left[\frac{1}{2}, 2-2 m, 1+2 m, \frac{3}{2}, \operatorname{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2,-\operatorname{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right]+\right.$$

$$\left.\left.(-1+m) \operatorname{AppellF1}\left[\frac{1}{2}, 3-2 m, 2 m, \frac{3}{2}, \operatorname{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2,-\operatorname{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right]\right) \operatorname{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right)^2-$$

$$\left(15 \operatorname{AppellF1}\left[\frac{1}{2}, 2-2 m, 2 m, \frac{3}{2}, \operatorname{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2,-\operatorname{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right] \operatorname{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right.$$

$$\left(-\frac{1}{3} m \operatorname{AppellF1}\left[\frac{3}{2}, 2-2 m, 1+2 m, \frac{5}{2}, \operatorname{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2,-\operatorname{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right] \operatorname{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2 \operatorname{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-\right.\right.\right.$$

$$\left.\left.d x\right)\right]+\frac{1}{6}(2-2 m) \operatorname{AppellF1}\left[\frac{3}{2}, 3-2 m, 2 m, \frac{5}{2}, \operatorname{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2,-\operatorname{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right] \operatorname{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2$$

$$\operatorname{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]-\frac{2}{3}\left(m \operatorname{AppellF1}\left[\frac{3}{2}, 2-2 m, 1+2 m, \frac{5}{2}, \operatorname{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2,-\operatorname{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right]+\right.$$

$$\left.(-1+m) \operatorname{AppellF1}\left[\frac{3}{2}, 3-2 m, 2 m, \frac{5}{2}, \operatorname{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2,-\operatorname{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right]\right) \operatorname{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2$$

$$\operatorname{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]-\frac{4}{3} \operatorname{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\left(m\left(-\frac{3}{10}(1+2 m) \operatorname{AppellF1}\left[\frac{5}{2}, 2-2 m, 2+2 m, \frac{7}{2}, \operatorname{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2,\right.\right.\right.$$

$$\left.-\operatorname{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right] \operatorname{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2 \operatorname{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]+\frac{3}{10}(2-2 m) \operatorname{AppellF1}\left[\frac{5}{2}, 3-2 m, 1+2 m,\right.$$

$$\left.\left.\frac{7}{2}, \operatorname{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2,-\operatorname{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right] \operatorname{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2 \operatorname{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]\right)+(-1+m)$$

$$\left(-\frac{3}{5} m \operatorname{AppellF1}\left[\frac{5}{2}, 3-2 m, 1+2 m, \frac{7}{2}, \operatorname{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2,-\operatorname{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right] \operatorname{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right.$$

$$\operatorname{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]+\frac{3}{10}(3-2 m) \operatorname{AppellF1}\left[\frac{5}{2}, 4-2 m, 2 m, \frac{7}{2}, \operatorname{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2,-\operatorname{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right]$$

$$\left.\left.\left.\left.\left.\operatorname{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2 \operatorname{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]\right)\right)\right)\right)\right) \Big/ \left(\operatorname{AppellF1}\left[\frac{1}{2}, 2-2 m, 2 m, \frac{3}{2}, \operatorname{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2,\right.\right.$$

$$\left.-\operatorname{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right]-\frac{4}{3}\left(m \operatorname{AppellF1}\left[\frac{3}{2}, 2-2 m, 1+2 m, \frac{5}{2}, \operatorname{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2,-\operatorname{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right]+\right.$$

$$\left.\left.(-1+m) \operatorname{AppellF1}\left[\frac{3}{2}, 3-2 m, 2 m, \frac{5}{2}, \operatorname{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2,-\operatorname{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right]\right) \operatorname{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right)^2-$$

$$\left(25 \operatorname{AppellF1}\left[\frac{3}{2}, 2-2 m, 2 m, \frac{5}{2}, \operatorname{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2,-\operatorname{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right] \operatorname{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^4\right.$$

$$\Bigg(-2\,\Big(m\,\text{AppellF1}\Big[\frac{5}{2},\,2-2m,\,1+2m,\,\frac{7}{2},\,\text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2\Big]+(-1+m)\,\text{AppellF1}\Big[\frac{5}{2},\,3-2m,$$

$$2m,\,\frac{7}{2},\,\text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2\Big]\Big)\,\text{Sec}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]+5$$

$$\Big(-\frac{3}{5}\,m\,\text{AppellF1}\Big[\frac{5}{2},\,2-2m,\,1+2m,\,\frac{7}{2},\,\text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2$$

$$\text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]+\frac{3}{10}\,(2-2m)\,\text{AppellF1}\Big[\frac{5}{2},\,3-2m,\,2m,\,\frac{7}{2},\,\text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2\Big]$$

$$\text{Sec}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]\Big)-4\,\text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2\,\Big(m\,\Big(-\frac{5}{14}\,(1+2m)\,\text{AppellF1}\Big[\frac{7}{2},\,2-2m,$$

$$2+2m,\,\frac{9}{2},\,\text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]+$$

$$\frac{5}{14}\,(2-2m)\,\text{AppellF1}\Big[\frac{7}{2},\,3-2m,\,1+2m,\,\frac{9}{2},\,\text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2$$

$$\text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]\Big)+(-1+m)\,\Big(-\frac{5}{7}\,m\,\text{AppellF1}\Big[\frac{7}{2},\,3-2m,\,1+2m,\,\frac{9}{2},\,\text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2,$$

$$-\text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]+\frac{5}{14}\,(3-2m)\,\text{AppellF1}\Big[\frac{7}{2},\,4-2m,$$

$$2m,\,\frac{9}{2},\,\text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]\Big)\Big)\Big)\Bigg)\Bigg/$$

$$\Big(5\,\text{AppellF1}\Big[\frac{3}{2},\,2-2m,\,2m,\,\frac{5}{2},\,\text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2\Big]-4\,\Big(m\,\text{AppellF1}\Big[\frac{5}{2},\,2-2m,$$

$$1+2m,\,\frac{7}{2},\,\text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2\Big]+(-1+m)$$

$$\text{AppellF1}\Big[\frac{5}{2},\,3-2m,\,2m,\,\frac{7}{2},\,\text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2\Big)^2-$$

$$\Big(7\,\text{AppellF1}\Big[\frac{5}{2},\,2-2m,\,2m,\,\frac{7}{2},\,\text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2\Big]\,\text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^6$$

$$\Big(-2\,\Big(m\,\text{AppellF1}\Big[\frac{7}{2},\,2-2m,\,1+2m,\,\frac{9}{2},\,\text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2\Big]+$$

$$(-1+m)\,\text{AppellF1}\Big[\frac{7}{2},\,3-2m,\,2m,\,\frac{9}{2},\,\text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2\Big]\Big)\,\text{Sec}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2$$

$$\text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]+7\,\Big(-\frac{5}{7}\,m\,\text{AppellF1}\Big[\frac{7}{2},\,2-2m,\,1+2m,\,\frac{9}{2},\,\text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2\Big]$$

$$\text{Sec}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]+\frac{5}{14}\,(2-2m)\,\text{AppellF1}\Big[\frac{7}{2},\,3-2m,\,2m,\,\frac{9}{2},\,\text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2,$$

$$-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Big]\,\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\Big]\Big)-4\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2$$

$$\Big(m\,\Big(-\frac{7}{18}\,(1+2\,m)\,\text{AppellF1}\Big[\frac{9}{2},\,2-2\,m,\,2+2\,m,\,\frac{11}{2},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Big]$$

$$\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\Big]+\frac{7}{18}\,(2-2\,m)\,\text{AppellF1}\Big[\frac{9}{2},\,3-2\,m,\,1+2\,m,\,\frac{11}{2},$$

$$\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Big]\,\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\Big]\Big)+$$

$$(-1+m)\,\Big(-\frac{7}{9}\,m\,\text{AppellF1}\Big[\frac{9}{2},\,3-2\,m,\,1+2\,m,\,\frac{11}{2},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Big]$$

$$\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\Big]+\frac{7}{18}\,(3-2\,m)\,\text{AppellF1}\Big[\frac{9}{2},\,4-2\,m,\,2\,m,\,\frac{11}{2},$$

$$\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Big]\,\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\Big]\Big)\Big)\Big)\Big)\Big)\Big/$$

$$\Big(7\,\text{AppellF1}\Big[\frac{5}{2},\,2-2\,m,\,2\,m,\,\frac{7}{2},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Big]-4\,\Big(m\,\text{AppellF1}\Big[\frac{7}{2},\,2-2\,m,$$

$$1+2\,m,\,\frac{9}{2},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Big]+(-1+m)$$

$$\text{AppellF1}\Big[\frac{7}{2},\,3-2\,m,\,2\,m,\,\frac{9}{2},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Big]\Big)\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Big)^2\Big)\Big)\Big)\Big)$$

- **Problem 353: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int \text{Sec}[c+d\,x]^4\,(a+a\,\text{Sin}[c+d\,x])^m\,dx$$

Optimal (type 5, 83 leaves, 3 steps):

$$\frac{1}{3\,a\,d}2^{-\frac{3}{2}+m}\,\text{Hypergeometric2F1}\Big[-\frac{3}{2},\,\frac{5}{2}-m,\,-\frac{1}{2},\,\frac{1}{2}\,(1-\text{Sin}[c+d\,x])\Big]\,\text{Sec}[c+d\,x]^3\,(1+\text{Sin}[c+d\,x])^{\frac{1}{2}-m}\,(a+a\,\text{Sin}[c+d\,x])^{1+m}$$

Result (type 6, 3545 leaves):

$$\Big(\text{AppellF1}\Big[-\frac{3}{2},\,4-2\,m,\,-7+2\,m,\,-\frac{1}{2},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Big]$$

$$\text{Cos}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^{2\,m}\text{Csc}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^{13}\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\,(a+a\,\text{Sin}[c+d\,x])^m\Big)\Big/$$

$$\Big(192\,d\,\left(-1+\text{Cot}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)^4\Big(2\,(-7+2\,m)\,\text{AppellF1}\Big[-\frac{1}{2},\,4-2\,m,\,-6+2\,m,\,\frac{1}{2},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Big]+$$

$$4\,(-2+m)\,\text{AppellF1}\Big[-\frac{1}{2},\,5-2\,m,\,-7+2\,m,\,\frac{1}{2},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Big]+$$

$$\text{AppellF1}\left[-\frac{3}{2},4-2m,-7+2m,-\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right]\text{Cot}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\Bigg)$$

$$\left(\text{Cos}\left[\frac{\pi}{4}+\frac{1}{2}\left(c-\frac{\pi}{2}+d x\right)\right]-\text{Sin}\left[\frac{\pi}{4}+\frac{1}{2}\left(c-\frac{\pi}{2}+d x\right)\right]\right)^4\left(\text{Cos}\left[\frac{\pi}{4}+\frac{1}{2}\left(c-\frac{\pi}{2}+d x\right)\right]+\text{Sin}\left[\frac{\pi}{4}+\frac{1}{2}\left(c-\frac{\pi}{2}+d x\right)\right]\right)^4$$

$$\Bigg(\Bigg(13\,\text{AppellF1}\left[-\frac{3}{2},4-2m,-7+2m,-\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right]\text{Cos}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]^{2m}\text{Csc}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^{14}\Bigg)\Big/$$

$$\Bigg(768\left(-1+\text{Cot}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right)^4\Bigg(2(-7+2m)\,\text{AppellF1}\left[-\frac{1}{2},4-2m,-6+2m,\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right]+$$

$$4(-2+m)\,\text{AppellF1}\left[-\frac{1}{2},5-2m,-7+2m,\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right]+$$

$$\text{AppellF1}\left[-\frac{3}{2},4-2m,-7+2m,-\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right]\text{Cot}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\Bigg)\Bigg)-$$

$$\Bigg(\text{AppellF1}\left[-\frac{3}{2},4-2m,-7+2m,-\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right]\text{Cos}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]^{2m}\text{Csc}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^{16}\Bigg)\Big/$$

$$\Bigg(96\left(-1+\text{Cot}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right)^5\Bigg(2(-7+2m)\,\text{AppellF1}\left[-\frac{1}{2},4-2m,-6+2m,\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right]+$$

$$4(-2+m)\,\text{AppellF1}\left[-\frac{1}{2},5-2m,-7+2m,\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right]+$$

$$\text{AppellF1}\left[-\frac{3}{2},4-2m,-7+2m,-\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right]\text{Cot}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\Bigg)\Bigg)-$$

$$\Bigg(\text{AppellF1}\left[-\frac{3}{2},4-2m,-7+2m,-\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right]\text{Cos}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]^{2m}$$

$$\text{Csc}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^{12}\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\Bigg)\Big/$$

$$\Bigg(768\left(-1+\text{Cot}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right)^4\Bigg(2(-7+2m)\,\text{AppellF1}\left[-\frac{1}{2},4-2m,-6+2m,\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right]+$$

$$4(-2+m)\,\text{AppellF1}\left[-\frac{1}{2},5-2m,-7+2m,\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right]+$$

$$\text{AppellF1}\left[-\frac{3}{2},4-2m,-7+2m,-\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right]\text{Cot}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\Bigg)\Bigg)+$$

$$\Bigg(m\,\text{AppellF1}\left[-\frac{3}{2},4-2m,-7+2m,-\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right]\text{Cos}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]^{-1+2m}$$

$$\text{Csc}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^{13}\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]\text{Sin}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]\Bigg)\Big/$$

$$\Bigg(192\left(-1+\text{Cot}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right)^4\Bigg(2(-7+2m)\,\text{AppellF1}\left[-\frac{1}{2},4-2m,-6+2m,\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right]+$$

$$4\,(-2+m)\,\text{AppellF1}\Big[-\frac{1}{2},\,5-2\,m,\,-7+2\,m,\,\frac{1}{2},\,\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]+$$

$$\text{AppellF1}\Big[-\frac{3}{2},\,4-2\,m,\,-7+2\,m,\,-\frac{1}{2},\,\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]\,\text{Cot}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big)\Big)-$$

$$\Big(\text{Cos}\Big[\frac{1}{2}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^{2\,m}\,\text{Csc}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^{13}\,\text{Sec}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]\,\Big(-\frac{3}{2}\,(-7+2\,m)\,\text{AppellF1}\Big[-\frac{1}{2},\,4-2\,m,\,-6+2\,m,\,\frac{1}{2},$$

$$\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]+\frac{3}{2}\,(4-2\,m)\,\text{AppellF1}\Big[-\frac{1}{2},$$

$$5-2\,m,\,-7+2\,m,\,\frac{1}{2},\,\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]\Big)\Big)\Big/$$

$$\Big(192\,\Big(-1+\text{Cot}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big)^4\,\Big(2\,(-7+2\,m)\,\text{AppellF1}\Big[-\frac{1}{2},\,4-2\,m,\,-6+2\,m,\,\frac{1}{2},\,\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]+$$

$$4\,(-2+m)\,\text{AppellF1}\Big[-\frac{1}{2},\,5-2\,m,\,-7+2\,m,\,\frac{1}{2},\,\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]+$$

$$\text{AppellF1}\Big[-\frac{3}{2},\,4-2\,m,\,-7+2\,m,\,-\frac{1}{2},\,\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]\,\text{Cot}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big)\Big)+$$

$$\Big(\text{AppellF1}\Big[-\frac{3}{2},\,4-2\,m,\,-7+2\,m,\,-\frac{1}{2},\,\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]\,\text{Cos}\Big[\frac{1}{2}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^{2\,m}\,\text{Csc}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^{13}$$

$$\text{Sec}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]\,\Big(-\frac{1}{2}\,\text{AppellF1}\Big[-\frac{3}{2},\,4-2\,m,\,-7+2\,m,\,-\frac{1}{2},\,\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]\,\text{Cot}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]$$

$$\text{Csc}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2+\text{Cot}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\,\Big(-\frac{3}{2}\,(-7+2\,m)\,\text{AppellF1}\Big[-\frac{1}{2},\,4-2\,m,\,-6+2\,m,\,\frac{1}{2},\,\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2,$$

$$-\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]+\frac{3}{2}\,(4-2\,m)\,\text{AppellF1}\Big[-\frac{1}{2},\,5-2\,m,\,-7+$$

$$2\,m,\,\frac{1}{2},\,\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]\Big)+$$

$$2\,(-7+2\,m)\,\Big(\frac{1}{2}\,(-6+2\,m)\,\text{AppellF1}\Big[\frac{1}{2},\,4-2\,m,\,-5+2\,m,\,\frac{3}{2},\,\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2$$

$$\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]-\frac{1}{2}\,(4-2\,m)\,\text{AppellF1}\Big[\frac{1}{2},\,5-2\,m,\,-6+2\,m,\,\frac{3}{2},\,\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]$$

$$\text{Sec}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]\Big)+4\,(-2+m)\,\Big(\frac{1}{2}\,(-7+2\,m)\,\text{AppellF1}\Big[\frac{1}{2},\,5-2\,m,\,-6+2\,m,\,\frac{3}{2},$$

$$\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]-\frac{1}{2}\,(5-2\,m)\,\text{AppellF1}\Big[\frac{1}{2},\,6-$$

$$2\,m,\,-7+2\,m,\,\frac{3}{2},\,\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]\Big)\Big)\Big)\Big)\Big/$$

$$\left(192\left(-1+\text{Cot}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)^4\left(2\,(-7+2\,m)\,\text{AppellF1}\left[-\frac{1}{2},4-2\,m,-6+2\,m,\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]+\right.\right.$$
$$4\,(-2+m)\,\text{AppellF1}\left[-\frac{1}{2},5-2\,m,-7+2\,m,\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]+$$
$$\left.\left.\text{AppellF1}\left[-\frac{3}{2},4-2\,m,-7+2\,m,-\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\text{Cot}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)^2\right)\right)\right)$$

- **Problem 354: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int (e\,\text{Cos}[c+d\,x])^{5/2}\,(a+a\,\text{Sin}[c+d\,x])^m\,dx$$

Optimal (type 5, 88 leaves, 3 steps):

$$-\frac{1}{7\,d\,e}2^{\frac{11}{4}+m}\,a\,(e\,\text{Cos}[c+d\,x])^{7/2}\,\text{Hypergeometric2F1}\left[\frac{7}{4},-\frac{3}{4}-m,\frac{11}{4},\frac{1}{2}\,(1-\text{Sin}[c+d\,x])\right]\,(1+\text{Sin}[c+d\,x])^{-\frac{3}{4}-m}\,(a+a\,\text{Sin}[c+d\,x])^{-1+m}$$

Result (type 6, 32 821 leaves): Display of huge result suppressed!

- **Problem 355: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int (e\,\text{Cos}[c+d\,x])^{3/2}\,(a+a\,\text{Sin}[c+d\,x])^m\,dx$$

Optimal (type 5, 88 leaves, 3 steps):

$$-\frac{1}{5\,d\,e}2^{\frac{9}{4}+m}\,a\,(e\,\text{Cos}[c+d\,x])^{5/2}\,\text{Hypergeometric2F1}\left[\frac{5}{4},-\frac{1}{4}-m,\frac{9}{4},\frac{1}{2}\,(1-\text{Sin}[c+d\,x])\right]\,(1+\text{Sin}[c+d\,x])^{-\frac{1}{4}-m}\,(a+a\,\text{Sin}[c+d\,x])^{-1+m}$$

Result (type 6, 13 703 leaves):

$$\left(64\,\text{Cos}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^{-2\,m}(e\,\text{Cos}[c+d\,x])^{3/2}\,(a+a\,\text{Sin}[c+d\,x])^m\right.$$
$$\left(\text{Cos}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^{2\,m}\text{Cos}[c+d\,x]^{7/2}+\text{Cos}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^{2\,m}\text{Cos}[c+d\,x]^{3/2}\,\text{Sin}[c+d\,x]^2\right)$$
$$\left(1-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)^{2\,m}\left(\frac{1}{1+\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2}\right)^{3+2\,m}\sqrt{\frac{\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^3}{\left(1+\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)^2}}$$
$$\left(\left(25\,\text{AppellF1}\left[\frac{1}{4},-\frac{1}{2}-2\,m,3+2\,m,\frac{5}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)\right)\right/$$
$$\left(-5\,\text{AppellF1}\left[\frac{1}{4},-\frac{1}{2}-2\,m,3+2\,m,\frac{5}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]+\right.$$
$$2\left((6+4\,m)\,\text{AppellF1}\left[\frac{5}{4},-\frac{1}{2}-2\,m,4+2\,m,\frac{9}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]+\right.$$

$$(1+4m)\,\text{AppellF1}\left[\frac{5}{4},\ \frac{1}{2}-2m,\ 3+2m,\ \frac{9}{4},\ \text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\Big)+$$

$$\left(25\,\text{AppellF1}\left[\frac{1}{4},\ -\frac{1}{2}-2m,\ 4+2m,\ \frac{5}{4},\ \text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]\right)\Big/$$

$$\Big(5\,\text{AppellF1}\left[\frac{1}{4},\ -\frac{1}{2}-2m,\ 4+2m,\ \frac{5}{4},\ \text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]-$$

$$2\Big(4(2+m)\,\text{AppellF1}\left[\frac{5}{4},\ -\frac{1}{2}-2m,\ 5+2m,\ \frac{9}{4},\ \text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]+$$

$$(1+4m)\,\text{AppellF1}\left[\frac{5}{4},\ \frac{1}{2}-2m,\ 4+2m,\ \frac{9}{4},\ \text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]\Big)\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\Big)+$$

$$9\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\Big(-\Big(\Big(\text{AppellF1}\left[\frac{5}{4},\ -\frac{1}{2}-2m,\ 3+2m,\ \frac{9}{4},\ \text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]$$

$$\left(1+\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right)\Big)\Big/\Big(-9\,\text{AppellF1}\left[\frac{5}{4},\ -\frac{1}{2}-2m,\ 3+2m,\ \frac{9}{4},\ \text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]+$$

$$2\Big((6+4m)\,\text{AppellF1}\left[\frac{9}{4},\ -\frac{1}{2}-2m,\ 4+2m,\ \frac{13}{4},\ \text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]+$$

$$(1+4m)\,\text{AppellF1}\left[\frac{9}{4},\ \frac{1}{2}-2m,\ 3+2m,\ \frac{13}{4},\ \text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]\Big)\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\Big)\Big)+$$

$$\text{AppellF1}\left[\frac{5}{4},\ -\frac{1}{2}-2m,\ 4+2m,\ \frac{9}{4},\ \text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]\Big/$$

$$\Big(-9\,\text{AppellF1}\left[\frac{5}{4},\ -\frac{1}{2}-2m,\ 4+2m,\ \frac{9}{4},\ \text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]+$$

$$2\Big(4(2+m)\,\text{AppellF1}\left[\frac{9}{4},\ -\frac{1}{2}-2m,\ 5+2m,\ \frac{13}{4},\ \text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]+$$

$$(1+4m)\,\text{AppellF1}\left[\frac{9}{4},\ \frac{1}{2}-2m,\ 4+2m,\ \frac{13}{4},\ \text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]\Big)\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\Big)\Big)\Big)\Big)\Big/$$

$$\Big(5\,d\,\text{Cos}[c+dx]^{3/2}\Big(\frac{64}{5}\,m\,\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]\left(1-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right)^{-1+2m}$$

$$\left(\frac{1}{1+\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2}\right)^{3+2\,m}\sqrt{\frac{\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^3}{\left(1+\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)^2}}$$

$$\Bigg(\bigg(25\,\text{AppellF1}\left[\frac{1}{4},-\frac{1}{2}-2\,m,3+2\,m,\frac{5}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)\bigg)\Big/$$

$$\left(-5\,\text{AppellF1}\left[\frac{1}{4},-\frac{1}{2}-2\,m,3+2\,m,\frac{5}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]+\right.$$

$$2\left((6+4\,m)\,\text{AppellF1}\left[\frac{5}{4},-\frac{1}{2}-2\,m,4+2\,m,\frac{9}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]+\right.$$

$$\left.\left.(1+4\,m)\,\text{AppellF1}\left[\frac{5}{4},\frac{1}{2}-2\,m,3+2\,m,\frac{9}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)+$$

$$\left(25\,\text{AppellF1}\left[\frac{1}{4},-\frac{1}{2}-2\,m,4+2\,m,\frac{5}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\right)\Big/$$

$$\left(5\,\text{AppellF1}\left[\frac{1}{4},-\frac{1}{2}-2\,m,4+2\,m,\frac{5}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]-\right.$$

$$2\left(4\,(2+m)\,\text{AppellF1}\left[\frac{5}{4},-\frac{1}{2}-2\,m,5+2\,m,\frac{9}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]+\right.$$

$$\left.\left.(1+4\,m)\,\text{AppellF1}\left[\frac{5}{4},\frac{1}{2}-2\,m,4+2\,m,\frac{9}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)+$$

$$9\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Bigg(-\bigg(\Big(\text{AppellF1}\left[\frac{5}{4},-\frac{1}{2}-2\,m,3+2\,m,\frac{9}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]$$

$$\left(1+\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)\Big)\Big/\Big(-9\,\text{AppellF1}\left[\frac{5}{4},-\frac{1}{2}-2\,m,3+2\,m,\frac{9}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]+$$

$$2\left((6+4\,m)\,\text{AppellF1}\left[\frac{9}{4},-\frac{1}{2}-2\,m,4+2\,m,\frac{13}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]+(1+4\,m)\,\text{AppellF1}\left[\frac{9}{4},\frac{1}{2}-\right.\right.$$

$$\left.\left.2\,m,3+2\,m,\frac{13}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Big)\bigg)+\text{AppellF1}\left[\frac{5}{4},-\frac{1}{2}-2\,m,\right.$$

$$\left.4+2\,m,\frac{9}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\Big/\Big(-9\,\text{AppellF1}\left[\frac{5}{4},-\frac{1}{2}-2\,m,4+2\,m,\frac{9}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\right.$$

$$\left.-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]+2\left(4\,(2+m)\,\text{AppellF1}\left[\frac{9}{4},-\frac{1}{2}-2\,m,5+2\,m,\frac{13}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]+\right.$$

$$\left.(1+4\,m)\,\text{AppellF1}\left[\frac{9}{4},\frac{1}{2}-2\,m,4+2\,m,\frac{13}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Big)\Bigg)\Bigg)+$$

$$\frac{32}{5}(3+2m)\,\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\left(1-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)^{2m}\left(\frac{1}{1+\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2}\right)^{4+2m}$$

$$\sqrt{\frac{\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^3}{\left(1+\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)^2}}$$

$$\Bigg(\Bigg(25\,\text{AppellF1}\left[\frac{1}{4},-\frac{1}{2}-2m,3+2m,\frac{5}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)\Bigg)\Big/$$

$$\Bigg(-5\,\text{AppellF1}\left[\frac{1}{4},-\frac{1}{2}-2m,3+2m,\frac{5}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]+$$

$$2\Bigg((6+4m)\,\text{AppellF1}\left[\frac{5}{4},-\frac{1}{2}-2m,4+2m,\frac{9}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]+$$

$$(1+4m)\,\text{AppellF1}\left[\frac{5}{4},\frac{1}{2}-2m,3+2m,\frac{9}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\Bigg)\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Bigg)+$$

$$\Bigg(25\,\text{AppellF1}\left[\frac{1}{4},-\frac{1}{2}-2m,4+2m,\frac{5}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\Bigg)\Big/$$

$$\Bigg(5\,\text{AppellF1}\left[\frac{1}{4},-\frac{1}{2}-2m,4+2m,\frac{5}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]-$$

$$2\Bigg(4(2+m)\,\text{AppellF1}\left[\frac{5}{4},-\frac{1}{2}-2m,5+2m,\frac{9}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]+$$

$$(1+4m)\,\text{AppellF1}\left[\frac{5}{4},\frac{1}{2}-2m,4+2m,\frac{9}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\Bigg)\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Bigg)+$$

$$9\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Bigg(-\Bigg(\Bigg(\text{AppellF1}\left[\frac{5}{4},-\frac{1}{2}-2m,3+2m,\frac{9}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]$$

$$\left(1+\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)\Bigg)\Big/\Bigg(-9\,\text{AppellF1}\left[\frac{5}{4},-\frac{1}{2}-2m,3+2m,\frac{9}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]+$$

$$2\Bigg((6+4m)\,\text{AppellF1}\left[\frac{9}{4},-\frac{1}{2}-2m,4+2m,\frac{13}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]+$$

$$(1+4m)\,\text{AppellF1}\left[\frac{9}{4},\frac{1}{2}-2m,3+2m,\frac{13}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\Bigg)\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Bigg)\Bigg)+$$

$$\text{AppellF1}\left[\frac{5}{4},-\frac{1}{2}-2m,4+2m,\frac{9}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\Big/$$

$$\Bigg(-9\,\text{AppellF1}\left[\frac{5}{4},-\frac{1}{2}-2m,4+2m,\frac{9}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]+$$

$$2\left(4\,(2+m)\,\text{AppellF1}\left[\frac{9}{4},-\frac{1}{2}-2m,5+2m,\frac{13}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]+\right.$$

$$\left.(1+4m)\,\text{AppellF1}\left[\frac{9}{4},\frac{1}{2}-2m,4+2m,\frac{13}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\Bigg)\Bigg)\Bigg)-$$

$$\frac{1}{5\sqrt{\frac{\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^3}{\left(1+\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right)^2}}}\,32\left(1-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right)^{2m}\left(\frac{1}{1+\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2}\right)^{3+2m}$$

$$\left(\frac{\frac{1}{4}\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2-\frac{3}{4}\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2}{\left(1+\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right)^2}-\right.$$

$$\left.\frac{\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]\left(\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^3\right)}{\left(1+\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right)^3}\right)$$

$$\Bigg(\Bigg(25\,\text{AppellF1}\left[\frac{1}{4},-\frac{1}{2}-2m,3+2m,\frac{5}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right)\Bigg)\Bigg/$$

$$\left(-5\,\text{AppellF1}\left[\frac{1}{4},-\frac{1}{2}-2m,3+2m,\frac{5}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]+\right.$$

$$2\left((6+4m)\,\text{AppellF1}\left[\frac{5}{4},-\frac{1}{2}-2m,4+2m,\frac{9}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]+(1+4m)\right.$$

$$\left.\left.\text{AppellF1}\left[\frac{5}{4},\frac{1}{2}-2m,3+2m,\frac{9}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right)+$$

$$\left(25\,\text{AppellF1}\left[\frac{1}{4},-\frac{1}{2}-2m,4+2m,\frac{5}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]\right)\Bigg/$$

$$\left(5\,\text{AppellF1}\left[\frac{1}{4},-\frac{1}{2}-2m,4+2m,\frac{5}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]-\right.$$

$$2\left(4\,(2+m)\,\text{AppellF1}\left[\frac{5}{4},-\frac{1}{2}-2m,5+2m,\frac{9}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]+(1+4m)\right.$$

$$\left.\left.\text{AppellF1}\left[\frac{5}{4},\frac{1}{2}-2m,4+2m,\frac{9}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right)+$$

$$9\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\Bigg(-\Bigg(\Bigg(\text{AppellF1}\left[\frac{5}{4},-\frac{1}{2}-2m,3+2m,\frac{9}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]$$

$$\left(1+\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right)\Bigg)\Bigg/\left(-9\,\text{AppellF1}\left[\frac{5}{4},-\frac{1}{2}-2m,3+2m,\frac{9}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]+\right.$$

$$2\left((6+4m)\,\text{AppellF1}\left[\frac{9}{4},-\frac{1}{2}-2m,4+2m,\frac{13}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]+\right.$$

$$\left.(1+4m)\,\text{AppellF1}\left[\frac{9}{4},\frac{1}{2}-2m,3+2m,\frac{13}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\Bigg)\Bigg)+$$

$$\text{AppellF1}\left[\frac{5}{4},-\frac{1}{2}-2m,4+2m,\frac{9}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]\Big/$$

$$\left(-9\,\text{AppellF1}\left[\frac{5}{4},-\frac{1}{2}-2m,4+2m,\frac{9}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]+2\right.$$

$$\left(4(2+m)\,\text{AppellF1}\left[\frac{9}{4},-\frac{1}{2}-2m,5+2m,\frac{13}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]+\right.$$

$$\left.\left.(1+4m)\,\text{AppellF1}\left[\frac{9}{4},\frac{1}{2}-2m,4+2m,\frac{13}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right)\Bigg)\Bigg)-$$

$$\frac{64}{5}\left(1-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right)^{2m}\left(\frac{1}{1+\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2}\right)^{3+2m}\sqrt{\frac{\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^3}{\left(1+\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right)^2}}$$

$$\left(\left(25\,\text{AppellF1}\left[\frac{1}{4},-\frac{1}{2}-2m,3+2m,\frac{5}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]\right)\Big/\right.$$

$$\left(2\left(-5\,\text{AppellF1}\left[\frac{1}{4},-\frac{1}{2}-2m,3+2m,\frac{5}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]+\right.\right.$$

$$2\left((6+4m)\,\text{AppellF1}\left[\frac{5}{4},-\frac{1}{2}-2m,4+2m,\frac{9}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]+\right.$$

$$\left.\left.(1+4m)\,\text{AppellF1}\left[\frac{5}{4},\frac{1}{2}-2m,3+2m,\frac{9}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right)\right)+$$

$$\left(25\left(-\frac{1}{10}(3+2m)\,\text{AppellF1}\left[\frac{5}{4},-\frac{1}{2}-2m,4+2m,\frac{9}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right.\right.$$

$$\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]+\frac{1}{10}\left(-\frac{1}{2}-2m\right)\text{AppellF1}\left[\frac{5}{4},\frac{1}{2}-2m,3+2m,\frac{9}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]$$

$$\left.\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]\right)\left(1+\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right)\Bigg)\Big/$$

$$\left(-5\,\text{AppellF1}\left[\frac{1}{4},-\frac{1}{2}-2m,3+2m,\frac{5}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]+\right.$$

$$2\left((6+4m)\,\text{AppellF1}\left[\frac{5}{4},-\frac{1}{2}-2m,4+2m,\frac{9}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]+\right.$$

$$\left.(1+4m)\,\text{AppellF1}\left[\frac{5}{4},\frac{1}{2}-2m,3+2m,\frac{9}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\Bigg)+$$

$$\left(25\left(-\frac{1}{10}(4+2m)\,\text{AppellF1}\left[\frac{5}{4},-\frac{1}{2}-2m,5+2m,\frac{9}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]\right.\right.$$

$$\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]+\frac{1}{10}\left(\frac{1}{2}-2m\right)\text{AppellF1}\left[\frac{5}{4},\frac{1}{2}-2m,4+2m,\frac{9}{4},\right.$$

$$\left.\left.\left.\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]\right)\right)\Big/$$

$$\left(5\,\text{AppellF1}\left[\frac{1}{4},-\frac{1}{2}-2m,4+2m,\frac{5}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]-\right.$$

$$2\left(4(2+m)\,\text{AppellF1}\left[\frac{5}{4},-\frac{1}{2}-2m,5+2m,\frac{9}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]+(1+4m)\,\text{AppellF1}\left[\frac{5}{4},\frac{1}{2}-2m,\right.\right.$$

$$\left.\left.4+2m,\frac{9}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right)+\frac{9}{2}\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2$$

$$\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]\left(-\left(\left(\text{AppellF1}\left[\frac{5}{4},-\frac{1}{2}-2m,3+2m,\frac{9}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]\right.\right.\right.$$

$$\left.\left(1+\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right)\right)\Big/\left(-9\,\text{AppellF1}\left[\frac{5}{4},-\frac{1}{2}-2m,3+2m,\frac{9}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]+\right.$$

$$2\left((6+4m)\,\text{AppellF1}\left[\frac{9}{4},-\frac{1}{2}-2m,4+2m,\frac{13}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]+\right.$$

$$\left.\left.\left.(1+4m)\,\text{AppellF1}\left[\frac{9}{4},\frac{1}{2}-2m,3+2m,\frac{13}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right)\right)+$$

$$\text{AppellF1}\left[\frac{5}{4},-\frac{1}{2}-2m,4+2m,\frac{9}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]\Big/$$

$$\left(-9\,\text{AppellF1}\left[\frac{5}{4},-\frac{1}{2}-2m,4+2m,\frac{9}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]+\right.$$

$$2\left(4(2+m)\,\text{AppellF1}\left[\frac{9}{4},-\frac{1}{2}-2m,5+2m,\frac{13}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]+\right.$$

$$\left.\left.(1+4m)\,\text{AppellF1}\left[\frac{9}{4},\frac{1}{2}-2m,4+2m,\frac{13}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right)\right)-$$

$$\left(25\,\text{AppellF1}\left[\frac{1}{4},-\frac{1}{2}-2m,3+2m,\frac{5}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right)\right.$$

$$\left(\left((6+4m)\,\text{AppellF1}\left[\frac{5}{4},-\frac{1}{2}-2m,4+2m,\frac{9}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]+(1+4m)\,\text{AppellF1}\left[\frac{5}{4},\right.\right.\right.$$

$$\left.\left.\frac{1}{2}-2m,3+2m,\frac{9}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]\right)\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]-$$

$$5\left(-\frac{1}{10}(3+2m)\,\text{AppellF1}\left[\frac{5}{4},-\frac{1}{2}-2m,4+2m,\frac{9}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right.$$

$$\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]+\frac{1}{10}\left(-\frac{1}{2}-2\,m\right)\text{AppellF1}\left[\frac{5}{4},\frac{1}{2}-2\,m,3+2\,m,\frac{9}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]$$
$$\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\Bigg)+2\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Bigg((6+4\,m)\left(-\frac{5}{18}(4+2\,m)\,\text{AppellF1}\left[\frac{9}{4},-\frac{1}{2}-2\,m,\right.\right.$$
$$5+2\,m,\frac{13}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Bigg]\,\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]+$$
$$\frac{5}{18}\left(-\frac{1}{2}-2\,m\right)\text{AppellF1}\left[\frac{9}{4},\frac{1}{2}-2\,m,4+2\,m,\frac{13}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2$$
$$\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\Bigg)+(1+4\,m)\left(-\frac{5}{18}(3+2\,m)\,\text{AppellF1}\left[\frac{9}{4},\frac{1}{2}-2\,m,4+2\,m,\frac{13}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\right.\right.$$
$$-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Bigg]\,\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]+\frac{5}{18}\left(\frac{1}{2}-2\,m\right)\text{AppellF1}\left[\frac{9}{4},\frac{3}{2}-2\,m,\right.$$
$$3+2\,m,\frac{13}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Bigg]\,\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\Bigg)\Bigg)\Bigg)\Bigg)\Bigg/$$
$$\Bigg(-5\,\text{AppellF1}\left[\frac{1}{4},-\frac{1}{2}-2\,m,3+2\,m,\frac{5}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]+$$
$$2\Bigg((6+4\,m)\,\text{AppellF1}\left[\frac{5}{4},-\frac{1}{2}-2\,m,4+2\,m,\frac{9}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]+$$
$$(1+4\,m)\,\text{AppellF1}\left[\frac{5}{4},\frac{1}{2}-2\,m,3+2\,m,\frac{9}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\Bigg)\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Bigg)^2-$$
$$\Bigg(25\,\text{AppellF1}\left[\frac{1}{4},-\frac{1}{2}-2\,m,4+2\,m,\frac{5}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]$$
$$\Bigg(-\Bigg(4\,(2+m)\,\text{AppellF1}\left[\frac{5}{4},-\frac{1}{2}-2\,m,5+2\,m,\frac{9}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]+(1+4\,m)\,\text{AppellF1}\left[\frac{5}{4},\right.$$
$$\frac{1}{2}-2\,m,4+2\,m,\frac{9}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Bigg]\Bigg)\,\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]+$$
$$5\left(-\frac{1}{10}(4+2\,m)\,\text{AppellF1}\left[\frac{5}{4},-\frac{1}{2}-2\,m,5+2\,m,\frac{9}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\right.$$
$$\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]+\frac{1}{10}\left(-\frac{1}{2}-2\,m\right)\text{AppellF1}\left[\frac{5}{4},\frac{1}{2}-2\,m,4+2\,m,\frac{9}{4},\right.$$
$$\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Bigg]\,\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\Bigg)-$$
$$2\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Bigg(4\,(2+m)\left(-\frac{5}{18}(5+2\,m)\,\text{AppellF1}\left[\frac{9}{4},-\frac{1}{2}-2\,m,6+2\,m,\frac{13}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\right.\right.$$
$$-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Bigg]\,\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]+\frac{5}{18}\left(-\frac{1}{2}-2\,m\right)\text{AppellF1}\left[\frac{9}{4},\frac{1}{2}-2\,m,\right.$$

$$5+2\,m,\ \frac{13}{4},\ \text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2\Big]\ \text{Sec}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2\ \text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]\Big)\ +$$

$$(1+4\,m)\ \Big(-\frac{5}{18}\ (4+2\,m)\ \text{AppellF1}\Big[\frac{9}{4},\ \frac{1}{2}-2\,m,\ 5+2\,m,\ \frac{13}{4},\ \text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2\Big]$$

$$\text{Sec}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2\ \text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]+\frac{5}{18}\left(\frac{1}{2}-2\,m\right)\ \text{AppellF1}\Big[\frac{9}{4},\ \frac{3}{2}-2\,m,\ 4+2\,m,\ \frac{13}{4},$$

$$\text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2\Big]\ \text{Sec}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2\ \text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]\Big)\Big)\Big)\Big)\Big/$$

$$\Big(5\ \text{AppellF1}\Big[\frac{1}{4},\ -\frac{1}{2}-2\,m,\ 4+2\,m,\ \frac{5}{4},\ \text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2\Big]-2\ \Big(4\ (2+m)\ \text{AppellF1}\Big[\frac{5}{4},$$

$$-\frac{1}{2}-2\,m,\ 5+2\,m,\ \frac{9}{4},\ \text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2\Big]+(1+4\,m)\ \text{AppellF1}\Big[\frac{5}{4},\ \frac{1}{2}-2\,m,\ 4+2\,m,$$

$$\frac{9}{4},\ \text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2\Big]\Big)\ \text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2\Big)^2+9\ \text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2$$

$$\Big(-\Big(\Big(\text{AppellF1}\Big[\frac{5}{4},\ -\frac{1}{2}-2\,m,\ 3+2\,m,\ \frac{9}{4},\ \text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2\Big]\ \text{Sec}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2$$

$$\text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]\Big)\Big/\ \Big(2\ \Big(-9\ \text{AppellF1}\Big[\frac{5}{4},\ -\frac{1}{2}-2\,m,\ 3+2\,m,\ \frac{9}{4},\ \text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2\Big]+$$

$$2\ \Big((6+4\,m)\ \text{AppellF1}\Big[\frac{9}{4},\ -\frac{1}{2}-2\,m,\ 4+2\,m,\ \frac{13}{4},\ \text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2\Big]+(1+4\,m)$$

$$\text{AppellF1}\Big[\frac{9}{4},\ \frac{1}{2}-2\,m,\ 3+2\,m,\ \frac{13}{4},\ \text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2\Big]\Big)\ \text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2\Big)\Big)\Big)-$$

$$\Big(\Big(-\frac{5}{18}\ (3+2\,m)\ \text{AppellF1}\Big[\frac{9}{4},\ -\frac{1}{2}-2\,m,\ 4+2\,m,\ \frac{13}{4},\ \text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2\Big]$$

$$\text{Sec}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2\ \text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]+\frac{5}{18}\left(-\frac{1}{2}-2\,m\right)\ \text{AppellF1}\Big[\frac{9}{4},\ \frac{1}{2}-2\,m,\ 3+2\,m,\ \frac{13}{4},\ \text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2,$$

$$-\text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2\Big]\ \text{Sec}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2\ \text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]\Big)\ \Big(1+\text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2\Big)\Big)\Big/$$

$$\Big(-9\ \text{AppellF1}\Big[\frac{5}{4},\ -\frac{1}{2}-2\,m,\ 3+2\,m,\ \frac{9}{4},\ \text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2\Big]+$$

$$2\ \Big((6+4\,m)\ \text{AppellF1}\Big[\frac{9}{4},\ -\frac{1}{2}-2\,m,\ 4+2\,m,\ \frac{13}{4},\ \text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2\Big]+$$

$$(1+4\,m)\ \text{AppellF1}\Big[\frac{9}{4},\ \frac{1}{2}-2\,m,\ 3+2\,m,\ \frac{13}{4},\ \text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2\Big]\Big)\ \text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2\Big)+$$

$$\Big(-\frac{5}{18}\ (4+2\,m)\ \text{AppellF1}\Big[\frac{9}{4},\ -\frac{1}{2}-2\,m,\ 5+2\,m,\ \frac{13}{4},\ \text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2\Big]\ \text{Sec}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2$$

$$\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]+\frac{5}{18}\left(-\frac{1}{2}-2\,m\right)\text{AppellF1}\left[\frac{9}{4},\frac{1}{2}-2\,m,4+2\,m,\frac{13}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]$$
$$\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\Bigg)\Bigg)\Bigg/\left(-9\,\text{AppellF1}\left[\frac{5}{4},-\frac{1}{2}-2\,m,4+2\,m,\frac{9}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\right.\right.$$
$$-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Bigg]+2\Bigg(4\,(2+m)\,\text{AppellF1}\left[\frac{9}{4},-\frac{1}{2}-2\,m,5+2\,m,\frac{13}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]+$$
$$(1+4\,m)\,\text{AppellF1}\left[\frac{9}{4},\frac{1}{2}-2\,m,4+2\,m,\frac{13}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\Bigg)\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Bigg)+$$
$$\left(\text{AppellF1}\left[\frac{5}{4},-\frac{1}{2}-2\,m,3+2\,m,\frac{9}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)\right)$$
$$\Bigg(\Bigg((6+4\,m)\,\text{AppellF1}\left[\frac{9}{4},-\frac{1}{2}-2\,m,4+2\,m,\frac{13}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]+(1+4\,m)\,\text{AppellF1}\Bigg[\frac{9}{4},$$
$$\frac{1}{2}-2\,m,3+2\,m,\frac{13}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Bigg]\Bigg)\,\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]-$$
$$9\left(-\frac{5}{18}\,(3+2\,m)\,\text{AppellF1}\left[\frac{9}{4},-\frac{1}{2}-2\,m,4+2\,m,\frac{13}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\right.$$
$$\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]+\frac{5}{18}\left(-\frac{1}{2}-2\,m\right)\text{AppellF1}\Bigg[\frac{9}{4},\frac{1}{2}-2\,m,3+2\,m,\frac{13}{4},$$
$$\left.\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Bigg]\,\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\right)+$$
$$2\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Bigg((6+4\,m)\left(-\frac{9}{26}\,(4+2\,m)\,\text{AppellF1}\left[\frac{13}{4},-\frac{1}{2}-2\,m,5+2\,m,\frac{17}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\right.\right.$$
$$-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Bigg]\,\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]+\frac{9}{26}\left(-\frac{1}{2}-2\,m\right)\text{AppellF1}\Bigg[\frac{13}{4},\frac{1}{2}-2\,m,$$
$$\left.4+2\,m,\frac{17}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Bigg]\,\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\right)+$$
$$(1+4\,m)\left(-\frac{9}{26}\,(3+2\,m)\,\text{AppellF1}\left[\frac{13}{4},\frac{1}{2}-2\,m,4+2\,m,\frac{17}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\right.$$
$$\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]+\frac{9}{26}\left(\frac{1}{2}-2\,m\right)\text{AppellF1}\Bigg[\frac{13}{4},\frac{3}{2}-2\,m,3+2\,m,\frac{17}{4},$$
$$\left.\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Bigg]\,\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\right)\Bigg)\Bigg)\Bigg)\Bigg/$$
$$\left(-9\,\text{AppellF1}\left[\frac{5}{4},-\frac{1}{2}-2\,m,3+2\,m,\frac{9}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]+\right.$$
$$2\left((6+4\,m)\,\text{AppellF1}\left[\frac{9}{4},-\frac{1}{2}-2\,m,4+2\,m,\frac{13}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]+\right.$$

$$(1+4\,m)\,\text{AppellF1}\left[\frac{9}{4},\,\frac{1}{2}-2\,m,\,3+2\,m,\,\frac{13}{4},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\right)\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Big)^2-$$

$$\Big(\text{AppellF1}\left[\frac{5}{4},\,-\frac{1}{2}-2\,m,\,4+2\,m,\,\frac{9}{4},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]$$

$$\Big(\Big(4\,(2+m)\,\text{AppellF1}\left[\frac{9}{4},\,-\frac{1}{2}-2\,m,\,5+2\,m,\,\frac{13}{4},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]+(1+4\,m)\,\text{AppellF1}\left[\frac{9}{4},\right.$$

$$\left.\frac{1}{2}-2\,m,\,4+2\,m,\,\frac{13}{4},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\Big)\,\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]-$$

$$9\,\Big(-\frac{5}{18}\,(4+2\,m)\,\text{AppellF1}\left[\frac{9}{4},\,-\frac{1}{2}-2\,m,\,5+2\,m,\,\frac{13}{4},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]+\frac{5}{18}\left(-\frac{1}{2}-2\,m\right)\,\text{AppellF1}\left[\frac{9}{4},\,\frac{1}{2}-2\,m,\,4+2\,m,\,\frac{13}{4},\right.$$

$$\left.\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\,\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\Big)+$$

$$2\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\,\Big(4\,(2+m)\,\Big(-\frac{9}{26}\,(5+2\,m)\,\text{AppellF1}\left[\frac{13}{4},\,-\frac{1}{2}-2\,m,\,6+2\,m,\,\frac{17}{4},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\right.$$

$$\left.-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\,\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]+\frac{9}{26}\left(-\frac{1}{2}-2\,m\right)\,\text{AppellF1}\left[\frac{13}{4},\,\frac{1}{2}-2\,m,\right.$$

$$\left.5+2\,m,\,\frac{17}{4},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\,\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\Big)+$$

$$(1+4\,m)\,\Big(-\frac{9}{26}\,(4+2\,m)\,\text{AppellF1}\left[\frac{13}{4},\,\frac{1}{2}-2\,m,\,5+2\,m,\,\frac{17}{4},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]+\frac{9}{26}\left(\frac{1}{2}-2\,m\right)\,\text{AppellF1}\left[\frac{13}{4},\,\frac{3}{2}-2\,m,\,4+2\,m,\,\frac{17}{4},\right.$$

$$\left.\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\,\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\Big)\Big)\Big)\Big)\Big)\Big/$$

$$\Big(-9\,\text{AppellF1}\left[\frac{5}{4},\,-\frac{1}{2}-2\,m,\,4+2\,m,\,\frac{9}{4},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]+$$

$$2\,\Big(4\,(2+m)\,\text{AppellF1}\left[\frac{9}{4},\,-\frac{1}{2}-2\,m,\,5+2\,m,\,\frac{13}{4},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]+(1+4\,m)$$

$$\text{AppellF1}\left[\frac{9}{4},\frac{1}{2}-2m,4+2m,\frac{13}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\Bigg)^2\Bigg)\Bigg)\Bigg)$$

Problem 356: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\sqrt{e\,\text{Cos}[c+d\,x]}\,(a+a\,\text{Sin}[c+d\,x])^m\,dx$$

Optimal (type 5, 88 leaves, 3 steps):

$$-\frac{1}{3de}2^{\frac{7}{4}+m}a\,(e\,\text{Cos}[c+d\,x])^{3/2}\,\text{Hypergeometric2F1}\left[\frac{3}{4},\frac{1}{4}-m,\frac{7}{4},\frac{1}{2}(1-\text{Sin}[c+d\,x])\right](1+\text{Sin}[c+d\,x])^{\frac{1}{4}-m}(a+a\,\text{Sin}[c+d\,x])^{-1+m}$$

Result (type 6, 3061 leaves):

$$-\Bigg(\Bigg(28\,\text{AppellF1}\left[\frac{3}{4},-\frac{1}{2}-2m,2+2m,\frac{7}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]$$

$$\text{Cos}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-dx\right)\right]^{2m}\sqrt{\text{Cos}[c+d\,x]}\,\sqrt{e\,\text{Cos}[c+d\,x]}\,\text{Sin}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-dx\right)\right](a+a\,\text{Sin}[c+d\,x])^m\Bigg)\Big/$$

$$\Bigg(d\,\Bigg(21\,\text{AppellF1}\left[\frac{3}{4},-\frac{1}{2}-2m,2+2m,\frac{7}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]-6$$

$$\Bigg(4\,(1+m)\,\text{AppellF1}\left[\frac{7}{4},-\frac{1}{2}-2m,3+2m,\frac{11}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]+$$

$$(1+4m)\,\text{AppellF1}\left[\frac{7}{4},\frac{1}{2}-2m,2+2m,\frac{11}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]\Bigg)\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\Bigg)$$

$$\Bigg(\Bigg(14\,\text{AppellF1}\left[\frac{3}{4},-\frac{1}{2}-2m,2+2m,\frac{7}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]\text{Cos}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-dx\right)\right]^{1+2m}\sqrt{\text{Cos}[c+d\,x]}\Bigg)\Big/$$

$$\Bigg(21\,\text{AppellF1}\left[\frac{3}{4},-\frac{1}{2}-2m,2+2m,\frac{7}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]-$$

$$6\,\Bigg(4\,(1+m)\,\text{AppellF1}\left[\frac{7}{4},-\frac{1}{2}-2m,3+2m,\frac{11}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]+$$

$$(1+4m)\,\text{AppellF1}\left[\frac{7}{4},\frac{1}{2}-2m,2+2m,\frac{11}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]\Bigg)\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\Bigg)-$$

$$\Bigg(28\,m\,\text{AppellF1}\left[\frac{3}{4},-\frac{1}{2}-2m,2+2m,\frac{7}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]\text{Cos}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-dx\right)\right]^{-1+2m}$$

$$\sqrt{\text{Cos}[c+d\,x]}\,\text{Sin}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\Bigg)\Big/\Bigg(21\,\text{AppellF1}\left[\frac{3}{4},-\frac{1}{2}-2m,2+2m,\frac{7}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]-$$

$$6\Big(4\,(1+m)\,\text{AppellF1}\Big[\frac{7}{4},-\frac{1}{2}-2\,m,3+2\,m,\frac{11}{4},\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]+$$

$$(1+4\,m)\,\text{AppellF1}\Big[\frac{7}{4},\frac{1}{2}-2\,m,2+2\,m,\frac{11}{4},\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big)+$$

$$\Big(14\,\text{AppellF1}\Big[\frac{3}{4},-\frac{1}{2}-2\,m,2+2\,m,\frac{7}{4},\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]\,\text{Cos}\Big[\frac{1}{2}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^{2\,m}\,\text{Sin}\Big[\frac{1}{2}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]$$

$$\text{Sin}[c+d\,x]\Big)\Big/\Big(\sqrt{\text{Cos}[c+d\,x]}\,\Big(21\,\text{AppellF1}\Big[\frac{3}{4},-\frac{1}{2}-2\,m,2+2\,m,\frac{7}{4},\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]-$$

$$6\Big(4\,(1+m)\,\text{AppellF1}\Big[\frac{7}{4},-\frac{1}{2}-2\,m,3+2\,m,\frac{11}{4},\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]+(1+4\,m)$$

$$\text{AppellF1}\Big[\frac{7}{4},\frac{1}{2}-2\,m,2+2\,m,\frac{11}{4},\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big)\Big)+$$

$$\Big(28\,\text{Cos}\Big[\frac{1}{2}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^{2\,m}\sqrt{\text{Cos}[c+d\,x]}\,\text{Sin}\Big[\frac{1}{2}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]\,\Big(-\frac{3}{14}\,(2+2\,m)\,\text{AppellF1}\Big[\frac{7}{4},-\frac{1}{2}-2\,m,3+2\,m,\frac{11}{4},$$

$$\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]+\frac{3}{14}\Big(-\frac{1}{2}-2\,m\Big)\,\text{AppellF1}\Big[\frac{7}{4},$$

$$\frac{1}{2}-2\,m,2+2\,m,\frac{11}{4},\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]\Big)\Big)\Big/$$

$$\Big(21\,\text{AppellF1}\Big[\frac{3}{4},-\frac{1}{2}-2\,m,2+2\,m,\frac{7}{4},\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]-$$

$$6\Big(4\,(1+m)\,\text{AppellF1}\Big[\frac{7}{4},-\frac{1}{2}-2\,m,3+2\,m,\frac{11}{4},\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]+$$

$$(1+4\,m)\,\text{AppellF1}\Big[\frac{7}{4},\frac{1}{2}-2\,m,2+2\,m,\frac{11}{4},\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big)-$$

$$\Big(28\,\text{AppellF1}\Big[\frac{3}{4},-\frac{1}{2}-2\,m,2+2\,m,\frac{7}{4},\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]\,\text{Cos}\Big[\frac{1}{2}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^{2\,m}\sqrt{\text{Cos}[c+d\,x]}$$

$$\text{Sin}\Big[\frac{1}{2}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]\,\Big(-3\Big(4\,(1+m)\,\text{AppellF1}\Big[\frac{7}{4},-\frac{1}{2}-2\,m,3+2\,m,\frac{11}{4},\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]+(1+4\,m)$$

$$\text{AppellF1}\Big[\frac{7}{4},\frac{1}{2}-2\,m,2+2\,m,\frac{11}{4},\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]\Big)\,\text{Sec}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2$$

$$\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]+21\Big(-\frac{3}{14}\,(2+2\,m)\,\text{AppellF1}\Big[\frac{7}{4},-\frac{1}{2}-2\,m,3+2\,m,\frac{11}{4},\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]$$

$$\text{Sec}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]+\frac{3}{14}\Big(-\frac{1}{2}-2\,m\Big)\,\text{AppellF1}\Big[\frac{7}{4},\frac{1}{2}-2\,m,2+2\,m,\frac{11}{4},$$

$$\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]\Big)-$$

$$6\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\left(4\,(1+m)\left(-\frac{7}{22}\,(3+2\,m)\,\text{AppellF1}\left[\frac{11}{4},\,-\frac{1}{2}-2\,m,\,4+2\,m,\,\frac{15}{4},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\right.\right.\right.$$

$$\left.-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]+\frac{7}{22}\left(-\frac{1}{2}-2\,m\right)\text{AppellF1}\left[\frac{11}{4},\,\frac{1}{2}-2\,m,\right.$$

$$\left.\left.3+2\,m,\,\frac{15}{4},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\right)+$$

$$(1+4\,m)\left(-\frac{7}{22}\,(2+2\,m)\,\text{AppellF1}\left[\frac{11}{4},\,\frac{1}{2}-2\,m,\,3+2\,m,\,\frac{15}{4},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\right.$$

$$\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]+\frac{7}{22}\left(\frac{1}{2}-2\,m\right)\text{AppellF1}\left[\frac{11}{4},\,\frac{3}{2}-2\,m,\,2+2\,m,\,\frac{15}{4},\right.$$

$$\left.\left.\left.\left.\left.\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\right)\right)\right)\right)\Big/$$

$$\left(21\,\text{AppellF1}\left[\frac{3}{4},\,-\frac{1}{2}-2\,m,\,2+2\,m,\,\frac{7}{4},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]-\right.$$

$$6\left(4\,(1+m)\,\text{AppellF1}\left[\frac{7}{4},\,-\frac{1}{2}-2\,m,\,3+2\,m,\,\frac{11}{4},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]+(1+4\,m)\right.$$

$$\left.\left.\left.\left.\text{AppellF1}\left[\frac{7}{4},\,\frac{1}{2}-2\,m,\,2+2\,m,\,\frac{11}{4},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)^2\right)\right)\right)$$

- **Problem 357: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int\frac{(a+a\,\text{Sin}[c+d\,x])^m}{\sqrt{e\,\text{Cos}[c+d\,x]}}\,dx$$

Optimal (type 5, 86 leaves, 3 steps):

$$-\frac{1}{d\,e}2^{\frac{5}{4}+m}\,a\,\sqrt{e\,\text{Cos}[c+d\,x]}\;\text{Hypergeometric2F1}\left[\frac{1}{4},\,\frac{3}{4}-m,\,\frac{5}{4},\,\frac{1}{2}\,(1-\text{Sin}[c+d\,x])\right]\,(1+\text{Sin}[c+d\,x])^{\frac{3}{4}-m}\,(a+a\,\text{Sin}[c+d\,x])^{-1+m}$$

Result (type 6, 3947 leaves):

$$-\left(\left(10\,\text{AppellF1}\left[\frac{1}{4},\,\frac{1}{2}-2\,m,\,2\,m,\,\frac{5}{4},\,\text{Cot}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Cot}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\right.\right.$$

$$\left.\text{Cos}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^{2\,m}\sqrt{\text{Cos}[c+d\,x]}\;\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2(a+a\,\text{Sin}[c+d\,x])^m\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)\Big/$$

$$\left(d\,\sqrt{e\,\text{Cos}[c+d\,x]}\,\left(-1+\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)\left(-8\,m\,\text{AppellF1}\left[\frac{5}{4},\,\frac{1}{2}-2\,m,\,1+2\,m,\,\frac{9}{4},\,\text{Cot}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Cot}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]+\right.\right.$$

$$(2-8\,m)\,\text{AppellF1}\left[\frac{5}{4},\,\frac{3}{2}-2\,m,\,2\,m,\,\frac{9}{4},\,\text{Cot}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Cot}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]+$$

$$\left.5\,\text{AppellF1}\left[\frac{1}{4},\,\frac{1}{2}-2\,m,\,2\,m,\,\frac{5}{4},\,\text{Cot}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Cot}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)$$

$$\Bigg(-\Bigg(\Bigg(5\,\text{AppellF1}\Big[\frac{1}{4},\ \frac{1}{2}-2\,m,\ 2\,m,\ \frac{5}{4},\ \text{Cot}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2,\ -\text{Cot}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]\ \text{Cos}\Big[\frac{1}{2}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^{2\,m}$$

$$\sqrt{\text{Cos}[c+d\,x]}\ \text{Sec}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^4\ \text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^3\Bigg)\Big/$$

$$\Bigg(\Bigg(-1+\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Bigg)^2\ \Bigg(-8\,m\,\text{AppellF1}\Big[\frac{5}{4},\ \frac{1}{2}-2\,m,\ 1+2\,m,\ \frac{9}{4},\ \text{Cot}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2,\ -\text{Cot}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]+$$

$$(2-8\,m)\ \text{AppellF1}\Big[\frac{5}{4},\ \frac{3}{2}-2\,m,\ 2\,m,\ \frac{9}{4},\ \text{Cot}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2,\ -\text{Cot}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]+$$

$$5\,\text{AppellF1}\Big[\frac{1}{4},\ \frac{1}{2}-2\,m,\ 2\,m,\ \frac{5}{4},\ \text{Cot}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2,\ -\text{Cot}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]\ \text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Bigg)\Bigg)\Bigg)+$$

$$\Bigg(5\,\text{AppellF1}\Big[\frac{1}{4},\ \frac{1}{2}-2\,m,\ 2\,m,\ \frac{5}{4},\ \text{Cot}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2,\ -\text{Cot}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]\ \text{Cos}\Big[\frac{1}{2}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^{2\,m}$$

$$\sqrt{\text{Cos}[c+d\,x]}\ \text{Sec}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^4\ \text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]\Bigg)\Big/$$

$$\Bigg(\Bigg(-1+\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Bigg)\ \Bigg(-8\,m\,\text{AppellF1}\Big[\frac{5}{4},\ \frac{1}{2}-2\,m,\ 1+2\,m,\ \frac{9}{4},\ \text{Cot}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2,\ -\text{Cot}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]+$$

$$(2-8\,m)\ \text{AppellF1}\Big[\frac{5}{4},\ \frac{3}{2}-2\,m,\ 2\,m,\ \frac{9}{4},\ \text{Cot}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2,\ -\text{Cot}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]+$$

$$5\,\text{AppellF1}\Big[\frac{1}{4},\ \frac{1}{2}-2\,m,\ 2\,m,\ \frac{5}{4},\ \text{Cot}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2,\ -\text{Cot}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]\ \text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Bigg)\Bigg)+$$

$$\Bigg(10\,\text{Cos}\Big[\frac{1}{2}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^{2\,m}\sqrt{\text{Cos}[c+d\,x]}\ \Bigg(\frac{1}{5}\,m\,\text{AppellF1}\Big[\frac{5}{4},\ \frac{1}{2}-2\,m,\ 1+2\,m,\ \frac{9}{4},\ \text{Cot}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2,\ -\text{Cot}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]$$

$$\text{Cot}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]\ \text{Csc}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2-\frac{1}{10}\Big(\frac{1}{2}-2\,m\Big)\ \text{AppellF1}\Big[\frac{5}{4},\ \frac{3}{2}-2\,m,\ 2\,m,\ \frac{9}{4},\ \text{Cot}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2,$$

$$-\text{Cot}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]\ \text{Cot}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]\ \text{Csc}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Bigg)\ \text{Sec}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\ \text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Bigg)\Big/$$

$$\Bigg(\Bigg(-1+\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Bigg)\ \Bigg(-8\,m\,\text{AppellF1}\Big[\frac{5}{4},\ \frac{1}{2}-2\,m,\ 1+2\,m,\ \frac{9}{4},\ \text{Cot}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2,\ -\text{Cot}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]+$$

$$(2-8\,m)\ \text{AppellF1}\Big[\frac{5}{4},\ \frac{3}{2}-2\,m,\ 2\,m,\ \frac{9}{4},\ \text{Cot}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2,\ -\text{Cot}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]+$$

$$5\,\text{AppellF1}\Big[\frac{1}{4},\ \frac{1}{2}-2\,m,\ 2\,m,\ \frac{5}{4},\ \text{Cot}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2,\ -\text{Cot}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]\ \text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Bigg)\Bigg)-$$

$$\Bigg(10\,m\,\text{AppellF1}\Big[\frac{1}{4},\ \frac{1}{2}-2\,m,\ 2\,m,\ \frac{5}{4},\ \text{Cot}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2,\ -\text{Cot}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]\ \text{Cos}\Big[\frac{1}{2}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^{-1+2\,m}$$

$$\sqrt{\text{Cos}[c+d\,x]}\ \text{Sec}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\ \text{Sin}\Big[\frac{1}{2}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]\ \text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Bigg)\Big/$$

$$\left(\left(-1+\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)\left(-8\,m\,\text{AppellF1}\left[\frac{5}{4},\ \frac{1}{2}-2\,m,\ 1+2\,m,\ \frac{9}{4},\ \text{Cot}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\ -\text{Cot}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]+\right.\right.$$

$$(2-8\,m)\,\text{AppellF1}\left[\frac{5}{4},\ \frac{3}{2}-2\,m,\ 2\,m,\ \frac{9}{4},\ \text{Cot}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\ -\text{Cot}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]+$$

$$\left.\left.5\,\text{AppellF1}\left[\frac{1}{4},\ \frac{1}{2}-2\,m,\ 2\,m,\ \frac{5}{4},\ \text{Cot}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\ -\text{Cot}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)\right)+$$

$$\left(5\,\text{AppellF1}\left[\frac{1}{4},\ \frac{1}{2}-2\,m,\ 2\,m,\ \frac{5}{4},\ \text{Cot}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\ -\text{Cot}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\text{Cos}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^{2\,m}\right.$$

$$\left.\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\,\text{Sin}[c+d\,x]\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)\Big/$$

$$\left(\sqrt{\text{Cos}[c+d\,x]}\left(-1+\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)\left(-8\,m\,\text{AppellF1}\left[\frac{5}{4},\ \frac{1}{2}-2\,m,\ 1+2\,m,\ \frac{9}{4},\ \text{Cot}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\ -\text{Cot}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]+\right.\right.$$

$$(2-8\,m)\,\text{AppellF1}\left[\frac{5}{4},\ \frac{3}{2}-2\,m,\ 2\,m,\ \frac{9}{4},\ \text{Cot}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\ -\text{Cot}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]+$$

$$\left.\left.5\,\text{AppellF1}\left[\frac{1}{4},\ \frac{1}{2}-2\,m,\ 2\,m,\ \frac{5}{4},\ \text{Cot}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\ -\text{Cot}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)\right)+$$

$$\left(5\,\text{AppellF1}\left[\frac{1}{4},\ \frac{1}{2}-2\,m,\ 2\,m,\ \frac{5}{4},\ \text{Cot}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\ -\text{Cot}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\text{Cos}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^{2\,m}\right.$$

$$\left.\sqrt{\text{Cos}[c+d\,x]}\,\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^3\right)\Big/$$

$$\left(\left(-1+\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)\left(-8\,m\,\text{AppellF1}\left[\frac{5}{4},\ \frac{1}{2}-2\,m,\ 1+2\,m,\ \frac{9}{4},\ \text{Cot}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\ -\text{Cot}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]+\right.\right.$$

$$(2-8\,m)\,\text{AppellF1}\left[\frac{5}{4},\ \frac{3}{2}-2\,m,\ 2\,m,\ \frac{9}{4},\ \text{Cot}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\ -\text{Cot}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]+$$

$$\left.\left.5\,\text{AppellF1}\left[\frac{1}{4},\ \frac{1}{2}-2\,m,\ 2\,m,\ \frac{5}{4},\ \text{Cot}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\ -\text{Cot}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)\right)-$$

$$\left(10\,\text{AppellF1}\left[\frac{1}{4},\ \frac{1}{2}-2\,m,\ 2\,m,\ \frac{5}{4},\ \text{Cot}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\ -\text{Cot}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\text{Cos}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^{2\,m}\right.$$

$$\sqrt{\text{Cos}[c+d\,x]}\,\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2$$

$$\left(-8\,m\left(\frac{5}{18}(1+2\,m)\,\text{AppellF1}\left[\frac{9}{4},\ \frac{1}{2}-2\,m,\ 2+2\,m,\ \frac{13}{4},\ \text{Cot}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\ -\text{Cot}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\text{Cot}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\right.\right.$$

$$\text{Csc}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2-\frac{5}{18}\left(\frac{1}{2}-2\,m\right)\text{AppellF1}\left[\frac{9}{4},\ \frac{3}{2}-2\,m,\ 1+2\,m,\ \frac{13}{4},\ \text{Cot}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\ -\text{Cot}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]$$

$$\left.\text{Cot}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\text{Csc}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)+(2-8\,m)\left(\frac{5}{9}\,m\,\text{AppellF1}\left[\frac{9}{4},\ \frac{3}{2}-2\,m,\ 1+2\,m,\ \frac{13}{4},\ \text{Cot}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\right.\right.$$

$$-\text{Cot}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\text{Cot}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\text{Csc}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2-\frac{5}{18}\left(\frac{3}{2}-2\,m\right)\text{AppellF1}\left[\frac{9}{4},\frac{5}{2}-2\,m,\right.$$

$$\left.2\,m,\frac{13}{4},\text{Cot}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Cot}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\text{Cot}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\text{Csc}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)+$$

$$\frac{5}{2}\text{AppellF1}\left[\frac{1}{4},\frac{1}{2}-2\,m,2\,m,\frac{5}{4},\text{Cot}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Cot}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]+$$

$$5\left(\frac{1}{5}\,m\,\text{AppellF1}\left[\frac{5}{4},\frac{1}{2}-2\,m,1+2\,m,\frac{9}{4},\text{Cot}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Cot}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\text{Cot}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\right.$$

$$\text{Csc}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2-\frac{1}{10}\left(\frac{1}{2}-2\,m\right)\text{AppellF1}\left[\frac{5}{4},\frac{3}{2}-2\,m,2\,m,\frac{9}{4},\text{Cot}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Cot}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]$$

$$\left.\left.\text{Cot}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\text{Csc}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)\right)\Big/$$

$$\left(\left(-1+\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)\left(-8\,m\,\text{AppellF1}\left[\frac{5}{4},\frac{1}{2}-2\,m,1+2\,m,\frac{9}{4},\text{Cot}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Cot}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]+\right.\right.$$

$$(2-8\,m)\,\text{AppellF1}\left[\frac{5}{4},\frac{3}{2}-2\,m,2\,m,\frac{9}{4},\text{Cot}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Cot}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]+$$

$$\left.\left.5\,\text{AppellF1}\left[\frac{1}{4},\frac{1}{2}-2\,m,2\,m,\frac{5}{4},\text{Cot}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Cot}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)^2\right)\right)\right)$$

- **Problem 358: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int\frac{(a+a\,\text{Sin}[c+d\,x])^m}{(e\,\text{Cos}[c+d\,x])^{3/2}}\,dx$$

Optimal (type 5, 82 leaves, 3 steps):

$$\frac{2^{\frac{3}{4}+m}\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{5}{4}-m,\frac{3}{4},\frac{1}{2}\,(1-\text{Sin}[c+d\,x])\right](1+\text{Sin}[c+d\,x])^{\frac{1}{4}-m}\,(a+a\,\text{Sin}[c+d\,x])^m}{d\,e\,\sqrt{e\,\text{Cos}[c+d\,x]}}$$

Result (type 6, 10 902 leaves):

$$-\left(\left(\text{Cot}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right](a+a\,\text{Sin}[c+d\,x])^m\left(1-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)^{2\,(-1+m)}\left(\frac{1}{1+\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2}\right)^{-1+2\,m}\right.\right.$$

$$\sqrt{\frac{\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^3}{\left(1+\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)^2}}\,\Bigg(\Bigg(63\,\text{AppellF1}\left[-\frac{1}{4},\frac{3}{2}-2\,m,2\,m,\frac{3}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\Bigg)\Big/$$

$$\Bigg(-3\,\text{AppellF1}\left[-\frac{1}{4},\frac{3}{2}-2\,m,2\,m,\frac{3}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]+$$

$$2\,\Bigg(4\,m\,\text{AppellF1}\left[\frac{3}{4},\frac{3}{2}-2\,m,1+2\,m,\frac{7}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]+$$

$$(-3+4\,m)\,\text{AppellF1}\left[\frac{3}{4},\frac{5}{2}-2\,m,2\,m,\frac{7}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\Bigg)\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Bigg)+$$

$$\Bigg(98\,\text{AppellF1}\left[\frac{3}{4},\frac{3}{2}-2\,m,2\,m,\frac{7}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Bigg)\Big/$$

$$\Bigg(7\,\text{AppellF1}\left[\frac{3}{4},\frac{3}{2}-2\,m,2\,m,\frac{7}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]-$$

$$2\,\Bigg(4\,m\,\text{AppellF1}\left[\frac{7}{4},\frac{3}{2}-2\,m,1+2\,m,\frac{11}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]+$$

$$(-3+4\,m)\,\text{AppellF1}\left[\frac{7}{4},\frac{5}{2}-2\,m,2\,m,\frac{11}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\Bigg)\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Bigg)+$$

$$\Bigg(33\,\text{AppellF1}\left[\frac{7}{4},\frac{3}{2}-2\,m,2\,m,\frac{11}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^4\Bigg)\Big/$$

$$\Bigg(11\,\text{AppellF1}\left[\frac{7}{4},\frac{3}{2}-2\,m,2\,m,\frac{11}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]-$$

$$2\,\Bigg(4\,m\,\text{AppellF1}\left[\frac{11}{4},\frac{3}{2}-2\,m,1+2\,m,\frac{15}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]+$$

$$(-3+4\,m)\,\text{AppellF1}\left[\frac{11}{4},\frac{5}{2}-2\,m,2\,m,\frac{15}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\Bigg)\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Bigg)\Bigg)\Big/$$

$$\Bigg(21\,d\,(e\,\text{Cos}[c+d\,x])^{3/2}\,\Bigg(-\frac{1}{42}\,(-1+2\,m)\,\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\,\left(1-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)^{2\,(-1+m)}$$

$$\left(\frac{1}{1+\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2}\right)^{2 m}\sqrt{\frac{\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^3}{\left(1+\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right)^2}}$$

$$\left(\left(63\,\text{AppellF1}\left[-\frac{1}{4},\frac{3}{2}-2 m,2 m,\frac{3}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right]\right)\right/$$

$$\left(-3\,\text{AppellF1}\left[-\frac{1}{4},\frac{3}{2}-2 m,2 m,\frac{3}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right]+\right.$$

$$2\left(4 m\,\text{AppellF1}\left[\frac{3}{4},\frac{3}{2}-2 m,1+2 m,\frac{7}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right]+\right.$$

$$\left.\left.(-3+4 m)\,\text{AppellF1}\left[\frac{3}{4},\frac{5}{2}-2 m,2 m,\frac{7}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right)+$$

$$\left(98\,\text{AppellF1}\left[\frac{3}{4},\frac{3}{2}-2 m,2 m,\frac{7}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right)\Big/$$

$$\left(7\,\text{AppellF1}\left[\frac{3}{4},\frac{3}{2}-2 m,2 m,\frac{7}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right]-\right.$$

$$2\left(4 m\,\text{AppellF1}\left[\frac{7}{4},\frac{3}{2}-2 m,1+2 m,\frac{11}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right]+\right.$$

$$\left.\left.(-3+4 m)\,\text{AppellF1}\left[\frac{7}{4},\frac{5}{2}-2 m,2 m,\frac{11}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right)+$$

$$\left(33\,\text{AppellF1}\left[\frac{7}{4},\frac{3}{2}-2 m,2 m,\frac{11}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^4\right)\Big/$$

$$\left(11\,\text{AppellF1}\left[\frac{7}{4},\frac{3}{2}-2 m,2 m,\frac{11}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right]-\right.$$

$$2\left(4 m\,\text{AppellF1}\left[\frac{11}{4},\frac{3}{2}-2 m,1+2 m,\frac{15}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right]+\right.$$

$$\left.\left.\left.(-3+4 m)\,\text{AppellF1}\left[\frac{11}{4},\frac{5}{2}-2 m,2 m,\frac{15}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right)\right)-$$

$$\frac{1}{21}(-1+m)\,\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\left(1-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right)^{-1+2(-1+m)}\left(\frac{1}{1+\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2}\right)^{-1+2 m}$$

$$\sqrt{\frac{\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^3}{\left(1+\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right)^2}}$$

$$\left(\left(63\,\text{AppellF1}\left[-\frac{1}{4},\frac{3}{2}-2m,2m,\frac{3}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]\right)\Big/\right.$$
$$\left(-3\,\text{AppellF1}\left[-\frac{1}{4},\frac{3}{2}-2m,2m,\frac{3}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]+\right.$$
$$2\left(4m\,\text{AppellF1}\left[\frac{3}{4},\frac{3}{2}-2m,1+2m,\frac{7}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]+\right.$$
$$\left.\left.(-3+4m)\,\text{AppellF1}\left[\frac{3}{4},\frac{5}{2}-2m,2m,\frac{7}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right)+$$
$$\left(98\,\text{AppellF1}\left[\frac{3}{4},\frac{3}{2}-2m,2m,\frac{7}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right)\Big/$$
$$\left(7\,\text{AppellF1}\left[\frac{3}{4},\frac{3}{2}-2m,2m,\frac{7}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]-\right.$$
$$2\left(4m\,\text{AppellF1}\left[\frac{7}{4},\frac{3}{2}-2m,1+2m,\frac{11}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]+\right.$$
$$\left.\left.(-3+4m)\,\text{AppellF1}\left[\frac{7}{4},\frac{5}{2}-2m,2m,\frac{11}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right)+$$
$$\left(33\,\text{AppellF1}\left[\frac{7}{4},\frac{3}{2}-2m,2m,\frac{11}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^4\right)\Big/$$
$$\left(11\,\text{AppellF1}\left[\frac{7}{4},\frac{3}{2}-2m,2m,\frac{11}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]-\right.$$
$$2\left(4m\,\text{AppellF1}\left[\frac{11}{4},\frac{3}{2}-2m,1+2m,\frac{15}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]+\right.$$
$$\left.\left.(-3+4m)\,\text{AppellF1}\left[\frac{11}{4},\frac{5}{2}-2m,2m,\frac{15}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right)\right)-$$
$$\frac{1}{84}\text{Csc}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\left(1-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right)^{2(-1+m)}\left(\frac{1}{1+\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2}\right)^{-1+2m}$$
$$\sqrt{\frac{\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^3}{\left(1+\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right)^2}}$$
$$\left(\left(63\,\text{AppellF1}\left[-\frac{1}{4},\frac{3}{2}-2m,2m,\frac{3}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]\right)\Big/\right.$$
$$\left(-3\,\text{AppellF1}\left[-\frac{1}{4},\frac{3}{2}-2m,2m,\frac{3}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]+\right.$$

$$2\,\Big(4\,m\,\text{AppellF1}\left[\frac{3}{4},\,\frac{3}{2}-2\,m,\,1+2\,m,\,\frac{7}{4},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]+$$

$$(-3+4\,m)\,\text{AppellF1}\left[\frac{3}{4},\,\frac{5}{2}-2\,m,\,2\,m,\,\frac{7}{4},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\Big)\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Big)+$$

$$\Big(98\,\text{AppellF1}\left[\frac{3}{4},\,\frac{3}{2}-2\,m,\,2\,m,\,\frac{7}{4},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Big)\Big/$$

$$\Big(7\,\text{AppellF1}\left[\frac{3}{4},\,\frac{3}{2}-2\,m,\,2\,m,\,\frac{7}{4},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]-$$

$$2\,\Big(4\,m\,\text{AppellF1}\left[\frac{7}{4},\,\frac{3}{2}-2\,m,\,1+2\,m,\,\frac{11}{4},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]+$$

$$(-3+4\,m)\,\text{AppellF1}\left[\frac{7}{4},\,\frac{5}{2}-2\,m,\,2\,m,\,\frac{11}{4},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\Big)\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Big)+$$

$$\Big(33\,\text{AppellF1}\left[\frac{7}{4},\,\frac{3}{2}-2\,m,\,2\,m,\,\frac{11}{4},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^4\Big)\Big/$$

$$\Big(11\,\text{AppellF1}\left[\frac{7}{4},\,\frac{3}{2}-2\,m,\,2\,m,\,\frac{11}{4},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]-$$

$$2\,\Big(4\,m\,\text{AppellF1}\left[\frac{11}{4},\,\frac{3}{2}-2\,m,\,1+2\,m,\,\frac{15}{4},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]+$$

$$(-3+4\,m)\,\text{AppellF1}\left[\frac{11}{4},\,\frac{5}{2}-2\,m,\,2\,m,\,\frac{15}{4},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\Big)\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Big)\Big)+$$

$$\frac{1}{42\,\sqrt{\frac{\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^3}{\left(1+\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)^2}}}\,\text{Cot}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\left(1-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)^{2\,(-1+m)}\left(\frac{1}{1+\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2}\right)^{-1+2\,m}$$

$$\Big(\Big(63\,\text{AppellF1}\left[-\frac{1}{4},\,\frac{3}{2}-2\,m,\,2\,m,\,\frac{3}{4},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\Big)\Big/$$

$$\Big(-3\,\text{AppellF1}\left[-\frac{1}{4},\,\frac{3}{2}-2\,m,\,2\,m,\,\frac{3}{4},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]+$$

$$2\,\Big(4\,m\,\text{AppellF1}\left[\frac{3}{4},\,\frac{3}{2}-2\,m,\,1+2\,m,\,\frac{7}{4},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]+$$

$$(-3+4\,m)\,\text{AppellF1}\left[\frac{3}{4},\,\frac{5}{2}-2\,m,\,2\,m,\,\frac{7}{4},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\Big)\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Big)+$$

$$\Big(98\,\text{AppellF1}\left[\frac{3}{4},\,\frac{3}{2}-2\,m,\,2\,m,\,\frac{7}{4},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Big)\Big/$$

$$\left(7\,\text{AppellF1}\left[\frac{3}{4},\frac{3}{2}-2m,2m,\frac{7}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right]-\right.$$

$$2\left(4m\,\text{AppellF1}\left[\frac{7}{4},\frac{3}{2}-2m,1+2m,\frac{11}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right]+\right.$$

$$\left.\left.(-3+4m)\,\text{AppellF1}\left[\frac{7}{4},\frac{5}{2}-2m,2m,\frac{11}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right)+$$

$$\left(33\,\text{AppellF1}\left[\frac{7}{4},\frac{3}{2}-2m,2m,\frac{11}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^4\right)\Big/$$

$$\left(11\,\text{AppellF1}\left[\frac{7}{4},\frac{3}{2}-2m,2m,\frac{11}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right]-\right.$$

$$2\left(4m\,\text{AppellF1}\left[\frac{11}{4},\frac{3}{2}-2m,1+2m,\frac{15}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right]+\right.$$

$$\left.\left.(-3+4m)\,\text{AppellF1}\left[\frac{11}{4},\frac{5}{2}-2m,2m,\frac{15}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right)\right)$$

$$\left(\frac{\frac{1}{4}\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2-\frac{3}{4}\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2}{\left(1+\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right)^2}-\left(\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]\right.\right.$$

$$\left.\left.\left(\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^3\right)\right)\Big/\left(1+\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right)^3\right)+$$

$$\frac{1}{21}\text{Cot}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]\left(1-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right)^{2(-1+m)}\left(\frac{1}{1+\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2}\right)^{-1+2m}$$

$$\sqrt{\frac{\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^3}{\left(1+\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right)^2}}$$

$$\left(\left(63\left(\frac{1}{3}m\,\text{AppellF1}\left[\frac{3}{4},\frac{3}{2}-2m,1+2m,\frac{7}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right.\right.\right.$$

$$\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]-\frac{1}{6}\left(\frac{3}{2}-2m\right)\text{AppellF1}\left[\frac{3}{4},\frac{5}{2}-2m,2m,\frac{7}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right]$$

$$\left.\left.\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]\right)\right)\Big/\left(-3\,\text{AppellF1}\left[-\frac{1}{4},\frac{3}{2}-2m,2m,\frac{3}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2,\right.\right.$$

$$\left.-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right]+2\left(4m\,\text{AppellF1}\left[\frac{3}{4},\frac{3}{2}-2m,1+2m,\frac{7}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right]+\right.$$

$$(-3+4\,m)\,\text{AppellF1}\left[\frac{3}{4},\,\frac{5}{2}-2\,m,\,2\,m,\,\frac{7}{4},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\right)\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)+$$

$$\left(49\,\text{AppellF1}\left[\frac{3}{4},\,\frac{3}{2}-2\,m,\,2\,m,\,\frac{7}{4},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\,\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\right)\Big/$$

$$\left(7\,\text{AppellF1}\left[\frac{3}{4},\,\frac{3}{2}-2\,m,\,2\,m,\,\frac{7}{4},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]-\right.$$

$$2\left(4\,m\,\text{AppellF1}\left[\frac{7}{4},\,\frac{3}{2}-2\,m,\,1+2\,m,\,\frac{11}{4},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]+\right.$$

$$(-3+4\,m)\,\text{AppellF1}\left[\frac{7}{4},\,\frac{5}{2}-2\,m,\,2\,m,\,\frac{11}{4},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\right)\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)+$$

$$\left(98\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\left(-\frac{3}{7}\,m\,\text{AppellF1}\left[\frac{7}{4},\,\frac{3}{2}-2\,m,\,1+2\,m,\,\frac{11}{4},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\right.\right.$$

$$\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]+\frac{3}{14}\left(\frac{3}{2}-2\,m\right)\,\text{AppellF1}\left[\frac{7}{4},\,\frac{5}{2}-2\,m,\,2\,m,\,\frac{11}{4},\right.$$

$$\left.\left.\left.\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\,\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\right)\right)\Big/$$

$$\left(7\,\text{AppellF1}\left[\frac{3}{4},\,\frac{3}{2}-2\,m,\,2\,m,\,\frac{7}{4},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]-\right.$$

$$2\left(4\,m\,\text{AppellF1}\left[\frac{7}{4},\,\frac{3}{2}-2\,m,\,1+2\,m,\,\frac{11}{4},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]+\right.$$

$$(-3+4\,m)\,\text{AppellF1}\left[\frac{7}{4},\,\frac{5}{2}-2\,m,\,2\,m,\,\frac{11}{4},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\right)\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)+$$

$$\left(33\,\text{AppellF1}\left[\frac{7}{4},\,\frac{3}{2}-2\,m,\,2\,m,\,\frac{11}{4},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\,\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right.$$

$$\left.\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^3\right)\Big/\left(11\,\text{AppellF1}\left[\frac{7}{4},\,\frac{3}{2}-2\,m,\,2\,m,\,\frac{11}{4},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]-\right.$$

$$2\left(4\,m\,\text{AppellF1}\left[\frac{11}{4},\,\frac{3}{2}-2\,m,\,1+2\,m,\,\frac{15}{4},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]+\right.$$

$$(-3+4\,m)\,\text{AppellF1}\left[\frac{11}{4},\,\frac{5}{2}-2\,m,\,2\,m,\,\frac{15}{4},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\right)\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)+$$

$$\left(33\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^4\left(-\frac{7}{11}\,m\,\text{AppellF1}\left[\frac{11}{4},\,\frac{3}{2}-2\,m,\,1+2\,m,\,\frac{15}{4},\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\right.\right.$$

$$\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]+\frac{7}{22}\left(\frac{3}{2}-2\,m\right)\,\text{AppellF1}\left[\frac{11}{4},\,\frac{5}{2}-2\,m,\,2\,m,\,\frac{15}{4},\right.$$

$$\left.\left.\left.\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\,\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\right)\right)\Big/$$

$$\Big(11\,\text{AppellF1}\Big[\frac{7}{4},\ \frac{3}{2}-2m,\ 2m,\ \frac{11}{4},\ \text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2\Big]-$$

$$2\,\Big(4\,m\,\text{AppellF1}\Big[\frac{11}{4},\ \frac{3}{2}-2m,\ 1+2m,\ \frac{15}{4},\ \text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2\Big]+$$

$$(-3+4m)\,\text{AppellF1}\Big[\frac{11}{4},\ \frac{5}{2}-2m,\ 2m,\ \frac{15}{4},\ \text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2\Big)-$$

$$\Big(63\,\text{AppellF1}\Big[-\frac{1}{4},\ \frac{3}{2}-2m,\ 2m,\ \frac{3}{4},\ \text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2\Big]$$

$$\Big(\Big(4\,m\,\text{AppellF1}\Big[\frac{3}{4},\ \frac{3}{2}-2m,\ 1+2m,\ \frac{7}{4},\ \text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2\Big]+(-3+4m)\,\text{AppellF1}\Big[\frac{3}{4},\ \frac{5}{2}-2m,$$

$$2m,\ \frac{7}{4},\ \text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2\Big]\Big)\,\text{Sec}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]-3$$

$$\Big(\frac{1}{3}\,m\,\text{AppellF1}\Big[\frac{3}{4},\ \frac{3}{2}-2m,\ 1+2m,\ \frac{7}{4},\ \text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2$$

$$\text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]-\frac{1}{6}\left(\frac{3}{2}-2m\right)\text{AppellF1}\Big[\frac{3}{4},\ \frac{5}{2}-2m,\ 2m,\ \frac{7}{4},\ \text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2\Big]$$

$$\text{Sec}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]\Big]\Big)+2\,\text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2\Big(4\,m\Big(-\frac{3}{14}\,(1+2m)\,\text{AppellF1}\Big[\frac{7}{4},\ \frac{3}{2}-2m,\ 2+2m,$$

$$\frac{11}{4},\ \text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]+\frac{3}{14}\left(\frac{3}{2}-2m\right)$$

$$\text{AppellF1}\Big[\frac{7}{4},\ \frac{5}{2}-2m,\ 1+2m,\ \frac{11}{4},\ \text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2$$

$$\text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]\Big)+(-3+4m)\Big(-\frac{3}{7}\,m\,\text{AppellF1}\Big[\frac{7}{4},\ \frac{5}{2}-2m,\ 1+2m,\ \frac{11}{4},\ \text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2,$$

$$-\text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]+\frac{3}{14}\left(\frac{5}{2}-2m\right)\text{AppellF1}\Big[\frac{7}{4},\ \frac{7}{2}-2m,$$

$$2m,\ \frac{11}{4},\ \text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]\Big]\Big)\Big)\Big)\Big)\Big)\Big/$$

$$\Big(-3\,\text{AppellF1}\Big[-\frac{1}{4},\ \frac{3}{2}-2m,\ 2m,\ \frac{3}{4},\ \text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2\Big]+2\Big(4\,m\,\text{AppellF1}\Big[\frac{3}{4},$$

$$\frac{3}{2}-2m,\ 1+2m,\ \frac{7}{4},\ \text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2\Big]+(-3+4m)$$

$$\text{AppellF1}\Big[\frac{3}{4},\ \frac{5}{2}-2m,\ 2m,\ \frac{7}{4},\ \text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2\Big)^2-$$

$$\Big(98\,\text{AppellF1}\Big[\frac{3}{4},\ \frac{3}{2}-2m,\ 2m,\ \frac{7}{4},\ \text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2\Big]\,\text{Tan}\Big[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\Big]^2$$

$$\Big(-\Big(4\,m\,\text{AppellF1}\Big[\frac{7}{4},\ \frac{3}{2}-2\,m,\ 1+2\,m,\ \frac{11}{4},\ \text{Tan}\Big[\frac{1}{4}\,\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\,\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]+(-3+4\,m)\,\text{AppellF1}\Big[\frac{7}{4},\ \frac{5}{2}-2\,m,$$

$$2\,m,\ \frac{11}{4},\ \text{Tan}\Big[\frac{1}{4}\,\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\,\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]\Big)\,\text{Sec}\Big[\frac{1}{4}\,\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\,\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]+7$$

$$\Big(-\frac{3}{7}\,m\,\text{AppellF1}\Big[\frac{7}{4},\ \frac{3}{2}-2\,m,\ 1+2\,m,\ \frac{11}{4},\ \text{Tan}\Big[\frac{1}{4}\,\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\,\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\,\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2$$

$$\text{Tan}\Big[\frac{1}{4}\,\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]+\frac{3}{14}\,\Big(\frac{3}{2}-2\,m\Big)\,\text{AppellF1}\Big[\frac{7}{4},\ \frac{5}{2}-2\,m,\ 2\,m,\ \frac{11}{4},\ \text{Tan}\Big[\frac{1}{4}\,\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\,\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]$$

$$\text{Sec}\Big[\frac{1}{4}\,\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\,\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]\Big)-2\,\text{Tan}\Big[\frac{1}{4}\,\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\,\Big(4\,m\,\Big(-\frac{7}{22}\,(1+2\,m)\,\text{AppellF1}\Big[\frac{11}{4},\ \frac{3}{2}-2\,m,\ 2+2\,m,$$

$$\frac{15}{4},\ \text{Tan}\Big[\frac{1}{4}\,\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\,\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\,\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\,\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]+\frac{7}{22}\,\Big(\frac{3}{2}-2\,m\Big)$$

$$\text{AppellF1}\Big[\frac{11}{4},\ \frac{5}{2}-2\,m,\ 1+2\,m,\ \frac{15}{4},\ \text{Tan}\Big[\frac{1}{4}\,\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\,\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\,\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2$$

$$\text{Tan}\Big[\frac{1}{4}\,\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]\Big)+(-3+4\,m)\,\Big(-\frac{7}{11}\,m\,\text{AppellF1}\Big[\frac{11}{4},\ \frac{5}{2}-2\,m,\ 1+2\,m,\ \frac{15}{4},\ \text{Tan}\Big[\frac{1}{4}\,\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2,$$

$$-\text{Tan}\Big[\frac{1}{4}\,\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\,\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\,\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]+\frac{7}{22}\,\Big(\frac{5}{2}-2\,m\Big)\,\text{AppellF1}\Big[\frac{11}{4},\ \frac{7}{2}-2\,m,$$

$$2\,m,\ \frac{15}{4},\ \text{Tan}\Big[\frac{1}{4}\,\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\,\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\,\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\,\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]\Big)\Big)\Big)\Big)\Big)\Big/$$

$$\Big(7\,\text{AppellF1}\Big[\frac{3}{4},\ \frac{3}{2}-2\,m,\ 2\,m,\ \frac{7}{4},\ \text{Tan}\Big[\frac{1}{4}\,\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\,\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]-2\,\Big(4\,m\,\text{AppellF1}\Big[\frac{7}{4},\ \frac{3}{2}-2\,m,$$

$$1+2\,m,\ \frac{11}{4},\ \text{Tan}\Big[\frac{1}{4}\,\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\,\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]+(-3+4\,m)$$

$$\text{AppellF1}\Big[\frac{7}{4},\ \frac{5}{2}-2\,m,\ 2\,m,\ \frac{11}{4},\ \text{Tan}\Big[\frac{1}{4}\,\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\,\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{4}\,\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big)^2-$$

$$\Big(33\,\text{AppellF1}\Big[\frac{7}{4},\ \frac{3}{2}-2\,m,\ 2\,m,\ \frac{11}{4},\ \text{Tan}\Big[\frac{1}{4}\,\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\,\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]\,\text{Tan}\Big[\frac{1}{4}\,\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^4$$

$$\Big(-\Big(4\,m\,\text{AppellF1}\Big[\frac{11}{4},\ \frac{3}{2}-2\,m,\ 1+2\,m,\ \frac{15}{4},\ \text{Tan}\Big[\frac{1}{4}\,\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\,\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]+$$

$$(-3+4\,m)\,\text{AppellF1}\Big[\frac{11}{4},\ \frac{5}{2}-2\,m,\ 2\,m,\ \frac{15}{4},\ \text{Tan}\Big[\frac{1}{4}\,\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\,\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]\Big)\,\text{Sec}\Big[\frac{1}{4}\,\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2$$

$$\text{Tan}\Big[\frac{1}{4}\,\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]+11\,\Big(-\frac{7}{11}\,m\,\text{AppellF1}\Big[\frac{11}{4},\ \frac{3}{2}-2\,m,\ 1+2\,m,\ \frac{15}{4},\ \text{Tan}\Big[\frac{1}{4}\,\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\,\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]$$

$$\text{Sec}\Big[\frac{1}{4}\,\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\,\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]+\frac{7}{22}\,\Big(\frac{3}{2}-2\,m\Big)\,\text{AppellF1}\Big[\frac{11}{4},\ \frac{5}{2}-2\,m,\ 2\,m,\ \frac{15}{4},\ \text{Tan}\Big[\frac{1}{4}\,\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2,$$

$$-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2 \text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2 \text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]\Bigg)\Bigg)-2\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2$$

$$\Bigg(4 m\left(-\frac{11}{30}(1+2 m)\,\text{AppellF1}\left[\frac{15}{4},\frac{3}{2}-2 m,2+2 m,\frac{19}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right]\right.$$

$$\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2 \text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]+\frac{11}{30}\left(\frac{3}{2}-2 m\right) \text{AppellF1}\left[\frac{15}{4},\frac{5}{2}-2 m,1+2 m,\frac{19}{4},\right.$$

$$\left.\left.\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right] \text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2 \text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]\right)+$$

$$(-3+4 m)\left(-\frac{11}{15} m\,\text{AppellF1}\left[\frac{15}{4},\frac{5}{2}-2 m,1+2 m,\frac{19}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right]\right.$$

$$\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2 \text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]+\frac{11}{30}\left(\frac{5}{2}-2 m\right) \text{AppellF1}\left[\frac{15}{4},\frac{7}{2}-2 m,2 m,\frac{19}{4},\right.$$

$$\left.\left.\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right] \text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2 \text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]\right)\Bigg)\Bigg)\Bigg)\Bigg)\Bigg/$$

$$\Bigg(11\,\text{AppellF1}\left[\frac{7}{4},\frac{3}{2}-2 m,2 m,\frac{11}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right]-2\Bigg(4 m\,\text{AppellF1}\left[\frac{11}{4},\right.$$

$$\left.\frac{3}{2}-2 m,1+2 m,\frac{15}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right]+(-3+4 m)$$

$$\left.\left.\text{AppellF1}\left[\frac{11}{4},\frac{5}{2}-2 m,2 m,\frac{15}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right]\right) \text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right)^2\Bigg)\Bigg)\Bigg)$$

- **Problem 359: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int \frac{(a+a\,\text{Sin}[c+d x])^m}{(e\,\text{Cos}[c+d x])^{5/2}}\,dx$$

Optimal (type 5, 85 leaves, 3 steps) :

$$\frac{2^{\frac{1}{4}+m}\,\text{Hypergeometric2F1}\left[-\frac{3}{4},\frac{7}{4}-m,\frac{1}{4},\frac{1}{2}(1-\text{Sin}[c+d x])\right](1+\text{Sin}[c+d x])^{\frac{3}{4}-m}(a+a\,\text{Sin}[c+d x])^m}{3 d e\,(e\,\text{Cos}[c+d x])^{3/2}}$$

Result (type 6, 16 046 leaves) :

$$-\Bigg(\Bigg((a+a\,\text{Sin}[c+d\,x])^m\left(1-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)^{-3+2m}\left(\frac{1}{1+\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2}\right)^{-1+2m}\sqrt{\frac{\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^3}{\left(1+\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)^2}}$$

$$\Bigg(-\Bigg(\Bigg(195\,\text{AppellF1}\left[-\frac{3}{4},\frac{5}{2}-2m,2m,\frac{1}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\text{Cot}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Bigg)\Big/$$

$$\Bigg(\text{AppellF1}\left[-\frac{3}{4},\frac{5}{2}-2m,2m,\frac{1}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]-$$

$$2\Bigg(4m\,\text{AppellF1}\left[\frac{1}{4},\frac{5}{2}-2m,1+2m,\frac{5}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]+(-5+4m)$$

$$\text{AppellF1}\left[\frac{1}{4},\frac{7}{2}-2m,2m,\frac{5}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\Bigg)\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Bigg)\Bigg)+$$

$$\Bigg(11700\,\text{AppellF1}\left[\frac{1}{4},\frac{5}{2}-2m,2m,\frac{5}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\Bigg)\Big/$$

$$\Bigg(5\,\text{AppellF1}\left[\frac{1}{4},\frac{5}{2}-2m,2m,\frac{5}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]-$$

$$2\Bigg(4m\,\text{AppellF1}\left[\frac{5}{4},\frac{5}{2}-2m,1+2m,\frac{9}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]+$$

$$(-5+4m)\,\text{AppellF1}\left[\frac{5}{4},\frac{7}{2}-2m,2m,\frac{9}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\Bigg)\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Bigg)+$$

$$\Bigg(6318\,\text{AppellF1}\left[\frac{5}{4},\frac{5}{2}-2m,2m,\frac{9}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Bigg)\Big/$$

$$\Bigg(9\,\text{AppellF1}\left[\frac{5}{4},\frac{5}{2}-2m,2m,\frac{9}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]-$$

$$2\Bigg(4m\,\text{AppellF1}\left[\frac{9}{4},\frac{5}{2}-2m,1+2m,\frac{13}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]+$$

$$(-5+4m)\,\text{AppellF1}\left[\frac{9}{4},\frac{7}{2}-2m,2m,\frac{13}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\Bigg)\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Bigg)+$$

$$\Bigg(3380\,\text{AppellF1}\left[\frac{9}{4},\frac{5}{2}-2m,2m,\frac{13}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^4\Bigg)\Big/$$

$$\Bigg(13\,\text{AppellF1}\left[\frac{9}{4},\frac{5}{2}-2m,2m,\frac{13}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]-$$

$$2\Bigg(4m\,\text{AppellF1}\left[\frac{13}{4},\frac{5}{2}-2m,1+2m,\frac{17}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]+$$

$$(-5+4m)\,\text{AppellF1}\left[\frac{13}{4},\frac{7}{2}-2m,2m,\frac{17}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\Bigg)+$$

$$\left(765\,\text{AppellF1}\left[\frac{13}{4},\frac{5}{2}-2m,2m,\frac{17}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^6\right)\Big/$$

$$\Bigg(17\,\text{AppellF1}\left[\frac{13}{4},\frac{5}{2}-2m,2m,\frac{17}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]-$$

$$2\Bigg(4m\,\text{AppellF1}\left[\frac{17}{4},\frac{5}{2}-2m,1+2m,\frac{21}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]+$$

$$(-5+4m)\,\text{AppellF1}\left[\frac{17}{4},\frac{7}{2}-2m,2m,\frac{21}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\Bigg)\Bigg)\Bigg/$$

$$\Bigg(2340\,d\,(e\,\text{Cos}[c+dx])^{5/2}\Bigg(-\frac{1}{4680}(-1+2m)\,\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]\left(1-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right)^{-3+2m}$$

$$\left(\frac{1}{1+\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2}\right)^{2m}\sqrt{\frac{\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^3}{\left(1+\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right)^2}}$$

$$\Bigg(-\Bigg(\Bigg(195\,\text{AppellF1}\left[-\frac{3}{4},\frac{5}{2}-2m,2m,\frac{1}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]\text{Cot}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\Bigg)\Big/$$

$$\Bigg(\text{AppellF1}\left[-\frac{3}{4},\frac{5}{2}-2m,2m,\frac{1}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]-$$

$$2\Bigg(4m\,\text{AppellF1}\left[\frac{1}{4},\frac{5}{2}-2m,1+2m,\frac{5}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]+(-5+4m)\,\text{AppellF1}\left[\frac{1}{4},\frac{7}{2}-2m,\right.$$

$$\left.2m,\frac{5}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]\Bigg)\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\Bigg)\Bigg)+\Bigg(11700\,\text{AppellF1}\left[\frac{1}{4},\frac{5}{2}-2m,\right.$$

$$\left.2m,\frac{5}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]\Bigg)\Big/\Bigg(5\,\text{AppellF1}\left[\frac{1}{4},\frac{5}{2}-2m,2m,\frac{5}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,\right.$$

$$\left.-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]-2\Bigg(4m\,\text{AppellF1}\left[\frac{5}{4},\frac{5}{2}-2m,1+2m,\frac{9}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]+$$

$$(-5+4m)\,\text{AppellF1}\left[\frac{5}{4},\frac{7}{2}-2m,2m,\frac{9}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]\Bigg)\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\Bigg)+$$

$$\left(6318\,\text{AppellF1}\left[\frac{5}{4},\frac{5}{2}-2m,2m,\frac{9}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right)\Big/$$

$$\left(9\,\text{AppellF1}\left[\frac{5}{4},\frac{5}{2}-2m,2m,\frac{9}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]-2\right.$$

$$\left(4m\,\text{AppellF1}\left[\frac{9}{4},\frac{5}{2}-2m,1+2m,\frac{13}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]+\right.$$

$$\left.\left.(-5+4m)\,\text{AppellF1}\left[\frac{9}{4},\frac{7}{2}-2m,2m,\frac{13}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right)+$$

$$\left(3380\,\text{AppellF1}\left[\frac{9}{4},\frac{5}{2}-2m,2m,\frac{13}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^4\right)\Big/$$

$$\left(13\,\text{AppellF1}\left[\frac{9}{4},\frac{5}{2}-2m,2m,\frac{13}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]-2\right.$$

$$\left(4m\,\text{AppellF1}\left[\frac{13}{4},\frac{5}{2}-2m,1+2m,\frac{17}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]+\right.$$

$$\left.\left.(-5+4m)\,\text{AppellF1}\left[\frac{13}{4},\frac{7}{2}-2m,2m,\frac{17}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right)+$$

$$\left(765\,\text{AppellF1}\left[\frac{13}{4},\frac{5}{2}-2m,2m,\frac{17}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^6\right)\Big/$$

$$\left(17\,\text{AppellF1}\left[\frac{13}{4},\frac{5}{2}-2m,2m,\frac{17}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]-2\right.$$

$$\left(4m\,\text{AppellF1}\left[\frac{17}{4},\frac{5}{2}-2m,1+2m,\frac{21}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]+\right.$$

$$\left.\left.(-5+4m)\,\text{AppellF1}\left[\frac{17}{4},\frac{7}{2}-2m,2m,\frac{21}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right)\right)-$$

$$\frac{1}{4680}(-3+2m)\,\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]\left(1-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right)^{-4+2m}\left(\frac{1}{1+\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2}\right)^{-1+2m}$$

$$\sqrt{\frac{\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^3}{\left(1+\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right)^2}}$$

$$\left(-\left(\left(195\,\text{AppellF1}\left[-\frac{3}{4},\frac{5}{2}-2m,2m,\frac{1}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]\text{Cot}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right)\Big/\right.\right.$$

$$\left(\text{AppellF1}\left[-\frac{3}{4},\frac{5}{2}-2m,2m,\frac{1}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]-\right.$$

$$2\,\Big(4\,m\,\text{AppellF1}\Big[\frac{1}{4},\ \frac{5}{2}-2\,m,\ 1+2\,m,\ \frac{5}{4},\ \text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]+$$

$$(-5+4\,m)\,\text{AppellF1}\Big[\frac{1}{4},\ \frac{7}{2}-2\,m,\ 2\,m,\ \frac{5}{4},\ \text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big)\Big)+$$

$$\Big(11\,700\,\text{AppellF1}\Big[\frac{1}{4},\ \frac{5}{2}-2\,m,\ 2\,m,\ \frac{5}{4},\ \text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]\Big)\Big/$$

$$\Big(5\,\text{AppellF1}\Big[\frac{1}{4},\ \frac{5}{2}-2\,m,\ 2\,m,\ \frac{5}{4},\ \text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]-$$

$$2\,\Big(4\,m\,\text{AppellF1}\Big[\frac{5}{4},\ \frac{5}{2}-2\,m,\ 1+2\,m,\ \frac{9}{4},\ \text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]+$$

$$(-5+4\,m)\,\text{AppellF1}\Big[\frac{5}{4},\ \frac{7}{2}-2\,m,\ 2\,m,\ \frac{9}{4},\ \text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big)+$$

$$\Big(6318\,\text{AppellF1}\Big[\frac{5}{4},\ \frac{5}{2}-2\,m,\ 2\,m,\ \frac{9}{4},\ \text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]\,\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big)\Big/$$

$$\Big(9\,\text{AppellF1}\Big[\frac{5}{4},\ \frac{5}{2}-2\,m,\ 2\,m,\ \frac{9}{4},\ \text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]-$$

$$2\,\Big(4\,m\,\text{AppellF1}\Big[\frac{9}{4},\ \frac{5}{2}-2\,m,\ 1+2\,m,\ \frac{13}{4},\ \text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]+$$

$$(-5+4\,m)\,\text{AppellF1}\Big[\frac{9}{4},\ \frac{7}{2}-2\,m,\ 2\,m,\ \frac{13}{4},\ \text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big)+$$

$$\Big(3380\,\text{AppellF1}\Big[\frac{9}{4},\ \frac{5}{2}-2\,m,\ 2\,m,\ \frac{13}{4},\ \text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]\,\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^4\Big)\Big/$$

$$\Big(13\,\text{AppellF1}\Big[\frac{9}{4},\ \frac{5}{2}-2\,m,\ 2\,m,\ \frac{13}{4},\ \text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]-$$

$$2\,\Big(4\,m\,\text{AppellF1}\Big[\frac{13}{4},\ \frac{5}{2}-2\,m,\ 1+2\,m,\ \frac{17}{4},\ \text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]+$$

$$(-5+4\,m)\,\text{AppellF1}\Big[\frac{13}{4},\ \frac{7}{2}-2\,m,\ 2\,m,\ \frac{17}{4},\ \text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big)+$$

$$\Big(765\,\text{AppellF1}\Big[\frac{13}{4},\ \frac{5}{2}-2\,m,\ 2\,m,\ \frac{17}{4},\ \text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]\,\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^6\Big)\Big/$$

$$\Big(17\,\text{AppellF1}\Big[\frac{13}{4},\ \frac{5}{2}-2\,m,\ 2\,m,\ \frac{17}{4},\ \text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]-$$

$$2\,\Big(4\,m\,\text{AppellF1}\Big[\frac{17}{4},\ \frac{5}{2}-2\,m,\ 1+2\,m,\ \frac{21}{4},\ \text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]+$$

$$(-5+4\,m)\,\text{AppellF1}\Big[\frac{17}{4},\ \frac{7}{2}-2\,m,\ 2\,m,\ \frac{21}{4},\ \text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{4}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big)\Big)+$$

$$\frac{1}{4680\sqrt{\frac{\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^3}{\left(1+\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right)^2}}}\left(1-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right)^{-3+2 m}\left(\frac{1}{1+\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2}\right)^{-1+2 m}$$

$$\left(-\left(\left(195\,\text{AppellF1}\left[-\frac{3}{4},\frac{5}{2}-2 m,2 m,\frac{1}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right]\text{Cot}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right)\Big/\right.\right.$$

$$\left(\text{AppellF1}\left[-\frac{3}{4},\frac{5}{2}-2 m,2 m,\frac{1}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right]-\right.$$

$$2\left(4 m\,\text{AppellF1}\left[\frac{1}{4},\frac{5}{2}-2 m,1+2 m,\frac{5}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right]+\right.$$

$$\left.\left.(-5+4 m)\,\text{AppellF1}\left[\frac{1}{4},\frac{7}{2}-2 m,2 m,\frac{5}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right)\right)+$$

$$\left(11700\,\text{AppellF1}\left[\frac{1}{4},\frac{5}{2}-2 m,2 m,\frac{5}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right]\right)\Big/$$

$$\left(5\,\text{AppellF1}\left[\frac{1}{4},\frac{5}{2}-2 m,2 m,\frac{5}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right]-\right.$$

$$2\left(4 m\,\text{AppellF1}\left[\frac{5}{4},\frac{5}{2}-2 m,1+2 m,\frac{9}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right]+\right.$$

$$\left.\left.(-5+4 m)\,\text{AppellF1}\left[\frac{5}{4},\frac{7}{2}-2 m,2 m,\frac{9}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right)+$$

$$\left(6318\,\text{AppellF1}\left[\frac{5}{4},\frac{5}{2}-2 m,2 m,\frac{9}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right)\Big/$$

$$\left(9\,\text{AppellF1}\left[\frac{5}{4},\frac{5}{2}-2 m,2 m,\frac{9}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right]-\right.$$

$$2\left(4 m\,\text{AppellF1}\left[\frac{9}{4},\frac{5}{2}-2 m,1+2 m,\frac{13}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right]+\right.$$

$$\left.\left.(-5+4 m)\,\text{AppellF1}\left[\frac{9}{4},\frac{7}{2}-2 m,2 m,\frac{13}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right)+$$

$$\left(3380\,\text{AppellF1}\left[\frac{9}{4},\frac{5}{2}-2 m,2 m,\frac{13}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^4\right)\Big/$$

$$\left(13\,\text{AppellF1}\left[\frac{9}{4},\frac{5}{2}-2 m,2 m,\frac{13}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right]-\right.$$

$$2\left(4 m\,\text{AppellF1}\left[\frac{13}{4},\frac{5}{2}-2 m,1+2 m,\frac{17}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right]+\right.$$

$$(-5+4m)\,\text{AppellF1}\left[\frac{13}{4},\frac{7}{2}-2m,2m,\frac{17}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\Bigg)+$$

$$\Bigg(765\,\text{AppellF1}\left[\frac{13}{4},\frac{5}{2}-2m,2m,\frac{17}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^6\Bigg)\Big/$$

$$\Bigg(17\,\text{AppellF1}\left[\frac{13}{4},\frac{5}{2}-2m,2m,\frac{17}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]-$$

$$2\Bigg(4m\,\text{AppellF1}\left[\frac{17}{4},\frac{5}{2}-2m,1+2m,\frac{21}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]+$$

$$(-5+4m)\,\text{AppellF1}\left[\frac{17}{4},\frac{7}{2}-2m,2m,\frac{21}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\Bigg)\Bigg)$$

$$\Bigg(\frac{\frac{1}{4}\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2-\frac{3}{4}\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2}{\left(1+\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right)^2}-\Bigg(\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]$$

$$\left(\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^3\right)\Bigg)\Big/\left(1+\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right)^3\Bigg)+$$

$$\frac{1}{2340}\left(1-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right)^{-3+2m}\left(\frac{1}{1+\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2}\right)^{-1+2m}\sqrt{\frac{\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^3}{\left(1+\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right)^2}}$$

$$\Bigg(\Bigg(195\,\text{AppellF1}\left[-\frac{3}{4},\frac{5}{2}-2m,2m,\frac{1}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]\text{Cot}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]$$

$$\text{Csc}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\Bigg)\Big/\Bigg(2\Bigg(\text{AppellF1}\left[-\frac{3}{4},\frac{5}{2}-2m,2m,\frac{1}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]-$$

$$2\Bigg(4m\,\text{AppellF1}\left[\frac{1}{4},\frac{5}{2}-2m,1+2m,\frac{5}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]+$$

$$(-5+4m)\,\text{AppellF1}\left[\frac{1}{4},\frac{7}{2}-2m,2m,\frac{5}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\Bigg)\Bigg)-$$

$$\Bigg(195\,\text{Cot}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\Bigg(3m\,\text{AppellF1}\left[\frac{1}{4},\frac{5}{2}-2m,1+2m,\frac{5}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]-\frac{3}{2}\left(\frac{5}{2}-2m\right)\text{AppellF1}\left[\frac{1}{4},\frac{7}{2}-2m,2m,\frac{5}{4},\right.$$

$$\left.\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]\Bigg)\Bigg)\Big/$$

$$\Bigg(\text{AppellF1}\left[-\frac{3}{4},\frac{5}{2}-2m,2m,\frac{1}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]-$$

$$2\,(4\,m\,\text{AppellF1}[\tfrac{1}{4},\tfrac{5}{2}-2\,m,1+2\,m,\tfrac{5}{4},\text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d\,x)]^2,-\text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d\,x)]^2]+$$

$$(-5+4\,m)\,\text{AppellF1}[\tfrac{1}{4},\tfrac{7}{2}-2\,m,2\,m,\tfrac{5}{4},\text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d\,x)]^2,-\text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d\,x)]^2])\,\text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d\,x)]^2)+$$

$$(11\,700\,(-\tfrac{1}{5}\,m\,\text{AppellF1}[\tfrac{5}{4},\tfrac{5}{2}-2\,m,1+2\,m,\tfrac{9}{4},\text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d\,x)]^2,-\text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d\,x)]^2]\,\text{Sec}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d\,x)]^2$$

$$\text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d\,x)]+\tfrac{1}{10}(\tfrac{5}{2}-2\,m)\,\text{AppellF1}[\tfrac{5}{4},\tfrac{7}{2}-2\,m,2\,m,\tfrac{9}{4},\text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d\,x)]^2,-\text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d\,x)]^2]$$

$$\text{Sec}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d\,x)]^2\,\text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d\,x)]))\Big/\,(5\,\text{AppellF1}[\tfrac{1}{4},\tfrac{5}{2}-2\,m,2\,m,\tfrac{5}{4},\text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d\,x)]^2,$$

$$-\text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d\,x)]^2]-2\,(4\,m\,\text{AppellF1}[\tfrac{5}{4},\tfrac{5}{2}-2\,m,1+2\,m,\tfrac{9}{4},\text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d\,x)]^2,-\text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d\,x)]^2]+$$

$$(-5+4\,m)\,\text{AppellF1}[\tfrac{5}{4},\tfrac{7}{2}-2\,m,2\,m,\tfrac{9}{4},\text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d\,x)]^2,-\text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d\,x)]^2])\,\text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d\,x)]^2)+$$

$$(3159\,\text{AppellF1}[\tfrac{5}{4},\tfrac{5}{2}-2\,m,2\,m,\tfrac{9}{4},\text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d\,x)]^2,-\text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d\,x)]^2]\,\text{Sec}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d\,x)]^2$$

$$\text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d\,x)])\Big/\,(9\,\text{AppellF1}[\tfrac{5}{4},\tfrac{5}{2}-2\,m,2\,m,\tfrac{9}{4},\text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d\,x)]^2,-\text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d\,x)]^2]-$$

$$2\,(4\,m\,\text{AppellF1}[\tfrac{9}{4},\tfrac{5}{2}-2\,m,1+2\,m,\tfrac{13}{4},\text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d\,x)]^2,-\text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d\,x)]^2]+$$

$$(-5+4\,m)\,\text{AppellF1}[\tfrac{9}{4},\tfrac{7}{2}-2\,m,2\,m,\tfrac{13}{4},\text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d\,x)]^2,-\text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d\,x)]^2])\,\text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d\,x)]^2)+$$

$$(6318\,\text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d\,x)]^2\,(-\tfrac{5}{9}\,m\,\text{AppellF1}[\tfrac{9}{4},\tfrac{5}{2}-2\,m,1+2\,m,\tfrac{13}{4},\text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d\,x)]^2,-\text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d\,x)]^2]$$

$$\text{Sec}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d\,x)]^2\,\text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d\,x)]+\tfrac{5}{18}(\tfrac{5}{2}-2\,m)\,\text{AppellF1}[\tfrac{9}{4},\tfrac{7}{2}-2\,m,2\,m,\tfrac{13}{4},$$

$$\text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d\,x)]^2,-\text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d\,x)]^2]\,\text{Sec}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d\,x)]^2\,\text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d\,x)]))\Big/$$

$$(9\,\text{AppellF1}[\tfrac{5}{4},\tfrac{5}{2}-2\,m,2\,m,\tfrac{9}{4},\text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d\,x)]^2,-\text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d\,x)]^2]-$$

$$2\,(4\,m\,\text{AppellF1}[\tfrac{9}{4},\tfrac{5}{2}-2\,m,1+2\,m,\tfrac{13}{4},\text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d\,x)]^2,-\text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d\,x)]^2]+$$

$$(-5+4\,m)\,\text{AppellF1}[\tfrac{9}{4},\tfrac{7}{2}-2\,m,2\,m,\tfrac{13}{4},\text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d\,x)]^2,-\text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d\,x)]^2])\,\text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d\,x)]^2)+$$

$$(3380\,\text{AppellF1}[\tfrac{9}{4},\tfrac{5}{2}-2\,m,2\,m,\tfrac{13}{4},\text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d\,x)]^2,-\text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d\,x)]^2]\,\text{Sec}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d\,x)]^2$$

$$\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^3\Bigg)\Bigg/\Bigg(13\,\text{AppellF1}\left[\frac{9}{4},\frac{5}{2}-2\,m,2\,m,\frac{13}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]-$$

$$2\left(4\,m\,\text{AppellF1}\left[\frac{13}{4},\frac{5}{2}-2\,m,1+2\,m,\frac{17}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]+\right.$$

$$\left.(-5+4\,m)\,\text{AppellF1}\left[\frac{13}{4},\frac{7}{2}-2\,m,2\,m,\frac{17}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Bigg)+$$

$$\Bigg(3380\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^4\Bigg(-\frac{9}{13}\,m\,\text{AppellF1}\left[\frac{13}{4},\frac{5}{2}-2\,m,1+2\,m,\frac{17}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]+\frac{9}{26}\left(\frac{5}{2}-2\,m\right)\text{AppellF1}\left[\frac{13}{4},\frac{7}{2}-2\,m,2\,m,\frac{17}{4},\right.$$

$$\left.\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\Bigg)\Bigg)\Bigg/$$

$$\Bigg(13\,\text{AppellF1}\left[\frac{9}{4},\frac{5}{2}-2\,m,2\,m,\frac{13}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]-$$

$$2\left(4\,m\,\text{AppellF1}\left[\frac{13}{4},\frac{5}{2}-2\,m,1+2\,m,\frac{17}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]+\right.$$

$$\left.(-5+4\,m)\,\text{AppellF1}\left[\frac{13}{4},\frac{7}{2}-2\,m,2\,m,\frac{17}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Bigg)+$$

$$\Bigg(2295\,\text{AppellF1}\left[\frac{13}{4},\frac{5}{2}-2\,m,2\,m,\frac{17}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2$$

$$\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^5\Bigg)\Bigg/\Bigg(2\Bigg(17\,\text{AppellF1}\left[\frac{13}{4},\frac{5}{2}-2\,m,2\,m,\frac{17}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]-$$

$$2\left(4\,m\,\text{AppellF1}\left[\frac{17}{4},\frac{5}{2}-2\,m,1+2\,m,\frac{21}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]+\right.$$

$$\left.(-5+4\,m)\,\text{AppellF1}\left[\frac{17}{4},\frac{7}{2}-2\,m,2\,m,\frac{21}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Bigg)\Bigg)+$$

$$\Bigg(765\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^6\Bigg(-\frac{13}{17}\,m\,\text{AppellF1}\left[\frac{17}{4},\frac{5}{2}-2\,m,1+2\,m,\frac{21}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]+\frac{13}{34}\left(\frac{5}{2}-2\,m\right)\text{AppellF1}\left[\frac{17}{4},\frac{7}{2}-2\,m,2\,m,\frac{21}{4},\right.$$

$$\left.\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\Bigg)\Bigg)\Bigg/$$

$$\Bigg(17\,\text{AppellF1}\left[\frac{13}{4},\frac{5}{2}-2\,m,2\,m,\frac{17}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]-$$

$$2\left(4\,m\,\text{AppellF1}\left[\frac{17}{4},\frac{5}{2}-2\,m,1+2\,m,\frac{21}{4},\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]+\right.$$

$$(-5+4\,m)\,\text{AppellF1}[\frac{17}{4},\,\frac{7}{2}-2\,m,\,2\,m,\,\frac{21}{4},\,\text{Tan}[\frac{1}{4}\,(-c+\frac{\pi}{2}-d\,x)]^2,\,-\text{Tan}[\frac{1}{4}\,(-c+\frac{\pi}{2}-d\,x)]^2])\,\text{Tan}[\frac{1}{4}\,(-c+\frac{\pi}{2}-d\,x)]^2)\,+$$

$$(195\,\text{AppellF1}[-\frac{3}{4},\,\frac{5}{2}-2\,m,\,2\,m,\,\frac{1}{4},\,\text{Tan}[\frac{1}{4}\,(-c+\frac{\pi}{2}-d\,x)]^2,\,-\text{Tan}[\frac{1}{4}\,(-c+\frac{\pi}{2}-d\,x)]^2]\,\text{Cot}[\frac{1}{4}\,(-c+\frac{\pi}{2}-d\,x)]^2\,(3\,m\,\text{AppellF1}[$$

$$\frac{1}{4},\,\frac{5}{2}-2\,m,\,1+2\,m,\,\frac{5}{4},\,\text{Tan}[\frac{1}{4}\,(-c+\frac{\pi}{2}-d\,x)]^2,\,-\text{Tan}[\frac{1}{4}\,(-c+\frac{\pi}{2}-d\,x)]^2]\,\text{Sec}[\frac{1}{4}\,(-c+\frac{\pi}{2}-d\,x)]^2\,\text{Tan}[\frac{1}{4}\,(-c+\frac{\pi}{2}-d\,x)]\,-$$

$$\frac{3}{2}\,(\frac{5}{2}-2\,m)\,\text{AppellF1}[\frac{1}{4},\,\frac{7}{2}-2\,m,\,2\,m,\,\frac{5}{4},\,\text{Tan}[\frac{1}{4}\,(-c+\frac{\pi}{2}-d\,x)]^2,\,-\text{Tan}[\frac{1}{4}\,(-c+\frac{\pi}{2}-d\,x)]^2]\,\text{Sec}[\frac{1}{4}\,(-c+\frac{\pi}{2}-d\,x)]^2$$

$$\text{Tan}[\frac{1}{4}\,(-c+\frac{\pi}{2}-d\,x)]\,-\,(4\,m\,\text{AppellF1}[\frac{1}{4},\,\frac{5}{2}-2\,m,\,1+2\,m,\,\frac{5}{4},\,\text{Tan}[\frac{1}{4}\,(-c+\frac{\pi}{2}-d\,x)]^2,\,-\text{Tan}[\frac{1}{4}\,(-c+\frac{\pi}{2}-d\,x)]^2]\,+$$

$$(-5+4\,m)\,\text{AppellF1}[\frac{1}{4},\,\frac{7}{2}-2\,m,\,2\,m,\,\frac{5}{4},\,\text{Tan}[\frac{1}{4}\,(-c+\frac{\pi}{2}-d\,x)]^2,\,-\text{Tan}[\frac{1}{4}\,(-c+\frac{\pi}{2}-d\,x)]^2])\,\text{Sec}[\frac{1}{4}\,(-c+\frac{\pi}{2}-d\,x)]^2$$

$$\text{Tan}[\frac{1}{4}\,(-c+\frac{\pi}{2}-d\,x)]\,-\,2\,\text{Tan}[\frac{1}{4}\,(-c+\frac{\pi}{2}-d\,x)]^2\,(4\,m\,(-\frac{1}{10}\,(1+2\,m)\,\text{AppellF1}[\frac{5}{4},\,\frac{5}{2}-2\,m,\,2+2\,m,\,\frac{9}{4},\,\text{Tan}[\frac{1}{4}\,(-c+\frac{\pi}{2}-d\,x)]^2,$$

$$-\text{Tan}[\frac{1}{4}\,(-c+\frac{\pi}{2}-d\,x)]^2]\,\text{Sec}[\frac{1}{4}\,(-c+\frac{\pi}{2}-d\,x)]^2\,\text{Tan}[\frac{1}{4}\,(-c+\frac{\pi}{2}-d\,x)]\,+\,\frac{1}{10}\,(\frac{5}{2}-2\,m)\,\text{AppellF1}[\frac{5}{4},\,\frac{7}{2}-2\,m,\,1+2\,m,$$

$$\frac{9}{4},\,\text{Tan}[\frac{1}{4}\,(-c+\frac{\pi}{2}-d\,x)]^2,\,-\text{Tan}[\frac{1}{4}\,(-c+\frac{\pi}{2}-d\,x)]^2]\,\text{Sec}[\frac{1}{4}\,(-c+\frac{\pi}{2}-d\,x)]^2\,\text{Tan}[\frac{1}{4}\,(-c+\frac{\pi}{2}-d\,x)])\,+\,(-5+4\,m)$$

$$(-\frac{1}{5}\,m\,\text{AppellF1}[\frac{5}{4},\,\frac{7}{2}-2\,m,\,1+2\,m,\,\frac{9}{4},\,\text{Tan}[\frac{1}{4}\,(-c+\frac{\pi}{2}-d\,x)]^2,\,-\text{Tan}[\frac{1}{4}\,(-c+\frac{\pi}{2}-d\,x)]^2]\,\text{Sec}[\frac{1}{4}\,(-c+\frac{\pi}{2}-d\,x)]^2$$

$$\text{Tan}[\frac{1}{4}\,(-c+\frac{\pi}{2}-d\,x)]\,+\,\frac{1}{10}\,(\frac{7}{2}-2\,m)\,\text{AppellF1}[\frac{5}{4},\,\frac{9}{2}-2\,m,\,2\,m,\,\frac{9}{4},\,\text{Tan}[\frac{1}{4}\,(-c+\frac{\pi}{2}-d\,x)]^2,\,-\text{Tan}[\frac{1}{4}\,(-c+\frac{\pi}{2}-d\,x)]^2]$$

$$\text{Sec}[\frac{1}{4}\,(-c+\frac{\pi}{2}-d\,x)]^2\,\text{Tan}[\frac{1}{4}\,(-c+\frac{\pi}{2}-d\,x)])))))\,/\,(\text{AppellF1}[-\frac{3}{4},\,\frac{5}{2}-2\,m,\,2\,m,\,\frac{1}{4},\,\text{Tan}[\frac{1}{4}\,(-c+\frac{\pi}{2}-d\,x)]^2,$$

$$-\text{Tan}[\frac{1}{4}\,(-c+\frac{\pi}{2}-d\,x)]^2]\,-\,2\,(4\,m\,\text{AppellF1}[\frac{1}{4},\,\frac{5}{2}-2\,m,\,1+2\,m,\,\frac{5}{4},\,\text{Tan}[\frac{1}{4}\,(-c+\frac{\pi}{2}-d\,x)]^2,\,-\text{Tan}[\frac{1}{4}\,(-c+\frac{\pi}{2}-d\,x)]^2]\,+$$

$$(-5+4\,m)\,\text{AppellF1}[\frac{1}{4},\,\frac{7}{2}-2\,m,\,2\,m,\,\frac{5}{4},\,\text{Tan}[\frac{1}{4}\,(-c+\frac{\pi}{2}-d\,x)]^2,\,-\text{Tan}[\frac{1}{4}\,(-c+\frac{\pi}{2}-d\,x)]^2])\,\text{Tan}[\frac{1}{4}\,(-c+\frac{\pi}{2}-d\,x)]^2)^2\,-$$

$$(11\,700\,\text{AppellF1}[\frac{1}{4},\,\frac{5}{2}-2\,m,\,2\,m,\,\frac{5}{4},\,\text{Tan}[\frac{1}{4}\,(-c+\frac{\pi}{2}-d\,x)]^2,\,-\text{Tan}[\frac{1}{4}\,(-c+\frac{\pi}{2}-d\,x)]^2]$$

$$(-(4\,m\,\text{AppellF1}[\frac{5}{4},\,\frac{5}{2}-2\,m,\,1+2\,m,\,\frac{9}{4},\,\text{Tan}[\frac{1}{4}\,(-c+\frac{\pi}{2}-d\,x)]^2,\,-\text{Tan}[\frac{1}{4}\,(-c+\frac{\pi}{2}-d\,x)]^2]\,+\,(-5+4\,m)\,\text{AppellF1}[\frac{5}{4},\,\frac{7}{2}-2\,m,$$

$$2\,m,\,\frac{9}{4},\,\text{Tan}[\frac{1}{4}\,(-c+\frac{\pi}{2}-d\,x)]^2,\,-\text{Tan}[\frac{1}{4}\,(-c+\frac{\pi}{2}-d\,x)]^2])\,\text{Sec}[\frac{1}{4}\,(-c+\frac{\pi}{2}-d\,x)]^2\,\text{Tan}[\frac{1}{4}\,(-c+\frac{\pi}{2}-d\,x)]\,+$$

$$5\,(-\frac{1}{5}\,m\,\text{AppellF1}[\frac{5}{4},\,\frac{5}{2}-2\,m,\,1+2\,m,\,\frac{9}{4},\,\text{Tan}[\frac{1}{4}\,(-c+\frac{\pi}{2}-d\,x)]^2,\,-\text{Tan}[\frac{1}{4}\,(-c+\frac{\pi}{2}-d\,x)]^2]\,\text{Sec}[\frac{1}{4}\,(-c+\frac{\pi}{2}-d\,x)]^2$$

$$\text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d\,x)] + \frac{1}{10}(\frac{5}{2}-2m)\,\text{AppellF1}[\frac{5}{4},\ \frac{7}{2}-2m,\ 2m,\ \frac{9}{4},\ \text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d\,x)]^2,\ -\text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d\,x)]^2]$$

$$\text{Sec}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d\,x)]^2\,\text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d\,x)])) - 2\,\text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d\,x)]^2\,(4m\,(-\frac{5}{18}(1+2m)\,\text{AppellF1}[\frac{9}{4},\ \frac{5}{2}-2m,\ 2+2m,$$

$$\frac{13}{4},\ \text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d\,x)]^2,\ -\text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d\,x)]^2]\,\text{Sec}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d\,x)]^2\,\text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d\,x)] + \frac{5}{18}(\frac{5}{2}-2m)$$

$$\text{AppellF1}[\frac{9}{4},\ \frac{7}{2}-2m,\ 1+2m,\ \frac{13}{4},\ \text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d\,x)]^2,\ -\text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d\,x)]^2]\,\text{Sec}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d\,x)]^2$$

$$\text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d\,x)]) + (-5+4m)\,(-\frac{5}{9}m\,\text{AppellF1}[\frac{9}{4},\ \frac{7}{2}-2m,\ 1+2m,\ \frac{13}{4},\ \text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d\,x)]^2,$$

$$-\text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d\,x)]^2]\,\text{Sec}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d\,x)]^2\,\text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d\,x)] + \frac{5}{18}(\frac{7}{2}-2m)\,\text{AppellF1}[\frac{9}{4},\ \frac{9}{2}-2m,$$

$$2m,\ \frac{13}{4},\ \text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d\,x)]^2,\ -\text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d\,x)]^2]\,\text{Sec}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d\,x)]^2\,\text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d\,x)])))))\Big/$$

$$(5\,\text{AppellF1}[\frac{1}{4},\ \frac{5}{2}-2m,\ 2m,\ \frac{5}{4},\ \text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d\,x)]^2,\ -\text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d\,x)]^2] - 2\,(4m\,\text{AppellF1}[\frac{5}{4},$$

$$\frac{5}{2}-2m,\ 1+2m,\ \frac{9}{4},\ \text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d\,x)]^2,\ -\text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d\,x)]^2] + (-5+4m)$$

$$\text{AppellF1}[\frac{5}{4},\ \frac{7}{2}-2m,\ 2m,\ \frac{9}{4},\ \text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d\,x)]^2,\ -\text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d\,x)]^2])\,\text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d\,x)]^2)^2 -$$

$$(6318\,\text{AppellF1}[\frac{5}{4},\ \frac{5}{2}-2m,\ 2m,\ \frac{9}{4},\ \text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d\,x)]^2,\ -\text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d\,x)]^2]\,\text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d\,x)]^2$$

$$(-(4m\,\text{AppellF1}[\frac{9}{4},\ \frac{5}{2}-2m,\ 1+2m,\ \frac{13}{4},\ \text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d\,x)]^2,\ -\text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d\,x)]^2] +$$

$$(-5+4m)\,\text{AppellF1}[\frac{9}{4},\ \frac{7}{2}-2m,\ 2m,\ \frac{13}{4},\ \text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d\,x)]^2,\ -\text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d\,x)]^2])\,\text{Sec}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d\,x)]^2$$

$$\text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d\,x)] + 9\,(-\frac{5}{9}m\,\text{AppellF1}[\frac{9}{4},\ \frac{5}{2}-2m,\ 1+2m,\ \frac{13}{4},\ \text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d\,x)]^2,\ -\text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d\,x)]^2]$$

$$\text{Sec}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d\,x)]^2\,\text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d\,x)] + \frac{5}{18}(\frac{5}{2}-2m)\,\text{AppellF1}[\frac{9}{4},\ \frac{7}{2}-2m,\ 2m,\ \frac{13}{4},$$

$$\text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d\,x)]^2,\ -\text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d\,x)]^2]\,\text{Sec}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d\,x)]^2\,\text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d\,x)]) -$$

$$2\,\text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d\,x)]^2\,(4m\,(-\frac{9}{26}(1+2m)\,\text{AppellF1}[\frac{13}{4},\ \frac{5}{2}-2m,\ 2+2m,\ \frac{17}{4},\ \text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d\,x)]^2,$$

$$-\text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d\,x)]^2]\,\text{Sec}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d\,x)]^2\,\text{Tan}[\tfrac{1}{4}(-c+\tfrac{\pi}{2}-d\,x)] + \frac{9}{26}(\frac{5}{2}-2m)\,\text{AppellF1}[\frac{13}{4},\ \frac{7}{2}-2m,$$

$$1+2\,m,\ \frac{17}{4},\ \text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2]\ \text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\ \text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\Big)\ +$$

$$(-5+4\,m)\ \Big(-\frac{9}{13}\,m\ \text{AppellF1}[\frac{13}{4},\ \frac{7}{2}-2\,m,\ 1+2\,m,\ \frac{17}{4},\ \text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2]$$

$$\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\ \text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]+\frac{9}{26}\left(\frac{7}{2}-2\,m\right)\ \text{AppellF1}[\frac{13}{4},\ \frac{9}{2}-2\,m,\ 2\,m,\ \frac{17}{4},$$

$$\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2]\ \text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\ \text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\Big)\Big)\Big)\Big)\Big)\Big/$$

$$\Big(9\ \text{AppellF1}[\frac{5}{4},\ \frac{5}{2}-2\,m,\ 2\,m,\ \frac{9}{4},\ \text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2]-2\ \Big(4\,m\ \text{AppellF1}[\frac{9}{4},$$

$$\frac{5}{2}-2\,m,\ 1+2\,m,\ \frac{13}{4},\ \text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2]+(-5+4\,m)$$

$$\text{AppellF1}[\frac{9}{4},\ \frac{7}{2}-2\,m,\ 2\,m,\ \frac{13}{4},\ \text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2]\Big)\ \text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Big)^2\ -$$

$$\Big(3380\ \text{AppellF1}[\frac{9}{4},\ \frac{5}{2}-2\,m,\ 2\,m,\ \frac{13}{4},\ \text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2]\ \text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^4$$

$$\Big(-\Big(4\,m\ \text{AppellF1}[\frac{13}{4},\ \frac{5}{2}-2\,m,\ 1+2\,m,\ \frac{17}{4},\ \text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2]+(-5+4\,m)\ \text{AppellF1}[\frac{13}{4},$$

$$\frac{7}{2}-2\,m,\ 2\,m,\ \frac{17}{4},\ \text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2]\Big)\ \text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\ \text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]+$$

$$13\ \Big(-\frac{9}{13}\,m\ \text{AppellF1}[\frac{13}{4},\ \frac{5}{2}-2\,m,\ 1+2\,m,\ \frac{17}{4},\ \text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2]$$

$$\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\ \text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]+\frac{9}{26}\left(\frac{5}{2}-2\,m\right)\ \text{AppellF1}[\frac{13}{4},\ \frac{7}{2}-2\,m,\ 2\,m,\ \frac{17}{4},$$

$$\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2]\ \text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\ \text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\Big)\ -$$

$$2\ \text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\ \Big(4\,m\ \Big(-\frac{13}{34}\ (1+2\,m)\ \text{AppellF1}[\frac{17}{4},\ \frac{5}{2}-2\,m,\ 2+2\,m,\ \frac{21}{4},\ \text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,$$

$$-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2]\ \text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\ \text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]+\frac{13}{34}\left(\frac{5}{2}-2\,m\right)\ \text{AppellF1}[\frac{17}{4},\ \frac{7}{2}-2\,m,$$

$$1+2\,m,\ \frac{21}{4},\ \text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2]\ \text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\ \text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\Big)\ +$$

$$(-5+4\,m)\ \Big(-\frac{13}{17}\,m\ \text{AppellF1}[\frac{17}{4},\ \frac{7}{2}-2\,m,\ 1+2\,m,\ \frac{21}{4},\ \text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2]$$

$$\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\ \text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]+\frac{13}{34}\left(\frac{7}{2}-2\,m\right)\ \text{AppellF1}[\frac{17}{4},\ \frac{9}{2}-2\,m,\ 2\,m,\ \frac{21}{4},$$

$$\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Big]\ \text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\ \text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\Big)\Big)\Big)\Big)\Big)\Big/$$

$$\Big(13\,\text{AppellF1}\left[\frac{9}{4},\ \frac{5}{2}-2\,m,\ 2\,m,\ \frac{13}{4},\ \text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]-2\,\Big(4\,m\,\text{AppellF1}\Big[\frac{13}{4},$$

$$\frac{5}{2}-2\,m,\ 1+2\,m,\ \frac{17}{4},\ \text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Big]+(-5+4\,m)$$

$$\text{AppellF1}\left[\frac{13}{4},\ \frac{7}{2}-2\,m,\ 2\,m,\ \frac{17}{4},\ \text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\Big)\ \text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Big)^2-$$

$$\Big(765\,\text{AppellF1}\left[\frac{13}{4},\ \frac{5}{2}-2\,m,\ 2\,m,\ \frac{17}{4},\ \text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\ \text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^6$$

$$\Big(-\Big(4\,m\,\text{AppellF1}\left[\frac{17}{4},\ \frac{5}{2}-2\,m,\ 1+2\,m,\ \frac{21}{4},\ \text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]+(-5+4\,m)\ \text{AppellF1}\Big[\frac{17}{4},$$

$$\frac{7}{2}-2\,m,\ 2\,m,\ \frac{21}{4},\ \text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Big]\Big)\ \text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\ \text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]+$$

$$17\,\Big(-\frac{13}{17}\,m\,\text{AppellF1}\left[\frac{17}{4},\ \frac{5}{2}-2\,m,\ 1+2\,m,\ \frac{21}{4},\ \text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\ \text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]+\frac{13}{34}\left(\frac{5}{2}-2\,m\right)\ \text{AppellF1}\Big[\frac{17}{4},\ \frac{7}{2}-2\,m,\ 2\,m,\ \frac{21}{4},$$

$$\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Big]\ \text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\ \text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\Big)-$$

$$2\,\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\ \Big(4\,m\,\Big(-\frac{17}{42}\,(1+2\,m)\ \text{AppellF1}\Big[\frac{21}{4},\ \frac{5}{2}-2\,m,\ 2+2\,m,\ \frac{25}{4},\ \text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,$$

$$-\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Big]\ \text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\ \text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]+\frac{17}{42}\left(\frac{5}{2}-2\,m\right)\ \text{AppellF1}\Big[\frac{21}{4},\ \frac{7}{2}-2\,m,$$

$$1+2\,m,\ \frac{25}{4},\ \text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Big]\ \text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\ \text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\Big)+$$

$$(-5+4\,m)\ \Big(-\frac{17}{21}\,m\,\text{AppellF1}\left[\frac{21}{4},\ \frac{7}{2}-2\,m,\ 1+2\,m,\ \frac{25}{4},\ \text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\ \text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]+\frac{17}{42}\left(\frac{7}{2}-2\,m\right)\ \text{AppellF1}\Big[\frac{21}{4},\ \frac{9}{2}-2\,m,\ 2\,m,\ \frac{25}{4},$$

$$\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Big]\ \text{Sec}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\ \text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\Big)\Big)\Big)\Big)\Big)\Big)\Big/$$

$$\Big(17\,\text{AppellF1}\left[\frac{13}{4},\ \frac{5}{2}-2\,m,\ 2\,m,\ \frac{17}{4},\ \text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]-2\,\Big(4\,m\,\text{AppellF1}\Big[\frac{17}{4},$$

$$\frac{5}{2}-2\,m,\ 1+2\,m,\ \frac{21}{4},\ \text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Big]+(-5+4\,m)$$

$$\text{AppellF1}\left[\frac{17}{4}, \frac{7}{2}-2m, 2m, \frac{21}{4}, \text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right] \text{Tan}\left[\frac{1}{4}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\Big)^2\Big)\Bigg)\Bigg)\Bigg)$$

Problem 371: Result more than twice size of optimal antiderivative.

$$\int (e\,\text{Cos}[c+d\,x])^{-3-2m} (a+a\,\text{Sin}[c+d\,x])^m \,dx$$

Optimal (type 5, 70 leaves, 3 steps):

$$\frac{(e\,\text{Cos}[c+d\,x])^{-2(1+m)} \text{Hypergeometric2F1}\left[2, -1-m, -m, \frac{1}{2}(1-\text{Sin}[c+d\,x])\right] (a+a\,\text{Sin}[c+d\,x])^{1+m}}{4\,a\,d\,e\,(1+m)}$$

Result (type 5, 206 leaves):

$$\frac{1}{8\,d\,e^3\,m\,(-1+m^2)} (e\,\text{Cos}[c+d\,x])^{-2m} \left(\text{Sec}\left[\frac{1}{4}(2c-\pi+2dx)\right]^2\right)^{-m} (a(1+\text{Sin}[c+d\,x]))^m$$
$$\Bigg(2(-1+m^2)\,\text{Hypergeometric2F1}\left[-m, -m, 1-m, -\text{Tan}\left[\frac{1}{4}(2c-\pi+2dx)\right]^2\right] + (-1+m)\,m\,\text{Csc}\left[\frac{1}{4}(2c-\pi+2dx)\right]^2 \left(\text{Sec}\left[\frac{1}{4}(2c-\pi+2dx)\right]^2\right)^m +$$
$$m(1+m)\,\text{Hypergeometric2F1}\left[1-m, -m, 2-m, -\text{Tan}\left[\frac{1}{4}(2c-\pi+2dx)\right]^2\right] \text{Tan}\left[\frac{1}{4}(2c-\pi+2dx)\right]^2\Bigg)$$

Problem 372: Result more than twice size of optimal antiderivative.

$$\int (e\,\text{Cos}[c+d\,x])^{4-2m} (a+a\,\text{Sin}[c+d\,x])^m \,dx$$

Optimal (type 5, 89 leaves, 4 steps):

$$\frac{1}{5\,d\,e} 2^{\frac{5}{2}-m} (e\,\text{Cos}[c+d\,x])^{5-2m} \text{Hypergeometric2F1}\left[\frac{5}{2}, \frac{1}{2}(-3+2m), \frac{7}{2}, \frac{1}{2}(1+\text{Sin}[c+d\,x])\right] (1-\text{Sin}[c+d\,x])^{-\frac{5}{2}+m} (a+a\,\text{Sin}[c+d\,x])^m$$

Result (type 5, 200 leaves):

$$-\frac{1}{d(-1+2m)} 32\,e^4 (e\,\text{Cos}[c+d\,x])^{-2m} \Bigg(\text{Hypergeometric2F1}\left[\frac{1}{2}-m, 3-m, \frac{3}{2}-m, -\text{Tan}\left[\frac{1}{4}(2c-\pi+2dx)\right]^2\right] -$$
$$2\,\text{Hypergeometric2F1}\left[\frac{1}{2}-m, 4-m, \frac{3}{2}-m, -\text{Tan}\left[\frac{1}{4}(2c-\pi+2dx)\right]^2\right] + \text{Hypergeometric2F1}\left[\frac{1}{2}-m, 5-m, \frac{3}{2}-m, -\text{Tan}\left[\frac{1}{4}(2c-\pi+2dx)\right]^2\right]\Bigg)$$
$$\left(\text{Sec}\left[\frac{1}{4}(2c-\pi+2dx)\right]^2\right)^{-m} (a(1+\text{Sin}[c+d\,x]))^m\,\text{Tan}\left[\frac{1}{4}(2c-\pi+2dx)\right]$$

- **Problem 375: Result more than twice size of optimal antiderivative.**

$$\int (e\,\text{Cos}[c+d\,x])^{-2-2\,m}\,(a+a\,\text{Sin}[c+d\,x])^m\,dx$$

Optimal (type 5, 87 leaves, 4 steps):

$$-\frac{1}{d\,e}2^{-\frac{1}{2}-m}\,(e\,\text{Cos}[c+d\,x])^{-1-2\,m}\,\text{Hypergeometric2F1}\left[-\frac{1}{2},\,\frac{1}{2}\,(3+2\,m),\,\frac{1}{2},\,\frac{1}{2}\,(1+\text{Sin}[c+d\,x])\right]\,(1-\text{Sin}[c+d\,x])^{\frac{1}{2}+m}\,(a+a\,\text{Sin}[c+d\,x])^m$$

Result (type 5, 186 leaves):

$$\frac{1}{2\,d\,e^2\,\left(-1+4\,m^2\right)}(e\,\text{Cos}[c+d\,x])^{-2\,m}\,\text{Cot}\left[\frac{1}{4}\,(2\,c+\pi+2\,d\,x)\right]$$
$$\left((-1+2\,m)\,\text{Cot}\left[\frac{1}{4}\,(2\,c-\pi+2\,d\,x)\right]^2\,\text{Hypergeometric2F1}\left[-\frac{1}{2}-m,\,-m,\,\frac{1}{2}-m,\,-\text{Tan}\left[\frac{1}{4}\,(2\,c-\pi+2\,d\,x)\right]^2\right]+\right.$$
$$\left.(1+2\,m)\,\text{Hypergeometric2F1}\left[\frac{1}{2}-m,\,-m,\,\frac{3}{2}-m,\,-\text{Tan}\left[\frac{1}{4}\,(2\,c-\pi+2\,d\,x)\right]^2\right]\right)\,\left(\text{Sec}\left[\frac{1}{4}\,(2\,c-\pi+2\,d\,x)\right]^2\right)^{-m}\,(a\,(1+\text{Sin}[c+d\,x]))^m$$

- **Problem 380: Result more than twice size of optimal antiderivative.**

$$\int \text{Sec}[c+d\,x]^3\,(a+b\,\text{Sin}[c+d\,x])\,dx$$

Optimal (type 3, 41 leaves, 3 steps):

$$\frac{a\,\text{ArcTanh}[\text{Sin}[c+d\,x]]}{2\,d}+\frac{\text{Sec}[c+d\,x]^2\,(b+a\,\text{Sin}[c+d\,x])}{2\,d}$$

Result (type 3, 83 leaves):

$$\frac{1}{2\,d}\left(a\,\left(-\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]+\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\right)+b\,\text{Sec}[c+d\,x]^2+a\,\text{Sec}[c+d\,x]\,\text{Tan}[c+d\,x]\right)$$

- **Problem 381: Result more than twice size of optimal antiderivative.**

$$\int \text{Sec}[c+d\,x]^5\,(a+b\,\text{Sin}[c+d\,x])\,dx$$

Optimal (type 3, 61 leaves, 4 steps):

$$\frac{3\,a\,\text{ArcTanh}[\text{Sin}[c+d\,x]]}{8\,d}+\frac{\text{Sec}[c+d\,x]^4\,(b+a\,\text{Sin}[c+d\,x])}{4\,d}+\frac{3\,a\,\text{Sec}[c+d\,x]\,\text{Tan}[c+d\,x]}{8\,d}$$

Result (type 3, 207 leaves):

$$-\frac{3\,a\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]}{8\,d}+\frac{3\,a\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]}{8\,d}+$$
$$\frac{b\,\text{Sec}[c+d\,x]^4}{4\,d}+\frac{a}{16\,d\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^4}+\frac{3\,a}{16\,d\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}-$$
$$\frac{a}{16\,d\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^4}-\frac{3\,a}{16\,d\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}$$

- **Problem 389: Result more than twice size of optimal antiderivative.**

$$\int \text{Cos}[c+d\,x]\,(a+b\,\text{Sin}[c+d\,x])^2\,dx$$

Optimal (type 3, 22 leaves, 2 steps):

$$\frac{(a+b\,\text{Sin}[c+d\,x])^3}{3\,b\,d}$$

Result (type 3, 46 leaves):

$$\frac{a^2\,\text{Sin}[c+d\,x]}{d}+\frac{a\,b\,\text{Sin}[c+d\,x]^2}{d}+\frac{b^2\,\text{Sin}[c+d\,x]^3}{3\,d}$$

- **Problem 391: Result more than twice size of optimal antiderivative.**

$$\int \text{Sec}[c+d\,x]^3\,(a+b\,\text{Sin}[c+d\,x])^2\,dx$$

Optimal (type 3, 59 leaves, 3 steps):

$$\frac{\left(a^2-b^2\right)\,\text{ArcTanh}[\text{Sin}[c+d\,x]]}{2\,d}+\frac{\text{Sec}[c+d\,x]^2\,(b+a\,\text{Sin}[c+d\,x])\,(a+b\,\text{Sin}[c+d\,x])}{2\,d}$$

Result (type 3, 139 leaves):

$$\frac{1}{4\,d}\left(2\,\left(-a^2+b^2\right)\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]+\right.$$
$$\left.2\,\left(a^2-b^2\right)\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]+\frac{(a+b)^2}{\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}-\frac{(a-b)^2}{\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}\right)$$

- **Problem 392: Result more than twice size of optimal antiderivative.**

$$\int \text{Sec}[c+d\,x]^5\,(a+b\,\text{Sin}[c+d\,x])^2\,dx$$

Optimal (type 3, 99 leaves, 4 steps):

$$\frac{\left(3 a^2-b^2\right) \text{ArcTanh}[\text{Sin}[c+d x]]}{8 d}+\frac{\text{Sec}[c+d x]^4 (b+a \text{Sin}[c+d x]) (a+b \text{Sin}[c+d x])}{4 d}+\frac{\text{Sec}[c+d x]^2 \left(2 a b+\left(3 a^2-b^2\right) \text{Sin}[c+d x]\right)}{8 d}$$

Result (type 3, 219 leaves) :

$$\frac{1}{16 d}\left(2 \left(-3 a^2+b^2\right) \text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]-\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right]+\right.$$
$$2 \left(3 a^2-b^2\right) \text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right]+\frac{(a+b)^2}{\left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]-\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^4}+$$
$$\left.\frac{3 a^2+2 a b-b^2}{\left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]-\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^2}-\frac{(a-b)^2}{\left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^4}+\frac{-3 a^2+2 a b+b^2}{\left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^2}\right)$$

- **Problem 402: Result more than twice size of optimal antiderivative.**

$$\int \text{Cos}[c+d x] (a+b \text{Sin}[c+d x])^3 \, dx$$

Optimal (type 3, 22 leaves, 2 steps) :

$$\frac{(a+b \text{Sin}[c+d x])^4}{4 b d}$$

Result (type 3, 67 leaves) :

$$\frac{a^3 \text{Sin}[c+d x]}{d}+\frac{3 a^2 b \text{Sin}[c+d x]^2}{2 d}+\frac{a b^2 \text{Sin}[c+d x]^3}{d}+\frac{b^3 \text{Sin}[c+d x]^4}{4 d}$$

- **Problem 405: Result more than twice size of optimal antiderivative.**

$$\int \text{Sec}[c+d x]^5 (a+b \text{Sin}[c+d x])^3 \, dx$$

Optimal (type 3, 94 leaves, 4 steps) :

$$\frac{3 a \left(a^2-b^2\right) \text{ArcTanh}[\text{Sin}[c+d x]]}{8 d}+\frac{3 a \text{Sec}[c+d x]^2 (b+a \text{Sin}[c+d x]) (a+b \text{Sin}[c+d x])}{8 d}+\frac{\text{Sec}[c+d x]^3 (a+b \text{Sin}[c+d x])^3 \text{Tan}[c+d x]}{4 d}$$

Result (type 3, 213 leaves) :

$$\frac{1}{16\,d}\left(-6\,a\,(a^2-b^2)\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]+\right.$$
$$6\,a\,(a^2-b^2)\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]+\frac{(a+b)^3}{\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4}+$$
$$\left.\frac{3\,(a-b)\,(a+b)^2}{\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2}-\frac{(a-b)^3}{\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4}-\frac{3\,(a-b)^2\,(a+b)}{\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2}\right)$$

- **Problem 413: Result more than twice size of optimal antiderivative.**

$$\int \text{Cos}[c+d\,x]^5\,(a+b\,\text{Sin}[c+d\,x])^8\,dx$$

Optimal (type 3, 144 leaves, 3 steps):

$$\frac{(a^2-b^2)^2\,(a+b\,\text{Sin}[c+d\,x])^9}{9\,b^5\,d}-\frac{2\,a\,(a^2-b^2)\,(a+b\,\text{Sin}[c+d\,x])^{10}}{5\,b^5\,d}+$$
$$\frac{2\,(3\,a^2-b^2)\,(a+b\,\text{Sin}[c+d\,x])^{11}}{11\,b^5\,d}-\frac{a\,(a+b\,\text{Sin}[c+d\,x])^{12}}{3\,b^5\,d}+\frac{(a+b\,\text{Sin}[c+d\,x])^{13}}{13\,b^5\,d}$$

Result (type 3, 572 leaves):

$$\frac{1}{26\,357\,760\,d}\left(-205\,920\,(80\,a^7\,b+168\,a^5\,b^3+70\,a^3\,b^5+5\,a\,b^7)\,\text{Cos}[2\,(c+d\,x)]-25\,740\,(256\,a^7\,b+224\,a^5\,b^3-5\,a\,b^7)\,\text{Cos}[4\,(c+d\,x)]-\right.$$
$$1\,098\,240\,a^7\,b\,\text{Cos}[6\,(c+d\,x)]+3\,843\,840\,a^5\,b^3\,\text{Cos}[6\,(c+d\,x)]+2\,402\,400\,a^3\,b^5\,\text{Cos}[6\,(c+d\,x)]+171\,600\,a\,b^7\,\text{Cos}[6\,(c+d\,x)]+$$
$$1\,441\,440\,a^5\,b^3\,\text{Cos}[8\,(c+d\,x)]-51\,480\,a\,b^7\,\text{Cos}[8\,(c+d\,x)]-288\,288\,a^3\,b^5\,\text{Cos}[10\,(c+d\,x)]-20\,592\,a\,b^7\,\text{Cos}[10\,(c+d\,x)]+$$
$$8580\,a\,b^7\,\text{Cos}[12\,(c+d\,x)]+16\,473\,600\,a^8\,\text{Sin}[c+d\,x]+57\,657\,600\,a^6\,b^2\,\text{Sin}[c+d\,x]+43\,243\,200\,a^4\,b^4\,\text{Sin}[c+d\,x]+7\,207\,200\,a^2\,b^6\,\text{Sin}[c+d\,x]+$$
$$128\,700\,b^8\,\text{Sin}[c+d\,x]+2\,745\,600\,a^8\,\text{Sin}[3\,(c+d\,x)]-3\,843\,840\,a^6\,b^2\,\text{Sin}[3\,(c+d\,x)]-9\,609\,600\,a^4\,b^4\,\text{Sin}[3\,(c+d\,x)]-$$
$$2\,402\,400\,a^2\,b^6\,\text{Sin}[3\,(c+d\,x)]-53\,625\,b^8\,\text{Sin}[3\,(c+d\,x)]+329\,472\,a^8\,\text{Sin}[5\,(c+d\,x)]-6\,918\,912\,a^6\,b^2\,\text{Sin}[5\,(c+d\,x)]-$$
$$5\,765\,760\,a^4\,b^4\,\text{Sin}[5\,(c+d\,x)]-720\,720\,a^2\,b^6\,\text{Sin}[5\,(c+d\,x)]-6435\,b^8\,\text{Sin}[5\,(c+d\,x)]-1\,647\,360\,a^6\,b^2\,\text{Sin}[7\,(c+d\,x)]+$$
$$1\,029\,600\,a^4\,b^4\,\text{Sin}[7\,(c+d\,x)]+514\,800\,a^2\,b^6\,\text{Sin}[7\,(c+d\,x)]+12\,870\,b^8\,\text{Sin}[7\,(c+d\,x)]+800\,800\,a^4\,b^4\,\text{Sin}[9\,(c+d\,x)]+$$
$$\left.80\,080\,a^2\,b^6\,\text{Sin}[9\,(c+d\,x)]-1430\,b^8\,\text{Sin}[9\,(c+d\,x)]-65\,520\,a^2\,b^6\,\text{Sin}[11\,(c+d\,x)]-1755\,b^8\,\text{Sin}[11\,(c+d\,x)]+495\,b^8\,\text{Sin}[13\,(c+d\,x)]\right)$$

- **Problem 414: Result more than twice size of optimal antiderivative.**

$$\int \text{Cos}[c+d\,x]^3\,(a+b\,\text{Sin}[c+d\,x])^8\,dx$$

Optimal (type 3, 77 leaves, 3 steps):

$$-\frac{(a^2-b^2)\,(a+b\,\text{Sin}[c+d\,x])^9}{9\,b^3\,d}+\frac{a\,(a+b\,\text{Sin}[c+d\,x])^{10}}{5\,b^3\,d}-\frac{(a+b\,\text{Sin}[c+d\,x])^{11}}{11\,b^3\,d}$$

Result (type 3, 438 leaves):

$$\frac{1}{506880\,d}\Big(-7920\left(64 a^7 b+168 a^5 b^3+84 a^3 b^5+7 a b^7\right) \text{Cos}[2 (c+d x)]-15840\left(8 a^7 b-7 a^3 b^5-a b^7\right) \text{Cos}[4 (c+d x)]+147840 a^5 b^3 \text{Cos}[6 (c+d x)]+73920 a^3 b^5 \text{Cos}[6 (c+d x)]+3960 a b^7 \text{Cos}[6 (c+d x)]-27720 a^3 b^5 \text{Cos}[8 (c+d x)]-3960 a b^7 \text{Cos}[8 (c+d x)]+792 a b^7 \text{Cos}[10 (c+d x)]+380160 a^8 \text{Sin}[c+d x]+1774080 a^6 b^2 \text{Sin}[c+d x]+1663200 a^4 b^4 \text{Sin}[c+d x]+332640 a^2 b^6 \text{Sin}[c+d x]+6930 b^8 \text{Sin}[c+d x]+42240 a^8 \text{Sin}[3 (c+d x)]-295680 a^6 b^2 \text{Sin}[3 (c+d x)]-554400 a^4 b^4 \text{Sin}[3 (c+d x)]-147840 a^2 b^6 \text{Sin}[3 (c+d x)]-3630 b^8 \text{Sin}[3 (c+d x)]-177408 a^6 b^2 \text{Sin}[5 (c+d x)]-110880 a^4 b^4 \text{Sin}[5 (c+d x)]+495 b^8 \text{Sin}[5 (c+d x)]+79200 a^4 b^4 \text{Sin}[7 (c+d x)]+23760 a^2 b^6 \text{Sin}[7 (c+d x)]+495 b^8 \text{Sin}[7 (c+d x)]-6160 a^2 b^6 \text{Sin}[9 (c+d x)]-275 b^8 \text{Sin}[9 (c+d x)]+45 b^8 \text{Sin}[11 (c+d x)]\Big)$$

- **Problem 465: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int \frac{\text{Sec}[c+d x]}{(a+b \text{Sin}[c+d x])^8} \, dx$$

Optimal (type 3, 385 leaves, 4 steps) :

$$-\frac{\text{Log}[1-\text{Sin}[c+d x]]}{2 (a+b)^8 d}+\frac{\text{Log}[1+\text{Sin}[c+d x]]}{2 (a-b)^8 d}-\frac{8 a b \left(a^2+b^2\right) \left(a^4+6 a^2 b^2+b^4\right) \text{Log}[a+b \text{Sin}[c+d x]]}{\left(a^2-b^2\right)^8 d}+\frac{b}{7 \left(a^2-b^2\right) d (a+b \text{Sin}[c+d x])^7}+\frac{a b}{3 \left(a^2-b^2\right)^2 d (a+b \text{Sin}[c+d x])^6}+\frac{b \left(3 a^2+b^2\right)}{5 \left(a^2-b^2\right)^3 d (a+b \text{Sin}[c+d x])^5}+\frac{a b \left(a^2+b^2\right)}{\left(a^2-b^2\right)^4 d (a+b \text{Sin}[c+d x])^4}+\frac{b \left(5 a^4+10 a^2 b^2+b^4\right)}{3 \left(a^2-b^2\right)^5 d (a+b \text{Sin}[c+d x])^3}+\frac{a b \left(3 a^2+b^2\right) \left(a^2+3 b^2\right)}{\left(a^2-b^2\right)^6 d (a+b \text{Sin}[c+d x])^2}+\frac{b \left(7 a^6+35 a^4 b^2+21 a^2 b^4+b^6\right)}{\left(a^2-b^2\right)^7 d (a+b \text{Sin}[c+d x])}$$

Result (type 3, 847 leaves) :

$$\frac{16\, i \left(a^7 b+7 a^5 b^3+7 a^3 b^5+a b^7\right) (c+d x)}{(a-b)^8 (a+b)^8 d}+\frac{i \text{ArcTan}\left[\text{Csc}[c+d x] \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]-\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right) \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)\right]}{(a-b)^8 d}-$$

$$\frac{i \text{ArcTan}\left[\text{Csc}[c+d x] \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]-\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right) \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)\right]}{(a+b)^8 d}-\frac{\text{Log}\left[\left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]-\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^2\right]}{2 (a+b)^8 d}+$$

$$\frac{\text{Log}\left[\left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^2\right]}{2 (a-b)^8 d}-\frac{8 \left(a^7 b+7 a^5 b^3+7 a^3 b^5+a b^7\right) \text{Log}[a+b \text{Sin}[c+d x]]}{\left(a^2-b^2\right)^8 d}+$$

$$\frac{1}{3360 \left(a^2-b^2\right)^7 d (a+b \text{Sin}[c+d x])^7}\Big(46176 a^{12} b+368176 a^{10} b^3+1198292 a^8 b^5+1066342 a^6 b^7+403302 a^4 b^9+20066 a^2 b^{11}+2286 b^{13}-$$
$$249648 a^{10} b^3 \text{Cos}[2 (c+d x)]-1190224 a^8 b^5 \text{Cos}[2 (c+d x)]-1321089 a^6 b^7 \text{Cos}[2 (c+d x)]-527429 a^4 b^9 \text{Cos}[2 (c+d x)]-$$
$$35539 a^2 b^{11} \text{Cos}[2 (c+d x)]-2471 b^{13} \text{Cos}[2 (c+d x)]+51100 a^8 b^5 \text{Cos}[4 (c+d x)]+239610 a^6 b^7 \text{Cos}[4 (c+d x)]+$$
$$137690 a^4 b^9 \text{Cos}[4 (c+d x)]+14350 a^2 b^{11} \text{Cos}[4 (c+d x)]+770 b^{13} \text{Cos}[4 (c+d x)]-735 a^6 b^7 \text{Cos}[6 (c+d x)]-$$
$$3675 a^4 b^9 \text{Cos}[6 (c+d x)]-2205 a^2 b^{11} \text{Cos}[6 (c+d x)]-105 b^{13} \text{Cos}[6 (c+d x)]+229152 a^{11} b^2 \text{Sin}[c+d x]+1230376 a^9 b^4 \text{Sin}[c+d x]+$$
$$2302916 a^7 b^6 \text{Sin}[c+d x]+1297156 a^5 b^8 \text{Sin}[c+d x]+255276 a^3 b^{10} \text{Sin}[c+d x]+7364 a b^{12} \text{Sin}[c+d x]-149240 a^9 b^4 \text{Sin}[3 (c+d x)]-$$
$$692370 a^7 b^6 \text{Sin}[3 (c+d x)]-506170 a^5 b^8 \text{Sin}[3 (c+d x)]-127190 a^3 b^{10} \text{Sin}[3 (c+d x)]-3430 a b^{12} \text{Sin}[3 (c+d x)]+$$
$$9450 a^7 b^6 \text{Sin}[5 (c+d x)]+45570 a^5 b^8 \text{Sin}[5 (c+d x)]+24990 a^3 b^{10} \text{Sin}[5 (c+d x)]+630 a b^{12} \text{Sin}[5 (c+d x)]\Big)$$

- **Problem 466: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int \frac{\text{Sec}[c+d x]^3}{(a+b \text{Sin}[c+d x])^8} \, dx$$

Optimal (type 3, 527 leaves, 4 steps):

$$-\frac{(a+9 b) \text{Log}[1-\text{Sin}[c+d x]]}{4 (a+b)^9 d}+\frac{(a-9 b) \text{Log}[1+\text{Sin}[c+d x]]}{4 (a-b)^9 d}+\frac{8 a b^3 \left(15 a^6+63 a^4 b^2+45 a^2 b^4+5 b^6\right) \text{Log}[a+b \text{Sin}[c+d x]]}{\left(a^2-b^2\right)^9 d}-$$

$$\frac{b \left(7 a^2+9 b^2\right)}{14 \left(a^2-b^2\right)^2 d (a+b \text{Sin}[c+d x])^7}-\frac{\text{Sec}[c+d x]^2 (b-a \text{Sin}[c+d x])}{2 \left(a^2-b^2\right) d (a+b \text{Sin}[c+d x])^7}-\frac{a b \left(3 a^2+13 b^2\right)}{6 \left(a^2-b^2\right)^3 d (a+b \text{Sin}[c+d x])^6}-$$

$$\frac{b \left(5 a^4+50 a^2 b^2+9 b^4\right)}{10 \left(a^2-b^2\right)^4 d (a+b \text{Sin}[c+d x])^5}-\frac{a b \left(a^4+20 a^2 b^2+11 b^4\right)}{2 \left(a^2-b^2\right)^5 d (a+b \text{Sin}[c+d x])^4}-\frac{b \left(3 a^6+115 a^4 b^2+129 a^2 b^4+9 b^6\right)}{6 \left(a^2-b^2\right)^6 d (a+b \text{Sin}[c+d x])^3}-$$

$$\frac{a b \left(a^6+77 a^4 b^2+147 a^2 b^4+31 b^6\right)}{2 \left(a^2-b^2\right)^7 d (a+b \text{Sin}[c+d x])^2}-\frac{b \left(a^8+196 a^6 b^2+574 a^4 b^4+244 a^2 b^6+9 b^8\right)}{2 \left(a^2-b^2\right)^8 d (a+b \text{Sin}[c+d x])}$$

Result (type 3, 1237 leaves):

$$-\frac{16\,i\,\left(15\,a^7\,b^3+63\,a^5\,b^5+45\,a^3\,b^7+5\,a\,b^9\right)\,(c+d\,x)}{(a-b)^9\,(a+b)^9\,d}+\frac{1}{2\,(a-b)^9\,d}$$

$$i\,(a-9\,b)\,\mathrm{ArcTan}\left[\mathrm{Csc}[c+d\,x]\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)\right]+\frac{1}{2\,(a+b)^9\,d}$$

$$i\,(-a-9\,b)\,\mathrm{ArcTan}\left[\mathrm{Csc}[c+d\,x]\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)\right]+$$

$$\frac{(-a-9\,b)\,\mathrm{Log}\left[\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2\right]}{4\,(a+b)^9\,d}+\frac{(a-9\,b)\,\mathrm{Log}\left[\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2\right]}{4\,(a-b)^9\,d}+$$

$$\frac{8\left(15\,a^7\,b^3+63\,a^5\,b^5+45\,a^3\,b^7+5\,a\,b^9\right)\mathrm{Log}[a+b\,\mathrm{Sin}[c+d\,x]]}{\left(a^2-b^2\right)^9\,d}+$$

$$\frac{1}{26880\left(a^2-b^2\right)^8\,d\,(a+b\,\mathrm{Sin}[c+d\,x])^7}\mathrm{Sec}[c+d\,x]^2\left(-60480\,a^{14}\,b-2155120\,a^{12}\,b^3-10531096\,a^{10}\,b^5-18656885\,a^8\,b^7-11704100\,a^6\,b^9-\right.$$
$$2859110\,a^4\,b^{11}-153820\,a^2\,b^{13}-5469\,b^{15}-47040\,a^{14}\,b\,\mathrm{Cos}[2\,(c+d\,x)]-2190400\,a^{12}\,b^3\,\mathrm{Cos}[2\,(c+d\,x)]-3544396\,a^{10}\,b^5\,\mathrm{Cos}[2\,(c+d\,x)]+$$
$$128224\,a^8\,b^7\,\mathrm{Cos}[2\,(c+d\,x)]+4162744\,a^6\,b^9\,\mathrm{Cos}[2\,(c+d\,x)]+1322704\,a^4\,b^{11}\,\mathrm{Cos}[2\,(c+d\,x)]+171764\,a^2\,b^{13}\,\mathrm{Cos}[2\,(c+d\,x)]-$$
$$3600\,b^{15}\,\mathrm{Cos}[2\,(c+d\,x)]+58800\,a^{12}\,b^3\,\mathrm{Cos}[4\,(c+d\,x)]+6695640\,a^{10}\,b^5\,\mathrm{Cos}[4\,(c+d\,x)]+17845324\,a^8\,b^7\,\mathrm{Cos}[4\,(c+d\,x)]+$$
$$11544064\,a^6\,b^9\,\mathrm{Cos}[4\,(c+d\,x)]+2887864\,a^4\,b^{11}\,\mathrm{Cos}[4\,(c+d\,x)]+96264\,a^2\,b^{13}\,\mathrm{Cos}[4\,(c+d\,x)]+9324\,b^{15}\,\mathrm{Cos}[4\,(c+d\,x)]-$$
$$8820\,a^{10}\,b^5\,\mathrm{Cos}[6\,(c+d\,x)]-1410080\,a^8\,b^7\,\mathrm{Cos}[6\,(c+d\,x)]-3831800\,a^6\,b^9\,\mathrm{Cos}[6\,(c+d\,x)]-1515920\,a^4\,b^{11}\,\mathrm{Cos}[6\,(c+d\,x)]-$$
$$109620\,a^2\,b^{13}\,\mathrm{Cos}[6\,(c+d\,x)]-5040\,b^{15}\,\mathrm{Cos}[6\,(c+d\,x)]+105\,a^8\,b^7\,\mathrm{Cos}[8\,(c+d\,x)]+20580\,a^6\,b^9\,\mathrm{Cos}[8\,(c+d\,x)]+$$
$$60270\,a^4\,b^{11}\,\mathrm{Cos}[8\,(c+d\,x)]+25620\,a^2\,b^{13}\,\mathrm{Cos}[8\,(c+d\,x)]+945\,b^{15}\,\mathrm{Cos}[8\,(c+d\,x)]+13440\,a^{15}\,\mathrm{Sin}[c+d\,x]-164640\,a^{13}\,b^2\,\mathrm{Sin}[c+d\,x]-$$
$$5702480\,a^{11}\,b^4\,\mathrm{Sin}[c+d\,x]-20202406\,a^9\,b^6\,\mathrm{Sin}[c+d\,x]-24081736\,a^7\,b^8\,\mathrm{Sin}[c+d\,x]-9935716\,a^5\,b^{10}\,\mathrm{Sin}[c+d\,x]-$$
$$1391096\,a^3\,b^{12}\,\mathrm{Sin}[c+d\,x]-36806\,a\,b^{14}\,\mathrm{Sin}[c+d\,x]-70560\,a^{13}\,b^2\,\mathrm{Sin}[3\,(c+d\,x)]-5955320\,a^{11}\,b^4\,\mathrm{Sin}[3\,(c+d\,x)]-$$
$$15658566\,a^9\,b^6\,\mathrm{Sin}[3\,(c+d\,x)]-13417656\,a^7\,b^8\,\mathrm{Sin}[3\,(c+d\,x)]-3705156\,a^5\,b^{10}\,\mathrm{Sin}[3\,(c+d\,x)]-326816\,a^3\,b^{12}\,\mathrm{Sin}[3\,(c+d\,x)]-$$
$$3206\,a\,b^{14}\,\mathrm{Sin}[3\,(c+d\,x)]+29400\,a^{11}\,b^4\,\mathrm{Sin}[5\,(c+d\,x)]+4071970\,a^9\,b^6\,\mathrm{Sin}[5\,(c+d\,x)]+10871560\,a^7\,b^8\,\mathrm{Sin}[5\,(c+d\,x)]+$$
$$5210380\,a^5\,b^{10}\,\mathrm{Sin}[5\,(c+d\,x)]+875280\,a^3\,b^{12}\,\mathrm{Sin}[5\,(c+d\,x)]+15330\,a\,b^{14}\,\mathrm{Sin}[5\,(c+d\,x)]-1470\,a^9\,b^6\,\mathrm{Sin}[7\,(c+d\,x)]-$$
$$\left.262920\,a^7\,b^8\,\mathrm{Sin}[7\,(c+d\,x)]-737940\,a^5\,b^{10}\,\mathrm{Sin}[7\,(c+d\,x)]-283080\,a^3\,b^{12}\,\mathrm{Sin}[7\,(c+d\,x)]-4830\,a\,b^{14}\,\mathrm{Sin}[7\,(c+d\,x)]\right)$$

- **Problem 495: Result more than twice size of optimal antiderivative.**

$$\int \mathrm{Cos}[c+d\,x]^3\,(a+b\,\mathrm{Sin}[c+d\,x])^{5/2}\,dx$$

Optimal (type 3, 83 leaves, 3 steps) :

$$-\frac{2\left(a^2-b^2\right)(a+b\,\mathrm{Sin}[c+d\,x])^{7/2}}{7\,b^3\,d}+\frac{4\,a\,(a+b\,\mathrm{Sin}[c+d\,x])^{9/2}}{9\,b^3\,d}-\frac{2\,(a+b\,\mathrm{Sin}[c+d\,x])^{11/2}}{11\,b^3\,d}$$

Result (type 3, 198 leaves) :

$$\left(-2 a^2 \left(64 a^4-780 a^2 b^2-705 b^4\right) \sqrt{1+\frac{b \operatorname{Sin}[c+d x]}{a}} \left(-1+\sqrt{1+\frac{b \operatorname{Sin}[c+d x]}{a}}\right)+\right.$$
$$b (a+b \operatorname{Sin}[c+d x]) \left(8 a b \left(3 a^2-136 b^2\right) \operatorname{Cos}[2 (c+d x)]-322 a b^3 \operatorname{Cos}[4 (c+d x)]+2 \left(32 a^4+1698 a^2 b^2+279 b^4\right) \operatorname{Sin}[c+d x]+\right.$$
$$\left.\left. b^2 \left(452 a^2-81 b^2\right) \operatorname{Sin}[3 (c+d x)]-63 b^4 \operatorname{Sin}[5 (c+d x)]\right)\right) \Big/ \left(5544 b^3 d \sqrt{a+b \operatorname{Sin}[c+d x]}\right)$$

- **Problem 497: Result more than twice size of optimal antiderivative.**

$$\int \operatorname{Sec}[c+d x] (a+b \operatorname{Sin}[c+d x])^{5/2} \, dx$$

Optimal (type 3, 117 leaves, 7 steps):

$$-\frac{(a-b)^{5/2} \operatorname{ArcTanh}\left[\frac{\sqrt{a+b \operatorname{Sin}[c+d x]}}{\sqrt{a-b}}\right]}{d}+\frac{(a+b)^{5/2} \operatorname{ArcTanh}\left[\frac{\sqrt{a+b \operatorname{Sin}[c+d x]}}{\sqrt{a+b}}\right]}{d}-\frac{4 a b \sqrt{a+b \operatorname{Sin}[c+d x]}}{d}-\frac{2 b (a+b \operatorname{Sin}[c+d x])^{3/2}}{3 d}$$

Result (type 3, 286 leaves):

$$\frac{1}{6 d}\left(-\frac{\left(6 a^3-18 a^2 b+11 a b^2-6 b^3\right) \operatorname{ArcTanh}\left[\frac{\sqrt{a+b \operatorname{Sin}[c+d x]}}{\sqrt{a-b}}\right]}{\sqrt{a-b}}+1 \Big/ \left(\sqrt{-a+b} \sqrt{-(a+b)^2}\right)\right.$$
$$\left(\sqrt{-a-b} \sqrt{-a+b} \left(6 a^3+18 a^2 b+11 a b^2+6 b^3\right) \operatorname{ArcTanh}\left[\frac{\sqrt{a+b \operatorname{Sin}[c+d x]}}{\sqrt{a+b}}\right]-b \left(7 a b \sqrt{-a+b} \sqrt{a+b} \operatorname{ArcTan}\left[\frac{\sqrt{a+b \operatorname{Sin}[c+d x]}}{\sqrt{-a-b}}\right]+\right.\right.$$
$$\left.\left.\left.\sqrt{-(a+b)^2} \left(-7 a b \operatorname{ArcTan}\left[\frac{\sqrt{a+b \operatorname{Sin}[c+d x]}}{\sqrt{-a+b}}\right]+4 \sqrt{-a+b} \sqrt{a+b \operatorname{Sin}[c+d x]} (7 a+b \operatorname{Sin}[c+d x])\right)\right)\right)\right)$$

- **Problem 574: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int \frac{(e \operatorname{Cos}[c+d x])^{11/2}}{a+b \operatorname{Sin}[c+d x]} \, dx$$

Optimal (type 4, 531 leaves, 15 steps):

$$-\frac{\left(-a^2+b^2\right)^{9/4} e^{11/2}\,\text{ArcTan}\left[\frac{\sqrt{b}\,\sqrt{e\,\text{Cos}[c+d\,x]}}{\left(-a^2+b^2\right)^{1/4}\sqrt{e}}\right]}{b^{11/2}\,d}-\frac{\left(-a^2+b^2\right)^{9/4} e^{11/2}\,\text{ArcTanh}\left[\frac{\sqrt{b}\,\sqrt{e\,\text{Cos}[c+d\,x]}}{\left(-a^2+b^2\right)^{1/4}\sqrt{e}}\right]}{b^{11/2}\,d}+$$

$$\frac{2\,e\,(e\,\text{Cos}[c+d\,x])^{9/2}}{9\,b\,d}+\frac{2\,a\left(21\,a^4-49\,a^2\,b^2+33\,b^4\right)e^6\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticF}\left[\frac{1}{2}(c+d\,x),2\right]}{21\,b^6\,d\sqrt{e\,\text{Cos}[c+d\,x]}}-$$

$$\frac{a\left(a^2-b^2\right)^3 e^6\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticPi}\left[\frac{2\,b}{b-\sqrt{-a^2+b^2}},\frac{1}{2}(c+d\,x),2\right]}{b^6\left(a^2-b\left(b-\sqrt{-a^2+b^2}\right)\right)d\sqrt{e\,\text{Cos}[c+d\,x]}}-\frac{a\left(a^2-b^2\right)^3 e^6\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticPi}\left[\frac{2\,b}{b+\sqrt{-a^2+b^2}},\frac{1}{2}(c+d\,x),2\right]}{b^6\left(a^2-b\left(b+\sqrt{-a^2+b^2}\right)\right)d\sqrt{e\,\text{Cos}[c+d\,x]}}-$$

$$\frac{2\,e^3\,(e\,\text{Cos}[c+d\,x])^{5/2}\left(7\left(a^2-b^2\right)-5\,a\,b\,\text{Sin}[c+d\,x]\right)}{35\,b^3\,d}+\frac{2\,e^5\sqrt{e\,\text{Cos}[c+d\,x]}\left(21\left(a^2-b^2\right)^2-a\,b\left(7\,a^2-12\,b^2\right)\text{Sin}[c+d\,x]\right)}{21\,b^5\,d}$$

Result (type 6, 2235 leaves) :

$$\frac{1}{1680\,b^4\,d\,\text{Cos}[c+d\,x]^{11/2}}$$

$$(e\,\text{Cos}[c+d\,x])^{11/2}\left(-\frac{1}{\sqrt{1-\text{Cos}[c+d\,x]^2}\,(a+b\,\text{Sin}[c+d\,x])}2\left(280\,a^4-636\,a^2\,b^2+721\,b^4\right)\left(a+b\sqrt{1-\text{Cos}[c+d\,x]^2}\right)\left(\left(5\,a\left(a^2-b^2\right)\right.\right.\right.$$

$$\left.\text{AppellF1}\left[\frac{1}{4},\frac{1}{2},1,\frac{5}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]\sqrt{\text{Cos}[c+d\,x]}\right)\Big/\left(\sqrt{1-\text{Cos}[c+d\,x]^2}\left(5\left(a^2-b^2\right)\text{AppellF1}\left[\frac{1}{4},\frac{1}{2},\right.\right.\right.$$

$$\left.1,\frac{5}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]-2\left(2\,b^2\,\text{AppellF1}\left[\frac{5}{4},\frac{1}{2},2,\frac{9}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]+\left(-a^2+b^2\right)\right.$$

$$\left.\left.\left.\left.\text{AppellF1}\left[\frac{5}{4},\frac{3}{2},1,\frac{9}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]\right)\text{Cos}[c+d\,x]^2\right)\left(a^2+b^2\left(-1+\text{Cos}[c+d\,x]^2\right)\right)\right)-$$

$$\frac{1}{\left(-a^2+b^2\right)^{3/4}}\left(\frac{1}{8}-\frac{i}{8}\right)\sqrt{b}\left(2\,\text{ArcTan}\left[1-\frac{(1+i)\sqrt{b}\sqrt{\text{Cos}[c+d\,x]}}{\left(-a^2+b^2\right)^{1/4}}\right]-2\,\text{ArcTan}\left[1+\frac{(1+i)\sqrt{b}\sqrt{\text{Cos}[c+d\,x]}}{\left(-a^2+b^2\right)^{1/4}}\right]+\right.$$

$$\text{Log}\left[\sqrt{-a^2+b^2}-(1+i)\sqrt{b}\left(-a^2+b^2\right)^{1/4}\sqrt{\text{Cos}[c+d\,x]}+i\,b\,\text{Cos}[c+d\,x]\right]-$$

$$\left.\left.\text{Log}\left[\sqrt{-a^2+b^2}+(1+i)\sqrt{b}\left(-a^2+b^2\right)^{1/4}\sqrt{\text{Cos}[c+d\,x]}+i\,b\,\text{Cos}[c+d\,x]\right]\right)\right)\text{Sin}[c+d\,x]+$$

$$\frac{1}{\sqrt{1-\text{Cos}[c+d\,x]^2}\left(-1+2\,\text{Cos}[c+d\,x]^2\right)(a+b\,\text{Sin}[c+d\,x])}\left(840\,a^4-1764\,a^2\,b^2+959\,b^4\right)\left(a+b\sqrt{1-\text{Cos}[c+d\,x]^2}\right)$$

$$\text{Cos}[2\,(c+d\,x)]$$

$$\left(\frac{\left(\frac{1}{2}-\frac{i}{2}\right)\left(-2a^2+b^2\right)\text{ArcTan}\left[1-\frac{(1+i)\sqrt{b}\sqrt{\text{Cos}[c+dx]}}{\left(-a^2+b^2\right)^{1/4}}\right]}{b^{3/2}\left(-a^2+b^2\right)^{3/4}}-\frac{\left(\frac{1}{2}-\frac{i}{2}\right)\left(-2a^2+b^2\right)\text{ArcTan}\left[1+\frac{(1+i)\sqrt{b}\sqrt{\text{Cos}[c+dx]}}{\left(-a^2+b^2\right)^{1/4}}\right]}{b^{3/2}\left(-a^2+b^2\right)^{3/4}}+\frac{4\sqrt{\text{Cos}[c+dx]}}{b}+\right.$$

$$\left(10\,a\left(a^2-b^2\right)\text{AppellF1}\left[\frac{1}{4},\frac{1}{2},1,\frac{5}{4},\text{Cos}[c+dx]^2,\frac{b^2\,\text{Cos}[c+dx]^2}{-a^2+b^2}\right]\sqrt{\text{Cos}[c+dx]}\right)\Big/\left(\sqrt{1-\text{Cos}[c+dx]^2}\left(5\left(a^2-b^2\right)\text{AppellF1}\left[\right.\right.\right.$$

$$\frac{1}{4},\frac{1}{2},1,\frac{5}{4},\text{Cos}[c+dx]^2,\frac{b^2\,\text{Cos}[c+dx]^2}{-a^2+b^2}\Big]-2\left(2b^2\,\text{AppellF1}\left[\frac{5}{4},\frac{1}{2},2,\frac{9}{4},\text{Cos}[c+dx]^2,\frac{b^2\,\text{Cos}[c+dx]^2}{-a^2+b^2}\right]+\right.$$

$$\left.\left.\left.\left(-a^2+b^2\right)\text{AppellF1}\left[\frac{5}{4},\frac{3}{2},1,\frac{9}{4},\text{Cos}[c+dx]^2,\frac{b^2\,\text{Cos}[c+dx]^2}{-a^2+b^2}\right]\right)\text{Cos}[c+dx]^2\right)\left(a^2+b^2\left(-1+\text{Cos}[c+dx]^2\right)\right)\right)-$$

$$\left(36\,a\left(a^2-b^2\right)\text{AppellF1}\left[\frac{5}{4},\frac{1}{2},1,\frac{9}{4},\text{Cos}[c+dx]^2,\frac{b^2\,\text{Cos}[c+dx]^2}{-a^2+b^2}\right]\text{Cos}[c+dx]^{5/2}\right)\Big/\left(5\sqrt{1-\text{Cos}[c+dx]^2}\left(9\left(a^2-b^2\right)\right.\right.$$

$$\text{AppellF1}\left[\frac{5}{4},\frac{1}{2},1,\frac{9}{4},\text{Cos}[c+dx]^2,\frac{b^2\,\text{Cos}[c+dx]^2}{-a^2+b^2}\right]-2\left(2b^2\,\text{AppellF1}\left[\frac{9}{4},\frac{1}{2},2,\frac{13}{4},\text{Cos}[c+dx]^2,\frac{b^2\,\text{Cos}[c+dx]^2}{-a^2+b^2}\right]+\right.$$

$$\left.\left.\left.\left(-a^2+b^2\right)\text{AppellF1}\left[\frac{9}{4},\frac{3}{2},1,\frac{13}{4},\text{Cos}[c+dx]^2,\frac{b^2\,\text{Cos}[c+dx]^2}{-a^2+b^2}\right]\right)\text{Cos}[c+dx]^2\right)\left(a^2+b^2\left(-1+\text{Cos}[c+dx]^2\right)\right)\right)+$$

$$\frac{1}{b^{3/2}\left(-a^2+b^2\right)^{3/4}}\left(\frac{1}{4}-\frac{i}{4}\right)\left(-2a^2+b^2\right)\text{Log}\left[\sqrt{-a^2+b^2}-(1+i)\sqrt{b}\left(-a^2+b^2\right)^{1/4}\sqrt{\text{Cos}[c+dx]}+i\,b\,\text{Cos}[c+dx]\right]-$$

$$\left.\frac{1}{b^{3/2}\left(-a^2+b^2\right)^{3/4}}\left(\frac{1}{4}-\frac{i}{4}\right)\left(-2a^2+b^2\right)\text{Log}\left[\sqrt{-a^2+b^2}+(1+i)\sqrt{b}\left(-a^2+b^2\right)^{1/4}\sqrt{\text{Cos}[c+dx]}+i\,b\,\text{Cos}[c+dx]\right]\right)\text{Sin}[c+dx]-$$

$$\frac{1}{\left(1-\text{Cos}[c+dx]^2\right)\left(a+b\,\text{Sin}[c+dx]\right)}2\left(-392a^3b+722ab^3\right)\left(a+b\sqrt{1-\text{Cos}[c+dx]^2}\right)$$

$$\left(\left(5b\left(a^2-b^2\right)\text{AppellF1}\left[\frac{1}{4},-\frac{1}{2},1,\frac{5}{4},\text{Cos}[c+dx]^2,\frac{b^2\,\text{Cos}[c+dx]^2}{-a^2+b^2}\right]\sqrt{\text{Cos}[c+dx]}\sqrt{1-\text{Cos}[c+dx]^2}\right)\Big/\right.$$

$$\left(\left(-5\left(a^2-b^2\right)\text{AppellF1}\left[\frac{1}{4},-\frac{1}{2},1,\frac{5}{4},\text{Cos}[c+dx]^2,\frac{b^2\,\text{Cos}[c+dx]^2}{-a^2+b^2}\right]+2\left(2b^2\,\text{AppellF1}\left[\frac{5}{4},-\frac{1}{2},2,\frac{9}{4},\text{Cos}[c+dx]^2,\right.\right.\right.\right.$$

$$\left.\left.\frac{b^2\,\text{Cos}[c+dx]^2}{-a^2+b^2}\right]+\left(a^2-b^2\right)\text{AppellF1}\left[\frac{5}{4},\frac{1}{2},1,\frac{9}{4},\text{Cos}[c+dx]^2,\frac{b^2\,\text{Cos}[c+dx]^2}{-a^2+b^2}\right]\right)\text{Cos}[c+dx]^2\right)$$

$$\left.\left(a^2+b^2\left(-1+\text{Cos}[c+dx]^2\right)\right)\right)+\frac{1}{4\sqrt{2}\sqrt{b}\left(a^2-b^2\right)^{3/4}}a\left(-2\,\text{ArcTan}\left[1-\frac{\sqrt{2}\sqrt{b}\sqrt{\text{Cos}[c+dx]}}{\left(a^2-b^2\right)^{1/4}}\right]+\right.$$

$$2\,\text{ArcTan}\left[1+\frac{\sqrt{2}\,\sqrt{b}\,\sqrt{\text{Cos}[c+d\,x]}}{\left(a^2-b^2\right)^{1/4}}\right]-\text{Log}\left[\sqrt{a^2-b^2}-\sqrt{2}\,\sqrt{b}\,\left(a^2-b^2\right)^{1/4}\sqrt{\text{Cos}[c+d\,x]}+b\,\text{Cos}[c+d\,x]\right]+$$

$$\left.\left.\left.\text{Log}\left[\sqrt{a^2-b^2}+\sqrt{2}\,\sqrt{b}\,\left(a^2-b^2\right)^{1/4}\sqrt{\text{Cos}[c+d\,x]}+b\,\text{Cos}[c+d\,x]\right]\right)\right)\text{Sin}[c+d\,x]^2\right)+$$

$$\frac{1}{d}(e\,\text{Cos}[c+d\,x])^{11/2}\,\text{Sec}[c+d\,x]^5\left(\frac{\left(-9\,a^2+14\,b^2\right)\text{Cos}[2\,(c+d\,x)]}{45\,b^3}+\frac{\text{Cos}[4\,(c+d\,x)]}{36\,b}-\frac{a\left(28\,a^2-51\,b^2\right)\text{Sin}[c+d\,x]}{42\,b^4}+\frac{a\,\text{Sin}[3\,(c+d\,x)]}{14\,b^2}\right)$$

- **Problem 575: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int\frac{(e\,\text{Cos}[c+d\,x])^{9/2}}{a+b\,\text{Sin}[c+d\,x]}\,dx$$

Optimal (type 4, 446 leaves, 14 steps):

$$\frac{\left(-a^2+b^2\right)^{7/4}e^{9/2}\,\text{ArcTan}\left[\frac{\sqrt{b}\,\sqrt{e\,\text{Cos}[c+d\,x]}}{\left(-a^2+b^2\right)^{1/4}\sqrt{e}}\right]}{b^{9/2}\,d}-\frac{\left(-a^2+b^2\right)^{7/4}e^{9/2}\,\text{ArcTanh}\left[\frac{\sqrt{b}\,\sqrt{e\,\text{Cos}[c+d\,x]}}{\left(-a^2+b^2\right)^{1/4}\sqrt{e}}\right]}{b^{9/2}\,d}+\frac{2\,e\,(e\,\text{Cos}[c+d\,x])^{7/2}}{7\,b\,d}-$$

$$\frac{2\,a\left(5\,a^2-8\,b^2\right)e^4\sqrt{e\,\text{Cos}[c+d\,x]}\;\text{EllipticE}\left[\frac{1}{2}(c+d\,x),2\right]}{5\,b^4\,d\,\sqrt{\text{Cos}[c+d\,x]}}+\frac{a\left(a^2-b^2\right)^2e^5\sqrt{\text{Cos}[c+d\,x]}\;\text{EllipticPi}\left[\frac{2\,b}{b-\sqrt{-a^2+b^2}},\frac{1}{2}(c+d\,x),2\right]}{b^5\left(b-\sqrt{-a^2+b^2}\right)d\,\sqrt{e\,\text{Cos}[c+d\,x]}}+$$

$$\frac{a\left(a^2-b^2\right)^2e^5\sqrt{\text{Cos}[c+d\,x]}\;\text{EllipticPi}\left[\frac{2\,b}{b+\sqrt{-a^2+b^2}},\frac{1}{2}(c+d\,x),2\right]}{b^5\left(b+\sqrt{-a^2+b^2}\right)d\,\sqrt{e\,\text{Cos}[c+d\,x]}}-\frac{2\,e^3\,(e\,\text{Cos}[c+d\,x])^{3/2}\left(5\left(a^2-b^2\right)-3\,a\,b\,\text{Sin}[c+d\,x]\right)}{15\,b^3\,d}$$

Result (type 6, 1228 leaves):

$$-\frac{1}{5\,b^3\,d\,\text{Cos}[c+d\,x]^{9/2}}(e\,\text{Cos}[c+d\,x])^{9/2}$$

$$\left(\frac{1}{12\sqrt{1-\text{Cos}[c+d\,x]^2}\;(a+b\,\text{Sin}[c+d\,x])}\left(2\,a^2\,b-5\,b^3\right)\left(a+b\sqrt{1-\text{Cos}[c+d\,x]^2}\right)\left(-\left(56\,a\left(a^2-b^2\right)\text{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},\text{Cos}[c+d\,x]^2,\right.\right.\right.\right.$$

$$\left.\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]\text{Cos}[c+d\,x]^{3/2}\Bigg)\Bigg/\left(\sqrt{1-\text{Cos}[c+d\,x]^2}\left(7\left(a^2-b^2\right)\text{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]-\right.\right.$$

$$2\left(2\,b^2\,\text{AppellF1}\left[\frac{7}{4},\frac{1}{2},2,\frac{11}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]+\left(-a^2+b^2\right)\text{AppellF1}\left[\frac{7}{4},\frac{3}{2},1,\frac{11}{4},\right.\right.$$

$$\left.\left.\left.\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]\right)\text{Cos}[c+d\,x]^2\right)\left(a^2+b^2\left(-1+\text{Cos}[c+d\,x]^2\right)\right)\Bigg)-\frac{1}{\sqrt{b}\,\left(-a^2+b^2\right)^{1/4}}$$

$$(3+3\,i)\left(2\,\text{ArcTan}\left[1-\frac{(1+i)\sqrt{b}\,\sqrt{\text{Cos}[c+d\,x]}}{\left(-a^2+b^2\right)^{1/4}}\right]-2\,\text{ArcTan}\left[1+\frac{(1+i)\sqrt{b}\,\sqrt{\text{Cos}[c+d\,x]}}{\left(-a^2+b^2\right)^{1/4}}\right]-\text{Log}\left[\sqrt{-a^2+b^2}-(1+i)\sqrt{b}\right.\right.$$

$$\left.\left.\left(-a^2+b^2\right)^{1/4}\sqrt{\text{Cos}[c+d\,x]}+i\,b\,\text{Cos}[c+d\,x]\right]+\text{Log}\left[\sqrt{-a^2+b^2}+(1+i)\sqrt{b}\,\left(-a^2+b^2\right)^{1/4}\sqrt{\text{Cos}[c+d\,x]}+i\,b\,\text{Cos}[c+d\,x]\right]\right)\Bigg)$$

$$\text{Sin}[c+d\,x]-\frac{1}{\left(1-\text{Cos}[c+d\,x]^2\right)\;(a+b\,\text{Sin}[c+d\,x])}2\left(5\,a^3-8\,a\,b^2\right)\left(a+b\sqrt{1-\text{Cos}[c+d\,x]^2}\right)$$

$$\left(\left(7\,b\left(a^2-b^2\right)\text{AppellF1}\left[\frac{3}{4},-\frac{1}{2},1,\frac{7}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]\text{Cos}[c+d\,x]^{3/2}\sqrt{1-\text{Cos}[c+d\,x]^2}\right)\Bigg/\right.$$

$$\left(3\left(-7\left(a^2-b^2\right)\text{AppellF1}\left[\frac{3}{4},-\frac{1}{2},1,\frac{7}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]+2\left(2\,b^2\,\text{AppellF1}\left[\frac{7}{4},-\frac{1}{2},2,\frac{11}{4},\text{Cos}[c+d\,x]^2,\right.\right.\right.\right.$$

$$\left.\left.\left.\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]+\left(a^2-b^2\right)\text{AppellF1}\left[\frac{7}{4},\frac{1}{2},1,\frac{11}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]\right)\text{Cos}[c+d\,x]^2\right)$$

$$\left.\left(a^2+b^2\left(-1+\text{Cos}[c+d\,x]^2\right)\right)\right)+\frac{1}{4\sqrt{2}\;b^{3/2}\left(a^2-b^2\right)^{1/4}}a\left(-2\,\text{ArcTan}\left[1-\frac{\sqrt{2}\,\sqrt{b}\,\sqrt{\text{Cos}[c+d\,x]}}{\left(a^2-b^2\right)^{1/4}}\right]+\right.$$

$$2\,\text{ArcTan}\left[1+\frac{\sqrt{2}\,\sqrt{b}\,\sqrt{\text{Cos}[c+d\,x]}}{\left(a^2-b^2\right)^{1/4}}\right]+\text{Log}\left[\sqrt{a^2-b^2}-\sqrt{2}\,\sqrt{b}\,\left(a^2-b^2\right)^{1/4}\sqrt{\text{Cos}[c+d\,x]}+b\,\text{Cos}[c+d\,x]\right]-$$

$$\left.\left.\text{Log}\left[\sqrt{a^2-b^2}+\sqrt{2}\,\sqrt{b}\,\left(a^2-b^2\right)^{1/4}\sqrt{\text{Cos}[c+d\,x]}+b\,\text{Cos}[c+d\,x]\right]\right)\right)\text{Sin}[c+d\,x]^2\Bigg)+$$

$$\frac{(e\,\text{Cos}[c+d\,x])^{9/2}\,\text{Sec}[c+d\,x]^4\left(\frac{\left(-28\,a^2+37\,b^2\right)\text{Cos}[c+d\,x]}{42\,b^3}+\frac{\text{Cos}[3\,(c+d\,x)]}{14\,b}+\frac{a\,\text{Sin}[2\,(c+d\,x)]}{5\,b^2}\right)}{d}$$

- **Problem 576: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int \frac{(e\,\text{Cos}[c+d\,x])^{7/2}}{a+b\,\text{Sin}[c+d\,x]}\,dx$$

Optimal (type 4, 461 leaves, 14 steps):

$$-\frac{(-a^2+b^2)^{5/4}\,e^{7/2}\,\text{ArcTan}\left[\frac{\sqrt{b}\,\sqrt{e\,\text{Cos}[c+d\,x]}}{(-a^2+b^2)^{1/4}\,\sqrt{e}}\right]}{b^{7/2}\,d}-\frac{(-a^2+b^2)^{5/4}\,e^{7/2}\,\text{ArcTanh}\left[\frac{\sqrt{b}\,\sqrt{e\,\text{Cos}[c+d\,x]}}{(-a^2+b^2)^{1/4}\,\sqrt{e}}\right]}{b^{7/2}\,d}+\frac{2\,e\,(e\,\text{Cos}[c+d\,x])^{5/2}}{5\,b\,d}-$$
$$\frac{2\,a\,(3\,a^2-4\,b^2)\,e^4\,\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,2\right]}{3\,b^4\,d\,\sqrt{e\,\text{Cos}[c+d\,x]}}+\frac{a\,(a^2-b^2)^2\,e^4\,\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticPi}\left[\frac{2\,b}{b-\sqrt{-a^2+b^2}},\,\frac{1}{2}\,(c+d\,x),\,2\right]}{b^4\,\left(a^2-b\,\left(b-\sqrt{-a^2+b^2}\right)\right)\,d\,\sqrt{e\,\text{Cos}[c+d\,x]}}+$$
$$\frac{a\,(a^2-b^2)^2\,e^4\,\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticPi}\left[\frac{2\,b}{b+\sqrt{-a^2+b^2}},\,\frac{1}{2}\,(c+d\,x),\,2\right]}{b^4\,\left(a^2-b\,\left(b+\sqrt{-a^2+b^2}\right)\right)\,d\,\sqrt{e\,\text{Cos}[c+d\,x]}}-\frac{2\,e^3\,\sqrt{e\,\text{Cos}[c+d\,x]}\,\left(3\,(a^2-b^2)-a\,b\,\text{Sin}[c+d\,x]\right)}{3\,b^3\,d}$$

Result (type 6, 2155 leaves):

$$\frac{(e\,\text{Cos}[c+d\,x])^{7/2}\,\text{Sec}[c+d\,x]^3\,\left(\frac{\text{Cos}[2\,(c+d\,x)]}{5\,b}+\frac{2\,a\,\text{Sin}[c+d\,x]}{3\,b^2}\right)}{d}-$$
$$\frac{1}{60\,b^2\,d\,\text{Cos}[c+d\,x]^{7/2}}\,(e\,\text{Cos}[c+d\,x])^{7/2}\left(-\frac{1}{\sqrt{1-\text{Cos}[c+d\,x]^2}\,(a+b\,\text{Sin}[c+d\,x])}\,2\,(10\,a^2-27\,b^2)\,\left(a+b\,\sqrt{1-\text{Cos}[c+d\,x]^2}\right)\right.$$
$$\left(\left(5\,a\,(a^2-b^2)\,\text{AppellF1}\left[\frac{1}{4},\,\frac{1}{2},\,1,\,\frac{5}{4},\,\text{Cos}[c+d\,x]^2,\,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]\,\sqrt{\text{Cos}[c+d\,x]}\right)\Big/\left(\sqrt{1-\text{Cos}[c+d\,x]^2}\,\left(5\,(a^2-b^2)\right.\right.\right.$$
$$\text{AppellF1}\left[\frac{1}{4},\,\frac{1}{2},\,1,\,\frac{5}{4},\,\text{Cos}[c+d\,x]^2,\,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]-2\,\left(2\,b^2\,\text{AppellF1}\left[\frac{5}{4},\,\frac{1}{2},\,2,\,\frac{9}{4},\,\text{Cos}[c+d\,x]^2,\,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]+\right.$$
$$\left.\left.\left.(-a^2+b^2)\,\text{AppellF1}\left[\frac{5}{4},\,\frac{3}{2},\,1,\,\frac{9}{4},\,\text{Cos}[c+d\,x]^2,\,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]\right)\,\text{Cos}[c+d\,x]^2\right)\,\left(a^2+b^2\,\left(-1+\text{Cos}[c+d\,x]^2\right)\right)\right)-$$
$$\frac{1}{(-a^2+b^2)^{3/4}}\left(\frac{1}{8}-\frac{i}{8}\right)\sqrt{b}\,\left(2\,\text{ArcTan}\left[1-\frac{(1+i)\,\sqrt{b}\,\sqrt{\text{Cos}[c+d\,x]}}{(-a^2+b^2)^{1/4}}\right]-2\,\text{ArcTan}\left[1+\frac{(1+i)\,\sqrt{b}\,\sqrt{\text{Cos}[c+d\,x]}}{(-a^2+b^2)^{1/4}}\right]+\right.$$
$$\text{Log}\left[\sqrt{-a^2+b^2}-(1+i)\,\sqrt{b}\,(-a^2+b^2)^{1/4}\,\sqrt{\text{Cos}[c+d\,x]}+i\,b\,\text{Cos}[c+d\,x]\right]-$$
$$\left.\left.\text{Log}\left[\sqrt{-a^2+b^2}+(1+i)\,\sqrt{b}\,(-a^2+b^2)^{1/4}\,\sqrt{\text{Cos}[c+d\,x]}+i\,b\,\text{Cos}[c+d\,x]\right]\right)\right)\,\text{Sin}[c+d\,x]+$$

$$\frac{1}{\sqrt{1-\text{Cos}[c+d x]^2}\;\left(-1+2\,\text{Cos}[c+d x]^2\right)\,(a+b\,\text{Sin}[c+d x])}\left(30\,a^2-33\,b^2\right)\left(a+b\sqrt{1-\text{Cos}[c+d x]^2}\right)\text{Cos}[2\,(c+d x)]$$

$$\left(\frac{\left(\frac{1}{2}-\frac{i}{2}\right)\left(-2\,a^2+b^2\right)\text{ArcTan}\left[1-\frac{(1+i)\sqrt{b}\,\sqrt{\text{Cos}[c+d x]}}{\left(-a^2+b^2\right)^{1/4}}\right]}{b^{3/2}\left(-a^2+b^2\right)^{3/4}}-\frac{\left(\frac{1}{2}-\frac{i}{2}\right)\left(-2\,a^2+b^2\right)\text{ArcTan}\left[1+\frac{(1+i)\sqrt{b}\,\sqrt{\text{Cos}[c+d x]}}{\left(-a^2+b^2\right)^{1/4}}\right]}{b^{3/2}\left(-a^2+b^2\right)^{3/4}}+\right.$$

$$\frac{4\sqrt{\text{Cos}[c+d x]}}{b}+\left(10\,a\left(a^2-b^2\right)\text{AppellF1}\left[\frac{1}{4},\frac{1}{2},1,\frac{5}{4},\text{Cos}[c+d x]^2,\frac{b^2\,\text{Cos}[c+d x]^2}{-a^2+b^2}\right]\sqrt{\text{Cos}[c+d x]}\right)\Big/$$

$$\left(\sqrt{1-\text{Cos}[c+d x]^2}\left(5\left(a^2-b^2\right)\text{AppellF1}\left[\frac{1}{4},\frac{1}{2},1,\frac{5}{4},\text{Cos}[c+d x]^2,\frac{b^2\,\text{Cos}[c+d x]^2}{-a^2+b^2}\right]-2\left(2\,b^2\,\text{AppellF1}\left[\frac{5}{4},\frac{1}{2},2,\frac{9}{4},\right.\right.\right.\right.$$

$$\left.\left.\text{Cos}[c+d x]^2,\frac{b^2\,\text{Cos}[c+d x]^2}{-a^2+b^2}\right]+\left(-a^2+b^2\right)\text{AppellF1}\left[\frac{5}{4},\frac{3}{2},1,\frac{9}{4},\text{Cos}[c+d x]^2,\frac{b^2\,\text{Cos}[c+d x]^2}{-a^2+b^2}\right]\right)\text{Cos}[c+d x]^2\Big)$$

$$\left.\left(a^2+b^2\left(-1+\text{Cos}[c+d x]^2\right)\right)\right)-\left(36\,a\left(a^2-b^2\right)\text{AppellF1}\left[\frac{5}{4},\frac{1}{2},1,\frac{9}{4},\text{Cos}[c+d x]^2,\frac{b^2\,\text{Cos}[c+d x]^2}{-a^2+b^2}\right]\text{Cos}[c+d x]^{5/2}\right)\Big/$$

$$\left(5\sqrt{1-\text{Cos}[c+d x]^2}\left(9\left(a^2-b^2\right)\text{AppellF1}\left[\frac{5}{4},\frac{1}{2},1,\frac{9}{4},\text{Cos}[c+d x]^2,\frac{b^2\,\text{Cos}[c+d x]^2}{-a^2+b^2}\right]-\right.\right.$$

$$2\left(2\,b^2\,\text{AppellF1}\left[\frac{9}{4},\frac{1}{2},2,\frac{13}{4},\text{Cos}[c+d x]^2,\frac{b^2\,\text{Cos}[c+d x]^2}{-a^2+b^2}\right]+\right.$$

$$\left.\left.\left(-a^2+b^2\right)\text{AppellF1}\left[\frac{9}{4},\frac{3}{2},1,\frac{13}{4},\text{Cos}[c+d x]^2,\frac{b^2\,\text{Cos}[c+d x]^2}{-a^2+b^2}\right]\right)\text{Cos}[c+d x]^2\right)\left(a^2+b^2\left(-1+\text{Cos}[c+d x]^2\right)\right)\Big)+$$

$$\frac{1}{b^{3/2}\left(-a^2+b^2\right)^{3/4}}\left(\frac{1}{4}-\frac{i}{4}\right)\left(-2\,a^2+b^2\right)\text{Log}\left[\sqrt{-a^2+b^2}-(1+i)\sqrt{b}\,\left(-a^2+b^2\right)^{1/4}\sqrt{\text{Cos}[c+d x]}+i\,b\,\text{Cos}[c+d x]\right]-$$

$$\left.\frac{1}{b^{3/2}\left(-a^2+b^2\right)^{3/4}}\left(\frac{1}{4}-\frac{i}{4}\right)\left(-2\,a^2+b^2\right)\text{Log}\left[\sqrt{-a^2+b^2}+(1+i)\sqrt{b}\,\left(-a^2+b^2\right)^{1/4}\sqrt{\text{Cos}[c+d x]}+i\,b\,\text{Cos}[c+d x]\right]\right)\text{Sin}[c+d x]+$$

$$\frac{1}{\left(1-\text{Cos}[c+d x]^2\right)\,(a+b\,\text{Sin}[c+d x])}28\,a\,b\left(a+b\sqrt{1-\text{Cos}[c+d x]^2}\right)$$

$$\left(\left(5\,b\left(a^2-b^2\right)\text{AppellF1}\left[\frac{1}{4},-\frac{1}{2},1,\frac{5}{4},\text{Cos}[c+d x]^2,\frac{b^2\,\text{Cos}[c+d x]^2}{-a^2+b^2}\right]\sqrt{\text{Cos}[c+d x]}\,\sqrt{1-\text{Cos}[c+d x]^2}\right)\Big/\right.$$

$$\left(\left(-5\left(a^2-b^2\right)\text{AppellF1}\left[\frac{1}{4},-\frac{1}{2},1,\frac{5}{4},\text{Cos}[c+d x]^2,\frac{b^2\,\text{Cos}[c+d x]^2}{-a^2+b^2}\right]+2\left(2\,b^2\,\text{AppellF1}\left[\frac{5}{4},-\frac{1}{2},2,\frac{9}{4},\text{Cos}[c+d x]^2,\right.\right.\right.\right.$$

$$\frac{b^2 \operatorname{Cos}[c+d x]^2}{-a^2+b^2}\Big] + \left(a^2-b^2\right) \operatorname{AppellF1}\Big[\frac{5}{4}, \frac{1}{2}, 1, \frac{9}{4}, \operatorname{Cos}[c+d x]^2, \frac{b^2 \operatorname{Cos}[c+d x]^2}{-a^2+b^2}\Big]\Big) \operatorname{Cos}[c+d x]^2\Big)$$

$$\left(a^2+b^2\left(-1+\operatorname{Cos}[c+d x]^2\right)\right)\Big) + \frac{1}{4\sqrt{2}\sqrt{b}\left(a^2-b^2\right)^{3/4}} a \left(-2 \operatorname{ArcTan}\Big[1-\frac{\sqrt{2}\sqrt{b}\sqrt{\operatorname{Cos}[c+d x]}}{\left(a^2-b^2\right)^{1/4}}\Big] + \right.$$

$$2 \operatorname{ArcTan}\Big[1+\frac{\sqrt{2}\sqrt{b}\sqrt{\operatorname{Cos}[c+d x]}}{\left(a^2-b^2\right)^{1/4}}\Big] - \operatorname{Log}\Big[\sqrt{a^2-b^2} - \sqrt{2}\sqrt{b}\left(a^2-b^2\right)^{1/4}\sqrt{\operatorname{Cos}[c+d x]} + b \operatorname{Cos}[c+d x]\Big] +$$

$$\left.\operatorname{Log}\Big[\sqrt{a^2-b^2} + \sqrt{2}\sqrt{b}\left(a^2-b^2\right)^{1/4}\sqrt{\operatorname{Cos}[c+d x]} + b \operatorname{Cos}[c+d x]\Big]\right)\Big) \operatorname{Sin}[c+d x]^2\Bigg)$$

- **Problem 577: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int \frac{(e \operatorname{Cos}[c+d x])^{5/2}}{a+b \operatorname{Sin}[c+d x]} \, dx$$

Optimal (type 4, 384 leaves, 13 steps):

$$\frac{\left(-a^2+b^2\right)^{3/4} e^{5/2} \operatorname{ArcTan}\Big[\frac{\sqrt{b}\sqrt{e \operatorname{Cos}[c+d x]}}{\left(-a^2+b^2\right)^{1/4}\sqrt{e}}\Big]}{b^{5/2} d} - \frac{\left(-a^2+b^2\right)^{3/4} e^{5/2} \operatorname{ArcTanh}\Big[\frac{\sqrt{b}\sqrt{e \operatorname{Cos}[c+d x]}}{\left(-a^2+b^2\right)^{1/4}\sqrt{e}}\Big]}{b^{5/2} d} +$$

$$\frac{2 e (e \operatorname{Cos}[c+d x])^{3/2}}{3 b d} + \frac{2 a e^2 \sqrt{e \operatorname{Cos}[c+d x]} \operatorname{EllipticE}\Big[\frac{1}{2}(c+d x), 2\Big]}{b^2 d \sqrt{\operatorname{Cos}[c+d x]}} -$$

$$\frac{a\left(a^2-b^2\right) e^3 \sqrt{\operatorname{Cos}[c+d x]} \operatorname{EllipticPi}\Big[\frac{2 b}{b-\sqrt{-a^2+b^2}}, \frac{1}{2}(c+d x), 2\Big]}{b^3\left(b-\sqrt{-a^2+b^2}\right) d \sqrt{e \operatorname{Cos}[c+d x]}} - \frac{a\left(a^2-b^2\right) e^3 \sqrt{\operatorname{Cos}[c+d x]} \operatorname{EllipticPi}\Big[\frac{2 b}{b+\sqrt{-a^2+b^2}}, \frac{1}{2}(c+d x), 2\Big]}{b^3\left(b+\sqrt{-a^2+b^2}\right) d \sqrt{e \operatorname{Cos}[c+d x]}}$$

Result (type 6, 1151 leaves):

$$\frac{2\,(e\,\text{Cos}[c+d\,x])^{5/2}\,\text{Sec}[c+d\,x]}{3\,b\,d}+$$

$$\frac{1}{b\,d\,\text{Cos}[c+d\,x]^{5/2}}\,(e\,\text{Cos}[c+d\,x])^{5/2}\,\Bigg(\frac{1}{12\,\sqrt{1-\text{Cos}[c+d\,x]^2}\,(a+b\,\text{Sin}[c+d\,x])}\,b\,\left(a+b\,\sqrt{1-\text{Cos}[c+d\,x]^2}\right)\,\Bigg(-\Bigg(56\,a\,(a^2-b^2)$$

$$\text{AppellF1}\left[\frac{3}{4},\,\frac{1}{2},\,1,\,\frac{7}{4},\,\text{Cos}[c+d\,x]^2,\,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]\,\text{Cos}[c+d\,x]^{3/2}\Bigg)\Big/\Bigg(\sqrt{1-\text{Cos}[c+d\,x]^2}\,\Bigg(7\,(a^2-b^2)\,\text{AppellF1}\left[\frac{3}{4},\,\frac{1}{2},\right.$$

$$\left.1,\,\frac{7}{4},\,\text{Cos}[c+d\,x]^2,\,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]-2\,\Bigg(2\,b^2\,\text{AppellF1}\left[\frac{7}{4},\,\frac{1}{2},\,2,\,\frac{11}{4},\,\text{Cos}[c+d\,x]^2,\,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]+(-a^2+b^2)$$

$$\text{AppellF1}\left[\frac{7}{4},\,\frac{3}{2},\,1,\,\frac{11}{4},\,\text{Cos}[c+d\,x]^2,\,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]\Bigg)\,\text{Cos}[c+d\,x]^2\Bigg)\,\left(a^2+b^2\,(-1+\text{Cos}[c+d\,x]^2)\right)\Bigg)-$$

$$\frac{1}{\sqrt{b}\,(-a^2+b^2)^{1/4}}\,(3+3\,i)\,\Bigg(2\,\text{ArcTan}\left[1-\frac{(1+i)\,\sqrt{b}\,\sqrt{\text{Cos}[c+d\,x]}}{(-a^2+b^2)^{1/4}}\right]-2\,\text{ArcTan}\left[1+\frac{(1+i)\,\sqrt{b}\,\sqrt{\text{Cos}[c+d\,x]}}{(-a^2+b^2)^{1/4}}\right]-$$

$$\text{Log}\left[\sqrt{-a^2+b^2}-(1+i)\,\sqrt{b}\,(-a^2+b^2)^{1/4}\,\sqrt{\text{Cos}[c+d\,x]}+i\,b\,\text{Cos}[c+d\,x]\right]+$$

$$\text{Log}\left[\sqrt{-a^2+b^2}+(1+i)\,\sqrt{b}\,(-a^2+b^2)^{1/4}\,\sqrt{\text{Cos}[c+d\,x]}+i\,b\,\text{Cos}[c+d\,x]\right]\Bigg)\Bigg)\,\text{Sin}[c+d\,x]-\frac{1}{(1-\text{Cos}[c+d\,x]^2)\,(a+b\,\text{Sin}[c+d\,x])}$$

$$2\,a\,\left(a+b\,\sqrt{1-\text{Cos}[c+d\,x]^2}\right)\,\Bigg(\Bigg(7\,b\,(a^2-b^2)\,\text{AppellF1}\left[\frac{3}{4},\,-\frac{1}{2},\,1,\,\frac{7}{4},\,\text{Cos}[c+d\,x]^2,\,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]\,\text{Cos}[c+d\,x]^{3/2}\,\sqrt{1-\text{Cos}[c+d\,x]^2}\Bigg)\Big/$$

$$\Bigg(3\,\Bigg(-7\,(a^2-b^2)\,\text{AppellF1}\left[\frac{3}{4},\,-\frac{1}{2},\,1,\,\frac{7}{4},\,\text{Cos}[c+d\,x]^2,\,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]+2\,\Bigg(2\,b^2\,\text{AppellF1}\left[\frac{7}{4},\,-\frac{1}{2},\,2,\,\frac{11}{4},\,\text{Cos}[c+d\,x]^2,\right.$$

$$\left.\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]+(a^2-b^2)\,\text{AppellF1}\left[\frac{7}{4},\,\frac{1}{2},\,1,\,\frac{11}{4},\,\text{Cos}[c+d\,x]^2,\,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]\Bigg)\,\text{Cos}[c+d\,x]^2\Bigg)$$

$$\left(a^2+b^2\,(-1+\text{Cos}[c+d\,x]^2)\right)\Bigg)+\frac{1}{4\,\sqrt{2}\,b^{3/2}\,(a^2-b^2)^{1/4}}\,a\,\Bigg(-2\,\text{ArcTan}\left[1-\frac{\sqrt{2}\,\sqrt{b}\,\sqrt{\text{Cos}[c+d\,x]}}{(a^2-b^2)^{1/4}}\right]+$$

$$2\,\text{ArcTan}\left[1+\frac{\sqrt{2}\,\sqrt{b}\,\sqrt{\text{Cos}[c+d\,x]}}{(a^2-b^2)^{1/4}}\right]+\text{Log}\left[\sqrt{a^2-b^2}-\sqrt{2}\,\sqrt{b}\,(a^2-b^2)^{1/4}\,\sqrt{\text{Cos}[c+d\,x]}+b\,\text{Cos}[c+d\,x]\right]-$$

$$\text{Log}\left[\sqrt{a^2-b^2}+\sqrt{2}\,\sqrt{b}\,(a^2-b^2)^{1/4}\,\sqrt{\text{Cos}[c+d\,x]}+b\,\text{Cos}[c+d\,x]\right]\Bigg)\Bigg)\,\text{Sin}[c+d\,x]^2\Bigg)$$

Problem 578: Result unnecessarily involves higher level functions.

$$\int \frac{(e \operatorname{Cos}[c+d x])^{3/2}}{a+b \operatorname{Sin}[c+d x]} \, dx$$

Optimal (type 4, 397 leaves, 13 steps):

$$-\frac{\left(-a^2+b^2\right)^{1/4} e^{3/2} \operatorname{ArcTan}\left[\frac{\sqrt{b} \sqrt{e \operatorname{Cos}[c+d x]}}{\left(-a^2+b^2\right)^{1/4} \sqrt{e}}\right]}{b^{3/2} d}-\frac{\left(-a^2+b^2\right)^{1/4} e^{3/2} \operatorname{ArcTanh}\left[\frac{\sqrt{b} \sqrt{e \operatorname{Cos}[c+d x]}}{\left(-a^2+b^2\right)^{1/4} \sqrt{e}}\right]}{b^{3/2} d}+\frac{2 e \sqrt{e \operatorname{Cos}[c+d x]}}{b d}+$$
$$\frac{2 a e^2 \sqrt{\operatorname{Cos}[c+d x]} \operatorname{EllipticF}\left[\frac{1}{2} (c+d x), 2\right]}{b^2 d \sqrt{e \operatorname{Cos}[c+d x]}}-\frac{a \left(a^2-b^2\right) e^2 \sqrt{\operatorname{Cos}[c+d x]} \operatorname{EllipticPi}\left[\frac{2 b}{b-\sqrt{-a^2+b^2}}, \frac{1}{2} (c+d x), 2\right]}{b^2 \left(a^2-b \left(b-\sqrt{-a^2+b^2}\right)\right) d \sqrt{e \operatorname{Cos}[c+d x]}}-$$
$$\frac{a \left(a^2-b^2\right) e^2 \sqrt{\operatorname{Cos}[c+d x]} \operatorname{EllipticPi}\left[\frac{2 b}{b+\sqrt{-a^2+b^2}}, \frac{1}{2} (c+d x), 2\right]}{b^2 \left(a^2-b \left(b+\sqrt{-a^2+b^2}\right)\right) d \sqrt{e \operatorname{Cos}[c+d x]}}$$

Result (type 6, 624 leaves):

$$\frac{1}{20 d \operatorname{Cos}[c+d x]^{3/2} \sqrt{1-\operatorname{Cos}[c+d x]^2} (a+b \operatorname{Sin}[c+d x])} (e \operatorname{Cos}[c+d x])^{3/2} \left(a+b \sqrt{1-\operatorname{Cos}[c+d x]^2}\right)$$
$$\left(-\left(72 a \left(a^2-b^2\right) \operatorname{AppellF1}\left[\frac{5}{4}, \frac{1}{2}, 1, \frac{9}{4}, \operatorname{Cos}[c+d x]^2, \frac{b^2 \operatorname{Cos}[c+d x]^2}{-a^2+b^2}\right] \operatorname{Cos}[c+d x]^{5/2}\right) \middle/ \left(\sqrt{1-\operatorname{Cos}[c+d x]^2}\right.\right.$$
$$\left(9 \left(a^2-b^2\right) \operatorname{AppellF1}\left[\frac{5}{4}, \frac{1}{2}, 1, \frac{9}{4}, \operatorname{Cos}[c+d x]^2, \frac{b^2 \operatorname{Cos}[c+d x]^2}{-a^2+b^2}\right]-2 \left(2 b^2 \operatorname{AppellF1}\left[\frac{9}{4}, \frac{1}{2}, 2, \frac{13}{4}, \operatorname{Cos}[c+d x]^2, \frac{b^2 \operatorname{Cos}[c+d x]^2}{-a^2+b^2}\right]+\right.\right.$$
$$\left.\left.\left.\left(-a^2+b^2\right) \operatorname{AppellF1}\left[\frac{9}{4}, \frac{3}{2}, 1, \frac{13}{4}, \operatorname{Cos}[c+d x]^2, \frac{b^2 \operatorname{Cos}[c+d x]^2}{-a^2+b^2}\right]\right) \operatorname{Cos}[c+d x]^2\right) \left(a^2+b^2 \left(-1+\operatorname{Cos}[c+d x]^2\right)\right)\right)+$$
$$\frac{1}{b^{3/2}} (5-5 i) \left(2 \left(-a^2+b^2\right)^{1/4} \operatorname{ArcTan}\left[1-\frac{(1+i) \sqrt{b} \sqrt{\operatorname{Cos}[c+d x]}}{\left(-a^2+b^2\right)^{1/4}}\right]-2 \left(-a^2+b^2\right)^{1/4} \operatorname{ArcTan}\left[1+\frac{(1+i) \sqrt{b} \sqrt{\operatorname{Cos}[c+d x]}}{\left(-a^2+b^2\right)^{1/4}}\right]+\right.$$
$$(4+4 i) \sqrt{b} \sqrt{\operatorname{Cos}[c+d x]}+\left(-a^2+b^2\right)^{1/4} \operatorname{Log}\left[\sqrt{-a^2+b^2}-(1+i) \sqrt{b} \left(-a^2+b^2\right)^{1/4} \sqrt{\operatorname{Cos}[c+d x]}+i b \operatorname{Cos}[c+d x]\right]-$$
$$\left.\left.\left(-a^2+b^2\right)^{1/4} \operatorname{Log}\left[\sqrt{-a^2+b^2}+(1+i) \sqrt{b} \left(-a^2+b^2\right)^{1/4} \sqrt{\operatorname{Cos}[c+d x]}+i b \operatorname{Cos}[c+d x]\right]\right)\right) \operatorname{Sin}[c+d x]$$

Problem 579: Result unnecessarily involves higher level functions.

$$\int \frac{\sqrt{e \operatorname{Cos}[c+d x]}}{a+b \operatorname{Sin}[c+d x]} \, dx$$

Optimal (type 4, 292 leaves, 9 steps):

$$\frac{\sqrt{e}\,\text{ArcTan}\left[\frac{\sqrt{b}\,\sqrt{e\,\text{Cos}[c+d\,x]}}{\left(-a^2+b^2\right)^{1/4}\sqrt{e}}\right]}{\sqrt{b}\,\left(-a^2+b^2\right)^{1/4}\,d}-\frac{\sqrt{e}\,\text{ArcTanh}\left[\frac{\sqrt{b}\,\sqrt{e\,\text{Cos}[c+d\,x]}}{\left(-a^2+b^2\right)^{1/4}\sqrt{e}}\right]}{\sqrt{b}\,\left(-a^2+b^2\right)^{1/4}\,d}+$$

$$\frac{a\,e\,\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticPi}\left[\frac{2\,b}{b-\sqrt{-a^2+b^2}},\,\frac{1}{2}\,(c+d\,x),\,2\right]}{b\,\left(b-\sqrt{-a^2+b^2}\right)\,d\,\sqrt{e\,\text{Cos}[c+d\,x]}}+\frac{a\,e\,\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticPi}\left[\frac{2\,b}{b+\sqrt{-a^2+b^2}},\,\frac{1}{2}\,(c+d\,x),\,2\right]}{b\,\left(b+\sqrt{-a^2+b^2}\right)\,d\,\sqrt{e\,\text{Cos}[c+d\,x]}}$$

Result (type 6, 556 leaves):

$$\frac{1}{12\,d\,\sqrt{\text{Cos}[c+d\,x]}\,\sqrt{\text{Sin}[c+d\,x]^2}\,(a+b\,\text{Sin}[c+d\,x])}\sqrt{e\,\text{Cos}[c+d\,x]}\,\text{Sin}[c+d\,x]$$

$$\left(\left(-\frac{1}{\sqrt{b}\,\left(-a^2+b^2\right)^{1/4}}(3+3\,i)\left(2\,\text{ArcTan}\left[1-\frac{(1+i)\,\sqrt{b}\,\sqrt{\text{Cos}[c+d\,x]}}{\left(-a^2+b^2\right)^{1/4}}\right]-2\,\text{ArcTan}\left[1+\frac{(1+i)\,\sqrt{b}\,\sqrt{\text{Cos}[c+d\,x]}}{\left(-a^2+b^2\right)^{1/4}}\right]-\text{Log}\left[\sqrt{-a^2+b^2}-(1+i)\,\sqrt{b}\right.\right.\right.\right.$$

$$\left.\left.\left.\left(-a^2+b^2\right)^{1/4}\sqrt{\text{Cos}[c+d\,x]}+i\,b\,\text{Cos}[c+d\,x]\right]+\text{Log}\left[\sqrt{-a^2+b^2}+(1+i)\,\sqrt{b}\,\left(-a^2+b^2\right)^{1/4}\sqrt{\text{Cos}[c+d\,x]}+i\,b\,\text{Cos}[c+d\,x]\right]\right)-$$

$$\left(56\,a\,\left(a^2-b^2\right)\,\text{AppellF1}\left[\frac{3}{4},\,\frac{1}{2},\,1,\,\frac{7}{4},\,\text{Cos}[c+d\,x]^2,\,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]\text{Cos}[c+d\,x]^{3/2}\right)\Bigg/\left(\left(a^2-b^2+b^2\,\text{Cos}[c+d\,x]^2\right)\right.$$

$$\left(7\,\left(a^2-b^2\right)\,\text{AppellF1}\left[\frac{3}{4},\,\frac{1}{2},\,1,\,\frac{7}{4},\,\text{Cos}[c+d\,x]^2,\,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]-2\left(2\,b^2\,\text{AppellF1}\left[\frac{7}{4},\,\frac{1}{2},\,2,\,\frac{11}{4},\,\text{Cos}[c+d\,x]^2,\,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]+\right.\right.$$

$$\left.\left.\left.\left(-a^2+b^2\right)\,\text{AppellF1}\left[\frac{7}{4},\,\frac{3}{2},\,1,\,\frac{11}{4},\,\text{Cos}[c+d\,x]^2,\,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]\right)\text{Cos}[c+d\,x]^2\right)\sqrt{\text{Sin}[c+d\,x]^2}\right)\right)\left(a+b\,\sqrt{\text{Sin}[c+d\,x]^2}\right)$$

Problem 580: Result unnecessarily involves higher level functions.

$$\int\frac{1}{\sqrt{e\,\text{Cos}[c+d\,x]}\,(a+b\,\text{Sin}[c+d\,x])}\,dx$$

Optimal (type 4, 299 leaves, 9 steps):

$$-\frac{\sqrt{b}\,\text{ArcTan}\left[\frac{\sqrt{b}\,\sqrt{e\,\text{Cos}[c+d\,x]}}{\left(-a^2+b^2\right)^{1/4}\sqrt{e}}\right]}{\left(-a^2+b^2\right)^{3/4}\,d\,\sqrt{e}}-\frac{\sqrt{b}\,\text{ArcTanh}\left[\frac{\sqrt{b}\,\sqrt{e\,\text{Cos}[c+d\,x]}}{\left(-a^2+b^2\right)^{1/4}\sqrt{e}}\right]}{\left(-a^2+b^2\right)^{3/4}\,d\,\sqrt{e}}+$$

$$\frac{a\,\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticPi}\left[\frac{2\,b}{b-\sqrt{-a^2+b^2}},\,\frac{1}{2}\,(c+d\,x),\,2\right]}{\left(a^2-b\,\left(b-\sqrt{-a^2+b^2}\right)\right)\,d\,\sqrt{e\,\text{Cos}[c+d\,x]}}+\frac{a\,\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticPi}\left[\frac{2\,b}{b+\sqrt{-a^2+b^2}},\,\frac{1}{2}\,(c+d\,x),\,2\right]}{\left(a^2-b\,\left(b+\sqrt{-a^2+b^2}\right)\right)\,d\,\sqrt{e\,\text{Cos}[c+d\,x]}}$$

Result (type 6, 567 leaves) :

$$-\frac{1}{d\sqrt{e\,\text{Cos}[c+d\,x]}\,\sqrt{1-\text{Cos}[c+d\,x]^2}\,(a+b\,\text{Sin}[c+d\,x])}\,2\sqrt{\text{Cos}[c+d\,x]}\,\left(a+b\sqrt{1-\text{Cos}[c+d\,x]^2}\right)$$
$$\left(\left(5\,a\,(a^2-b^2)\,\text{AppellF1}\left[\frac{1}{4},\frac{1}{2},1,\frac{5}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]\sqrt{\text{Cos}[c+d\,x]}\right)\Big/\left(\sqrt{1-\text{Cos}[c+d\,x]^2}\right.\right.$$
$$\left(5\,(a^2-b^2)\,\text{AppellF1}\left[\frac{1}{4},\frac{1}{2},1,\frac{5}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]-2\left(2\,b^2\,\text{AppellF1}\left[\frac{5}{4},\frac{1}{2},2,\frac{9}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]+\right.\right.$$
$$\left.\left.\left.(-a^2+b^2)\,\text{AppellF1}\left[\frac{5}{4},\frac{3}{2},1,\frac{9}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]\right)\text{Cos}[c+d\,x]^2\right)\left(a^2+b^2\left(-1+\text{Cos}[c+d\,x]^2\right)\right)\right)-$$
$$\frac{1}{(-a^2+b^2)^{3/4}}\left(\frac{1}{8}-\frac{i}{8}\right)\sqrt{b}\left(2\,\text{ArcTan}\left[1-\frac{(1+i)\sqrt{b}\,\sqrt{\text{Cos}[c+d\,x]}}{(-a^2+b^2)^{1/4}}\right]-2\,\text{ArcTan}\left[1+\frac{(1+i)\sqrt{b}\,\sqrt{\text{Cos}[c+d\,x]}}{(-a^2+b^2)^{1/4}}\right]+\right.$$
$$\text{Log}\left[\sqrt{-a^2+b^2}-(1+i)\sqrt{b}\,(-a^2+b^2)^{1/4}\sqrt{\text{Cos}[c+d\,x]}+i\,b\,\text{Cos}[c+d\,x]\right]-$$
$$\left.\left.\text{Log}\left[\sqrt{-a^2+b^2}+(1+i)\sqrt{b}\,(-a^2+b^2)^{1/4}\sqrt{\text{Cos}[c+d\,x]}+i\,b\,\text{Cos}[c+d\,x]\right]\right)\right)\text{Sin}[c+d\,x]$$

- **Problem 581: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int\frac{1}{(e\,\text{Cos}[c+d\,x])^{3/2}\,(a+b\,\text{Sin}[c+d\,x])}\,dx$$

Optimal (type 4, 411 leaves, 13 steps) :

$$\frac{b^{3/2}\,\text{ArcTan}\left[\frac{\sqrt{b}\,\sqrt{e\,\text{Cos}[c+d\,x]}}{(-a^2+b^2)^{1/4}\sqrt{e}}\right]}{(-a^2+b^2)^{5/4}\,d\,e^{3/2}}-\frac{b^{3/2}\,\text{ArcTanh}\left[\frac{\sqrt{b}\,\sqrt{e\,\text{Cos}[c+d\,x]}}{(-a^2+b^2)^{1/4}\sqrt{e}}\right]}{(-a^2+b^2)^{5/4}\,d\,e^{3/2}}-$$
$$\frac{2\,a\sqrt{e\,\text{Cos}[c+d\,x]}\,\text{EllipticE}\left[\frac{1}{2}(c+d\,x),2\right]}{(a^2-b^2)\,d\,e^2\sqrt{\text{Cos}[c+d\,x]}}-\frac{a\,b\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticPi}\left[\frac{2\,b}{b-\sqrt{-a^2+b^2}},\frac{1}{2}(c+d\,x),2\right]}{(a^2-b^2)\left(b-\sqrt{-a^2+b^2}\right)d\,e\sqrt{e\,\text{Cos}[c+d\,x]}}-$$
$$\frac{a\,b\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticPi}\left[\frac{2\,b}{b+\sqrt{-a^2+b^2}},\frac{1}{2}(c+d\,x),2\right]}{(a^2-b^2)\left(b+\sqrt{-a^2+b^2}\right)d\,e\sqrt{e\,\text{Cos}[c+d\,x]}}-\frac{2\,(b-a\,\text{Sin}[c+d\,x])}{(a^2-b^2)\,d\,e\sqrt{e\,\text{Cos}[c+d\,x]}}$$

Result (type 6, 1186 leaves) :

$$\frac{2\,\text{Cos}[c+d\,x]\,(-b+a\,\text{Sin}[c+d\,x])}{\left(a^2-b^2\right) d\,(e\,\text{Cos}[c+d\,x])^{3/2}}-$$

$$\frac{1}{(a-b)\,(a+b)\,d\,(e\,\text{Cos}[c+d\,x])^{3/2}}\text{Cos}[c+d\,x]^{3/2}\left(\frac{1}{12\sqrt{1-\text{Cos}[c+d\,x]^2}\,(a+b\,\text{Sin}[c+d\,x])}\left(a^2+b^2\right)\left(a+b\sqrt{1-\text{Cos}[c+d\,x]^2}\right)\right.$$

$$\left(-\left(56\,a\left(a^2-b^2\right)\text{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]\text{Cos}[c+d\,x]^{3/2}\right)\Big/\left(\sqrt{1-\text{Cos}[c+d\,x]^2}\left(7\left(a^2-b^2\right)\right.\right.\right.$$

$$\text{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]-2\left(2\,b^2\,\text{AppellF1}\left[\frac{7}{4},\frac{1}{2},2,\frac{11}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]+\right.$$

$$\left.\left.\left.\left(-a^2+b^2\right)\text{AppellF1}\left[\frac{7}{4},\frac{3}{2},1,\frac{11}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]\right)\text{Cos}[c+d\,x]^2\right)\left(a^2+b^2\left(-1+\text{Cos}[c+d\,x]^2\right)\right)\right)-$$

$$\frac{1}{\sqrt{b}\left(-a^2+b^2\right)^{1/4}}(3+3\,i)\left(2\,\text{ArcTan}\left[1-\frac{(1+i)\sqrt{b}\sqrt{\text{Cos}[c+d\,x]}}{\left(-a^2+b^2\right)^{1/4}}\right]-2\,\text{ArcTan}\left[1+\frac{(1+i)\sqrt{b}\sqrt{\text{Cos}[c+d\,x]}}{\left(-a^2+b^2\right)^{1/4}}\right]-\right.$$

$$\text{Log}\left[\sqrt{-a^2+b^2}-(1+i)\sqrt{b}\left(-a^2+b^2\right)^{1/4}\sqrt{\text{Cos}[c+d\,x]}+i\,b\,\text{Cos}[c+d\,x]\right]+$$

$$\left.\left.\text{Log}\left[\sqrt{-a^2+b^2}+(1+i)\sqrt{b}\left(-a^2+b^2\right)^{1/4}\sqrt{\text{Cos}[c+d\,x]}+i\,b\,\text{Cos}[c+d\,x]\right]\right)\right)\text{Sin}[c+d\,x]-$$

$$\frac{1}{\left(1-\text{Cos}[c+d\,x]^2\right)(a+b\,\text{Sin}[c+d\,x])}2\,a\,b\left(a+b\sqrt{1-\text{Cos}[c+d\,x]^2}\right)$$

$$\left(\left(7\,b\left(a^2-b^2\right)\text{AppellF1}\left[\frac{3}{4},-\frac{1}{2},1,\frac{7}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]\text{Cos}[c+d\,x]^{3/2}\sqrt{1-\text{Cos}[c+d\,x]^2}\right)\Big/\right.$$

$$\left(3\left(-7\left(a^2-b^2\right)\text{AppellF1}\left[\frac{3}{4},-\frac{1}{2},1,\frac{7}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]+2\left(2\,b^2\,\text{AppellF1}\left[\frac{7}{4},-\frac{1}{2},2,\frac{11}{4},\text{Cos}[c+d\,x]^2,\right.\right.\right.\right.$$

$$\left.\left.\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]+\left(a^2-b^2\right)\text{AppellF1}\left[\frac{7}{4},\frac{1}{2},1,\frac{11}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]\right)\text{Cos}[c+d\,x]^2\right)$$

$$\left.\left(a^2+b^2\left(-1+\text{Cos}[c+d\,x]^2\right)\right)\right)+\frac{1}{4\sqrt{2}\,b^{3/2}\left(a^2-b^2\right)^{1/4}}a\left(-2\,\text{ArcTan}\left[1-\frac{\sqrt{2}\sqrt{b}\sqrt{\text{Cos}[c+d\,x]}}{\left(a^2-b^2\right)^{1/4}}\right]+\right.$$

$$2\,\text{ArcTan}\left[1+\frac{\sqrt{2}\sqrt{b}\sqrt{\text{Cos}[c+d\,x]}}{\left(a^2-b^2\right)^{1/4}}\right]+\text{Log}\left[\sqrt{a^2-b^2}-\sqrt{2}\sqrt{b}\left(a^2-b^2\right)^{1/4}\sqrt{\text{Cos}[c+d\,x]}+b\,\text{Cos}[c+d\,x]\right]-$$

$$\left.\left.\left.\text{Log}\left[\sqrt{a^2-b^2}+\sqrt{2}\sqrt{b}\left(a^2-b^2\right)^{1/4}\sqrt{\text{Cos}[c+d\,x]}+b\,\text{Cos}[c+d\,x]\right]\right)\right)\text{Sin}[c+d\,x]^2\right)$$

- **Problem 582: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int \frac{1}{(e\,\mathrm{Cos}[c+d\,x])^{5/2}\,(a+b\,\mathrm{Sin}[c+d\,x])}\,dx$$

Optimal (type 4, 434 leaves, 13 steps) :

$$-\frac{b^{5/2}\,\mathrm{ArcTan}\left[\frac{\sqrt{b}\,\sqrt{e\,\mathrm{Cos}[c+d\,x]}}{(-a^2+b^2)^{1/4}\,\sqrt{e}}\right]}{(-a^2+b^2)^{7/4}\,d\,e^{5/2}}-\frac{b^{5/2}\,\mathrm{ArcTanh}\left[\frac{\sqrt{b}\,\sqrt{e\,\mathrm{Cos}[c+d\,x]}}{(-a^2+b^2)^{1/4}\,\sqrt{e}}\right]}{(-a^2+b^2)^{7/4}\,d\,e^{5/2}}+$$

$$\frac{2\,a\,\sqrt{\mathrm{Cos}[c+d\,x]}\,\mathrm{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,2\right]}{3\,(a^2-b^2)\,d\,e^2\,\sqrt{e\,\mathrm{Cos}[c+d\,x]}}-\frac{a\,b^2\,\sqrt{\mathrm{Cos}[c+d\,x]}\,\mathrm{EllipticPi}\left[\frac{2\,b}{b-\sqrt{-a^2+b^2}},\,\frac{1}{2}\,(c+d\,x),\,2\right]}{(a^2-b^2)\,\left(a^2-b\,\left(b-\sqrt{-a^2+b^2}\right)\right)\,d\,e^2\,\sqrt{e\,\mathrm{Cos}[c+d\,x]}}-$$

$$\frac{a\,b^2\,\sqrt{\mathrm{Cos}[c+d\,x]}\,\mathrm{EllipticPi}\left[\frac{2\,b}{b+\sqrt{-a^2+b^2}},\,\frac{1}{2}\,(c+d\,x),\,2\right]}{(a^2-b^2)\,\left(a^2-b\,\left(b+\sqrt{-a^2+b^2}\right)\right)\,d\,e^2\,\sqrt{e\,\mathrm{Cos}[c+d\,x]}}-\frac{2\,(b-a\,\mathrm{Sin}[c+d\,x])}{3\,(a^2-b^2)\,d\,e\,(e\,\mathrm{Cos}[c+d\,x])^{3/2}}$$

Result (type 6, 1192 leaves) :

$$\frac{2\,\text{Cos}[c+d\,x]\,(-b+a\,\text{Sin}[c+d\,x])}{3\left(a^2-b^2\right)d\,(e\,\text{Cos}[c+d\,x])^{5/2}}+$$

$$\frac{1}{3\,(a-b)\,(a+b)\,d\,(e\,\text{Cos}[c+d\,x])^{5/2}}\text{Cos}[c+d\,x]^{5/2}\left(-\frac{1}{\sqrt{1-\text{Cos}[c+d\,x]^2}\,(a+b\,\text{Sin}[c+d\,x])}2\left(a^2-3\,b^2\right)\left(a+b\sqrt{1-\text{Cos}[c+d\,x]^2}\right)\right.$$

$$\left(\left(5\,a\left(a^2-b^2\right)\text{AppellF1}\left[\frac{1}{4},\frac{1}{2},1,\frac{5}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]\sqrt{\text{Cos}[c+d\,x]}\right)\Big/\left(\sqrt{1-\text{Cos}[c+d\,x]^2}\left(5\left(a^2-b^2\right)\text{AppellF1}\left[\frac{1}{4},\right.\right.\right.\right.$$

$$\frac{1}{2},1,\frac{5}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\Big]-2\left(2\,b^2\,\text{AppellF1}\left[\frac{5}{4},\frac{1}{2},2,\frac{9}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]+\left(-a^2+b^2\right)\right.$$

$$\left.\left.\left.\text{AppellF1}\left[\frac{5}{4},\frac{3}{2},1,\frac{9}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]\right)\text{Cos}[c+d\,x]^2\right)\left(a^2+b^2\left(-1+\text{Cos}[c+d\,x]^2\right)\right)\right)-\frac{1}{\left(-a^2+b^2\right)^{3/4}}$$

$$\left(\frac{1}{8}-\frac{i}{8}\right)\sqrt{b}\left(2\,\text{ArcTan}\left[1-\frac{(1+i)\sqrt{b}\sqrt{\text{Cos}[c+d\,x]}}{\left(-a^2+b^2\right)^{1/4}}\right]-2\,\text{ArcTan}\left[1+\frac{(1+i)\sqrt{b}\sqrt{\text{Cos}[c+d\,x]}}{\left(-a^2+b^2\right)^{1/4}}\right]+\text{Log}\left[\sqrt{-a^2+b^2}-(1+i)\sqrt{b}\right.\right.$$

$$\left.\left.\left.\left(-a^2+b^2\right)^{1/4}\sqrt{\text{Cos}[c+d\,x]}+i\,b\,\text{Cos}[c+d\,x]\right]-\text{Log}\left[\sqrt{-a^2+b^2}+(1+i)\sqrt{b}\left(-a^2+b^2\right)^{1/4}\sqrt{\text{Cos}[c+d\,x]}+i\,b\,\text{Cos}[c+d\,x]\right]\right)\right)$$

$$\text{Sin}[c+d\,x]-\frac{1}{\left(1-\text{Cos}[c+d\,x]^2\right)(a+b\,\text{Sin}[c+d\,x])}2\,a\,b\left(a+b\sqrt{1-\text{Cos}[c+d\,x]^2}\right)$$

$$\left(\left(5\,b\left(a^2-b^2\right)\text{AppellF1}\left[\frac{1}{4},-\frac{1}{2},1,\frac{5}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]\sqrt{\text{Cos}[c+d\,x]}\sqrt{1-\text{Cos}[c+d\,x]^2}\right)\Big/\right.$$

$$\left(\left(-5\left(a^2-b^2\right)\text{AppellF1}\left[\frac{1}{4},-\frac{1}{2},1,\frac{5}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]+2\left(2\,b^2\,\text{AppellF1}\left[\frac{5}{4},-\frac{1}{2},2,\frac{9}{4},\text{Cos}[c+d\,x]^2,\right.\right.\right.\right.$$

$$\left.\left.\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]+\left(a^2-b^2\right)\text{AppellF1}\left[\frac{5}{4},\frac{1}{2},1,\frac{9}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]\right)\text{Cos}[c+d\,x]^2\right)$$

$$\left.\left(a^2+b^2\left(-1+\text{Cos}[c+d\,x]^2\right)\right)\right)+\frac{1}{4\sqrt{2}\sqrt{b}\left(a^2-b^2\right)^{3/4}}a\left(-2\,\text{ArcTan}\left[1-\frac{\sqrt{2}\sqrt{b}\sqrt{\text{Cos}[c+d\,x]}}{\left(a^2-b^2\right)^{1/4}}\right]+\right.$$

$$2\,\text{ArcTan}\left[1+\frac{\sqrt{2}\sqrt{b}\sqrt{\text{Cos}[c+d\,x]}}{\left(a^2-b^2\right)^{1/4}}\right]-\text{Log}\left[\sqrt{a^2-b^2}-\sqrt{2}\sqrt{b}\left(a^2-b^2\right)^{1/4}\sqrt{\text{Cos}[c+d\,x]}+b\,\text{Cos}[c+d\,x]\right]+$$

$$\left.\left.\left.\text{Log}\left[\sqrt{a^2-b^2}+\sqrt{2}\sqrt{b}\left(a^2-b^2\right)^{1/4}\sqrt{\text{Cos}[c+d\,x]}+b\,\text{Cos}[c+d\,x]\right]\right)\right)\text{Sin}[c+d\,x]^2\right)$$

- **Problem 583: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int \frac{1}{(e \operatorname{Cos}[c+d x])^{7/2} (a+b \operatorname{Sin}[c+d x])} \, dx$$

Optimal (type 4, 486 leaves, 14 steps):

$$\frac{b^{7/2} \operatorname{ArcTan}\left[\frac{\sqrt{b} \sqrt{e \operatorname{Cos}[c+d x]}}{(-a^2+b^2)^{1/4} \sqrt{e}}\right]}{(-a^2+b^2)^{9/4} d e^{7/2}} - \frac{b^{7/2} \operatorname{ArcTanh}\left[\frac{\sqrt{b} \sqrt{e \operatorname{Cos}[c+d x]}}{(-a^2+b^2)^{1/4} \sqrt{e}}\right]}{(-a^2+b^2)^{9/4} d e^{7/2}} -$$

$$\frac{2 a (3 a^2-8 b^2) \sqrt{e \operatorname{Cos}[c+d x]} \operatorname{EllipticE}\left[\frac{1}{2} (c+d x), 2\right]}{5 (a^2-b^2)^2 d e^4 \sqrt{\operatorname{Cos}[c+d x]}} + \frac{a b^3 \sqrt{\operatorname{Cos}[c+d x]} \operatorname{EllipticPi}\left[\frac{2 b}{b-\sqrt{-a^2+b^2}}, \frac{1}{2} (c+d x), 2\right]}{(a^2-b^2)^2 \left(b-\sqrt{-a^2+b^2}\right) d e^3 \sqrt{e \operatorname{Cos}[c+d x]}} +$$

$$\frac{a b^3 \sqrt{\operatorname{Cos}[c+d x]} \operatorname{EllipticPi}\left[\frac{2 b}{b+\sqrt{-a^2+b^2}}, \frac{1}{2} (c+d x), 2\right]}{(a^2-b^2)^2 \left(b+\sqrt{-a^2+b^2}\right) d e^3 \sqrt{e \operatorname{Cos}[c+d x]}} - \frac{2 (b-a \operatorname{Sin}[c+d x])}{5 (a^2-b^2) d e (e \operatorname{Cos}[c+d x])^{5/2}} + \frac{2 \left(5 b^3+a (3 a^2-8 b^2) \operatorname{Sin}[c+d x]\right)}{5 (a^2-b^2)^2 d e^3 \sqrt{e \operatorname{Cos}[c+d x]}}$$

Result (type 6, 1275 leaves):

$$-\frac{1}{5 (a-b)^2 (a+b)^2 d (e \operatorname{Cos}[c+d x])^{7/2}}$$

$$\operatorname{Cos}[c+d x]^{7/2} \left(\frac{1}{12 \sqrt{1-\operatorname{Cos}[c+d x]^2} (a+b \operatorname{Sin}[c+d x])} (3 a^4-8 a^2 b^2-5 b^4) \left(a+b \sqrt{1-\operatorname{Cos}[c+d x]^2}\right) \left(-\left(56 a (a^2-b^2)\right.\right.\right.$$

$$\operatorname{AppellF1}\left[\frac{3}{4}, \frac{1}{2}, 1, \frac{7}{4}, \operatorname{Cos}[c+d x]^2, \frac{b^2 \operatorname{Cos}[c+d x]^2}{-a^2+b^2}\right] \operatorname{Cos}[c+d x]^{3/2}\Bigg) \Bigg/ \left(\sqrt{1-\operatorname{Cos}[c+d x]^2} \left(7 (a^2-b^2) \operatorname{AppellF1}\left[\frac{3}{4}, \frac{1}{2}, 1,\right.\right.\right.$$

$$\left.\frac{7}{4}, \operatorname{Cos}[c+d x]^2, \frac{b^2 \operatorname{Cos}[c+d x]^2}{-a^2+b^2}\right] - 2 \left(2 b^2 \operatorname{AppellF1}\left[\frac{7}{4}, \frac{1}{2}, 2, \frac{11}{4}, \operatorname{Cos}[c+d x]^2, \frac{b^2 \operatorname{Cos}[c+d x]^2}{-a^2+b^2}\right] + (-a^2+b^2) \operatorname{AppellF1}\left[\right.\right.$$

$$\left.\left.\left.\left.\frac{7}{4}, \frac{3}{2}, 1, \frac{11}{4}, \operatorname{Cos}[c+d x]^2, \frac{b^2 \operatorname{Cos}[c+d x]^2}{-a^2+b^2}\right]\right) \operatorname{Cos}[c+d x]^2\right) \left(a^2+b^2 (-1+\operatorname{Cos}[c+d x]^2)\right)\right) - \frac{1}{\sqrt{b} (-a^2+b^2)^{1/4}}$$

$$(3+3 i) \left(2 \operatorname{ArcTan}\left[1-\frac{(1+i) \sqrt{b} \sqrt{\operatorname{Cos}[c+d x]}}{(-a^2+b^2)^{1/4}}\right] - 2 \operatorname{ArcTan}\left[1+\frac{(1+i) \sqrt{b} \sqrt{\operatorname{Cos}[c+d x]}}{(-a^2+b^2)^{1/4}}\right] - \operatorname{Log}\left[\sqrt{-a^2+b^2} - (1+i) \sqrt{b}\right.\right.$$

$$\left.\left.\left.(-a^2+b^2)^{1/4} \sqrt{\operatorname{Cos}[c+d x]} + i b \operatorname{Cos}[c+d x]\right] + \operatorname{Log}\left[\sqrt{-a^2+b^2} + (1+i) \sqrt{b} (-a^2+b^2)^{1/4} \sqrt{\operatorname{Cos}[c+d x]} + i b \operatorname{Cos}[c+d x]\right]\right)\right)$$

$$\operatorname{Sin}[c+d x] - \frac{1}{(1-\operatorname{Cos}[c+d x]^2) (a+b \operatorname{Sin}[c+d x])} 2 (3 a^3 b-8 a b^3) \left(a+b \sqrt{1-\operatorname{Cos}[c+d x]^2}\right)$$

$$\left(\left(7\, b\, (a^2-b^2)\, \text{AppellF1}\left[\frac{3}{4}, -\frac{1}{2}, 1, \frac{7}{4}, \text{Cos}[c+d\,x]^2, \frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right] \text{Cos}[c+d\,x]^{3/2} \sqrt{1-\text{Cos}[c+d\,x]^2}\right) \Big/ \right.$$

$$\left(3\left(-7\,(a^2-b^2)\,\text{AppellF1}\left[\frac{3}{4}, -\frac{1}{2}, 1, \frac{7}{4}, \text{Cos}[c+d\,x]^2, \frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right] + 2\left(2\,b^2\,\text{AppellF1}\left[\frac{7}{4}, -\frac{1}{2}, 2, \frac{11}{4}, \text{Cos}[c+d\,x]^2, \right.\right.\right.$$

$$\left.\left.\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right] + (a^2-b^2)\,\text{AppellF1}\left[\frac{7}{4}, \frac{1}{2}, 1, \frac{11}{4}, \text{Cos}[c+d\,x]^2, \frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]\right) \text{Cos}[c+d\,x]^2\Bigg)$$

$$\left.\left.(a^2+b^2\,(-1+\text{Cos}[c+d\,x]^2))\right)\right) + \frac{1}{4\sqrt{2}\, b^{3/2}\,(a^2-b^2)^{1/4}} a \left(-2\,\text{ArcTan}\left[1-\frac{\sqrt{2}\,\sqrt{b}\,\sqrt{\text{Cos}[c+d\,x]}}{(a^2-b^2)^{1/4}}\right] + \right.$$

$$2\,\text{ArcTan}\left[1+\frac{\sqrt{2}\,\sqrt{b}\,\sqrt{\text{Cos}[c+d\,x]}}{(a^2-b^2)^{1/4}}\right] + \text{Log}\left[\sqrt{a^2-b^2} - \sqrt{2}\,\sqrt{b}\,(a^2-b^2)^{1/4}\sqrt{\text{Cos}[c+d\,x]} + b\,\text{Cos}[c+d\,x]\right] -$$

$$\left.\left.\text{Log}\left[\sqrt{a^2-b^2} + \sqrt{2}\,\sqrt{b}\,(a^2-b^2)^{1/4}\sqrt{\text{Cos}[c+d\,x]} + b\,\text{Cos}[c+d\,x]\right]\right)\right) \text{Sin}[c+d\,x]^2\Bigg) +$$

$$\frac{\text{Cos}[c+d\,x]^4 \left(\frac{2\,\text{Sec}[c+d\,x]^3\,(-b+a\,\text{Sin}[c+d\,x])}{5\,(a^2-b^2)} + \frac{2\,\text{Sec}[c+d\,x]\,(5\,b^3+3\,a^3\,\text{Sin}[c+d\,x]-8\,a\,b^2\,\text{Sin}[c+d\,x])}{5\,(a^2-b^2)^2}\right)}{d\,(e\,\text{Cos}[c+d\,x])^{7/2}}$$

Problem 584: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{(e\,\text{Cos}[c+d\,x])^{11/2}}{(a+b\,\text{Sin}[c+d\,x])^2}\, dx$$

Optimal (type 4, 543 leaves, 15 steps):

$$-\frac{9\,a\,(-a^2+b^2)^{5/4}\,e^{11/2}\,\text{ArcTan}\left[\frac{\sqrt{b}\,\sqrt{e\,\text{Cos}[c+d\,x]}}{(-a^2+b^2)^{1/4}\sqrt{e}}\right]}{2\,b^{11/2}\,d} - \frac{9\,a\,(-a^2+b^2)^{5/4}\,e^{11/2}\,\text{ArcTanh}\left[\frac{\sqrt{b}\,\sqrt{e\,\text{Cos}[c+d\,x]}}{(-a^2+b^2)^{1/4}\sqrt{e}}\right]}{2\,b^{11/2}\,d} -$$

$$\frac{3\,(21\,a^4-28\,a^2\,b^2+5\,b^4)\,e^6\,\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticF}\left[\frac{1}{2}(c+d\,x), 2\right]}{7\,b^6\,d\,\sqrt{e\,\text{Cos}[c+d\,x]}} + \frac{9\,a^2\,(a^2-b^2)^2\,e^6\,\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticPi}\left[\frac{2\,b}{b-\sqrt{-a^2+b^2}}, \frac{1}{2}(c+d\,x), 2\right]}{2\,b^6\left(a^2-b\left(b-\sqrt{-a^2+b^2}\right)\right) d\,\sqrt{e\,\text{Cos}[c+d\,x]}} +$$

$$\frac{9\,a^2\,(a^2-b^2)^2\,e^6\,\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticPi}\left[\frac{2\,b}{b+\sqrt{-a^2+b^2}}, \frac{1}{2}(c+d\,x), 2\right]}{2\,b^6\left(a^2-b\left(b+\sqrt{-a^2+b^2}\right)\right) d\,\sqrt{e\,\text{Cos}[c+d\,x]}} + \frac{9\,e^3\,(e\,\text{Cos}[c+d\,x])^{5/2}\,(7\,a-5\,b\,\text{Sin}[c+d\,x])}{35\,b^3\,d} -$$

$$\frac{e\,(e\,\text{Cos}[c+d\,x])^{9/2}}{b\,d\,(a+b\,\text{Sin}[c+d\,x])} - \frac{3\,e^5\,\sqrt{e\,\text{Cos}[c+d\,x]}\,(21\,a\,(a^2-b^2)-b\,(7\,a^2-5\,b^2)\,\text{Sin}[c+d\,x])}{7\,b^5\,d}$$

Result (type 6, 2230 leaves):

$$-\frac{1}{70\,b^5\,d\,\mathrm{Cos}[c+d\,x]^{11/2}}\,(e\,\mathrm{Cos}[c+d\,x])^{11/2}$$

$$\Bigg(-\frac{1}{\sqrt{1-\mathrm{Cos}[c+d\,x]^2}\,\left(a+b\,\mathrm{Sin}[c+d\,x]\right)}\,2\left(70\,a^3\,b-93\,a\,b^3\right)\left(a+b\,\sqrt{1-\mathrm{Cos}[c+d\,x]^2}\right)\Bigg(\Bigg(5\,a\left(a^2-b^2\right)\mathrm{AppellF1}\Big[\frac{1}{4},\frac{1}{2},1,\frac{5}{4},\mathrm{Cos}[c+d\,x]^2,$$

$$\frac{b^2\,\mathrm{Cos}[c+d\,x]^2}{-a^2+b^2}\Big]\sqrt{\mathrm{Cos}[c+d\,x]}\Bigg)\Bigg/\Bigg(\sqrt{1-\mathrm{Cos}[c+d\,x]^2}\,\Big(5\left(a^2-b^2\right)\mathrm{AppellF1}\Big[\frac{1}{4},\frac{1}{2},1,\frac{5}{4},\mathrm{Cos}[c+d\,x]^2,\frac{b^2\,\mathrm{Cos}[c+d\,x]^2}{-a^2+b^2}\Big]-$$

$$2\Big(2\,b^2\,\mathrm{AppellF1}\Big[\frac{5}{4},\frac{1}{2},2,\frac{9}{4},\mathrm{Cos}[c+d\,x]^2,\frac{b^2\,\mathrm{Cos}[c+d\,x]^2}{-a^2+b^2}\Big]+\left(-a^2+b^2\right)\mathrm{AppellF1}\Big[\frac{5}{4},\frac{3}{2},1,\frac{9}{4},$$

$$\mathrm{Cos}[c+d\,x]^2,\frac{b^2\,\mathrm{Cos}[c+d\,x]^2}{-a^2+b^2}\Big]\Big)\mathrm{Cos}[c+d\,x]^2\Big)\left(a^2+b^2\left(-1+\mathrm{Cos}[c+d\,x]^2\right)\right)\Bigg)-\frac{1}{\left(-a^2+b^2\right)^{3/4}}\left(\frac{1}{8}-\frac{i}{8}\right)\sqrt{b}$$

$$\Bigg(2\,\mathrm{ArcTan}\Big[1-\frac{(1+i)\sqrt{b}\,\sqrt{\mathrm{Cos}[c+d\,x]}}{\left(-a^2+b^2\right)^{1/4}}\Big]-2\,\mathrm{ArcTan}\Big[1+\frac{(1+i)\sqrt{b}\,\sqrt{\mathrm{Cos}[c+d\,x]}}{\left(-a^2+b^2\right)^{1/4}}\Big]+\mathrm{Log}\Big[\sqrt{-a^2+b^2}-(1+i)\sqrt{b}\left(-a^2+b^2\right)^{1/4}$$

$$\sqrt{\mathrm{Cos}[c+d\,x]}+i\,b\,\mathrm{Cos}[c+d\,x]\Big]-\mathrm{Log}\Big[\sqrt{-a^2+b^2}+(1+i)\sqrt{b}\left(-a^2+b^2\right)^{1/4}\sqrt{\mathrm{Cos}[c+d\,x]}+i\,b\,\mathrm{Cos}[c+d\,x]\Big]\Bigg)\Bigg)\mathrm{Sin}[c+d\,x]+$$

$$\frac{1}{\sqrt{1-\mathrm{Cos}[c+d\,x]^2}\left(-1+2\,\mathrm{Cos}[c+d\,x]^2\right)\left(a+b\,\mathrm{Sin}[c+d\,x]\right)}\left(140\,a^3\,b-147\,a\,b^3\right)\left(a+b\,\sqrt{1-\mathrm{Cos}[c+d\,x]^2}\right)\mathrm{Cos}[2\,(c+d\,x)]$$

$$\Bigg(\frac{\left(\frac{1}{2}-\frac{i}{2}\right)\left(-2\,a^2+b^2\right)\mathrm{ArcTan}\Big[1-\frac{(1+i)\sqrt{b}\,\sqrt{\mathrm{Cos}[c+d\,x]}}{\left(-a^2+b^2\right)^{1/4}}\Big]}{b^{3/2}\left(-a^2+b^2\right)^{3/4}}-\frac{\left(\frac{1}{2}-\frac{i}{2}\right)\left(-2\,a^2+b^2\right)\mathrm{ArcTan}\Big[1+\frac{(1+i)\sqrt{b}\,\sqrt{\mathrm{Cos}[c+d\,x]}}{\left(-a^2+b^2\right)^{1/4}}\Big]}{b^{3/2}\left(-a^2+b^2\right)^{3/4}}+\frac{4\sqrt{\mathrm{Cos}[c+d\,x]}}{b}+$$

$$\Bigg(10\,a\left(a^2-b^2\right)\mathrm{AppellF1}\Big[\frac{1}{4},\frac{1}{2},1,\frac{5}{4},\mathrm{Cos}[c+d\,x]^2,\frac{b^2\,\mathrm{Cos}[c+d\,x]^2}{-a^2+b^2}\Big]\sqrt{\mathrm{Cos}[c+d\,x]}\Bigg)\Bigg/\Bigg(\sqrt{1-\mathrm{Cos}[c+d\,x]^2}\,\Big(5\left(a^2-b^2\right)$$

$$\mathrm{AppellF1}\Big[\frac{1}{4},\frac{1}{2},1,\frac{5}{4},\mathrm{Cos}[c+d\,x]^2,\frac{b^2\,\mathrm{Cos}[c+d\,x]^2}{-a^2+b^2}\Big]-2\Big(2\,b^2\,\mathrm{AppellF1}\Big[\frac{5}{4},\frac{1}{2},2,\frac{9}{4},\mathrm{Cos}[c+d\,x]^2,\frac{b^2\,\mathrm{Cos}[c+d\,x]^2}{-a^2+b^2}\Big]+$$

$$\left(-a^2+b^2\right)\mathrm{AppellF1}\Big[\frac{5}{4},\frac{3}{2},1,\frac{9}{4},\mathrm{Cos}[c+d\,x]^2,\frac{b^2\,\mathrm{Cos}[c+d\,x]^2}{-a^2+b^2}\Big]\Big)\mathrm{Cos}[c+d\,x]^2\Big)\left(a^2+b^2\left(-1+\mathrm{Cos}[c+d\,x]^2\right)\right)\Bigg)-$$

$$\Bigg(36\,a\left(a^2-b^2\right)\mathrm{AppellF1}\Big[\frac{5}{4},\frac{1}{2},1,\frac{9}{4},\mathrm{Cos}[c+d\,x]^2,\frac{b^2\,\mathrm{Cos}[c+d\,x]^2}{-a^2+b^2}\Big]\mathrm{Cos}[c+d\,x]^{5/2}\Bigg)\Bigg/\Bigg(5\sqrt{1-\mathrm{Cos}[c+d\,x]^2}\,\Big(9\left(a^2-b^2\right)$$

$$\mathrm{AppellF1}\Big[\frac{5}{4},\frac{1}{2},1,\frac{9}{4},\mathrm{Cos}[c+d\,x]^2,\frac{b^2\,\mathrm{Cos}[c+d\,x]^2}{-a^2+b^2}\Big]-2\Big(2\,b^2\,\mathrm{AppellF1}\Big[\frac{9}{4},\frac{1}{2},2,\frac{13}{4},\mathrm{Cos}[c+d\,x]^2,\frac{b^2\,\mathrm{Cos}[c+d\,x]^2}{-a^2+b^2}\Big]+$$

$$\left(-a^2+b^2\right) \text{AppellF1}\left[\frac{9}{4},\frac{3}{2},1,\frac{13}{4},\text{Cos}[c+d x]^2,\frac{b^2 \text{Cos}[c+d x]^2}{-a^2+b^2}\right]\right) \text{Cos}[c+d x]^2\right) \left(a^2+b^2 \left(-1+\text{Cos}[c+d x]^2\right)\right)\right)+$$

$$\frac{1}{b^{3/2} \left(-a^2+b^2\right)^{3/4}}\left(\frac{1}{4}-\frac{i}{4}\right) \left(-2 a^2+b^2\right) \text{Log}\left[\sqrt{-a^2+b^2}-(1+i) \sqrt{b} \left(-a^2+b^2\right)^{1/4} \sqrt{\text{Cos}[c+d x]}+i b \text{Cos}[c+d x]\right]-$$

$$\frac{1}{b^{3/2} \left(-a^2+b^2\right)^{3/4}}\left(\frac{1}{4}-\frac{i}{4}\right) \left(-2 a^2+b^2\right) \text{Log}\left[\sqrt{-a^2+b^2}+(1+i) \sqrt{b} \left(-a^2+b^2\right)^{1/4} \sqrt{\text{Cos}[c+d x]}+i b \text{Cos}[c+d x]\right]\right) \text{Sin}[c+d x]-$$

$$\frac{1}{\left(1-\text{Cos}[c+d x]^2\right) (a+b \text{Sin}[c+d x])} 2 \left(35 a^4-126 a^2 b^2+75 b^4\right) \left(a+b \sqrt{1-\text{Cos}[c+d x]^2}\right)$$

$$\left(\left(5 b \left(a^2-b^2\right) \text{AppellF1}\left[\frac{1}{4},-\frac{1}{2},1,\frac{5}{4},\text{Cos}[c+d x]^2,\frac{b^2 \text{Cos}[c+d x]^2}{-a^2+b^2}\right] \sqrt{\text{Cos}[c+d x]} \sqrt{1-\text{Cos}[c+d x]^2}\right)\right/$$

$$\left(\left(-5 \left(a^2-b^2\right) \text{AppellF1}\left[\frac{1}{4},-\frac{1}{2},1,\frac{5}{4},\text{Cos}[c+d x]^2,\frac{b^2 \text{Cos}[c+d x]^2}{-a^2+b^2}\right]+2 \left(2 b^2 \text{AppellF1}\left[\frac{5}{4},-\frac{1}{2},2,\frac{9}{4},\text{Cos}[c+d x]^2,\right.\right.\right.\right.$$

$$\left.\frac{b^2 \text{Cos}[c+d x]^2}{-a^2+b^2}\right]+\left(a^2-b^2\right) \text{AppellF1}\left[\frac{5}{4},\frac{1}{2},1,\frac{9}{4},\text{Cos}[c+d x]^2,\frac{b^2 \text{Cos}[c+d x]^2}{-a^2+b^2}\right]\right) \text{Cos}[c+d x]^2\right)$$

$$\left(a^2+b^2 \left(-1+\text{Cos}[c+d x]^2\right)\right)\right)+\frac{1}{4 \sqrt{2} \sqrt{b} \left(a^2-b^2\right)^{3/4}}a \left(-2 \text{ArcTan}\left[1-\frac{\sqrt{2} \sqrt{b} \sqrt{\text{Cos}[c+d x]}}{\left(a^2-b^2\right)^{1/4}}\right]+\right.$$

$$2 \text{ArcTan}\left[1+\frac{\sqrt{2} \sqrt{b} \sqrt{\text{Cos}[c+d x]}}{\left(a^2-b^2\right)^{1/4}}\right]-\text{Log}\left[\sqrt{a^2-b^2}-\sqrt{2} \sqrt{b} \left(a^2-b^2\right)^{1/4} \sqrt{\text{Cos}[c+d x]}+b \text{Cos}[c+d x]\right]+$$

$$\left.\left.\text{Log}\left[\sqrt{a^2-b^2}+\sqrt{2} \sqrt{b} \left(a^2-b^2\right)^{1/4} \sqrt{\text{Cos}[c+d x]}+b \text{Cos}[c+d x]\right]\right)\right) \text{Sin}[c+d x]^2\right)+$$

$$\frac{(e \text{Cos}[c+d x])^{11/2} \text{Sec}[c+d x]^5 \left(\frac{2 a \text{Cos}[2 (c+d x)]}{5 b^3}-\frac{\left(-28 a^2+17 b^2\right) \text{Sin}[c+d x]}{14 b^4}-\frac{\left(-a^2+b^2\right)^2}{b^5 (a+b \text{Sin}[c+d x])}-\frac{\text{Sin}[3 (c+d x)]}{14 b^2}\right)}{d}$$

- **Problem 585: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int \frac{(e \text{Cos}[c+d x])^{9/2}}{(a+b \text{Sin}[c+d x])^2} \, dx$$

Optimal (type 4, 459 leaves, 14 steps):

$$\frac{7\,a\,\left(-a^2+b^2\right)^{3/4}\,e^{9/2}\,\text{ArcTan}\left[\frac{\sqrt{b}\,\sqrt{e\,\text{Cos}[c+d\,x]}}{\left(-a^2+b^2\right)^{1/4}\,\sqrt{e}}\right]}{2\,b^{9/2}\,d}-\frac{7\,a\,\left(-a^2+b^2\right)^{3/4}\,e^{9/2}\,\text{ArcTanh}\left[\frac{\sqrt{b}\,\sqrt{e\,\text{Cos}[c+d\,x]}}{\left(-a^2+b^2\right)^{1/4}\,\sqrt{e}}\right]}{2\,b^{9/2}\,d}+$$

$$\frac{7\,\left(5\,a^2-3\,b^2\right)\,e^4\,\sqrt{e\,\text{Cos}[c+d\,x]}\,\,\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),\,2\right]}{5\,b^4\,d\,\sqrt{\text{Cos}[c+d\,x]}}-\frac{7\,a^2\,\left(a^2-b^2\right)\,e^5\,\sqrt{\text{Cos}[c+d\,x]}\,\,\text{EllipticPi}\left[\frac{2\,b}{b-\sqrt{-a^2+b^2}},\,\frac{1}{2}\,(c+d\,x),\,2\right]}{2\,b^5\,\left(b-\sqrt{-a^2+b^2}\right)\,d\,\sqrt{e\,\text{Cos}[c+d\,x]}}-$$

$$\frac{7\,a^2\,\left(a^2-b^2\right)\,e^5\,\sqrt{\text{Cos}[c+d\,x]}\,\,\text{EllipticPi}\left[\frac{2\,b}{b+\sqrt{-a^2+b^2}},\,\frac{1}{2}\,(c+d\,x),\,2\right]}{2\,b^5\,\left(b+\sqrt{-a^2+b^2}\right)\,d\,\sqrt{e\,\text{Cos}[c+d\,x]}}+\frac{7\,e^3\,(e\,\text{Cos}[c+d\,x])^{3/2}\,(5\,a-3\,b\,\text{Sin}[c+d\,x])}{15\,b^3\,d}-\frac{e\,(e\,\text{Cos}[c+d\,x])^{7/2}}{b\,d\,(a+b\,\text{Sin}[c+d\,x])}$$

Result (type 6, 1229 leaves):

$$\frac{1}{10\,b^3\,d\,\text{Cos}[c+d\,x]^{9/2}}\,7\,(e\,\text{Cos}[c+d\,x])^{9/2}\,\left(\frac{1}{6\,\sqrt{1-\text{Cos}[c+d\,x]^2}\,\,(a+b\,\text{Sin}[c+d\,x])}\right.$$

$$a\,b\,\left(a+b\,\sqrt{1-\text{Cos}[c+d\,x]^2}\,\right)\,\left(-\left(56\,a\,\left(a^2-b^2\right)\,\text{AppellF1}\left[\frac{3}{4},\,\frac{1}{2},\,1,\,\frac{7}{4},\,\text{Cos}[c+d\,x]^2,\,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]\,\text{Cos}[c+d\,x]^{3/2}\right)\Big/\right.$$

$$\left(\sqrt{1-\text{Cos}[c+d\,x]^2}\,\,\left(7\,\left(a^2-b^2\right)\,\text{AppellF1}\left[\frac{3}{4},\,\frac{1}{2},\,1,\,\frac{7}{4},\,\text{Cos}[c+d\,x]^2,\,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]-2\,\left(2\,b^2\,\text{AppellF1}\left[\frac{7}{4},\,\frac{1}{2},\,2,\,\frac{11}{4},\right.\right.\right.\right.$$

$$\left.\left.\text{Cos}[c+d\,x]^2,\,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]+\left(-a^2+b^2\right)\,\text{AppellF1}\left[\frac{7}{4},\,\frac{3}{2},\,1,\,\frac{11}{4},\,\text{Cos}[c+d\,x]^2,\,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]\right)\,\text{Cos}[c+d\,x]^2\right)$$

$$\left.\left.\left(a^2+b^2\,\left(-1+\text{Cos}[c+d\,x]^2\right)\right)\right)-\frac{1}{\sqrt{b}\,\left(-a^2+b^2\right)^{1/4}}\,(3+3\,i)\,\left(2\,\text{ArcTan}\left[1-\frac{(1+i)\,\sqrt{b}\,\sqrt{\text{Cos}[c+d\,x]}}{\left(-a^2+b^2\right)^{1/4}}\right]-\right.$$

$$2\,\text{ArcTan}\left[1+\frac{(1+i)\,\sqrt{b}\,\sqrt{\text{Cos}[c+d\,x]}}{\left(-a^2+b^2\right)^{1/4}}\right]-\text{Log}\left[\sqrt{-a^2+b^2}-(1+i)\,\sqrt{b}\,\left(-a^2+b^2\right)^{1/4}\,\sqrt{\text{Cos}[c+d\,x]}+i\,b\,\text{Cos}[c+d\,x]\right]+$$

$$\left.\left.\text{Log}\left[\sqrt{-a^2+b^2}+(1+i)\,\sqrt{b}\,\left(-a^2+b^2\right)^{1/4}\,\sqrt{\text{Cos}[c+d\,x]}+i\,b\,\text{Cos}[c+d\,x]\right]\right)\right)\,\text{Sin}[c+d\,x]-$$

$$\frac{1}{\left(1-\text{Cos}[c+d\,x]^2\right)\,(a+b\,\text{Sin}[c+d\,x])}\,2\,\left(5\,a^2-3\,b^2\right)\,\left(a+b\,\sqrt{1-\text{Cos}[c+d\,x]^2}\,\right)$$

$$\left(\left(7\,b\,\left(a^2-b^2\right)\,\text{AppellF1}\left[\frac{3}{4},\,-\frac{1}{2},\,1,\,\frac{7}{4},\,\text{Cos}[c+d\,x]^2,\,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]\,\text{Cos}[c+d\,x]^{3/2}\,\sqrt{1-\text{Cos}[c+d\,x]^2}\,\right)\Big/\right.$$

$$\left(3\left(-7\left(a^2-b^2\right)\text{AppellF1}\left[\frac{3}{4},-\frac{1}{2},1,\frac{7}{4},\text{Cos}[c+d x]^2,\frac{b^2\,\text{Cos}[c+d x]^2}{-a^2+b^2}\right]+2\left(2\,b^2\,\text{AppellF1}\left[\frac{7}{4},-\frac{1}{2},2,\frac{11}{4},\text{Cos}[c+d x]^2,\frac{b^2\,\text{Cos}[c+d x]^2}{-a^2+b^2}\right]+\left(a^2-b^2\right)\text{AppellF1}\left[\frac{7}{4},\frac{1}{2},1,\frac{11}{4},\text{Cos}[c+d x]^2,\frac{b^2\,\text{Cos}[c+d x]^2}{-a^2+b^2}\right]\right)\text{Cos}[c+d x]^2\right)\left(a^2+b^2\left(-1+\text{Cos}[c+d x]^2\right)\right)\right)+\frac{1}{4\sqrt{2}\,b^{3/2}\left(a^2-b^2\right)^{1/4}}a\left(-2\,\text{ArcTan}\left[1-\frac{\sqrt{2}\,\sqrt{b}\,\sqrt{\text{Cos}[c+d x]}}{\left(a^2-b^2\right)^{1/4}}\right]+2\,\text{ArcTan}\left[1+\frac{\sqrt{2}\,\sqrt{b}\,\sqrt{\text{Cos}[c+d x]}}{\left(a^2-b^2\right)^{1/4}}\right]+\text{Log}\left[\sqrt{a^2-b^2}-\sqrt{2}\,\sqrt{b}\left(a^2-b^2\right)^{1/4}\sqrt{\text{Cos}[c+d x]}+b\,\text{Cos}[c+d x]\right]-\text{Log}\left[\sqrt{a^2-b^2}+\sqrt{2}\,\sqrt{b}\left(a^2-b^2\right)^{1/4}\sqrt{\text{Cos}[c+d x]}+b\,\text{Cos}[c+d x]\right]\right)\text{Sin}[c+d x]^2\right)+$$

$$\frac{(e\,\text{Cos}[c+d x])^{9/2}\,\text{Sec}[c+d x]^4\left(\frac{4\,a\,\text{Cos}[c+d x]}{3\,b^3}+\frac{a^2\,\text{Cos}[c+d x]-b^2\,\text{Cos}[c+d x]}{b^3\,(a+b\,\text{Sin}[c+d x])}-\frac{\text{Sin}[2\,(c+d x)]}{5\,b^2}\right)}{d}$$

Problem 586: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{(e\,\text{Cos}[c+d x])^{7/2}}{(a+b\,\text{Sin}[c+d x])^2}\,dx$$

Optimal (type 4, 473 leaves, 14 steps):

$$-\frac{5\,a\left(-a^2+b^2\right)^{1/4}e^{7/2}\,\text{ArcTan}\left[\frac{\sqrt{b}\,\sqrt{e\,\text{Cos}[c+d x]}}{\left(-a^2+b^2\right)^{1/4}\sqrt{e}}\right]}{2\,b^{7/2}\,d}-\frac{5\,a\left(-a^2+b^2\right)^{1/4}e^{7/2}\,\text{ArcTanh}\left[\frac{\sqrt{b}\,\sqrt{e\,\text{Cos}[c+d x]}}{\left(-a^2+b^2\right)^{1/4}\sqrt{e}}\right]}{2\,b^{7/2}\,d}+\frac{5\left(3\,a^2-b^2\right)e^4\sqrt{\text{Cos}[c+d x]}\,\text{EllipticF}\left[\frac{1}{2}(c+d x),2\right]}{3\,b^4\,d\,\sqrt{e\,\text{Cos}[c+d x]}}-\frac{5\,a^2\left(a^2-b^2\right)e^4\sqrt{\text{Cos}[c+d x]}\,\text{EllipticPi}\left[\frac{2\,b}{b-\sqrt{-a^2+b^2}},\frac{1}{2}(c+d x),2\right]}{2\,b^4\left(a^2-b\left(b-\sqrt{-a^2+b^2}\right)\right)d\,\sqrt{e\,\text{Cos}[c+d x]}}-\frac{5\,a^2\left(a^2-b^2\right)e^4\sqrt{\text{Cos}[c+d x]}\,\text{EllipticPi}\left[\frac{2\,b}{b+\sqrt{-a^2+b^2}},\frac{1}{2}(c+d x),2\right]}{2\,b^4\left(a^2-b\left(b+\sqrt{-a^2+b^2}\right)\right)d\,\sqrt{e\,\text{Cos}[c+d x]}}+\frac{5\,e^3\sqrt{e\,\text{Cos}[c+d x]}\,(3\,a-b\,\text{Sin}[c+d x])}{3\,b^3\,d}-\frac{e\,(e\,\text{Cos}[c+d x])^{5/2}}{b\,d\,(a+b\,\text{Sin}[c+d x])}$$

Result (type 6, 2156 leaves):

$$\frac{(e\,\text{Cos}[c+d x])^{7/2}\,\text{Sec}[c+d x]^3\left(-\frac{2\,\text{Sin}[c+d x]}{3\,b^2}+\frac{a^2-b^2}{b^3\,(a+b\,\text{Sin}[c+d x])}\right)}{d}+$$

$$\frac{1}{6 b^3 d \operatorname{Cos}[c+d x]^{7/2}} (e \operatorname{Cos}[c+d x])^{7/2} \Bigg(-\frac{1}{\sqrt{1-\operatorname{Cos}[c+d x]^2} (a+b \operatorname{Sin}[c+d x])} 8 a b \left(a+b \sqrt{1-\operatorname{Cos}[c+d x]^2}\right)$$

$$\Bigg(\Bigg(5 a \left(a^2-b^2\right) \operatorname{AppellF1}\left[\frac{1}{4}, \frac{1}{2}, 1, \frac{5}{4}, \operatorname{Cos}[c+d x]^2, \frac{b^2 \operatorname{Cos}[c+d x]^2}{-a^2+b^2}\right] \sqrt{\operatorname{Cos}[c+d x]}\Bigg) \Big/ \Bigg(\sqrt{1-\operatorname{Cos}[c+d x]^2} \Bigg(5 \left(a^2-b^2\right)$$

$$\operatorname{AppellF1}\left[\frac{1}{4}, \frac{1}{2}, 1, \frac{5}{4}, \operatorname{Cos}[c+d x]^2, \frac{b^2 \operatorname{Cos}[c+d x]^2}{-a^2+b^2}\right] - 2 \Bigg(2 b^2 \operatorname{AppellF1}\left[\frac{5}{4}, \frac{1}{2}, 2, \frac{9}{4}, \operatorname{Cos}[c+d x]^2, \frac{b^2 \operatorname{Cos}[c+d x]^2}{-a^2+b^2}\right] +$$

$$\left(-a^2+b^2\right) \operatorname{AppellF1}\left[\frac{5}{4}, \frac{3}{2}, 1, \frac{9}{4}, \operatorname{Cos}[c+d x]^2, \frac{b^2 \operatorname{Cos}[c+d x]^2}{-a^2+b^2}\right]\Bigg) \operatorname{Cos}[c+d x]^2\Bigg) \left(a^2+b^2 \left(-1+\operatorname{Cos}[c+d x]^2\right)\right)\Bigg) -$$

$$\frac{1}{\left(-a^2+b^2\right)^{3/4}} \left(\frac{1}{8}-\frac{i}{8}\right) \sqrt{b} \Bigg(2 \operatorname{ArcTan}\left[1-\frac{(1+i) \sqrt{b} \sqrt{\operatorname{Cos}[c+d x]}}{\left(-a^2+b^2\right)^{1/4}}\right] - 2 \operatorname{ArcTan}\left[1+\frac{(1+i) \sqrt{b} \sqrt{\operatorname{Cos}[c+d x]}}{\left(-a^2+b^2\right)^{1/4}}\right] +$$

$$\operatorname{Log}\left[\sqrt{-a^2+b^2} - (1+i) \sqrt{b} \left(-a^2+b^2\right)^{1/4} \sqrt{\operatorname{Cos}[c+d x]} + i b \operatorname{Cos}[c+d x]\right] -$$

$$\operatorname{Log}\left[\sqrt{-a^2+b^2} + (1+i) \sqrt{b} \left(-a^2+b^2\right)^{1/4} \sqrt{\operatorname{Cos}[c+d x]} + i b \operatorname{Cos}[c+d x]\right]\Bigg)\Bigg) \operatorname{Sin}[c+d x] +$$

$$\frac{1}{\sqrt{1-\operatorname{Cos}[c+d x]^2} \left(-1+2 \operatorname{Cos}[c+d x]^2\right) (a+b \operatorname{Sin}[c+d x])} 6 a b \left(a+b \sqrt{1-\operatorname{Cos}[c+d x]^2}\right) \operatorname{Cos}[2 (c+d x)]$$

$$\Bigg(\frac{\left(\frac{1}{2}-\frac{i}{2}\right) \left(-2 a^2+b^2\right) \operatorname{ArcTan}\left[1-\frac{(1+i) \sqrt{b} \sqrt{\operatorname{Cos}[c+d x]}}{\left(-a^2+b^2\right)^{1/4}}\right]}{b^{3/2} \left(-a^2+b^2\right)^{3/4}} - \frac{\left(\frac{1}{2}-\frac{i}{2}\right) \left(-2 a^2+b^2\right) \operatorname{ArcTan}\left[1+\frac{(1+i) \sqrt{b} \sqrt{\operatorname{Cos}[c+d x]}}{\left(-a^2+b^2\right)^{1/4}}\right]}{b^{3/2} \left(-a^2+b^2\right)^{3/4}} +$$

$$\frac{4 \sqrt{\operatorname{Cos}[c+d x]}}{b} + \Bigg(10 a \left(a^2-b^2\right) \operatorname{AppellF1}\left[\frac{1}{4}, \frac{1}{2}, 1, \frac{5}{4}, \operatorname{Cos}[c+d x]^2, \frac{b^2 \operatorname{Cos}[c+d x]^2}{-a^2+b^2}\right] \sqrt{\operatorname{Cos}[c+d x]}\Bigg) \Big/$$

$$\Bigg(\sqrt{1-\operatorname{Cos}[c+d x]^2} \Bigg(5 \left(a^2-b^2\right) \operatorname{AppellF1}\left[\frac{1}{4}, \frac{1}{2}, 1, \frac{5}{4}, \operatorname{Cos}[c+d x]^2, \frac{b^2 \operatorname{Cos}[c+d x]^2}{-a^2+b^2}\right] - 2 \Bigg(2 b^2 \operatorname{AppellF1}\Bigg[\frac{5}{4}, \frac{1}{2}, 2, \frac{9}{4},$$

$$\operatorname{Cos}[c+d x]^2, \frac{b^2 \operatorname{Cos}[c+d x]^2}{-a^2+b^2}\Bigg] + \left(-a^2+b^2\right) \operatorname{AppellF1}\left[\frac{5}{4}, \frac{3}{2}, 1, \frac{9}{4}, \operatorname{Cos}[c+d x]^2, \frac{b^2 \operatorname{Cos}[c+d x]^2}{-a^2+b^2}\right]\Bigg) \operatorname{Cos}[c+d x]^2\Bigg)$$

$$\left(a^2+b^2 \left(-1+\operatorname{Cos}[c+d x]^2\right)\right)\Bigg) - \Bigg(36 a \left(a^2-b^2\right) \operatorname{AppellF1}\left[\frac{5}{4}, \frac{1}{2}, 1, \frac{9}{4}, \operatorname{Cos}[c+d x]^2, \frac{b^2 \operatorname{Cos}[c+d x]^2}{-a^2+b^2}\right] \operatorname{Cos}[c+d x]^{5/2}\Bigg) \Big/$$

$$\Bigg(5 \sqrt{1-\operatorname{Cos}[c+d x]^2} \Bigg(9 \left(a^2-b^2\right) \operatorname{AppellF1}\left[\frac{5}{4}, \frac{1}{2}, 1, \frac{9}{4}, \operatorname{Cos}[c+d x]^2, \frac{b^2 \operatorname{Cos}[c+d x]^2}{-a^2+b^2}\right] -$$

$$2\left(2\,b^2\,\text{AppellF1}\left[\frac{9}{4},\,\frac{1}{2},\,2,\,\frac{13}{4},\,\text{Cos}[c+d\,x]^2,\,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]+\right.$$

$$\left.\left(-a^2+b^2\right)\,\text{AppellF1}\left[\frac{9}{4},\,\frac{3}{2},\,1,\,\frac{13}{4},\,\text{Cos}[c+d\,x]^2,\,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]\right)\,\text{Cos}[c+d\,x]^2\Big)\,\left(a^2+b^2\,\left(-1+\text{Cos}[c+d\,x]^2\right)\right)\Bigg)+$$

$$\frac{1}{b^{3/2}\,\left(-a^2+b^2\right)^{3/4}}\left(\frac{1}{4}-\frac{i}{4}\right)\,\left(-2\,a^2+b^2\right)\,\text{Log}\left[\sqrt{-a^2+b^2}-(1+i)\,\sqrt{b}\,\left(-a^2+b^2\right)^{1/4}\,\sqrt{\text{Cos}[c+d\,x]}+i\,b\,\text{Cos}[c+d\,x]\right]-$$

$$\left.\frac{1}{b^{3/2}\,\left(-a^2+b^2\right)^{3/4}}\left(\frac{1}{4}-\frac{i}{4}\right)\,\left(-2\,a^2+b^2\right)\,\text{Log}\left[\sqrt{-a^2+b^2}+(1+i)\,\sqrt{b}\,\left(-a^2+b^2\right)^{1/4}\,\sqrt{\text{Cos}[c+d\,x]}+i\,b\,\text{Cos}[c+d\,x]\right]\right)\,\text{Sin}[c+d\,x]-$$

$$\frac{1}{\left(1-\text{Cos}[c+d\,x]^2\right)\,(a+b\,\text{Sin}[c+d\,x])}\,2\,\left(3\,a^2-5\,b^2\right)\,\left(a+b\,\sqrt{1-\text{Cos}[c+d\,x]^2}\right)$$

$$\left(\left(5\,b\,\left(a^2-b^2\right)\,\text{AppellF1}\left[\frac{1}{4},\,-\frac{1}{2},\,1,\,\frac{5}{4},\,\text{Cos}[c+d\,x]^2,\,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]\,\sqrt{\text{Cos}[c+d\,x]}\,\sqrt{1-\text{Cos}[c+d\,x]^2}\right)\Big/\right.$$

$$\left(\left(-5\,\left(a^2-b^2\right)\,\text{AppellF1}\left[\frac{1}{4},\,-\frac{1}{2},\,1,\,\frac{5}{4},\,\text{Cos}[c+d\,x]^2,\,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]+2\,\left(2\,b^2\,\text{AppellF1}\left[\frac{5}{4},\,-\frac{1}{2},\,2,\,\frac{9}{4},\,\text{Cos}[c+d\,x]^2,\right.\right.\right.\right.$$

$$\left.\left.\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]+\left(a^2-b^2\right)\,\text{AppellF1}\left[\frac{5}{4},\,\frac{1}{2},\,1,\,\frac{9}{4},\,\text{Cos}[c+d\,x]^2,\,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]\right)\,\text{Cos}[c+d\,x]^2\Big)$$

$$\left.\left(a^2+b^2\,\left(-1+\text{Cos}[c+d\,x]^2\right)\right)\right)+\frac{1}{4\,\sqrt{2}\,\sqrt{b}\,\left(a^2-b^2\right)^{3/4}}\,a\,\left(-2\,\text{ArcTan}\left[1-\frac{\sqrt{2}\,\sqrt{b}\,\sqrt{\text{Cos}[c+d\,x]}}{\left(a^2-b^2\right)^{1/4}}\right]+\right.$$

$$2\,\text{ArcTan}\left[1+\frac{\sqrt{2}\,\sqrt{b}\,\sqrt{\text{Cos}[c+d\,x]}}{\left(a^2-b^2\right)^{1/4}}\right]-\text{Log}\left[\sqrt{a^2-b^2}-\sqrt{2}\,\sqrt{b}\,\left(a^2-b^2\right)^{1/4}\,\sqrt{\text{Cos}[c+d\,x]}+b\,\text{Cos}[c+d\,x]\right]+$$

$$\left.\left.\text{Log}\left[\sqrt{a^2-b^2}+\sqrt{2}\,\sqrt{b}\,\left(a^2-b^2\right)^{1/4}\,\sqrt{\text{Cos}[c+d\,x]}+b\,\text{Cos}[c+d\,x]\right]\right)\right)\,\text{Sin}[c+d\,x]^2\Bigg)$$

- **Problem 587: Result unnecessarily involves higher level functions.**

$$\int\frac{(e\,\text{Cos}[c+d\,x])^{5/2}}{(a+b\,\text{Sin}[c+d\,x])^2}\,dx$$

Optimal (type 4, 390 leaves, 13 steps):

$$\frac{3\,a\,e^{5/2}\,\text{ArcTan}\left[\frac{\sqrt{b}\,\sqrt{e\,\text{Cos}[c+d\,x]}}{(-a^2+b^2)^{1/4}\,\sqrt{e}}\right]}{2\,b^{5/2}\,(-a^2+b^2)^{1/4}\,d}-\frac{3\,a\,e^{5/2}\,\text{ArcTanh}\left[\frac{\sqrt{b}\,\sqrt{e\,\text{Cos}[c+d\,x]}}{(-a^2+b^2)^{1/4}\,\sqrt{e}}\right]}{2\,b^{5/2}\,(-a^2+b^2)^{1/4}\,d}-$$

$$\frac{3\,e^2\,\sqrt{e\,\text{Cos}[c+d\,x]}\,\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),\,2\right]}{b^2\,d\,\sqrt{\text{Cos}[c+d\,x]}}+\frac{3\,a^2\,e^3\,\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticPi}\left[\frac{2\,b}{b-\sqrt{-a^2+b^2}},\,\frac{1}{2}\,(c+d\,x),\,2\right]}{2\,b^3\,\left(b-\sqrt{-a^2+b^2}\right)\,d\,\sqrt{e\,\text{Cos}[c+d\,x]}}+$$

$$\frac{3\,a^2\,e^3\,\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticPi}\left[\frac{2\,b}{b+\sqrt{-a^2+b^2}},\,\frac{1}{2}\,(c+d\,x),\,2\right]}{2\,b^3\,\left(b+\sqrt{-a^2+b^2}\right)\,d\,\sqrt{e\,\text{Cos}[c+d\,x]}}-\frac{e\,(e\,\text{Cos}[c+d\,x])^{3/2}}{b\,d\,(a+b\,\text{Sin}[c+d\,x])}$$

Result (type 6, 617 leaves):

$$-\frac{(e\,\text{Cos}[c+d\,x])^{5/2}\,\text{Sec}[c+d\,x]}{b\,d\,(a+b\,\text{Sin}[c+d\,x])}+\frac{1}{b\,d\,\text{Cos}[c+d\,x]^{5/2}\,\left(1-\text{Cos}[c+d\,x]^2\right)\,(a+b\,\text{Sin}[c+d\,x])}\,3\,(e\,\text{Cos}[c+d\,x])^{5/2}\,\left(a+b\,\sqrt{1-\text{Cos}[c+d\,x]^2}\right)$$
$$\left(\left(7\,b\,(a^2-b^2)\,\text{AppellF1}\left[\frac{3}{4},-\frac{1}{2},1,\frac{7}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]\,\text{Cos}[c+d\,x]^{3/2}\,\sqrt{1-\text{Cos}[c+d\,x]^2}\right)\Big/\right.$$
$$\left(3\,\left(-7\,(a^2-b^2)\,\text{AppellF1}\left[\frac{3}{4},-\frac{1}{2},1,\frac{7}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]+2\right.\right.$$
$$\left(2\,b^2\,\text{AppellF1}\left[\frac{7}{4},-\frac{1}{2},2,\frac{11}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]+(a^2-b^2)\,\text{AppellF1}\left[\frac{7}{4},\frac{1}{2},1,\frac{11}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]\right)$$
$$\left.\left.\text{Cos}[c+d\,x]^2\right)\,\left(a^2+b^2\,\left(-1+\text{Cos}[c+d\,x]^2\right)\right)\right)+\frac{1}{4\,\sqrt{2}\,b^{3/2}\,(a^2-b^2)^{1/4}}$$
$$a\left(-2\,\text{ArcTan}\left[1-\frac{\sqrt{2}\,\sqrt{b}\,\sqrt{\text{Cos}[c+d\,x]}}{(a^2-b^2)^{1/4}}\right]+2\,\text{ArcTan}\left[1+\frac{\sqrt{2}\,\sqrt{b}\,\sqrt{\text{Cos}[c+d\,x]}}{(a^2-b^2)^{1/4}}\right]+\text{Log}\left[\sqrt{a^2-b^2}-\sqrt{2}\,\sqrt{b}\,(a^2-b^2)^{1/4}\,\sqrt{\text{Cos}[c+d\,x]}+\right.\right.$$
$$\left.\left.\left.b\,\text{Cos}[c+d\,x]\right]-\text{Log}\left[\sqrt{a^2-b^2}+\sqrt{2}\,\sqrt{b}\,(a^2-b^2)^{1/4}\,\sqrt{\text{Cos}[c+d\,x]}+b\,\text{Cos}[c+d\,x]\right]\right)\right)\,\text{Sin}[c+d\,x]^2$$

- **Problem 588: Result unnecessarily involves higher level functions.**

$$\int\frac{(e\,\text{Cos}[c+d\,x])^{3/2}}{(a+b\,\text{Sin}[c+d\,x])^2}\,dx$$

Optimal (type 4, 404 leaves, 13 steps):

$$-\frac{a\,e^{3/2}\,\text{ArcTan}\left[\frac{\sqrt{b}\,\sqrt{e\,\text{Cos}[c+d\,x]}}{\left(-a^2+b^2\right)^{1/4}\sqrt{e}}\right]}{2\,b^{3/2}\left(-a^2+b^2\right)^{3/4}d}-\frac{a\,e^{3/2}\,\text{ArcTanh}\left[\frac{\sqrt{b}\,\sqrt{e\,\text{Cos}[c+d\,x]}}{\left(-a^2+b^2\right)^{1/4}\sqrt{e}}\right]}{2\,b^{3/2}\left(-a^2+b^2\right)^{3/4}d}-\frac{e^2\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticF}\left[\frac{1}{2}(c+d\,x),2\right]}{b^2\,d\,\sqrt{e\,\text{Cos}[c+d\,x]}}+$$

$$\frac{a^2\,e^2\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticPi}\left[\frac{2\,b}{b-\sqrt{-a^2+b^2}},\frac{1}{2}(c+d\,x),2\right]}{2\,b^2\left(a^2-b\left(b-\sqrt{-a^2+b^2}\right)\right)d\,\sqrt{e\,\text{Cos}[c+d\,x]}}+\frac{a^2\,e^2\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticPi}\left[\frac{2\,b}{b+\sqrt{-a^2+b^2}},\frac{1}{2}(c+d\,x),2\right]}{2\,b^2\left(a^2-b\left(b+\sqrt{-a^2+b^2}\right)\right)d\,\sqrt{e\,\text{Cos}[c+d\,x]}}-\frac{e\,\sqrt{e\,\text{Cos}[c+d\,x]}}{b\,d\,(a+b\,\text{Sin}[c+d\,x])}$$

Result (type 6, 614 leaves):

$$-\frac{(e\,\text{Cos}[c+d\,x])^{3/2}\,\text{Sec}[c+d\,x]}{b\,d\,(a+b\,\text{Sin}[c+d\,x])}+\frac{1}{b\,d\,\text{Cos}[c+d\,x]^{3/2}\left(1-\text{Cos}[c+d\,x]^2\right)(a+b\,\text{Sin}[c+d\,x])}(e\,\text{Cos}[c+d\,x])^{3/2}\left(a+b\sqrt{1-\text{Cos}[c+d\,x]^2}\right.$$

$$\left(\left(5\,b\left(a^2-b^2\right)\text{AppellF1}\left[\frac{1}{4},-\frac{1}{2},1,\frac{5}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]\sqrt{\text{Cos}[c+d\,x]}\,\sqrt{1-\text{Cos}[c+d\,x]^2}\right)\Big/\right.$$

$$\left(\left(-5\left(a^2-b^2\right)\text{AppellF1}\left[\frac{1}{4},-\frac{1}{2},1,\frac{5}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]+2\left(2\,b^2\,\text{AppellF1}\left[\frac{5}{4},-\frac{1}{2},2,\frac{9}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]+\right.\right.\right.$$

$$\left.\left.\left.\left.\left(a^2-b^2\right)\text{AppellF1}\left[\frac{5}{4},\frac{1}{2},1,\frac{9}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]\right)\text{Cos}[c+d\,x]^2\right)\left(a^2+b^2\left(-1+\text{Cos}[c+d\,x]^2\right)\right)\right)+$$

$$\frac{1}{4\sqrt{2}\,\sqrt{b}\left(a^2-b^2\right)^{3/4}}a\left(-2\,\text{ArcTan}\left[1-\frac{\sqrt{2}\,\sqrt{b}\,\sqrt{\text{Cos}[c+d\,x]}}{\left(a^2-b^2\right)^{1/4}}\right]+2\,\text{ArcTan}\left[1+\frac{\sqrt{2}\,\sqrt{b}\,\sqrt{\text{Cos}[c+d\,x]}}{\left(a^2-b^2\right)^{1/4}}\right]-\right.$$

$$\text{Log}\left[\sqrt{a^2-b^2}-\sqrt{2}\,\sqrt{b}\left(a^2-b^2\right)^{1/4}\sqrt{\text{Cos}[c+d\,x]}+b\,\text{Cos}[c+d\,x]\right]+$$

$$\left.\left.\text{Log}\left[\sqrt{a^2-b^2}+\sqrt{2}\,\sqrt{b}\left(a^2-b^2\right)^{1/4}\sqrt{\text{Cos}[c+d\,x]}+b\,\text{Cos}[c+d\,x]\right]\right)\right)\text{Sin}[c+d\,x]^2$$

- **Problem 589: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int\frac{\sqrt{e\,\text{Cos}[c+d\,x]}}{(a+b\,\text{Sin}[c+d\,x])^2}\,dx$$

Optimal (type 4, 422 leaves, 13 steps):

$$-\frac{a\sqrt{e}\,\text{ArcTan}\left[\frac{\sqrt{b}\,\sqrt{e\,\text{Cos}[c+d\,x]}}{\left(-a^2+b^2\right)^{1/4}\sqrt{e}}\right]}{2\sqrt{b}\,\left(-a^2+b^2\right)^{5/4}d}+\frac{a\sqrt{e}\,\text{ArcTanh}\left[\frac{\sqrt{b}\,\sqrt{e\,\text{Cos}[c+d\,x]}}{\left(-a^2+b^2\right)^{1/4}\sqrt{e}}\right]}{2\sqrt{b}\,\left(-a^2+b^2\right)^{5/4}d}+$$

$$\frac{\sqrt{e\,\text{Cos}[c+d\,x]}\,\text{EllipticE}\left[\frac{1}{2}(c+d\,x),2\right]}{\left(a^2-b^2\right)d\sqrt{\text{Cos}[c+d\,x]}}+\frac{a^2 e\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticPi}\left[\frac{2b}{b-\sqrt{-a^2+b^2}},\frac{1}{2}(c+d\,x),2\right]}{2b\left(a^2-b^2\right)\left(b-\sqrt{-a^2+b^2}\right)d\sqrt{e\,\text{Cos}[c+d\,x]}}+$$

$$\frac{a^2 e\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticPi}\left[\frac{2b}{b+\sqrt{-a^2+b^2}},\frac{1}{2}(c+d\,x),2\right]}{2b\left(a^2-b^2\right)\left(b+\sqrt{-a^2+b^2}\right)d\sqrt{e\,\text{Cos}[c+d\,x]}}+\frac{b\,(e\,\text{Cos}[c+d\,x])^{3/2}}{\left(a^2-b^2\right)d\,e\,(a+b\,\text{Sin}[c+d\,x])}$$

Result (type 6, 1182 leaves) :

$$-\frac{b\,\text{Cos}[c+d\,x]\,\sqrt{e\,\text{Cos}[c+d\,x]}}{\left(-a^2+b^2\right)d\,(a+b\,\text{Sin}[c+d\,x])}+$$

$$\frac{1}{2\,(a-b)\,(a+b)\,d\,\sqrt{\text{Cos}[c+d\,x]}}\sqrt{e\,\text{Cos}[c+d\,x]}\left(\frac{1}{6\,\sqrt{1-\text{Cos}[c+d\,x]^2}\,(a+b\,\text{Sin}[c+d\,x])}\,a\left(a+b\,\sqrt{1-\text{Cos}[c+d\,x]^2}\right)\right.$$

$$\left(-\left(56\,a\,\left(a^2-b^2\right)\text{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]\text{Cos}[c+d\,x]^{3/2}\right)\Big/\left(\sqrt{1-\text{Cos}[c+d\,x]^2}\,\left(7\,\left(a^2-b^2\right)\right.\right.\right.$$

$$\text{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]-2\left(2\,b^2\,\text{AppellF1}\left[\frac{7}{4},\frac{1}{2},2,\frac{11}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]+\right.$$

$$\left.\left.\left.\left(-a^2+b^2\right)\text{AppellF1}\left[\frac{7}{4},\frac{3}{2},1,\frac{11}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]\right)\text{Cos}[c+d\,x]^2\right)\left(a^2+b^2\,\left(-1+\text{Cos}[c+d\,x]^2\right)\right)\right)-$$

$$\frac{1}{\sqrt{b}\,\left(-a^2+b^2\right)^{1/4}}(3+3\,i)\left(2\,\text{ArcTan}\left[1-\frac{(1+i)\,\sqrt{b}\,\sqrt{\text{Cos}[c+d\,x]}}{\left(-a^2+b^2\right)^{1/4}}\right]-2\,\text{ArcTan}\left[1+\frac{(1+i)\,\sqrt{b}\,\sqrt{\text{Cos}[c+d\,x]}}{\left(-a^2+b^2\right)^{1/4}}\right]-\right.$$

$$\text{Log}\left[\sqrt{-a^2+b^2}-(1+i)\,\sqrt{b}\,\left(-a^2+b^2\right)^{1/4}\sqrt{\text{Cos}[c+d\,x]}+i\,b\,\text{Cos}[c+d\,x]\right]+$$

$$\left.\left.\text{Log}\left[\sqrt{-a^2+b^2}+(1+i)\,\sqrt{b}\,\left(-a^2+b^2\right)^{1/4}\sqrt{\text{Cos}[c+d\,x]}+i\,b\,\text{Cos}[c+d\,x]\right]\right)\right)\text{Sin}[c+d\,x]-\frac{1}{\left(1-\text{Cos}[c+d\,x]^2\right)(a+b\,\text{Sin}[c+d\,x])}$$

$$2\,b\left(a+b\,\sqrt{1-\text{Cos}[c+d\,x]^2}\right)\left(\left(\left(7\,b\,\left(a^2-b^2\right)\text{AppellF1}\left[\frac{3}{4},-\frac{1}{2},1,\frac{7}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]\text{Cos}[c+d\,x]^{3/2}\sqrt{1-\text{Cos}[c+d\,x]^2}\right)\Big/\right.\right.$$

$$\left(3\left(-7\,\left(a^2-b^2\right)\text{AppellF1}\left[\frac{3}{4},-\frac{1}{2},1,\frac{7}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]+2\left(2\,b^2\,\text{AppellF1}\left[\frac{7}{4},-\frac{1}{2},2,\frac{11}{4},\text{Cos}[c+d\,x]^2,\right.\right.\right.\right.$$

$$\left.\left.\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]+\left(a^2-b^2\right)\text{AppellF1}\left[\frac{7}{4},\frac{1}{2},1,\frac{11}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]\right)\text{Cos}[c+d\,x]^2\right)$$

$$\left.\left.\left(a^2+b^2\,\left(-1+\text{Cos}[c+d\,x]^2\right)\right)\right)\right)+\frac{1}{4\,\sqrt{2}\,b^{3/2}\,\left(a^2-b^2\right)^{1/4}}a\left(-2\,\text{ArcTan}\left[1-\frac{\sqrt{2}\,\sqrt{b}\,\sqrt{\text{Cos}[c+d\,x]}}{\left(a^2-b^2\right)^{1/4}}\right]+\right.$$

$$2\,\text{ArcTan}\left[1+\frac{\sqrt{2}\,\sqrt{b}\,\sqrt{\text{Cos}[c+d\,x]}}{\left(a^2-b^2\right)^{1/4}}\right]+\text{Log}\left[\sqrt{a^2-b^2}-\sqrt{2}\,\sqrt{b}\,\left(a^2-b^2\right)^{1/4}\sqrt{\text{Cos}[c+d\,x]}+b\,\text{Cos}[c+d\,x]\right]-$$

$$\left.\left.\left.\text{Log}\left[\sqrt{a^2-b^2}+\sqrt{2}\,\sqrt{b}\,\left(a^2-b^2\right)^{1/4}\sqrt{\text{Cos}[c+d\,x]}+b\,\text{Cos}[c+d\,x]\right]\right)\right)\text{Sin}[c+d\,x]^2\right)$$

- **Problem 590: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int \frac{1}{\sqrt{e \operatorname{Cos}[c+d x]}\,(a+b \operatorname{Sin}[c+d x])^2}\,dx$$

Optimal (type 4, 429 leaves, 13 steps):

$$\frac{3 a \sqrt{b} \operatorname{ArcTan}\left[\frac{\sqrt{b} \sqrt{e \operatorname{Cos}[c+d x]}}{\left(-a^2+b^2\right)^{1/4} \sqrt{e}}\right]}{2 \left(-a^2+b^2\right)^{7/4} d \sqrt{e}}+\frac{3 a \sqrt{b} \operatorname{ArcTanh}\left[\frac{\sqrt{b} \sqrt{e \operatorname{Cos}[c+d x]}}{\left(-a^2+b^2\right)^{1/4} \sqrt{e}}\right]}{2 \left(-a^2+b^2\right)^{7/4} d \sqrt{e}}-$$

$$\frac{\sqrt{\operatorname{Cos}[c+d x]} \operatorname{EllipticF}\left[\frac{1}{2} (c+d x), 2\right]}{\left(a^2-b^2\right) d \sqrt{e \operatorname{Cos}[c+d x]}}+\frac{3 a^2 \sqrt{\operatorname{Cos}[c+d x]} \operatorname{EllipticPi}\left[\frac{2 b}{b-\sqrt{-a^2+b^2}}, \frac{1}{2} (c+d x), 2\right]}{2 \left(a^2-b^2\right) \left(a^2-b \left(b-\sqrt{-a^2+b^2}\right)\right) d \sqrt{e \operatorname{Cos}[c+d x]}}+$$

$$\frac{3 a^2 \sqrt{\operatorname{Cos}[c+d x]} \operatorname{EllipticPi}\left[\frac{2 b}{b+\sqrt{-a^2+b^2}}, \frac{1}{2} (c+d x), 2\right]}{2 \left(a^2-b^2\right) \left(a^2-b \left(b+\sqrt{-a^2+b^2}\right)\right) d \sqrt{e \operatorname{Cos}[c+d x]}}+\frac{b \sqrt{e \operatorname{Cos}[c+d x]}}{\left(a^2-b^2\right) d e (a+b \operatorname{Sin}[c+d x])}$$

Result (type 6, 1181 leaves):

$$\frac{b\,\text{Cos}[c+d\,x]}{\left(a^2-b^2\right)d\sqrt{e\,\text{Cos}[c+d\,x]}\,(a+b\,\text{Sin}[c+d\,x])}+$$

$$\frac{1}{2\,(a-b)\,(a+b)\,d\sqrt{e\,\text{Cos}[c+d\,x]}}\sqrt{\text{Cos}[c+d\,x]}\left(-\frac{1}{\sqrt{1-\text{Cos}[c+d\,x]^2}\,(a+b\,\text{Sin}[c+d\,x])}4\,a\left(a+b\sqrt{1-\text{Cos}[c+d\,x]^2}\right)\right.$$

$$\left(\left(5\,a\left(a^2-b^2\right)\text{AppellF1}\left[\frac{1}{4},\frac{1}{2},1,\frac{5}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]\sqrt{\text{Cos}[c+d\,x]}\right)\Big/\left(\sqrt{1-\text{Cos}[c+d\,x]^2}\left(5\left(a^2-b^2\right)\right.\right.\right.$$

$$\text{AppellF1}\left[\frac{1}{4},\frac{1}{2},1,\frac{5}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]-2\left(2\,b^2\,\text{AppellF1}\left[\frac{5}{4},\frac{1}{2},2,\frac{9}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]+\right.$$

$$\left.\left.\left.\left(-a^2+b^2\right)\text{AppellF1}\left[\frac{5}{4},\frac{3}{2},1,\frac{9}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]\right)\text{Cos}[c+d\,x]^2\right)\left(a^2+b^2\left(-1+\text{Cos}[c+d\,x]^2\right)\right)\right)-$$

$$\frac{1}{\left(-a^2+b^2\right)^{3/4}}\left(\frac{1}{8}-\frac{i}{8}\right)\sqrt{b}\left(2\,\text{ArcTan}\left[1-\frac{(1+i)\sqrt{b}\sqrt{\text{Cos}[c+d\,x]}}{\left(-a^2+b^2\right)^{1/4}}\right]-2\,\text{ArcTan}\left[1+\frac{(1+i)\sqrt{b}\sqrt{\text{Cos}[c+d\,x]}}{\left(-a^2+b^2\right)^{1/4}}\right]+\right.$$

$$\text{Log}\left[\sqrt{-a^2+b^2}-(1+i)\sqrt{b}\left(-a^2+b^2\right)^{1/4}\sqrt{\text{Cos}[c+d\,x]}+i\,b\,\text{Cos}[c+d\,x]\right]-$$

$$\left.\left.\text{Log}\left[\sqrt{-a^2+b^2}+(1+i)\sqrt{b}\left(-a^2+b^2\right)^{1/4}\sqrt{\text{Cos}[c+d\,x]}+i\,b\,\text{Cos}[c+d\,x]\right]\right)\right)\text{Sin}[c+d\,x]+\frac{1}{\left(1-\text{Cos}[c+d\,x]^2\right)(a+b\,\text{Sin}[c+d\,x])}$$

$$2\,b\left(a+b\sqrt{1-\text{Cos}[c+d\,x]^2}\right)\left(\left(5\,b\left(a^2-b^2\right)\text{AppellF1}\left[\frac{1}{4},-\frac{1}{2},1,\frac{5}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]\sqrt{\text{Cos}[c+d\,x]}\sqrt{1-\text{Cos}[c+d\,x]^2}\right)\Big/\right.$$

$$\left(\left(-5\left(a^2-b^2\right)\text{AppellF1}\left[\frac{1}{4},-\frac{1}{2},1,\frac{5}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]+2\left(2\,b^2\,\text{AppellF1}\left[\frac{5}{4},-\frac{1}{2},2,\frac{9}{4},\text{Cos}[c+d\,x]^2,\right.\right.\right.\right.$$

$$\left.\left.\left.\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]+\left(a^2-b^2\right)\text{AppellF1}\left[\frac{5}{4},\frac{1}{2},1,\frac{9}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]\right)\text{Cos}[c+d\,x]^2\right)$$

$$\left.\left(a^2+b^2\left(-1+\text{Cos}[c+d\,x]^2\right)\right)\right)+\frac{1}{4\sqrt{2}\sqrt{b}\left(a^2-b^2\right)^{3/4}}a\left(-2\,\text{ArcTan}\left[1-\frac{\sqrt{2}\sqrt{b}\sqrt{\text{Cos}[c+d\,x]}}{\left(a^2-b^2\right)^{1/4}}\right]+\right.$$

$$2\,\text{ArcTan}\left[1+\frac{\sqrt{2}\sqrt{b}\sqrt{\text{Cos}[c+d\,x]}}{\left(a^2-b^2\right)^{1/4}}\right]-\text{Log}\left[\sqrt{a^2-b^2}-\sqrt{2}\sqrt{b}\left(a^2-b^2\right)^{1/4}\sqrt{\text{Cos}[c+d\,x]}+b\,\text{Cos}[c+d\,x]\right]+$$

$$\left.\left.\text{Log}\left[\sqrt{a^2-b^2}+\sqrt{2}\sqrt{b}\left(a^2-b^2\right)^{1/4}\sqrt{\text{Cos}[c+d\,x]}+b\,\text{Cos}[c+d\,x]\right]\right)\right)\text{Sin}[c+d\,x]^2\Bigg)$$

- **Problem 591: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int \frac{1}{(e \operatorname{Cos}[c+d x])^{3/2} (a+b \operatorname{Sin}[c+d x])^2} \, dx$$

Optimal (type 4, 492 leaves, 14 steps):

$$-\frac{5 a b^{3/2} \operatorname{ArcTan}\left[\frac{\sqrt{b} \sqrt{e \operatorname{Cos}[c+d x]}}{\left(-a^2+b^2\right)^{1/4} \sqrt{e}}\right]}{2 \left(-a^2+b^2\right)^{9/4} d e^{3/2}}+\frac{5 a b^{3/2} \operatorname{ArcTanh}\left[\frac{\sqrt{b} \sqrt{e \operatorname{Cos}[c+d x]}}{\left(-a^2+b^2\right)^{1/4} \sqrt{e}}\right]}{2 \left(-a^2+b^2\right)^{9/4} d e^{3/2}}-\frac{\left(2 a^2+3 b^2\right) \sqrt{e \operatorname{Cos}[c+d x]} \operatorname{EllipticE}\left[\frac{1}{2} (c+d x), 2\right]}{\left(a^2-b^2\right)^2 d e^2 \sqrt{\operatorname{Cos}[c+d x]}}-$$

$$\frac{5 a^2 b \sqrt{\operatorname{Cos}[c+d x]} \operatorname{EllipticPi}\left[\frac{2 b}{b-\sqrt{-a^2+b^2}}, \frac{1}{2} (c+d x), 2\right]}{2 \left(a^2-b^2\right)^2 \left(b-\sqrt{-a^2+b^2}\right) d e \sqrt{e \operatorname{Cos}[c+d x]}}-\frac{5 a^2 b \sqrt{\operatorname{Cos}[c+d x]} \operatorname{EllipticPi}\left[\frac{2 b}{b+\sqrt{-a^2+b^2}}, \frac{1}{2} (c+d x), 2\right]}{2 \left(a^2-b^2\right)^2 \left(b+\sqrt{-a^2+b^2}\right) d e \sqrt{e \operatorname{Cos}[c+d x]}}+$$

$$\frac{b}{\left(a^2-b^2\right) d e \sqrt{e \operatorname{Cos}[c+d x]} (a+b \operatorname{Sin}[c+d x])}-\frac{5 a b-\left(2 a^2+3 b^2\right) \operatorname{Sin}[c+d x]}{\left(a^2-b^2\right)^2 d e \sqrt{e \operatorname{Cos}[c+d x]}}$$

Result (type 6, 1260 leaves):

$$-\frac{1}{2 (a-b)^2 (a+b)^2 d (e \operatorname{Cos}[c+d x])^{3/2}}$$

$$\operatorname{Cos}[c+d x]^{3/2} \left(\frac{1}{12 \sqrt{1-\operatorname{Cos}[c+d x]^2} (a+b \operatorname{Sin}[c+d x])} \left(2 a^3+8 a b^2\right) \left(a+b \sqrt{1-\operatorname{Cos}[c+d x]^2}\right) \left(-\left(56 a \left(a^2-b^2\right)\right.\right.\right.$$

$$\operatorname{AppellF1}\left[\frac{3}{4}, \frac{1}{2}, 1, \frac{7}{4}, \operatorname{Cos}[c+d x]^2, \frac{b^2 \operatorname{Cos}[c+d x]^2}{-a^2+b^2}\right] \operatorname{Cos}[c+d x]^{3/2}\Big) \Big/ \left(\sqrt{1-\operatorname{Cos}[c+d x]^2} \left(7 \left(a^2-b^2\right) \operatorname{AppellF1}\left[\frac{3}{4}, \frac{1}{2}, 1,\right.\right.\right.$$

$$\left.\frac{7}{4}, \operatorname{Cos}[c+d x]^2, \frac{b^2 \operatorname{Cos}[c+d x]^2}{-a^2+b^2}\right]-2 \left(2 b^2 \operatorname{AppellF1}\left[\frac{7}{4}, \frac{1}{2}, 2, \frac{11}{4}, \operatorname{Cos}[c+d x]^2, \frac{b^2 \operatorname{Cos}[c+d x]^2}{-a^2+b^2}\right]+\left(-a^2+b^2\right) \operatorname{AppellF1}\left[\right.\right.$$

$$\left.\left.\left.\left.\frac{7}{4}, \frac{3}{2}, 1, \frac{11}{4}, \operatorname{Cos}[c+d x]^2, \frac{b^2 \operatorname{Cos}[c+d x]^2}{-a^2+b^2}\right]\right) \operatorname{Cos}[c+d x]^2\right) \left(a^2+b^2 \left(-1+\operatorname{Cos}[c+d x]^2\right)\right)\right)-\frac{1}{\sqrt{b} \left(-a^2+b^2\right)^{1/4}}$$

$$(3+3 i) \left(2 \operatorname{ArcTan}\left[1-\frac{(1+i) \sqrt{b} \sqrt{\operatorname{Cos}[c+d x]}}{\left(-a^2+b^2\right)^{1/4}}\right]-2 \operatorname{ArcTan}\left[1+\frac{(1+i) \sqrt{b} \sqrt{\operatorname{Cos}[c+d x]}}{\left(-a^2+b^2\right)^{1/4}}\right]-\operatorname{Log}\left[\sqrt{-a^2+b^2}-(1+i) \sqrt{b}\right.\right.$$

$$\left.\left.\left(-a^2+b^2\right)^{1/4} \sqrt{\operatorname{Cos}[c+d x]}+i b \operatorname{Cos}[c+d x]\right]+\operatorname{Log}\left[\sqrt{-a^2+b^2}+(1+i) \sqrt{b} \left(-a^2+b^2\right)^{1/4} \sqrt{\operatorname{Cos}[c+d x]}+i b \operatorname{Cos}[c+d x]\right]\right)\Bigg)$$

$$\operatorname{Sin}[c+d x]-\frac{1}{\left(1-\operatorname{Cos}[c+d x]^2\right) (a+b \operatorname{Sin}[c+d x])} 2 \left(2 a^2 b+3 b^3\right) \left(a+b \sqrt{1-\operatorname{Cos}[c+d x]^2}\right)$$

$$\left(\left(7 b \left(a^2-b^2\right) \text{AppellF1}\left[\frac{3}{4},-\frac{1}{2},1,\frac{7}{4},\text{Cos}[c+d x]^2,\frac{b^2 \text{Cos}[c+d x]^2}{-a^2+b^2}\right] \text{Cos}[c+d x]^{3/2} \sqrt{1-\text{Cos}[c+d x]^2}\right)\Big/\right.$$
$$\left(3 \left(-7 \left(a^2-b^2\right) \text{AppellF1}\left[\frac{3}{4},-\frac{1}{2},1,\frac{7}{4},\text{Cos}[c+d x]^2,\frac{b^2 \text{Cos}[c+d x]^2}{-a^2+b^2}\right]+2 \left(2 b^2 \text{AppellF1}\left[\frac{7}{4},-\frac{1}{2},2,\frac{11}{4},\text{Cos}[c+d x]^2,\right.\right.\right.\right.$$
$$\left.\left.\frac{b^2 \text{Cos}[c+d x]^2}{-a^2+b^2}\right]+\left(a^2-b^2\right) \text{AppellF1}\left[\frac{7}{4},\frac{1}{2},1,\frac{11}{4},\text{Cos}[c+d x]^2,\frac{b^2 \text{Cos}[c+d x]^2}{-a^2+b^2}\right]\right) \text{Cos}[c+d x]^2\Big)$$
$$\left.\left(a^2+b^2 \left(-1+\text{Cos}[c+d x]^2\right)\right)\right)+\frac{1}{4 \sqrt{2}\, b^{3/2} \left(a^2-b^2\right)^{1/4}} a \left(-2 \text{ArcTan}\left[1-\frac{\sqrt{2} \sqrt{b} \sqrt{\text{Cos}[c+d x]}}{\left(a^2-b^2\right)^{1/4}}\right]+\right.$$
$$2 \text{ArcTan}\left[1+\frac{\sqrt{2} \sqrt{b} \sqrt{\text{Cos}[c+d x]}}{\left(a^2-b^2\right)^{1/4}}\right]+\text{Log}\left[\sqrt{a^2-b^2}-\sqrt{2} \sqrt{b} \left(a^2-b^2\right)^{1/4} \sqrt{\text{Cos}[c+d x]}+b \text{Cos}[c+d x]\right]-$$
$$\left.\left.\text{Log}\left[\sqrt{a^2-b^2}+\sqrt{2} \sqrt{b} \left(a^2-b^2\right)^{1/4} \sqrt{\text{Cos}[c+d x]}+b \text{Cos}[c+d x]\right]\right)\right) \text{Sin}[c+d x]^2\Bigg)+$$
$$\frac{\text{Cos}[c+d x]^2 \left(-\frac{b^3 \text{Cos}[c+d x]}{\left(a^2-b^2\right)^2 (a+b \text{Sin}[c+d x])}+\frac{2 \text{Sec}[c+d x] \left(-2 a b+a^2 \text{Sin}[c+d x]+b^2 \text{Sin}[c+d x]\right)}{\left(a^2-b^2\right)^2}\right)}{d (e \text{Cos}[c+d x])^{3/2}}$$

- **Problem 592: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int \frac{1}{(e \text{Cos}[c+d x])^{5/2} (a+b \text{Sin}[c+d x])^2} \, dx$$

Optimal (type 4, 514 leaves, 14 steps):

$$\frac{7 a b^{5/2} \text{ArcTan}\left[\frac{\sqrt{b} \sqrt{e \text{Cos}[c+d x]}}{\left(-a^2+b^2\right)^{1/4} \sqrt{e}}\right]}{2 \left(-a^2+b^2\right)^{11/4} d e^{5/2}}+\frac{7 a b^{5/2} \text{ArcTanh}\left[\frac{\sqrt{b} \sqrt{e \text{Cos}[c+d x]}}{\left(-a^2+b^2\right)^{1/4} \sqrt{e}}\right]}{2 \left(-a^2+b^2\right)^{11/4} d e^{5/2}}+\frac{\left(2 a^2+5 b^2\right) \sqrt{\text{Cos}[c+d x]} \text{EllipticF}\left[\frac{1}{2} (c+d x),2\right]}{3 \left(a^2-b^2\right)^2 d e^2 \sqrt{e \text{Cos}[c+d x]}}-$$
$$\frac{7 a^2 b^2 \sqrt{\text{Cos}[c+d x]} \text{EllipticPi}\left[\frac{2 b}{b-\sqrt{-a^2+b^2}},\frac{1}{2} (c+d x),2\right]}{2 \left(a^2-b^2\right)^2 \left(a^2-b \left(b-\sqrt{-a^2+b^2}\right)\right) d e^2 \sqrt{e \text{Cos}[c+d x]}}-\frac{7 a^2 b^2 \sqrt{\text{Cos}[c+d x]} \text{EllipticPi}\left[\frac{2 b}{b+\sqrt{-a^2+b^2}},\frac{1}{2} (c+d x),2\right]}{2 \left(a^2-b^2\right)^2 \left(a^2-b \left(b+\sqrt{-a^2+b^2}\right)\right) d e^2 \sqrt{e \text{Cos}[c+d x]}}+$$
$$\frac{b}{\left(a^2-b^2\right) d e (e \text{Cos}[c+d x])^{3/2} (a+b \text{Sin}[c+d x])}-\frac{7 a b-\left(2 a^2+5 b^2\right) \text{Sin}[c+d x]}{3 \left(a^2-b^2\right)^2 d e (e \text{Cos}[c+d x])^{3/2}}$$

Result (type 6, 1258 leaves):

$$\frac{1}{6 (a-b)^2 (a+b)^2 d (e \text{Cos}[c+d x])^{5/2}}$$

$$\text{Cos}[c+d x]^{5/2}\left(-\frac{1}{\sqrt{1-\text{Cos}[c+d x]^2}\,(a+b\,\text{Sin}[c+d x])}2\left(2a^3-16ab^2\right)\left(a+b\sqrt{1-\text{Cos}[c+d x]^2}\right)\left(\left(5a\left(a^2-b^2\right)\right.\right.\right.$$

$$\left.\text{AppellF1}\left[\frac{1}{4},\frac{1}{2},1,\frac{5}{4},\text{Cos}[c+d x]^2,\frac{b^2\text{Cos}[c+d x]^2}{-a^2+b^2}\right]\sqrt{\text{Cos}[c+d x]}\right)\Big/\left(\sqrt{1-\text{Cos}[c+d x]^2}\left(5\left(a^2-b^2\right)\text{AppellF1}\left[\frac{1}{4},\frac{1}{2},\right.\right.\right.$$

$$\left.1,\frac{5}{4},\text{Cos}[c+d x]^2,\frac{b^2\text{Cos}[c+d x]^2}{-a^2+b^2}\right]-2\left(2b^2\text{AppellF1}\left[\frac{5}{4},\frac{1}{2},2,\frac{9}{4},\text{Cos}[c+d x]^2,\frac{b^2\text{Cos}[c+d x]^2}{-a^2+b^2}\right]+\right.$$

$$\left.\left.\left.\left(-a^2+b^2\right)\text{AppellF1}\left[\frac{5}{4},\frac{3}{2},1,\frac{9}{4},\text{Cos}[c+d x]^2,\frac{b^2\text{Cos}[c+d x]^2}{-a^2+b^2}\right]\right)\text{Cos}[c+d x]^2\right)\left(a^2+b^2\left(-1+\text{Cos}[c+d x]^2\right)\right)\right)-$$

$$\frac{1}{\left(-a^2+b^2\right)^{3/4}}\left(\frac{1}{8}-\frac{i}{8}\right)\sqrt{b}\left(2\,\text{ArcTan}\left[1-\frac{(1+i)\sqrt{b}\sqrt{\text{Cos}[c+d x]}}{\left(-a^2+b^2\right)^{1/4}}\right]-2\,\text{ArcTan}\left[1+\frac{(1+i)\sqrt{b}\sqrt{\text{Cos}[c+d x]}}{\left(-a^2+b^2\right)^{1/4}}\right]+\right.$$

$$\text{Log}\left[\sqrt{-a^2+b^2}-(1+i)\sqrt{b}\left(-a^2+b^2\right)^{1/4}\sqrt{\text{Cos}[c+d x]}+i\,b\,\text{Cos}[c+d x]\right]-$$

$$\left.\left.\text{Log}\left[\sqrt{-a^2+b^2}+(1+i)\sqrt{b}\left(-a^2+b^2\right)^{1/4}\sqrt{\text{Cos}[c+d x]}+i\,b\,\text{Cos}[c+d x]\right]\right)\right)\text{Sin}[c+d x]-$$

$$\frac{1}{\left(1-\text{Cos}[c+d x]^2\right)(a+b\,\text{Sin}[c+d x])}2\left(2a^2b+5b^3\right)\left(a+b\sqrt{1-\text{Cos}[c+d x]^2}\right)$$

$$\left(\left(5b\left(a^2-b^2\right)\text{AppellF1}\left[\frac{1}{4},-\frac{1}{2},1,\frac{5}{4},\text{Cos}[c+d x]^2,\frac{b^2\text{Cos}[c+d x]^2}{-a^2+b^2}\right]\sqrt{\text{Cos}[c+d x]}\sqrt{1-\text{Cos}[c+d x]^2}\right)\Big/\right.$$

$$\left(\left(-5\left(a^2-b^2\right)\text{AppellF1}\left[\frac{1}{4},-\frac{1}{2},1,\frac{5}{4},\text{Cos}[c+d x]^2,\frac{b^2\text{Cos}[c+d x]^2}{-a^2+b^2}\right]+2\left(2b^2\text{AppellF1}\left[\frac{5}{4},-\frac{1}{2},2,\frac{9}{4},\text{Cos}[c+d x]^2,\right.\right.\right.\right.$$

$$\left.\left.\left.\frac{b^2\text{Cos}[c+d x]^2}{-a^2+b^2}\right]+\left(a^2-b^2\right)\text{AppellF1}\left[\frac{5}{4},\frac{1}{2},1,\frac{9}{4},\text{Cos}[c+d x]^2,\frac{b^2\text{Cos}[c+d x]^2}{-a^2+b^2}\right]\right)\text{Cos}[c+d x]^2\right)$$

$$\left.\left(a^2+b^2\left(-1+\text{Cos}[c+d x]^2\right)\right)\right)+\frac{1}{4\sqrt{2}\sqrt{b}\left(a^2-b^2\right)^{3/4}}a\left(-2\,\text{ArcTan}\left[1-\frac{\sqrt{2}\sqrt{b}\sqrt{\text{Cos}[c+d x]}}{\left(a^2-b^2\right)^{1/4}}\right]+\right.$$

$$2\,\text{ArcTan}\left[1+\frac{\sqrt{2}\sqrt{b}\sqrt{\text{Cos}[c+d x]}}{\left(a^2-b^2\right)^{1/4}}\right]-\text{Log}\left[\sqrt{a^2-b^2}-\sqrt{2}\sqrt{b}\left(a^2-b^2\right)^{1/4}\sqrt{\text{Cos}[c+d x]}+b\,\text{Cos}[c+d x]\right]+$$

$$\left.\left.\left.\text{Log}\left[\sqrt{a^2-b^2}+\sqrt{2}\sqrt{b}\left(a^2-b^2\right)^{1/4}\sqrt{\text{Cos}[c+d x]}+b\,\text{Cos}[c+d x]\right]\right)\right)\text{Sin}[c+d x]^2\right)+$$

$$\frac{\text{Cos}[c+d\,x]^3\left(-\frac{b^3}{\left(a^2-b^2\right)^2\,(a+b\,\text{Sin}[c+d\,x])}+\frac{2\,\text{Sec}[c+d\,x]^2\,\left(-2\,a\,b+a^2\,\text{Sin}[c+d\,x]+b^2\,\text{Sin}[c+d\,x]\right)}{3\,\left(a^2-b^2\right)^2}\right)}{d\,(e\,\text{Cos}[c+d\,x])^{5/2}}$$

- **Problem 593: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int\frac{1}{(e\,\text{Cos}[c+d\,x])^{7/2}\,(a+b\,\text{Sin}[c+d\,x])^2}\,dx$$

Optimal (type 4, 574 leaves, 15 steps):

$$-\frac{9\,a\,b^{7/2}\,\text{ArcTan}\left[\frac{\sqrt{b}\,\sqrt{e\,\text{Cos}[c+d\,x]}}{\left(-a^2+b^2\right)^{1/4}\sqrt{e}}\right]}{2\,\left(-a^2+b^2\right)^{13/4}\,d\,e^{7/2}}+\frac{9\,a\,b^{7/2}\,\text{ArcTanh}\left[\frac{\sqrt{b}\,\sqrt{e\,\text{Cos}[c+d\,x]}}{\left(-a^2+b^2\right)^{1/4}\sqrt{e}}\right]}{2\,\left(-a^2+b^2\right)^{13/4}\,d\,e^{7/2}}-\frac{3\,\left(2\,a^4-10\,a^2\,b^2-7\,b^4\right)\sqrt{e\,\text{Cos}[c+d\,x]}\,\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),2\right]}{5\,\left(a^2-b^2\right)^3\,d\,e^4\,\sqrt{\text{Cos}[c+d\,x]}}+$$

$$\frac{9\,a^2\,b^3\,\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticPi}\left[\frac{2\,b}{b-\sqrt{-a^2+b^2}},\frac{1}{2}\,(c+d\,x),2\right]}{2\,\left(a^2-b^2\right)^3\,\left(b-\sqrt{-a^2+b^2}\right)\,d\,e^3\,\sqrt{e\,\text{Cos}[c+d\,x]}}+\frac{9\,a^2\,b^3\,\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticPi}\left[\frac{2\,b}{b+\sqrt{-a^2+b^2}},\frac{1}{2}\,(c+d\,x),2\right]}{2\,\left(a^2-b^2\right)^3\,\left(b+\sqrt{-a^2+b^2}\right)\,d\,e^3\,\sqrt{e\,\text{Cos}[c+d\,x]}}+$$

$$\frac{b}{\left(a^2-b^2\right)\,d\,e\,(e\,\text{Cos}[c+d\,x])^{5/2}\,(a+b\,\text{Sin}[c+d\,x])}-\frac{9\,a\,b-\left(2\,a^2+7\,b^2\right)\,\text{Sin}[c+d\,x]}{5\,\left(a^2-b^2\right)^2\,d\,e\,(e\,\text{Cos}[c+d\,x])^{5/2}}+\frac{3\,\left(15\,a\,b^3+\left(2\,a^4-10\,a^2\,b^2-7\,b^4\right)\,\text{Sin}[c+d\,x]\right)}{5\,\left(a^2-b^2\right)^3\,d\,e^3\,\sqrt{e\,\text{Cos}[c+d\,x]}}$$

Result (type 6, 1343 leaves):

$$-\frac{1}{10\,(a-b)^3\,(a+b)^3\,d\,(e\,\text{Cos}[c+d\,x])^{7/2}}$$

$$3\,\text{Cos}[c+d\,x]^{7/2}\left(\frac{1}{12\,\sqrt{1-\text{Cos}[c+d\,x]^2}\,(a+b\,\text{Sin}[c+d\,x])}\left(2\,a^5-10\,a^3\,b^2-22\,a\,b^4\right)\left(a+b\,\sqrt{1-\text{Cos}[c+d\,x]^2}\right)\right.$$

$$\left(-\left(56\,a\,\left(a^2-b^2\right)\,\text{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]\text{Cos}[c+d\,x]^{3/2}\right)\Big/\left(\sqrt{1-\text{Cos}[c+d\,x]^2}\,\left(7\,\left(a^2-b^2\right)\right.\right.\right.$$

$$\text{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]-2\left(2\,b^2\,\text{AppellF1}\left[\frac{7}{4},\frac{1}{2},2,\frac{11}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]+\right.$$

$$\left.\left.\left.\left(-a^2+b^2\right)\text{AppellF1}\left[\frac{7}{4},\frac{3}{2},1,\frac{11}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]\right)\text{Cos}[c+d\,x]^2\right)\left(a^2+b^2\,\left(-1+\text{Cos}[c+d\,x]^2\right)\right)\right)-$$

$$\frac{1}{\sqrt{b}\,\left(-a^2+b^2\right)^{1/4}}(3+3\,i)\left(2\,\text{ArcTan}\left[1-\frac{(1+i)\,\sqrt{b}\,\sqrt{\text{Cos}[c+d\,x]}}{\left(-a^2+b^2\right)^{1/4}}\right]-2\,\text{ArcTan}\left[1+\frac{(1+i)\,\sqrt{b}\,\sqrt{\text{Cos}[c+d\,x]}}{\left(-a^2+b^2\right)^{1/4}}\right]-\right.$$

$$\text{Log}\left[\sqrt{-a^2+b^2}-(1+i)\,\sqrt{b}\,\left(-a^2+b^2\right)^{1/4}\sqrt{\text{Cos}[c+d\,x]}+i\,b\,\text{Cos}[c+d\,x]\right]+$$

$$\text{Log}\left[\sqrt{-a^2+b^2}+(1+i)\sqrt{b}\left(-a^2+b^2\right)^{1/4}\sqrt{\text{Cos}[c+d\,x]}+i\,b\,\text{Cos}[c+d\,x]\right]\Bigg)\Bigg)\,\text{Sin}[c+d\,x]-$$

$$\frac{1}{\left(1-\text{Cos}[c+d\,x]^2\right)(a+b\,\text{Sin}[c+d\,x])}\,2\left(2\,a^4\,b-10\,a^2\,b^3-7\,b^5\right)\left(a+b\sqrt{1-\text{Cos}[c+d\,x]^2}\right)$$

$$\Bigg(\Bigg(7\,b\left(a^2-b^2\right)\text{AppellF1}\left[\frac{3}{4},-\frac{1}{2},1,\frac{7}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]\text{Cos}[c+d\,x]^{3/2}\sqrt{1-\text{Cos}[c+d\,x]^2}\Bigg)\Big/$$

$$\Bigg(3\Bigg(-7\left(a^2-b^2\right)\text{AppellF1}\left[\frac{3}{4},-\frac{1}{2},1,\frac{7}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]+2\Bigg(2\,b^2\,\text{AppellF1}\left[\frac{7}{4},-\frac{1}{2},2,\frac{11}{4},\text{Cos}[c+d\,x]^2,\right.$$

$$\left.\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]+\left(a^2-b^2\right)\text{AppellF1}\left[\frac{7}{4},\frac{1}{2},1,\frac{11}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]\Bigg)\,\text{Cos}[c+d\,x]^2\Bigg)$$

$$\left(a^2+b^2\left(-1+\text{Cos}[c+d\,x]^2\right)\right)\Bigg)\Bigg)+\frac{1}{4\sqrt{2}\,b^{3/2}\left(a^2-b^2\right)^{1/4}}\,a\Bigg(-2\,\text{ArcTan}\left[1-\frac{\sqrt{2}\sqrt{b}\sqrt{\text{Cos}[c+d\,x]}}{\left(a^2-b^2\right)^{1/4}}\right]+$$

$$2\,\text{ArcTan}\left[1+\frac{\sqrt{2}\sqrt{b}\sqrt{\text{Cos}[c+d\,x]}}{\left(a^2-b^2\right)^{1/4}}\right]+\text{Log}\left[\sqrt{a^2-b^2}-\sqrt{2}\sqrt{b}\left(a^2-b^2\right)^{1/4}\sqrt{\text{Cos}[c+d\,x]}+b\,\text{Cos}[c+d\,x]\right]-$$

$$\text{Log}\left[\sqrt{a^2-b^2}+\sqrt{2}\sqrt{b}\left(a^2-b^2\right)^{1/4}\sqrt{\text{Cos}[c+d\,x]}+b\,\text{Cos}[c+d\,x]\right]\Bigg)\Bigg)\,\text{Sin}[c+d\,x]^2\Bigg)+$$

$$\frac{1}{d\,(e\,\text{Cos}[c+d\,x])^{7/2}}\text{Cos}[c+d\,x]^4\left(\frac{b^5\,\text{Cos}[c+d\,x]}{\left(a^2-b^2\right)^3(a+b\,\text{Sin}[c+d\,x])}+\frac{2\,\text{Sec}[c+d\,x]^3\left(-2\,a\,b+a^2\,\text{Sin}[c+d\,x]+b^2\,\text{Sin}[c+d\,x]\right)}{5\left(a^2-b^2\right)^2}+\right.$$

$$\left.\frac{2\,\text{Sec}[c+d\,x]\left(20\,a\,b^3+3\,a^4\,\text{Sin}[c+d\,x]-15\,a^2\,b^2\,\text{Sin}[c+d\,x]-8\,b^4\,\text{Sin}[c+d\,x]\right)}{5\left(a^2-b^2\right)^3}\right)$$

- **Problem 594: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int\frac{(e\,\text{Cos}[c+d\,x])^{13/2}}{(a+b\,\text{Sin}[c+d\,x])^3}\,dx$$

Optimal (type 4, 575 leaves, 15 steps):

$$-\frac{11\left(9a^4-11a^2b^2+2b^4\right)e^{13/2}\,\text{ArcTan}\left[\frac{\sqrt{b}\,\sqrt{e\,\text{Cos}[c+d\,x]}}{\left(-a^2+b^2\right)^{1/4}\sqrt{e}}\right]}{8\,b^{13/2}\left(-a^2+b^2\right)^{1/4}d}+$$

$$\frac{11\left(9a^4-11a^2b^2+2b^4\right)e^{13/2}\,\text{ArcTanh}\left[\frac{\sqrt{b}\,\sqrt{e\,\text{Cos}[c+d\,x]}}{\left(-a^2+b^2\right)^{1/4}\sqrt{e}}\right]}{8\,b^{13/2}\left(-a^2+b^2\right)^{1/4}d}+\frac{11\,a\left(45a^2-37b^2\right)e^6\sqrt{e\,\text{Cos}[c+d\,x]}\;\text{EllipticE}\left[\frac{1}{2}(c+d\,x),2\right]}{20\,b^6\,d\sqrt{\text{Cos}[c+d\,x]}}-$$

$$\frac{11\,a\left(9a^4-11a^2b^2+2b^4\right)e^7\sqrt{\text{Cos}[c+d\,x]}\;\text{EllipticPi}\left[\frac{2b}{b-\sqrt{-a^2+b^2}},\frac{1}{2}(c+d\,x),2\right]}{8\,b^7\left(b-\sqrt{-a^2+b^2}\right)d\sqrt{e\,\text{Cos}[c+d\,x]}}-$$

$$\frac{11\,a\left(9a^4-11a^2b^2+2b^4\right)e^7\sqrt{\text{Cos}[c+d\,x]}\;\text{EllipticPi}\left[\frac{2b}{b+\sqrt{-a^2+b^2}},\frac{1}{2}(c+d\,x),2\right]}{8\,b^7\left(b+\sqrt{-a^2+b^2}\right)d\sqrt{e\,\text{Cos}[c+d\,x]}}-\frac{e\,(e\,\text{Cos}[c+d\,x])^{11/2}}{2\,b\,d\,(a+b\,\text{Sin}[c+d\,x])^2}-$$

$$\frac{11\,e^3\,(e\,\text{Cos}[c+d\,x])^{7/2}\,(9a+2b\,\text{Sin}[c+d\,x])}{28\,b^3\,d\,(a+b\,\text{Sin}[c+d\,x])}+\frac{11\,e^5\,(e\,\text{Cos}[c+d\,x])^{3/2}\left(5\left(9a^2-2b^2\right)-27\,a\,b\,\text{Sin}[c+d\,x]\right)}{60\,b^5\,d}$$

Result (type 6, 1326 leaves) :

$$\frac{1}{40\,b^5\,d\,\text{Cos}[c+d\,x]^{13/2}}\,11\,(e\,\text{Cos}[c+d\,x])^{13/2}\left(\frac{1}{12\sqrt{1-\text{Cos}[c+d\,x]^2}\,(a+b\,\text{Sin}[c+d\,x])}\right.$$

$$\left(18a^2b-10b^3\right)\left(a+b\sqrt{1-\text{Cos}[c+d\,x]^2}\right)\left(-\left(56\,a\left(a^2-b^2\right)\text{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]\text{Cos}[c+d\,x]^{3/2}\right)\right/$$

$$\left(\sqrt{1-\text{Cos}[c+d\,x]^2}\left(7\left(a^2-b^2\right)\text{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]-2\left(2\,b^2\,\text{AppellF1}\left[\frac{7}{4},\frac{1}{2},2,\frac{11}{4},\right.\right.\right.\right.$$

$$\left.\left.\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]+\left(-a^2+b^2\right)\text{AppellF1}\left[\frac{7}{4},\frac{3}{2},1,\frac{11}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]\right)\text{Cos}[c+d\,x]^2\right)$$

$$\left.\left.\left(a^2+b^2\left(-1+\text{Cos}[c+d\,x]^2\right)\right)\right)\right)-\frac{1}{\sqrt{b}\left(-a^2+b^2\right)^{1/4}}(3+3\,i)\left(2\,\text{ArcTan}\left[1-\frac{(1+i)\sqrt{b}\,\sqrt{\text{Cos}[c+d\,x]}}{\left(-a^2+b^2\right)^{1/4}}\right]-\right.$$

$$2\,\text{ArcTan}\left[1+\frac{(1+i)\sqrt{b}\,\sqrt{\text{Cos}[c+d\,x]}}{\left(-a^2+b^2\right)^{1/4}}\right]-\text{Log}\left[\sqrt{-a^2+b^2}-(1+i)\sqrt{b}\left(-a^2+b^2\right)^{1/4}\sqrt{\text{Cos}[c+d\,x]}+i\,b\,\text{Cos}[c+d\,x]\right]+$$

$$\left.\left.\text{Log}\left[\sqrt{-a^2+b^2}+(1+i)\sqrt{b}\left(-a^2+b^2\right)^{1/4}\sqrt{\text{Cos}[c+d\,x]}+i\,b\,\text{Cos}[c+d\,x]\right]\right)\right)\text{Sin}[c+d\,x]-$$

$$\frac{1}{\left(1-\text{Cos}[c+d\,x]^2\right)\,(a+b\,\text{Sin}[c+d\,x])}\,2\,\left(45\,a^3-37\,a\,b^2\right)\,\left(a+b\,\sqrt{1-\text{Cos}[c+d\,x]^2}\right)$$

$$\left(\left(7\,b\,\left(a^2-b^2\right)\,\text{AppellF1}\left[\frac{3}{4},\,-\frac{1}{2},\,1,\,\frac{7}{4},\,\text{Cos}[c+d\,x]^2,\,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]\,\text{Cos}[c+d\,x]^{3/2}\,\sqrt{1-\text{Cos}[c+d\,x]^2}\right)\Big/\right.$$

$$\left(3\,\left(-7\,\left(a^2-b^2\right)\,\text{AppellF1}\left[\frac{3}{4},\,-\frac{1}{2},\,1,\,\frac{7}{4},\,\text{Cos}[c+d\,x]^2,\,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]+2\,\left(2\,b^2\,\text{AppellF1}\left[\frac{7}{4},\,-\frac{1}{2},\,2,\,\frac{11}{4},\,\text{Cos}[c+d\,x]^2,\right.\right.\right.\right.$$

$$\left.\left.\left.\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]+\left(a^2-b^2\right)\,\text{AppellF1}\left[\frac{7}{4},\,\frac{1}{2},\,1,\,\frac{11}{4},\,\text{Cos}[c+d\,x]^2,\,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]\right)\,\text{Cos}[c+d\,x]^2\right)$$

$$\left.\left(a^2+b^2\,\left(-1+\text{Cos}[c+d\,x]^2\right)\right)\right)+\frac{1}{4\,\sqrt{2}\,b^{3/2}\,\left(a^2-b^2\right)^{1/4}}a\,\left(-2\,\text{ArcTan}\left[1-\frac{\sqrt{2}\,\sqrt{b}\,\sqrt{\text{Cos}[c+d\,x]}}{\left(a^2-b^2\right)^{1/4}}\right]+\right.$$

$$2\,\text{ArcTan}\left[1+\frac{\sqrt{2}\,\sqrt{b}\,\sqrt{\text{Cos}[c+d\,x]}}{\left(a^2-b^2\right)^{1/4}}\right]+\text{Log}\left[\sqrt{a^2-b^2}-\sqrt{2}\,\sqrt{b}\,\left(a^2-b^2\right)^{1/4}\,\sqrt{\text{Cos}[c+d\,x]}+b\,\text{Cos}[c+d\,x]\right]-$$

$$\left.\left.\left.\text{Log}\left[\sqrt{a^2-b^2}+\sqrt{2}\,\sqrt{b}\,\left(a^2-b^2\right)^{1/4}\,\sqrt{\text{Cos}[c+d\,x]}+b\,\text{Cos}[c+d\,x]\right]\right)\right)\,\text{Sin}[c+d\,x]^2\right)+$$

$$\frac{1}{d}(e\,\text{Cos}[c+d\,x])^{13/2}\,\text{Sec}[c+d\,x]^6\,\left(-\frac{\left(-168\,a^2+65\,b^2\right)\,\text{Cos}[c+d\,x]}{42\,b^5}-\right.$$

$$\frac{\text{Cos}[3\,(c+d\,x)]}{14\,b^3}+$$

$$\frac{-a^4\,\text{Cos}[c+d\,x]+2\,a^2\,b^2\,\text{Cos}[c+d\,x]-b^4\,\text{Cos}[c+d\,x]}{2\,b^5\,(a+b\,\text{Sin}[c+d\,x])^2}+$$

$$\frac{19\,\left(a^3\,\text{Cos}[c+d\,x]-a\,b^2\,\text{Cos}[c+d\,x]\right)}{4\,b^5\,(a+b\,\text{Sin}[c+d\,x])}-$$

$$\left.\frac{3\,a\,\text{Sin}[2\,(c+d\,x)]}{5\,b^4}\right)$$

- **Problem 595: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int\frac{(e\,\text{Cos}[c+d\,x])^{11/2}}{(a+b\,\text{Sin}[c+d\,x])^3}\,dx$$

Optimal (type 4, 589 leaves, 15 steps):

$$\frac{9\left(7a^4-9a^2b^2+2b^4\right)e^{11/2}\,\text{ArcTan}\left[\frac{\sqrt{b}\sqrt{e\,\text{Cos}[c+d\,x]}}{\left(-a^2+b^2\right)^{1/4}\sqrt{e}}\right]}{8\,b^{11/2}\left(-a^2+b^2\right)^{3/4}d}+\frac{9\left(7a^4-9a^2b^2+2b^4\right)e^{11/2}\,\text{ArcTanh}\left[\frac{\sqrt{b}\sqrt{e\,\text{Cos}[c+d\,x]}}{\left(-a^2+b^2\right)^{1/4}\sqrt{e}}\right]}{8\,b^{11/2}\left(-a^2+b^2\right)^{3/4}d}+$$

$$\frac{3a\left(21a^2-13b^2\right)e^6\sqrt{\text{Cos}[c+d\,x]}\;\text{EllipticF}\left[\frac{1}{2}(c+d\,x),2\right]}{4\,b^6\,d\sqrt{e\,\text{Cos}[c+d\,x]}}-\frac{9a\left(7a^4-9a^2b^2+2b^4\right)e^6\sqrt{\text{Cos}[c+d\,x]}\;\text{EllipticPi}\left[\frac{2b}{b-\sqrt{-a^2+b^2}},\frac{1}{2}(c+d\,x),2\right]}{8\,b^6\left(a^2-b\left(b-\sqrt{-a^2+b^2}\right)\right)d\sqrt{e\,\text{Cos}[c+d\,x]}}-$$

$$\frac{9a\left(7a^4-9a^2b^2+2b^4\right)e^6\sqrt{\text{Cos}[c+d\,x]}\;\text{EllipticPi}\left[\frac{2b}{b+\sqrt{-a^2+b^2}},\frac{1}{2}(c+d\,x),2\right]}{8\,b^6\left(a^2-b\left(b+\sqrt{-a^2+b^2}\right)\right)d\sqrt{e\,\text{Cos}[c+d\,x]}}-\frac{e\,(e\,\text{Cos}[c+d\,x])^{9/2}}{2\,b\,d\,(a+b\,\text{Sin}[c+d\,x])^2}-$$

$$\frac{9e^3\,(e\,\text{Cos}[c+d\,x])^{5/2}\,(7a+2b\,\text{Sin}[c+d\,x])}{20\,b^3\,d\,(a+b\,\text{Sin}[c+d\,x])}+\frac{3e^5\sqrt{e\,\text{Cos}[c+d\,x]}\left(3\left(7a^2-2b^2\right)-7a\,b\,\text{Sin}[c+d\,x]\right)}{4\,b^5\,d}$$

Result (type 6, 2224 leaves) :

$$\frac{(e\,\text{Cos}[c+d\,x])^{11/2}\,\text{Sec}[c+d\,x]^5\left(-\frac{\text{Cos}[2(c+d\,x)]}{5b^3}-\frac{2a\,\text{Sin}[c+d\,x]}{b^4}-\frac{\left(-a^2+b^2\right)^2}{2b^5(a+b\,\text{Sin}[c+d\,x])^2}+\frac{17a\left(a^2-b^2\right)}{4b^5(a+b\,\text{Sin}[c+d\,x])}\right)}{d}+$$

$$\frac{1}{40\,b^5\,d\,\text{Cos}[c+d\,x]^{11/2}}3\,(e\,\text{Cos}[c+d\,x])^{11/2}\left(-\frac{1}{\sqrt{1-\text{Cos}[c+d\,x]^2}\;(a+b\,\text{Sin}[c+d\,x])}\right.$$

$$2\left(30a^2b-16b^3\right)\left(a+b\sqrt{1-\text{Cos}[c+d\,x]^2}\right)\left(\left(5a\left(a^2-b^2\right)\text{AppellF1}\left[\frac{1}{4},\frac{1}{2},1,\frac{5}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]\sqrt{\text{Cos}[c+d\,x]}\right)\right/$$

$$\left(\sqrt{1-\text{Cos}[c+d\,x]^2}\left(5\left(a^2-b^2\right)\text{AppellF1}\left[\frac{1}{4},\frac{1}{2},1,\frac{5}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]-2\left(2b^2\,\text{AppellF1}\left[\frac{5}{4},\frac{1}{2},2,\frac{9}{4},\right.\right.\right.\right.$$

$$\left.\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]+\left(-a^2+b^2\right)\text{AppellF1}\left[\frac{5}{4},\frac{3}{2},1,\frac{9}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]\right)\text{Cos}[c+d\,x]^2$$

$$\left.\left.\left(a^2+b^2\left(-1+\text{Cos}[c+d\,x]^2\right)\right)\right)-\frac{1}{\left(-a^2+b^2\right)^{3/4}}\left(\frac{1}{8}-\frac{i}{8}\right)\sqrt{b}\left(2\,\text{ArcTan}\left[1-\frac{(1+i)\sqrt{b}\sqrt{\text{Cos}[c+d\,x]}}{\left(-a^2+b^2\right)^{1/4}}\right]-\right.$$

$$2\,\text{ArcTan}\left[1+\frac{(1+i)\sqrt{b}\sqrt{\text{Cos}[c+d\,x]}}{\left(-a^2+b^2\right)^{1/4}}\right]+\text{Log}\left[\sqrt{-a^2+b^2}-(1+i)\sqrt{b}\left(-a^2+b^2\right)^{1/4}\sqrt{\text{Cos}[c+d\,x]}+i\,b\,\text{Cos}[c+d\,x]\right]-$$

$$\left.\left.\text{Log}\left[\sqrt{-a^2+b^2}+(1+i)\sqrt{b}\left(-a^2+b^2\right)^{1/4}\sqrt{\text{Cos}[c+d\,x]}+i\,b\,\text{Cos}[c+d\,x]\right]\right)\right)\text{Sin}[c+d\,x]+$$

$$\frac{1}{\sqrt{1-\text{Cos}[c+d x]^2}\,\left(-1+2\,\text{Cos}[c+d x]^2\right)\,(a+b\,\text{Sin}[c+d x])}\left(40\,a^2\,b-14\,b^3\right)\left(a+b\sqrt{1-\text{Cos}[c+d x]^2}\right)\text{Cos}[2\,(c+d x)]$$

$$\left(\frac{\left(\frac{1}{2}-\frac{i}{2}\right)\left(-2\,a^2+b^2\right)\text{ArcTan}\left[1-\frac{(1+i)\sqrt{b}\,\sqrt{\text{Cos}[c+d x]}}{\left(-a^2+b^2\right)^{1/4}}\right]}{b^{3/2}\left(-a^2+b^2\right)^{3/4}}-\frac{\left(\frac{1}{2}-\frac{i}{2}\right)\left(-2\,a^2+b^2\right)\text{ArcTan}\left[1+\frac{(1+i)\sqrt{b}\,\sqrt{\text{Cos}[c+d x]}}{\left(-a^2+b^2\right)^{1/4}}\right]}{b^{3/2}\left(-a^2+b^2\right)^{3/4}}+\right.$$

$$\frac{4\sqrt{\text{Cos}[c+d x]}}{b}+\left(10\,a\left(a^2-b^2\right)\text{AppellF1}\left[\frac{1}{4},\frac{1}{2},1,\frac{5}{4},\text{Cos}[c+d x]^2,\frac{b^2\,\text{Cos}[c+d x]^2}{-a^2+b^2}\right]\sqrt{\text{Cos}[c+d x]}\right)\Big/$$

$$\left(\sqrt{1-\text{Cos}[c+d x]^2}\left(5\left(a^2-b^2\right)\text{AppellF1}\left[\frac{1}{4},\frac{1}{2},1,\frac{5}{4},\text{Cos}[c+d x]^2,\frac{b^2\,\text{Cos}[c+d x]^2}{-a^2+b^2}\right]-2\left(2\,b^2\,\text{AppellF1}\left[\frac{5}{4},\frac{1}{2},2,\frac{9}{4},\right.\right.\right.\right.$$

$$\left.\left.\text{Cos}[c+d x]^2,\frac{b^2\,\text{Cos}[c+d x]^2}{-a^2+b^2}\right]+\left(-a^2+b^2\right)\text{AppellF1}\left[\frac{5}{4},\frac{3}{2},1,\frac{9}{4},\text{Cos}[c+d x]^2,\frac{b^2\,\text{Cos}[c+d x]^2}{-a^2+b^2}\right]\right)\text{Cos}[c+d x]^2\right)$$

$$\left.\left(a^2+b^2\left(-1+\text{Cos}[c+d x]^2\right)\right)\right)-\left(36\,a\left(a^2-b^2\right)\text{AppellF1}\left[\frac{5}{4},\frac{1}{2},1,\frac{9}{4},\text{Cos}[c+d x]^2,\frac{b^2\,\text{Cos}[c+d x]^2}{-a^2+b^2}\right]\text{Cos}[c+d x]^{5/2}\right)\Big/$$

$$\left(5\sqrt{1-\text{Cos}[c+d x]^2}\left(9\left(a^2-b^2\right)\text{AppellF1}\left[\frac{5}{4},\frac{1}{2},1,\frac{9}{4},\text{Cos}[c+d x]^2,\frac{b^2\,\text{Cos}[c+d x]^2}{-a^2+b^2}\right]-\right.\right.$$

$$2\left(2\,b^2\,\text{AppellF1}\left[\frac{9}{4},\frac{1}{2},2,\frac{13}{4},\text{Cos}[c+d x]^2,\frac{b^2\,\text{Cos}[c+d x]^2}{-a^2+b^2}\right]+\left(-a^2+b^2\right)\right.$$

$$\left.\left.\left.\text{AppellF1}\left[\frac{9}{4},\frac{3}{2},1,\frac{13}{4},\text{Cos}[c+d x]^2,\frac{b^2\,\text{Cos}[c+d x]^2}{-a^2+b^2}\right]\right)\text{Cos}[c+d x]^2\right)\left(a^2+b^2\left(-1+\text{Cos}[c+d x]^2\right)\right)\right)+$$

$$\frac{1}{b^{3/2}\left(-a^2+b^2\right)^{3/4}}\left(\frac{1}{4}-\frac{i}{4}\right)\left(-2\,a^2+b^2\right)\text{Log}\left[\sqrt{-a^2+b^2}-(1+i)\sqrt{b}\left(-a^2+b^2\right)^{1/4}\sqrt{\text{Cos}[c+d x]}+i\,b\,\text{Cos}[c+d x]\right]-$$

$$\left.\frac{1}{b^{3/2}\left(-a^2+b^2\right)^{3/4}}\left(\frac{1}{4}-\frac{i}{4}\right)\left(-2\,a^2+b^2\right)\text{Log}\left[\sqrt{-a^2+b^2}+(1+i)\sqrt{b}\left(-a^2+b^2\right)^{1/4}\sqrt{\text{Cos}[c+d x]}+i\,b\,\text{Cos}[c+d x]\right]\right)\text{Sin}[c+d x]-$$

$$\frac{1}{\left(1-\text{Cos}[c+d x]^2\right)(a+b\,\text{Sin}[c+d x])}\,2\left(25\,a^3-37\,a\,b^2\right)\left(a+b\sqrt{1-\text{Cos}[c+d x]^2}\right)$$

$$\left(\left(5\,b\left(a^2-b^2\right)\text{AppellF1}\left[\frac{1}{4},-\frac{1}{2},1,\frac{5}{4},\text{Cos}[c+d x]^2,\frac{b^2\,\text{Cos}[c+d x]^2}{-a^2+b^2}\right]\sqrt{\text{Cos}[c+d x]}\,\sqrt{1-\text{Cos}[c+d x]^2}\right)\Big/\right.$$

$$\left(\left(-5\left(a^2-b^2\right)\text{AppellF1}\left[\frac{1}{4},-\frac{1}{2},1,\frac{5}{4},\text{Cos}[c+d x]^2,\frac{b^2\,\text{Cos}[c+d x]^2}{-a^2+b^2}\right]+2\left(2\,b^2\,\text{AppellF1}\left[\frac{5}{4},-\frac{1}{2},2,\frac{9}{4},\text{Cos}[c+d x]^2,\right.\right.\right.\right.$$

$$\frac{b^2 \operatorname{Cos}[c+d x]^2}{-a^2+b^2}\Big]+\left(a^2-b^2\right) \operatorname{AppellF1}\Big[\frac{5}{4}, \frac{1}{2}, 1, \frac{9}{4}, \operatorname{Cos}[c+d x]^2, \frac{b^2 \operatorname{Cos}[c+d x]^2}{-a^2+b^2}\Big]\Big) \operatorname{Cos}[c+d x]^2\Big)$$

$$\left(a^2+b^2\left(-1+\operatorname{Cos}[c+d x]^2\right)\right)\Big)+\frac{1}{4 \sqrt{2} \sqrt{b}\left(a^2-b^2\right)^{3/4}} a\Big(-2 \operatorname{ArcTan}\Big[1-\frac{\sqrt{2} \sqrt{b} \sqrt{\operatorname{Cos}[c+d x]}}{\left(a^2-b^2\right)^{1/4}}\Big]+$$

$$2 \operatorname{ArcTan}\Big[1+\frac{\sqrt{2} \sqrt{b} \sqrt{\operatorname{Cos}[c+d x]}}{\left(a^2-b^2\right)^{1/4}}\Big]-\operatorname{Log}\Big[\sqrt{a^2-b^2}-\sqrt{2} \sqrt{b}\left(a^2-b^2\right)^{1/4} \sqrt{\operatorname{Cos}[c+d x]}+b \operatorname{Cos}[c+d x]\Big]+$$

$$\operatorname{Log}\Big[\sqrt{a^2-b^2}+\sqrt{2} \sqrt{b}\left(a^2-b^2\right)^{1/4} \sqrt{\operatorname{Cos}[c+d x]}+b \operatorname{Cos}[c+d x]\Big]\Big)\Big) \operatorname{Sin}[c+d x]^2\Big)$$

- **Problem 596: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int \frac{(e \operatorname{Cos}[c+d x])^{9/2}}{(a+b \operatorname{Sin}[c+d x])^3} \, dx$$

Optimal (type 4, 483 leaves, 14 steps):

$$\frac{7\left(5 a^2-2 b^2\right) e^{9/2} \operatorname{ArcTan}\Big[\frac{\sqrt{b} \sqrt{e \operatorname{Cos}[c+d x]}}{\left(-a^2+b^2\right)^{1/4} \sqrt{e}}\Big]}{8 b^{9/2}\left(-a^2+b^2\right)^{1/4} d}-\frac{7\left(5 a^2-2 b^2\right) e^{9/2} \operatorname{ArcTanh}\Big[\frac{\sqrt{b} \sqrt{e \operatorname{Cos}[c+d x]}}{\left(-a^2+b^2\right)^{1/4} \sqrt{e}}\Big]}{8 b^{9/2}\left(-a^2+b^2\right)^{1/4} d}-$$

$$\frac{35 a e^4 \sqrt{e \operatorname{Cos}[c+d x]} \operatorname{EllipticE}\Big[\frac{1}{2}(c+d x), 2\Big]}{4 b^4 d \sqrt{\operatorname{Cos}[c+d x]}}+\frac{7 a\left(5 a^2-2 b^2\right) e^5 \sqrt{\operatorname{Cos}[c+d x]} \operatorname{EllipticPi}\Big[\frac{2 b}{b-\sqrt{-a^2+b^2}}, \frac{1}{2}(c+d x), 2\Big]}{8 b^5\left(b-\sqrt{-a^2+b^2}\right) d \sqrt{e \operatorname{Cos}[c+d x]}}+$$

$$\frac{7 a\left(5 a^2-2 b^2\right) e^5 \sqrt{\operatorname{Cos}[c+d x]} \operatorname{EllipticPi}\Big[\frac{2 b}{b+\sqrt{-a^2+b^2}}, \frac{1}{2}(c+d x), 2\Big]}{8 b^5\left(b+\sqrt{-a^2+b^2}\right) d \sqrt{e \operatorname{Cos}[c+d x]}}-$$

$$\frac{e(e \operatorname{Cos}[c+d x])^{7/2}}{2 b d(a+b \operatorname{Sin}[c+d x])^2}-\frac{7 e^3(e \operatorname{Cos}[c+d x])^{3/2}(5 a+2 b \operatorname{Sin}[c+d x])}{12 b^3 d(a+b \operatorname{Sin}[c+d x])}$$

Result (type 6, 1231 leaves):

$$\frac{(e\,\mathrm{Cos}[c+d\,x])^{9/2}\,\mathrm{Sec}[c+d\,x]^4\left(-\frac{2\,\mathrm{Cos}[c+d\,x]}{3\,b^3}+\frac{a^2\,\mathrm{Cos}[c+d\,x]-b^2\,\mathrm{Cos}[c+d\,x]}{2\,b^3\,(a+b\,\mathrm{Sin}[c+d\,x])^2}-\frac{11\,a\,\mathrm{Cos}[c+d\,x]}{4\,b^3\,(a+b\,\mathrm{Sin}[c+d\,x])}\right)}{d}-$$

$$\frac{1}{8\,b^3\,d\,\mathrm{Cos}[c+d\,x]^{9/2}}\,7\,(e\,\mathrm{Cos}[c+d\,x])^{9/2}\left(\frac{1}{6\sqrt{1-\mathrm{Cos}[c+d\,x]^2}\,(a+b\,\mathrm{Sin}[c+d\,x])}\right.$$

$$b\left(a+b\sqrt{1-\mathrm{Cos}[c+d\,x]^2}\right)\left(-\left(56\,a\,(a^2-b^2)\,\mathrm{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},\mathrm{Cos}[c+d\,x]^2,\frac{b^2\,\mathrm{Cos}[c+d\,x]^2}{-a^2+b^2}\right]\mathrm{Cos}[c+d\,x]^{3/2}\right)\Big/\right.$$

$$\left(\sqrt{1-\mathrm{Cos}[c+d\,x]^2}\left(7\,(a^2-b^2)\,\mathrm{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},\mathrm{Cos}[c+d\,x]^2,\frac{b^2\,\mathrm{Cos}[c+d\,x]^2}{-a^2+b^2}\right]-2\left(2\,b^2\,\mathrm{AppellF1}\left[\frac{7}{4},\frac{1}{2},2,\frac{11}{4},\right.\right.\right.\right.$$

$$\left.\left.\left.\mathrm{Cos}[c+d\,x]^2,\frac{b^2\,\mathrm{Cos}[c+d\,x]^2}{-a^2+b^2}\right]+(-a^2+b^2)\,\mathrm{AppellF1}\left[\frac{7}{4},\frac{3}{2},1,\frac{11}{4},\mathrm{Cos}[c+d\,x]^2,\frac{b^2\,\mathrm{Cos}[c+d\,x]^2}{-a^2+b^2}\right]\right)\mathrm{Cos}[c+d\,x]^2\right)$$

$$\left.\left.(a^2+b^2\,(-1+\mathrm{Cos}[c+d\,x]^2))\right)\right)-\frac{1}{\sqrt{b}\,(-a^2+b^2)^{1/4}}(3+3\,i)\left(2\,\mathrm{ArcTan}\left[1-\frac{(1+i)\sqrt{b}\,\sqrt{\mathrm{Cos}[c+d\,x]}}{(-a^2+b^2)^{1/4}}\right]-\right.$$

$$2\,\mathrm{ArcTan}\left[1+\frac{(1+i)\sqrt{b}\,\sqrt{\mathrm{Cos}[c+d\,x]}}{(-a^2+b^2)^{1/4}}\right]-\mathrm{Log}\left[\sqrt{-a^2+b^2}-(1+i)\sqrt{b}\,(-a^2+b^2)^{1/4}\sqrt{\mathrm{Cos}[c+d\,x]}+i\,b\,\mathrm{Cos}[c+d\,x]\right]+$$

$$\left.\left.\mathrm{Log}\left[\sqrt{-a^2+b^2}+(1+i)\sqrt{b}\,(-a^2+b^2)^{1/4}\sqrt{\mathrm{Cos}[c+d\,x]}+i\,b\,\mathrm{Cos}[c+d\,x]\right]\right)\right)\mathrm{Sin}[c+d\,x]-$$

$$\frac{1}{(1-\mathrm{Cos}[c+d\,x]^2)\,(a+b\,\mathrm{Sin}[c+d\,x])}\,10\,a\left(a+b\sqrt{1-\mathrm{Cos}[c+d\,x]^2}\right)$$

$$\left(\left(7\,b\,(a^2-b^2)\,\mathrm{AppellF1}\left[\frac{3}{4},-\frac{1}{2},1,\frac{7}{4},\mathrm{Cos}[c+d\,x]^2,\frac{b^2\,\mathrm{Cos}[c+d\,x]^2}{-a^2+b^2}\right]\mathrm{Cos}[c+d\,x]^{3/2}\sqrt{1-\mathrm{Cos}[c+d\,x]^2}\right)\Big/\left(3\left(-7\,(a^2-b^2)\,\mathrm{AppellF1}\left[\right.\right.\right.\right.$$

$$\frac{3}{4},-\frac{1}{2},1,\frac{7}{4},\mathrm{Cos}[c+d\,x]^2,\frac{b^2\,\mathrm{Cos}[c+d\,x]^2}{-a^2+b^2}\Big]+2\left(2\,b^2\,\mathrm{AppellF1}\left[\frac{7}{4},-\frac{1}{2},2,\frac{11}{4},\mathrm{Cos}[c+d\,x]^2,\frac{b^2\,\mathrm{Cos}[c+d\,x]^2}{-a^2+b^2}\right]+\right.$$

$$\left.\left.\left.(a^2-b^2)\,\mathrm{AppellF1}\left[\frac{7}{4},\frac{1}{2},1,\frac{11}{4},\mathrm{Cos}[c+d\,x]^2,\frac{b^2\,\mathrm{Cos}[c+d\,x]^2}{-a^2+b^2}\right]\right)\mathrm{Cos}[c+d\,x]^2\right)(a^2+b^2\,(-1+\mathrm{Cos}[c+d\,x]^2))\right)+$$

$$\frac{1}{4\sqrt{2}\,b^{3/2}\,(a^2-b^2)^{1/4}}a\left(-2\,\mathrm{ArcTan}\left[1-\frac{\sqrt{2}\sqrt{b}\sqrt{\mathrm{Cos}[c+d\,x]}}{(a^2-b^2)^{1/4}}\right]+2\,\mathrm{ArcTan}\left[1+\frac{\sqrt{2}\sqrt{b}\sqrt{\mathrm{Cos}[c+d\,x]}}{(a^2-b^2)^{1/4}}\right]+\mathrm{Log}\left[\sqrt{a^2-b^2}-\sqrt{2}\sqrt{b}\right.\right.$$

$$\left.\left.\left.(a^2-b^2)^{1/4}\sqrt{\mathrm{Cos}[c+d\,x]}+b\,\mathrm{Cos}[c+d\,x]\right]-\mathrm{Log}\left[\sqrt{a^2-b^2}+\sqrt{2}\sqrt{b}\,(a^2-b^2)^{1/4}\sqrt{\mathrm{Cos}[c+d\,x]}+b\,\mathrm{Cos}[c+d\,x]\right]\right)\right)\mathrm{Sin}[c+d\,x]^2\right)$$

Problem 597: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{(e \cos[c+d x])^{7/2}}{(a+b \sin[c+d x])^3}\, dx$$

Optimal (type 4, 497 leaves, 14 steps):

$$-\frac{5\left(3 a^2-2 b^2\right) e^{7/2} \text{ArcTan}\left[\frac{\sqrt{b}\,\sqrt{e \cos[c+d x]}}{\left(-a^2+b^2\right)^{1/4}\sqrt{e}}\right]}{8 b^{7/2}\left(-a^2+b^2\right)^{3/4} d}-\frac{5\left(3 a^2-2 b^2\right) e^{7/2} \text{ArcTanh}\left[\frac{\sqrt{b}\,\sqrt{e \cos[c+d x]}}{\left(-a^2+b^2\right)^{1/4}\sqrt{e}}\right]}{8 b^{7/2}\left(-a^2+b^2\right)^{3/4} d}-$$
$$\frac{15 a e^4 \sqrt{\cos[c+d x]}\, \text{EllipticF}\left[\frac{1}{2}(c+d x), 2\right]}{4 b^4 d \sqrt{e \cos[c+d x]}}+\frac{5 a\left(3 a^2-2 b^2\right) e^4 \sqrt{\cos[c+d x]}\, \text{EllipticPi}\left[\frac{2 b}{b-\sqrt{-a^2+b^2}}, \frac{1}{2}(c+d x), 2\right]}{8 b^4\left(a^2-b\left(b-\sqrt{-a^2+b^2}\right)\right) d \sqrt{e \cos[c+d x]}}+$$
$$\frac{5 a\left(3 a^2-2 b^2\right) e^4 \sqrt{\cos[c+d x]}\, \text{EllipticPi}\left[\frac{2 b}{b+\sqrt{-a^2+b^2}}, \frac{1}{2}(c+d x), 2\right]}{8 b^4\left(a^2-b\left(b+\sqrt{-a^2+b^2}\right)\right) d \sqrt{e \cos[c+d x]}}-\frac{e (e \cos[c+d x])^{5/2}}{2 b d (a+b \sin[c+d x])^2}-\frac{5 e^3 \sqrt{e \cos[c+d x]}\,(3 a+2 b \sin[c+d x])}{4 b^3 d (a+b \sin[c+d x])}$$

Result (type 6, 2154 leaves):

$$\frac{(e \cos[c+d x])^{7/2} \sec[c+d x]^3\left(\frac{a^2-b^2}{2 b^3 (a+b \sin[c+d x])^2}-\frac{9 a}{4 b^3 (a+b \sin[c+d x])}\right)}{d}-$$
$$\frac{1}{8 b^3 d \cos[c+d x]^{7/2}}(e \cos[c+d x])^{7/2}\left(-\frac{1}{\sqrt{1-\cos[c+d x]^2}\,(a+b \sin[c+d x])}\right.$$
$$12 b\left(a+b \sqrt{1-\cos[c+d x]^2}\right)\left(\left(5 a\left(a^2-b^2\right) \text{AppellF1}\left[\frac{1}{4}, \frac{1}{2}, 1, \frac{5}{4}, \cos[c+d x]^2, \frac{b^2 \cos[c+d x]^2}{-a^2+b^2}\right] \sqrt{\cos[c+d x]}\right)\right/$$
$$\left(\sqrt{1-\cos[c+d x]^2}\left(5\left(a^2-b^2\right) \text{AppellF1}\left[\frac{1}{4}, \frac{1}{2}, 1, \frac{5}{4}, \cos[c+d x]^2, \frac{b^2 \cos[c+d x]^2}{-a^2+b^2}\right]-2\left(2 b^2 \text{AppellF1}\left[\frac{5}{4}, \frac{1}{2}, 2, \frac{9}{4},\right.\right.\right.\right.$$
$$\left.\left.\cos[c+d x]^2, \frac{b^2 \cos[c+d x]^2}{-a^2+b^2}\right]+\left(-a^2+b^2\right) \text{AppellF1}\left[\frac{5}{4}, \frac{3}{2}, 1, \frac{9}{4}, \cos[c+d x]^2, \frac{b^2 \cos[c+d x]^2}{-a^2+b^2}\right]\right) \cos[c+d x]^2\right)$$
$$\left.\left(a^2+b^2\left(-1+\cos[c+d x]^2\right)\right)\right)-\frac{1}{\left(-a^2+b^2\right)^{3/4}}\left(\frac{1}{8}-\frac{i}{8}\right) \sqrt{b}\left(2 \text{ArcTan}\left[1-\frac{(1+i) \sqrt{b}\, \sqrt{\cos[c+d x]}}{\left(-a^2+b^2\right)^{1/4}}\right]-\right.$$
$$2 \text{ArcTan}\left[1+\frac{(1+i) \sqrt{b}\, \sqrt{\cos[c+d x]}}{\left(-a^2+b^2\right)^{1/4}}\right]+\text{Log}\left[\sqrt{-a^2+b^2}-(1+i) \sqrt{b}\left(-a^2+b^2\right)^{1/4} \sqrt{\cos[c+d x]}+i b \cos[c+d x]\right]-$$

$$\text{Log}\left[\sqrt{-a^2+b^2}+(1+i)\sqrt{b}\left(-a^2+b^2\right)^{1/4}\sqrt{\text{Cos}[c+d x]}+i\, b\, \text{Cos}[c+d x]\right]\Bigg)\Bigg)\, \text{Sin}[c+d x]+$$

$$\frac{1}{\sqrt{1-\text{Cos}[c+d x]^2}\left(-1+2\,\text{Cos}[c+d x]^2\right)(a+b\,\text{Sin}[c+d x])}\, 4\, b\left(a+b\sqrt{1-\text{Cos}[c+d x]^2}\right)\text{Cos}[2\,(c+d x)]$$

$$\left(\frac{\left(\frac{1}{2}-\frac{i}{2}\right)\left(-2 a^2+b^2\right)\text{ArcTan}\left[1-\frac{(1+i)\sqrt{b}\sqrt{\text{Cos}[c+d x]}}{\left(-a^2+b^2\right)^{1/4}}\right]}{b^{3/2}\left(-a^2+b^2\right)^{3/4}}-\frac{\left(\frac{1}{2}-\frac{i}{2}\right)\left(-2 a^2+b^2\right)\text{ArcTan}\left[1+\frac{(1+i)\sqrt{b}\sqrt{\text{Cos}[c+d x]}}{\left(-a^2+b^2\right)^{1/4}}\right]}{b^{3/2}\left(-a^2+b^2\right)^{3/4}}+\right.$$

$$\frac{4\sqrt{\text{Cos}[c+d x]}}{b}+\left(10\, a\left(a^2-b^2\right)\text{AppellF1}\left[\frac{1}{4},\frac{1}{2},1,\frac{5}{4},\text{Cos}[c+d x]^2,\frac{b^2\,\text{Cos}[c+d x]^2}{-a^2+b^2}\right]\sqrt{\text{Cos}[c+d x]}\right)\Big/$$

$$\left(\sqrt{1-\text{Cos}[c+d x]^2}\left(5\left(a^2-b^2\right)\text{AppellF1}\left[\frac{1}{4},\frac{1}{2},1,\frac{5}{4},\text{Cos}[c+d x]^2,\frac{b^2\,\text{Cos}[c+d x]^2}{-a^2+b^2}\right]-2\left(2\, b^2\,\text{AppellF1}\left[\frac{5}{4},\frac{1}{2},2,\frac{9}{4},\right.\right.\right.\right.$$

$$\left.\left.\text{Cos}[c+d x]^2,\frac{b^2\,\text{Cos}[c+d x]^2}{-a^2+b^2}\right]+\left(-a^2+b^2\right)\text{AppellF1}\left[\frac{5}{4},\frac{3}{2},1,\frac{9}{4},\text{Cos}[c+d x]^2,\frac{b^2\,\text{Cos}[c+d x]^2}{-a^2+b^2}\right]\right)\text{Cos}[c+d x]^2\Bigg)$$

$$\left.\left(a^2+b^2\left(-1+\text{Cos}[c+d x]^2\right)\right)\right)-\left(36\, a\left(a^2-b^2\right)\text{AppellF1}\left[\frac{5}{4},\frac{1}{2},1,\frac{9}{4},\text{Cos}[c+d x]^2,\frac{b^2\,\text{Cos}[c+d x]^2}{-a^2+b^2}\right]\text{Cos}[c+d x]^{5/2}\right)\Big/$$

$$\left(5\sqrt{1-\text{Cos}[c+d x]^2}\left(9\left(a^2-b^2\right)\text{AppellF1}\left[\frac{5}{4},\frac{1}{2},1,\frac{9}{4},\text{Cos}[c+d x]^2,\frac{b^2\,\text{Cos}[c+d x]^2}{-a^2+b^2}\right]-\right.\right.$$

$$2\left(2\, b^2\,\text{AppellF1}\left[\frac{9}{4},\frac{1}{2},2,\frac{13}{4},\text{Cos}[c+d x]^2,\frac{b^2\,\text{Cos}[c+d x]^2}{-a^2+b^2}\right]+\left(-a^2+b^2\right)\right.$$

$$\left.\left.\left.\text{AppellF1}\left[\frac{9}{4},\frac{3}{2},1,\frac{13}{4},\text{Cos}[c+d x]^2,\frac{b^2\,\text{Cos}[c+d x]^2}{-a^2+b^2}\right]\right)\text{Cos}[c+d x]^2\right)\left(a^2+b^2\left(-1+\text{Cos}[c+d x]^2\right)\right)\right)+$$

$$\frac{1}{b^{3/2}\left(-a^2+b^2\right)^{3/4}}\left(\frac{1}{4}-\frac{i}{4}\right)\left(-2 a^2+b^2\right)\text{Log}\left[\sqrt{-a^2+b^2}-(1+i)\sqrt{b}\left(-a^2+b^2\right)^{1/4}\sqrt{\text{Cos}[c+d x]}+i\, b\,\text{Cos}[c+d x]\right]-$$

$$\left.\frac{1}{b^{3/2}\left(-a^2+b^2\right)^{3/4}}\left(\frac{1}{4}-\frac{i}{4}\right)\left(-2 a^2+b^2\right)\text{Log}\left[\sqrt{-a^2+b^2}+(1+i)\sqrt{b}\left(-a^2+b^2\right)^{1/4}\sqrt{\text{Cos}[c+d x]}+i\, b\,\text{Cos}[c+d x]\right]\right)\text{Sin}[c+d x]-$$

$$\frac{1}{\left(1-\text{Cos}[c+d x]^2\right)(a+b\,\text{Sin}[c+d x])}\, 14\, a\left(a+b\sqrt{1-\text{Cos}[c+d x]^2}\right)$$

$$\left(\left(5\, b\left(a^2-b^2\right)\text{AppellF1}\left[\frac{1}{4},-\frac{1}{2},1,\frac{5}{4},\text{Cos}[c+d x]^2,\frac{b^2\,\text{Cos}[c+d x]^2}{-a^2+b^2}\right]\sqrt{\text{Cos}[c+d x]}\sqrt{1-\text{Cos}[c+d x]^2}\right)\Big/\right.$$

$$\left(\left(-5\left(a^2-b^2\right)\text{AppellF1}\left[\frac{1}{4},-\frac{1}{2},1,\frac{5}{4},\text{Cos}[c+d x]^2,\frac{b^2\,\text{Cos}[c+d x]^2}{-a^2+b^2}\right]+2\left(2 b^2\,\text{AppellF1}\left[\frac{5}{4},-\frac{1}{2},2,\frac{9}{4},\text{Cos}[c+d x]^2,\frac{b^2\,\text{Cos}[c+d x]^2}{-a^2+b^2}\right]+\left(a^2-b^2\right)\text{AppellF1}\left[\frac{5}{4},\frac{1}{2},1,\frac{9}{4},\text{Cos}[c+d x]^2,\frac{b^2\,\text{Cos}[c+d x]^2}{-a^2+b^2}\right]\right)\text{Cos}[c+d x]^2\right)\left(a^2+b^2\left(-1+\text{Cos}[c+d x]^2\right)\right)\right)+\frac{1}{4\sqrt{2}\sqrt{b}\left(a^2-b^2\right)^{3/4}}a\left(-2\,\text{ArcTan}\left[1-\frac{\sqrt{2}\sqrt{b}\sqrt{\text{Cos}[c+d x]}}{\left(a^2-b^2\right)^{1/4}}\right]+2\,\text{ArcTan}\left[1+\frac{\sqrt{2}\sqrt{b}\sqrt{\text{Cos}[c+d x]}}{\left(a^2-b^2\right)^{1/4}}\right]-\text{Log}\left[\sqrt{a^2-b^2}-\sqrt{2}\sqrt{b}\left(a^2-b^2\right)^{1/4}\sqrt{\text{Cos}[c+d x]}+b\,\text{Cos}[c+d x]\right]+\text{Log}\left[\sqrt{a^2-b^2}+\sqrt{2}\sqrt{b}\left(a^2-b^2\right)^{1/4}\sqrt{\text{Cos}[c+d x]}+b\,\text{Cos}[c+d x]\right]\right)\right)\text{Sin}[c+d x]^2\right)$$

- **Problem 598: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int\frac{(e\,\text{Cos}[c+d x])^{5/2}}{(a+b\,\text{Sin}[c+d x])^3}\,dx$$

Optimal (type 4, 505 leaves, 14 steps):

$$\frac{3\left(a^2-2 b^2\right)e^{5/2}\,\text{ArcTan}\left[\frac{\sqrt{b}\sqrt{e\,\text{Cos}[c+d x]}}{\left(-a^2+b^2\right)^{1/4}\sqrt{e}}\right]}{8 b^{5/2}\left(-a^2+b^2\right)^{5/4}d}-\frac{3\left(a^2-2 b^2\right)e^{5/2}\,\text{ArcTanh}\left[\frac{\sqrt{b}\sqrt{e\,\text{Cos}[c+d x]}}{\left(-a^2+b^2\right)^{1/4}\sqrt{e}}\right]}{8 b^{5/2}\left(-a^2+b^2\right)^{5/4}d}+\frac{3 a e^2\sqrt{e\,\text{Cos}[c+d x]}\,\text{EllipticE}\left[\frac{1}{2}(c+d x),2\right]}{4 b^2\left(a^2-b^2\right)d\sqrt{\text{Cos}[c+d x]}}-\frac{3 a\left(a^2-2 b^2\right)e^3\sqrt{\text{Cos}[c+d x]}\,\text{EllipticPi}\left[\frac{2 b}{b-\sqrt{-a^2+b^2}},\frac{1}{2}(c+d x),2\right]}{8 b^3\left(a^2-b^2\right)\left(b-\sqrt{-a^2+b^2}\right)d\sqrt{e\,\text{Cos}[c+d x]}}-\frac{3 a\left(a^2-2 b^2\right)e^3\sqrt{\text{Cos}[c+d x]}\,\text{EllipticPi}\left[\frac{2 b}{b+\sqrt{-a^2+b^2}},\frac{1}{2}(c+d x),2\right]}{8 b^3\left(a^2-b^2\right)\left(b+\sqrt{-a^2+b^2}\right)d\sqrt{e\,\text{Cos}[c+d x]}}-\frac{e\,(e\,\text{Cos}[c+d x])^{3/2}}{2 b d\,(a+b\,\text{Sin}[c+d x])^2}+\frac{3 a e\,(e\,\text{Cos}[c+d x])^{3/2}}{4 b\left(a^2-b^2\right)d\,(a+b\,\text{Sin}[c+d x])}$$

Result (type 6, 1225 leaves):

$$\frac{(e\,\text{Cos}[c+d\,x])^{5/2}\,\text{Sec}[c+d\,x]^2\left(-\frac{\text{Cos}[c+d\,x]}{2\,b\,(a+b\,\text{Sin}[c+d\,x])^2}-\frac{3\,a\,\text{Cos}[c+d\,x]}{4\,b\,(-a^2+b^2)\,(a+b\,\text{Sin}[c+d\,x])}\right)}{d}+$$

$$\frac{1}{8\,(a-b)\,b\,(a+b)\,d\,\text{Cos}[c+d\,x]^{5/2}}\,3\,(e\,\text{Cos}[c+d\,x])^{5/2}\Bigg(\frac{1}{6\sqrt{1-\text{Cos}[c+d\,x]^2}\,(a+b\,\text{Sin}[c+d\,x])}$$

$$b\left(a+b\sqrt{1-\text{Cos}[c+d\,x]^2}\right)\Bigg(-\left(56\,a\,(a^2-b^2)\,\text{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]\text{Cos}[c+d\,x]^{3/2}\right)\Big/$$

$$\Bigg(\sqrt{1-\text{Cos}[c+d\,x]^2}\,\Bigg(7\,(a^2-b^2)\,\text{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]-2\Bigg(2\,b^2\,\text{AppellF1}\left[\frac{7}{4},\frac{1}{2},2,\frac{11}{4},\right.$$

$$\left.\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]+(-a^2+b^2)\,\text{AppellF1}\left[\frac{7}{4},\frac{3}{2},1,\frac{11}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]\Bigg)\text{Cos}[c+d\,x]^2\Bigg)$$

$$\left(a^2+b^2\left(-1+\text{Cos}[c+d\,x]^2\right)\right)\Bigg)-\frac{1}{\sqrt{b}\,(-a^2+b^2)^{1/4}}(3+3\,i)\Bigg(2\,\text{ArcTan}\left[1-\frac{(1+i)\sqrt{b}\sqrt{\text{Cos}[c+d\,x]}}{(-a^2+b^2)^{1/4}}\right]-$$

$$2\,\text{ArcTan}\left[1+\frac{(1+i)\sqrt{b}\sqrt{\text{Cos}[c+d\,x]}}{(-a^2+b^2)^{1/4}}\right]-\text{Log}\left[\sqrt{-a^2+b^2}-(1+i)\sqrt{b}\,(-a^2+b^2)^{1/4}\sqrt{\text{Cos}[c+d\,x]}+i\,b\,\text{Cos}[c+d\,x]\right]+$$

$$\text{Log}\left[\sqrt{-a^2+b^2}+(1+i)\sqrt{b}\,(-a^2+b^2)^{1/4}\sqrt{\text{Cos}[c+d\,x]}+i\,b\,\text{Cos}[c+d\,x]\right]\Bigg)\Bigg)\text{Sin}[c+d\,x]-\frac{1}{\left(1-\text{Cos}[c+d\,x]^2\right)(a+b\,\text{Sin}[c+d\,x])}$$

$$2\,a\left(a+b\sqrt{1-\text{Cos}[c+d\,x]^2}\right)\Bigg(\left(7\,b\,(a^2-b^2)\,\text{AppellF1}\left[\frac{3}{4},-\frac{1}{2},1,\frac{7}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]\text{Cos}[c+d\,x]^{3/2}\sqrt{1-\text{Cos}[c+d\,x]^2}\right)\Big/$$

$$\Bigg(3\Bigg(-7\,(a^2-b^2)\,\text{AppellF1}\left[\frac{3}{4},-\frac{1}{2},1,\frac{7}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]+2\Bigg(2\,b^2\,\text{AppellF1}\left[\frac{7}{4},-\frac{1}{2},2,\frac{11}{4},\text{Cos}[c+d\,x]^2,\right.$$

$$\left.\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]+(a^2-b^2)\,\text{AppellF1}\left[\frac{7}{4},\frac{1}{2},1,\frac{11}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]\Bigg)\text{Cos}[c+d\,x]^2\Bigg)$$

$$\left(a^2+b^2\left(-1+\text{Cos}[c+d\,x]^2\right)\right)\Bigg)+\frac{1}{4\sqrt{2}\,b^{3/2}\,(a^2-b^2)^{1/4}}a\Bigg(-2\,\text{ArcTan}\left[1-\frac{\sqrt{2}\sqrt{b}\sqrt{\text{Cos}[c+d\,x]}}{(a^2-b^2)^{1/4}}\right]+$$

$$2\,\text{ArcTan}\left[1+\frac{\sqrt{2}\sqrt{b}\sqrt{\text{Cos}[c+d\,x]}}{(a^2-b^2)^{1/4}}\right]+\text{Log}\left[\sqrt{a^2-b^2}-\sqrt{2}\sqrt{b}\,(a^2-b^2)^{1/4}\sqrt{\text{Cos}[c+d\,x]}+b\,\text{Cos}[c+d\,x]\right]-$$

$$\text{Log}\left[\sqrt{a^2-b^2}+\sqrt{2}\sqrt{b}\,(a^2-b^2)^{1/4}\sqrt{\text{Cos}[c+d\,x]}+b\,\text{Cos}[c+d\,x]\right]\Bigg)\Bigg)\text{Sin}[c+d\,x]^2\Bigg)$$

- **Problem 599: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int \frac{(e\,\mathrm{Cos}[c+d\,x])^{3/2}}{(a+b\,\mathrm{Sin}[c+d\,x])^3}\,dx$$

Optimal (type 4, 519 leaves, 14 steps):

$$\frac{\left(a^2+2\,b^2\right)\,e^{3/2}\,\mathrm{ArcTan}\left[\frac{\sqrt{b}\,\sqrt{e\,\mathrm{Cos}[c+d\,x]}}{\left(-a^2+b^2\right)^{1/4}\,\sqrt{e}}\right]}{8\,b^{3/2}\,\left(-a^2+b^2\right)^{7/4}\,d}+\frac{\left(a^2+2\,b^2\right)\,e^{3/2}\,\mathrm{ArcTanh}\left[\frac{\sqrt{b}\,\sqrt{e\,\mathrm{Cos}[c+d\,x]}}{\left(-a^2+b^2\right)^{1/4}\,\sqrt{e}}\right]}{8\,b^{3/2}\,\left(-a^2+b^2\right)^{7/4}\,d}-$$

$$\frac{a\,e^2\,\sqrt{\mathrm{Cos}[c+d\,x]}\,\mathrm{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,2\right]}{4\,b^2\,\left(a^2-b^2\right)\,d\,\sqrt{e\,\mathrm{Cos}[c+d\,x]}}+\frac{a\,\left(a^2+2\,b^2\right)\,e^2\,\sqrt{\mathrm{Cos}[c+d\,x]}\,\mathrm{EllipticPi}\left[\frac{2\,b}{b-\sqrt{-a^2+b^2}},\,\frac{1}{2}\,(c+d\,x),\,2\right]}{8\,b^2\,\left(a^2-b^2\right)\,\left(a^2-b\,\left(b-\sqrt{-a^2+b^2}\right)\right)\,d\,\sqrt{e\,\mathrm{Cos}[c+d\,x]}}+$$

$$\frac{a\,\left(a^2+2\,b^2\right)\,e^2\,\sqrt{\mathrm{Cos}[c+d\,x]}\,\mathrm{EllipticPi}\left[\frac{2\,b}{b+\sqrt{-a^2+b^2}},\,\frac{1}{2}\,(c+d\,x),\,2\right]}{8\,b^2\,\left(a^2-b^2\right)\,\left(a^2-b\,\left(b+\sqrt{-a^2+b^2}\right)\right)\,d\,\sqrt{e\,\mathrm{Cos}[c+d\,x]}}-\frac{e\,\sqrt{e\,\mathrm{Cos}[c+d\,x]}}{2\,b\,d\,(a+b\,\mathrm{Sin}[c+d\,x])^2}+\frac{a\,e\,\sqrt{e\,\mathrm{Cos}[c+d\,x]}}{4\,b\,\left(a^2-b^2\right)\,d\,(a+b\,\mathrm{Sin}[c+d\,x])}$$

Result (type 6, 1211 leaves):

$$\frac{(e\,\text{Cos}[c+d\,x])^{3/2}\,\text{Sec}[c+d\,x]\left(-\frac{1}{2\,b\,(a+b\,\text{Sin}[c+d\,x])^2}-\frac{a}{4\,b\,(-a^2+b^2)\,(a+b\,\text{Sin}[c+d\,x])}\right)}{d}-$$

$$\frac{1}{8\,(a-b)\,b\,(a+b)\,d\,\text{Cos}[c+d\,x]^{3/2}}\,(e\,\text{Cos}[c+d\,x])^{3/2}\left(\frac{1}{\sqrt{1-\text{Cos}[c+d\,x]^2}\,(a+b\,\text{Sin}[c+d\,x])}\right.$$

$$4\,b\left(a+b\sqrt{1-\text{Cos}[c+d\,x]^2}\right)\left(\left(5\,a\,(a^2-b^2)\,\text{AppellF1}\left[\frac{1}{4},\frac{1}{2},1,\frac{5}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]\sqrt{\text{Cos}[c+d\,x]}\right)\Big/\right.$$

$$\left(\sqrt{1-\text{Cos}[c+d\,x]^2}\left(5\,(a^2-b^2)\,\text{AppellF1}\left[\frac{1}{4},\frac{1}{2},1,\frac{5}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]-2\left(2\,b^2\,\text{AppellF1}\left[\frac{5}{4},\frac{1}{2},2,\frac{9}{4},\right.\right.\right.\right.$$

$$\left.\left.\left.\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]+(-a^2+b^2)\,\text{AppellF1}\left[\frac{5}{4},\frac{3}{2},1,\frac{9}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]\right)\text{Cos}[c+d\,x]^2\right)$$

$$\left.\left(a^2+b^2\,(-1+\text{Cos}[c+d\,x]^2)\right)\right)-\frac{1}{(-a^2+b^2)^{3/4}}\left(\frac{1}{8}-\frac{i}{8}\right)\sqrt{b}\left(2\,\text{ArcTan}\left[1-\frac{(1+i)\sqrt{b}\sqrt{\text{Cos}[c+d\,x]}}{(-a^2+b^2)^{1/4}}\right]-\right.$$

$$2\,\text{ArcTan}\left[1+\frac{(1+i)\sqrt{b}\sqrt{\text{Cos}[c+d\,x]}}{(-a^2+b^2)^{1/4}}\right]+\text{Log}\left[\sqrt{-a^2+b^2}-(1+i)\sqrt{b}\,(-a^2+b^2)^{1/4}\sqrt{\text{Cos}[c+d\,x]}+i\,b\,\text{Cos}[c+d\,x]\right]-$$

$$\left.\left.\text{Log}\left[\sqrt{-a^2+b^2}+(1+i)\sqrt{b}\,(-a^2+b^2)^{1/4}\sqrt{\text{Cos}[c+d\,x]}+i\,b\,\text{Cos}[c+d\,x]\right]\right)\right)\text{Sin}[c+d\,x]-\frac{1}{(1-\text{Cos}[c+d\,x]^2)\,(a+b\,\text{Sin}[c+d\,x])}$$

$$2\,a\left(a+b\sqrt{1-\text{Cos}[c+d\,x]^2}\right)\left(\left(5\,b\,(a^2-b^2)\,\text{AppellF1}\left[\frac{1}{4},-\frac{1}{2},1,\frac{5}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]\sqrt{\text{Cos}[c+d\,x]}\sqrt{1-\text{Cos}[c+d\,x]^2}\right)\Big/\right.$$

$$\left(\left(-5\,(a^2-b^2)\,\text{AppellF1}\left[\frac{1}{4},-\frac{1}{2},1,\frac{5}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]+2\left(2\,b^2\,\text{AppellF1}\left[\frac{5}{4},-\frac{1}{2},2,\frac{9}{4},\text{Cos}[c+d\,x]^2,\right.\right.\right.\right.$$

$$\left.\left.\left.\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]+(a^2-b^2)\,\text{AppellF1}\left[\frac{5}{4},\frac{1}{2},1,\frac{9}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]\right)\text{Cos}[c+d\,x]^2\right)$$

$$\left.\left(a^2+b^2\,(-1+\text{Cos}[c+d\,x]^2)\right)\right)+\frac{1}{4\sqrt{2}\sqrt{b}\,(a^2-b^2)^{3/4}}a\left(-2\,\text{ArcTan}\left[1-\frac{\sqrt{2}\sqrt{b}\sqrt{\text{Cos}[c+d\,x]}}{(a^2-b^2)^{1/4}}\right]+\right.$$

$$2\,\text{ArcTan}\left[1+\frac{\sqrt{2}\sqrt{b}\sqrt{\text{Cos}[c+d\,x]}}{(a^2-b^2)^{1/4}}\right]-\text{Log}\left[\sqrt{a^2-b^2}-\sqrt{2}\sqrt{b}\,(a^2-b^2)^{1/4}\sqrt{\text{Cos}[c+d\,x]}+b\,\text{Cos}[c+d\,x]\right]+$$

$$\left.\left.\left.\text{Log}\left[\sqrt{a^2-b^2}+\sqrt{2}\sqrt{b}\,(a^2-b^2)^{1/4}\sqrt{\text{Cos}[c+d\,x]}+b\,\text{Cos}[c+d\,x]\right]\right)\right)\text{Sin}[c+d\,x]^2\right)$$

- **Problem 600: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int \frac{\sqrt{e\,\text{Cos}[c+d\,x]}}{(a+b\,\text{Sin}[c+d\,x])^3}\,dx$$

Optimal (type 4, 514 leaves, 14 steps):

$$\frac{(3a^2+2b^2)\sqrt{e}\,\text{ArcTan}\left[\frac{\sqrt{b}\sqrt{e\,\text{Cos}[c+d\,x]}}{(-a^2+b^2)^{1/4}\sqrt{e}}\right]}{8\sqrt{b}\,(-a^2+b^2)^{9/4}\,d}-\frac{(3a^2+2b^2)\sqrt{e}\,\text{ArcTanh}\left[\frac{\sqrt{b}\sqrt{e\,\text{Cos}[c+d\,x]}}{(-a^2+b^2)^{1/4}\sqrt{e}}\right]}{8\sqrt{b}\,(-a^2+b^2)^{9/4}\,d}+$$

$$\frac{5a\sqrt{e\,\text{Cos}[c+d\,x]}\,\text{EllipticE}\left[\frac{1}{2}(c+d\,x),2\right]}{4(a^2-b^2)^2\,d\sqrt{\text{Cos}[c+d\,x]}}+\frac{a(3a^2+2b^2)\,e\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticPi}\left[\frac{2b}{b-\sqrt{-a^2+b^2}},\frac{1}{2}(c+d\,x),2\right]}{8b(a^2-b^2)^2\left(b-\sqrt{-a^2+b^2}\right)d\sqrt{e\,\text{Cos}[c+d\,x]}}+$$

$$\frac{a(3a^2+2b^2)\,e\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticPi}\left[\frac{2b}{b+\sqrt{-a^2+b^2}},\frac{1}{2}(c+d\,x),2\right]}{8b(a^2-b^2)^2\left(b+\sqrt{-a^2+b^2}\right)d\sqrt{e\,\text{Cos}[c+d\,x]}}+\frac{b\,(e\,\text{Cos}[c+d\,x])^{3/2}}{2(a^2-b^2)\,d\,e\,(a+b\,\text{Sin}[c+d\,x])^2}+\frac{5a\,b\,(e\,\text{Cos}[c+d\,x])^{3/2}}{4(a^2-b^2)^2\,d\,e\,(a+b\,\text{Sin}[c+d\,x])}$$

Result (type 6, 1232 leaves):

$$\frac{\sqrt{e\,\text{Cos}[c+d\,x]}\left(\frac{b\,\text{Cos}[c+d\,x]}{2(a^2-b^2)(a+b\,\text{Sin}[c+d\,x])^2}+\frac{5a\,b\,\text{Cos}[c+d\,x]}{4(a^2-b^2)^2(a+b\,\text{Sin}[c+d\,x])}\right)}{d}+$$

$$\frac{1}{8(a-b)^2(a+b)^2\,d\sqrt{\text{Cos}[c+d\,x]}}\sqrt{e\,\text{Cos}[c+d\,x]}\left(\frac{1}{12\sqrt{1-\text{Cos}[c+d\,x]^2}\,(a+b\,\text{Sin}[c+d\,x])}\right.$$

$$(8a^2+2b^2)\left(a+b\sqrt{1-\text{Cos}[c+d\,x]^2}\right)\left(-\left(56a(a^2-b^2)\,\text{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]\text{Cos}[c+d\,x]^{3/2}\right)\right/$$

$$\left(\sqrt{1-\text{Cos}[c+d\,x]^2}\left(7(a^2-b^2)\,\text{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]-2\left(2b^2\,\text{AppellF1}\left[\frac{7}{4},\frac{1}{2},2,\frac{11}{4},\right.\right.\right.\right.$$

$$\left.\left.\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]+(-a^2+b^2)\,\text{AppellF1}\left[\frac{7}{4},\frac{3}{2},1,\frac{11}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]\right)\text{Cos}[c+d\,x]^2\right)$$

$$\left.\left.(a^2+b^2(-1+\text{Cos}[c+d\,x]^2))\right)\right)-\frac{1}{\sqrt{b}\,(-a^2+b^2)^{1/4}}(3+3\,i)\left(2\,\text{ArcTan}\left[1-\frac{(1+i)\sqrt{b}\sqrt{\text{Cos}[c+d\,x]}}{(-a^2+b^2)^{1/4}}\right]-\right.$$

$$2\,\text{ArcTan}\left[1+\frac{(1+i)\sqrt{b}\sqrt{\text{Cos}[c+d\,x]}}{(-a^2+b^2)^{1/4}}\right]-\text{Log}\left[\sqrt{-a^2+b^2}-(1+i)\sqrt{b}\,(-a^2+b^2)^{1/4}\sqrt{\text{Cos}[c+d\,x]}+i\,b\,\text{Cos}[c+d\,x]\right]+$$

$$\left.\left.\mathrm{Log}\left[\sqrt{-a^2+b^2}+(1+i)\sqrt{b}\,(-a^2+b^2)^{1/4}\sqrt{\mathrm{Cos}[c+d\,x]}+i\,b\,\mathrm{Cos}[c+d\,x]\right]\right)\right)\mathrm{Sin}[c+d\,x]-$$

$$\frac{1}{(1-\mathrm{Cos}[c+d\,x]^2)\,(a+b\,\mathrm{Sin}[c+d\,x])}10\,a\,b\left(a+b\sqrt{1-\mathrm{Cos}[c+d\,x]^2}\right)$$

$$\left(\left(7\,b\,(a^2-b^2)\,\mathrm{AppellF1}\left[\frac{3}{4},-\frac{1}{2},1,\frac{7}{4},\mathrm{Cos}[c+d\,x]^2,\frac{b^2\,\mathrm{Cos}[c+d\,x]^2}{-a^2+b^2}\right]\mathrm{Cos}[c+d\,x]^{3/2}\sqrt{1-\mathrm{Cos}[c+d\,x]^2}\right)\Big/\right.$$

$$\left(3\left(-7\,(a^2-b^2)\,\mathrm{AppellF1}\left[\frac{3}{4},-\frac{1}{2},1,\frac{7}{4},\mathrm{Cos}[c+d\,x]^2,\frac{b^2\,\mathrm{Cos}[c+d\,x]^2}{-a^2+b^2}\right]+2\left(2\,b^2\,\mathrm{AppellF1}\left[\frac{7}{4},-\frac{1}{2},2,\frac{11}{4},\mathrm{Cos}[c+d\,x]^2,\right.\right.\right.\right.$$

$$\left.\left.\left.\frac{b^2\,\mathrm{Cos}[c+d\,x]^2}{-a^2+b^2}\right]+(a^2-b^2)\,\mathrm{AppellF1}\left[\frac{7}{4},\frac{1}{2},1,\frac{11}{4},\mathrm{Cos}[c+d\,x]^2,\frac{b^2\,\mathrm{Cos}[c+d\,x]^2}{-a^2+b^2}\right]\right)\mathrm{Cos}[c+d\,x]^2\right)$$

$$\left.\left.(a^2+b^2\,(-1+\mathrm{Cos}[c+d\,x]^2))\right)\right)+\frac{1}{4\sqrt{2}\,b^{3/2}\,(a^2-b^2)^{1/4}}a\left(-2\,\mathrm{ArcTan}\left[1-\frac{\sqrt{2}\,\sqrt{b}\,\sqrt{\mathrm{Cos}[c+d\,x]}}{(a^2-b^2)^{1/4}}\right]+\right.$$

$$2\,\mathrm{ArcTan}\left[1+\frac{\sqrt{2}\,\sqrt{b}\,\sqrt{\mathrm{Cos}[c+d\,x]}}{(a^2-b^2)^{1/4}}\right]+\mathrm{Log}\left[\sqrt{a^2-b^2}-\sqrt{2}\,\sqrt{b}\,(a^2-b^2)^{1/4}\sqrt{\mathrm{Cos}[c+d\,x]}+b\,\mathrm{Cos}[c+d\,x]\right]-$$

$$\left.\left.\mathrm{Log}\left[\sqrt{a^2-b^2}+\sqrt{2}\,\sqrt{b}\,(a^2-b^2)^{1/4}\sqrt{\mathrm{Cos}[c+d\,x]}+b\,\mathrm{Cos}[c+d\,x]\right]\right)\right)\mathrm{Sin}[c+d\,x]^2\Bigg)$$

- **Problem 601: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int\frac{1}{\sqrt{e\,\mathrm{Cos}[c+d\,x]}\,(a+b\,\mathrm{Sin}[c+d\,x])^3}\,dx$$

Optimal (type 4, 520 leaves, 14 steps):

$$-\frac{3\sqrt{b}\,(5\,a^2+2\,b^2)\,\mathrm{ArcTan}\left[\frac{\sqrt{b}\,\sqrt{e\,\mathrm{Cos}[c+d\,x]}}{(-a^2+b^2)^{1/4}\sqrt{e}}\right]}{8\,(-a^2+b^2)^{11/4}\,d\sqrt{e}}-\frac{3\sqrt{b}\,(5\,a^2+2\,b^2)\,\mathrm{ArcTanh}\left[\frac{\sqrt{b}\,\sqrt{e\,\mathrm{Cos}[c+d\,x]}}{(-a^2+b^2)^{1/4}\sqrt{e}}\right]}{8\,(-a^2+b^2)^{11/4}\,d\sqrt{e}}-$$

$$\frac{7\,a\sqrt{\mathrm{Cos}[c+d\,x]}\,\mathrm{EllipticF}\left[\frac{1}{2}(c+d\,x),2\right]}{4\,(a^2-b^2)^2\,d\sqrt{e\,\mathrm{Cos}[c+d\,x]}}+\frac{3\,a\,(5\,a^2+2\,b^2)\sqrt{\mathrm{Cos}[c+d\,x]}\,\mathrm{EllipticPi}\left[\frac{2\,b}{b-\sqrt{-a^2+b^2}},\frac{1}{2}(c+d\,x),2\right]}{8\,(a^2-b^2)^2\left(a^2-b\left(b-\sqrt{-a^2+b^2}\right)\right)d\sqrt{e\,\mathrm{Cos}[c+d\,x]}}+$$

$$\frac{3\,a\,(5\,a^2+2\,b^2)\sqrt{\mathrm{Cos}[c+d\,x]}\,\mathrm{EllipticPi}\left[\frac{2\,b}{b+\sqrt{-a^2+b^2}},\frac{1}{2}(c+d\,x),2\right]}{8\,(a^2-b^2)^2\left(a^2-b\left(b+\sqrt{-a^2+b^2}\right)\right)d\sqrt{e\,\mathrm{Cos}[c+d\,x]}}+\frac{b\sqrt{e\,\mathrm{Cos}[c+d\,x]}}{2\,(a^2-b^2)\,d\,e\,(a+b\,\mathrm{Sin}[c+d\,x])^2}+\frac{7\,a\,b\sqrt{e\,\mathrm{Cos}[c+d\,x]}}{4\,(a^2-b^2)^2\,d\,e\,(a+b\,\mathrm{Sin}[c+d\,x])}$$

Result (type 6, 1226 leaves):

$$\frac{\text{Cos}[c+d\,x]\left(\frac{b}{2\left(a^2-b^2\right)(a+b\,\text{Sin}[c+d\,x])^2}+\frac{7\,a\,b}{4\left(a^2-b^2\right)^2(a+b\,\text{Sin}[c+d\,x])}\right)}{d\sqrt{e\,\text{Cos}[c+d\,x]}}+$$

$$\frac{1}{8\,(a-b)^2\,(a+b)^2\,d\sqrt{e\,\text{Cos}[c+d\,x]}}\sqrt{\text{Cos}[c+d\,x]}\left(-\frac{1}{\sqrt{1-\text{Cos}[c+d\,x]^2}\,(a+b\,\text{Sin}[c+d\,x])}\right.$$

$$2\left(8\,a^2+6\,b^2\right)\left(a+b\sqrt{1-\text{Cos}[c+d\,x]^2}\right)\left(\left(5\,a\left(a^2-b^2\right)\text{AppellF1}\left[\frac{1}{4},\frac{1}{2},1,\frac{5}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]\sqrt{\text{Cos}[c+d\,x]}\right)\right/$$

$$\left(\sqrt{1-\text{Cos}[c+d\,x]^2}\left(5\left(a^2-b^2\right)\text{AppellF1}\left[\frac{1}{4},\frac{1}{2},1,\frac{5}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]-2\left(2\,b^2\,\text{AppellF1}\left[\frac{5}{4},\frac{1}{2},2,\frac{9}{4},\right.\right.\right.\right.$$

$$\left.\left.\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]+\left(-a^2+b^2\right)\text{AppellF1}\left[\frac{5}{4},\frac{3}{2},1,\frac{9}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]\right)\text{Cos}[c+d\,x]^2\Big)$$

$$\left.\left.\left(a^2+b^2\left(-1+\text{Cos}[c+d\,x]^2\right)\right)\right)\right)-\frac{1}{\left(-a^2+b^2\right)^{3/4}}\left(\frac{1}{8}-\frac{i}{8}\right)\sqrt{b}\left(2\,\text{ArcTan}\left[1-\frac{(1+i)\sqrt{b}\sqrt{\text{Cos}[c+d\,x]}}{\left(-a^2+b^2\right)^{1/4}}\right]-\right.$$

$$2\,\text{ArcTan}\left[1+\frac{(1+i)\sqrt{b}\sqrt{\text{Cos}[c+d\,x]}}{\left(-a^2+b^2\right)^{1/4}}\right]+\text{Log}\left[\sqrt{-a^2+b^2}-(1+i)\sqrt{b}\left(-a^2+b^2\right)^{1/4}\sqrt{\text{Cos}[c+d\,x]}+i\,b\,\text{Cos}[c+d\,x]\right]-$$

$$\left.\left.\text{Log}\left[\sqrt{-a^2+b^2}+(1+i)\sqrt{b}\left(-a^2+b^2\right)^{1/4}\sqrt{\text{Cos}[c+d\,x]}+i\,b\,\text{Cos}[c+d\,x]\right]\right)\right)\text{Sin}[c+d\,x]+$$

$$\frac{1}{\left(1-\text{Cos}[c+d\,x]^2\right)(a+b\,\text{Sin}[c+d\,x])}14\,a\,b\left(a+b\sqrt{1-\text{Cos}[c+d\,x]^2}\right)$$

$$\left(\left(5\,b\left(a^2-b^2\right)\text{AppellF1}\left[\frac{1}{4},-\frac{1}{2},1,\frac{5}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]\sqrt{\text{Cos}[c+d\,x]}\sqrt{1-\text{Cos}[c+d\,x]^2}\right)\right/$$

$$\left(\left(-5\left(a^2-b^2\right)\text{AppellF1}\left[\frac{1}{4},-\frac{1}{2},1,\frac{5}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]+2\left(2\,b^2\,\text{AppellF1}\left[\frac{5}{4},-\frac{1}{2},2,\frac{9}{4},\text{Cos}[c+d\,x]^2,\right.\right.\right.\right.$$

$$\left.\left.\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]+\left(a^2-b^2\right)\text{AppellF1}\left[\frac{5}{4},\frac{1}{2},1,\frac{9}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]\right)\text{Cos}[c+d\,x]^2\Big)$$

$$\left.\left.\left(a^2+b^2\left(-1+\text{Cos}[c+d\,x]^2\right)\right)\right)\right)+\frac{1}{4\sqrt{2}\sqrt{b}\left(a^2-b^2\right)^{3/4}}a\left(-2\,\text{ArcTan}\left[1-\frac{\sqrt{2}\sqrt{b}\sqrt{\text{Cos}[c+d\,x]}}{\left(a^2-b^2\right)^{1/4}}\right]+\right.$$

$$2\,\text{ArcTan}\left[1+\frac{\sqrt{2}\sqrt{b}\sqrt{\text{Cos}[c+d\,x]}}{\left(a^2-b^2\right)^{1/4}}\right]-\text{Log}\left[\sqrt{a^2-b^2}-\sqrt{2}\sqrt{b}\left(a^2-b^2\right)^{1/4}\sqrt{\text{Cos}[c+d\,x]}+b\,\text{Cos}[c+d\,x]\right]+$$

$$\text{Log}\left[\sqrt{a^2-b^2}+\sqrt{2}\sqrt{b}\left(a^2-b^2\right)^{1/4}\sqrt{\text{Cos}[c+d x]}+b\,\text{Cos}[c+d x]\right]\Bigg)\Bigg)\,\text{Sin}[c+d x]^2\Bigg)$$

- **Problem 602: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int \frac{1}{(e\,\text{Cos}[c+d x])^{3/2}\,(a+b\,\text{Sin}[c+d x])^3}\,dx$$

Optimal (type 4, 596 leaves, 15 steps):

$$\frac{5\,b^{3/2}\left(7 a^2+2 b^2\right)\text{ArcTan}\left[\frac{\sqrt{b}\,\sqrt{e\,\text{Cos}[c+d x]}}{\left(-a^2+b^2\right)^{1/4}\sqrt{e}}\right]}{8\left(-a^2+b^2\right)^{13/4} d\,e^{3/2}}-\frac{5\,b^{3/2}\left(7 a^2+2 b^2\right)\text{ArcTanh}\left[\frac{\sqrt{b}\,\sqrt{e\,\text{Cos}[c+d x]}}{\left(-a^2+b^2\right)^{1/4}\sqrt{e}}\right]}{8\left(-a^2+b^2\right)^{13/4} d\,e^{3/2}}-$$

$$\frac{a\left(8 a^2+37 b^2\right)\sqrt{e\,\text{Cos}[c+d x]}\,\text{EllipticE}\left[\frac{1}{2}(c+d x),2\right]}{4\left(a^2-b^2\right)^3 d\,e^2\sqrt{\text{Cos}[c+d x]}}-\frac{5\,a\,b\left(7 a^2+2 b^2\right)\sqrt{\text{Cos}[c+d x]}\,\text{EllipticPi}\left[\frac{2 b}{b-\sqrt{-a^2+b^2}},\frac{1}{2}(c+d x),2\right]}{8\left(a^2-b^2\right)^3\left(b-\sqrt{-a^2+b^2}\right) d\,e\sqrt{e\,\text{Cos}[c+d x]}}-$$

$$\frac{5\,a\,b\left(7 a^2+2 b^2\right)\sqrt{\text{Cos}[c+d x]}\,\text{EllipticPi}\left[\frac{2 b}{b+\sqrt{-a^2+b^2}},\frac{1}{2}(c+d x),2\right]}{8\left(a^2-b^2\right)^3\left(b+\sqrt{-a^2+b^2}\right) d\,e\sqrt{e\,\text{Cos}[c+d x]}}+\frac{b}{2\left(a^2-b^2\right) d\,e\sqrt{e\,\text{Cos}[c+d x]}\,(a+b\,\text{Sin}[c+d x])^2}+$$

$$\frac{9\,a\,b}{4\left(a^2-b^2\right)^2 d\,e\sqrt{e\,\text{Cos}[c+d x]}\,(a+b\,\text{Sin}[c+d x])}-\frac{5\,b\left(7 a^2+2 b^2\right)-a\left(8 a^2+37 b^2\right)\text{Sin}[c+d x]}{4\left(a^2-b^2\right)^3 d\,e\sqrt{e\,\text{Cos}[c+d x]}}$$

Result (type 6, 1316 leaves):

$$-\frac{1}{8\,(a-b)^3\,(a+b)^3\,d\,(e\,\text{Cos}[c+d x])^{3/2}}$$

$$\text{Cos}[c+d x]^{3/2}\left(\frac{1}{12\sqrt{1-\text{Cos}[c+d x]^2}\,(a+b\,\text{Sin}[c+d x])}\left(8 a^4+72 a^2 b^2+10 b^4\right)\left(a+b\sqrt{1-\text{Cos}[c+d x]^2}\right)\left(-\left(56\,a\left(a^2-b^2\right)\right.\right.\right.$$

$$\left.\text{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},\text{Cos}[c+d x]^2,\frac{b^2\,\text{Cos}[c+d x]^2}{-a^2+b^2}\right]\text{Cos}[c+d x]^{3/2}\right)\Big/\left(\sqrt{1-\text{Cos}[c+d x]^2}\left(7\left(a^2-b^2\right)\text{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\right.\right.\right.$$

$$\left.\frac{7}{4},\text{Cos}[c+d x]^2,\frac{b^2\,\text{Cos}[c+d x]^2}{-a^2+b^2}\right]-2\left(2 b^2\,\text{AppellF1}\left[\frac{7}{4},\frac{1}{2},2,\frac{11}{4},\text{Cos}[c+d x]^2,\frac{b^2\,\text{Cos}[c+d x]^2}{-a^2+b^2}\right]+\left(-a^2+b^2\right)\text{AppellF1}\left[\right.\right.$$

$$\left.\left.\left.\frac{7}{4},\frac{3}{2},1,\frac{11}{4},\text{Cos}[c+d x]^2,\frac{b^2\,\text{Cos}[c+d x]^2}{-a^2+b^2}\right]\right)\text{Cos}[c+d x]^2\right)\left(a^2+b^2\left(-1+\text{Cos}[c+d x]^2\right)\right)\Bigg)-\frac{1}{\sqrt{b}\left(-a^2+b^2\right)^{1/4}}$$

$$(3+3\,i)\left(2\,\text{ArcTan}\left[1-\frac{(1+i)\,\sqrt{b}\,\sqrt{\text{Cos}[c+d\,x]}}{\left(-a^2+b^2\right)^{1/4}}\right]-2\,\text{ArcTan}\left[1+\frac{(1+i)\,\sqrt{b}\,\sqrt{\text{Cos}[c+d\,x]}}{\left(-a^2+b^2\right)^{1/4}}\right]-\text{Log}\left[\sqrt{-a^2+b^2}-(1+i)\,\sqrt{b}\right.\right.$$

$$\left.\left.\left(-a^2+b^2\right)^{1/4}\sqrt{\text{Cos}[c+d\,x]}+i\,b\,\text{Cos}[c+d\,x]\right]+\text{Log}\left[\sqrt{-a^2+b^2}+(1+i)\,\sqrt{b}\,\left(-a^2+b^2\right)^{1/4}\sqrt{\text{Cos}[c+d\,x]}+i\,b\,\text{Cos}[c+d\,x]\right]\right)\right)$$

$$\text{Sin}[c+d\,x]-\frac{1}{\left(1-\text{Cos}[c+d\,x]^2\right)\,(a+b\,\text{Sin}[c+d\,x])}\,2\,\left(8\,a^3\,b+37\,a\,b^3\right)\,\left(a+b\,\sqrt{1-\text{Cos}[c+d\,x]^2}\right)$$

$$\left(\left(7\,b\,\left(a^2-b^2\right)\,\text{AppellF1}\left[\frac{3}{4},-\frac{1}{2},1,\frac{7}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]\,\text{Cos}[c+d\,x]^{3/2}\,\sqrt{1-\text{Cos}[c+d\,x]^2}\right)\Big/\right.$$

$$\left(3\,\left(-7\,\left(a^2-b^2\right)\,\text{AppellF1}\left[\frac{3}{4},-\frac{1}{2},1,\frac{7}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]+2\,\left(2\,b^2\,\text{AppellF1}\left[\frac{7}{4},-\frac{1}{2},2,\frac{11}{4},\text{Cos}[c+d\,x]^2,\right.\right.\right.\right.$$

$$\left.\left.\left.\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]+\left(a^2-b^2\right)\,\text{AppellF1}\left[\frac{7}{4},\frac{1}{2},1,\frac{11}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]\right)\,\text{Cos}[c+d\,x]^2\right)$$

$$\left.\left(a^2+b^2\,\left(-1+\text{Cos}[c+d\,x]^2\right)\right)\right)+\frac{1}{4\,\sqrt{2}\,b^{3/2}\,\left(a^2-b^2\right)^{1/4}}a\,\left(-2\,\text{ArcTan}\left[1-\frac{\sqrt{2}\,\sqrt{b}\,\sqrt{\text{Cos}[c+d\,x]}}{\left(a^2-b^2\right)^{1/4}}\right]+\right.$$

$$2\,\text{ArcTan}\left[1+\frac{\sqrt{2}\,\sqrt{b}\,\sqrt{\text{Cos}[c+d\,x]}}{\left(a^2-b^2\right)^{1/4}}\right]+\text{Log}\left[\sqrt{a^2-b^2}-\sqrt{2}\,\sqrt{b}\,\left(a^2-b^2\right)^{1/4}\sqrt{\text{Cos}[c+d\,x]}+b\,\text{Cos}[c+d\,x]\right]-$$

$$\left.\left.\text{Log}\left[\sqrt{a^2-b^2}+\sqrt{2}\,\sqrt{b}\,\left(a^2-b^2\right)^{1/4}\sqrt{\text{Cos}[c+d\,x]}+b\,\text{Cos}[c+d\,x]\right]\right)\right)\,\text{Sin}[c+d\,x]^2\right)+$$

$$\frac{1}{d\,(e\,\text{Cos}[c+d\,x])^{3/2}}\text{Cos}[c+d\,x]^2\,\left(-\frac{b^3\,\text{Cos}[c+d\,x]}{2\,\left(a^2-b^2\right)^2\,(a+b\,\text{Sin}[c+d\,x])^2}-\frac{13\,a\,b^3\,\text{Cos}[c+d\,x]}{4\,\left(a^2-b^2\right)^3\,(a+b\,\text{Sin}[c+d\,x])}+\right.$$

$$\left.\frac{2\,\text{Sec}[c+d\,x]\,\left(-3\,a^2\,b-b^3+a^3\,\text{Sin}[c+d\,x]+3\,a\,b^2\,\text{Sin}[c+d\,x]\right)}{\left(a^2-b^2\right)^3}\right)$$

- **Problem 603: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int\frac{1}{(e\,\text{Cos}[c+d\,x])^{5/2}\,(a+b\,\text{Sin}[c+d\,x])^3}\,dx$$

Optimal (type 4, 614 leaves, 15 steps) :

$$-\frac{7 b^{5/2} \left(9 a^2+2 b^2\right) \text{ArcTan}\left[\frac{\sqrt{b} \sqrt{e \text{Cos}[c+d x]}}{\left(-a^2+b^2\right)^{1/4} \sqrt{e}}\right]}{8 \left(-a^2+b^2\right)^{15/4} d e^{5/2}}-\frac{7 b^{5/2} \left(9 a^2+2 b^2\right) \text{ArcTanh}\left[\frac{\sqrt{b} \sqrt{e \text{Cos}[c+d x]}}{\left(-a^2+b^2\right)^{1/4} \sqrt{e}}\right]}{8 \left(-a^2+b^2\right)^{15/4} d e^{5/2}}+$$

$$\frac{a \left(8 a^2+69 b^2\right) \sqrt{\text{Cos}[c+d x]} \text{EllipticF}\left[\frac{1}{2} (c+d x),2\right]}{12 \left(a^2-b^2\right)^3 d e^2 \sqrt{e \text{Cos}[c+d x]}}-\frac{7 a b^2 \left(9 a^2+2 b^2\right) \sqrt{\text{Cos}[c+d x]} \text{EllipticPi}\left[\frac{2 b}{b-\sqrt{-a^2+b^2}},\frac{1}{2} (c+d x),2\right]}{8 \left(a^2-b^2\right)^3 \left(a^2-b \left(b-\sqrt{-a^2+b^2}\right)\right) d e^2 \sqrt{e \text{Cos}[c+d x]}}-$$

$$\frac{7 a b^2 \left(9 a^2+2 b^2\right) \sqrt{\text{Cos}[c+d x]} \text{EllipticPi}\left[\frac{2 b}{b+\sqrt{-a^2+b^2}},\frac{1}{2} (c+d x),2\right]}{8 \left(a^2-b^2\right)^3 \left(a^2-b \left(b+\sqrt{-a^2+b^2}\right)\right) d e^2 \sqrt{e \text{Cos}[c+d x]}}+\frac{b}{2 \left(a^2-b^2\right) d e (e \text{Cos}[c+d x])^{3/2} (a+b \text{Sin}[c+d x])^2}+$$

$$\frac{11 a b}{4 \left(a^2-b^2\right)^2 d e (e \text{Cos}[c+d x])^{3/2} (a+b \text{Sin}[c+d x])}-\frac{7 b \left(9 a^2+2 b^2\right)-a \left(8 a^2+69 b^2\right) \text{Sin}[c+d x]}{12 \left(a^2-b^2\right)^3 d e (e \text{Cos}[c+d x])^{3/2}}$$

Result (type 6, 1308 leaves) :

$$\frac{1}{24 (a-b)^3 (a+b)^3 d (e \text{Cos}[c+d x])^{5/2}}$$

$$\text{Cos}[c+d x]^{5/2} \Bigg(-\frac{1}{\sqrt{1-\text{Cos}[c+d x]^2} (a+b \text{Sin}[c+d x])} 2 \left(8 a^4-120 a^2 b^2-42 b^4\right) \left(a+b \sqrt{1-\text{Cos}[c+d x]^2}\right)$$

$$\Bigg(\Bigg(5 a \left(a^2-b^2\right) \text{AppellF1}\left[\frac{1}{4},\frac{1}{2},1,\frac{5}{4},\text{Cos}[c+d x]^2,\frac{b^2 \text{Cos}[c+d x]^2}{-a^2+b^2}\right] \sqrt{\text{Cos}[c+d x]}\Bigg)\Bigg/\Bigg(\sqrt{1-\text{Cos}[c+d x]^2} \Bigg(5 \left(a^2-b^2\right)$$

$$\text{AppellF1}\left[\frac{1}{4},\frac{1}{2},1,\frac{5}{4},\text{Cos}[c+d x]^2,\frac{b^2 \text{Cos}[c+d x]^2}{-a^2+b^2}\right]-2 \Bigg(2 b^2 \text{AppellF1}\left[\frac{5}{4},\frac{1}{2},2,\frac{9}{4},\text{Cos}[c+d x]^2,\frac{b^2 \text{Cos}[c+d x]^2}{-a^2+b^2}\right]+$$

$$\left(-a^2+b^2\right) \text{AppellF1}\left[\frac{5}{4},\frac{3}{2},1,\frac{9}{4},\text{Cos}[c+d x]^2,\frac{b^2 \text{Cos}[c+d x]^2}{-a^2+b^2}\right]\Bigg) \text{Cos}[c+d x]^2\Bigg) \left(a^2+b^2 \left(-1+\text{Cos}[c+d x]^2\right)\right)\Bigg)-$$

$$\frac{1}{\left(-a^2+b^2\right)^{3/4}} \left(\frac{1}{8}-\frac{i}{8}\right) \sqrt{b} \Bigg(2 \text{ArcTan}\left[1-\frac{(1+i) \sqrt{b} \sqrt{\text{Cos}[c+d x]}}{\left(-a^2+b^2\right)^{1/4}}\right]-2 \text{ArcTan}\left[1+\frac{(1+i) \sqrt{b} \sqrt{\text{Cos}[c+d x]}}{\left(-a^2+b^2\right)^{1/4}}\right]+$$

$$\text{Log}\left[\sqrt{-a^2+b^2}-(1+i) \sqrt{b} \left(-a^2+b^2\right)^{1/4} \sqrt{\text{Cos}[c+d x]}+i b \text{Cos}[c+d x]\right]-$$

$$\text{Log}\left[\sqrt{-a^2+b^2}+(1+i) \sqrt{b} \left(-a^2+b^2\right)^{1/4} \sqrt{\text{Cos}[c+d x]}+i b \text{Cos}[c+d x]\right]\Bigg)\Bigg) \text{Sin}[c+d x]-$$

$$\frac{1}{\left(1-\text{Cos}[c+d x]^2\right) (a+b \text{Sin}[c+d x])} 2 \left(8 a^3 b+69 a b^3\right) \left(a+b \sqrt{1-\text{Cos}[c+d x]^2}\right)$$

$$\left(\left(5\,b\,\left(a^2-b^2\right)\,\text{AppellF1}\left[\frac{1}{4},-\frac{1}{2},1,\frac{5}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]\sqrt{\text{Cos}[c+d\,x]}\,\sqrt{1-\text{Cos}[c+d\,x]^2}\right)\Big/\right.$$

$$\left(\left(-5\,\left(a^2-b^2\right)\,\text{AppellF1}\left[\frac{1}{4},-\frac{1}{2},1,\frac{5}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]+2\,\left(2\,b^2\,\text{AppellF1}\left[\frac{5}{4},-\frac{1}{2},2,\frac{9}{4},\text{Cos}[c+d\,x]^2,\right.\right.\right.\right.$$

$$\left.\left.\left.\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]+\left(a^2-b^2\right)\,\text{AppellF1}\left[\frac{5}{4},\frac{1}{2},1,\frac{9}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]\right)\,\text{Cos}[c+d\,x]^2\right)$$

$$\left.\left.\left(a^2+b^2\,\left(-1+\text{Cos}[c+d\,x]^2\right)\right)\right)+\frac{1}{4\,\sqrt{2}\,\sqrt{b}\,\left(a^2-b^2\right)^{3/4}}a\,\left(-2\,\text{ArcTan}\left[1-\frac{\sqrt{2}\,\sqrt{b}\,\sqrt{\text{Cos}[c+d\,x]}}{\left(a^2-b^2\right)^{1/4}}\right]+\right.$$

$$2\,\text{ArcTan}\left[1+\frac{\sqrt{2}\,\sqrt{b}\,\sqrt{\text{Cos}[c+d\,x]}}{\left(a^2-b^2\right)^{1/4}}\right]-\text{Log}\left[\sqrt{a^2-b^2}-\sqrt{2}\,\sqrt{b}\,\left(a^2-b^2\right)^{1/4}\sqrt{\text{Cos}[c+d\,x]}+b\,\text{Cos}[c+d\,x]\right]+$$

$$\left.\left.\left.\text{Log}\left[\sqrt{a^2-b^2}+\sqrt{2}\,\sqrt{b}\,\left(a^2-b^2\right)^{1/4}\sqrt{\text{Cos}[c+d\,x]}+b\,\text{Cos}[c+d\,x]\right]\right)\right)\,\text{Sin}[c+d\,x]^2\right)+$$

$$\frac{1}{d\,(e\,\text{Cos}[c+d\,x])^{5/2}}\text{Cos}[c+d\,x]^3\,\left(-\frac{b^3}{2\,\left(a^2-b^2\right)^2\,(a+b\,\text{Sin}[c+d\,x])^2}-\frac{15\,a\,b^3}{4\,\left(a^2-b^2\right)^3\,(a+b\,\text{Sin}[c+d\,x])}+\right.$$

$$\left.\frac{2\,\text{Sec}[c+d\,x]^2\,\left(-3\,a^2\,b-b^3+a^3\,\text{Sin}[c+d\,x]+3\,a\,b^2\,\text{Sin}[c+d\,x]\right)}{3\,\left(a^2-b^2\right)^3}\right)$$

- **Problem 604: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int\frac{1}{(e\,\text{Cos}[c+d\,x])^{7/2}\,(a+b\,\text{Sin}[c+d\,x])^3}\,dx$$

Optimal (type 4, 685 leaves, 16 steps) :

$$\frac{9\,b^{7/2}\left(11\,a^2+2\,b^2\right)\text{ArcTan}\left[\frac{\sqrt{b}\,\sqrt{e\,\text{Cos}[c+d\,x]}}{\left(-a^2+b^2\right)^{1/4}\sqrt{e}}\right]}{8\left(-a^2+b^2\right)^{17/4}d\,e^{7/2}}-\frac{9\,b^{7/2}\left(11\,a^2+2\,b^2\right)\text{ArcTanh}\left[\frac{\sqrt{b}\,\sqrt{e\,\text{Cos}[c+d\,x]}}{\left(-a^2+b^2\right)^{1/4}\sqrt{e}}\right]}{8\left(-a^2+b^2\right)^{17/4}d\,e^{7/2}}-$$

$$\frac{3\,a\left(8\,a^4-64\,a^2\,b^2-139\,b^4\right)\sqrt{e\,\text{Cos}[c+d\,x]}\,\text{EllipticE}\left[\frac{1}{2}(c+d\,x),2\right]}{20\left(a^2-b^2\right)^4d\,e^4\sqrt{\text{Cos}[c+d\,x]}}+$$

$$\frac{9\,a\,b^3\left(11\,a^2+2\,b^2\right)\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticPi}\left[\frac{2\,b}{b-\sqrt{-a^2+b^2}},\frac{1}{2}(c+d\,x),2\right]}{8\left(a^2-b^2\right)^4\left(b-\sqrt{-a^2+b^2}\right)d\,e^3\sqrt{e\,\text{Cos}[c+d\,x]}}+$$

$$\frac{9\,a\,b^3\left(11\,a^2+2\,b^2\right)\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticPi}\left[\frac{2\,b}{b+\sqrt{-a^2+b^2}},\frac{1}{2}(c+d\,x),2\right]}{8\left(a^2-b^2\right)^4\left(b+\sqrt{-a^2+b^2}\right)d\,e^3\sqrt{e\,\text{Cos}[c+d\,x]}}+$$

$$\frac{b}{2\left(a^2-b^2\right)d\,e\,(e\,\text{Cos}[c+d\,x])^{5/2}(a+b\,\text{Sin}[c+d\,x])^2}+\frac{13\,a\,b}{4\left(a^2-b^2\right)^2d\,e\,(e\,\text{Cos}[c+d\,x])^{5/2}(a+b\,\text{Sin}[c+d\,x])}-$$

$$\frac{9\,b\left(11\,a^2+2\,b^2\right)-a\left(8\,a^2+109\,b^2\right)\text{Sin}[c+d\,x]}{20\left(a^2-b^2\right)^3d\,e\,(e\,\text{Cos}[c+d\,x])^{5/2}}+\frac{3\left(15\,b^3\left(11\,a^2+2\,b^2\right)+a\left(8\,a^4-64\,a^2\,b^2-139\,b^4\right)\text{Sin}[c+d\,x]\right)}{20\left(a^2-b^2\right)^4d\,e^3\sqrt{e\,\text{Cos}[c+d\,x]}}$$

Result (type 6, 1408 leaves) :

$$-\frac{1}{40\,(a-b)^4\,(a+b)^4\,d\,(e\,\text{Cos}[c+d\,x])^{7/2}}$$

$$3\,\text{Cos}[c+d\,x]^{7/2}\left(\frac{1}{12\sqrt{1-\text{Cos}[c+d\,x]^2}\,(a+b\,\text{Sin}[c+d\,x])}\left(8\,a^6-64\,a^4\,b^2-304\,a^2\,b^4-30\,b^6\right)\left(a+b\sqrt{1-\text{Cos}[c+d\,x]^2}\right)\right.$$

$$\left(-\left(56\,a\left(a^2-b^2\right)\text{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]\text{Cos}[c+d\,x]^{3/2}\right)\Big/\left(\sqrt{1-\text{Cos}[c+d\,x]^2}\left(7\left(a^2-b^2\right)\right.\right.\right.$$

$$\text{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]-2\left(2\,b^2\,\text{AppellF1}\left[\frac{7}{4},\frac{1}{2},2,\frac{11}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]+\right.$$

$$\left.\left.\left(-a^2+b^2\right)\text{AppellF1}\left[\frac{7}{4},\frac{3}{2},1,\frac{11}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]\right)\text{Cos}[c+d\,x]^2\right)\left(a^2+b^2\left(-1+\text{Cos}[c+d\,x]^2\right)\right)\right)-$$

$$\frac{1}{\sqrt{b}\left(-a^2+b^2\right)^{1/4}}(3+3\,i)\left(2\,\text{ArcTan}\left[1-\frac{(1+i)\sqrt{b}\sqrt{\text{Cos}[c+d\,x]}}{\left(-a^2+b^2\right)^{1/4}}\right]-2\,\text{ArcTan}\left[1+\frac{(1+i)\sqrt{b}\sqrt{\text{Cos}[c+d\,x]}}{\left(-a^2+b^2\right)^{1/4}}\right]-\right.$$

$$\text{Log}\left[\sqrt{-a^2+b^2}-(1+i)\sqrt{b}\left(-a^2+b^2\right)^{1/4}\sqrt{\text{Cos}[c+d\,x]}+i\,b\,\text{Cos}[c+d\,x]\right]+$$

$$\text{Log}\left[\sqrt{-a^2+b^2}+(1+i)\sqrt{b}\left(-a^2+b^2\right)^{1/4}\sqrt{\text{Cos}[c+d x]}+i\, b\, \text{Cos}[c+d x]\right]\Bigg)\Bigg)\, \text{Sin}[c+d x]-$$

$$\frac{1}{\left(1-\text{Cos}[c+d x]^2\right)(a+b\,\text{Sin}[c+d x])}\, 2\left(8 a^5 b-64 a^3 b^3-139 a b^5\right)\left(a+b\sqrt{1-\text{Cos}[c+d x]^2}\right)$$

$$\Bigg(\Bigg(7 b\left(a^2-b^2\right)\text{AppellF1}\left[\frac{3}{4},-\frac{1}{2},1,\frac{7}{4},\text{Cos}[c+d x]^2,\frac{b^2\,\text{Cos}[c+d x]^2}{-a^2+b^2}\right]\text{Cos}[c+d x]^{3/2}\sqrt{1-\text{Cos}[c+d x]^2}\Bigg)\Big/$$

$$\Bigg(3\Bigg(-7\left(a^2-b^2\right)\text{AppellF1}\left[\frac{3}{4},-\frac{1}{2},1,\frac{7}{4},\text{Cos}[c+d x]^2,\frac{b^2\,\text{Cos}[c+d x]^2}{-a^2+b^2}\right]+2\Bigg(2 b^2\,\text{AppellF1}\left[\frac{7}{4},-\frac{1}{2},2,\frac{11}{4},\text{Cos}[c+d x]^2,\right.$$

$$\left.\frac{b^2\,\text{Cos}[c+d x]^2}{-a^2+b^2}\right]+\left(a^2-b^2\right)\text{AppellF1}\left[\frac{7}{4},\frac{1}{2},1,\frac{11}{4},\text{Cos}[c+d x]^2,\frac{b^2\,\text{Cos}[c+d x]^2}{-a^2+b^2}\right]\Bigg)\text{Cos}[c+d x]^2\Bigg)$$

$$\left(a^2+b^2\left(-1+\text{Cos}[c+d x]^2\right)\right)\Bigg)\Bigg)+\frac{1}{4\sqrt{2}\, b^{3/2}\left(a^2-b^2\right)^{1/4}}\, a\Bigg(-2\,\text{ArcTan}\left[1-\frac{\sqrt{2}\sqrt{b}\sqrt{\text{Cos}[c+d x]}}{\left(a^2-b^2\right)^{1/4}}\right]+$$

$$2\,\text{ArcTan}\left[1+\frac{\sqrt{2}\sqrt{b}\sqrt{\text{Cos}[c+d x]}}{\left(a^2-b^2\right)^{1/4}}\right]+\text{Log}\left[\sqrt{a^2-b^2}-\sqrt{2}\sqrt{b}\left(a^2-b^2\right)^{1/4}\sqrt{\text{Cos}[c+d x]}+b\,\text{Cos}[c+d x]\right]-$$

$$\text{Log}\left[\sqrt{a^2-b^2}+\sqrt{2}\sqrt{b}\left(a^2-b^2\right)^{1/4}\sqrt{\text{Cos}[c+d x]}+b\,\text{Cos}[c+d x]\right]\Bigg)\Bigg)\,\text{Sin}[c+d x]^2\Bigg)+$$

$$\frac{1}{d\,(e\,\text{Cos}[c+d x])^{7/2}}\text{Cos}[c+d x]^4\Bigg(\frac{b^5\,\text{Cos}[c+d x]}{2\left(a^2-b^2\right)^3(a+b\,\text{Sin}[c+d x])^2}+\frac{21 a b^5\,\text{Cos}[c+d x]}{4\left(a^2-b^2\right)^4(a+b\,\text{Sin}[c+d x])}+$$

$$\frac{2\,\text{Sec}[c+d x]^3\left(-3 a^2 b-b^3+a^3\,\text{Sin}[c+d x]+3 a b^2\,\text{Sin}[c+d x]\right)}{5\left(a^2-b^2\right)^3}+$$

$$\frac{2\,\text{Sec}[c+d x]\left(50 a^2 b^3+10 b^5+3 a^5\,\text{Sin}[c+d x]-24 a^3 b^2\,\text{Sin}[c+d x]-39 a b^4\,\text{Sin}[c+d x]\right)}{5\left(a^2-b^2\right)^4}\Bigg)$$

- **Problem 605: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int\frac{(e\,\text{Cos}[c+d x])^{15/2}}{(a+b\,\text{Sin}[c+d x])^4}\,dx$$

Optimal (type 4, 671 leaves, 16 steps) :

$$\frac{39\,a\left(11a^4-17a^2b^2+6b^4\right)e^{15/2}\,\text{ArcTan}\left[\frac{\sqrt{b}\sqrt{e\,\text{Cos}[c+d\,x]}}{\left(-a^2+b^2\right)^{1/4}\sqrt{e}}\right]}{16\,b^{15/2}\left(-a^2+b^2\right)^{3/4}d}+\frac{39\,a\left(11a^4-17a^2b^2+6b^4\right)e^{15/2}\,\text{ArcTanh}\left[\frac{\sqrt{b}\sqrt{e\,\text{Cos}[c+d\,x]}}{\left(-a^2+b^2\right)^{1/4}\sqrt{e}}\right]}{16\,b^{15/2}\left(-a^2+b^2\right)^{3/4}d}+$$

$$\frac{13\left(231a^4-203a^2b^2+20b^4\right)e^8\sqrt{\text{Cos}[c+d\,x]}\;\text{EllipticF}\left[\frac{1}{2}(c+d\,x),2\right]}{56\,b^8\,d\sqrt{e\,\text{Cos}[c+d\,x]}}-$$

$$\frac{39\,a^2\left(11a^4-17a^2b^2+6b^4\right)e^8\sqrt{\text{Cos}[c+d\,x]}\;\text{EllipticPi}\left[\frac{2b}{b-\sqrt{-a^2+b^2}},\frac{1}{2}(c+d\,x),2\right]}{16\,b^8\left(a^2-b\left(b-\sqrt{-a^2+b^2}\right)\right)d\sqrt{e\,\text{Cos}[c+d\,x]}}-$$

$$\frac{39\,a^2\left(11a^4-17a^2b^2+6b^4\right)e^8\sqrt{\text{Cos}[c+d\,x]}\;\text{EllipticPi}\left[\frac{2b}{b+\sqrt{-a^2+b^2}},\frac{1}{2}(c+d\,x),2\right]}{16\,b^8\left(a^2-b\left(b+\sqrt{-a^2+b^2}\right)\right)d\sqrt{e\,\text{Cos}[c+d\,x]}}-\frac{e\,(e\,\text{Cos}[c+d\,x])^{13/2}}{3\,b\,d\,(a+b\,\text{Sin}[c+d\,x])^3}-$$

$$\frac{13\,e^3\,(e\,\text{Cos}[c+d\,x])^{9/2}\,(11\,a+4\,b\,\text{Sin}[c+d\,x])}{84\,b^3\,d\,(a+b\,\text{Sin}[c+d\,x])^2}-\frac{39\,e^5\,(e\,\text{Cos}[c+d\,x])^{5/2}\left(77a^2-20b^2+22\,a\,b\,\text{Sin}[c+d\,x]\right)}{280\,b^5\,d\,(a+b\,\text{Sin}[c+d\,x])}+$$

$$\frac{13\,e^7\sqrt{e\,\text{Cos}[c+d\,x]}\;\left(21\,a\left(11a^2-6b^2\right)-b\left(77a^2-20b^2\right)\text{Sin}[c+d\,x]\right)}{56\,b^7\,d}$$

Result (type 6, 2302 leaves) :

$$\frac{1}{560\,b^7\,d\,\text{Cos}[c+d\,x]^{15/2}}$$

$$(e\,\text{Cos}[c+d\,x])^{15/2}\left(-\frac{1}{\sqrt{1-\text{Cos}[c+d\,x]^2}\;(a+b\,\text{Sin}[c+d\,x])}\,2\left(4410\,a^3\,b-3418\,a\,b^3\right)\left(a+b\sqrt{1-\text{Cos}[c+d\,x]^2}\right)\left(\left(5\,a\left(a^2-b^2\right)\right.\right.\right.$$

$$\text{AppellF1}\left[\frac{1}{4},\frac{1}{2},1,\frac{5}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]\sqrt{\text{Cos}[c+d\,x]}\Big)\Big/\left(\sqrt{1-\text{Cos}[c+d\,x]^2}\left(5\left(a^2-b^2\right)\text{AppellF1}\left[\frac{1}{4},\frac{1}{2},\right.\right.\right.$$

$$1,\frac{5}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\Big]-2\left(2\,b^2\,\text{AppellF1}\left[\frac{5}{4},\frac{1}{2},2,\frac{9}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]+\left(-a^2+b^2\right)\right.$$

$$\left.\left.\text{AppellF1}\left[\frac{5}{4},\frac{3}{2},1,\frac{9}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]\right)\text{Cos}[c+d\,x]^2\right)\left(a^2+b^2\left(-1+\text{Cos}[c+d\,x]^2\right)\right)\Big)-$$

$$\frac{1}{\left(-a^2+b^2\right)^{3/4}}\left(\frac{1}{8}-\frac{i}{8}\right)\sqrt{b}\left(2\,\text{ArcTan}\left[1-\frac{(1+i)\sqrt{b}\sqrt{\text{Cos}[c+d\,x]}}{\left(-a^2+b^2\right)^{1/4}}\right]-2\,\text{ArcTan}\left[1+\frac{(1+i)\sqrt{b}\sqrt{\text{Cos}[c+d\,x]}}{\left(-a^2+b^2\right)^{1/4}}\right]+\right.$$

$$\text{Log}\left[\sqrt{-a^2+b^2}-(1+i)\sqrt{b}\left(-a^2+b^2\right)^{1/4}\sqrt{\text{Cos}[c+d\,x]}+i\,b\,\text{Cos}[c+d\,x]\right]-$$

$$\text{Log}\left[\sqrt{-a^2+b^2}+(1+i)\sqrt{b}\left(-a^2+b^2\right)^{1/4}\sqrt{\text{Cos}[c+d\,x]}+i\,b\,\text{Cos}[c+d\,x]\right]\Bigg)\Bigg)\,\text{Sin}[c+d\,x]+$$

$$\frac{1}{\sqrt{1-\text{Cos}[c+d\,x]^2}\left(-1+2\,\text{Cos}[c+d\,x]^2\right)(a+b\,\text{Sin}[c+d\,x])}\left(5600\,a^3\,b-3472\,a\,b^3\right)\left(a+b\sqrt{1-\text{Cos}[c+d\,x]^2}\right)\text{Cos}[2\,(c+d\,x)]$$

$$\left(\frac{\left(\frac{1}{2}-\frac{i}{2}\right)\left(-2\,a^2+b^2\right)\text{ArcTan}\left[1-\frac{(1+i)\sqrt{b}\sqrt{\text{Cos}[c+d\,x]}}{\left(-a^2+b^2\right)^{1/4}}\right]}{b^{3/2}\left(-a^2+b^2\right)^{3/4}}-\frac{\left(\frac{1}{2}-\frac{i}{2}\right)\left(-2\,a^2+b^2\right)\text{ArcTan}\left[1+\frac{(1+i)\sqrt{b}\sqrt{\text{Cos}[c+d\,x]}}{\left(-a^2+b^2\right)^{1/4}}\right]}{b^{3/2}\left(-a^2+b^2\right)^{3/4}}+\right.$$

$$\frac{4\sqrt{\text{Cos}[c+d\,x]}}{b}+\left(10\,a\left(a^2-b^2\right)\text{AppellF1}\left[\frac{1}{4},\frac{1}{2},1,\frac{5}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]\sqrt{\text{Cos}[c+d\,x]}\right)\Big/$$

$$\left(\sqrt{1-\text{Cos}[c+d\,x]^2}\left(5\left(a^2-b^2\right)\text{AppellF1}\left[\frac{1}{4},\frac{1}{2},1,\frac{5}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]-2\left(2\,b^2\,\text{AppellF1}\left[\frac{5}{4},\frac{1}{2},2,\frac{9}{4},\right.\right.\right.$$

$$\left.\left.\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]+\left(-a^2+b^2\right)\text{AppellF1}\left[\frac{5}{4},\frac{3}{2},1,\frac{9}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]\right)\text{Cos}[c+d\,x]^2\Big)$$

$$\left.\left(a^2+b^2\left(-1+\text{Cos}[c+d\,x]^2\right)\right)\right)-\left(36\,a\left(a^2-b^2\right)\text{AppellF1}\left[\frac{5}{4},\frac{1}{2},1,\frac{9}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]\text{Cos}[c+d\,x]^{5/2}\right)\Big/$$

$$\left(5\sqrt{1-\text{Cos}[c+d\,x]^2}\left(9\left(a^2-b^2\right)\text{AppellF1}\left[\frac{5}{4},\frac{1}{2},1,\frac{9}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]-\right.\right.$$

$$2\left(2\,b^2\,\text{AppellF1}\left[\frac{9}{4},\frac{1}{2},2,\frac{13}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]+\right.$$

$$\left.\left.\left.\left(-a^2+b^2\right)\text{AppellF1}\left[\frac{9}{4},\frac{3}{2},1,\frac{13}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]\right)\text{Cos}[c+d\,x]^2\right)\left(a^2+b^2\left(-1+\text{Cos}[c+d\,x]^2\right)\right)\right)+$$

$$\frac{1}{b^{3/2}\left(-a^2+b^2\right)^{3/4}}\left(\frac{1}{4}-\frac{i}{4}\right)\left(-2\,a^2+b^2\right)\text{Log}\left[\sqrt{-a^2+b^2}-(1+i)\sqrt{b}\left(-a^2+b^2\right)^{1/4}\sqrt{\text{Cos}[c+d\,x]}+i\,b\,\text{Cos}[c+d\,x]\right]-$$

$$\left.\frac{1}{b^{3/2}\left(-a^2+b^2\right)^{3/4}}\left(\frac{1}{4}-\frac{i}{4}\right)\left(-2\,a^2+b^2\right)\text{Log}\left[\sqrt{-a^2+b^2}+(1+i)\sqrt{b}\left(-a^2+b^2\right)^{1/4}\sqrt{\text{Cos}[c+d\,x]}+i\,b\,\text{Cos}[c+d\,x]\right]\right)\text{Sin}[c+d\,x]-$$

$$\frac{1}{\left(1-\text{Cos}[c+d\,x]^2\right)(a+b\,\text{Sin}[c+d\,x])}\,2\left(3815\,a^4-6251\,a^2\,b^2+1300\,b^4\right)\left(a+b\sqrt{1-\text{Cos}[c+d\,x]^2}\right)$$

$$\left(\left(5\,b\left(a^2-b^2\right)\text{AppellF1}\left[\frac{1}{4},-\frac{1}{2},1,\frac{5}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]\sqrt{\text{Cos}[c+d\,x]}\sqrt{1-\text{Cos}[c+d\,x]^2}\right)\Big/\right.$$

$$\left(\left(-5\left(a^2-b^2\right)\text{AppellF1}\left[\frac{1}{4},-\frac{1}{2},1,\frac{5}{4},\text{Cos}[c+d x]^2,\frac{b^2\,\text{Cos}[c+d x]^2}{-a^2+b^2}\right]+2\left(2 b^2\,\text{AppellF1}\left[\frac{5}{4},-\frac{1}{2},2,\frac{9}{4},\text{Cos}[c+d x]^2,\frac{b^2\,\text{Cos}[c+d x]^2}{-a^2+b^2}\right]+\left(a^2-b^2\right)\text{AppellF1}\left[\frac{5}{4},\frac{1}{2},1,\frac{9}{4},\text{Cos}[c+d x]^2,\frac{b^2\,\text{Cos}[c+d x]^2}{-a^2+b^2}\right]\right)\text{Cos}[c+d x]^2\right)\left(a^2+b^2\left(-1+\text{Cos}[c+d x]^2\right)\right)\right)+\frac{1}{4\sqrt{2}\sqrt{b}\left(a^2-b^2\right)^{3/4}}a\left(-2\,\text{ArcTan}\left[1-\frac{\sqrt{2}\sqrt{b}\sqrt{\text{Cos}[c+d x]}}{\left(a^2-b^2\right)^{1/4}}\right]+2\,\text{ArcTan}\left[1+\frac{\sqrt{2}\sqrt{b}\sqrt{\text{Cos}[c+d x]}}{\left(a^2-b^2\right)^{1/4}}\right]-\text{Log}\left[\sqrt{a^2-b^2}-\sqrt{2}\sqrt{b}\left(a^2-b^2\right)^{1/4}\sqrt{\text{Cos}[c+d x]}+b\,\text{Cos}[c+d x]\right]+\text{Log}\left[\sqrt{a^2-b^2}+\sqrt{2}\sqrt{b}\left(a^2-b^2\right)^{1/4}\sqrt{\text{Cos}[c+d x]}+b\,\text{Cos}[c+d x]\right]\right)\right)\text{Sin}[c+d x]^2\right)+$$

$$\frac{1}{d}(e\,\text{Cos}[c+d x])^{15/2}\,\text{Sec}[c+d x]^7\left(-\frac{4 a\,\text{Cos}[2(c+d x)]}{5 b^5}+\frac{\left(-280 a^2+79 b^2\right)\text{Sin}[c+d x]}{42 b^6}-\frac{\left(-a^2+b^2\right)^3}{3 b^7\,(a+b\,\text{Sin}[c+d x])^3}-\frac{37 a\left(a^2-b^2\right)^2}{12 b^7\,(a+b\,\text{Sin}[c+d x])^2}+\frac{\left(-a^2+b^2\right)\left(-393 a^2+76 b^2\right)}{24 b^7\,(a+b\,\text{Sin}[c+d x])}+\frac{\text{Sin}[3(c+d x)]}{14 b^4}\right)$$

- **Problem 606: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int\frac{(e\,\text{Cos}[c+d x])^{13/2}}{(a+b\,\text{Sin}[c+d x])^4}\,dx$$

Optimal (type 4, 557 leaves, 15 steps):

$$\frac{77\,a\,\left(3\,a^2-2\,b^2\right)\,e^{13/2}\,\text{ArcTan}\left[\frac{\sqrt{b}\,\sqrt{e\,\text{Cos}[c+d\,x]}}{\left(-a^2+b^2\right)^{1/4}\,\sqrt{e}}\right]}{16\,b^{13/2}\,\left(-a^2+b^2\right)^{1/4}\,d}-\frac{77\,a\,\left(3\,a^2-2\,b^2\right)\,e^{13/2}\,\text{ArcTanh}\left[\frac{\sqrt{b}\,\sqrt{e\,\text{Cos}[c+d\,x]}}{\left(-a^2+b^2\right)^{1/4}\,\sqrt{e}}\right]}{16\,b^{13/2}\,\left(-a^2+b^2\right)^{1/4}\,d}-$$

$$\frac{77\,\left(15\,a^2-4\,b^2\right)\,e^6\,\sqrt{e\,\text{Cos}[c+d\,x]}\,\text{EllipticE}\left[\frac{1}{2}\,(c+d\,x),2\right]}{40\,b^6\,d\,\sqrt{\text{Cos}[c+d\,x]}}+\frac{77\,a^2\,\left(3\,a^2-2\,b^2\right)\,e^7\,\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticPi}\left[\frac{2\,b}{b-\sqrt{-a^2+b^2}},\frac{1}{2}\,(c+d\,x),2\right]}{16\,b^7\,\left(b-\sqrt{-a^2+b^2}\right)\,d\,\sqrt{e\,\text{Cos}[c+d\,x]}}+$$

$$\frac{77\,a^2\,\left(3\,a^2-2\,b^2\right)\,e^7\,\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticPi}\left[\frac{2\,b}{b+\sqrt{-a^2+b^2}},\frac{1}{2}\,(c+d\,x),2\right]}{16\,b^7\,\left(b+\sqrt{-a^2+b^2}\right)\,d\,\sqrt{e\,\text{Cos}[c+d\,x]}}-\frac{e\,(e\,\text{Cos}[c+d\,x])^{11/2}}{3\,b\,d\,(a+b\,\text{Sin}[c+d\,x])^3}-$$

$$\frac{11\,e^3\,(e\,\text{Cos}[c+d\,x])^{7/2}\,(9\,a+4\,b\,\text{Sin}[c+d\,x])}{60\,b^3\,d\,(a+b\,\text{Sin}[c+d\,x])^2}-\frac{77\,e^5\,(e\,\text{Cos}[c+d\,x])^{3/2}\,\left(15\,a^2-4\,b^2+6\,a\,b\,\text{Sin}[c+d\,x]\right)}{120\,b^5\,d\,(a+b\,\text{Sin}[c+d\,x])}$$

Result (type 6, 1331 leaves) :

$$-\frac{1}{80\,b^5\,d\,\text{Cos}[c+d\,x]^{13/2}}77\,(e\,\text{Cos}[c+d\,x])^{13/2}$$

$$\left(\frac{1}{2\,\sqrt{1-\text{Cos}[c+d\,x]^2}\,(a+b\,\text{Sin}[c+d\,x])}a\,b\,\left(a+b\,\sqrt{1-\text{Cos}[c+d\,x]^2}\right)\left(-\left(56\,a\,\left(a^2-b^2\right)\,\text{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},\text{Cos}[c+d\,x]^2,\right.\right.\right.\right.$$

$$\left.\left.\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]\text{Cos}[c+d\,x]^{3/2}\right)\Big/\left(\sqrt{1-\text{Cos}[c+d\,x]^2}\,\left(7\,\left(a^2-b^2\right)\,\text{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]-\right.\right.$$

$$2\,\left(2\,b^2\,\text{AppellF1}\left[\frac{7}{4},\frac{1}{2},2,\frac{11}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]+\left(-a^2+b^2\right)\,\text{AppellF1}\left[\frac{7}{4},\frac{3}{2},1,\frac{11}{4},\right.\right.$$

$$\left.\left.\left.\left.\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]\right)\text{Cos}[c+d\,x]^2\right)\left(a^2+b^2\,\left(-1+\text{Cos}[c+d\,x]^2\right)\right)\right)-\frac{1}{\sqrt{b}\,\left(-a^2+b^2\right)^{1/4}}$$

$$(3+3\,i)\,\left(2\,\text{ArcTan}\left[1-\frac{(1+i)\,\sqrt{b}\,\sqrt{\text{Cos}[c+d\,x]}}{\left(-a^2+b^2\right)^{1/4}}\right]-2\,\text{ArcTan}\left[1+\frac{(1+i)\,\sqrt{b}\,\sqrt{\text{Cos}[c+d\,x]}}{\left(-a^2+b^2\right)^{1/4}}\right]-\text{Log}\left[\sqrt{-a^2+b^2}-(1+i)\,\sqrt{b}\right.\right.$$

$$\left.\left.\left.\left(-a^2+b^2\right)^{1/4}\sqrt{\text{Cos}[c+d\,x]}+i\,b\,\text{Cos}[c+d\,x]\right]+\text{Log}\left[\sqrt{-a^2+b^2}+(1+i)\,\sqrt{b}\,\left(-a^2+b^2\right)^{1/4}\sqrt{\text{Cos}[c+d\,x]}+i\,b\,\text{Cos}[c+d\,x]\right]\right)\right)$$

$$\text{Sin}[c+d\,x]-\frac{1}{\left(1-\text{Cos}[c+d\,x]^2\right)\,(a+b\,\text{Sin}[c+d\,x])}2\,\left(15\,a^2-4\,b^2\right)\,\left(a+b\,\sqrt{1-\text{Cos}[c+d\,x]^2}\right)$$

$$\left(\left(7\,b\,(a^2-b^2)\,\text{AppellF1}\left[\frac{3}{4},-\frac{1}{2},1,\frac{7}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]\text{Cos}[c+d\,x]^{3/2}\sqrt{1-\text{Cos}[c+d\,x]^2}\right)\Big/\right.$$

$$\left(3\left(-7\,(a^2-b^2)\,\text{AppellF1}\left[\frac{3}{4},-\frac{1}{2},1,\frac{7}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]+2\left(2\,b^2\,\text{AppellF1}\left[\frac{7}{4},-\frac{1}{2},2,\frac{11}{4},\text{Cos}[c+d\,x]^2,\right.\right.\right.\right.$$

$$\left.\left.\left.\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]+(a^2-b^2)\,\text{AppellF1}\left[\frac{7}{4},\frac{1}{2},1,\frac{11}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]\right)\text{Cos}[c+d\,x]^2\right)$$

$$\left.\left.(a^2+b^2\,(-1+\text{Cos}[c+d\,x]^2))\right)\right)+\frac{1}{4\sqrt{2}\,b^{3/2}\,(a^2-b^2)^{1/4}}a\left(-2\,\text{ArcTan}\left[1-\frac{\sqrt{2}\,\sqrt{b}\,\sqrt{\text{Cos}[c+d\,x]}}{(a^2-b^2)^{1/4}}\right]+\right.$$

$$2\,\text{ArcTan}\left[1+\frac{\sqrt{2}\,\sqrt{b}\,\sqrt{\text{Cos}[c+d\,x]}}{(a^2-b^2)^{1/4}}\right]+\text{Log}\left[\sqrt{a^2-b^2}-\sqrt{2}\,\sqrt{b}\,(a^2-b^2)^{1/4}\sqrt{\text{Cos}[c+d\,x]}+b\,\text{Cos}[c+d\,x]\right]-$$

$$\left.\left.\text{Log}\left[\sqrt{a^2-b^2}+\sqrt{2}\,\sqrt{b}\,(a^2-b^2)^{1/4}\sqrt{\text{Cos}[c+d\,x]}+b\,\text{Cos}[c+d\,x]\right]\right)\right)\text{Sin}[c+d\,x]^2\right)+$$

$$\frac{1}{d}(e\,\text{Cos}[c+d\,x])^{13/2}\,\text{Sec}[c+d\,x]^6\left(-\frac{8\,a\,\text{Cos}[c+d\,x]}{3\,b^5}+\frac{-a^4\,\text{Cos}[c+d\,x]+2\,a^2\,b^2\,\text{Cos}[c+d\,x]-b^4\,\text{Cos}[c+d\,x]}{3\,b^5\,(a+b\,\text{Sin}[c+d\,x])^3}+\right.$$

$$\frac{9\,(a^3\,\text{Cos}[c+d\,x]-a\,b^2\,\text{Cos}[c+d\,x])}{4\,b^5\,(a+b\,\text{Sin}[c+d\,x])^2}+$$

$$\frac{-71\,a^2\,\text{Cos}[c+d\,x]+20\,b^2\,\text{Cos}[c+d\,x]}{8\,b^5\,(a+b\,\text{Sin}[c+d\,x])}+$$

$$\left.\frac{\text{Sin}[2\,(c+d\,x)]}{5\,b^4}\right)$$

- **Problem 607: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int\frac{(e\,\text{Cos}[c+d\,x])^{11/2}}{(a+b\,\text{Sin}[c+d\,x])^4}\,dx$$

Optimal (type 4, 571 leaves, 15 steps):

$$-\frac{15\,a\,(7a^2-6b^2)\,e^{11/2}\,\text{ArcTan}\left[\frac{\sqrt{b}\,\sqrt{e\,\text{Cos}[c+d\,x]}}{(-a^2+b^2)^{1/4}\,\sqrt{e}}\right]}{16\,b^{11/2}\,(-a^2+b^2)^{3/4}\,d}-\frac{15\,a\,(7a^2-6b^2)\,e^{11/2}\,\text{ArcTanh}\left[\frac{\sqrt{b}\,\sqrt{e\,\text{Cos}[c+d\,x]}}{(-a^2+b^2)^{1/4}\,\sqrt{e}}\right]}{16\,b^{11/2}\,(-a^2+b^2)^{3/4}\,d}-$$

$$\frac{5\,(21a^2-4b^2)\,e^6\,\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticF}\left[\frac{1}{2}(c+d\,x),2\right]}{8\,b^6\,d\,\sqrt{e\,\text{Cos}[c+d\,x]}}+\frac{15\,a^2\,(7a^2-6b^2)\,e^6\,\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticPi}\left[\frac{2b}{b-\sqrt{-a^2+b^2}},\frac{1}{2}(c+d\,x),2\right]}{16\,b^6\left(a^2-b\left(b-\sqrt{-a^2+b^2}\right)\right)d\,\sqrt{e\,\text{Cos}[c+d\,x]}}+$$

$$\frac{15\,a^2\,(7a^2-6b^2)\,e^6\,\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticPi}\left[\frac{2b}{b+\sqrt{-a^2+b^2}},\frac{1}{2}(c+d\,x),2\right]}{16\,b^6\left(a^2-b\left(b+\sqrt{-a^2+b^2}\right)\right)d\,\sqrt{e\,\text{Cos}[c+d\,x]}}-\frac{e\,(e\,\text{Cos}[c+d\,x])^{9/2}}{3\,b\,d\,(a+b\,\text{Sin}[c+d\,x])^3}-$$

$$\frac{e^3\,(e\,\text{Cos}[c+d\,x])^{5/2}\,(7a+4b\,\text{Sin}[c+d\,x])}{4\,b^3\,d\,(a+b\,\text{Sin}[c+d\,x])^2}-\frac{5\,e^5\,\sqrt{e\,\text{Cos}[c+d\,x]}\,\left(21a^2-4b^2+14\,a\,b\,\text{Sin}[c+d\,x]\right)}{8\,b^5\,d\,(a+b\,\text{Sin}[c+d\,x])}$$

Result (type 6, 2220 leaves) :

$$\frac{(e\,\text{Cos}[c+d\,x])^{11/2}\,\text{Sec}[c+d\,x]^5\left(\frac{2\,\text{Sin}[c+d\,x]}{3\,b^4}-\frac{(-a^2+b^2)^2}{3\,b^5\,(a+b\,\text{Sin}[c+d\,x])^3}+\frac{25\,a\,(a^2-b^2)}{12\,b^5\,(a+b\,\text{Sin}[c+d\,x])^2}+\frac{-165\,a^2+52\,b^2}{24\,b^5\,(a+b\,\text{Sin}[c+d\,x])}\right)}{d}-$$

$$\frac{1}{16\,b^5\,d\,\text{Cos}[c+d\,x]^{11/2}}\,(e\,\text{Cos}[c+d\,x])^{11/2}\left(-\frac{1}{\sqrt{1-\text{Cos}[c+d\,x]^2}\,(a+b\,\text{Sin}[c+d\,x])}\right.$$

$$76\,a\,b\left(a+b\sqrt{1-\text{Cos}[c+d\,x]^2}\right)\left(\left(5\,a\,(a^2-b^2)\,\text{AppellF1}\left[\frac{1}{4},\frac{1}{2},1,\frac{5}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]\sqrt{\text{Cos}[c+d\,x]}\right)\Big/\right.$$

$$\left(\sqrt{1-\text{Cos}[c+d\,x]^2}\left(5\,(a^2-b^2)\,\text{AppellF1}\left[\frac{1}{4},\frac{1}{2},1,\frac{5}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]-2\left(2\,b^2\,\text{AppellF1}\left[\frac{5}{4},\frac{1}{2},2,\frac{9}{4},\right.\right.\right.\right.$$

$$\left.\left.\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]+(-a^2+b^2)\,\text{AppellF1}\left[\frac{5}{4},\frac{3}{2},1,\frac{9}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]\right)\text{Cos}[c+d\,x]^2\right)$$

$$\left.\left(a^2+b^2\left(-1+\text{Cos}[c+d\,x]^2\right)\right)\right)-\frac{1}{(-a^2+b^2)^{3/4}}\left(\frac{1}{8}-\frac{i}{8}\right)\sqrt{b}\left(2\,\text{ArcTan}\left[1-\frac{(1+i)\,\sqrt{b}\,\sqrt{\text{Cos}[c+d\,x]}}{(-a^2+b^2)^{1/4}}\right]-\right.$$

$$2\,\text{ArcTan}\left[1+\frac{(1+i)\,\sqrt{b}\,\sqrt{\text{Cos}[c+d\,x]}}{(-a^2+b^2)^{1/4}}\right]+\text{Log}\left[\sqrt{-a^2+b^2}-(1+i)\,\sqrt{b}\,(-a^2+b^2)^{1/4}\sqrt{\text{Cos}[c+d\,x]}+i\,b\,\text{Cos}[c+d\,x]\right]-$$

$$\left.\left.\text{Log}\left[\sqrt{-a^2+b^2}+(1+i)\,\sqrt{b}\,(-a^2+b^2)^{1/4}\sqrt{\text{Cos}[c+d\,x]}+i\,b\,\text{Cos}[c+d\,x]\right]\right)\right)\text{Sin}[c+d\,x]+$$

$$\frac{1}{\sqrt{1-\text{Cos}[c+d\,x]^2}\,\left(-1+2\,\text{Cos}[c+d\,x]^2\right)\,(a+b\,\text{Sin}[c+d\,x])}\,32\,a\,b\,\left(a+b\,\sqrt{1-\text{Cos}[c+d\,x]^2}\right)\,\text{Cos}[2\,(c+d\,x)]$$

$$\left(\frac{\left(\frac{1}{2}-\frac{i}{2}\right)\,\left(-2\,a^2+b^2\right)\,\text{ArcTan}\left[1-\frac{(1+i)\,\sqrt{b}\,\sqrt{\text{Cos}[c+d\,x]}}{\left(-a^2+b^2\right)^{1/4}}\right]}{b^{3/2}\,\left(-a^2+b^2\right)^{3/4}}-\frac{\left(\frac{1}{2}-\frac{i}{2}\right)\,\left(-2\,a^2+b^2\right)\,\text{ArcTan}\left[1+\frac{(1+i)\,\sqrt{b}\,\sqrt{\text{Cos}[c+d\,x]}}{\left(-a^2+b^2\right)^{1/4}}\right]}{b^{3/2}\,\left(-a^2+b^2\right)^{3/4}}+\right.$$

$$\frac{4\,\sqrt{\text{Cos}[c+d\,x]}}{b}+\left(10\,a\,\left(a^2-b^2\right)\,\text{AppellF1}\left[\frac{1}{4},\,\frac{1}{2},\,1,\,\frac{5}{4},\,\text{Cos}[c+d\,x]^2,\,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]\,\sqrt{\text{Cos}[c+d\,x]}\right)\Big/$$

$$\left(\sqrt{1-\text{Cos}[c+d\,x]^2}\,\left(5\,\left(a^2-b^2\right)\,\text{AppellF1}\left[\frac{1}{4},\,\frac{1}{2},\,1,\,\frac{5}{4},\,\text{Cos}[c+d\,x]^2,\,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]-2\,\left(2\,b^2\,\text{AppellF1}\left[\frac{5}{4},\,\frac{1}{2},\,2,\,\frac{9}{4},\right.\right.\right.\right.$$

$$\left.\left.\left.\text{Cos}[c+d\,x]^2,\,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]+\left(-a^2+b^2\right)\,\text{AppellF1}\left[\frac{5}{4},\,\frac{3}{2},\,1,\,\frac{9}{4},\,\text{Cos}[c+d\,x]^2,\,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]\right)\,\text{Cos}[c+d\,x]^2\right)$$

$$\left.\left(a^2+b^2\,\left(-1+\text{Cos}[c+d\,x]^2\right)\right)\right)-\left(36\,a\,\left(a^2-b^2\right)\,\text{AppellF1}\left[\frac{5}{4},\,\frac{1}{2},\,1,\,\frac{9}{4},\,\text{Cos}[c+d\,x]^2,\,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]\,\text{Cos}[c+d\,x]^{5/2}\right)\Big/$$

$$\left(5\,\sqrt{1-\text{Cos}[c+d\,x]^2}\,\left(9\,\left(a^2-b^2\right)\,\text{AppellF1}\left[\frac{5}{4},\,\frac{1}{2},\,1,\,\frac{9}{4},\,\text{Cos}[c+d\,x]^2,\,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]-\right.\right.$$

$$2\,\left(2\,b^2\,\text{AppellF1}\left[\frac{9}{4},\,\frac{1}{2},\,2,\,\frac{13}{4},\,\text{Cos}[c+d\,x]^2,\,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]+\left(-a^2+b^2\right)\right.$$

$$\left.\left.\left.\text{AppellF1}\left[\frac{9}{4},\,\frac{3}{2},\,1,\,\frac{13}{4},\,\text{Cos}[c+d\,x]^2,\,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]\right)\,\text{Cos}[c+d\,x]^2\right)\,\left(a^2+b^2\,\left(-1+\text{Cos}[c+d\,x]^2\right)\right)\right)+$$

$$\frac{1}{b^{3/2}\,\left(-a^2+b^2\right)^{3/4}}\left(\frac{1}{4}-\frac{i}{4}\right)\,\left(-2\,a^2+b^2\right)\,\text{Log}\left[\sqrt{-a^2+b^2}-(1+i)\,\sqrt{b}\,\left(-a^2+b^2\right)^{1/4}\,\sqrt{\text{Cos}[c+d\,x]}+i\,b\,\text{Cos}[c+d\,x]\right]-$$

$$\left.\frac{1}{b^{3/2}\,\left(-a^2+b^2\right)^{3/4}}\left(\frac{1}{4}-\frac{i}{4}\right)\,\left(-2\,a^2+b^2\right)\,\text{Log}\left[\sqrt{-a^2+b^2}+(1+i)\,\sqrt{b}\,\left(-a^2+b^2\right)^{1/4}\,\sqrt{\text{Cos}[c+d\,x]}+i\,b\,\text{Cos}[c+d\,x]\right]\right)\,\text{Sin}[c+d\,x]-$$

$$\frac{1}{\left(1-\text{Cos}[c+d\,x]^2\right)\,(a+b\,\text{Sin}[c+d\,x])}\,2\,\left(41\,a^2-20\,b^2\right)\,\left(a+b\,\sqrt{1-\text{Cos}[c+d\,x]^2}\right)$$

$$\left(\left(5\,b\,\left(a^2-b^2\right)\,\text{AppellF1}\left[\frac{1}{4},\,-\frac{1}{2},\,1,\,\frac{5}{4},\,\text{Cos}[c+d\,x]^2,\,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]\,\sqrt{\text{Cos}[c+d\,x]}\,\sqrt{1-\text{Cos}[c+d\,x]^2}\right)\Big/\right.$$

$$\left(\left(-5\,\left(a^2-b^2\right)\,\text{AppellF1}\left[\frac{1}{4},\,-\frac{1}{2},\,1,\,\frac{5}{4},\,\text{Cos}[c+d\,x]^2,\,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]+2\,\left(2\,b^2\,\text{AppellF1}\left[\frac{5}{4},\,-\frac{1}{2},\,2,\,\frac{9}{4},\,\text{Cos}[c+d\,x]^2,\right.\right.\right.\right.$$

$$\frac{b^2 \operatorname{Cos}[c+d x]^2}{-a^2+b^2}\Big] + \left(a^2-b^2\right) \operatorname{AppellF1}\Big[\frac{5}{4}, \frac{1}{2}, 1, \frac{9}{4}, \operatorname{Cos}[c+d x]^2, \frac{b^2 \operatorname{Cos}[c+d x]^2}{-a^2+b^2}\Big]\Big) \operatorname{Cos}[c+d x]^2\Big)$$

$$\left(a^2+b^2\left(-1+\operatorname{Cos}[c+d x]^2\right)\right)\Big) + \frac{1}{4\sqrt{2}\sqrt{b}\left(a^2-b^2\right)^{3/4}} a \Big(-2 \operatorname{ArcTan}\Big[1-\frac{\sqrt{2}\sqrt{b}\sqrt{\operatorname{Cos}[c+d x]}}{\left(a^2-b^2\right)^{1/4}}\Big] +$$

$$2 \operatorname{ArcTan}\Big[1+\frac{\sqrt{2}\sqrt{b}\sqrt{\operatorname{Cos}[c+d x]}}{\left(a^2-b^2\right)^{1/4}}\Big] - \operatorname{Log}\Big[\sqrt{a^2-b^2}-\sqrt{2}\sqrt{b}\left(a^2-b^2\right)^{1/4}\sqrt{\operatorname{Cos}[c+d x]}+b \operatorname{Cos}[c+d x]\Big] +$$

$$\operatorname{Log}\Big[\sqrt{a^2-b^2}+\sqrt{2}\sqrt{b}\left(a^2-b^2\right)^{1/4}\sqrt{\operatorname{Cos}[c+d x]}+b \operatorname{Cos}[c+d x]\Big]\Big)\Big) \operatorname{Sin}[c+d x]^2\Big)$$

Problem 608: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{(e \operatorname{Cos}[c+d x])^{9/2}}{(a+b \operatorname{Sin}[c+d x])^4} \, dx$$

Optimal (type 4, 591 leaves, 15 steps):

$$\frac{7 a\left(5 a^2-6 b^2\right) e^{9/2} \operatorname{ArcTan}\Big[\frac{\sqrt{b}\sqrt{e \operatorname{Cos}[c+d x]}}{\left(-a^2+b^2\right)^{1/4}\sqrt{e}}\Big]}{16 b^{9/2}\left(-a^2+b^2\right)^{5/4} d} - \frac{7 a\left(5 a^2-6 b^2\right) e^{9/2} \operatorname{ArcTanh}\Big[\frac{\sqrt{b}\sqrt{e \operatorname{Cos}[c+d x]}}{\left(-a^2+b^2\right)^{1/4}\sqrt{e}}\Big]}{16 b^{9/2}\left(-a^2+b^2\right)^{5/4} d} +$$

$$\frac{7\left(5 a^2-4 b^2\right) e^4 \sqrt{e \operatorname{Cos}[c+d x]} \operatorname{EllipticE}\Big[\frac{1}{2}(c+d x), 2\Big]}{8 b^4\left(a^2-b^2\right) d \sqrt{\operatorname{Cos}[c+d x]}} - \frac{7 a^2\left(5 a^2-6 b^2\right) e^5 \sqrt{\operatorname{Cos}[c+d x]} \operatorname{EllipticPi}\Big[\frac{2 b}{b-\sqrt{-a^2+b^2}}, \frac{1}{2}(c+d x), 2\Big]}{16 b^5\left(a^2-b^2\right)\left(b-\sqrt{-a^2+b^2}\right) d \sqrt{e \operatorname{Cos}[c+d x]}} -$$

$$\frac{7 a^2\left(5 a^2-6 b^2\right) e^5 \sqrt{\operatorname{Cos}[c+d x]} \operatorname{EllipticPi}\Big[\frac{2 b}{b+\sqrt{-a^2+b^2}}, \frac{1}{2}(c+d x), 2\Big]}{16 b^5\left(a^2-b^2\right)\left(b+\sqrt{-a^2+b^2}\right) d \sqrt{e \operatorname{Cos}[c+d x]}} - \frac{e\,(e \operatorname{Cos}[c+d x])^{7/2}}{3 b d\,(a+b \operatorname{Sin}[c+d x])^3} +$$

$$\frac{7\left(5 a^2-4 b^2\right) e^3 (e \operatorname{Cos}[c+d x])^{3/2}}{8 b^3\left(a^2-b^2\right) d\,(a+b \operatorname{Sin}[c+d x])} - \frac{7 e^3 (e \operatorname{Cos}[c+d x])^{3/2}(5 a+4 b \operatorname{Sin}[c+d x])}{12 b^3 d\,(a+b \operatorname{Sin}[c+d x])^2}$$

Result (type 6, 1294 leaves):

$$\frac{(e \operatorname{Cos}[c+d x])^{9/2} \operatorname{Sec}[c+d x]^4\left(\frac{a^2 \operatorname{Cos}[c+d x]-b^2 \operatorname{Cos}[c+d x]}{3 b^3 (a+b \operatorname{Sin}[c+d x])^3}-\frac{5 a \operatorname{Cos}[c+d x]}{4 b^3 (a+b \operatorname{Sin}[c+d x])^2}+\frac{-19 a^2 \operatorname{Cos}[c+d x]+12 b^2 \operatorname{Cos}[c+d x]}{8 b^3\left(-a^2+b^2\right)(a+b \operatorname{Sin}[c+d x])}\right)}{d} +$$

$$\frac{1}{16 (a-b) b^3 (a+b) d \operatorname{Cos}[c+d x]^{9/2}} 7 (e \operatorname{Cos}[c+d x])^{9/2} \Big(\frac{1}{6\sqrt{1-\operatorname{Cos}[c+d x]^2}\,(a+b \operatorname{Sin}[c+d x])}$$

$$a\,b\left(a+b\sqrt{1-\text{Cos}[c+d\,x]^2}\right)\left(-\left(56\,a\left(a^2-b^2\right)\text{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]\text{Cos}[c+d\,x]^{3/2}\right)\Big/\right.$$

$$\left(\sqrt{1-\text{Cos}[c+d\,x]^2}\left(7\left(a^2-b^2\right)\text{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]-2\left(2\,b^2\,\text{AppellF1}\left[\frac{7}{4},\frac{1}{2},2,\frac{11}{4},\right.\right.\right.\right.$$

$$\left.\left.\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]+\left(-a^2+b^2\right)\text{AppellF1}\left[\frac{7}{4},\frac{3}{2},1,\frac{11}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]\right)\text{Cos}[c+d\,x]^2\right)$$

$$\left.\left(a^2+b^2\left(-1+\text{Cos}[c+d\,x]^2\right)\right)\right)-\frac{1}{\sqrt{b}\left(-a^2+b^2\right)^{1/4}}(3+3\,i)\left(2\,\text{ArcTan}\left[1-\frac{(1+i)\sqrt{b}\sqrt{\text{Cos}[c+d\,x]}}{\left(-a^2+b^2\right)^{1/4}}\right]-\right.$$

$$2\,\text{ArcTan}\left[1+\frac{(1+i)\sqrt{b}\sqrt{\text{Cos}[c+d\,x]}}{\left(-a^2+b^2\right)^{1/4}}\right]-\text{Log}\left[\sqrt{-a^2+b^2}-(1+i)\sqrt{b}\left(-a^2+b^2\right)^{1/4}\sqrt{\text{Cos}[c+d\,x]}+i\,b\,\text{Cos}[c+d\,x]\right]+$$

$$\left.\left.\text{Log}\left[\sqrt{-a^2+b^2}+(1+i)\sqrt{b}\left(-a^2+b^2\right)^{1/4}\sqrt{\text{Cos}[c+d\,x]}+i\,b\,\text{Cos}[c+d\,x]\right]\right)\right)\text{Sin}[c+d\,x]-$$

$$\frac{1}{\left(1-\text{Cos}[c+d\,x]^2\right)(a+b\,\text{Sin}[c+d\,x])}2\left(5\,a^2-4\,b^2\right)\left(a+b\sqrt{1-\text{Cos}[c+d\,x]^2}\right)$$

$$\left(\left(7\,b\left(a^2-b^2\right)\text{AppellF1}\left[\frac{3}{4},-\frac{1}{2},1,\frac{7}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]\text{Cos}[c+d\,x]^{3/2}\sqrt{1-\text{Cos}[c+d\,x]^2}\right)\Big/\right.$$

$$\left(3\left(-7\left(a^2-b^2\right)\text{AppellF1}\left[\frac{3}{4},-\frac{1}{2},1,\frac{7}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]+2\left(2\,b^2\,\text{AppellF1}\left[\frac{7}{4},-\frac{1}{2},2,\frac{11}{4},\text{Cos}[c+d\,x]^2,\right.\right.\right.\right.$$

$$\left.\left.\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]+\left(a^2-b^2\right)\text{AppellF1}\left[\frac{7}{4},\frac{1}{2},1,\frac{11}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]\right)\text{Cos}[c+d\,x]^2\right)$$

$$\left.\left(a^2+b^2\left(-1+\text{Cos}[c+d\,x]^2\right)\right)\right)+\frac{1}{4\sqrt{2}\,b^{3/2}\left(a^2-b^2\right)^{1/4}}a\left(-2\,\text{ArcTan}\left[1-\frac{\sqrt{2}\sqrt{b}\sqrt{\text{Cos}[c+d\,x]}}{\left(a^2-b^2\right)^{1/4}}\right]+\right.$$

$$2\,\text{ArcTan}\left[1+\frac{\sqrt{2}\sqrt{b}\sqrt{\text{Cos}[c+d\,x]}}{\left(a^2-b^2\right)^{1/4}}\right]+\text{Log}\left[\sqrt{a^2-b^2}-\sqrt{2}\sqrt{b}\left(a^2-b^2\right)^{1/4}\sqrt{\text{Cos}[c+d\,x]}+b\,\text{Cos}[c+d\,x]\right]-$$

$$\left.\left.\text{Log}\left[\sqrt{a^2-b^2}+\sqrt{2}\sqrt{b}\left(a^2-b^2\right)^{1/4}\sqrt{\text{Cos}[c+d\,x]}+b\,\text{Cos}[c+d\,x]\right]\right)\right)\text{Sin}[c+d\,x]^2\Bigg)$$

- **Problem 609: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int\frac{(e\,\text{Cos}[c+d\,x])^{7/2}}{(a+b\,\text{Sin}[c+d\,x])^4}\,dx$$

Optimal (type 4, 597 leaves, 15 steps):

$$-\frac{5 a \left(a^2-2 b^2\right) e^{7/2} \text{ArcTan}\left[\frac{\sqrt{b} \sqrt{e \text{Cos}[c+d x]}}{\left(-a^2+b^2\right)^{1/4} \sqrt{e}}\right]}{16 b^{7/2} \left(-a^2+b^2\right)^{7/4} d}-\frac{5 a \left(a^2-2 b^2\right) e^{7/2} \text{ArcTanh}\left[\frac{\sqrt{b} \sqrt{e \text{Cos}[c+d x]}}{\left(-a^2+b^2\right)^{1/4} \sqrt{e}}\right]}{16 b^{7/2} \left(-a^2+b^2\right)^{7/4} d}+$$

$$\frac{5 \left(3 a^2-4 b^2\right) e^4 \sqrt{\text{Cos}[c+d x]} \text{EllipticF}\left[\frac{1}{2} (c+d x),2\right]}{24 b^4 \left(a^2-b^2\right) d \sqrt{e \text{Cos}[c+d x]}}-\frac{5 a^2 \left(a^2-2 b^2\right) e^4 \sqrt{\text{Cos}[c+d x]} \text{EllipticPi}\left[\frac{2 b}{b-\sqrt{-a^2+b^2}},\frac{1}{2} (c+d x),2\right]}{16 b^4 \left(a^2-b^2\right) \left(a^2-b \left(b-\sqrt{-a^2+b^2}\right)\right) d \sqrt{e \text{Cos}[c+d x]}}-$$

$$\frac{5 a^2 \left(a^2-2 b^2\right) e^4 \sqrt{\text{Cos}[c+d x]} \text{EllipticPi}\left[\frac{2 b}{b+\sqrt{-a^2+b^2}},\frac{1}{2} (c+d x),2\right]}{16 b^4 \left(a^2-b^2\right) \left(a^2-b \left(b+\sqrt{-a^2+b^2}\right)\right) d \sqrt{e \text{Cos}[c+d x]}}-\frac{e (e \text{Cos}[c+d x])^{5/2}}{3 b d (a+b \text{Sin}[c+d x])^3}-$$

$$\frac{5 \left(3 a^2-4 b^2\right) e^3 \sqrt{e \text{Cos}[c+d x]}}{24 b^3 \left(a^2-b^2\right) d (a+b \text{Sin}[c+d x])}+\frac{5 e^3 \sqrt{e \text{Cos}[c+d x]} (3 a+4 b \text{Sin}[c+d x])}{12 b^3 d (a+b \text{Sin}[c+d x])^2}$$

Result (type 6, 1263 leaves):

$$\frac{(e \text{Cos}[c+d x])^{7/2} \text{Sec}[c+d x]^3 \left(\frac{a^2-b^2}{3 b^3 (a+b \text{Sin}[c+d x])^3}-\frac{13 a}{12 b^3 (a+b \text{Sin}[c+d x])^2}+\frac{-33 a^2+28 b^2}{24 b^3 \left(-a^2+b^2\right) (a+b \text{Sin}[c+d x])}\right)}{d}+$$

$$\frac{1}{48 (a-b) b^3 (a+b) d \text{Cos}[c+d x]^{7/2}} 5 (e \text{Cos}[c+d x])^{7/2} \left(-\frac{1}{\sqrt{1-\text{Cos}[c+d x]^2} (a+b \text{Sin}[c+d x])}\right.$$

$$4 a b \left(a+b \sqrt{1-\text{Cos}[c+d x]^2}\right) \left(\left(5 a \left(a^2-b^2\right) \text{AppellF1}\left[\frac{1}{4},\frac{1}{2},1,\frac{5}{4},\text{Cos}[c+d x]^2,\frac{b^2 \text{Cos}[c+d x]^2}{-a^2+b^2}\right] \sqrt{\text{Cos}[c+d x]}\right)\right/$$

$$\left(\sqrt{1-\text{Cos}[c+d x]^2} \left(5 \left(a^2-b^2\right) \text{AppellF1}\left[\frac{1}{4},\frac{1}{2},1,\frac{5}{4},\text{Cos}[c+d x]^2,\frac{b^2 \text{Cos}[c+d x]^2}{-a^2+b^2}\right]-2 \left(2 b^2 \text{AppellF1}\left[\frac{5}{4},\frac{1}{2},2,\frac{9}{4},\right.\right.\right.\right.$$

$$\left.\left.\text{Cos}[c+d x]^2,\frac{b^2 \text{Cos}[c+d x]^2}{-a^2+b^2}\right]+\left(-a^2+b^2\right) \text{AppellF1}\left[\frac{5}{4},\frac{3}{2},1,\frac{9}{4},\text{Cos}[c+d x]^2,\frac{b^2 \text{Cos}[c+d x]^2}{-a^2+b^2}\right]\right) \text{Cos}[c+d x]^2$$

$$\left.\left.\left(a^2+b^2 \left(-1+\text{Cos}[c+d x]^2\right)\right)\right)-\frac{1}{\left(-a^2+b^2\right)^{3/4}} \left(\frac{1}{8}-\frac{i}{8}\right) \sqrt{b} \left(2 \text{ArcTan}\left[1-\frac{(1+i) \sqrt{b} \sqrt{\text{Cos}[c+d x]}}{\left(-a^2+b^2\right)^{1/4}}\right]-\right.$$

$$2 \text{ArcTan}\left[1+\frac{(1+i) \sqrt{b} \sqrt{\text{Cos}[c+d x]}}{\left(-a^2+b^2\right)^{1/4}}\right]+\text{Log}\left[\sqrt{-a^2+b^2}-(1+i) \sqrt{b} \left(-a^2+b^2\right)^{1/4} \sqrt{\text{Cos}[c+d x]}+i b \text{Cos}[c+d x]\right]-$$

$$\left.\left.\text{Log}\left[\sqrt{-a^2+b^2}+(1+i) \sqrt{b} \left(-a^2+b^2\right)^{1/4} \sqrt{\text{Cos}[c+d x]}+i b \text{Cos}[c+d x]\right]\right)\right) \text{Sin}[c+d x]-$$

$$\frac{1}{\left(1-\text{Cos}[c+d x]^2\right)\,(a+b\,\text{Sin}[c+d x])}\,2\left(3 a^2-4 b^2\right)\left(a+b\sqrt{1-\text{Cos}[c+d x]^2}\right)$$

$$\left(\left(5 b\left(a^2-b^2\right)\text{AppellF1}\left[\frac{1}{4},-\frac{1}{2},1,\frac{5}{4},\text{Cos}[c+d x]^2,\frac{b^2\,\text{Cos}[c+d x]^2}{-a^2+b^2}\right]\sqrt{\text{Cos}[c+d x]}\sqrt{1-\text{Cos}[c+d x]^2}\right)\Big/\right.$$

$$\left(\left(-5\left(a^2-b^2\right)\text{AppellF1}\left[\frac{1}{4},-\frac{1}{2},1,\frac{5}{4},\text{Cos}[c+d x]^2,\frac{b^2\,\text{Cos}[c+d x]^2}{-a^2+b^2}\right]+2\left(2 b^2\,\text{AppellF1}\left[\frac{5}{4},-\frac{1}{2},2,\frac{9}{4},\text{Cos}[c+d x]^2,\right.\right.\right.\right.$$

$$\left.\left.\left.\frac{b^2\,\text{Cos}[c+d x]^2}{-a^2+b^2}\right]+\left(a^2-b^2\right)\text{AppellF1}\left[\frac{5}{4},\frac{1}{2},1,\frac{9}{4},\text{Cos}[c+d x]^2,\frac{b^2\,\text{Cos}[c+d x]^2}{-a^2+b^2}\right]\right)\text{Cos}[c+d x]^2\right)$$

$$\left.\left(a^2+b^2\left(-1+\text{Cos}[c+d x]^2\right)\right)\right)+\frac{1}{4\sqrt{2}\sqrt{b}\left(a^2-b^2\right)^{3/4}}a\left(-2\,\text{ArcTan}\left[1-\frac{\sqrt{2}\sqrt{b}\sqrt{\text{Cos}[c+d x]}}{\left(a^2-b^2\right)^{1/4}}\right]+\right.$$

$$2\,\text{ArcTan}\left[1+\frac{\sqrt{2}\sqrt{b}\sqrt{\text{Cos}[c+d x]}}{\left(a^2-b^2\right)^{1/4}}\right]-\text{Log}\left[\sqrt{a^2-b^2}-\sqrt{2}\sqrt{b}\left(a^2-b^2\right)^{1/4}\sqrt{\text{Cos}[c+d x]}+b\,\text{Cos}[c+d x]\right]+$$

$$\left.\left.\text{Log}\left[\sqrt{a^2-b^2}+\sqrt{2}\sqrt{b}\left(a^2-b^2\right)^{1/4}\sqrt{\text{Cos}[c+d x]}+b\,\text{Cos}[c+d x]\right]\right)\right)\text{Sin}[c+d x]^2\Big)$$

- **Problem 610: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int\frac{(e\,\text{Cos}[c+d x])^{5/2}}{(a+b\,\text{Sin}[c+d x])^4}\,dx$$

Optimal (type 4, 574 leaves, 15 steps):

$$-\frac{a\left(a^2-6 b^2\right)e^{5/2}\,\text{ArcTan}\left[\frac{\sqrt{b}\sqrt{e\,\text{Cos}[c+d x]}}{\left(-a^2+b^2\right)^{1/4}\sqrt{e}}\right]}{16\,b^{5/2}\left(-a^2+b^2\right)^{9/4}d}+\frac{a\left(a^2-6 b^2\right)e^{5/2}\,\text{ArcTanh}\left[\frac{\sqrt{b}\sqrt{e\,\text{Cos}[c+d x]}}{\left(-a^2+b^2\right)^{1/4}\sqrt{e}}\right]}{16\,b^{5/2}\left(-a^2+b^2\right)^{9/4}d}+\frac{\left(a^2+4 b^2\right)e^2\sqrt{e\,\text{Cos}[c+d x]}\,\text{EllipticE}\left[\frac{1}{2}(c+d x),2\right]}{8 b^2\left(a^2-b^2\right)^2 d\sqrt{\text{Cos}[c+d x]}}-$$

$$\frac{a^2\left(a^2-6 b^2\right)e^3\sqrt{\text{Cos}[c+d x]}\,\text{EllipticPi}\left[\frac{2 b}{b-\sqrt{-a^2+b^2}},\frac{1}{2}(c+d x),2\right]}{16\,b^3\left(a^2-b^2\right)^2\left(b-\sqrt{-a^2+b^2}\right)d\sqrt{e\,\text{Cos}[c+d x]}}-\frac{a^2\left(a^2-6 b^2\right)e^3\sqrt{\text{Cos}[c+d x]}\,\text{EllipticPi}\left[\frac{2 b}{b+\sqrt{-a^2+b^2}},\frac{1}{2}(c+d x),2\right]}{16\,b^3\left(a^2-b^2\right)^2\left(b+\sqrt{-a^2+b^2}\right)d\sqrt{e\,\text{Cos}[c+d x]}}-$$

$$\frac{e\,(e\,\text{Cos}[c+d x])^{3/2}}{3 b d\,(a+b\,\text{Sin}[c+d x])^3}+\frac{a e\,(e\,\text{Cos}[c+d x])^{3/2}}{4 b\left(a^2-b^2\right)d\,(a+b\,\text{Sin}[c+d x])^2}+\frac{\left(a^2+4 b^2\right)e\,(e\,\text{Cos}[c+d x])^{3/2}}{8 b\left(a^2-b^2\right)^2 d\,(a+b\,\text{Sin}[c+d x])}$$

Result (type 6, 1286 leaves):

$$\frac{(e\,\text{Cos}[c+d x])^{5/2}\,\text{Sec}[c+d x]^2\left(-\frac{\text{Cos}[c+d x]}{3 b\,(a+b\,\text{Sin}[c+d x])^3}-\frac{a\,\text{Cos}[c+d x]}{4 b\left(-a^2+b^2\right)(a+b\,\text{Sin}[c+d x])^2}+\frac{a^2\,\text{Cos}[c+d x]+4 b^2\,\text{Cos}[c+d x]}{8 b\left(-a^2+b^2\right)^2(a+b\,\text{Sin}[c+d x])}\right)}{d}+$$

$$\frac{1}{16\,(a-b)^2\,b\,(a+b)^2\,d\,\mathrm{Cos}[c+d\,x]^{5/2}}\,(e\,\mathrm{Cos}[c+d\,x])^{5/2}\left(\frac{1}{6\sqrt{1-\mathrm{Cos}[c+d\,x]^2}\,(a+b\,\mathrm{Sin}[c+d\,x])}\right.$$
$$5\,a\,b\left(a+b\sqrt{1-\mathrm{Cos}[c+d\,x]^2}\right)\left(-\left(56\,a\,(a^2-b^2)\,\mathrm{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},\mathrm{Cos}[c+d\,x]^2,\frac{b^2\,\mathrm{Cos}[c+d\,x]^2}{-a^2+b^2}\right]\mathrm{Cos}[c+d\,x]^{3/2}\right)\Big/\right.$$
$$\left(\sqrt{1-\mathrm{Cos}[c+d\,x]^2}\left(7\,(a^2-b^2)\,\mathrm{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},\mathrm{Cos}[c+d\,x]^2,\frac{b^2\,\mathrm{Cos}[c+d\,x]^2}{-a^2+b^2}\right]-2\left(2\,b^2\,\mathrm{AppellF1}\left[\frac{7}{4},\frac{1}{2},2,\frac{11}{4},\right.\right.\right.$$
$$\left.\left.\mathrm{Cos}[c+d\,x]^2,\frac{b^2\,\mathrm{Cos}[c+d\,x]^2}{-a^2+b^2}\right]+(-a^2+b^2)\,\mathrm{AppellF1}\left[\frac{7}{4},\frac{3}{2},1,\frac{11}{4},\mathrm{Cos}[c+d\,x]^2,\frac{b^2\,\mathrm{Cos}[c+d\,x]^2}{-a^2+b^2}\right]\right)\mathrm{Cos}[c+d\,x]^2\Big)$$
$$\left.\left(a^2+b^2\left(-1+\mathrm{Cos}[c+d\,x]^2\right)\right)\right)-\frac{1}{\sqrt{b}\,(-a^2+b^2)^{1/4}}(3+3\,i)\left(2\,\mathrm{ArcTan}\left[1-\frac{(1+i)\sqrt{b}\sqrt{\mathrm{Cos}[c+d\,x]}}{(-a^2+b^2)^{1/4}}\right]-\right.$$
$$2\,\mathrm{ArcTan}\left[1+\frac{(1+i)\sqrt{b}\sqrt{\mathrm{Cos}[c+d\,x]}}{(-a^2+b^2)^{1/4}}\right]-\mathrm{Log}\left[\sqrt{-a^2+b^2}-(1+i)\sqrt{b}\,(-a^2+b^2)^{1/4}\sqrt{\mathrm{Cos}[c+d\,x]}+i\,b\,\mathrm{Cos}[c+d\,x]\right]+$$
$$\left.\left.\mathrm{Log}\left[\sqrt{-a^2+b^2}+(1+i)\sqrt{b}\,(-a^2+b^2)^{1/4}\sqrt{\mathrm{Cos}[c+d\,x]}+i\,b\,\mathrm{Cos}[c+d\,x]\right]\right)\right)\mathrm{Sin}[c+d\,x]-$$
$$\frac{1}{(1-\mathrm{Cos}[c+d\,x]^2)\,(a+b\,\mathrm{Sin}[c+d\,x])}\,2\,(a^2+4\,b^2)\left(a+b\sqrt{1-\mathrm{Cos}[c+d\,x]^2}\right)$$
$$\left(\left(7\,b\,(a^2-b^2)\,\mathrm{AppellF1}\left[\frac{3}{4},-\frac{1}{2},1,\frac{7}{4},\mathrm{Cos}[c+d\,x]^2,\frac{b^2\,\mathrm{Cos}[c+d\,x]^2}{-a^2+b^2}\right]\mathrm{Cos}[c+d\,x]^{3/2}\sqrt{1-\mathrm{Cos}[c+d\,x]^2}\right)\Big/\right.$$
$$\left(3\left(-7\,(a^2-b^2)\,\mathrm{AppellF1}\left[\frac{3}{4},-\frac{1}{2},1,\frac{7}{4},\mathrm{Cos}[c+d\,x]^2,\frac{b^2\,\mathrm{Cos}[c+d\,x]^2}{-a^2+b^2}\right]+2\left(2\,b^2\,\mathrm{AppellF1}\left[\frac{7}{4},-\frac{1}{2},2,\frac{11}{4},\mathrm{Cos}[c+d\,x]^2,\right.\right.\right.$$
$$\left.\left.\frac{b^2\,\mathrm{Cos}[c+d\,x]^2}{-a^2+b^2}\right]+(a^2-b^2)\,\mathrm{AppellF1}\left[\frac{7}{4},\frac{1}{2},1,\frac{11}{4},\mathrm{Cos}[c+d\,x]^2,\frac{b^2\,\mathrm{Cos}[c+d\,x]^2}{-a^2+b^2}\right]\right)\mathrm{Cos}[c+d\,x]^2\Big)$$
$$\left.\left(a^2+b^2\left(-1+\mathrm{Cos}[c+d\,x]^2\right)\right)\right)+\frac{1}{4\sqrt{2}\,b^{3/2}\,(a^2-b^2)^{1/4}}a\left(-2\,\mathrm{ArcTan}\left[1-\frac{\sqrt{2}\sqrt{b}\sqrt{\mathrm{Cos}[c+d\,x]}}{(a^2-b^2)^{1/4}}\right]+\right.$$
$$2\,\mathrm{ArcTan}\left[1+\frac{\sqrt{2}\sqrt{b}\sqrt{\mathrm{Cos}[c+d\,x]}}{(a^2-b^2)^{1/4}}\right]+\mathrm{Log}\left[\sqrt{a^2-b^2}-\sqrt{2}\sqrt{b}\,(a^2-b^2)^{1/4}\sqrt{\mathrm{Cos}[c+d\,x]}+b\,\mathrm{Cos}[c+d\,x]\right]-$$
$$\left.\left.\left.\mathrm{Log}\left[\sqrt{a^2-b^2}+\sqrt{2}\sqrt{b}\,(a^2-b^2)^{1/4}\sqrt{\mathrm{Cos}[c+d\,x]}+b\,\mathrm{Cos}[c+d\,x]\right]\right)\right)\mathrm{Sin}[c+d\,x]^2\right)$$

- **Problem 611: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int \frac{(e\,\text{Cos}[c+d\,x])^{3/2}}{(a+b\,\text{Sin}[c+d\,x])^4}\,dx$$

Optimal (type 4, 592 leaves, 15 steps):

$$-\frac{a\left(a^2+6b^2\right)e^{3/2}\,\text{ArcTan}\left[\frac{\sqrt{b}\,\sqrt{e\,\text{Cos}[c+d\,x]}}{\left(-a^2+b^2\right)^{1/4}\sqrt{e}}\right]}{16\,b^{3/2}\left(-a^2+b^2\right)^{11/4}d}-\frac{a\left(a^2+6b^2\right)e^{3/2}\,\text{ArcTanh}\left[\frac{\sqrt{b}\,\sqrt{e\,\text{Cos}[c+d\,x]}}{\left(-a^2+b^2\right)^{1/4}\sqrt{e}}\right]}{16\,b^{3/2}\left(-a^2+b^2\right)^{11/4}d}-\frac{\left(3a^2+4b^2\right)e^2\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticF}\left[\frac{1}{2}(c+d\,x),2\right]}{24\,b^2\left(a^2-b^2\right)^2 d\,\sqrt{e\,\text{Cos}[c+d\,x]}}+$$
$$\frac{a^2\left(a^2+6b^2\right)e^2\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticPi}\left[\frac{2b}{b-\sqrt{-a^2+b^2}},\frac{1}{2}(c+d\,x),2\right]}{16\,b^2\left(a^2-b^2\right)^2\left(a^2-b\left(b-\sqrt{-a^2+b^2}\right)\right)d\,\sqrt{e\,\text{Cos}[c+d\,x]}}+\frac{a^2\left(a^2+6b^2\right)e^2\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticPi}\left[\frac{2b}{b+\sqrt{-a^2+b^2}},\frac{1}{2}(c+d\,x),2\right]}{16\,b^2\left(a^2-b^2\right)^2\left(a^2-b\left(b+\sqrt{-a^2+b^2}\right)\right)d\,\sqrt{e\,\text{Cos}[c+d\,x]}}-$$
$$\frac{e\sqrt{e\,\text{Cos}[c+d\,x]}}{3\,b\,d\,(a+b\,\text{Sin}[c+d\,x])^3}+\frac{a\,e\sqrt{e\,\text{Cos}[c+d\,x]}}{12\,b\left(a^2-b^2\right)d\,(a+b\,\text{Sin}[c+d\,x])^2}+\frac{\left(3a^2+4b^2\right)e\sqrt{e\,\text{Cos}[c+d\,x]}}{24\,b\left(a^2-b^2\right)^2 d\,(a+b\,\text{Sin}[c+d\,x])}$$

Result (type 6, 1263 leaves):

$$\frac{(e\,\text{Cos}[c+d\,x])^{3/2}\,\text{Sec}[c+d\,x]\left(-\frac{1}{3\,b\,(a+b\,\text{Sin}[c+d\,x])^3}-\frac{a}{12\,b\left(-a^2+b^2\right)(a+b\,\text{Sin}[c+d\,x])^2}+\frac{3a^2+4b^2}{24\,b\left(-a^2+b^2\right)^2(a+b\,\text{Sin}[c+d\,x])}\right)}{d}-$$
$$\frac{1}{48\,(a-b)^2\,b\,(a+b)^2\,d\,\text{Cos}[c+d\,x]^{3/2}}(e\,\text{Cos}[c+d\,x])^{3/2}\left(\frac{1}{\sqrt{1-\text{Cos}[c+d\,x]^2}\,(a+b\,\text{Sin}[c+d\,x])}\right.$$
$$28\,a\,b\left(a+b\sqrt{1-\text{Cos}[c+d\,x]^2}\right)\left(\left(5\,a\left(a^2-b^2\right)\text{AppellF1}\left[\frac{1}{4},\frac{1}{2},1,\frac{5}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]\sqrt{\text{Cos}[c+d\,x]}\right)\Big/\right.$$
$$\left(\sqrt{1-\text{Cos}[c+d\,x]^2}\left(5\left(a^2-b^2\right)\text{AppellF1}\left[\frac{1}{4},\frac{1}{2},1,\frac{5}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]-2\left(2\,b^2\,\text{AppellF1}\left[\frac{5}{4},\frac{1}{2},2,\frac{9}{4},\right.\right.\right.$$
$$\left.\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]+\left(-a^2+b^2\right)\text{AppellF1}\left[\frac{5}{4},\frac{3}{2},1,\frac{9}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]\Big)\text{Cos}[c+d\,x]^2\Big)$$
$$\left.\left(a^2+b^2\left(-1+\text{Cos}[c+d\,x]^2\right)\right)\right)-\frac{1}{\left(-a^2+b^2\right)^{3/4}}\left(\frac{1}{8}-\frac{i}{8}\right)\sqrt{b}\left(2\,\text{ArcTan}\left[1-\frac{(1+i)\sqrt{b}\,\sqrt{\text{Cos}[c+d\,x]}}{\left(-a^2+b^2\right)^{1/4}}\right]-\right.$$
$$2\,\text{ArcTan}\left[1+\frac{(1+i)\sqrt{b}\,\sqrt{\text{Cos}[c+d\,x]}}{\left(-a^2+b^2\right)^{1/4}}\right]+\text{Log}\left[\sqrt{-a^2+b^2}-(1+i)\sqrt{b}\left(-a^2+b^2\right)^{1/4}\sqrt{\text{Cos}[c+d\,x]}+i\,b\,\text{Cos}[c+d\,x]\right]-$$
$$\left.\left.\text{Log}\left[\sqrt{-a^2+b^2}+(1+i)\sqrt{b}\left(-a^2+b^2\right)^{1/4}\sqrt{\text{Cos}[c+d\,x]}+i\,b\,\text{Cos}[c+d\,x]\right]\right)\right)\text{Sin}[c+d\,x]-$$

$$\frac{1}{\left(1-\text{Cos}[c+d x]^2\right)(a+b\,\text{Sin}[c+d x])}\,2\left(3 a^2+4 b^2\right)\left(a+b\sqrt{1-\text{Cos}[c+d x]^2}\right)$$
$$\left(\left(5 b\left(a^2-b^2\right)\text{AppellF1}\left[\frac{1}{4},-\frac{1}{2},1,\frac{5}{4},\text{Cos}[c+d x]^2,\frac{b^2\,\text{Cos}[c+d x]^2}{-a^2+b^2}\right]\sqrt{\text{Cos}[c+d x]}\sqrt{1-\text{Cos}[c+d x]^2}\right)\Big/\right.$$
$$\left(\left(-5\left(a^2-b^2\right)\text{AppellF1}\left[\frac{1}{4},-\frac{1}{2},1,\frac{5}{4},\text{Cos}[c+d x]^2,\frac{b^2\,\text{Cos}[c+d x]^2}{-a^2+b^2}\right]+2\left(2 b^2\,\text{AppellF1}\left[\frac{5}{4},-\frac{1}{2},2,\frac{9}{4},\text{Cos}[c+d x]^2,\right.\right.\right.\right.$$
$$\left.\left.\left.\frac{b^2\,\text{Cos}[c+d x]^2}{-a^2+b^2}\right]+\left(a^2-b^2\right)\text{AppellF1}\left[\frac{5}{4},\frac{1}{2},1,\frac{9}{4},\text{Cos}[c+d x]^2,\frac{b^2\,\text{Cos}[c+d x]^2}{-a^2+b^2}\right]\right)\text{Cos}[c+d x]^2\right)$$
$$\left.\left(a^2+b^2\left(-1+\text{Cos}[c+d x]^2\right)\right)\right)+\frac{1}{4\sqrt{2}\sqrt{b}\left(a^2-b^2\right)^{3/4}}a\left(-2\,\text{ArcTan}\left[1-\frac{\sqrt{2}\sqrt{b}\sqrt{\text{Cos}[c+d x]}}{\left(a^2-b^2\right)^{1/4}}\right]+\right.$$
$$2\,\text{ArcTan}\left[1+\frac{\sqrt{2}\sqrt{b}\sqrt{\text{Cos}[c+d x]}}{\left(a^2-b^2\right)^{1/4}}\right]-\text{Log}\left[\sqrt{a^2-b^2}-\sqrt{2}\sqrt{b}\left(a^2-b^2\right)^{1/4}\sqrt{\text{Cos}[c+d x]}+b\,\text{Cos}[c+d x]\right]+$$
$$\left.\left.\text{Log}\left[\sqrt{a^2-b^2}+\sqrt{2}\sqrt{b}\left(a^2-b^2\right)^{1/4}\sqrt{\text{Cos}[c+d x]}+b\,\text{Cos}[c+d x]\right]\right)\right)\text{Sin}[c+d x]^2$$

- **Problem 612: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int\frac{\sqrt{e\,\text{Cos}[c+d x]}}{(a+b\,\text{Sin}[c+d x])^4}\,dx$$

Optimal (type 4, 579 leaves, 15 steps):

$$-\frac{5 a\left(a^2+2 b^2\right)\sqrt{e}\,\text{ArcTan}\left[\frac{\sqrt{b}\sqrt{e\,\text{Cos}[c+d x]}}{\left(-a^2+b^2\right)^{1/4}\sqrt{e}}\right]}{16\sqrt{b}\left(-a^2+b^2\right)^{13/4}d}+\frac{5 a\left(a^2+2 b^2\right)\sqrt{e}\,\text{ArcTanh}\left[\frac{\sqrt{b}\sqrt{e\,\text{Cos}[c+d x]}}{\left(-a^2+b^2\right)^{1/4}\sqrt{e}}\right]}{16\sqrt{b}\left(-a^2+b^2\right)^{13/4}d}+$$
$$\frac{\left(11 a^2+4 b^2\right)\sqrt{e\,\text{Cos}[c+d x]}\,\text{EllipticE}\left[\frac{1}{2}(c+d x),2\right]}{8\left(a^2-b^2\right)^3 d\sqrt{\text{Cos}[c+d x]}}+\frac{5 a^2\left(a^2+2 b^2\right)e\sqrt{\text{Cos}[c+d x]}\,\text{EllipticPi}\left[\frac{2 b}{b-\sqrt{-a^2+b^2}},\frac{1}{2}(c+d x),2\right]}{16 b\left(a^2-b^2\right)^3\left(b-\sqrt{-a^2+b^2}\right)d\sqrt{e\,\text{Cos}[c+d x]}}+$$
$$\frac{5 a^2\left(a^2+2 b^2\right)e\sqrt{\text{Cos}[c+d x]}\,\text{EllipticPi}\left[\frac{2 b}{b+\sqrt{-a^2+b^2}},\frac{1}{2}(c+d x),2\right]}{16 b\left(a^2-b^2\right)^3\left(b+\sqrt{-a^2+b^2}\right)d\sqrt{e\,\text{Cos}[c+d x]}}+$$
$$\frac{b\,(e\,\text{Cos}[c+d x])^{3/2}}{3\left(a^2-b^2\right)d\,e\,(a+b\,\text{Sin}[c+d x])^3}+\frac{3 a b\,(e\,\text{Cos}[c+d x])^{3/2}}{4\left(a^2-b^2\right)^2 d\,e\,(a+b\,\text{Sin}[c+d x])^2}+\frac{b\left(11 a^2+4 b^2\right)(e\,\text{Cos}[c+d x])^{3/2}}{8\left(a^2-b^2\right)^3 d\,e\,(a+b\,\text{Sin}[c+d x])}$$

Result (type 6, 1294 leaves):

$$\frac{\sqrt{e\,\text{Cos}[c+d\,x]}\left(\frac{b\,\text{Cos}[c+d\,x]}{3\left(a^2-b^2\right)(a+b\,\text{Sin}[c+d\,x])^3}+\frac{3\,a\,b\,\text{Cos}[c+d\,x]}{4\left(a^2-b^2\right)^2(a+b\,\text{Sin}[c+d\,x])^2}-\frac{-11\,a^2\,b\,\text{Cos}[c+d\,x]-4\,b^3\,\text{Cos}[c+d\,x]}{8\left(a^2-b^2\right)^3(a+b\,\text{Sin}[c+d\,x])}\right)}{d}+$$

$$\frac{1}{16\,(a-b)^3\,(a+b)^3\,d\,\sqrt{\text{Cos}[c+d\,x]}}\sqrt{e\,\text{Cos}[c+d\,x]}\left(\frac{1}{12\sqrt{1-\text{Cos}[c+d\,x]^2}\,(a+b\,\text{Sin}[c+d\,x])}\right.$$

$$\left(16\,a^3+14\,a\,b^2\right)\left(a+b\sqrt{1-\text{Cos}[c+d\,x]^2}\right)\left(-\left(56\,a\left(a^2-b^2\right)\text{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]\text{Cos}[c+d\,x]^{3/2}\right)\Big/\right.$$

$$\left(\sqrt{1-\text{Cos}[c+d\,x]^2}\left(7\left(a^2-b^2\right)\text{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]-2\left(2\,b^2\,\text{AppellF1}\left[\frac{7}{4},\frac{1}{2},2,\frac{11}{4},\right.\right.\right.\right.$$

$$\left.\left.\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]+\left(-a^2+b^2\right)\text{AppellF1}\left[\frac{7}{4},\frac{3}{2},1,\frac{11}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]\right)\text{Cos}[c+d\,x]^2\right)$$

$$\left.\left.\left(a^2+b^2\left(-1+\text{Cos}[c+d\,x]^2\right)\right)\right)-\frac{1}{\sqrt{b}\left(-a^2+b^2\right)^{1/4}}(3+3\,\text{i})\left(2\,\text{ArcTan}\left[1-\frac{(1+\text{i})\sqrt{b}\sqrt{\text{Cos}[c+d\,x]}}{\left(-a^2+b^2\right)^{1/4}}\right]-\right.$$

$$2\,\text{ArcTan}\left[1+\frac{(1+\text{i})\sqrt{b}\sqrt{\text{Cos}[c+d\,x]}}{\left(-a^2+b^2\right)^{1/4}}\right]-\text{Log}\left[\sqrt{-a^2+b^2}-(1+\text{i})\sqrt{b}\left(-a^2+b^2\right)^{1/4}\sqrt{\text{Cos}[c+d\,x]}+\text{i}\,b\,\text{Cos}[c+d\,x]\right]+$$

$$\left.\left.\text{Log}\left[\sqrt{-a^2+b^2}+(1+\text{i})\sqrt{b}\left(-a^2+b^2\right)^{1/4}\sqrt{\text{Cos}[c+d\,x]}+\text{i}\,b\,\text{Cos}[c+d\,x]\right]\right)\right)\text{Sin}[c+d\,x]-$$

$$\frac{1}{\left(1-\text{Cos}[c+d\,x]^2\right)(a+b\,\text{Sin}[c+d\,x])}2\left(11\,a^2\,b+4\,b^3\right)\left(a+b\sqrt{1-\text{Cos}[c+d\,x]^2}\right)$$

$$\left(\left(7\,b\left(a^2-b^2\right)\text{AppellF1}\left[\frac{3}{4},-\frac{1}{2},1,\frac{7}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]\text{Cos}[c+d\,x]^{3/2}\sqrt{1-\text{Cos}[c+d\,x]^2}\right)\Big/\right.$$

$$\left(3\left(-7\left(a^2-b^2\right)\text{AppellF1}\left[\frac{3}{4},-\frac{1}{2},1,\frac{7}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]+2\left(2\,b^2\,\text{AppellF1}\left[\frac{7}{4},-\frac{1}{2},2,\frac{11}{4},\text{Cos}[c+d\,x]^2,\right.\right.\right.\right.$$

$$\left.\left.\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]+\left(a^2-b^2\right)\text{AppellF1}\left[\frac{7}{4},\frac{1}{2},1,\frac{11}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]\right)\text{Cos}[c+d\,x]^2\right)$$

$$\left.\left(a^2+b^2\left(-1+\text{Cos}[c+d\,x]^2\right)\right)\right)+\frac{1}{4\sqrt{2}\,b^{3/2}\left(a^2-b^2\right)^{1/4}}a\left(-2\,\text{ArcTan}\left[1-\frac{\sqrt{2}\sqrt{b}\sqrt{\text{Cos}[c+d\,x]}}{\left(a^2-b^2\right)^{1/4}}\right]+\right.$$

$$2\,\text{ArcTan}\left[1+\frac{\sqrt{2}\sqrt{b}\sqrt{\text{Cos}[c+d\,x]}}{\left(a^2-b^2\right)^{1/4}}\right]+\text{Log}\left[\sqrt{a^2-b^2}-\sqrt{2}\sqrt{b}\left(a^2-b^2\right)^{1/4}\sqrt{\text{Cos}[c+d\,x]}+b\,\text{Cos}[c+d\,x]\right]-$$

$$\text{Log}\left[\sqrt{a^2-b^2}+\sqrt{2}\,\sqrt{b}\,\left(a^2-b^2\right)^{1/4}\sqrt{\text{Cos}[c+d\,x]}+b\,\text{Cos}[c+d\,x]\right]\Bigg)\Bigg)\,\text{Sin}[c+d\,x]^2\Bigg)$$

- **Problem 613: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int \frac{1}{\sqrt{e\,\text{Cos}[c+d\,x]}\,\left(a+b\,\text{Sin}[c+d\,x]\right)^4}\,dx$$

Optimal (type 4, 593 leaves, 15 steps):

$$\frac{7\,a\,\sqrt{b}\,\left(5\,a^2+6\,b^2\right)\,\text{ArcTan}\left[\frac{\sqrt{b}\,\sqrt{e\,\text{Cos}[c+d\,x]}}{\left(-a^2+b^2\right)^{1/4}\,\sqrt{e}}\right]}{16\,\left(-a^2+b^2\right)^{15/4}\,d\,\sqrt{e}}+\frac{7\,a\,\sqrt{b}\,\left(5\,a^2+6\,b^2\right)\,\text{ArcTanh}\left[\frac{\sqrt{b}\,\sqrt{e\,\text{Cos}[c+d\,x]}}{\left(-a^2+b^2\right)^{1/4}\,\sqrt{e}}\right]}{16\,\left(-a^2+b^2\right)^{15/4}\,d\,\sqrt{e}}-$$

$$\frac{\left(57\,a^2+20\,b^2\right)\,\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticF}\left[\frac{1}{2}\,(c+d\,x),\,2\right]}{24\,\left(a^2-b^2\right)^3\,d\,\sqrt{e\,\text{Cos}[c+d\,x]}}+\frac{7\,a^2\,\left(5\,a^2+6\,b^2\right)\,\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticPi}\left[\frac{2\,b}{b-\sqrt{-a^2+b^2}},\,\frac{1}{2}\,(c+d\,x),\,2\right]}{16\,\left(a^2-b^2\right)^3\,\left(a^2-b\,\left(b-\sqrt{-a^2+b^2}\right)\right)\,d\,\sqrt{e\,\text{Cos}[c+d\,x]}}+$$

$$\frac{7\,a^2\,\left(5\,a^2+6\,b^2\right)\,\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticPi}\left[\frac{2\,b}{b+\sqrt{-a^2+b^2}},\,\frac{1}{2}\,(c+d\,x),\,2\right]}{16\,\left(a^2-b^2\right)^3\,\left(a^2-b\,\left(b+\sqrt{-a^2+b^2}\right)\right)\,d\,\sqrt{e\,\text{Cos}[c+d\,x]}}+\frac{b\,\sqrt{e\,\text{Cos}[c+d\,x]}}{3\,\left(a^2-b^2\right)\,d\,e\,\left(a+b\,\text{Sin}[c+d\,x]\right)^3}+$$

$$\frac{11\,a\,b\,\sqrt{e\,\text{Cos}[c+d\,x]}}{12\,\left(a^2-b^2\right)^2\,d\,e\,\left(a+b\,\text{Sin}[c+d\,x]\right)^2}+\frac{b\,\left(57\,a^2+20\,b^2\right)\,\sqrt{e\,\text{Cos}[c+d\,x]}}{24\,\left(a^2-b^2\right)^3\,d\,e\,\left(a+b\,\text{Sin}[c+d\,x]\right)}$$

Result (type 6, 1276 leaves):

$$\frac{\text{Cos}[c+d\,x]\,\left(\frac{b}{3\,\left(a^2-b^2\right)\,\left(a+b\,\text{Sin}[c+d\,x]\right)^3}+\frac{11\,a\,b}{12\,\left(a^2-b^2\right)^2\,\left(a+b\,\text{Sin}[c+d\,x]\right)^2}+\frac{b\,\left(57\,a^2+20\,b^2\right)}{24\,\left(a^2-b^2\right)^3\,\left(a+b\,\text{Sin}[c+d\,x]\right)}\right)}{d\,\sqrt{e\,\text{Cos}[c+d\,x]}}+$$

$$\frac{1}{48\,(a-b)^3\,(a+b)^3\,d\,\sqrt{e\,\text{Cos}[c+d\,x]}}\sqrt{\text{Cos}[c+d\,x]}\,\left(-\frac{1}{\sqrt{1-\text{Cos}[c+d\,x]^2}\,\left(a+b\,\text{Sin}[c+d\,x]\right)}\right.$$

$$2\,\left(48\,a^3+106\,a\,b^2\right)\,\left(a+b\,\sqrt{1-\text{Cos}[c+d\,x]^2}\right)\,\left(\left(5\,a\,\left(a^2-b^2\right)\,\text{AppellF1}\left[\frac{1}{4},\,\frac{1}{2},\,1,\,\frac{5}{4},\,\text{Cos}[c+d\,x]^2,\,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]\,\sqrt{\text{Cos}[c+d\,x]}\right)\Big/\right.$$

$$\left(\sqrt{1-\text{Cos}[c+d\,x]^2}\,\left(5\,\left(a^2-b^2\right)\,\text{AppellF1}\left[\frac{1}{4},\,\frac{1}{2},\,1,\,\frac{5}{4},\,\text{Cos}[c+d\,x]^2,\,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]-2\,\left(2\,b^2\,\text{AppellF1}\left[\frac{5}{4},\,\frac{1}{2},\,2,\,\frac{9}{4},\right.\right.\right.\right.$$

$$\left.\left.\text{Cos}[c+d\,x]^2,\,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]+\left(-a^2+b^2\right)\,\text{AppellF1}\left[\frac{5}{4},\,\frac{3}{2},\,1,\,\frac{9}{4},\,\text{Cos}[c+d\,x]^2,\,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]\right)\,\text{Cos}[c+d\,x]^2\Bigg)$$

$$\left(a^2+b^2\left(-1+\text{Cos}[c+d x]^2\right)\right)\Big) - \frac{1}{\left(-a^2+b^2\right)^{3/4}}\left(\frac{1}{8}-\frac{i}{8}\right)\sqrt{b}\ \Bigg(2\,\text{ArcTan}\Big[1-\frac{(1+i)\sqrt{b}\ \sqrt{\text{Cos}[c+d x]}}{\left(-a^2+b^2\right)^{1/4}}\Big] -$$

$$2\,\text{ArcTan}\Big[1+\frac{(1+i)\sqrt{b}\ \sqrt{\text{Cos}[c+d x]}}{\left(-a^2+b^2\right)^{1/4}}\Big] + \text{Log}\Big[\sqrt{-a^2+b^2} - (1+i)\sqrt{b}\ \left(-a^2+b^2\right)^{1/4}\sqrt{\text{Cos}[c+d x]} + i\, b\, \text{Cos}[c+d x]\Big] -$$

$$\text{Log}\Big[\sqrt{-a^2+b^2} + (1+i)\sqrt{b}\ \left(-a^2+b^2\right)^{1/4}\sqrt{\text{Cos}[c+d x]} + i\, b\, \text{Cos}[c+d x]\Big]\Bigg)\Bigg)\ \text{Sin}[c+d x] -$$

$$\frac{1}{\left(1-\text{Cos}[c+d x]^2\right)\,(a+b\,\text{Sin}[c+d x])}\,2\left(-57 a^2 b-20 b^3\right)\left(a+b\sqrt{1-\text{Cos}[c+d x]^2}\right)$$

$$\Bigg(\Bigg(5 b\left(a^2-b^2\right)\text{AppellF1}\Big[\frac{1}{4},-\frac{1}{2},1,\frac{5}{4},\text{Cos}[c+d x]^2,\frac{b^2\,\text{Cos}[c+d x]^2}{-a^2+b^2}\Big]\sqrt{\text{Cos}[c+d x]}\ \sqrt{1-\text{Cos}[c+d x]^2}\Bigg)\Big/$$

$$\Bigg(\Bigg(-5\left(a^2-b^2\right)\text{AppellF1}\Big[\frac{1}{4},-\frac{1}{2},1,\frac{5}{4},\text{Cos}[c+d x]^2,\frac{b^2\,\text{Cos}[c+d x]^2}{-a^2+b^2}\Big] + 2\Big(2 b^2\,\text{AppellF1}\Big[\frac{5}{4},-\frac{1}{2},2,\frac{9}{4},\text{Cos}[c+d x]^2,$$

$$\frac{b^2\,\text{Cos}[c+d x]^2}{-a^2+b^2}\Big] + \left(a^2-b^2\right)\text{AppellF1}\Big[\frac{5}{4},\frac{1}{2},1,\frac{9}{4},\text{Cos}[c+d x]^2,\frac{b^2\,\text{Cos}[c+d x]^2}{-a^2+b^2}\Big]\Big)\,\text{Cos}[c+d x]^2\Bigg)$$

$$\left(a^2+b^2\left(-1+\text{Cos}[c+d x]^2\right)\right)\Bigg) + \frac{1}{4\sqrt{2}\ \sqrt{b}\ \left(a^2-b^2\right)^{3/4}}a\ \Bigg(-2\,\text{ArcTan}\Big[1-\frac{\sqrt{2}\ \sqrt{b}\ \sqrt{\text{Cos}[c+d x]}}{\left(a^2-b^2\right)^{1/4}}\Big] +$$

$$2\,\text{ArcTan}\Big[1+\frac{\sqrt{2}\ \sqrt{b}\ \sqrt{\text{Cos}[c+d x]}}{\left(a^2-b^2\right)^{1/4}}\Big] - \text{Log}\Big[\sqrt{a^2-b^2} - \sqrt{2}\ \sqrt{b}\ \left(a^2-b^2\right)^{1/4}\sqrt{\text{Cos}[c+d x]} + b\,\text{Cos}[c+d x]\Big] +$$

$$\text{Log}\Big[\sqrt{a^2-b^2} + \sqrt{2}\ \sqrt{b}\ \left(a^2-b^2\right)^{1/4}\sqrt{\text{Cos}[c+d x]} + b\,\text{Cos}[c+d x]\Big]\Bigg)\Bigg)\ \text{Sin}[c+d x]^2\Bigg)$$

- **Problem 614: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int \frac{1}{(e\,\text{Cos}[c+d x])^{3/2}\,(a+b\,\text{Sin}[c+d x])^4}\,dx$$

Optimal (type 4, 674 leaves, 16 steps) :

$$-\frac{15\,a\,b^{3/2}\left(7\,a^2+6\,b^2\right)\text{ArcTan}\left[\frac{\sqrt{b}\,\sqrt{e\,\text{Cos}[c+d\,x]}}{\left(-a^2+b^2\right)^{1/4}\sqrt{e}}\right]}{16\left(-a^2+b^2\right)^{17/4}d\,e^{3/2}}+\frac{15\,a\,b^{3/2}\left(7\,a^2+6\,b^2\right)\text{ArcTanh}\left[\frac{\sqrt{b}\,\sqrt{e\,\text{Cos}[c+d\,x]}}{\left(-a^2+b^2\right)^{1/4}\sqrt{e}}\right]}{16\left(-a^2+b^2\right)^{17/4}d\,e^{3/2}}-$$

$$\frac{\left(16\,a^4+151\,a^2\,b^2+28\,b^4\right)\sqrt{e\,\text{Cos}[c+d\,x]}\,\text{EllipticE}\left[\frac{1}{2}(c+d\,x),2\right]}{8\left(a^2-b^2\right)^4 d\,e^2\sqrt{\text{Cos}[c+d\,x]}}-\frac{15\,a^2\,b\left(7\,a^2+6\,b^2\right)\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticPi}\left[\frac{2\,b}{b-\sqrt{-a^2+b^2}},\frac{1}{2}(c+d\,x),2\right]}{16\left(a^2-b^2\right)^4\left(b-\sqrt{-a^2+b^2}\right)d\,e\,\sqrt{e\,\text{Cos}[c+d\,x]}}-$$

$$\frac{15\,a^2\,b\left(7\,a^2+6\,b^2\right)\sqrt{\text{Cos}[c+d\,x]}\,\text{EllipticPi}\left[\frac{2\,b}{b+\sqrt{-a^2+b^2}},\frac{1}{2}(c+d\,x),2\right]}{16\left(a^2-b^2\right)^4\left(b+\sqrt{-a^2+b^2}\right)d\,e\,\sqrt{e\,\text{Cos}[c+d\,x]}}+$$

$$\frac{b}{3\left(a^2-b^2\right)d\,e\,\sqrt{e\,\text{Cos}[c+d\,x]}\,(a+b\,\text{Sin}[c+d\,x])^3}+\frac{13\,a\,b}{12\left(a^2-b^2\right)^2 d\,e\,\sqrt{e\,\text{Cos}[c+d\,x]}\,(a+b\,\text{Sin}[c+d\,x])^2}+$$

$$\frac{b\left(89\,a^2+28\,b^2\right)}{24\left(a^2-b^2\right)^3 d\,e\,\sqrt{e\,\text{Cos}[c+d\,x]}\,(a+b\,\text{Sin}[c+d\,x])}-\frac{15\,a\,b\left(7\,a^2+6\,b^2\right)-\left(16\,a^4+151\,a^2\,b^2+28\,b^4\right)\text{Sin}[c+d\,x]}{8\left(a^2-b^2\right)^4 d\,e\,\sqrt{e\,\text{Cos}[c+d\,x]}}$$

Result (type 6, 1390 leaves) :

$$-\frac{1}{16\,(a-b)^4\,(a+b)^4\,d\,(e\,\text{Cos}[c+d\,x])^{3/2}}$$

$$\text{Cos}[c+d\,x]^{3/2}\left(\frac{1}{12\sqrt{1-\text{Cos}[c+d\,x]^2}\,(a+b\,\text{Sin}[c+d\,x])}\left(16\,a^5+256\,a^3\,b^2+118\,a\,b^4\right)\left(a+b\sqrt{1-\text{Cos}[c+d\,x]^2}\right)\right.$$

$$\left(-\left(56\,a\left(a^2-b^2\right)\text{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]\text{Cos}[c+d\,x]^{3/2}\right)\Big/\left(\sqrt{1-\text{Cos}[c+d\,x]^2}\left(7\left(a^2-b^2\right)\right.\right.\right.$$

$$\text{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]-2\left(2\,b^2\,\text{AppellF1}\left[\frac{7}{4},\frac{1}{2},2,\frac{11}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]+\right.$$

$$\left.\left.\left.\left(-a^2+b^2\right)\text{AppellF1}\left[\frac{7}{4},\frac{3}{2},1,\frac{11}{4},\text{Cos}[c+d\,x]^2,\frac{b^2\,\text{Cos}[c+d\,x]^2}{-a^2+b^2}\right]\right)\text{Cos}[c+d\,x]^2\right)\left(a^2+b^2\left(-1+\text{Cos}[c+d\,x]^2\right)\right)\right)-$$

$$\frac{1}{\sqrt{b}\left(-a^2+b^2\right)^{1/4}}(3+3\,i)\left(2\,\text{ArcTan}\left[1-\frac{(1+i)\sqrt{b}\,\sqrt{\text{Cos}[c+d\,x]}}{\left(-a^2+b^2\right)^{1/4}}\right]-2\,\text{ArcTan}\left[1+\frac{(1+i)\sqrt{b}\,\sqrt{\text{Cos}[c+d\,x]}}{\left(-a^2+b^2\right)^{1/4}}\right]-\right.$$

$$\text{Log}\left[\sqrt{-a^2+b^2}-(1+i)\sqrt{b}\left(-a^2+b^2\right)^{1/4}\sqrt{\text{Cos}[c+d\,x]}+i\,b\,\text{Cos}[c+d\,x]\right]+$$

$$\left.\left.\text{Log}\left[\sqrt{-a^2+b^2}+(1+i)\sqrt{b}\left(-a^2+b^2\right)^{1/4}\sqrt{\text{Cos}[c+d\,x]}+i\,b\,\text{Cos}[c+d\,x]\right]\right)\right)\text{Sin}[c+d\,x]-$$

$$\frac{1}{\left(1-\text{Cos}[c+d x]^2\right)(a+b\,\text{Sin}[c+d x])} 2\left(16 a^4 b+151 a^2 b^3+28 b^5\right)\left(a+b\sqrt{1-\text{Cos}[c+d x]^2}\right)$$
$$\left(\left(7 b\left(a^2-b^2\right)\text{AppellF1}\left[\frac{3}{4},-\frac{1}{2},1,\frac{7}{4},\text{Cos}[c+d x]^2,\frac{b^2\text{Cos}[c+d x]^2}{-a^2+b^2}\right]\text{Cos}[c+d x]^{3/2}\sqrt{1-\text{Cos}[c+d x]^2}\right)\Big/\right.$$
$$\left(3\left(-7\left(a^2-b^2\right)\text{AppellF1}\left[\frac{3}{4},-\frac{1}{2},1,\frac{7}{4},\text{Cos}[c+d x]^2,\frac{b^2\text{Cos}[c+d x]^2}{-a^2+b^2}\right]+2\left(2 b^2\text{AppellF1}\left[\frac{7}{4},-\frac{1}{2},2,\frac{11}{4},\text{Cos}[c+d x]^2,\right.\right.\right.\right.$$
$$\left.\left.\left.\frac{b^2\text{Cos}[c+d x]^2}{-a^2+b^2}\right]+\left(a^2-b^2\right)\text{AppellF1}\left[\frac{7}{4},\frac{1}{2},1,\frac{11}{4},\text{Cos}[c+d x]^2,\frac{b^2\text{Cos}[c+d x]^2}{-a^2+b^2}\right]\right)\text{Cos}[c+d x]^2\right)$$
$$\left.\left(a^2+b^2\left(-1+\text{Cos}[c+d x]^2\right)\right)\right)+\frac{1}{4\sqrt{2}\,b^{3/2}\left(a^2-b^2\right)^{1/4}}a\left(-2\,\text{ArcTan}\left[1-\frac{\sqrt{2}\sqrt{b}\sqrt{\text{Cos}[c+d x]}}{\left(a^2-b^2\right)^{1/4}}\right]+\right.$$
$$2\,\text{ArcTan}\left[1+\frac{\sqrt{2}\sqrt{b}\sqrt{\text{Cos}[c+d x]}}{\left(a^2-b^2\right)^{1/4}}\right]+\text{Log}\left[\sqrt{a^2-b^2}-\sqrt{2}\sqrt{b}\left(a^2-b^2\right)^{1/4}\sqrt{\text{Cos}[c+d x]}+b\,\text{Cos}[c+d x]\right]-$$
$$\left.\left.\text{Log}\left[\sqrt{a^2-b^2}+\sqrt{2}\sqrt{b}\left(a^2-b^2\right)^{1/4}\sqrt{\text{Cos}[c+d x]}+b\,\text{Cos}[c+d x]\right]\right)\right)\text{Sin}[c+d x]^2\Bigg)+$$
$$\frac{1}{d\,(e\,\text{Cos}[c+d x])^{3/2}}\text{Cos}[c+d x]^2\left(-\frac{b^3\text{Cos}[c+d x]}{3\left(a^2-b^2\right)^2(a+b\,\text{Sin}[c+d x])^3}-\frac{7 a b^3\text{Cos}[c+d x]}{4\left(a^2-b^2\right)^3(a+b\,\text{Sin}[c+d x])^2}+\right.$$
$$\frac{-55 a^2 b^3\text{Cos}[c+d x]-12 b^5\text{Cos}[c+d x]}{8\left(a^2-b^2\right)^4(a+b\,\text{Sin}[c+d x])}+$$
$$\left.\frac{2\,\text{Sec}[c+d x]\left(-4 a^3 b-4 a b^3+a^4\text{Sin}[c+d x]+6 a^2 b^2\text{Sin}[c+d x]+b^4\text{Sin}[c+d x]\right)}{\left(a^2-b^2\right)^4}\right)$$

- **Problem 615: Result more than twice size of optimal antiderivative.**

$$\int\frac{1}{\sqrt{c\,\text{Cos}[e+f x]}\sqrt{a+b\,\text{Sin}[e+f x]}}\,dx$$

Optimal (type 4, 183 leaves, 2 steps):

$$\left(2\sqrt{2}\,(-a+b)^{1/4}\sqrt{c\,\mathrm{Cos}[e+f\,x]}\;\mathrm{EllipticF}\left[\mathrm{ArcSin}\left[\frac{(a+b)^{1/4}\sqrt{\frac{1+\mathrm{Cos}[e+f\,x]+\mathrm{Sin}[e+f\,x]}{1+\mathrm{Cos}[e+f\,x]-\mathrm{Sin}[e+f\,x]}}}{(-a+b)^{1/4}}\right],-1\right]\sqrt{\frac{a+b\,\mathrm{Sin}[e+f\,x]}{(a-b)\,(1-\mathrm{Sin}[e+f\,x])}}\right)\Big/$$

$$\left((a+b)^{1/4}\,c\,f\sqrt{\frac{1+\mathrm{Cos}[e+f\,x]+\mathrm{Sin}[e+f\,x]}{1+\mathrm{Cos}[e+f\,x]-\mathrm{Sin}[e+f\,x]}}\sqrt{a+b\,\mathrm{Sin}[e+f\,x]}\right)$$

Result (type 4, 4001 leaves) :

$$-\left(\left(4\,\mathrm{Cos}\left[\frac{1}{2}(e+f\,x)\right]^2\mathrm{EllipticF}\left[\mathrm{ArcSin}\left[\sqrt{\frac{\left(-a-b+\sqrt{-a^2+b^2}\right)\left(1+\mathrm{Tan}\left[\frac{1}{2}(e+f\,x)\right]\right)}{\left(a-b+\sqrt{-a^2+b^2}\right)\left(-1+\mathrm{Tan}\left[\frac{1}{2}(e+f\,x)\right]\right)}}\right],-1\right]\left(-1+\mathrm{Tan}\left[\frac{1}{2}(e+f\,x)\right]\right)\right.\right.$$

$$\left.\left(1+\mathrm{Tan}\left[\frac{1}{2}(e+f\,x)\right]\right)\sqrt{\frac{b-\sqrt{-a^2+b^2}+a\,\mathrm{Tan}\left[\frac{1}{2}(e+f\,x)\right]}{\left(a-b+\sqrt{-a^2+b^2}\right)\left(-1+\mathrm{Tan}\left[\frac{1}{2}(e+f\,x)\right]\right)}}\sqrt{-\frac{b+\sqrt{-a^2+b^2}+a\,\mathrm{Tan}\left[\frac{1}{2}(e+f\,x)\right]}{\left(-a+b+\sqrt{-a^2+b^2}\right)\left(-1+\mathrm{Tan}\left[\frac{1}{2}(e+f\,x)\right]\right)}}\right)\Big/$$

$$\left(f\sqrt{\mathrm{Cos}[e+f\,x]}\sqrt{c\,\mathrm{Cos}[e+f\,x]}\,(a+b\,\mathrm{Sin}[e+f\,x])\sqrt{\frac{\left(-a-b+\sqrt{-a^2+b^2}\right)\left(1+\mathrm{Tan}\left[\frac{1}{2}(e+f\,x)\right]\right)}{\left(a-b+\sqrt{-a^2+b^2}\right)\left(-1+\mathrm{Tan}\left[\frac{1}{2}(e+f\,x)\right]\right)}}\right.$$

$$\left(-\left(2\,\mathrm{EllipticF}\left[\mathrm{ArcSin}\left[\sqrt{\frac{\left(-a-b+\sqrt{-a^2+b^2}\right)\left(1+\mathrm{Tan}\left[\frac{1}{2}(e+f\,x)\right]\right)}{\left(a-b+\sqrt{-a^2+b^2}\right)\left(-1+\mathrm{Tan}\left[\frac{1}{2}(e+f\,x)\right]\right)}}\right],-1\right]\left(-1+\mathrm{Tan}\left[\frac{1}{2}(e+f\,x)\right]\right)\right.\right.$$

$$\left.\sqrt{\frac{b-\sqrt{-a^2+b^2}+a\,\mathrm{Tan}\left[\frac{1}{2}(e+f\,x)\right]}{\left(a-b+\sqrt{-a^2+b^2}\right)\left(-1+\mathrm{Tan}\left[\frac{1}{2}(e+f\,x)\right]\right)}}\sqrt{-\frac{b+\sqrt{-a^2+b^2}+a\,\mathrm{Tan}\left[\frac{1}{2}(e+f\,x)\right]}{\left(-a+b+\sqrt{-a^2+b^2}\right)\left(-1+\mathrm{Tan}\left[\frac{1}{2}(e+f\,x)\right]\right)}}\right)\Big/$$

$$\left(\sqrt{\text{Cos}[e+f x]}\,\sqrt{a+b\,\text{Sin}[e+f x]}\,\sqrt{\frac{\left(-a-b+\sqrt{-a^2+b^2}\right)\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)}{\left(a-b+\sqrt{-a^2+b^2}\right)\left(-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)}}\right)-$$

$$\left(2\,\text{EllipticF}\left[\text{ArcSin}\left[\sqrt{\frac{\left(-a-b+\sqrt{-a^2+b^2}\right)\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)}{\left(a-b+\sqrt{-a^2+b^2}\right)\left(-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)}}\right],-1\right]\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\right.$$

$$\left.\sqrt{\frac{b-\sqrt{-a^2+b^2}+a\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{\left(a-b+\sqrt{-a^2+b^2}\right)\left(-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)}}\,\sqrt{-\frac{b+\sqrt{-a^2+b^2}+a\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{\left(-a+b+\sqrt{-a^2+b^2}\right)\left(-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)}}\right)\Big/$$

$$\left(\sqrt{\text{Cos}[e+f x]}\,\sqrt{a+b\,\text{Sin}[e+f x]}\,\sqrt{\frac{\left(-a-b+\sqrt{-a^2+b^2}\right)\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)}{\left(a-b+\sqrt{-a^2+b^2}\right)\left(-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)}}\right)+$$

$$\left(2\,b\,\text{Cos}\left[\frac{1}{2}(e+f x)\right]^2\sqrt{\text{Cos}[e+f x]}\,\text{EllipticF}\left[\text{ArcSin}\left[\sqrt{\frac{\left(-a-b+\sqrt{-a^2+b^2}\right)\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)}{\left(a-b+\sqrt{-a^2+b^2}\right)\left(-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)}}\right],-1\right]\left(-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\right.$$

$$\left.\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\sqrt{\frac{b-\sqrt{-a^2+b^2}+a\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{\left(a-b+\sqrt{-a^2+b^2}\right)\left(-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)}}\,\sqrt{-\frac{b+\sqrt{-a^2+b^2}+a\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{\left(-a+b+\sqrt{-a^2+b^2}\right)\left(-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)}}\right)\Big/$$

$$\left((a+b\,\text{Sin}[e+f x])^{3/2}\sqrt{\frac{\left(-a-b+\sqrt{-a^2+b^2}\right)\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)}{\left(a-b+\sqrt{-a^2+b^2}\right)\left(-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)}}\right)+$$

$$\left(4\,\mathrm{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]\,\mathrm{EllipticF}\left[\mathrm{ArcSin}\left[\sqrt{\frac{\left(-a-b+\sqrt{-a^2+b^2}\right)\,\left(1+\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right)}{\left(a-b+\sqrt{-a^2+b^2}\right)\,\left(-1+\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right)}}\right],\,-1\right]\,\mathrm{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\,\left(-1+\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right)\right.$$

$$\left.\left(1+\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right)\,\sqrt{\frac{b-\sqrt{-a^2+b^2}+a\,\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]}{\left(a-b+\sqrt{-a^2+b^2}\right)\,\left(-1+\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right)}}\,\sqrt{-\frac{b+\sqrt{-a^2+b^2}+a\,\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]}{\left(-a+b+\sqrt{-a^2+b^2}\right)\,\left(-1+\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right)}}\right)\Big/$$

$$\left(\sqrt{\mathrm{Cos}[e+f\,x]}\,\sqrt{a+b\,\mathrm{Sin}[e+f\,x]}\,\sqrt{\frac{\left(-a-b+\sqrt{-a^2+b^2}\right)\,\left(1+\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right)}{\left(a-b+\sqrt{-a^2+b^2}\right)\,\left(-1+\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right)}}\right)-$$

$$\left(2\,\mathrm{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]^2\,\mathrm{EllipticF}\left[\mathrm{ArcSin}\left[\sqrt{\frac{\left(-a-b+\sqrt{-a^2+b^2}\right)\,\left(1+\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right)}{\left(a-b+\sqrt{-a^2+b^2}\right)\,\left(-1+\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right)}}\right],\,-1\right]\,\mathrm{Sin}[e+f\,x]\,\left(-1+\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right)\right.$$

$$\left.\left(1+\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right)\,\sqrt{\frac{b-\sqrt{-a^2+b^2}+a\,\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]}{\left(a-b+\sqrt{-a^2+b^2}\right)\,\left(-1+\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right)}}\,\sqrt{-\frac{b+\sqrt{-a^2+b^2}+a\,\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]}{\left(-a+b+\sqrt{-a^2+b^2}\right)\,\left(-1+\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right)}}\right)\Big/$$

$$\left(\mathrm{Cos}[e+f\,x]^{3/2}\,\sqrt{a+b\,\mathrm{Sin}[e+f\,x]}\,\sqrt{\frac{\left(-a-b+\sqrt{-a^2+b^2}\right)\,\left(1+\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right)}{\left(a-b+\sqrt{-a^2+b^2}\right)\,\left(-1+\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right)}}\right)+$$

$$\left(2\,\mathrm{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]^2\,\mathrm{EllipticF}\left[\mathrm{ArcSin}\left[\sqrt{\frac{\left(-a-b+\sqrt{-a^2+b^2}\right)\,\left(1+\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right)}{\left(a-b+\sqrt{-a^2+b^2}\right)\,\left(-1+\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right)}}\right],\,-1\right]\,\left(-1+\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right)\right.$$

$$\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\sqrt{\frac{b-\sqrt{-a^2+b^2}+a\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{\left(a-b+\sqrt{-a^2+b^2}\right)\left(-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)}}\sqrt{-\frac{b+\sqrt{-a^2+b^2}+a\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{\left(-a+b+\sqrt{-a^2+b^2}\right)\left(-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)}}$$

$$\left(\left(\frac{\left(-a-b+\sqrt{-a^2+b^2}\right)\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2}{2\left(a-b+\sqrt{-a^2+b^2}\right)\left(-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)}-\frac{\left(-a-b+\sqrt{-a^2+b^2}\right)\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)}{2\left(a-b+\sqrt{-a^2+b^2}\right)\left(-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)^2}\right)\right)\Big/$$

$$\left(\sqrt{\text{Cos}[e+f x]}\sqrt{a+b\,\text{Sin}[e+f x]}\left(\frac{\left(-a-b+\sqrt{-a^2+b^2}\right)\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)}{\left(a-b+\sqrt{-a^2+b^2}\right)\left(-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)}\right)^{3/2}\right)-\left(2\left(a-b+\sqrt{-a^2+b^2}\right)\text{Cos}\left[\frac{1}{2}(e+f x)\right]^2\right.$$

$$\left(-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)^2\sqrt{\frac{b-\sqrt{-a^2+b^2}+a\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{\left(a-b+\sqrt{-a^2+b^2}\right)\left(-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)}}\sqrt{-\frac{b+\sqrt{-a^2+b^2}+a\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{\left(-a+b+\sqrt{-a^2+b^2}\right)\left(-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)}}$$

$$\left.\left(\frac{\left(-a-b+\sqrt{-a^2+b^2}\right)\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2}{2\left(a-b+\sqrt{-a^2+b^2}\right)\left(-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)}-\frac{\left(-a-b+\sqrt{-a^2+b^2}\right)\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)}{2\left(a-b+\sqrt{-a^2+b^2}\right)\left(-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)^2}\right)\right)\Big/$$

$$\left(\left(-a-b+\sqrt{-a^2+b^2}\right)\sqrt{\text{Cos}[e+f x]}\sqrt{a+b\,\text{Sin}[e+f x]}\sqrt{1-\frac{\left(-a-b+\sqrt{-a^2+b^2}\right)\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)}{\left(a-b+\sqrt{-a^2+b^2}\right)\left(-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)}}\right.$$

$$\left.\sqrt{1+\frac{\left(-a-b+\sqrt{-a^2+b^2}\right)\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)}{\left(a-b+\sqrt{-a^2+b^2}\right)\left(-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)}}\right)-$$

$$\left(2\,\text{Cos}\left[\frac{1}{2}(e+f x)\right]^2\text{EllipticF}\left[\text{ArcSin}\left[\sqrt{\frac{\left(-a-b+\sqrt{-a^2+b^2}\right)\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)}{\left(a-b+\sqrt{-a^2+b^2}\right)\left(-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)}}\right],-1\right]\left(-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\right.$$

$$\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\sqrt{-\frac{b+\sqrt{-a^2+b^2}+a\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{\left(-a+b+\sqrt{-a^2+b^2}\right)\left(-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)}}$$

$$\left(\frac{a\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2}{2\left(a-b+\sqrt{-a^2+b^2}\right)\left(-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)}-\frac{\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\left(b-\sqrt{-a^2+b^2}+a\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)}{2\left(a-b+\sqrt{-a^2+b^2}\right)\left(-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)^2}\right)\Bigg)\Big/$$

$$\left(\sqrt{\text{Cos}[e+f x]}\sqrt{a+b\,\text{Sin}[e+f x]}\sqrt{\frac{\left(-a-b+\sqrt{-a^2+b^2}\right)\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)}{\left(a-b+\sqrt{-a^2+b^2}\right)\left(-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)}}\sqrt{\frac{b-\sqrt{-a^2+b^2}+a\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{\left(a-b+\sqrt{-a^2+b^2}\right)\left(-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)}}\right)-$$

$$\left(2\,\text{Cos}\left[\frac{1}{2}(e+f x)\right]^2\text{EllipticF}\left[\text{ArcSin}\left[\sqrt{\frac{\left(-a-b+\sqrt{-a^2+b^2}\right)\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)}{\left(a-b+\sqrt{-a^2+b^2}\right)\left(-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)}}\right],-1\right]\right.$$

$$\left(-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\sqrt{\frac{b-\sqrt{-a^2+b^2}+a\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{\left(a-b+\sqrt{-a^2+b^2}\right)\left(-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)}}$$

$$\left(-\frac{a\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2}{2\left(-a+b+\sqrt{-a^2+b^2}\right)\left(-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)}+\frac{\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\left(b+\sqrt{-a^2+b^2}+a\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)}{2\left(-a+b+\sqrt{-a^2+b^2}\right)\left(-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)^2}\right)\Bigg)\Big/$$

$$\left(\sqrt{\text{Cos}[e+f x]}\sqrt{a+b\,\text{Sin}[e+f x]}\sqrt{\frac{\left(-a-b+\sqrt{-a^2+b^2}\right)\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)}{\left(a-b+\sqrt{-a^2+b^2}\right)\left(-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)}}\sqrt{-\frac{b+\sqrt{-a^2+b^2}+a\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{\left(-a+b+\sqrt{-a^2+b^2}\right)\left(-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)}}\right)\Bigg)\Bigg)\Bigg)$$

- **Problem 617: Result unnecessarily involves imaginary or complex numbers.**

$$\int(e\,\text{Cos}[c+d x])^p\,(a+b\,\text{Sin}[c+d x])^2\,dx$$

Optimal (type 5, 157 leaves, 3 steps):

$$-\frac{a b (3+p) (e \text{Cos}[c+d x])^{1+p}}{d e (1+p) (2+p)}-\frac{\left(b^2+a^2 (2+p)\right) (e \text{Cos}[c+d x])^{1+p} \text{Hypergeometric2F1}\left[\frac{1}{2},\frac{1+p}{2},\frac{3+p}{2},\text{Cos}[c+d x]^2\right] \text{Sin}[c+d x]}{d e (1+p) (2+p) \sqrt{\text{Sin}[c+d x]^2}}-\frac{b (e \text{Cos}[c+d x])^{1+p} (a+b \text{Sin}[c+d x])}{d e (2+p)}$$

Result (type 5, 288 leaves):

$$\frac{1}{d (1+p) \sqrt{\text{Sin}[c+d x]^2}} (e \text{Cos}[c+d x])^p \left(\frac{1}{-1+p} 2^{-p} a b \left(1+e^{2 i (c+d x)}\right)^{-1-p} \left(e^{-i (c+d x)} \left(1+e^{2 i (c+d x)}\right)\right)^{1+p} \text{Cos}[c+d x]^{-p} \left(-(-1+p) \text{Hypergeometric2F1}\left[\frac{1}{2} (-1-p),-p,\frac{1-p}{2},-e^{2 i (c+d x)}\right]+e^{2 i (c+d x)} (1+p) \text{Hypergeometric2F1}\left[\frac{1-p}{2},-p,\frac{3-p}{2},-e^{2 i (c+d x)}\right]\right) \sqrt{\text{Sin}[c+d x]^2}-\frac{1}{2} b^2 \text{Hypergeometric2F1}\left[-\frac{1}{2},\frac{1+p}{2},\frac{3+p}{2},\text{Cos}[c+d x]^2\right] \text{Sin}[2 (c+d x)]-\frac{1}{2} a^2 \text{Hypergeometric2F1}\left[\frac{1}{2},\frac{1+p}{2},\frac{3+p}{2},\text{Cos}[c+d x]^2\right] \text{Sin}[2 (c+d x)]\right)$$

- **Problem 618: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int (e \text{Cos}[c+d x])^p (a+b \text{Sin}[c+d x]) \, dx$$

Optimal (type 5, 97 leaves, 2 steps):

$$-\frac{b (e \text{Cos}[c+d x])^{1+p}}{d e (1+p)}-\frac{a (e \text{Cos}[c+d x])^{1+p} \text{Hypergeometric2F1}\left[\frac{1}{2},\frac{1+p}{2},\frac{3+p}{2},\text{Cos}[c+d x]^2\right] \text{Sin}[c+d x]}{d e (1+p) \sqrt{\text{Sin}[c+d x]^2}}$$

Result (type 5, 233 leaves):

$$\frac{1}{2 d (1+p)} (e \text{Cos}[c+d x])^p \left(1/(-1+p) 2^{-p} b \left(1+e^{2 i (c+d x)}\right)^{-1-p} \left(e^{-i (c+d x)} \left(1+e^{2 i (c+d x)}\right)\right)^{1+p} \text{Cos}[c+d x]^{-p} \left(-(-1+p) \text{Hypergeometric2F1}\left[\frac{1}{2} (-1-p),-p,\frac{1-p}{2},-e^{2 i (c+d x)}\right]+e^{2 i (c+d x)} (1+p) \text{Hypergeometric2F1}\left[\frac{1-p}{2},-p,\frac{3-p}{2},-e^{2 i (c+d x)}\right]\right)-\frac{a \text{Hypergeometric2F1}\left[\frac{1}{2},\frac{1+p}{2},\frac{3+p}{2},\text{Cos}[c+d x]^2\right] \text{Sin}[2 (c+d x)]}{\sqrt{\text{Sin}[c+d x]^2}}\right)$$

- **Problem 619: Result more than twice size of optimal antiderivative.**

$$\int \frac{(e \text{Cos}[c+d x])^p}{a+b \text{Sin}[c+d x]} \, dx$$

Optimal (type 6, 158 leaves, 1 step):

$$-\frac{1}{b\,d\,(1-p)}$$

$$e\,\text{AppellF1}\left[1-p,\frac{1-p}{2},\frac{1-p}{2},2-p,\frac{a+b}{a+b\,\text{Sin}[c+d\,x]},\frac{a-b}{a+b\,\text{Sin}[c+d\,x]}\right](e\,\text{Cos}[c+d\,x])^{-1+p}\left(-\frac{b\,(1-\text{Sin}[c+d\,x])}{a+b\,\text{Sin}[c+d\,x]}\right)^{\frac{1-p}{2}}\left(\frac{b\,(1+\text{Sin}[c+d\,x])}{a+b\,\text{Sin}[c+d\,x]}\right)^{\frac{1-p}{2}}$$

Result (type 6, 6000 leaves) :

$$\Bigg(a^2\,(e\,\text{Cos}[c+d\,x])^p\,\text{Tan}[c+d\,x]\,\left(1+\text{Tan}[c+d\,x]^2\right)^{-1-\frac{p}{2}}\left(b\,\text{Tan}[c+d\,x]+a\sqrt{1+\text{Tan}[c+d\,x]^2}\right)$$

$$\Bigg(-\left(3\,a\,\text{AppellF1}\left[\frac{1}{2},\frac{p}{2},1,\frac{3}{2},-\text{Tan}[c+d\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\right]\sqrt{1+\text{Tan}[c+d\,x]^2}\right)\Bigg/$$

$$\Bigg(-3\,a^2\,\text{AppellF1}\left[\frac{1}{2},\frac{p}{2},1,\frac{3}{2},-\text{Tan}[c+d\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\right]+\Bigg(2\,(a^2-b^2)\,\text{AppellF1}\left[\frac{3}{2},\frac{p}{2},2,\frac{5}{2},-\text{Tan}[c+d\,x]^2,\right.$$

$$\left.\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\right]+a^2\,p\,\text{AppellF1}\left[\frac{3}{2},\frac{2+p}{2},1,\frac{5}{2},-\text{Tan}[c+d\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\right]\Bigg)\text{Tan}[c+d\,x]^2\Bigg)+$$

$$\left(2\,b\,\text{AppellF1}\left[1,\frac{1+p}{2},1,2,-\text{Tan}[c+d\,x]^2,\frac{(-a^2+b^2)\,\text{Tan}[c+d\,x]^2}{a^2}\right]\text{Tan}[c+d\,x]\right)\Bigg/$$

$$\Bigg(-4\,a^2\,\text{AppellF1}\left[1,\frac{1+p}{2},1,2,-\text{Tan}[c+d\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\right]+\Bigg(2\,(a^2-b^2)\,\text{AppellF1}\left[2,\frac{1+p}{2},2,3,-\text{Tan}[c+d\,x]^2,\right.$$

$$\left.\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\right]+a^2\,(1+p)\,\text{AppellF1}\left[2,\frac{3+p}{2},1,3,-\text{Tan}[c+d\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\right]\Bigg)\text{Tan}[c+d\,x]^2\Bigg)\Bigg)\Bigg)\Bigg/$$

$$\Bigg(d\,(a+b\,\text{Sin}[c+d\,x])\left(a+\frac{b\,\text{Tan}[c+d\,x]}{\sqrt{1+\text{Tan}[c+d\,x]^2}}\right)\left(-b^2\,\text{Tan}[c+d\,x]^2+a^2\left(1+\text{Tan}[c+d\,x]^2\right)\right)$$

$$\Bigg(-\frac{1}{\left(a+\frac{b\,\text{Tan}[c+d\,x]}{\sqrt{1+\text{Tan}[c+d\,x]^2}}\right)\left(-b^2\,\text{Tan}[c+d\,x]^2+a^2\left(1+\text{Tan}[c+d\,x]^2\right)\right)^2}$$

$$a^2\,\text{Tan}[c+d\,x]\,\left(2\,a^2\,\text{Sec}[c+d\,x]^2\,\text{Tan}[c+d\,x]-2\,b^2\,\text{Sec}[c+d\,x]^2\,\text{Tan}[c+d\,x]\right)\left(1+\text{Tan}[c+d\,x]^2\right)^{-1-\frac{p}{2}}$$

$$\left(b\,\text{Tan}[c+d\,x]+a\sqrt{1+\text{Tan}[c+d\,x]^2}\right)\Bigg(-\left(3\,a\,\text{AppellF1}\left[\frac{1}{2},\frac{p}{2},1,\frac{3}{2},-\text{Tan}[c+d\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\right]\sqrt{1+\text{Tan}[c+d\,x]^2}\right)\Bigg/$$

$$\Bigg(-3\,a^2\,\text{AppellF1}\left[\frac{1}{2},\frac{p}{2},1,\frac{3}{2},-\text{Tan}[c+d\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\right]+\Bigg(2\,(a^2-b^2)\,\text{AppellF1}\left[\frac{3}{2},\frac{p}{2},2,\frac{5}{2},-\text{Tan}[c+d\,x]^2,\right.$$

$$\Big(-1+\frac{b^2}{a^2}\Big)\,\text{Tan}[c+d\,x]^2\Big]+a^2\,p\,\text{AppellF1}\Big[\frac{3}{2},\,\frac{2+p}{2},\,1,\,\frac{5}{2},\,-\text{Tan}[c+d\,x]^2,\,\Big(-1+\frac{b^2}{a^2}\Big)\,\text{Tan}[c+d\,x]^2\Big]\Big)\,\text{Tan}[c+d\,x]^2\Big)+$$

$$\Big(2\,b\,\text{AppellF1}\Big[1,\,\frac{1+p}{2},\,1,\,2,\,-\text{Tan}[c+d\,x]^2,\,\frac{(-a^2+b^2)\,\text{Tan}[c+d\,x]^2}{a^2}\Big]\,\text{Tan}[c+d\,x]\Big)\Big/$$

$$\Big(-4\,a^2\,\text{AppellF1}\Big[1,\,\frac{1+p}{2},\,1,\,2,\,-\text{Tan}[c+d\,x]^2,\,\Big(-1+\frac{b^2}{a^2}\Big)\,\text{Tan}[c+d\,x]^2\Big]+\Big(2\,(a^2-b^2)\,\text{AppellF1}\Big[2,\,\frac{1+p}{2},\,2,\,3,\,-\text{Tan}[c+d\,x]^2,$$

$$\Big(-1+\frac{b^2}{a^2}\Big)\,\text{Tan}[c+d\,x]^2\Big]+a^2\,(1+p)\,\text{AppellF1}\Big[2,\,\frac{3+p}{2},\,1,\,3,\,-\text{Tan}[c+d\,x]^2,\,\Big(-1+\frac{b^2}{a^2}\Big)\,\text{Tan}[c+d\,x]^2\Big]\Big)\,\text{Tan}[c+d\,x]^2\Big)\Big)+$$

$$\frac{1}{\Big(a+\frac{b\,\text{Tan}[c+d\,x]}{\sqrt{1+\text{Tan}[c+d\,x]^2}}\Big)\,\big(-b^2\,\text{Tan}[c+d\,x]^2+a^2\,(1+\text{Tan}[c+d\,x]^2)\big)}\,a^2\,\text{Tan}[c+d\,x]\,\big(1+\text{Tan}[c+d\,x]^2\big)^{-1-\frac{p}{2}}$$

$$\Big(b\,\text{Sec}[c+d\,x]^2+\frac{a\,\text{Sec}[c+d\,x]^2\,\text{Tan}[c+d\,x]}{\sqrt{1+\text{Tan}[c+d\,x]^2}}\Big)$$

$$\Big(-\Big(3\,a\,\text{AppellF1}\Big[\frac{1}{2},\,\frac{p}{2},\,1,\,\frac{3}{2},\,-\text{Tan}[c+d\,x]^2,\,\Big(-1+\frac{b^2}{a^2}\Big)\,\text{Tan}[c+d\,x]^2\Big]\,\sqrt{1+\text{Tan}[c+d\,x]^2}\Big)\Big/$$

$$\Big(-3\,a^2\,\text{AppellF1}\Big[\frac{1}{2},\,\frac{p}{2},\,1,\,\frac{3}{2},\,-\text{Tan}[c+d\,x]^2,\,\Big(-1+\frac{b^2}{a^2}\Big)\,\text{Tan}[c+d\,x]^2\Big]+\Big(2\,(a^2-b^2)\,\text{AppellF1}\Big[\frac{3}{2},\,\frac{p}{2},\,2,\,\frac{5}{2},\,-\text{Tan}[c+d\,x]^2,$$

$$\Big(-1+\frac{b^2}{a^2}\Big)\,\text{Tan}[c+d\,x]^2\Big]+a^2\,p\,\text{AppellF1}\Big[\frac{3}{2},\,\frac{2+p}{2},\,1,\,\frac{5}{2},\,-\text{Tan}[c+d\,x]^2,\,\Big(-1+\frac{b^2}{a^2}\Big)\,\text{Tan}[c+d\,x]^2\Big]\Big)\,\text{Tan}[c+d\,x]^2\Big)+$$

$$\Big(2\,b\,\text{AppellF1}\Big[1,\,\frac{1+p}{2},\,1,\,2,\,-\text{Tan}[c+d\,x]^2,\,\frac{(-a^2+b^2)\,\text{Tan}[c+d\,x]^2}{a^2}\Big]\,\text{Tan}[c+d\,x]\Big)\Big/$$

$$\Big(-4\,a^2\,\text{AppellF1}\Big[1,\,\frac{1+p}{2},\,1,\,2,\,-\text{Tan}[c+d\,x]^2,\,\Big(-1+\frac{b^2}{a^2}\Big)\,\text{Tan}[c+d\,x]^2\Big]+\Big(2\,(a^2-b^2)\,\text{AppellF1}\Big[2,\,\frac{1+p}{2},\,2,\,3,\,-\text{Tan}[c+d\,x]^2,$$

$$\Big(-1+\frac{b^2}{a^2}\Big)\,\text{Tan}[c+d\,x]^2\Big]+a^2\,(1+p)\,\text{AppellF1}\Big[2,\,\frac{3+p}{2},\,1,\,3,\,-\text{Tan}[c+d\,x]^2,\,\Big(-1+\frac{b^2}{a^2}\Big)\,\text{Tan}[c+d\,x]^2\Big]\Big)\,\text{Tan}[c+d\,x]^2\Big)\Big)-$$

$$\frac{1}{\Big(a+\frac{b\,\text{Tan}[c+d\,x]}{\sqrt{1+\text{Tan}[c+d\,x]^2}}\Big)^2\,\big(-b^2\,\text{Tan}[c+d\,x]^2+a^2\,(1+\text{Tan}[c+d\,x]^2)\big)}\,a^2\,\text{Tan}[c+d\,x]\,\big(1+\text{Tan}[c+d\,x]^2\big)^{-1-\frac{p}{2}}$$

$$\Big(-\frac{b\,\text{Sec}[c+d\,x]^2\,\text{Tan}[c+d\,x]^2}{(1+\text{Tan}[c+d\,x]^2)^{3/2}}+\frac{b\,\text{Sec}[c+d\,x]^2}{\sqrt{1+\text{Tan}[c+d\,x]^2}}\Big)\,\Big(b\,\text{Tan}[c+d\,x]+a\,\sqrt{1+\text{Tan}[c+d\,x]^2}\Big)$$

$$\left(-\left(3\,a\,\text{AppellF1}\left[\frac{1}{2},\frac{p}{2},1,\frac{3}{2},-\text{Tan}[c+d\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\right]\sqrt{1+\text{Tan}[c+d\,x]^2}\right)\Big/\right.$$

$$\left(-3\,a^2\,\text{AppellF1}\left[\frac{1}{2},\frac{p}{2},1,\frac{3}{2},-\text{Tan}[c+d\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\right]+\left(2\left(a^2-b^2\right)\text{AppellF1}\left[\frac{3}{2},\frac{p}{2},2,\frac{5}{2},-\text{Tan}[c+d\,x]^2,\right.\right.\right.$$

$$\left.\left.\left.\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\right]+a^2\,p\,\text{AppellF1}\left[\frac{3}{2},\frac{2+p}{2},1,\frac{5}{2},-\text{Tan}[c+d\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\right]\right)\text{Tan}[c+d\,x]^2\right)+$$

$$\left(2\,b\,\text{AppellF1}\left[1,\frac{1+p}{2},1,2,-\text{Tan}[c+d\,x]^2,\frac{\left(-a^2+b^2\right)\text{Tan}[c+d\,x]^2}{a^2}\right]\text{Tan}[c+d\,x]\right)\Big/$$

$$\left(-4\,a^2\,\text{AppellF1}\left[1,\frac{1+p}{2},1,2,-\text{Tan}[c+d\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\right]+\left(2\left(a^2-b^2\right)\text{AppellF1}\left[2,\frac{1+p}{2},2,3,-\text{Tan}[c+d\,x]^2,\right.\right.\right.$$

$$\left.\left.\left.\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\right]+a^2\,(1+p)\,\text{AppellF1}\left[2,\frac{3+p}{2},1,3,-\text{Tan}[c+d\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\right]\right)\text{Tan}[c+d\,x]^2\right)\right)+$$

$$\frac{1}{\left(a+\frac{b\,\text{Tan}[c+d\,x]}{\sqrt{1+\text{Tan}[c+d\,x]^2}}\right)\left(-b^2\,\text{Tan}[c+d\,x]^2+a^2\left(1+\text{Tan}[c+d\,x]^2\right)\right)}\,2\,a^2\left(-1-\frac{p}{2}\right)\text{Sec}[c+d\,x]^2\,\text{Tan}[c+d\,x]^2$$

$$\left(1+\text{Tan}[c+d\,x]^2\right)^{-2-\frac{p}{2}}\left(b\,\text{Tan}[c+d\,x]+a\sqrt{1+\text{Tan}[c+d\,x]^2}\right)$$

$$\left(-\left(3\,a\,\text{AppellF1}\left[\frac{1}{2},\frac{p}{2},1,\frac{3}{2},-\text{Tan}[c+d\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\right]\sqrt{1+\text{Tan}[c+d\,x]^2}\right)\Big/\right.$$

$$\left(-3\,a^2\,\text{AppellF1}\left[\frac{1}{2},\frac{p}{2},1,\frac{3}{2},-\text{Tan}[c+d\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\right]+\left(2\left(a^2-b^2\right)\text{AppellF1}\left[\frac{3}{2},\frac{p}{2},2,\frac{5}{2},-\text{Tan}[c+d\,x]^2,\right.\right.\right.$$

$$\left.\left.\left.\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\right]+a^2\,p\,\text{AppellF1}\left[\frac{3}{2},\frac{2+p}{2},1,\frac{5}{2},-\text{Tan}[c+d\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\right]\right)\text{Tan}[c+d\,x]^2\right)+$$

$$\left(2\,b\,\text{AppellF1}\left[1,\frac{1+p}{2},1,2,-\text{Tan}[c+d\,x]^2,\frac{\left(-a^2+b^2\right)\text{Tan}[c+d\,x]^2}{a^2}\right]\text{Tan}[c+d\,x]\right)\Big/$$

$$\left(-4\,a^2\,\text{AppellF1}\left[1,\frac{1+p}{2},1,2,-\text{Tan}[c+d\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\right]+\left(2\left(a^2-b^2\right)\text{AppellF1}\left[2,\frac{1+p}{2},2,3,-\text{Tan}[c+d\,x]^2,\right.\right.\right.$$

$$\left.\left.\left.\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\right]+a^2\,(1+p)\,\text{AppellF1}\left[2,\frac{3+p}{2},1,3,-\text{Tan}[c+d\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\right]\right)\text{Tan}[c+d\,x]^2\right)\right)+$$

$$\frac{1}{\left(a+\frac{b\,\text{Tan}[c+d\,x]}{\sqrt{1+\text{Tan}[c+d\,x]^2}}\right)\left(-b^2\,\text{Tan}[c+d\,x]^2+a^2\left(1+\text{Tan}[c+d\,x]^2\right)\right)}\,a^2\,\text{Sec}[c+d\,x]^2\left(1+\text{Tan}[c+d\,x]^2\right)^{-1-\frac{p}{2}}$$

$$\left(b\,\text{Tan}[c+d\,x]+a\sqrt{1+\text{Tan}[c+d\,x]^2}\right)$$

$$\Bigg(-\left(3\,a\,\text{AppellF1}\left[\frac{1}{2},\frac{p}{2},1,\frac{3}{2},-\text{Tan}[c+d\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\right]\sqrt{1+\text{Tan}[c+d\,x]^2}\right)\Big/$$

$$\Bigg(-3\,a^2\,\text{AppellF1}\left[\frac{1}{2},\frac{p}{2},1,\frac{3}{2},-\text{Tan}[c+d\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\right]+\Bigg(2\left(a^2-b^2\right)\text{AppellF1}\Bigg[\frac{3}{2},\frac{p}{2},2,\frac{5}{2},-\text{Tan}[c+d\,x]^2,$$

$$\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\Bigg]+a^2\,p\,\text{AppellF1}\left[\frac{3}{2},\frac{2+p}{2},1,\frac{5}{2},-\text{Tan}[c+d\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\right]\Bigg)\text{Tan}[c+d\,x]^2\Bigg)+$$

$$\left(2\,b\,\text{AppellF1}\left[1,\frac{1+p}{2},1,2,-\text{Tan}[c+d\,x]^2,\frac{\left(-a^2+b^2\right)\text{Tan}[c+d\,x]^2}{a^2}\right]\text{Tan}[c+d\,x]\right)\Big/$$

$$\Bigg(-4\,a^2\,\text{AppellF1}\left[1,\frac{1+p}{2},1,2,-\text{Tan}[c+d\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\right]+\Bigg(2\left(a^2-b^2\right)\text{AppellF1}\Bigg[2,\frac{1+p}{2},2,3,-\text{Tan}[c+d\,x]^2,$$

$$\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\Bigg]+a^2\,(1+p)\,\text{AppellF1}\left[2,\frac{3+p}{2},1,3,-\text{Tan}[c+d\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\right]\Bigg)\text{Tan}[c+d\,x]^2\Bigg)\Bigg)+$$

$$\frac{1}{\left(a+\frac{b\,\text{Tan}[c+d\,x]}{\sqrt{1+\text{Tan}[c+d\,x]^2}}\right)\left(-b^2\,\text{Tan}[c+d\,x]^2+a^2\left(1+\text{Tan}[c+d\,x]^2\right)\right)}a^2\,\text{Tan}[c+d\,x]\left(1+\text{Tan}[c+d\,x]^2\right)^{-1-\frac{p}{2}}$$

$$\left(b\,\text{Tan}[c+d\,x]+a\sqrt{1+\text{Tan}[c+d\,x]^2}\right)$$

$$\Bigg(-\left(3\,a\,\text{AppellF1}\left[\frac{1}{2},\frac{p}{2},1,\frac{3}{2},-\text{Tan}[c+d\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\right]\text{Sec}[c+d\,x]^2\,\text{Tan}[c+d\,x]\right)\Big/\Bigg(\sqrt{1+\text{Tan}[c+d\,x]^2}$$

$$\Bigg(-3\,a^2\,\text{AppellF1}\left[\frac{1}{2},\frac{p}{2},1,\frac{3}{2},-\text{Tan}[c+d\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\right]+\Bigg(2\left(a^2-b^2\right)\text{AppellF1}\Bigg[\frac{3}{2},\frac{p}{2},2,\frac{5}{2},-\text{Tan}[c+d\,x]^2,$$

$$\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\Bigg]+a^2\,p\,\text{AppellF1}\left[\frac{3}{2},\frac{2+p}{2},1,\frac{5}{2},-\text{Tan}[c+d\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\right]\Bigg)\text{Tan}[c+d\,x]^2\Bigg)\Bigg)-$$

$$\Bigg(3\,a\,\Bigg(-\frac{1}{3}\,p\,\text{AppellF1}\left[\frac{3}{2},1+\frac{p}{2},1,\frac{5}{2},-\text{Tan}[c+d\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\right]\text{Sec}[c+d\,x]^2\,\text{Tan}[c+d\,x]+$$

$$\frac{2}{3}\left(-1+\frac{b^2}{a^2}\right)\text{AppellF1}\left[\frac{3}{2},\frac{p}{2},2,\frac{5}{2},-\text{Tan}[c+d\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\right]\text{Sec}[c+d\,x]^2\,\text{Tan}[c+d\,x]\Bigg)\sqrt{1+\text{Tan}[c+d\,x]^2}\Bigg)\Big/$$

$$\Bigg(-3\,a^2\,\text{AppellF1}\left[\frac{1}{2},\frac{p}{2},1,\frac{3}{2},-\text{Tan}[c+d\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\right]+\Bigg(2\left(a^2-b^2\right)\text{AppellF1}\Bigg[\frac{3}{2},\frac{p}{2},2,\frac{5}{2},-\text{Tan}[c+d\,x]^2,$$

$$\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\Bigg]+a^2\,p\,\text{AppellF1}\left[\frac{3}{2},\frac{2+p}{2},1,\frac{5}{2},-\text{Tan}[c+d\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\right]\Bigg)\text{Tan}[c+d\,x]^2\Bigg)+$$

$$\left(2\,b\,\text{AppellF1}\left[1,\frac{1+p}{2},1,2,-\text{Tan}[c+d\,x]^2,\frac{\left(-a^2+b^2\right)\text{Tan}[c+d\,x]^2}{a^2}\right]\text{Sec}[c+d\,x]^2\right)\Big/$$

$$\left(-4\,a^2\,\text{AppellF1}\left[1,\frac{1+p}{2},1,2,-\text{Tan}[c+d\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\right]+\left(2\left(a^2-b^2\right)\text{AppellF1}\left[2,\frac{1+p}{2},2,3,-\text{Tan}[c+d\,x]^2,\right.\right.\right.$$

$$\left.\left.\left.\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\right]+a^2\,(1+p)\,\text{AppellF1}\left[2,\frac{3+p}{2},1,3,-\text{Tan}[c+d\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\right]\right)\text{Tan}[c+d\,x]^2\right)+$$

$$\left(2\,b\,\text{Tan}[c+d\,x]\left(1\Big/a^2\left(-a^2+b^2\right)\text{AppellF1}\left[2,\frac{1+p}{2},2,3,-\text{Tan}[c+d\,x]^2,\frac{\left(-a^2+b^2\right)\text{Tan}[c+d\,x]^2}{a^2}\right]\text{Sec}[c+d\,x]^2\,\text{Tan}[c+d\,x]-\right.\right.$$

$$\left.\left.\frac{1}{2}\,(1+p)\,\text{AppellF1}\left[2,1+\frac{1+p}{2},1,3,-\text{Tan}[c+d\,x]^2,\frac{\left(-a^2+b^2\right)\text{Tan}[c+d\,x]^2}{a^2}\right]\text{Sec}[c+d\,x]^2\,\text{Tan}[c+d\,x]\right)\right)\Big/$$

$$\left(-4\,a^2\,\text{AppellF1}\left[1,\frac{1+p}{2},1,2,-\text{Tan}[c+d\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\right]+\left(2\left(a^2-b^2\right)\text{AppellF1}\left[2,\frac{1+p}{2},2,3,-\text{Tan}[c+d\,x]^2,\right.\right.\right.$$

$$\left.\left.\left.\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\right]+a^2\,(1+p)\,\text{AppellF1}\left[2,\frac{3+p}{2},1,3,-\text{Tan}[c+d\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\right]\right)\text{Tan}[c+d\,x]^2\right)+$$

$$\left(3\,a\,\text{AppellF1}\left[\frac{1}{2},\frac{p}{2},1,\frac{3}{2},-\text{Tan}[c+d\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\right]\sqrt{1+\text{Tan}[c+d\,x]^2}\left(2\left(2\left(a^2-b^2\right)\text{AppellF1}\left[\frac{3}{2},\frac{p}{2},\right.\right.\right.\right.$$

$$\left.\left.2,\frac{5}{2},-\text{Tan}[c+d\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\right]+a^2\,p\,\text{AppellF1}\left[\frac{3}{2},\frac{2+p}{2},1,\frac{5}{2},-\text{Tan}[c+d\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\right]\right)$$

$$\text{Sec}[c+d\,x]^2\,\text{Tan}[c+d\,x]-3\,a^2\left(-\frac{1}{3}\,p\,\text{AppellF1}\left[\frac{3}{2},1+\frac{p}{2},1,\frac{5}{2},-\text{Tan}[c+d\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\right]\text{Sec}[c+d\,x]^2\right.$$

$$\left.\text{Tan}[c+d\,x]+\frac{2}{3}\left(-1+\frac{b^2}{a^2}\right)\text{AppellF1}\left[\frac{3}{2},\frac{p}{2},2,\frac{5}{2},-\text{Tan}[c+d\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\right]\text{Sec}[c+d\,x]^2\,\text{Tan}[c+d\,x]\right)+$$

$$\text{Tan}[c+d\,x]^2\left(2\left(a^2-b^2\right)\left(-\frac{3}{5}\,p\,\text{AppellF1}\left[\frac{5}{2},1+\frac{p}{2},2,\frac{7}{2},-\text{Tan}[c+d\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\right]\text{Sec}[c+d\,x]^2\right.\right.$$

$$\left.\text{Tan}[c+d\,x]+\frac{12}{5}\left(-1+\frac{b^2}{a^2}\right)\text{AppellF1}\left[\frac{5}{2},\frac{p}{2},3,\frac{7}{2},-\text{Tan}[c+d\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\right]\text{Sec}[c+d\,x]^2\,\text{Tan}[c+d\,x]\right)+$$

$$a^2\,p\left(\frac{6}{5}\left(-1+\frac{b^2}{a^2}\right)\text{AppellF1}\left[\frac{5}{2},\frac{2+p}{2},2,\frac{7}{2},-\text{Tan}[c+d\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\right]\text{Sec}[c+d\,x]^2\,\text{Tan}[c+d\,x]-\right.$$

$$\left.\left.\left.\left.\frac{3}{5}\,(2+p)\,\text{AppellF1}\left[\frac{5}{2},1+\frac{2+p}{2},1,\frac{7}{2},-\text{Tan}[c+d\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\right]\text{Sec}[c+d\,x]^2\,\text{Tan}[c+d\,x]\right)\right)\right)\right)\Big/$$

$$\left(-3\,a^2\,\text{AppellF1}\left[\frac{1}{2},\frac{p}{2},1,\frac{3}{2},-\text{Tan}[c+d\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\right]+\left(2\left(a^2-b^2\right)\text{AppellF1}\left[\frac{3}{2},\frac{p}{2},2,\frac{5}{2},-\text{Tan}[c+d\,x]^2,\right.\right.\right.$$

$$\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\Big]+a^2\,p\,\text{AppellF1}\Big[\frac{3}{2},\,\frac{2+p}{2},\,1,\,\frac{5}{2},\,-\text{Tan}[c+d\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\Big]\Big)\,\text{Tan}[c+d\,x]^2\Big)^2-$$

$$\Big(2\,b\,\text{AppellF1}\Big[1,\,\frac{1+p}{2},\,1,\,2,\,-\text{Tan}[c+d\,x]^2,\,\frac{\left(-a^2+b^2\right)\text{Tan}[c+d\,x]^2}{a^2}\Big]\,\text{Tan}[c+d\,x]\,\Big(2\,\Big(2\,\left(a^2-b^2\right)\text{AppellF1}\Big[2,\,\frac{1+p}{2},\,2,$$

$$3,\,-\text{Tan}[c+d\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\Big]+a^2\,(1+p)\,\text{AppellF1}\Big[2,\,\frac{3+p}{2},\,1,\,3,\,-\text{Tan}[c+d\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\Big]\Big)$$

$$\text{Sec}[c+d\,x]^2\,\text{Tan}[c+d\,x]-4\,a^2\,\Big(\Big(\left(-1+\frac{b^2}{a^2}\right)\text{AppellF1}\Big[2,\,\frac{1+p}{2},\,2,\,3,\,-\text{Tan}[c+d\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\Big]\,\text{Sec}[c+d\,x]^2$$

$$\text{Tan}[c+d\,x]-\frac{1}{2}\,(1+p)\,\text{AppellF1}\Big[2,\,1+\frac{1+p}{2},\,1,\,3,\,-\text{Tan}[c+d\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\Big]\,\text{Sec}[c+d\,x]^2\,\text{Tan}[c+d\,x]\Big)+$$

$$\text{Tan}[c+d\,x]^2\,\Big(2\,\left(a^2-b^2\right)\,\Big(\frac{8}{3}\,\left(-1+\frac{b^2}{a^2}\right)\text{AppellF1}\Big[3,\,\frac{1+p}{2},\,3,\,4,\,-\text{Tan}[c+d\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\Big]\,\text{Sec}[c+d\,x]^2$$

$$\text{Tan}[c+d\,x]-\frac{2}{3}\,(1+p)\,\text{AppellF1}\Big[3,\,1+\frac{1+p}{2},\,2,\,4,\,-\text{Tan}[c+d\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\Big]\,\text{Sec}[c+d\,x]^2\,\text{Tan}[c+d\,x]\Big)+$$

$$a^2\,(1+p)\,\Big(\frac{4}{3}\,\left(-1+\frac{b^2}{a^2}\right)\text{AppellF1}\Big[3,\,\frac{3+p}{2},\,2,\,4,\,-\text{Tan}[c+d\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\Big]\,\text{Sec}[c+d\,x]^2\,\text{Tan}[c+d\,x]-$$

$$\frac{2}{3}\,(3+p)\,\text{AppellF1}\Big[3,\,1+\frac{3+p}{2},\,1,\,4,\,-\text{Tan}[c+d\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\Big]\,\text{Sec}[c+d\,x]^2\,\text{Tan}[c+d\,x]\Big)\Big)\Big)\Big)\Big/$$

$$\Big(-4\,a^2\,\text{AppellF1}\Big[1,\,\frac{1+p}{2},\,1,\,2,\,-\text{Tan}[c+d\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\Big]+\Big(2\,\left(a^2-b^2\right)\text{AppellF1}\Big[2,\,\frac{1+p}{2},\,2,\,3,\,-\text{Tan}[c+d\,x]^2,$$

$$\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\Big]+a^2\,(1+p)\,\text{AppellF1}\Big[2,\,\frac{3+p}{2},\,1,\,3,\,-\text{Tan}[c+d\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\Big]\Big)\,\text{Tan}[c+d\,x]^2\Big)^2\Big)\Big)$$

- **Problem 620: Result more than twice size of optimal antiderivative.**

$$\int\frac{(e\,\text{Cos}[c+d\,x])^p}{(a+b\,\text{Sin}[c+d\,x])^2}\,dx$$

Optimal (type 6, 170 leaves, 1 step):

$$-\Big(e\,\text{AppellF1}\Big[2-p,\,\frac{1-p}{2},\,\frac{1-p}{2},\,3-p,\,\frac{a+b}{a+b\,\text{Sin}[c+d\,x]},\,\frac{a-b}{a+b\,\text{Sin}[c+d\,x]}\Big]$$

$$(e\,\text{Cos}[c+d\,x])^{-1+p}\left(-\frac{b\,(1-\text{Sin}[c+d\,x])}{a+b\,\text{Sin}[c+d\,x]}\right)^{\frac{1-p}{2}}\left(\frac{b\,(1+\text{Sin}[c+d\,x])}{a+b\,\text{Sin}[c+d\,x]}\right)^{\frac{1-p}{2}}\Big)\Big/\left(b\,d\,(2-p)\,(a+b\,\text{Sin}[c+d\,x])\right)$$

Result (type 6, 6875 leaves) :

$$\Bigg(a^2 \,(e \,\mathrm{Cos}[c+d\,x])^p \,\mathrm{Tan}[c+d\,x] \,\left(1+\mathrm{Tan}[c+d\,x]^2\right)^{-p/2}$$

$$\Bigg(\Bigg(3\,(a^2+b^2)\,\mathrm{AppellF1}\Big[\frac{1}{2},\frac{p}{2},1,\frac{3}{2},-\mathrm{Tan}[c+d\,x]^2,\frac{(-a^2+b^2)\,\mathrm{Tan}[c+d\,x]^2}{a^2}\Big]\Bigg)\Big/\Bigg(\Bigg(-3\,a^2\,\mathrm{AppellF1}\Big[\frac{1}{2},\frac{p}{2},1,\frac{3}{2},-\mathrm{Tan}[c+d\,x]^2,$$

$$\left(-1+\frac{b^2}{a^2}\right)\mathrm{Tan}[c+d\,x]^2\Big]+\Big(2\,(a^2-b^2)\,\mathrm{AppellF1}\Big[\frac{3}{2},\frac{p}{2},2,\frac{5}{2},-\mathrm{Tan}[c+d\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\mathrm{Tan}[c+d\,x]^2\Big]+a^2\,p$$

$$\mathrm{AppellF1}\Big[\frac{3}{2},\frac{2+p}{2},1,\frac{5}{2},-\mathrm{Tan}[c+d\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\mathrm{Tan}[c+d\,x]^2\Big]\Big)\,\mathrm{Tan}[c+d\,x]^2\Bigg)\,\left(-b^2\,\mathrm{Tan}[c+d\,x]^2+a^2\,(1+\mathrm{Tan}[c+d\,x]^2)\right)\Bigg)+$$

$$\frac{1}{\left(b^2\,\mathrm{Tan}[c+d\,x]^2-a^2\,(1+\mathrm{Tan}[c+d\,x]^2)\right)^2}\,2\,a\,b\,\Bigg(-\Bigg(3\,a\,b\,\mathrm{AppellF1}\Big[\frac{1}{2},\frac{p}{2},2,\frac{3}{2},-\mathrm{Tan}[c+d\,x]^2,\frac{(-a^2+b^2)\,\mathrm{Tan}[c+d\,x]^2}{a^2}\Big]\Bigg)\Big/$$

$$\Bigg(-3\,a^2\,\mathrm{AppellF1}\Big[\frac{1}{2},\frac{p}{2},2,\frac{3}{2},-\mathrm{Tan}[c+d\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\mathrm{Tan}[c+d\,x]^2\Big]+\Big(4\,(a^2-b^2)\,\mathrm{AppellF1}\Big[\frac{3}{2},\frac{p}{2},3,\frac{5}{2},-\mathrm{Tan}[c+d\,x]^2,$$

$$\left(-1+\frac{b^2}{a^2}\right)\mathrm{Tan}[c+d\,x]^2\Big]+a^2\,p\,\mathrm{AppellF1}\Big[\frac{3}{2},\frac{2+p}{2},2,\frac{5}{2},-\mathrm{Tan}[c+d\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\mathrm{Tan}[c+d\,x]^2\Big]\Big)\,\mathrm{Tan}[c+d\,x]^2\Bigg)+$$

$$\Bigg(2\,(-a^2+b^2)\,\mathrm{AppellF1}\Big[1,\frac{1}{2}\,(-1+p),2,2,-\mathrm{Tan}[c+d\,x]^2,\frac{(-a^2+b^2)\,\mathrm{Tan}[c+d\,x]^2}{a^2}\Big]\,\mathrm{Tan}[c+d\,x]\,\sqrt{1+\mathrm{Tan}[c+d\,x]^2}\Bigg)\Big/$$

$$\Bigg(-4\,a^2\,\mathrm{AppellF1}\Big[1,\frac{1}{2}\,(-1+p),2,2,-\mathrm{Tan}[c+d\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\mathrm{Tan}[c+d\,x]^2\Big]+$$

$$\Big(4\,(a^2-b^2)\,\mathrm{AppellF1}\Big[2,\frac{1}{2}\,(-1+p),3,3,-\mathrm{Tan}[c+d\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\mathrm{Tan}[c+d\,x]^2\Big]+a^2\,(-1+p)$$

$$\mathrm{AppellF1}\Big[2,\frac{1+p}{2},2,3,-\mathrm{Tan}[c+d\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\mathrm{Tan}[c+d\,x]^2\Big]\Big)\,\mathrm{Tan}[c+d\,x]^2\Bigg)\Bigg)\Bigg)\Bigg)\Big/$$

$$\Bigg((-a^2+b^2)\,d\,(a+b\,\mathrm{Sin}[c+d\,x])^2\,\Bigg(-\frac{1}{-a^2+b^2}\,a^2\,p\,\mathrm{Sec}[c+d\,x]^2\,\mathrm{Tan}[c+d\,x]^2\,\left(1+\mathrm{Tan}[c+d\,x]^2\right)^{-1-\frac{p}{2}}$$

$$\Bigg(\Bigg(3\,(a^2+b^2)\,\mathrm{AppellF1}\Big[\frac{1}{2},\frac{p}{2},1,\frac{3}{2},-\mathrm{Tan}[c+d\,x]^2,\frac{(-a^2+b^2)\,\mathrm{Tan}[c+d\,x]^2}{a^2}\Big]\Bigg)\Big/\Bigg(\Bigg(-3\,a^2\,\mathrm{AppellF1}\Big[\frac{1}{2},\frac{p}{2},1,\frac{3}{2},-\mathrm{Tan}[c+d\,x]^2,$$

$$\left(-1+\frac{b^2}{a^2}\right)\mathrm{Tan}[c+d\,x]^2\Big]+\Big(2\,(a^2-b^2)\,\mathrm{AppellF1}\Big[\frac{3}{2},\frac{p}{2},2,\frac{5}{2},-\mathrm{Tan}[c+d\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\mathrm{Tan}[c+d\,x]^2\Big]+a^2\,p\,\mathrm{AppellF1}\Big[\frac{3}{2},$$

$$\frac{2+p}{2},1,\frac{5}{2},-\mathrm{Tan}[c+d\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\mathrm{Tan}[c+d\,x]^2\Big]\Big)\,\mathrm{Tan}[c+d\,x]^2\Bigg)\,\left(-b^2\,\mathrm{Tan}[c+d\,x]^2+a^2\,(1+\mathrm{Tan}[c+d\,x]^2)\right)\Bigg)+$$

$$\frac{1}{\left(b^2\,\mathrm{Tan}[c+d\,x]^2-a^2\left(1+\mathrm{Tan}[c+d\,x]^2\right)\right)^2}\,2\,a\,b\,\Bigg(-\Bigg(3\,a\,b\,\mathrm{AppellF1}\Big[\frac{1}{2},\frac{p}{2},2,\frac{3}{2},-\mathrm{Tan}[c+d\,x]^2,\frac{\left(-a^2+b^2\right)\mathrm{Tan}[c+d\,x]^2}{a^2}\Big]\Bigg)\Bigg/$$

$$\Bigg(-3\,a^2\,\mathrm{AppellF1}\Big[\frac{1}{2},\frac{p}{2},2,\frac{3}{2},-\mathrm{Tan}[c+d\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\mathrm{Tan}[c+d\,x]^2\Big]+\Bigg(4\left(a^2-b^2\right)\mathrm{AppellF1}\Big[\frac{3}{2},\frac{p}{2},3,\frac{5}{2},-\mathrm{Tan}[c+d\,x]^2,$$

$$\left(-1+\frac{b^2}{a^2}\right)\mathrm{Tan}[c+d\,x]^2\Big]+a^2\,p\,\mathrm{AppellF1}\Big[\frac{3}{2},\frac{2+p}{2},2,\frac{5}{2},-\mathrm{Tan}[c+d\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\mathrm{Tan}[c+d\,x]^2\Big]\Bigg)\mathrm{Tan}[c+d\,x]^2\Bigg)+$$

$$\Bigg(2\left(-a^2+b^2\right)\mathrm{AppellF1}\Big[1,\frac{1}{2}(-1+p),2,2,-\mathrm{Tan}[c+d\,x]^2,\frac{\left(-a^2+b^2\right)\mathrm{Tan}[c+d\,x]^2}{a^2}\Big]\mathrm{Tan}[c+d\,x]$$

$$\sqrt{1+\mathrm{Tan}[c+d\,x]^2}\Bigg)\Bigg/\Bigg(-4\,a^2\,\mathrm{AppellF1}\Big[1,\frac{1}{2}(-1+p),2,2,-\mathrm{Tan}[c+d\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\mathrm{Tan}[c+d\,x]^2\Big]+$$

$$\Bigg(4\left(a^2-b^2\right)\mathrm{AppellF1}\Big[2,\frac{1}{2}(-1+p),3,3,-\mathrm{Tan}[c+d\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\mathrm{Tan}[c+d\,x]^2\Big]+$$

$$a^2(-1+p)\,\mathrm{AppellF1}\Big[2,\frac{1+p}{2},2,3,-\mathrm{Tan}[c+d\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\mathrm{Tan}[c+d\,x]^2\Big]\Bigg)\mathrm{Tan}[c+d\,x]^2\Bigg)\Bigg)\Bigg)+$$

$$\frac{1}{-a^2+b^2}\,a^2\,\mathrm{Sec}[c+d\,x]^2\left(1+\mathrm{Tan}[c+d\,x]^2\right)^{-p/2}\Bigg(\Bigg(3\left(a^2+b^2\right)\mathrm{AppellF1}\Big[\frac{1}{2},\frac{p}{2},1,\frac{3}{2},-\mathrm{Tan}[c+d\,x]^2,\frac{\left(-a^2+b^2\right)\mathrm{Tan}[c+d\,x]^2}{a^2}\Big]\Bigg)\Bigg/$$

$$\Bigg(\Bigg(-3\,a^2\,\mathrm{AppellF1}\Big[\frac{1}{2},\frac{p}{2},1,\frac{3}{2},-\mathrm{Tan}[c+d\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\mathrm{Tan}[c+d\,x]^2\Big]+$$

$$\Bigg(2\left(a^2-b^2\right)\mathrm{AppellF1}\Big[\frac{3}{2},\frac{p}{2},2,\frac{5}{2},-\mathrm{Tan}[c+d\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\mathrm{Tan}[c+d\,x]^2\Big]+a^2\,p\,\mathrm{AppellF1}\Big[\frac{3}{2},\frac{2+p}{2},1,\frac{5}{2},$$

$$-\mathrm{Tan}[c+d\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\mathrm{Tan}[c+d\,x]^2\Big]\Bigg)\mathrm{Tan}[c+d\,x]^2\Bigg)\left(-b^2\,\mathrm{Tan}[c+d\,x]^2+a^2\left(1+\mathrm{Tan}[c+d\,x]^2\right)\right)\Bigg)+$$

$$\frac{1}{\left(b^2\,\mathrm{Tan}[c+d\,x]^2-a^2\left(1+\mathrm{Tan}[c+d\,x]^2\right)\right)^2}\,2\,a\,b\,\Bigg(-\Bigg(3\,a\,b\,\mathrm{AppellF1}\Big[\frac{1}{2},\frac{p}{2},2,\frac{3}{2},-\mathrm{Tan}[c+d\,x]^2,\frac{\left(-a^2+b^2\right)\mathrm{Tan}[c+d\,x]^2}{a^2}\Big]\Bigg)\Bigg/$$

$$\Bigg(-3\,a^2\,\mathrm{AppellF1}\Big[\frac{1}{2},\frac{p}{2},2,\frac{3}{2},-\mathrm{Tan}[c+d\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\mathrm{Tan}[c+d\,x]^2\Big]+\Bigg(4\left(a^2-b^2\right)\mathrm{AppellF1}\Big[\frac{3}{2},\frac{p}{2},3,\frac{5}{2},-\mathrm{Tan}[c+d\,x]^2,$$

$$\left(-1+\frac{b^2}{a^2}\right)\mathrm{Tan}[c+d\,x]^2\Big]+a^2\,p\,\mathrm{AppellF1}\Big[\frac{3}{2},\frac{2+p}{2},2,\frac{5}{2},-\mathrm{Tan}[c+d\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\mathrm{Tan}[c+d\,x]^2\Big]\Bigg)\mathrm{Tan}[c+d\,x]^2\Bigg)+$$

$$\Bigg(2\left(-a^2+b^2\right)\mathrm{AppellF1}\Big[1,\frac{1}{2}(-1+p),2,2,-\mathrm{Tan}[c+d\,x]^2,\frac{\left(-a^2+b^2\right)\mathrm{Tan}[c+d\,x]^2}{a^2}\Big]\mathrm{Tan}[c+d\,x]\sqrt{1+\mathrm{Tan}[c+d\,x]^2}\Bigg)\Bigg/$$

$$\Bigg(-4\,a^2\,\mathrm{AppellF1}\Big[1,\frac{1}{2}(-1+p),2,2,-\mathrm{Tan}[c+d\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\mathrm{Tan}[c+d\,x]^2\Big]+$$

$$\left(4\left(a^2-b^2\right)\text{AppellF1}\left[2,\frac{1}{2}(-1+p),3,3,-\text{Tan}[c+d\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\right]+\right.$$

$$\left.\left.\left.a^2(-1+p)\,\text{AppellF1}\left[2,\frac{1+p}{2},2,3,-\text{Tan}[c+d\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\right]\right)\text{Tan}[c+d\,x]^2\right)\right)\right)+$$

$$\frac{1}{-a^2+b^2}a^2\,\text{Tan}[c+d\,x]\left(1+\text{Tan}[c+d\,x]^2\right)^{-p/2}\left(-\left(\left(3\left(a^2+b^2\right)\text{AppellF1}\left[\frac{1}{2},\frac{p}{2},1,\frac{3}{2},-\text{Tan}[c+d\,x]^2,\frac{\left(-a^2+b^2\right)\text{Tan}[c+d\,x]^2}{a^2}\right]\right.\right.\right.$$

$$\left.\left.\left(2\,a^2\,\text{Sec}[c+d\,x]^2\,\text{Tan}[c+d\,x]-2\,b^2\,\text{Sec}[c+d\,x]^2\,\text{Tan}[c+d\,x]\right)\right)\Big/\left(\left(-3\,a^2\,\text{AppellF1}\left[\frac{1}{2},\frac{p}{2},1,\frac{3}{2},-\text{Tan}[c+d\,x]^2,\right.\right.\right.\right.$$

$$\left.\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\right]+\left(2\left(a^2-b^2\right)\text{AppellF1}\left[\frac{3}{2},\frac{p}{2},2,\frac{5}{2},-\text{Tan}[c+d\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\right]+a^2\,p\,\text{AppellF1}\left[\frac{3}{2},\right.\right.$$

$$\left.\left.\left.\left.\frac{2+p}{2},1,\frac{5}{2},-\text{Tan}[c+d\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\right]\right)\text{Tan}[c+d\,x]^2\right)\left(-b^2\,\text{Tan}[c+d\,x]^2+a^2\left(1+\text{Tan}[c+d\,x]^2\right)\right)^2\right)\right)+$$

$$\left(3\left(a^2+b^2\right)\left(-\frac{1}{3}p\,\text{AppellF1}\left[\frac{3}{2},1+\frac{p}{2},1,\frac{5}{2},-\text{Tan}[c+d\,x]^2,\frac{\left(-a^2+b^2\right)\text{Tan}[c+d\,x]^2}{a^2}\right]\text{Sec}[c+d\,x]^2\,\text{Tan}[c+d\,x]+\right.\right.$$

$$\left.\left.\frac{1}{3\,a^2}2\left(-a^2+b^2\right)\text{AppellF1}\left[\frac{3}{2},\frac{p}{2},2,\frac{5}{2},-\text{Tan}[c+d\,x]^2,\frac{\left(-a^2+b^2\right)\text{Tan}[c+d\,x]^2}{a^2}\right]\text{Sec}[c+d\,x]^2\,\text{Tan}[c+d\,x]\right)\right)\Big/$$

$$\left(\left(-3\,a^2\,\text{AppellF1}\left[\frac{1}{2},\frac{p}{2},1,\frac{3}{2},-\text{Tan}[c+d\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\right]+\left(2\left(a^2-b^2\right)\text{AppellF1}\left[\frac{3}{2},\frac{p}{2},2,\frac{5}{2},\right.\right.\right.\right.$$

$$-\text{Tan}[c+d\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\right]+a^2\,p\,\text{AppellF1}\left[\frac{3}{2},\frac{2+p}{2},1,\frac{5}{2},-\text{Tan}[c+d\,x]^2,\right.$$

$$\left.\left.\left.\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\right]\right)\text{Tan}[c+d\,x]^2\right)\left(-b^2\,\text{Tan}[c+d\,x]^2+a^2\left(1+\text{Tan}[c+d\,x]^2\right)\right)\right)-$$

$$\frac{1}{\left(b^2\,\text{Tan}[c+d\,x]^2-a^2\left(1+\text{Tan}[c+d\,x]^2\right)\right)^3}4\,a\,b\left(-2\,a^2\,\text{Sec}[c+d\,x]^2\,\text{Tan}[c+d\,x]+2\,b^2\,\text{Sec}[c+d\,x]^2\,\text{Tan}[c+d\,x]\right)$$

$$\left(-\left(3\,a\,b\,\text{AppellF1}\left[\frac{1}{2},\frac{p}{2},2,\frac{3}{2},-\text{Tan}[c+d\,x]^2,\frac{\left(-a^2+b^2\right)\text{Tan}[c+d\,x]^2}{a^2}\right]\right)\Big/\right.$$

$$\left(-3\,a^2\,\text{AppellF1}\left[\frac{1}{2},\frac{p}{2},2,\frac{3}{2},-\text{Tan}[c+d\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\right]+\left(4\left(a^2-b^2\right)\text{AppellF1}\left[\frac{3}{2},\frac{p}{2},3,\frac{5}{2},-\text{Tan}[c+d\,x]^2,\right.\right.\right.$$

$$\left.\left.\left.\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\right]+a^2\,p\,\text{AppellF1}\left[\frac{3}{2},\frac{2+p}{2},2,\frac{5}{2},-\text{Tan}[c+d\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\right]\right)\text{Tan}[c+d\,x]^2\right)+$$

$$\left(2\left(-a^2+b^2\right)\text{AppellF1}\left[1,\frac{1}{2}(-1+p),2,2,-\text{Tan}[c+d\,x]^2,\frac{\left(-a^2+b^2\right)\text{Tan}[c+d\,x]^2}{a^2}\right]\text{Tan}[c+d\,x]\sqrt{1+\text{Tan}[c+d\,x]^2}\right)\Big/$$

$$\Big(-4 a^2 \text{AppellF1}\Big[1, \frac{1}{2}(-1+p), 2, 2, -\text{Tan}[c+d x]^2, \Big(-1+\frac{b^2}{a^2}\Big) \text{Tan}[c+d x]^2\Big] +$$

$$\Big(4 (a^2-b^2) \text{AppellF1}\Big[2, \frac{1}{2}(-1+p), 3, 3, -\text{Tan}[c+d x]^2, \Big(-1+\frac{b^2}{a^2}\Big) \text{Tan}[c+d x]^2\Big] +$$

$$a^2 (-1+p) \text{AppellF1}\Big[2, \frac{1+p}{2}, 2, 3, -\text{Tan}[c+d x]^2, \Big(-1+\frac{b^2}{a^2}\Big) \text{Tan}[c+d x]^2\Big]\Big) \text{Tan}[c+d x]^2\Big)\Big) -$$

$$\Big(3 (a^2+b^2) \text{AppellF1}\Big[\frac{1}{2}, \frac{p}{2}, 1, \frac{3}{2}, -\text{Tan}[c+d x]^2, \frac{(-a^2+b^2) \text{Tan}[c+d x]^2}{a^2}\Big] \Big(2 \Big(2 (a^2-b^2) \text{AppellF1}\Big[\frac{3}{2}, \frac{p}{2}, 2, \frac{5}{2},$$

$$-\text{Tan}[c+d x]^2, \Big(-1+\frac{b^2}{a^2}\Big) \text{Tan}[c+d x]^2\Big] + a^2 p \text{AppellF1}\Big[\frac{3}{2}, \frac{2+p}{2}, 1, \frac{5}{2}, -\text{Tan}[c+d x]^2, \Big(-1+\frac{b^2}{a^2}\Big) \text{Tan}[c+d x]^2\Big]\Big)$$

$$\text{Sec}[c+d x]^2 \text{Tan}[c+d x] - 3 a^2 \Big(-\frac{1}{3} p \text{AppellF1}\Big[\frac{3}{2}, 1+\frac{p}{2}, 1, \frac{5}{2}, -\text{Tan}[c+d x]^2, \Big(-1+\frac{b^2}{a^2}\Big) \text{Tan}[c+d x]^2\Big] \text{Sec}[c+d x]^2$$

$$\text{Tan}[c+d x] + \frac{2}{3}\Big(-1+\frac{b^2}{a^2}\Big) \text{AppellF1}\Big[\frac{3}{2}, \frac{p}{2}, 2, \frac{5}{2}, -\text{Tan}[c+d x]^2, \Big(-1+\frac{b^2}{a^2}\Big) \text{Tan}[c+d x]^2\Big] \text{Sec}[c+d x]^2 \text{Tan}[c+d x]\Big) +$$

$$\text{Tan}[c+d x]^2 \Big(2 (a^2-b^2) \Big(-\frac{3}{5} p \text{AppellF1}\Big[\frac{5}{2}, 1+\frac{p}{2}, 2, \frac{7}{2}, -\text{Tan}[c+d x]^2, \Big(-1+\frac{b^2}{a^2}\Big) \text{Tan}[c+d x]^2\Big] \text{Sec}[c+d x]^2$$

$$\text{Tan}[c+d x] + \frac{12}{5}\Big(-1+\frac{b^2}{a^2}\Big) \text{AppellF1}\Big[\frac{5}{2}, \frac{p}{2}, 3, \frac{7}{2}, -\text{Tan}[c+d x]^2, \Big(-1+\frac{b^2}{a^2}\Big) \text{Tan}[c+d x]^2\Big] \text{Sec}[c+d x]^2 \text{Tan}[c+d x]\Big) +$$

$$a^2 p \Big(\frac{6}{5}\Big(-1+\frac{b^2}{a^2}\Big) \text{AppellF1}\Big[\frac{5}{2}, \frac{2+p}{2}, 2, \frac{7}{2}, -\text{Tan}[c+d x]^2, \Big(-1+\frac{b^2}{a^2}\Big) \text{Tan}[c+d x]^2\Big] \text{Sec}[c+d x]^2 \text{Tan}[c+d x] -$$

$$\frac{3}{5}(2+p) \text{AppellF1}\Big[\frac{5}{2}, 1+\frac{2+p}{2}, 1, \frac{7}{2}, -\text{Tan}[c+d x]^2, \Big(-1+\frac{b^2}{a^2}\Big) \text{Tan}[c+d x]^2\Big] \text{Sec}[c+d x]^2 \text{Tan}[c+d x]\Big)\Big)\Big)\Big)\Big/$$

$$\Big(\Big(-3 a^2 \text{AppellF1}\Big[\frac{1}{2}, \frac{p}{2}, 1, \frac{3}{2}, -\text{Tan}[c+d x]^2, \Big(-1+\frac{b^2}{a^2}\Big) \text{Tan}[c+d x]^2\Big] + \Big(2 (a^2-b^2) \text{AppellF1}\Big[\frac{3}{2}, \frac{p}{2}, 2, \frac{5}{2}, -\text{Tan}[c+d x]^2,$$

$$\Big(-1+\frac{b^2}{a^2}\Big) \text{Tan}[c+d x]^2\Big] + a^2 p \text{AppellF1}\Big[\frac{3}{2}, \frac{2+p}{2}, 1, \frac{5}{2}, -\text{Tan}[c+d x]^2, \Big(-1+\frac{b^2}{a^2}\Big) \text{Tan}[c+d x]^2\Big]\Big) \text{Tan}[c+d x]^2\Big)^2$$

$$\big(-b^2 \text{Tan}[c+d x]^2 + a^2 (1+\text{Tan}[c+d x]^2)\big)\Big) + \frac{1}{\big(b^2 \text{Tan}[c+d x]^2 - a^2 (1+\text{Tan}[c+d x]^2)\big)^2}$$

$$2 a b \Big(-\Big(3 a b \Big(-\frac{1}{3} p \text{AppellF1}\Big[\frac{3}{2}, 1+\frac{p}{2}, 2, \frac{5}{2}, -\text{Tan}[c+d x]^2, \frac{(-a^2+b^2) \text{Tan}[c+d x]^2}{a^2}\Big] \text{Sec}[c+d x]^2 \text{Tan}[c+d x] +$$

$$1\big/(3 a^2) 4 (-a^2+b^2) \text{AppellF1}\Big[\frac{3}{2}, \frac{p}{2}, 3, \frac{5}{2}, -\text{Tan}[c+d x]^2, \frac{(-a^2+b^2) \text{Tan}[c+d x]^2}{a^2}\Big] \text{Sec}[c+d x]^2 \text{Tan}[c+d x]\Big)\Big)\Big/$$

$$\left(-3 a^2 \text{AppellF1}\left[\frac{1}{2}, \frac{p}{2}, 2, \frac{3}{2}, -\text{Tan}[c+d x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[c+d x]^2\right] + \left(4 \left(a^2-b^2\right) \text{AppellF1}\left[\frac{3}{2}, \frac{p}{2}, 3, \frac{5}{2}, -\text{Tan}[c+d x]^2,\right.\right.\right.$$

$$\left.\left.\left.\left(-1+\frac{b^2}{a^2}\right) \text{Tan}[c+d x]^2\right] + a^2 p \text{AppellF1}\left[\frac{3}{2}, \frac{2+p}{2}, 2, \frac{5}{2}, -\text{Tan}[c+d x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[c+d x]^2\right]\right) \text{Tan}[c+d x]^2\right) +$$

$$\left(2 \left(-a^2+b^2\right) \text{AppellF1}\left[1, \frac{1}{2} (-1+p), 2, 2, -\text{Tan}[c+d x]^2, \frac{\left(-a^2+b^2\right) \text{Tan}[c+d x]^2}{a^2}\right] \text{Sec}[c+d x]^2 \text{Tan}[c+d x]^2\right) \Big/$$

$$\left(\sqrt{1+\text{Tan}[c+d x]^2} \left(-4 a^2 \text{AppellF1}\left[1, \frac{1}{2} (-1+p), 2, 2, -\text{Tan}[c+d x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[c+d x]^2\right] +\right.\right.$$

$$\left(4 \left(a^2-b^2\right) \text{AppellF1}\left[2, \frac{1}{2} (-1+p), 3, 3, -\text{Tan}[c+d x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[c+d x]^2\right] +\right.$$

$$\left.\left.\left. a^2 (-1+p) \text{AppellF1}\left[2, \frac{1+p}{2}, 2, 3, -\text{Tan}[c+d x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[c+d x]^2\right]\right) \text{Tan}[c+d x]^2\right)\right) +$$

$$\left(2 \left(-a^2+b^2\right) \text{AppellF1}\left[1, \frac{1}{2} (-1+p), 2, 2, -\text{Tan}[c+d x]^2, \frac{\left(-a^2+b^2\right) \text{Tan}[c+d x]^2}{a^2}\right] \text{Sec}[c+d x]^2 \sqrt{1+\text{Tan}[c+d x]^2}\right) \Big/$$

$$\left(-4 a^2 \text{AppellF1}\left[1, \frac{1}{2} (-1+p), 2, 2, -\text{Tan}[c+d x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[c+d x]^2\right] +\right.$$

$$\left(4 \left(a^2-b^2\right) \text{AppellF1}\left[2, \frac{1}{2} (-1+p), 3, 3, -\text{Tan}[c+d x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[c+d x]^2\right] +\right.$$

$$\left.\left. a^2 (-1+p) \text{AppellF1}\left[2, \frac{1+p}{2}, 2, 3, -\text{Tan}[c+d x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[c+d x]^2\right]\right) \text{Tan}[c+d x]^2\right) + \left(2 \left(-a^2+b^2\right) \text{Tan}[c+d x]\right.$$

$$\left(-\frac{1}{2} (-1+p) \text{AppellF1}\left[2, 1+\frac{1}{2} (-1+p), 2, 3, -\text{Tan}[c+d x]^2, \frac{\left(-a^2+b^2\right) \text{Tan}[c+d x]^2}{a^2}\right] \text{Sec}[c+d x]^2 \text{Tan}[c+d x] +\right.$$

$$\left. 1 \Big/ a^2 2 \left(-a^2+b^2\right) \text{AppellF1}\left[2, \frac{1}{2} (-1+p), 3, 3, -\text{Tan}[c+d x]^2, \frac{\left(-a^2+b^2\right) \text{Tan}[c+d x]^2}{a^2}\right] \text{Sec}[c+d x]^2 \text{Tan}[c+d x]\right)$$

$$\left.\sqrt{1+\text{Tan}[c+d x]^2}\right) \Big/ \left(-4 a^2 \text{AppellF1}\left[1, \frac{1}{2} (-1+p), 2, 2, -\text{Tan}[c+d x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[c+d x]^2\right] +\right.$$

$$\left(4 \left(a^2-b^2\right) \text{AppellF1}\left[2, \frac{1}{2} (-1+p), 3, 3, -\text{Tan}[c+d x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[c+d x]^2\right] +\right.$$

$$\left.\left. a^2 (-1+p) \text{AppellF1}\left[2, \frac{1+p}{2}, 2, 3, -\text{Tan}[c+d x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[c+d x]^2\right]\right) \text{Tan}[c+d x]^2\right) +$$

$$\left(3 a b \text{AppellF1}\left[\frac{1}{2}, \frac{p}{2}, 2, \frac{3}{2}, -\text{Tan}[c+d x]^2, \frac{\left(-a^2+b^2\right) \text{Tan}[c+d x]^2}{a^2}\right] \left(2 \left(4 \left(a^2-b^2\right) \text{AppellF1}\left[\frac{3}{2}, \frac{p}{2}, 3, \frac{5}{2}, -\text{Tan}[c+d x]^2,\right.\right.\right.\right.$$

$$\left(-1+\frac{b^2}{a^2}\right)\mathrm{Tan}[c+d\,x]^2\Big]+a^2\,p\,\mathrm{AppellF1}\Big[\frac{3}{2},\frac{2+p}{2},2,\frac{5}{2},-\mathrm{Tan}[c+d\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\mathrm{Tan}[c+d\,x]^2\Big]\Big)\,\mathrm{Sec}[c+d\,x]^2$$

$$\mathrm{Tan}[c+d\,x]-3\,a^2\left(-\frac{1}{3}\,p\,\mathrm{AppellF1}\Big[\frac{3}{2},1+\frac{p}{2},2,\frac{5}{2},-\mathrm{Tan}[c+d\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\mathrm{Tan}[c+d\,x]^2\Big]\,\mathrm{Sec}[c+d\,x]^2\,\mathrm{Tan}[c+d\,x]+\right.$$

$$\left.\frac{4}{3}\left(-1+\frac{b^2}{a^2}\right)\mathrm{AppellF1}\Big[\frac{3}{2},\frac{p}{2},3,\frac{5}{2},-\mathrm{Tan}[c+d\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\mathrm{Tan}[c+d\,x]^2\Big]\,\mathrm{Sec}[c+d\,x]^2\,\mathrm{Tan}[c+d\,x]\right)+\mathrm{Tan}[c+d\,x]^2$$

$$\Big(4\left(a^2-b^2\right)\left(-\frac{3}{5}\,p\,\mathrm{AppellF1}\Big[\frac{5}{2},1+\frac{p}{2},3,\frac{7}{2},-\mathrm{Tan}[c+d\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\mathrm{Tan}[c+d\,x]^2\Big]\,\mathrm{Sec}[c+d\,x]^2\,\mathrm{Tan}[c+d\,x]+\right.$$

$$\left.\frac{18}{5}\left(-1+\frac{b^2}{a^2}\right)\mathrm{AppellF1}\Big[\frac{5}{2},\frac{p}{2},4,\frac{7}{2},-\mathrm{Tan}[c+d\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\mathrm{Tan}[c+d\,x]^2\Big]\,\mathrm{Sec}[c+d\,x]^2\,\mathrm{Tan}[c+d\,x]\right)+$$

$$a^2\,p\left(\frac{12}{5}\left(-1+\frac{b^2}{a^2}\right)\mathrm{AppellF1}\Big[\frac{5}{2},\frac{2+p}{2},3,\frac{7}{2},-\mathrm{Tan}[c+d\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\mathrm{Tan}[c+d\,x]^2\Big]\,\mathrm{Sec}[c+d\,x]^2\,\mathrm{Tan}[c+d\,x]-\right.$$

$$\left.\left.\left.\left.\frac{3}{5}\,(2+p)\,\mathrm{AppellF1}\Big[\frac{5}{2},1+\frac{2+p}{2},2,\frac{7}{2},-\mathrm{Tan}[c+d\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\mathrm{Tan}[c+d\,x]^2\Big]\,\mathrm{Sec}[c+d\,x]^2\,\mathrm{Tan}[c+d\,x]\right)\right)\right)\right)\Big/$$

$$\Big(-3\,a^2\,\mathrm{AppellF1}\Big[\frac{1}{2},\frac{p}{2},2,\frac{3}{2},-\mathrm{Tan}[c+d\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\mathrm{Tan}[c+d\,x]^2\Big]+\Big(4\left(a^2-b^2\right)\mathrm{AppellF1}\Big[\frac{3}{2},\frac{p}{2},3,\frac{5}{2},-\mathrm{Tan}[c+d\,x]^2,$$

$$\left(-1+\frac{b^2}{a^2}\right)\mathrm{Tan}[c+d\,x]^2\Big]+a^2\,p\,\mathrm{AppellF1}\Big[\frac{3}{2},\frac{2+p}{2},2,\frac{5}{2},-\mathrm{Tan}[c+d\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\mathrm{Tan}[c+d\,x]^2\Big]\Big)\,\mathrm{Tan}[c+d\,x]^2\Big)^2-$$

$$\Big(2\left(-a^2+b^2\right)\mathrm{AppellF1}\Big[1,\frac{1}{2}\,(-1+p),2,2,-\mathrm{Tan}[c+d\,x]^2,\frac{\left(-a^2+b^2\right)\mathrm{Tan}[c+d\,x]^2}{a^2}\Big]\,\mathrm{Tan}[c+d\,x]\,\sqrt{1+\mathrm{Tan}[c+d\,x]^2}$$

$$\Big(2\,\Big(4\left(a^2-b^2\right)\mathrm{AppellF1}\Big[2,\frac{1}{2}\,(-1+p),3,3,-\mathrm{Tan}[c+d\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\mathrm{Tan}[c+d\,x]^2\Big]+a^2\,(-1+p)\,\mathrm{AppellF1}\Big[2,\frac{1+p}{2},$$

$$2,3,-\mathrm{Tan}[c+d\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\mathrm{Tan}[c+d\,x]^2\Big]\Big)\,\mathrm{Sec}[c+d\,x]^2\,\mathrm{Tan}[c+d\,x]-4\,a^2\left(-\frac{1}{2}\,(-1+p)\,\mathrm{AppellF1}\Big[2,\right.$$

$$1+\frac{1}{2}\,(-1+p),2,3,-\mathrm{Tan}[c+d\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\mathrm{Tan}[c+d\,x]^2\Big]\,\mathrm{Sec}[c+d\,x]^2\,\mathrm{Tan}[c+d\,x]+2\left(-1+\frac{b^2}{a^2}\right)\mathrm{AppellF1}\Big[2,$$

$$\left.\frac{1}{2}\,(-1+p),3,3,-\mathrm{Tan}[c+d\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\mathrm{Tan}[c+d\,x]^2\Big]\,\mathrm{Sec}[c+d\,x]^2\,\mathrm{Tan}[c+d\,x]\right)+\mathrm{Tan}[c+d\,x]^2\,\Big(4\left(a^2-b^2\right)$$

$$\left(-\frac{2}{3}\,(-1+p)\,\mathrm{AppellF1}\Big[3,1+\frac{1}{2}\,(-1+p),3,4,-\mathrm{Tan}[c+d\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\mathrm{Tan}[c+d\,x]^2\Big]\,\mathrm{Sec}[c+d\,x]^2\,\mathrm{Tan}[c+d\,x]+\right.$$

$$\left.4\left(-1+\frac{b^2}{a^2}\right)\mathrm{AppellF1}\Big[3,\frac{1}{2}\,(-1+p),4,4,-\mathrm{Tan}[c+d\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\mathrm{Tan}[c+d\,x]^2\Big]\,\mathrm{Sec}[c+d\,x]^2\,\mathrm{Tan}[c+d\,x]\right)+$$

$$a^2\,(-1+p)\left(\frac{8}{3}\left(-1+\frac{b^2}{a^2}\right)\mathrm{AppellF1}\Big[3,\frac{1+p}{2},3,4,-\mathrm{Tan}[c+d\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\mathrm{Tan}[c+d\,x]^2\Big]\,\mathrm{Sec}[c+d\,x]^2\,\mathrm{Tan}[c+d\,x]-\right.$$

$$\frac{2}{3}(1+p)\,\text{AppellF1}\left[3,1+\frac{1+p}{2},2,4,-\text{Tan}[c+d x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d x]^2\right]\text{Sec}[c+d x]^2\,\text{Tan}[c+d x]\Big)\Big)\Big)\Big)\Big/$$
$$\Big(-4a^2\,\text{AppellF1}\left[1,\frac{1}{2}(-1+p),2,2,-\text{Tan}[c+d x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d x]^2\right]+\Big(4\left(a^2-b^2\right)\text{AppellF1}\Big[$$
$$2,\frac{1}{2}(-1+p),3,3,-\text{Tan}[c+d x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d x]^2\Big]+$$
$$a^2(-1+p)\,\text{AppellF1}\left[2,\frac{1+p}{2},2,3,-\text{Tan}[c+d x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d x]^2\right]\Big)\text{Tan}[c+d x]^2\Big)^2\Big)\Big)\Big)\Big)$$

- **Problem 621: Result more than twice size of optimal antiderivative.**

$$\int \frac{(e\,\text{Cos}[c+d x])^p}{(a+b\,\text{Sin}[c+d x])^3}\,dx$$

Optimal (type 6, 170 leaves, 1 step):

$$-\Big(e\,\text{AppellF1}\left[3-p,\frac{1-p}{2},\frac{1-p}{2},4-p,\frac{a+b}{a+b\,\text{Sin}[c+d x]},\frac{a-b}{a+b\,\text{Sin}[c+d x]}\right]$$
$$(e\,\text{Cos}[c+d x])^{-1+p}\left(-\frac{b\,(1-\text{Sin}[c+d x])}{a+b\,\text{Sin}[c+d x]}\right)^{\frac{1-p}{2}}\left(\frac{b\,(1+\text{Sin}[c+d x])}{a+b\,\text{Sin}[c+d x]}\right)^{\frac{1-p}{2}}\Big)\Big/\left(b\,d\,(3-p)\,(a+b\,\text{Sin}[c+d x])^2\right)$$

Result (type 6, 20 626 leaves): Display of huge result suppressed!

- **Problem 622: Unable to integrate problem.**

$$\int \frac{(e\,\text{Cos}[c+d x])^p}{(a+b\,\text{Sin}[c+d x])^8}\,dx$$

Optimal (type 6, 170 leaves, 1 step):

$$-\Big(e\,\text{AppellF1}\left[8-p,\frac{1-p}{2},\frac{1-p}{2},9-p,\frac{a+b}{a+b\,\text{Sin}[c+d x]},\frac{a-b}{a+b\,\text{Sin}[c+d x]}\right]$$
$$(e\,\text{Cos}[c+d x])^{-1+p}\left(-\frac{b\,(1-\text{Sin}[c+d x])}{a+b\,\text{Sin}[c+d x]}\right)^{\frac{1-p}{2}}\left(\frac{b\,(1+\text{Sin}[c+d x])}{a+b\,\text{Sin}[c+d x]}\right)^{\frac{1-p}{2}}\Big)\Big/\left(b\,d\,(8-p)\,(a+b\,\text{Sin}[c+d x])^7\right)$$

Result (type 8, 25 leaves):

$$\int \frac{(e\,\text{Cos}[c+d x])^p}{(a+b\,\text{Sin}[c+d x])^8}\,dx$$

- **Problem 623: Result more than twice size of optimal antiderivative.**

$$\int (e\,\text{Cos}[c+d x])^p\,(a+b\,\text{Sin}[c+d x])^{5/2}\,dx$$

Optimal (type 6, 156 leaves, 2 steps):

$$\frac{1}{7\,b\,d}2\,e\,\text{AppellF1}\left[\frac{7}{2},\frac{1-p}{2},\frac{1-p}{2},\frac{9}{2},\frac{a+b\,\text{Sin}[c+d\,x]}{a-b},\frac{a+b\,\text{Sin}[c+d\,x]}{a+b}\right]$$
$$(e\,\text{Cos}[c+d\,x])^{-1+p}\,(a+b\,\text{Sin}[c+d\,x])^{7/2}\left(1-\frac{a+b\,\text{Sin}[c+d\,x]}{a-b}\right)^{\frac{1-p}{2}}\left(1-\frac{a+b\,\text{Sin}[c+d\,x]}{a+b}\right)^{\frac{1-p}{2}}$$

Result (type 6, 2612 leaves):

$$\frac{1}{2\,d}\text{Cos}[c+d\,x]^{-p}\,(e\,\text{Cos}[c+d\,x])^{p}$$
$$\left(-\left(10\,(a^2-b^2)^2\,(2\,a^2+b^2)\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{2}-\frac{p}{2},\frac{1}{2}-\frac{p}{2},\frac{5}{2},\frac{a+b\,\text{Sin}[c+d\,x]}{a-\sqrt{b^2}},\frac{a+b\,\text{Sin}[c+d\,x]}{a+\sqrt{b^2}}\right]\text{Cos}[c+d\,x]^{1+p}\,(a+b\,\text{Sin}[c+d\,x])^{3/2}\right.\right.$$
$$\left.\left(-\sqrt{b^2}+b\,\text{Sin}[c+d\,x]\right)\left(\sqrt{b^2}+b\,\text{Sin}[c+d\,x]\right)\left(1-\text{Sin}[c+d\,x]^2\right)^{-\frac{1}{2}-\frac{p}{2}}\left(-\frac{a^2-b^2-2\,a\,(a+b\,\text{Sin}[c+d\,x])+(a+b\,\text{Sin}[c+d\,x])^2}{b^2}\right)^{\frac{1}{2}(-3+p)}\right)\Bigg/$$
$$\left(3\,b^3\left(a-\sqrt{b^2}\right)\left(a+\sqrt{b^2}\right)\left(5\,(a^2-b^2)\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{2}-\frac{p}{2},\frac{1}{2}-\frac{p}{2},\frac{5}{2},\frac{a+b\,\text{Sin}[c+d\,x]}{a-\sqrt{b^2}},\frac{a+b\,\text{Sin}[c+d\,x]}{a+\sqrt{b^2}}\right]+\right.\right.$$
$$(-1+p)\left(\left(-a+\sqrt{b^2}\right)\text{AppellF1}\left[\frac{5}{2},\frac{1}{2}-\frac{p}{2},\frac{3}{2}-\frac{p}{2},\frac{7}{2},\frac{a+b\,\text{Sin}[c+d\,x]}{a-\sqrt{b^2}},\frac{a+b\,\text{Sin}[c+d\,x]}{a+\sqrt{b^2}}\right]-\right.$$
$$\left.\left.\left.\left(a+\sqrt{b^2}\right)\text{AppellF1}\left[\frac{5}{2},\frac{3}{2}-\frac{p}{2},\frac{1}{2}-\frac{p}{2},\frac{7}{2},\frac{a+b\,\text{Sin}[c+d\,x]}{a-\sqrt{b^2}},\frac{a+b\,\text{Sin}[c+d\,x]}{a+\sqrt{b^2}}\right]\right)(a+b\,\text{Sin}[c+d\,x])\right)\right)-$$
$$\frac{1}{15\,b^3}8\,a\,(a^2-b^2)\,\text{Cos}[c+d\,x]^{1+p}\,(a+b\,\text{Sin}[c+d\,x])^{3/2}\left(-\sqrt{b^2}+b\,\text{Sin}[c+d\,x]\right)\left(\sqrt{b^2}+b\,\text{Sin}[c+d\,x]\right)\left(1-\text{Sin}[c+d\,x]^2\right)^{-\frac{1}{2}-\frac{p}{2}}$$
$$\left(-\frac{a^2-b^2-2\,a\,(a+b\,\text{Sin}[c+d\,x])+(a+b\,\text{Sin}[c+d\,x])^2}{b^2}\right)^{\frac{1}{2}(-3+p)}$$
$$\left(-\left(25\,a\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{2}-\frac{p}{2},\frac{1}{2}-\frac{p}{2},\frac{5}{2},\frac{a+b\,\text{Sin}[c+d\,x]}{a-\sqrt{b^2}},\frac{a+b\,\text{Sin}[c+d\,x]}{a+\sqrt{b^2}}\right]\right)\Bigg/\left(5\,(a^2-b^2)\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{2}-\frac{p}{2},\frac{1}{2}-\frac{p}{2},\frac{5}{2},\right.\right.\right.$$
$$\frac{a+b\,\text{Sin}[c+d\,x]}{a-\sqrt{b^2}},\frac{a+b\,\text{Sin}[c+d\,x]}{a+\sqrt{b^2}}\Bigg]+(-1+p)\left(\left(-a+\sqrt{b^2}\right)\text{AppellF1}\left[\frac{5}{2},\frac{1}{2}-\frac{p}{2},\frac{3}{2}-\frac{p}{2},\frac{7}{2},\frac{a+b\,\text{Sin}[c+d\,x]}{a-\sqrt{b^2}},\right.\right.$$

$$\frac{a+b\,\text{Sin}[c+d\,x]}{a+\sqrt{b^2}}\Big]-\left(a+\sqrt{b^2}\right)\text{AppellF1}\Big[\frac{5}{2},\frac{3}{2}-\frac{p}{2},\frac{1}{2}-\frac{p}{2},\frac{7}{2},\frac{a+b\,\text{Sin}[c+d\,x]}{a-\sqrt{b^2}},\frac{a+b\,\text{Sin}[c+d\,x]}{a+\sqrt{b^2}}\Big]\Bigg)\,(a+b\,\text{Sin}[c+d\,x])\Bigg)+$$

$$\Bigg(21\,\text{AppellF1}\Big[\frac{5}{2},\frac{1}{2}-\frac{p}{2},\frac{1}{2}-\frac{p}{2},\frac{7}{2},\frac{a+b\,\text{Sin}[c+d\,x]}{a-\sqrt{b^2}},\frac{a+b\,\text{Sin}[c+d\,x]}{a+\sqrt{b^2}}\Big]\,(a+b\,\text{Sin}[c+d\,x])\Bigg)\Big/$$

$$\Bigg(7\left(a^2-b^2\right)\text{AppellF1}\Big[\frac{5}{2},\frac{1}{2}-\frac{p}{2},\frac{1}{2}-\frac{p}{2},\frac{7}{2},\frac{a+b\,\text{Sin}[c+d\,x]}{a-\sqrt{b^2}},\frac{a+b\,\text{Sin}[c+d\,x]}{a+\sqrt{b^2}}\Big]+$$

$$(-1+p)\Bigg(\left(-a+\sqrt{b^2}\right)\text{AppellF1}\Big[\frac{7}{2},\frac{1}{2}-\frac{p}{2},\frac{3}{2}-\frac{p}{2},\frac{9}{2},\frac{a+b\,\text{Sin}[c+d\,x]}{a-\sqrt{b^2}},\frac{a+b\,\text{Sin}[c+d\,x]}{a+\sqrt{b^2}}\Big]-$$

$$\left(a+\sqrt{b^2}\right)\text{AppellF1}\Big[\frac{7}{2},\frac{3}{2}-\frac{p}{2},\frac{1}{2}-\frac{p}{2},\frac{9}{2},\frac{a+b\,\text{Sin}[c+d\,x]}{a-\sqrt{b^2}},\frac{a+b\,\text{Sin}[c+d\,x]}{a+\sqrt{b^2}}\Big]\Bigg)\,(a+b\,\text{Sin}[c+d\,x])\Bigg)\Bigg)+$$

$$\frac{1}{105\,b\left(-2\,a^2+b^2+4\,a\,(a+b\,\text{Sin}[c+d\,x])-2\,(a+b\,\text{Sin}[c+d\,x])^2\right)}\,2\left(a^2-b^2\right)\text{Cos}[c+d\,x]^{1+p}\,\text{Cos}[2\,(c+d\,x)]$$

$$(a+b\,\text{Sin}[c+d\,x])^{3/2}\left(-\sqrt{b^2}+b\,\text{Sin}[c+d\,x]\right)\left(\sqrt{b^2}+b\,\text{Sin}[c+d\,x]\right)$$

$$\left(1-\text{Sin}[c+d\,x]^2\right)^{-\frac{1}{2}-\frac{p}{2}}\left(-\frac{a^2-b^2-2\,a\,(a+b\,\text{Sin}[c+d\,x])+(a+b\,\text{Sin}[c+d\,x])^2}{b^2}\right)^{\frac{1}{2}(-3+p)}$$

$$\Bigg(-\Bigg(175\left(2\,a^2-b^2\right)\text{AppellF1}\Big[\frac{3}{2},\frac{1}{2}-\frac{p}{2},\frac{1}{2}-\frac{p}{2},\frac{5}{2},\frac{a+b\,\text{Sin}[c+d\,x]}{a-\sqrt{b^2}},\frac{a+b\,\text{Sin}[c+d\,x]}{a+\sqrt{b^2}}\Big]\Bigg)\Big/$$

$$\Bigg(5\left(a^2-b^2\right)\text{AppellF1}\Big[\frac{3}{2},\frac{1}{2}-\frac{p}{2},\frac{1}{2}-\frac{p}{2},\frac{5}{2},\frac{a+b\,\text{Sin}[c+d\,x]}{a-\sqrt{b^2}},\frac{a+b\,\text{Sin}[c+d\,x]}{a+\sqrt{b^2}}\Big]+$$

$$(-1+p)\Bigg(\left(-a+\sqrt{b^2}\right)\text{AppellF1}\Big[\frac{5}{2},\frac{1}{2}-\frac{p}{2},\frac{3}{2}-\frac{p}{2},\frac{7}{2},\frac{a+b\,\text{Sin}[c+d\,x]}{a-\sqrt{b^2}},\frac{a+b\,\text{Sin}[c+d\,x]}{a+\sqrt{b^2}}\Big]-\left(a+\sqrt{b^2}\right)$$

$$\text{AppellF1}\Big[\frac{5}{2},\frac{3}{2}-\frac{p}{2},\frac{1}{2}-\frac{p}{2},\frac{7}{2},\frac{a+b\,\text{Sin}[c+d\,x]}{a-\sqrt{b^2}},\frac{a+b\,\text{Sin}[c+d\,x]}{a+\sqrt{b^2}}\Big]\Bigg)\,(a+b\,\text{Sin}[c+d\,x])\Bigg)+$$

$$\left(588\, a\, \text{AppellF1}\left[\frac{5}{2}, \frac{1}{2}-\frac{p}{2}, \frac{1}{2}-\frac{p}{2}, \frac{7}{2}, \frac{a+b\,\text{Sin}[c+d\,x]}{a-\sqrt{b^2}}, \frac{a+b\,\text{Sin}[c+d\,x]}{a+\sqrt{b^2}}\right] (a+b\,\text{Sin}[c+d\,x])\right) \Big/$$

$$\left(7\,(a^2-b^2)\,\text{AppellF1}\left[\frac{5}{2}, \frac{1}{2}-\frac{p}{2}, \frac{1}{2}-\frac{p}{2}, \frac{7}{2}, \frac{a+b\,\text{Sin}[c+d\,x]}{a-\sqrt{b^2}}, \frac{a+b\,\text{Sin}[c+d\,x]}{a+\sqrt{b^2}}\right] +\right.$$

$$(-1+p)\left(\left(-a+\sqrt{b^2}\right)\text{AppellF1}\left[\frac{7}{2}, \frac{1}{2}-\frac{p}{2}, \frac{3}{2}-\frac{p}{2}, \frac{9}{2}, \frac{a+b\,\text{Sin}[c+d\,x]}{a-\sqrt{b^2}}, \frac{a+b\,\text{Sin}[c+d\,x]}{a+\sqrt{b^2}}\right] -\right.$$

$$\left.\left.\left(a+\sqrt{b^2}\right)\text{AppellF1}\left[\frac{7}{2}, \frac{3}{2}-\frac{p}{2}, \frac{1}{2}-\frac{p}{2}, \frac{9}{2}, \frac{a+b\,\text{Sin}[c+d\,x]}{a-\sqrt{b^2}}, \frac{a+b\,\text{Sin}[c+d\,x]}{a+\sqrt{b^2}}\right]\right)(a+b\,\text{Sin}[c+d\,x])\right) -$$

$$\left(270\,\text{AppellF1}\left[\frac{7}{2}, \frac{1}{2}-\frac{p}{2}, \frac{1}{2}-\frac{p}{2}, \frac{9}{2}, \frac{a+b\,\text{Sin}[c+d\,x]}{a-\sqrt{b^2}}, \frac{a+b\,\text{Sin}[c+d\,x]}{a+\sqrt{b^2}}\right] (a+b\,\text{Sin}[c+d\,x])^2\right) \Big/$$

$$\left(9\,(a^2-b^2)\,\text{AppellF1}\left[\frac{7}{2}, \frac{1}{2}-\frac{p}{2}, \frac{1}{2}-\frac{p}{2}, \frac{9}{2}, \frac{a+b\,\text{Sin}[c+d\,x]}{a-\sqrt{b^2}}, \frac{a+b\,\text{Sin}[c+d\,x]}{a+\sqrt{b^2}}\right] +\right.$$

$$(-1+p)\left(\left(-a+\sqrt{b^2}\right)\text{AppellF1}\left[\frac{9}{2}, \frac{1}{2}-\frac{p}{2}, \frac{3}{2}-\frac{p}{2}, \frac{11}{2}, \frac{a+b\,\text{Sin}[c+d\,x]}{a-\sqrt{b^2}}, \frac{a+b\,\text{Sin}[c+d\,x]}{a+\sqrt{b^2}}\right] -\right.$$

$$\left.\left.\left.\left(a+\sqrt{b^2}\right)\text{AppellF1}\left[\frac{9}{2}, \frac{3}{2}-\frac{p}{2}, \frac{1}{2}-\frac{p}{2}, \frac{11}{2}, \frac{a+b\,\text{Sin}[c+d\,x]}{a-\sqrt{b^2}}, \frac{a+b\,\text{Sin}[c+d\,x]}{a+\sqrt{b^2}}\right]\right)(a+b\,\text{Sin}[c+d\,x])\right)\right)\right)$$

- **Problem 624: Result more than twice size of optimal antiderivative.**

$$\int (e\,\text{Cos}[c+d\,x])^p\,(a+b\,\text{Sin}[c+d\,x])^{3/2}\,dx$$

Optimal (type 6, 156 leaves, 2 steps):

$$\frac{1}{5\,b\,d} 2\,e\,\text{AppellF1}\left[\frac{5}{2}, \frac{1-p}{2}, \frac{1-p}{2}, \frac{7}{2}, \frac{a+b\,\text{Sin}[c+d\,x]}{a-b}, \frac{a+b\,\text{Sin}[c+d\,x]}{a+b}\right]$$

$$(e\,\text{Cos}[c+d\,x])^{-1+p}\,(a+b\,\text{Sin}[c+d\,x])^{5/2}\left(1-\frac{a+b\,\text{Sin}[c+d\,x]}{a-b}\right)^{\frac{1-p}{2}}\left(1-\frac{a+b\,\text{Sin}[c+d\,x]}{a+b}\right)^{\frac{1-p}{2}}$$

Result (type 6, 447 leaves):

$$-\left(14\left(a^2-b^2\right)^2 \text{AppellF1}\left[\frac{5}{2},\frac{1-p}{2},\frac{1-p}{2},\frac{7}{2},\frac{a+b\,\text{Sin}[c+d\,x]}{a-\sqrt{b^2}},\frac{a+b\,\text{Sin}[c+d\,x]}{a+\sqrt{b^2}}\right]\right.$$

$$\left.(e\,\text{Cos}[c+d\,x])^p\,\text{Sec}[c+d\,x]^3\,(a+b\,\text{Sin}[c+d\,x])^{5/2}\left(-\sqrt{b^2}+b\,\text{Sin}[c+d\,x]\right)\left(\sqrt{b^2}+b\,\text{Sin}[c+d\,x]\right)\right)\Big/$$

$$\left(5\,b^3\left(a-\sqrt{b^2}\right)\left(a+\sqrt{b^2}\right)d\left(7\left(a^2-b^2\right)\text{AppellF1}\left[\frac{5}{2},\frac{1-p}{2},\frac{1-p}{2},\frac{7}{2},\frac{a+b\,\text{Sin}[c+d\,x]}{a-\sqrt{b^2}},\frac{a+b\,\text{Sin}[c+d\,x]}{a+\sqrt{b^2}}\right]+\right.\right.$$

$$(-1+p)\left(\left(-a+\sqrt{b^2}\right)\text{AppellF1}\left[\frac{7}{2},\frac{1-p}{2},\frac{3-p}{2},\frac{9}{2},\frac{a+b\,\text{Sin}[c+d\,x]}{a-\sqrt{b^2}},\frac{a+b\,\text{Sin}[c+d\,x]}{a+\sqrt{b^2}}\right]-\right.$$

$$\left.\left.\left.\left(a+\sqrt{b^2}\right)\text{AppellF1}\left[\frac{7}{2},\frac{3-p}{2},\frac{1-p}{2},\frac{9}{2},\frac{a+b\,\text{Sin}[c+d\,x]}{a-\sqrt{b^2}},\frac{a+b\,\text{Sin}[c+d\,x]}{a+\sqrt{b^2}}\right]\right)(a+b\,\text{Sin}[c+d\,x])\right)\right)$$

- **Problem 625: Result more than twice size of optimal antiderivative.**

$$\int (e\,\text{Cos}[c+d\,x])^p\sqrt{a+b\,\text{Sin}[c+d\,x]}\,dx$$

Optimal (type 6, 156 leaves, 2 steps) :

$$\frac{1}{3\,b\,d}2\,e\,\text{AppellF1}\left[\frac{3}{2},\frac{1-p}{2},\frac{1-p}{2},\frac{5}{2},\frac{a+b\,\text{Sin}[c+d\,x]}{a-b},\frac{a+b\,\text{Sin}[c+d\,x]}{a+b}\right]$$

$$(e\,\text{Cos}[c+d\,x])^{-1+p}\,(a+b\,\text{Sin}[c+d\,x])^{3/2}\left(1-\frac{a+b\,\text{Sin}[c+d\,x]}{a-b}\right)^{\frac{1-p}{2}}\left(1-\frac{a+b\,\text{Sin}[c+d\,x]}{a+b}\right)^{\frac{1-p}{2}}$$

Result (type 6, 447 leaves) :

$$-\left(10\left(a^2-b^2\right)^2 \text{AppellF1}\left[\frac{3}{2},\frac{1-p}{2},\frac{1-p}{2},\frac{5}{2},\frac{a+b\,\text{Sin}[c+d\,x]}{a-\sqrt{b^2}},\frac{a+b\,\text{Sin}[c+d\,x]}{a+\sqrt{b^2}}\right]\right.$$

$$\left.(e\,\text{Cos}[c+d\,x])^p\,\text{Sec}[c+d\,x]^3\,(a+b\,\text{Sin}[c+d\,x])^{3/2}\left(-\sqrt{b^2}+b\,\text{Sin}[c+d\,x]\right)\left(\sqrt{b^2}+b\,\text{Sin}[c+d\,x]\right)\right)\Big/$$

$$\left(3\,b^3\left(a-\sqrt{b^2}\right)\left(a+\sqrt{b^2}\right)d\left(5\left(a^2-b^2\right)\text{AppellF1}\left[\frac{3}{2},\frac{1-p}{2},\frac{1-p}{2},\frac{5}{2},\frac{a+b\,\text{Sin}[c+d\,x]}{a-\sqrt{b^2}},\frac{a+b\,\text{Sin}[c+d\,x]}{a+\sqrt{b^2}}\right]+\right.\right.$$

$$(-1+p)\left(\left(-a+\sqrt{b^2}\right)\text{AppellF1}\left[\frac{5}{2},\frac{1-p}{2},\frac{3-p}{2},\frac{7}{2},\frac{a+b\,\text{Sin}[c+d\,x]}{a-\sqrt{b^2}},\frac{a+b\,\text{Sin}[c+d\,x]}{a+\sqrt{b^2}}\right]-\right.$$

$$\left.\left.\left.\left(a+\sqrt{b^2}\right)\text{AppellF1}\left[\frac{5}{2},\frac{3-p}{2},\frac{1-p}{2},\frac{7}{2},\frac{a+b\,\text{Sin}[c+d\,x]}{a-\sqrt{b^2}},\frac{a+b\,\text{Sin}[c+d\,x]}{a+\sqrt{b^2}}\right]\right)(a+b\,\text{Sin}[c+d\,x])\right)\right)$$

Problem 626: Result more than twice size of optimal antiderivative.

$$\int\frac{(e\,\text{Cos}[c+d\,x])^p}{\sqrt{a+b\,\text{Sin}[c+d\,x]}}\,dx$$

Optimal (type 6, 154 leaves, 2 steps):

$$\frac{1}{b\,d}2\,e\,\text{AppellF1}\left[\frac{1}{2},\frac{1-p}{2},\frac{1-p}{2},\frac{3}{2},\frac{a+b\,\text{Sin}[c+d\,x]}{a-b},\frac{a+b\,\text{Sin}[c+d\,x]}{a+b}\right]$$

$$(e\,\text{Cos}[c+d\,x])^{-1+p}\sqrt{a+b\,\text{Sin}[c+d\,x]}\left(1-\frac{a+b\,\text{Sin}[c+d\,x]}{a-b}\right)^{\frac{1-p}{2}}\left(1-\frac{a+b\,\text{Sin}[c+d\,x]}{a+b}\right)^{\frac{1-p}{2}}$$

Result (type 6, 445 leaves):

$$-\left(6\left(a^2-b^2\right)^2 \text{AppellF1}\left[\frac{1}{2},\frac{1-p}{2},\frac{1-p}{2},\frac{3}{2},\frac{a+b\,\text{Sin}[c+d\,x]}{a-\sqrt{b^2}},\frac{a+b\,\text{Sin}[c+d\,x]}{a+\sqrt{b^2}}\right]\right.$$

$$\left.(e\,\text{Cos}[c+d\,x])^p\,\text{Sec}[c+d\,x]^3\sqrt{a+b\,\text{Sin}[c+d\,x]}\left(-\sqrt{b^2}+b\,\text{Sin}[c+d\,x]\right)\left(\sqrt{b^2}+b\,\text{Sin}[c+d\,x]\right)\right)\Big/$$

$$\left(b^3\left(a-\sqrt{b^2}\right)\left(a+\sqrt{b^2}\right)d\left(3\left(a^2-b^2\right)\text{AppellF1}\left[\frac{1}{2},\frac{1-p}{2},\frac{1-p}{2},\frac{3}{2},\frac{a+b\,\text{Sin}[c+d\,x]}{a-\sqrt{b^2}},\frac{a+b\,\text{Sin}[c+d\,x]}{a+\sqrt{b^2}}\right]+\right.\right.$$

$$(-1+p)\left(\left(-a+\sqrt{b^2}\right)\text{AppellF1}\left[\frac{3}{2},\frac{1-p}{2},\frac{3-p}{2},\frac{5}{2},\frac{a+b\,\text{Sin}[c+d\,x]}{a-\sqrt{b^2}},\frac{a+b\,\text{Sin}[c+d\,x]}{a+\sqrt{b^2}}\right]-\right.$$

$$\left.\left.\left.\left(a+\sqrt{b^2}\right)\text{AppellF1}\left[\frac{3}{2},\frac{3-p}{2},\frac{1-p}{2},\frac{5}{2},\frac{a+b\,\text{Sin}[c+d\,x]}{a-\sqrt{b^2}},\frac{a+b\,\text{Sin}[c+d\,x]}{a+\sqrt{b^2}}\right]\right)(a+b\,\text{Sin}[c+d\,x])\right)\right)$$

Problem 627: Result more than twice size of optimal antiderivative.

$$\int\frac{(e\,\text{Cos}[c+d\,x])^p}{(a+b\,\text{Sin}[c+d\,x])^{3/2}}\,dx$$

Optimal (type 6, 154 leaves, 2 steps):

$$-\frac{1}{b\,d\sqrt{a+b\,\text{Sin}[c+d\,x]}}$$

$$2\,e\,\text{AppellF1}\left[-\frac{1}{2},\frac{1-p}{2},\frac{1-p}{2},\frac{1}{2},\frac{a+b\,\text{Sin}[c+d\,x]}{a-b},\frac{a+b\,\text{Sin}[c+d\,x]}{a+b}\right](e\,\text{Cos}[c+d\,x])^{-1+p}\left(1-\frac{a+b\,\text{Sin}[c+d\,x]}{a-b}\right)^{\frac{1-p}{2}}\left(1-\frac{a+b\,\text{Sin}[c+d\,x]}{a+b}\right)^{\frac{1-p}{2}}$$

Result (type 6, 444 leaves):

$$\left(2\left(a^2-b^2\right)^2 \text{AppellF1}\left[-\frac{1}{2},\frac{1-p}{2},\frac{1-p}{2},\frac{1}{2},\frac{a+b\,\text{Sin}[c+d\,x]}{a-\sqrt{b^2}},\frac{a+b\,\text{Sin}[c+d\,x]}{a+\sqrt{b^2}}\right]\right.$$

$$\left.(e\,\text{Cos}[c+d\,x])^p\,\text{Sec}[c+d\,x]^3\left(\sqrt{b^2}-b\,\text{Sin}[c+d\,x]\right)\left(\sqrt{b^2}+b\,\text{Sin}[c+d\,x]\right)\right)\Big/$$

$$\left(b^3\left(a-\sqrt{b^2}\right)\left(a+\sqrt{b^2}\right)d\sqrt{a+b\,\text{Sin}[c+d\,x]}\left(\left(-a^2+b^2\right)\text{AppellF1}\left[-\frac{1}{2},\frac{1-p}{2},\frac{1-p}{2},\frac{1}{2},\frac{a+b\,\text{Sin}[c+d\,x]}{a-\sqrt{b^2}},\frac{a+b\,\text{Sin}[c+d\,x]}{a+\sqrt{b^2}}\right]-\right.\right.$$

$$(-1+p)\left(\left(-a+\sqrt{b^2}\right)\text{AppellF1}\left[\frac{1}{2},\frac{1-p}{2},\frac{3-p}{2},\frac{3}{2},\frac{a+b\,\text{Sin}[c+d\,x]}{a-\sqrt{b^2}},\frac{a+b\,\text{Sin}[c+d\,x]}{a+\sqrt{b^2}}\right]-\right.$$

$$\left.\left.\left.\left(a+\sqrt{b^2}\right)\text{AppellF1}\left[\frac{1}{2},\frac{3-p}{2},\frac{1-p}{2},\frac{3}{2},\frac{a+b\,\text{Sin}[c+d\,x]}{a-\sqrt{b^2}},\frac{a+b\,\text{Sin}[c+d\,x]}{a+\sqrt{b^2}}\right]\right)(a+b\,\text{Sin}[c+d\,x])\right)\right)$$

- **Problem 628: Result more than twice size of optimal antiderivative.**

$$\int\frac{(e\,\text{Cos}[c+d\,x])^p}{(a+b\,\text{Sin}[c+d\,x])^{5/2}}\,dx$$

Optimal (type 6, 156 leaves, 2 steps):

$$-\left(2\,e\,\text{AppellF1}\left[-\frac{3}{2},\frac{1-p}{2},\frac{1-p}{2},-\frac{1}{2},\frac{a+b\,\text{Sin}[c+d\,x]}{a-b},\frac{a+b\,\text{Sin}[c+d\,x]}{a+b}\right]\right.$$

$$\left.(e\,\text{Cos}[c+d\,x])^{-1+p}\left(1-\frac{a+b\,\text{Sin}[c+d\,x]}{a-b}\right)^{\frac{1-p}{2}}\left(1-\frac{a+b\,\text{Sin}[c+d\,x]}{a+b}\right)^{\frac{1-p}{2}}\right)\Big/\left(3\,b\,d\,(a+b\,\text{Sin}[c+d\,x])^{3/2}\right)$$

Result (type 6, 446 leaves):

$$-\left(2\left(a^2-b^2\right)^2 \text{AppellF1}\left[-\frac{3}{2},\frac{1-p}{2},\frac{1-p}{2},-\frac{1}{2},\frac{a+b\,\text{Sin}[c+d\,x]}{a-\sqrt{b^2}},\frac{a+b\,\text{Sin}[c+d\,x]}{a+\sqrt{b^2}}\right]\right.$$

$$\left.(e\,\text{Cos}[c+d\,x])^p\,\text{Sec}[c+d\,x]^3\left(\sqrt{b^2}-b\,\text{Sin}[c+d\,x]\right)\left(\sqrt{b^2}+b\,\text{Sin}[c+d\,x]\right)\right)\Big/$$

$$\left(3\,b^3\left(a-\sqrt{b^2}\right)\left(a+\sqrt{b^2}\right)d\,(a+b\,\text{Sin}[c+d\,x])^{3/2}\left(\left(a^2-b^2\right)\text{AppellF1}\left[-\frac{3}{2},\frac{1-p}{2},\frac{1-p}{2},-\frac{1}{2},\frac{a+b\,\text{Sin}[c+d\,x]}{a-\sqrt{b^2}},\frac{a+b\,\text{Sin}[c+d\,x]}{a+\sqrt{b^2}}\right]-\right.\right.$$

$$(-1+p)\left(\left(-a+\sqrt{b^2}\right)\text{AppellF1}\left[-\frac{1}{2},\frac{1-p}{2},\frac{3-p}{2},\frac{1}{2},\frac{a+b\,\text{Sin}[c+d\,x]}{a-\sqrt{b^2}},\frac{a+b\,\text{Sin}[c+d\,x]}{a+\sqrt{b^2}}\right]-\right.$$

$$\left.\left.\left.\left(a+\sqrt{b^2}\right)\text{AppellF1}\left[-\frac{1}{2},\frac{3-p}{2},\frac{1-p}{2},\frac{1}{2},\frac{a+b\,\text{Sin}[c+d\,x]}{a-\sqrt{b^2}},\frac{a+b\,\text{Sin}[c+d\,x]}{a+\sqrt{b^2}}\right]\right)(a+b\,\text{Sin}[c+d\,x])\right)\right)$$

- **Problem 629: Unable to integrate problem.**

$$\int (e\,\text{Cos}[c+d\,x])^p\,(a+b\,\text{Sin}[c+d\,x])^m\,dx$$

Optimal (type 6, 158 leaves, 2 steps):

$$\frac{1}{b\,d\,(1+m)}e\,\text{AppellF1}\left[1+m,\frac{1-p}{2},\frac{1-p}{2},2+m,\frac{a+b\,\text{Sin}[c+d\,x]}{a-b},\frac{a+b\,\text{Sin}[c+d\,x]}{a+b}\right]$$

$$(e\,\text{Cos}[c+d\,x])^{-1+p}\,(a+b\,\text{Sin}[c+d\,x])^{1+m}\left(1-\frac{a+b\,\text{Sin}[c+d\,x]}{a-b}\right)^{\frac{1-p}{2}}\left(1-\frac{a+b\,\text{Sin}[c+d\,x]}{a+b}\right)^{\frac{1-p}{2}}$$

Result (type 8, 25 leaves):

$$\int (e\,\text{Cos}[c+d\,x])^p\,(a+b\,\text{Sin}[c+d\,x])^m\,dx$$

- **Problem 630: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int \text{Cos}[c+d\,x]^7\,(a+b\,\text{Sin}[c+d\,x])^m\,dx$$

Optimal (type 3, 254 leaves, 3 steps):

$$-\frac{\left(a^2-b^2\right)^3(a+b\,\text{Sin}[c+d\,x])^{1+m}}{b^7\,d\,(1+m)}+\frac{6\,a\left(a^2-b^2\right)^2(a+b\,\text{Sin}[c+d\,x])^{2+m}}{b^7\,d\,(2+m)}-\frac{3\left(5\,a^4-6\,a^2\,b^2+b^4\right)(a+b\,\text{Sin}[c+d\,x])^{3+m}}{b^7\,d\,(3+m)}+$$

$$\frac{4\,a\left(5\,a^2-3\,b^2\right)(a+b\,\text{Sin}[c+d\,x])^{4+m}}{b^7\,d\,(4+m)}-\frac{3\left(5\,a^2-b^2\right)(a+b\,\text{Sin}[c+d\,x])^{5+m}}{b^7\,d\,(5+m)}+\frac{6\,a\,(a+b\,\text{Sin}[c+d\,x])^{6+m}}{b^7\,d\,(6+m)}-\frac{(a+b\,\text{Sin}[c+d\,x])^{7+m}}{b^7\,d\,(7+m)}$$

Result (type 3, 1639 leaves):

$$\frac{1}{d}(a+b\,\mathrm{Sin}[c+d\,x])^m$$

$$\Bigg(-\Big(a\,\big(11520\,a^6-48384\,a^4\,b^2+80640\,a^2\,b^4-80640\,b^6-12096\,a^4\,b^2\,m+50232\,a^2\,b^4\,m-112224\,b^6\,m+1728\,a^4\,b^2\,m^2+3324\,a^2\,b^4\,m^2-54542\,b^6\,m^2-840\,a^2\,b^4\,m^3-13125\,b^6\,m^3-12\,a^2\,b^4\,m^4-1829\,b^6\,m^4-147\,b^6\,m^5-5\,b^6\,m^6\big)\Big)\Big/\big(16\,b^7\,(1+m)\,(2+m)\,(3+m)\,(4+m)\,(5+m)\,(6+m)\,(7+m)\big)+$$

$$\Big(\big(176400\,b^6+46080\,a^6\,m-182016\,a^4\,b^2\,m+279936\,a^2\,b^4\,m+194868\,b^6\,m-42624\,a^4\,b^2\,m^2+169440\,a^2\,b^4\,m^2+78968\,b^6\,m^2+1152\,a^4\,b^2\,m^3+29328\,a^2\,b^4\,m^3+16299\,b^6\,m^3+1632\,a^2\,b^4\,m^4+2027\,b^6\,m^4+48\,a^2\,b^4\,m^5+153\,b^6\,m^5+5\,b^6\,m^6\big)\left(-\frac{i\,\mathrm{Cos}[c+d\,x]}{128\,b^6}+\frac{\mathrm{Sin}[c+d\,x]}{128\,b^6}\right)\Big)\Big/\big((1+m)\,(2+m)\,(3+m)\,(4+m)\,(5+m)\,(6+m)\,(7+m)\big)+$$

$$\Big(\big(176400\,b^6+46080\,a^6\,m-182016\,a^4\,b^2\,m+279936\,a^2\,b^4\,m+194868\,b^6\,m-42624\,a^4\,b^2\,m^2+169440\,a^2\,b^4\,m^2+78968\,b^6\,m^2+1152\,a^4\,b^2\,m^3+29328\,a^2\,b^4\,m^3+16299\,b^6\,m^3+1632\,a^2\,b^4\,m^4+2027\,b^6\,m^4+48\,a^2\,b^4\,m^5+153\,b^6\,m^5+5\,b^6\,m^6\big)\left(\frac{i\,\mathrm{Cos}[c+d\,x]}{128\,b^6}+\frac{\mathrm{Sin}[c+d\,x]}{128\,b^6}\right)\Big)\Big/\big((1+m)\,(2+m)\,(3+m)\,(4+m)\,(5+m)\,(6+m)\,(7+m)\big)+$$

$$\Big(\big(1920\,a^4\,m-7104\,a^2\,b^2\,m+10008\,b^4\,m-1696\,a^2\,b^2\,m^2+6370\,b^4\,m^2-32\,a^2\,b^2\,m^3+1411\,b^4\,m^3+134\,b^4\,m^4+5\,b^4\,m^5\big)\left(\frac{3\,a\,\mathrm{Cos}[2\,(c+d\,x)]}{64\,b^5}-\frac{3\,i\,a\,\mathrm{Sin}[2\,(c+d\,x)]}{64\,b^5}\right)\Big)\Big/\big((2+m)\,(3+m)\,(4+m)\,(5+m)\,(6+m)\,(7+m)\big)+$$

$$\Big(\big(1920\,a^4\,m-7104\,a^2\,b^2\,m+10008\,b^4\,m-1696\,a^2\,b^2\,m^2+6370\,b^4\,m^2-32\,a^2\,b^2\,m^3+1411\,b^4\,m^3+134\,b^4\,m^4+5\,b^4\,m^5\big)\left(\frac{3\,a\,\mathrm{Cos}[2\,(c+d\,x)]}{64\,b^5}+\frac{3\,i\,a\,\mathrm{Sin}[2\,(c+d\,x)]}{64\,b^5}\right)\Big)\Big/\big((2+m)\,(3+m)\,(4+m)\,(5+m)\,(6+m)\,(7+m)\big)+$$

$$\Big(\big(5880\,b^4-640\,a^4\,m+2208\,a^2\,b^2\,m+3602\,b^4\,m+552\,a^2\,b^2\,m^2+797\,b^4\,m^2+24\,a^2\,b^2\,m^3+78\,b^4\,m^3+3\,b^4\,m^4\big)\left(-\frac{3\,i\,\mathrm{Cos}[3\,(c+d\,x)]}{128\,b^4}+\frac{3\,\mathrm{Sin}[3\,(c+d\,x)]}{128\,b^4}\right)\Big)\Big/\big((3+m)\,(4+m)\,(5+m)\,(6+m)\,(7+m)\big)+$$

$$\Big(\big(5880\,b^4-640\,a^4\,m+2208\,a^2\,b^2\,m+3602\,b^4\,m+552\,a^2\,b^2\,m^2+797\,b^4\,m^2+24\,a^2\,b^2\,m^3+78\,b^4\,m^3+3\,b^4\,m^4\big)\left(\frac{3\,i\,\mathrm{Cos}[3\,(c+d\,x)]}{128\,b^4}+\frac{3\,\mathrm{Sin}[3\,(c+d\,x)]}{128\,b^4}\right)\Big)\Big/\big((3+m)\,(4+m)\,(5+m)\,(6+m)\,(7+m)\big)+$$

$$\frac{\big(20\,a^2\,m-64\,b^2\,m-17\,b^2\,m^2-b^2\,m^3\big)\left(-\frac{3\,a\,\mathrm{Cos}[4\,(c+d\,x)]}{32\,b^3}-\frac{3\,i\,a\,\mathrm{Sin}[4\,(c+d\,x)]}{32\,b^3}\right)}{(4+m)\,(5+m)\,(6+m)\,(7+m)}+\frac{\big(20\,a^2\,m-64\,b^2\,m-17\,b^2\,m^2-b^2\,m^3\big)\left(-\frac{3\,a\,\mathrm{Cos}[4\,(c+d\,x)]}{32\,b^3}+\frac{3\,i\,a\,\mathrm{Sin}[4\,(c+d\,x)]}{32\,b^3}\right)}{(4+m)\,(5+m)\,(6+m)\,(7+m)}+$$

$$\frac{\left(294\,b^2+24\,a^2\,m+79\,b^2\,m+5\,b^2\,m^2\right)\left(-\frac{i\,\mathrm{Cos}[5\,(c+d\,x)]}{128\,b^2}+\frac{\mathrm{Sin}[5\,(c+d\,x)]}{128\,b^2}\right)}{(5+m)\,(6+m)\,(7+m)}+$$

$$\frac{\left(294\,b^2+24\,a^2\,m+79\,b^2\,m+5\,b^2\,m^2\right)\left(\frac{i\,\mathrm{Cos}[5\,(c+d\,x)]}{128\,b^2}+\frac{\mathrm{Sin}[5\,(c+d\,x)]}{128\,b^2}\right)}{(5+m)\,(6+m)\,(7+m)}+$$

$$\frac{\frac{a\,m\,\mathrm{Cos}[6\,(c+d\,x)]}{64\,b}-\frac{i\,a\,m\,\mathrm{Sin}[6\,(c+d\,x)]}{64\,b}}{(6+m)\,(7+m)}+\frac{\frac{a\,m\,\mathrm{Cos}[6\,(c+d\,x)]}{64\,b}+\frac{i\,a\,m\,\mathrm{Sin}[6\,(c+d\,x)]}{64\,b}}{(6+m)\,(7+m)}+$$

$$\left.\frac{-\frac{1}{128}\,i\,\mathrm{Cos}[7\,(c+d\,x)]+\frac{1}{128}\,\mathrm{Sin}[7\,(c+d\,x)]}{7+m}+\frac{\frac{1}{128}\,i\,\mathrm{Cos}[7\,(c+d\,x)]+\frac{1}{128}\,\mathrm{Sin}[7\,(c+d\,x)]}{7+m}\right)$$

Problem 634: Unable to integrate problem.

$$\int \mathrm{Sec}[c+d\,x]\,(a+b\,\mathrm{Sin}[c+d\,x])^m\,dx$$

Optimal (type 5, 115 leaves, 5 steps):

$$-\frac{\mathrm{Hypergeometric2F1}\left[1,\,1+m,\,2+m,\,\frac{a+b\,\mathrm{Sin}[c+d\,x]}{a-b}\right]\,(a+b\,\mathrm{Sin}[c+d\,x])^{1+m}}{2\,(a-b)\,d\,(1+m)}+\frac{\mathrm{Hypergeometric2F1}\left[1,\,1+m,\,2+m,\,\frac{a+b\,\mathrm{Sin}[c+d\,x]}{a+b}\right]\,(a+b\,\mathrm{Sin}[c+d\,x])^{1+m}}{2\,(a+b)\,d\,(1+m)}$$

Result (type 8, 21 leaves):

$$\int \mathrm{Sec}[c+d\,x]\,(a+b\,\mathrm{Sin}[c+d\,x])^m\,dx$$

Problem 635: Unable to integrate problem.

$$\int \mathrm{Sec}[c+d\,x]^3\,(a+b\,\mathrm{Sin}[c+d\,x])^m\,dx$$

Optimal (type 5, 183 leaves, 6 steps):

$$-\frac{(a-b\,(1-m))\,\mathrm{Hypergeometric2F1}\left[1,\,1+m,\,2+m,\,\frac{a+b\,\mathrm{Sin}[c+d\,x]}{a-b}\right]\,(a+b\,\mathrm{Sin}[c+d\,x])^{1+m}}{4\,(a-b)^2\,d\,(1+m)}+$$

$$\frac{(a+b-b\,m)\,\mathrm{Hypergeometric2F1}\left[1,\,1+m,\,2+m,\,\frac{a+b\,\mathrm{Sin}[c+d\,x]}{a+b}\right]\,(a+b\,\mathrm{Sin}[c+d\,x])^{1+m}}{4\,(a+b)^2\,d\,(1+m)}-\frac{\mathrm{Sec}[c+d\,x]^2\,(b-a\,\mathrm{Sin}[c+d\,x])\,(a+b\,\mathrm{Sin}[c+d\,x])^{1+m}}{2\,\left(a^2-b^2\right)\,d}$$

Result (type 8, 23 leaves):

$$\int \mathrm{Sec}[c+d\,x]^3\,(a+b\,\mathrm{Sin}[c+d\,x])^m\,dx$$

Problem 636: Unable to integrate problem.

$$\int \mathrm{Sec}[c+d\,x]^5\,(a+b\,\mathrm{Sin}[c+d\,x])^m\,dx$$

Optimal (type 5, 305 leaves, 7 steps):

$$-\frac{1}{16\,(a-b)^3\,d\,(1+m)}\left(3a^2-3ab\,(2-m)+b^2\left(3-4m+m^2\right)\right)\text{Hypergeometric2F1}\left[1,1+m,2+m,\frac{a+b\,\text{Sin}[c+d\,x]}{a-b}\right](a+b\,\text{Sin}[c+d\,x])^{1+m}+$$
$$\frac{1}{16\,(a+b)^3\,d\,(1+m)}\left(3a^2+3ab\,(2-m)+b^2\left(3-4m+m^2\right)\right)\text{Hypergeometric2F1}\left[1,1+m,2+m,\frac{a+b\,\text{Sin}[c+d\,x]}{a+b}\right](a+b\,\text{Sin}[c+d\,x])^{1+m}-$$
$$\frac{\text{Sec}[c+d\,x]^4\,(b-a\,\text{Sin}[c+d\,x])\,(a+b\,\text{Sin}[c+d\,x])^{1+m}}{4\left(a^2-b^2\right)d}+$$
$$\frac{\text{Sec}[c+d\,x]^2\,(a+b\,\text{Sin}[c+d\,x])^{1+m}\left(b\left(b^2\,(3-m)-a^2\,(1+m)\right)+a\left(3a^2-b^2\,(5-2m)\right)\text{Sin}[c+d\,x]\right)}{8\left(a^2-b^2\right)^2d}$$

Result (type 8, 23 leaves) :

$$\int \text{Sec}[c+d\,x]^5\,(a+b\,\text{Sin}[c+d\,x])^m\,dx$$

- **Problem 637: Unable to integrate problem.**

$$\int \text{Cos}[c+d\,x]^4\,(a+b\,\text{Sin}[c+d\,x])^m\,dx$$

Optimal (type 6, 129 leaves, 2 steps) :

$$\frac{\text{AppellF1}\left[1+m,-\frac{3}{2},-\frac{3}{2},2+m,\frac{a+b\,\text{Sin}[c+d\,x]}{a-b},\frac{a+b\,\text{Sin}[c+d\,x]}{a+b}\right]\text{Cos}[c+d\,x]^3\,(a+b\,\text{Sin}[c+d\,x])^{1+m}}{b\,d\,(1+m)\left(1-\frac{a+b\,\text{Sin}[c+d\,x]}{a-b}\right)^{3/2}\left(1-\frac{a+b\,\text{Sin}[c+d\,x]}{a+b}\right)^{3/2}}$$

Result (type 8, 23 leaves) :

$$\int \text{Cos}[c+d\,x]^4\,(a+b\,\text{Sin}[c+d\,x])^m\,dx$$

- **Problem 638: Unable to integrate problem.**

$$\int \text{Cos}[c+d\,x]^2\,(a+b\,\text{Sin}[c+d\,x])^m\,dx$$

Optimal (type 6, 127 leaves, 2 steps) :

$$\frac{\text{AppellF1}\left[1+m,-\frac{1}{2},-\frac{1}{2},2+m,\frac{a+b\,\text{Sin}[c+d\,x]}{a-b},\frac{a+b\,\text{Sin}[c+d\,x]}{a+b}\right]\text{Cos}[c+d\,x]\,(a+b\,\text{Sin}[c+d\,x])^{1+m}}{b\,d\,(1+m)\sqrt{1-\frac{a+b\,\text{Sin}[c+d\,x]}{a-b}}\sqrt{1-\frac{a+b\,\text{Sin}[c+d\,x]}{a+b}}}$$

Result (type 8, 23 leaves) :

$$\int \text{Cos}[c+d\,x]^2\,(a+b\,\text{Sin}[c+d\,x])^m\,dx$$

- **Problem 639: Unable to integrate problem.**

$$\int \text{Sec}[c+d\,x]^2\,(a+b\,\text{Sin}[c+d\,x])^m\,dx$$

Optimal (type 6, 129 leaves, 2 steps):

$$\frac{1}{b\,d\,(1+m)}\text{AppellF1}\left[1+m,\frac{3}{2},\frac{3}{2},2+m,\frac{a+b\,\text{Sin}[c+d\,x]}{a-b},\frac{a+b\,\text{Sin}[c+d\,x]}{a+b}\right]\text{Sec}[c+d\,x]^3\,(a+b\,\text{Sin}[c+d\,x])^{1+m}\left(1-\frac{a+b\,\text{Sin}[c+d\,x]}{a-b}\right)^{3/2}\left(1-\frac{a+b\,\text{Sin}[c+d\,x]}{a+b}\right)^{3/2}$$

Result (type 8, 23 leaves):

$$\int \text{Sec}[c+d\,x]^2\,(a+b\,\text{Sin}[c+d\,x])^m\,dx$$

Problem 640: Unable to integrate problem.

$$\int \text{Sec}[c+d\,x]^4\,(a+b\,\text{Sin}[c+d\,x])^m\,dx$$

Optimal (type 6, 129 leaves, 2 steps):

$$\frac{1}{b\,d\,(1+m)}\text{AppellF1}\left[1+m,\frac{5}{2},\frac{5}{2},2+m,\frac{a+b\,\text{Sin}[c+d\,x]}{a-b},\frac{a+b\,\text{Sin}[c+d\,x]}{a+b}\right]\text{Sec}[c+d\,x]^5\,(a+b\,\text{Sin}[c+d\,x])^{1+m}\left(1-\frac{a+b\,\text{Sin}[c+d\,x]}{a-b}\right)^{5/2}\left(1-\frac{a+b\,\text{Sin}[c+d\,x]}{a+b}\right)^{5/2}$$

Result (type 8, 23 leaves):

$$\int \text{Sec}[c+d\,x]^4\,(a+b\,\text{Sin}[c+d\,x])^m\,dx$$

Problem 641: Unable to integrate problem.

$$\int (e\,\text{Cos}[c+d\,x])^{5/2}\,(a+b\,\text{Sin}[c+d\,x])^m\,dx$$

Optimal (type 6, 134 leaves, 2 steps):

$$\frac{e\,\text{AppellF1}\left[1+m,-\frac{3}{4},-\frac{3}{4},2+m,\frac{a+b\,\text{Sin}[c+d\,x]}{a-b},\frac{a+b\,\text{Sin}[c+d\,x]}{a+b}\right](e\,\text{Cos}[c+d\,x])^{3/2}\,(a+b\,\text{Sin}[c+d\,x])^{1+m}}{b\,d\,(1+m)\left(1-\frac{a+b\,\text{Sin}[c+d\,x]}{a-b}\right)^{3/4}\left(1-\frac{a+b\,\text{Sin}[c+d\,x]}{a+b}\right)^{3/4}}$$

Result (type 8, 27 leaves):

$$\int (e\,\text{Cos}[c+d\,x])^{5/2}\,(a+b\,\text{Sin}[c+d\,x])^m\,dx$$

Problem 642: Unable to integrate problem.

$$\int (e\,\text{Cos}[c+d\,x])^{3/2}\,(a+b\,\text{Sin}[c+d\,x])^m\,dx$$

Optimal (type 6, 134 leaves, 2 steps):

$$\frac{e\,\text{AppellF1}\left[1+m,-\frac{1}{4},-\frac{1}{4},2+m,\frac{a+b\,\text{Sin}[c+d\,x]}{a-b},\frac{a+b\,\text{Sin}[c+d\,x]}{a+b}\right]\sqrt{e\,\text{Cos}[c+d\,x]}\,(a+b\,\text{Sin}[c+d\,x])^{1+m}}{b\,d\,(1+m)\left(1-\frac{a+b\,\text{Sin}[c+d\,x]}{a-b}\right)^{1/4}\left(1-\frac{a+b\,\text{Sin}[c+d\,x]}{a+b}\right)^{1/4}}$$

Result (type 8, 27 leaves) :

$$\int(e\,\text{Cos}[c+d\,x])^{3/2}\,(a+b\,\text{Sin}[c+d\,x])^m\,dx$$

Problem 643: Unable to integrate problem.

$$\int\sqrt{e\,\text{Cos}[c+d\,x]}\,(a+b\,\text{Sin}[c+d\,x])^m\,dx$$

Optimal (type 6, 134 leaves, 2 steps) :

$$\left(e\,\text{AppellF1}\left[1+m,\frac{1}{4},\frac{1}{4},2+m,\frac{a+b\,\text{Sin}[c+d\,x]}{a-b},\frac{a+b\,\text{Sin}[c+d\,x]}{a+b}\right]\right.$$
$$\left.(a+b\,\text{Sin}[c+d\,x])^{1+m}\left(1-\frac{a+b\,\text{Sin}[c+d\,x]}{a-b}\right)^{1/4}\left(1-\frac{a+b\,\text{Sin}[c+d\,x]}{a+b}\right)^{1/4}\right)\Big/\left(b\,d\,(1+m)\sqrt{e\,\text{Cos}[c+d\,x]}\right)$$

Result (type 8, 27 leaves) :

$$\int\sqrt{e\,\text{Cos}[c+d\,x]}\,(a+b\,\text{Sin}[c+d\,x])^m\,dx$$

Problem 644: Unable to integrate problem.

$$\int\frac{(a+b\,\text{Sin}[c+d\,x])^m}{\sqrt{e\,\text{Cos}[c+d\,x]}}\,dx$$

Optimal (type 6, 134 leaves, 2 steps) :

$$\left(e\,\text{AppellF1}\left[1+m,\frac{3}{4},\frac{3}{4},2+m,\frac{a+b\,\text{Sin}[c+d\,x]}{a-b},\frac{a+b\,\text{Sin}[c+d\,x]}{a+b}\right]\right.$$
$$\left.(a+b\,\text{Sin}[c+d\,x])^{1+m}\left(1-\frac{a+b\,\text{Sin}[c+d\,x]}{a-b}\right)^{3/4}\left(1-\frac{a+b\,\text{Sin}[c+d\,x]}{a+b}\right)^{3/4}\right)\Big/\left(b\,d\,(1+m)\,(e\,\text{Cos}[c+d\,x])^{3/2}\right)$$

Result (type 8, 27 leaves) :

$$\int\frac{(a+b\,\text{Sin}[c+d\,x])^m}{\sqrt{e\,\text{Cos}[c+d\,x]}}\,dx$$

Problem 645: Unable to integrate problem.

$$\int\frac{(a+b\,\text{Sin}[c+d\,x])^m}{(e\,\text{Cos}[c+d\,x])^{3/2}}\,dx$$

Optimal (type 6, 134 leaves, 2 steps) :

$$\left(e\,\text{AppellF1}\left[1+m,\frac{5}{4},\frac{5}{4},2+m,\frac{a+b\,\text{Sin}[c+d\,x]}{a-b},\frac{a+b\,\text{Sin}[c+d\,x]}{a+b}\right]\right.$$
$$\left.(a+b\,\text{Sin}[c+d\,x])^{1+m}\left(1-\frac{a+b\,\text{Sin}[c+d\,x]}{a-b}\right)^{5/4}\left(1-\frac{a+b\,\text{Sin}[c+d\,x]}{a+b}\right)^{5/4}\right)\Big/\left(b\,d\,(1+m)\,(e\,\text{Cos}[c+d\,x])^{5/2}\right)$$

Result (type 8, 27 leaves):

$$\int\frac{(a+b\,\text{Sin}[c+d\,x])^m}{(e\,\text{Cos}[c+d\,x])^{3/2}}\,dx$$

- **Problem 646: Unable to integrate problem.**

$$\int\frac{(a+b\,\text{Sin}[c+d\,x])^m}{(e\,\text{Cos}[c+d\,x])^{5/2}}\,dx$$

Optimal (type 6, 134 leaves, 2 steps):

$$\left(e\,\text{AppellF1}\left[1+m,\frac{7}{4},\frac{7}{4},2+m,\frac{a+b\,\text{Sin}[c+d\,x]}{a-b},\frac{a+b\,\text{Sin}[c+d\,x]}{a+b}\right]\right.$$
$$\left.(a+b\,\text{Sin}[c+d\,x])^{1+m}\left(1-\frac{a+b\,\text{Sin}[c+d\,x]}{a-b}\right)^{7/4}\left(1-\frac{a+b\,\text{Sin}[c+d\,x]}{a+b}\right)^{7/4}\right)\Big/\left(b\,d\,(1+m)\,(e\,\text{Cos}[c+d\,x])^{7/2}\right)$$

Result (type 8, 27 leaves):

$$\int\frac{(a+b\,\text{Sin}[c+d\,x])^m}{(e\,\text{Cos}[c+d\,x])^{5/2}}\,dx$$

- **Problem 647: Unable to integrate problem.**

$$\int(e\,\text{Cos}[c+d\,x])^{-4-m}\,(a+b\,\text{Sin}[c+d\,x])^m\,dx$$

Optimal (type 5, 598 leaves, 9 steps):

$$-\frac{(e\,\text{Cos}[c+d\,x])^{-3-m}\,(a+b\,\text{Sin}[c+d\,x])^{1+m}}{(a-b)\,d\,e\,(3+m)}+\frac{2\,b\,(e\,\text{Cos}[c+d\,x])^{-1-m}\,(a+b\,\text{Sin}[c+d\,x])^{1+m}}{(a-b)^2\,d\,e^3\,(1+m)\,(3+m)}+\frac{a\,(e\,\text{Cos}[c+d\,x])^{-3-m}\,(1+\text{Sin}[c+d\,x])\,(a+b\,\text{Sin}[c+d\,x])^{1+m}}{\left(a^2-b^2\right)\,d\,e\,(3+m)}+\frac{a\,(3\,b+a\,(2+m))\,(e\,\text{Cos}[c+d\,x])^{-3-m}\,(1-\text{Sin}[c+d\,x])\,(1+\text{Sin}[c+d\,x])\,(a+b\,\text{Sin}[c+d\,x])^{1+m}}{(a-b)\,(a+b)^2\,d\,e\,(1+m)\,(3+m)}-\left(2^{\frac{3}{2}-\frac{m}{2}}\,a\,b\,(e\,\text{Cos}[c+d\,x])^{-1-m}\,\text{Hypergeometric2F1}\left[\frac{1}{2}\,(-1-m),\frac{1+m}{2},\frac{1-m}{2},\frac{(a-b)\,(1-\text{Sin}[c+d\,x])}{2\,(a+b\,\text{Sin}[c+d\,x])}\right]\left(\frac{(a+b)\,(1+\text{Sin}[c+d\,x])}{a+b\,\text{Sin}[c+d\,x]}\right)^{\frac{1+m}{2}}\,(a+b\,\text{Sin}[c+d\,x])^{1+m}\right)\Big/\left((a-b)^2\,(a+b)\,d\,e^3\,(1+m)\,(3+m)\right)-\left(2^{-\frac{1}{2}-\frac{m}{2}}\,a\,\left(2\,a\,b-b^2+a^2\,(2+m)\right)\,(e\,\text{Cos}[c+d\,x])^{-3-m}\,\text{Hypergeometric2F1}\left[\frac{1-m}{2},\frac{3+m}{2},\frac{3-m}{2},\frac{(a-b)\,(1-\text{Sin}[c+d\,x])}{2\,(a+b\,\text{Sin}[c+d\,x])}\right]\,(1-\text{Sin}[c+d\,x])^2\left(\frac{(a+b)\,(1+\text{Sin}[c+d\,x])}{a+b\,\text{Sin}[c+d\,x]}\right)^{\frac{3+m}{2}}\,(a+b\,\text{Sin}[c+d\,x])^{1+m}\right)\Big/\left((a-b)\,(a+b)^3\,d\,e\,(1-m)\,(3+m)\right)$$

Result (type 8, 29 leaves) :

$$\int (e\,\text{Cos}[c+d\,x])^{-4-m}\,(a+b\,\text{Sin}[c+d\,x])^m\,dx$$

Problem 648: Unable to integrate problem.

$$\int (e\,\text{Cos}[c+d\,x])^{-3-m}\,(a+b\,\text{Sin}[c+d\,x])^m\,dx$$

Optimal (type 5, 311 leaves, ? steps):

$$\frac{(e\,\text{Cos}[c+d\,x])^{-m}\,\text{Sec}[c+d\,x]^4\,(-1+\text{Sin}[c+d\,x])\,(1+\text{Sin}[c+d\,x])\,(a+b\,\text{Sin}[c+d\,x])^{1+m}}{(a-b)\,d\,e^3\,(2+m)}+\frac{1}{(a-b)^2\,d\,e^3\,m\,(2+m)}(-2\,b+a\,(2+m))\,(e\,\text{Cos}[c+d\,x])^{-m}\,\text{Sec}[c+d\,x]^4\,(-1+\text{Sin}[c+d\,x])\,(1+\text{Sin}[c+d\,x])^2\,(a+b\,\text{Sin}[c+d\,x])^{1+m}-\frac{1}{(a-b)^3\,d\,e^3\,m\,(1+m)}\left(-b^2+a^2\,(1+m)\right)\,(e\,\text{Cos}[c+d\,x])^{-m}\,\text{Hypergeometric2F1}\left[\frac{m}{2},1+m,2+m,-\frac{2\,(a+b\,\text{Sin}[c+d\,x])}{(a-b)\,(-1+\text{Sin}[c+d\,x])}\right]\text{Sec}[c+d\,x]^4\,(1+\text{Sin}[c+d\,x])^3\left(\frac{(a+b)\,(1+\text{Sin}[c+d\,x])}{(a-b)\,(-1+\text{Sin}[c+d\,x])}\right)^{\frac{1}{2}(-2+m)}\,(a+b\,\text{Sin}[c+d\,x])^{1+m}$$

Result (type 8, 29 leaves) :

$$\int (e\,\text{Cos}[c+d\,x])^{-3-m}\,(a+b\,\text{Sin}[c+d\,x])^m\,dx$$

Problem 649: Unable to integrate problem.

$$\int (e \operatorname{Cos}[c+d x])^{-2-m} (a+b \operatorname{Sin}[c+d x])^m \, dx$$

Optimal (type 5, 201 leaves, 3 steps):

$$-\frac{(e \operatorname{Cos}[c+d x])^{-1-m} (a+b \operatorname{Sin}[c+d x])^{1+m}}{(a-b) d e (1+m)}+\frac{1}{\left(a^2-b^2\right) d e (1+m)} 2^{\frac{1}{2}-\frac{m}{2}} a (e \operatorname{Cos}[c+d x])^{-1-m}$$
$$\operatorname{Hypergeometric2F1}\left[\frac{1}{2}(-1-m), \frac{1+m}{2}, \frac{1-m}{2}, \frac{(a-b)(1-\operatorname{Sin}[c+d x])}{2(a+b \operatorname{Sin}[c+d x])}\right]\left(\frac{(a+b)(1+\operatorname{Sin}[c+d x])}{a+b \operatorname{Sin}[c+d x]}\right)^{\frac{1+m}{2}} (a+b \operatorname{Sin}[c+d x])^{1+m}$$

Result (type 8, 29 leaves):

$$\int (e \operatorname{Cos}[c+d x])^{-2-m} (a+b \operatorname{Sin}[c+d x])^m \, dx$$

Problem 650: Unable to integrate problem.

$$\int (e \operatorname{Cos}[c+d x])^{-1-m} (a+b \operatorname{Sin}[c+d x])^m \, dx$$

Optimal (type 5, 132 leaves, 1 step):

$$\frac{1}{(a+b) d (1+m)} e (e \operatorname{Cos}[c+d x])^{-2-m} \operatorname{Hypergeometric2F1}\left[1+m, \frac{2+m}{2}, 2+m, \frac{2(a+b \operatorname{Sin}[c+d x])}{(a+b)(1+\operatorname{Sin}[c+d x])}\right]$$
$$(1-\operatorname{Sin}[c+d x])\left(-\frac{(a-b)(1-\operatorname{Sin}[c+d x])}{(a+b)(1+\operatorname{Sin}[c+d x])}\right)^{m/2} (a+b \operatorname{Sin}[c+d x])^{1+m}$$

Result (type 8, 29 leaves):

$$\int (e \operatorname{Cos}[c+d x])^{-1-m} (a+b \operatorname{Sin}[c+d x])^m \, dx$$

Problem 651: Unable to integrate problem.

$$\int (e \operatorname{Cos}[c+d x])^{-m} (a+b \operatorname{Sin}[c+d x])^m \, dx$$

Optimal (type 6, 152 leaves, 2 steps):

$$\frac{1}{b d (1+m)} e \operatorname{AppellF1}\left[1+m, \frac{1+m}{2}, \frac{1+m}{2}, 2+m, \frac{a+b \operatorname{Sin}[c+d x]}{a-b}, \frac{a+b \operatorname{Sin}[c+d x]}{a+b}\right]$$
$$(e \operatorname{Cos}[c+d x])^{-1-m} (a+b \operatorname{Sin}[c+d x])^{1+m}\left(1-\frac{a+b \operatorname{Sin}[c+d x]}{a-b}\right)^{\frac{1+m}{2}}\left(1-\frac{a+b \operatorname{Sin}[c+d x]}{a+b}\right)^{\frac{1+m}{2}}$$

Result (type 8, 27 leaves):

$$\int (e \operatorname{Cos}[c+d x])^{-m} (a+b \operatorname{Sin}[c+d x])^m \, dx$$

- **Problem 652: Unable to integrate problem.**

$$\int (e\,\text{Cos}[c+d\,x])^{1-m}\,(a+b\,\text{Sin}[c+d\,x])^m\,dx$$

Optimal (type 6, 142 leaves, 2 steps):

$$\frac{1}{b\,d\,(1+m)}e\,\text{AppellF1}\left[1+m,\frac{m}{2},\frac{m}{2},2+m,\frac{a+b\,\text{Sin}[c+d\,x]}{a-b},\frac{a+b\,\text{Sin}[c+d\,x]}{a+b}\right]$$
$$(e\,\text{Cos}[c+d\,x])^{-m}\,(a+b\,\text{Sin}[c+d\,x])^{1+m}\left(1-\frac{a+b\,\text{Sin}[c+d\,x]}{a-b}\right)^{m/2}\left(1-\frac{a+b\,\text{Sin}[c+d\,x]}{a+b}\right)^{m/2}$$

Result (type 8, 29 leaves):

$$\int (e\,\text{Cos}[c+d\,x])^{1-m}\,(a+b\,\text{Sin}[c+d\,x])^m\,dx$$

- **Problem 653: Unable to integrate problem.**

$$\int (e\,\text{Cos}[c+d\,x])^{2-m}\,(a+b\,\text{Sin}[c+d\,x])^m\,dx$$

Optimal (type 6, 152 leaves, 2 steps):

$$\frac{1}{b\,d\,(1+m)}e\,\text{AppellF1}\left[1+m,\frac{1}{2}(-1+m),\frac{1}{2}(-1+m),2+m,\frac{a+b\,\text{Sin}[c+d\,x]}{a-b},\frac{a+b\,\text{Sin}[c+d\,x]}{a+b}\right]$$
$$(e\,\text{Cos}[c+d\,x])^{1-m}\,(a+b\,\text{Sin}[c+d\,x])^{1+m}\left(1-\frac{a+b\,\text{Sin}[c+d\,x]}{a-b}\right)^{\frac{1}{2}(-1+m)}\left(1-\frac{a+b\,\text{Sin}[c+d\,x]}{a+b}\right)^{\frac{1}{2}(-1+m)}$$

Result (type 8, 29 leaves):

$$\int (e\,\text{Cos}[c+d\,x])^{2-m}\,(a+b\,\text{Sin}[c+d\,x])^m\,dx$$

Test results for the 36 problems in "4.1.13 (d+e x)^m sin(a+b x+c x^2)^n.m"

Test results for the 208 problems in "4.1.1.3 (g tan)^p (a+b sin)^m.m"

- **Problem 1: Result more than twice size of optimal antiderivative.**

$$\int (a+a\,\text{Sin}[c+d\,x])\,\text{Tan}[c+d\,x]^5\,dx$$

Optimal (type 3, 115 leaves, 3 steps):

$$-\frac{23\,a\,\text{Log}[1-\text{Sin}[c+d\,x]]}{16\,d}+\frac{7\,a\,\text{Log}[1+\text{Sin}[c+d\,x]]}{16\,d}-\frac{a\,\text{Sin}[c+d\,x]}{d}+\frac{a^3}{8\,d\,(a-a\,\text{Sin}[c+d\,x])^2}-\frac{a^2}{d\,(a-a\,\text{Sin}[c+d\,x])}+\frac{a^2}{8\,d\,(a+a\,\text{Sin}[c+d\,x])}$$

Result (type 3, 246 leaves):

$$-\frac{a\,\text{Log}[\text{Cos}[c+d\,x]]}{d}-\frac{15\,a\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]}{8\,d}+\frac{15\,a\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]}{8\,d}-\frac{a\,\text{Sec}[c+d\,x]^2}{d}+\frac{a\,\text{Sec}[c+d\,x]^4}{4\,d}+\frac{a}{16\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4}-\frac{9\,a}{16\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2}-\frac{a}{16\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4}+\frac{9\,a}{16\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2}-\frac{a\,\text{Sin}[c+d\,x]}{d}$$

- **Problem 2: Result more than twice size of optimal antiderivative.**

$$\int(a+a\,\text{Sin}[c+d\,x])\,\text{Tan}[c+d\,x]^3\,dx$$

Optimal (type 3, 71 leaves, 3 steps):

$$\frac{5\,a\,\text{Log}[1-\text{Sin}[c+d\,x]]}{4\,d}-\frac{a\,\text{Log}[1+\text{Sin}[c+d\,x]]}{4\,d}+\frac{a\,\text{Sin}[c+d\,x]}{d}+\frac{a^2}{2\,d\,(a-a\,\text{Sin}[c+d\,x])}$$

Result (type 3, 166 leaves):

$$\frac{a\,\text{Log}[\text{Cos}[c+d\,x]]}{d}+\frac{3\,a\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]}{2\,d}-\frac{3\,a\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]}{2\,d}+\frac{a\,\text{Sec}[c+d\,x]^2}{2\,d}+\frac{a}{4\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2}-\frac{a}{4\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2}+\frac{a\,\text{Sin}[c+d\,x]}{d}$$

- **Problem 3: Result more than twice size of optimal antiderivative.**

$$\int(a+a\,\text{Sin}[c+d\,x])\,\text{Tan}[c+d\,x]\,dx$$

Optimal (type 3, 30 leaves, 3 steps):

$$-\frac{a\,\text{Log}[1-\text{Sin}[c+d\,x]]}{d}-\frac{a\,\text{Sin}[c+d\,x]}{d}$$

Result (type 3, 83 leaves):

$$-\frac{a\,\text{Log}[\text{Cos}[c+d\,x]]}{d}-\frac{a\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]}{d}+\frac{a\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]}{d}-\frac{a\,\text{Sin}[c+d\,x]}{d}$$

- **Problem 21: Result more than twice size of optimal antiderivative.**

$$\int(a+a\,\text{Sin}[c+d\,x])^2\,\text{Tan}[c+d\,x]^2\,dx$$

Optimal (type 3, 71 leaves, 6 steps):

$$-\frac{5 a^2 x}{2}+\frac{2 a^2 \text{Cos}[c+d x]}{d}+\frac{2 a^2 \text{Cos}[c+d x]}{d (1-\text{Sin}[c+d x])}+\frac{a^2 \text{Cos}[c+d x] \text{Sin}[c+d x]}{2 d}$$

Result (type 3, 145 leaves):

$$-\left(a^2 (1+\text{Sin}[c+d x])^2 \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right] (10 (c+d x)-8 \text{Cos}[c+d x]-\text{Sin}[2 (c+d x)])+\text{Sin}\left[\frac{1}{2} (c+d x)\right] (-2 (8+5 c+5 d x)+8 \text{Cos}[c+d x]+\text{Sin}[2 (c+d x)])\right)\right) / \left(4 d \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]-\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right) \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^4\right)$$

Problem 25: Result more than twice size of optimal antiderivative.

$$\int (a+a \text{Sin}[c+d x])^3 \text{Tan}[c+d x]^7 \, dx$$

Optimal (type 3, 160 leaves, 3 steps):

$$\frac{209 a^3 \text{Log}[1-\text{Sin}[c+d x]]}{16 d}-\frac{a^3 \text{Log}[1+\text{Sin}[c+d x]]}{16 d}+\frac{7 a^3 \text{Sin}[c+d x]}{d}+\frac{3 a^3 \text{Sin}[c+d x]^2}{2 d}+\frac{a^3 \text{Sin}[c+d x]^3}{3 d}+\frac{a^6}{6 d (a-a \text{Sin}[c+d x])^3}-\frac{13 a^5}{8 d (a-a \text{Sin}[c+d x])^2}+\frac{71 a^4}{8 d (a-a \text{Sin}[c+d x])}$$

Result (type 3, 480 leaves):

$$-\frac{3 \text{Cos}[2 (c+d x)] (a+a \text{Sin}[c+d x])^3}{4 d \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^6}+\frac{209 \text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]-\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right] (a+a \text{Sin}[c+d x])^3}{8 d \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^6}-\frac{\text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right] (a+a \text{Sin}[c+d x])^3}{8 d \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^6}+\frac{(a+a \text{Sin}[c+d x])^3}{6 d \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]-\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^6 \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^6}-\frac{13 (a+a \text{Sin}[c+d x])^3}{8 d \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]-\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^4 \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^6}+\frac{71 (a+a \text{Sin}[c+d x])^3}{8 d \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]-\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^2 \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^6}+\frac{29 \text{Sin}[c+d x] (a+a \text{Sin}[c+d x])^3}{4 d \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^6}-\frac{(a+a \text{Sin}[c+d x])^3 \text{Sin}[3 (c+d x)]}{12 d \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^6}$$

Problem 29: Result more than twice size of optimal antiderivative.

$$\int (a+a \text{Sin}[c+d x])^3 \text{Tan}[c+d x]^6 \, dx$$

Optimal (type 3, 180 leaves, 9 steps):

$$-\frac{23 a^3 x}{2}+\frac{136 a^3 \text{Cos}[c+d x]}{5 d}-\frac{136 a^3 \text{Cos}[c+d x]^3}{15 d}+\frac{23 a^3 \text{Cos}[c+d x] \text{Sin}[c+d x]}{2 d}+\frac{a^6 \text{Cos}[c+d x] \text{Sin}[c+d x]^5}{5 d (a-a \text{Sin}[c+d x])^3}-\frac{13 a^5 \text{Cos}[c+d x] \text{Sin}[c+d x]^4}{15 d (a-a \text{Sin}[c+d x])^2}+\frac{23 a^6 \text{Cos}[c+d x] \text{Sin}[c+d x]^3}{3 d \left(a^3-a^3 \text{Sin}[c+d x]\right)}$$

Result (type 3, 561 leaves):

$$-\frac{23 (c+d x) (a+a \text{Sin}[c+d x])^3}{2 d \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^6}+\frac{27 \text{Cos}[c+d x] (a+a \text{Sin}[c+d x])^3}{4 d \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^6}-\frac{\text{Cos}[3 (c+d x)] (a+a \text{Sin}[c+d x])^3}{12 d \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^6}+\frac{(a+a \text{Sin}[c+d x])^3}{5 d \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]-\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^4 \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^6}-\frac{28 (a+a \text{Sin}[c+d x])^3}{15 d \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]-\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^2 \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^6}+\frac{2 \text{Sin}\left[\frac{1}{2} (c+d x)\right] (a+a \text{Sin}[c+d x])^3}{5 d \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]-\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^5 \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^6}-\frac{56 \text{Sin}\left[\frac{1}{2} (c+d x)\right] (a+a \text{Sin}[c+d x])^3}{15 d \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]-\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^3 \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^6}+\frac{394 \text{Sin}\left[\frac{1}{2} (c+d x)\right] (a+a \text{Sin}[c+d x])^3}{15 d \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]-\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right) \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^6}+\frac{3 (a+a \text{Sin}[c+d x])^3 \text{Sin}[2 (c+d x)]}{4 d \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^6}$$

Problem 34: Result more than twice size of optimal antiderivative.

$$\int (a+a \text{Sin}[c+d x])^4 \text{Tan}[c+d x]^5 \, dx$$

Optimal (type 3, 129 leaves, 3 steps):

$$-\frac{25 a^4 \text{Log}[1-\text{Sin}[c+d x]]}{d}-\frac{16 a^4 \text{Sin}[c+d x]}{d}-\frac{9 a^4 \text{Sin}[c+d x]^2}{2 d}-\frac{4 a^4 \text{Sin}[c+d x]^3}{3 d}-\frac{a^4 \text{Sin}[c+d x]^4}{4 d}+\frac{a^6}{d (a-a \text{Sin}[c+d x])^2}-\frac{11 a^5}{d (a-a \text{Sin}[c+d x])}$$

Result (type 3, 390 leaves):

$$\frac{19\,\text{Cos}[2\,(c+d\,x)]\,(a+a\,\text{Sin}[c+d\,x])^4}{8\,d\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^8}-\frac{\text{Cos}[4\,(c+d\,x)]\,(a+a\,\text{Sin}[c+d\,x])^4}{32\,d\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^8}-$$

$$\frac{50\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\,(a+a\,\text{Sin}[c+d\,x])^4}{d\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^8}+\frac{(a+a\,\text{Sin}[c+d\,x])^4}{d\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^4\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^8}-$$

$$\frac{11\,(a+a\,\text{Sin}[c+d\,x])^4}{d\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^8}-$$

$$\frac{17\,\text{Sin}[c+d\,x]\,(a+a\,\text{Sin}[c+d\,x])^4}{d\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^8}+\frac{(a+a\,\text{Sin}[c+d\,x])^4\,\text{Sin}[3\,(c+d\,x)]}{3\,d\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^8}$$

Problem 44: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Tan}[c+d\,x]^7}{a+a\,\text{Sin}[c+d\,x]}\,dx$$

Optimal (type 3, 130 leaves, 8 steps):

$$-\frac{35\,\text{ArcTanh}[\text{Sin}[c+d\,x]]}{128\,a\,d}+\frac{35\,\text{Sec}[c+d\,x]\,\text{Tan}[c+d\,x]}{128\,a\,d}-\frac{35\,\text{Sec}[c+d\,x]\,\text{Tan}[c+d\,x]^3}{192\,a\,d}+\frac{7\,\text{Sec}[c+d\,x]\,\text{Tan}[c+d\,x]^5}{48\,a\,d}-\frac{\text{Sec}[c+d\,x]\,\text{Tan}[c+d\,x]^7}{8\,a\,d}+\frac{\text{Tan}[c+d\,x]^8}{8\,a\,d}$$

Result (type 3, 342 leaves):

$$\frac{1}{384\,d\,(a+a\,\text{Sin}[c+d\,x])}\left(-192+\frac{6}{\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^6}-\frac{40}{\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^4}+\right.$$

$$\frac{114}{\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}+105\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2-$$

$$105\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2+\frac{4\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}{\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^6}-$$

$$\left.\frac{27\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}{\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^4}+\frac{87\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}{\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}\right)$$

Problem 45: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Tan}[c+d\,x]^5}{a+a\,\text{Sin}[c+d\,x]}\,dx$$

Optimal (type 3, 106 leaves, 7 steps):

$$\frac{5\,\text{ArcTanh}[\text{Sin}[c+d\,x]]}{16\,a\,d}-\frac{5\,\text{Sec}[c+d\,x]\,\text{Tan}[c+d\,x]}{16\,a\,d}+\frac{5\,\text{Sec}[c+d\,x]\,\text{Tan}[c+d\,x]^3}{24\,a\,d}-\frac{\text{Sec}[c+d\,x]\,\text{Tan}[c+d\,x]^5}{6\,a\,d}+\frac{\text{Tan}[c+d\,x]^6}{6\,a\,d}$$

Result (type 3, 267 leaves):

$$\frac{1}{96\,d\,(a+a\,\text{Sin}[c+d\,x])}\left(48+\frac{4}{\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4}-\frac{21}{\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2}-30\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2+30\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2+\frac{3\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2}{\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4}-\frac{18\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2}{\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2}\right)$$

- **Problem 46: Result more than twice size of optimal antiderivative.**

$$\int\frac{\text{Tan}[c+d\,x]^3}{a+a\,\text{Sin}[c+d\,x]}\,dx$$

Optimal (type 3, 82 leaves, 6 steps):

$$-\frac{3\,\text{ArcTanh}[\text{Sin}[c+d\,x]]}{8\,a\,d}+\frac{3\,\text{Sec}[c+d\,x]\,\text{Tan}[c+d\,x]}{8\,a\,d}-\frac{\text{Sec}[c+d\,x]\,\text{Tan}[c+d\,x]^3}{4\,a\,d}+\frac{\text{Tan}[c+d\,x]^4}{4\,a\,d}$$

Result (type 3, 189 leaves):

$$\frac{1}{8\,d\,(a+a\,\text{Sin}[c+d\,x])}\left(-4+\frac{1}{\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2}+3\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2-3\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2+\frac{\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2}{\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2}\right)$$

- **Problem 47: Result more than twice size of optimal antiderivative.**

$$\int\frac{\text{Tan}[c+d\,x]}{a+a\,\text{Sin}[c+d\,x]}\,dx$$

Optimal (type 3, 37 leaves, 5 steps):

$$\frac{\text{ArcTanh}[\text{Sin}[c+d\,x]]}{2\,a\,d}+\frac{1}{2\,d\,(a+a\,\text{Sin}[c+d\,x])}$$

Result (type 3, 126 leaves):

$$\frac{1}{2\,a\,d\,(1+\text{Sin}[c+d\,x])}\left(1-\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]+\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]+\left(-\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]+\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]\right)\text{Sin}[c+d\,x]\right)$$

Problem 55: Result more than twice size of optimal antiderivative.

$$\int\frac{\text{Tan}[c+d\,x]^2}{a+a\,\text{Sin}[c+d\,x]}\,dx$$

Optimal (type 3, 50 leaves, 5 steps):

$$\frac{\text{Sec}[c+d\,x]}{a\,d}-\frac{\text{Sec}[c+d\,x]^3}{3\,a\,d}+\frac{\text{Tan}[c+d\,x]^3}{3\,a\,d}$$

Result (type 3, 106 leaves):

$$\frac{6-10\,\text{Cos}[c+d\,x]+2\,\text{Cos}[2\,(c+d\,x)]+8\,\text{Sin}[c+d\,x]-5\,\text{Sin}[2\,(c+d\,x)]}{12\,a\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)(1+\text{Sin}[c+d\,x])}$$

Problem 56: Result more than twice size of optimal antiderivative.

$$\int\frac{1}{a+a\,\text{Sin}[c+d\,x]}\,dx$$

Optimal (type 3, 23 leaves, 1 step):

$$-\frac{\text{Cos}[c+d\,x]}{d\,(a+a\,\text{Sin}[c+d\,x])}$$

Result (type 3, 48 leaves):

$$\frac{2\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)}{d\,(a+a\,\text{Sin}[c+d\,x])}$$

Problem 57: Result more than twice size of optimal antiderivative.

$$\int\frac{\text{Cot}[c+d\,x]^2}{a+a\,\text{Sin}[c+d\,x]}\,dx$$

Optimal (type 3, 29 leaves, 4 steps):

$$\frac{\text{ArcTanh}[\text{Cos}[c+d\,x]]}{a\,d}-\frac{\text{Cot}[c+d\,x]}{a\,d}$$

Result (type 3, 69 leaves):

$$-\frac{1}{2\,a\,d}\text{Csc}\left[\frac{1}{2}(c+d\,x)\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]\left(\text{Cos}[c+d\,x]+\left(-\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]\right]+\text{Log}\left[\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]\right)\text{Sin}[c+d\,x]\right)$$

Problem 58: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Cot}[c+d x]^4}{a+a \text{Sin}[c+d x]} \, dx$$

Optimal (type 3, 58 leaves, 5 steps):

$$-\frac{\text{ArcTanh}[\text{Cos}[c+d x]]}{2 a d}-\frac{\text{Cot}[c+d x]^3}{3 a d}+\frac{\text{Cot}[c+d x] \text{Csc}[c+d x]}{2 a d}$$

Result (type 3, 124 leaves):

$$-\frac{1}{96 a d (1+\text{Sin}[c+d x])}\text{Csc}\left[\frac{1}{2} (c+d x)\right] \text{Sec}\left[\frac{1}{2} (c+d x)\right] \left(\text{Csc}\left[\frac{1}{2} (c+d x)\right]+\text{Sec}\left[\frac{1}{2} (c+d x)\right]\right)^2 \left(\text{Cos}[3 (c+d x)]+\text{Cos}[c+d x] (3-6 \text{Sin}[c+d x])+6 \left(\text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]\right]-\text{Log}\left[\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right]\right) \text{Sin}[c+d x]^3\right)$$

Problem 59: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Cot}[c+d x]^6}{a+a \text{Sin}[c+d x]} \, dx$$

Optimal (type 3, 82 leaves, 6 steps):

$$\frac{3 \text{ArcTanh}[\text{Cos}[c+d x]]}{8 a d}-\frac{\text{Cot}[c+d x]^5}{5 a d}-\frac{3 \text{Cot}[c+d x] \text{Csc}[c+d x]}{8 a d}+\frac{\text{Cot}[c+d x]^3 \text{Csc}[c+d x]}{4 a d}$$

Result (type 3, 189 leaves):

$$-\frac{1}{640 a d} \text{Csc}[c+d x]^5 \left(80 \text{Cos}[c+d x]+40 \text{Cos}[3 (c+d x)]+8 \text{Cos}[5 (c+d x)]-150 \text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]\right] \text{Sin}[c+d x]+150 \text{Log}\left[\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right] \text{Sin}[c+d x]+ 20 \text{Sin}[2 (c+d x)]+75 \text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]\right] \text{Sin}[3 (c+d x)]-75 \text{Log}\left[\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right] \text{Sin}[3 (c+d x)]- 50 \text{Sin}[4 (c+d x)]-15 \text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]\right] \text{Sin}[5 (c+d x)]+15 \text{Log}\left[\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right] \text{Sin}[5 (c+d x)]\right)$$

Problem 60: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Cot}[c+d x]^8}{a+a \text{Sin}[c+d x]} \, dx$$

Optimal (type 3, 106 leaves, 7 steps):

$$-\frac{5 \text{ArcTanh}[\text{Cos}[c+d x]]}{16 a d}-\frac{\text{Cot}[c+d x]^7}{7 a d}+\frac{5 \text{Cot}[c+d x] \text{Csc}[c+d x]}{16 a d}-\frac{5 \text{Cot}[c+d x]^3 \text{Csc}[c+d x]}{24 a d}+\frac{\text{Cot}[c+d x]^5 \text{Csc}[c+d x]}{6 a d}$$

Result (type 3, 284 leaves):

$$-\frac{1}{86016\,a\,d\,(1+\text{Sin}[c+d\,x])}\text{Csc}[c+d\,x]^5\left(\text{Csc}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]\right)^2\Big(1680\,\text{Cos}[c+d\,x]+1008\,\text{Cos}[3\,(c+d\,x)]+336\,\text{Cos}[5\,(c+d\,x)]+48\,\text{Cos}[7\,(c+d\,x)]+3675\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]\right]\text{Sin}[c+d\,x]-3675\,\text{Log}\left[\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]\text{Sin}[c+d\,x]-1190\,\text{Sin}[2\,(c+d\,x)]-2205\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]\right]\text{Sin}[3\,(c+d\,x)]+2205\,\text{Log}\left[\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]\text{Sin}[3\,(c+d\,x)]+392\,\text{Sin}[4\,(c+d\,x)]+735\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]\right]\text{Sin}[5\,(c+d\,x)]-735\,\text{Log}\left[\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]\text{Sin}[5\,(c+d\,x)]-462\,\text{Sin}[6\,(c+d\,x)]-105\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]\right]\text{Sin}[7\,(c+d\,x)]+105\,\text{Log}\left[\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]\text{Sin}[7\,(c+d\,x)]\Big)$$

- **Problem 63: Result more than twice size of optimal antiderivative.**

$$\int\frac{\text{Tan}[c+d\,x]^3}{(a+a\,\text{Sin}[c+d\,x])^2}\,dx$$

Optimal (type 3, 104 leaves, 4 steps):

$$-\frac{\text{ArcTanh}[\text{Sin}[c+d\,x]]}{8\,a^2\,d}+\frac{a}{12\,d\,(a+a\,\text{Sin}[c+d\,x])^3}-\frac{1}{4\,d\,(a+a\,\text{Sin}[c+d\,x])^2}+\frac{1}{16\,d\,\left(a^2-a^2\,\text{Sin}[c+d\,x]\right)}+\frac{3}{16\,d\,\left(a^2+a^2\,\text{Sin}[c+d\,x]\right)}$$

Result (type 3, 217 leaves):

$$\frac{1}{48\,d\,(a+a\,\text{Sin}[c+d\,x])^2}\left(-12+\frac{4}{\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2}+9\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2+6\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4-6\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4+\frac{3\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4}{\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2}\right)$$

- **Problem 64: Result more than twice size of optimal antiderivative.**

$$\int\frac{\text{Tan}[c+d\,x]}{(a+a\,\text{Sin}[c+d\,x])^2}\,dx$$

Optimal (type 3, 60 leaves, 4 steps):

$$\frac{\text{ArcTanh}[\text{Sin}[c+d\,x]]}{4\,a^2\,d}+\frac{1}{4\,d\,(a+a\,\text{Sin}[c+d\,x])^2}-\frac{1}{4\,d\,\left(a^2+a^2\,\text{Sin}[c+d\,x]\right)}$$

Result (type 3, 139 leaves):

$$-\frac{1}{4\,d\,(a+a\,\text{Sin}[c+d\,x])^2}\left(-1+\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2+\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4-\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4\right)$$

- **Problem 65: Result more than twice size of optimal antiderivative.**

$$\int\frac{\text{Cot}[c+d\,x]}{(a+a\,\text{Sin}[c+d\,x])^2}\,dx$$

Optimal (type 3, 52 leaves, 3 steps) :

$$\frac{\text{Log}[\text{Sin}[c+d\,x]]}{a^2\,d}-\frac{\text{Log}[1+\text{Sin}[c+d\,x]]}{a^2\,d}+\frac{1}{d\,(a^2+a^2\,\text{Sin}[c+d\,x])}$$

Result (type 3, 112 leaves) :

$$\frac{1}{a^2\,d\,(1+\text{Sin}[c+d\,x])^2}\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2\left(1-2\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]+\text{Log}[\text{Sin}[c+d\,x]]+\left(-2\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]+\text{Log}[\text{Sin}[c+d\,x]]\right)\text{Sin}[c+d\,x]\right)$$

- **Problem 74: Result more than twice size of optimal antiderivative.**

$$\int\frac{\text{Tan}[c+d\,x]}{(a+a\,\text{Sin}[c+d\,x])^3}\,dx$$

Optimal (type 3, 82 leaves, 4 steps) :

$$\frac{\text{ArcTanh}[\text{Sin}[c+d\,x]]}{8\,a^3\,d}+\frac{1}{6\,d\,(a+a\,\text{Sin}[c+d\,x])^3}-\frac{1}{8\,a\,d\,(a+a\,\text{Sin}[c+d\,x])^2}-\frac{1}{8\,d\,(a^3+a^3\,\text{Sin}[c+d\,x])}$$

Result (type 3, 167 leaves) :

$$\frac{1}{24\,d\,(a+a\,\text{Sin}[c+d\,x])^3}\left(4-3\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2-3\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4-3\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^6+3\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^6\right)$$

Problem 76: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Cot}[c+d x]^3}{(a+a \text{Sin}[c+d x])^3} \, dx$$

Optimal (type 3, 86 leaves, 3 steps):

$$\frac{3 \text{Csc}[c+d x]}{a^3 d}-\frac{\text{Csc}[c+d x]^2}{2 a^3 d}+\frac{5 \text{Log}[\text{Sin}[c+d x]]}{a^3 d}-\frac{5 \text{Log}[1+\text{Sin}[c+d x]]}{a^3 d}+\frac{2}{d \left(a^3+a^3 \text{Sin}[c+d x]\right)}$$

Result (type 3, 226 leaves):

$$\frac{1}{8 a^3 d (1+\text{Sin}[c+d x])^3} \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^4 \left(16-\left(1+\text{Cot}\left[\frac{1}{2} (c+d x)\right]\right)^2+12 \text{Cot}\left[\frac{1}{2} (c+d x)\right] \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^2-\right.$$
$$80 \text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right] \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^2+40 \text{Log}[\text{Sin}[c+d x]]$$
$$\left.\left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^2+12 \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^2 \text{Tan}\left[\frac{1}{2} (c+d x)\right]-\left(1+\text{Tan}\left[\frac{1}{2} (c+d x)\right]\right)^2\right)$$

Problem 77: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Cot}[c+d x]^5}{(a+a \text{Sin}[c+d x])^3} \, dx$$

Optimal (type 3, 96 leaves, 3 steps):

$$\frac{4 \text{Csc}[c+d x]}{a^3 d}-\frac{2 \text{Csc}[c+d x]^2}{a^3 d}+\frac{\text{Csc}[c+d x]^3}{a^3 d}-\frac{\text{Csc}[c+d x]^4}{4 a^3 d}+\frac{4 \text{Log}[\text{Sin}[c+d x]]}{a^3 d}-\frac{4 \text{Log}[1+\text{Sin}[c+d x]]}{a^3 d}$$

Result (type 3, 558 leaves):

$$\frac{9\,\mathrm{Cot}\left[\frac{1}{2}(c+d\,x)\right]\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^6}{4\,d\,(a+a\,\mathrm{Sin}[c+d\,x])^3}-\frac{17\,\mathrm{Csc}\left[\frac{1}{2}(c+d\,x)\right]^2\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^6}{32\,d\,(a+a\,\mathrm{Sin}[c+d\,x])^3}+$$

$$\frac{\mathrm{Cot}\left[\frac{1}{2}(c+d\,x)\right]\mathrm{Csc}\left[\frac{1}{2}(c+d\,x)\right]^2\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^6}{8\,d\,(a+a\,\mathrm{Sin}[c+d\,x])^3}-\frac{\mathrm{Csc}\left[\frac{1}{2}(c+d\,x)\right]^4\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^6}{64\,d\,(a+a\,\mathrm{Sin}[c+d\,x])^3}-$$

$$\frac{8\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^6}{d\,(a+a\,\mathrm{Sin}[c+d\,x])^3}+\frac{4\,\mathrm{Log}[\mathrm{Sin}[c+d\,x]]\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^6}{d\,(a+a\,\mathrm{Sin}[c+d\,x])^3}-$$

$$\frac{17\,\mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^6}{32\,d\,(a+a\,\mathrm{Sin}[c+d\,x])^3}-\frac{\mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]^4\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^6}{64\,d\,(a+a\,\mathrm{Sin}[c+d\,x])^3}+$$

$$\frac{9\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^6\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{4\,d\,(a+a\,\mathrm{Sin}[c+d\,x])^3}+\frac{\mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^6\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{8\,d\,(a+a\,\mathrm{Sin}[c+d\,x])^3}$$

- **Problem 85: Result more than twice size of optimal antiderivative.**

$$\int\frac{\mathrm{Cot}[c+d\,x]^3}{(a+a\,\mathrm{Sin}[c+d\,x])^4}\,dx$$

Optimal (type 3, 106 leaves, 3 steps):

$$\frac{4\,\mathrm{Csc}[c+d\,x]}{a^4\,d}-\frac{\mathrm{Csc}[c+d\,x]^2}{2\,a^4\,d}+\frac{9\,\mathrm{Log}[\mathrm{Sin}[c+d\,x]]}{a^4\,d}-\frac{9\,\mathrm{Log}[1+\mathrm{Sin}[c+d\,x]]}{a^4\,d}+\frac{1}{d\left(a^2+a^2\,\mathrm{Sin}[c+d\,x]\right)^2}+\frac{5}{d\left(a^4+a^4\,\mathrm{Sin}[c+d\,x]\right)}$$

Result (type 3, 275 leaves):

$$\frac{1}{8\,a^4\,d\,(1+\mathrm{Sin}[c+d\,x])^4}$$

$$\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4\left(8-\left(1+\mathrm{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right)^4\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]^2+40\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2+\right.$$

$$16\,\mathrm{Cot}\left[\frac{1}{2}(c+d\,x)\right]\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4-144\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]$$

$$\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4+72\,\mathrm{Log}[\mathrm{Sin}[c+d\,x]]\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4+$$

$$\left.16\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]-\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]^2\left(1+\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)^4\right)$$

- **Problem 88: Result more than twice size of optimal antiderivative.**

$$\int\frac{\mathrm{Cot}[c+d\,x]^2}{(a+a\,\mathrm{Sin}[c+d\,x])^4}\,dx$$

Optimal (type 3, 108 leaves, 14 steps):

$$\frac{4\,\text{ArcTanh}[\text{Cos}[c+d\,x]]}{a^4\,d}-\frac{\text{Cot}[c+d\,x]}{a^4\,d}-\frac{2\,\text{Cot}[c+d\,x]}{5\,a^4\,d\,(1+\text{Csc}[c+d\,x])^3}+\frac{31\,\text{Cot}[c+d\,x]}{15\,a^4\,d\,(1+\text{Csc}[c+d\,x])^2}-\frac{104\,\text{Cot}[c+d\,x]}{15\,a^4\,d\,(1+\text{Csc}[c+d\,x])}$$

Result (type 3, 315 leaves) :

$$\frac{1}{30\,d\,(a+a\,\text{Sin}[c+d\,x])^4}\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^3$$
$$\left(24\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]-12\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)+76\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2-\right.$$
$$38\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^3+316\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4-$$
$$15\,\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^5+120\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]\right]\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^5-$$
$$\left.120\,\text{Log}\left[\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^5+15\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^5\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)$$

- **Problem 89: Result more than twice size of optimal antiderivative.**

$$\int\frac{\text{Cot}[c+d\,x]^4}{(a+a\,\text{Sin}[c+d\,x])^4}\,dx$$

Optimal (type 3, 120 leaves, 14 steps) :

$$\frac{14\,\text{ArcTanh}[\text{Cos}[c+d\,x]]}{a^4\,d}-\frac{9\,\text{Cot}[c+d\,x]}{a^4\,d}-\frac{\text{Cot}[c+d\,x]^3}{3\,a^4\,d}+\frac{2\,\text{Cot}[c+d\,x]\,\text{Csc}[c+d\,x]}{a^4\,d}+\frac{4\,\text{Cot}[c+d\,x]}{3\,a^4\,d\,(1+\text{Csc}[c+d\,x])^2}-\frac{44\,\text{Cot}[c+d\,x]}{3\,a^4\,d\,(1+\text{Csc}[c+d\,x])}$$

Result (type 3, 589 leaves) :

$$\frac{8\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^5}{3 d\,(a+a\,\text{Sin}[c+d x])^4}-\frac{4\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^6}{3 d\,(a+a\,\text{Sin}[c+d x])^4}+$$
$$\frac{80\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^7}{3 d\,(a+a\,\text{Sin}[c+d x])^4}-\frac{13\,\text{Cot}\left[\frac{1}{2}(c+d x)\right]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^8}{3 d\,(a+a\,\text{Sin}[c+d x])^4}+$$
$$\frac{\text{Csc}\left[\frac{1}{2}(c+d x)\right]^2\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^8}{2 d\,(a+a\,\text{Sin}[c+d x])^4}-\frac{\text{Cot}\left[\frac{1}{2}(c+d x)\right]\text{Csc}\left[\frac{1}{2}(c+d x)\right]^2\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^8}{24 d\,(a+a\,\text{Sin}[c+d x])^4}+$$
$$\frac{14\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^8}{d\,(a+a\,\text{Sin}[c+d x])^4}-\frac{14\,\text{Log}\left[\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^8}{d\,(a+a\,\text{Sin}[c+d x])^4}-$$
$$\frac{\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^8}{2 d\,(a+a\,\text{Sin}[c+d x])^4}+\frac{13\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^8\text{Tan}\left[\frac{1}{2}(c+d x)\right]}{3 d\,(a+a\,\text{Sin}[c+d x])^4}+$$
$$\frac{\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^8\text{Tan}\left[\frac{1}{2}(c+d x)\right]}{24 d\,(a+a\,\text{Sin}[c+d x])^4}$$

- **Problem 90: Result more than twice size of optimal antiderivative.**

$$\int \frac{\text{Cot}[c+d x]^6}{(a+a\,\text{Sin}[c+d x])^4}\,dx$$

Optimal (type 3, 133 leaves, 16 steps):

$$\frac{27\,\text{ArcTanh}[\text{Cos}[c+d x]]}{2 a^4 d}-\frac{16\,\text{Cot}[c+d x]}{a^4 d}-\frac{3\,\text{Cot}[c+d x]^3}{a^4 d}-$$
$$\frac{\text{Cot}[c+d x]^5}{5 a^4 d}+\frac{11\,\text{Cot}[c+d x]\,\text{Csc}[c+d x]}{2 a^4 d}+\frac{\text{Cot}[c+d x]\,\text{Csc}[c+d x]^3}{a^4 d}-\frac{8\,\text{Cot}[c+d x]}{a^4 d\,(1+\text{Csc}[c+d x])}$$

Result (type 3, 733 leaves):

$$\frac{16\,\mathrm{Sin}\left[\frac{1}{2}(c+d x)\right]\left(\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^7}{d\,(a+a\,\mathrm{Sin}[c+d x])^4}-\frac{33\,\mathrm{Cot}\left[\frac{1}{2}(c+d x)\right]\left(\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^8}{5\,d\,(a+a\,\mathrm{Sin}[c+d x])^4}+$$

$$\frac{11\,\mathrm{Csc}\left[\frac{1}{2}(c+d x)\right]^2\left(\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^8}{8\,d\,(a+a\,\mathrm{Sin}[c+d x])^4}-\frac{53\,\mathrm{Cot}\left[\frac{1}{2}(c+d x)\right]\mathrm{Csc}\left[\frac{1}{2}(c+d x)\right]^2\left(\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^8}{160\,d\,(a+a\,\mathrm{Sin}[c+d x])^4}+$$

$$\frac{\mathrm{Csc}\left[\frac{1}{2}(c+d x)\right]^4\left(\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^8}{16\,d\,(a+a\,\mathrm{Sin}[c+d x])^4}-\frac{\mathrm{Cot}\left[\frac{1}{2}(c+d x)\right]\mathrm{Csc}\left[\frac{1}{2}(c+d x)\right]^4\left(\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^8}{160\,d\,(a+a\,\mathrm{Sin}[c+d x])^4}+$$

$$\frac{27\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]\right]\left(\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^8}{2\,d\,(a+a\,\mathrm{Sin}[c+d x])^4}-\frac{27\,\mathrm{Log}\left[\mathrm{Sin}\left[\frac{1}{2}(c+d x)\right]\right]\left(\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^8}{2\,d\,(a+a\,\mathrm{Sin}[c+d x])^4}-$$

$$\frac{11\,\mathrm{Sec}\left[\frac{1}{2}(c+d x)\right]^2\left(\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^8}{8\,d\,(a+a\,\mathrm{Sin}[c+d x])^4}-\frac{\mathrm{Sec}\left[\frac{1}{2}(c+d x)\right]^4\left(\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^8}{16\,d\,(a+a\,\mathrm{Sin}[c+d x])^4}+$$

$$\frac{33\left(\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^8\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]}{5\,d\,(a+a\,\mathrm{Sin}[c+d x])^4}+\frac{53\,\mathrm{Sec}\left[\frac{1}{2}(c+d x)\right]^2\left(\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^8\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]}{160\,d\,(a+a\,\mathrm{Sin}[c+d x])^4}+$$

$$\frac{\mathrm{Sec}\left[\frac{1}{2}(c+d x)\right]^4\left(\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^8\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]}{160\,d\,(a+a\,\mathrm{Sin}[c+d x])^4}$$

- **Problem 91: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int\sqrt{a+a\,\mathrm{Sin}[e+f x]}\;\mathrm{Tan}[e+f x]^4\,dx$$

Optimal (type 3, 162 leaves, 15 steps):

$$\frac{11\sqrt{a}\,\mathrm{ArcTanh}\left[\frac{\sqrt{a}\,\mathrm{Cos}[e+f x]}{\sqrt{2}\sqrt{a+a\,\mathrm{Sin}[e+f x]}}\right]}{8\sqrt{2}\,f}-\frac{27\,\mathrm{Sec}[e+f x]\sqrt{a\,(1+\mathrm{Sin}[e+f x])}}{8\,f}-$$

$$\frac{\mathrm{Sec}[e+f x]^3\sqrt{a\,(1+\mathrm{Sin}[e+f x])}}{12\,f}+\frac{29\sqrt{a+a\,\mathrm{Sin}[e+f x]}\;\mathrm{Tan}[e+f x]}{12\,f}+\frac{5\sqrt{a\,(1+\mathrm{Sin}[e+f x])}\;\mathrm{Tan}[e+f x]^3}{12\,f}$$

Result (type 3, 394 leaves):

$$\frac{1}{24 f \left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^3}\left(\frac{6 \text{Sin}\left[\frac{f x}{2}\right]}{\text{Cos}\left[\frac{e}{2}\right]+\text{Sin}\left[\frac{e}{2}\right]}-\frac{3\left(\text{Cos}\left[\frac{e}{2}\right]-\text{Sin}\left[\frac{e}{2}\right]\right)\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)}{\text{Cos}\left[\frac{e}{2}\right]+\text{Sin}\left[\frac{e}{2}\right]}+\right.$$

$$(33+33 i)(-1)^{3/4} \text{ArcTanh}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{3/4} \text{Sec}\left[\frac{f x}{4}\right]\left(\text{Cos}\left[\frac{1}{4}(2 e+f x)\right]-\text{Sin}\left[\frac{1}{4}(2 e+f x)\right]\right)\right]\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^2-$$

$$48 \text{Cos}\left[\frac{f x}{2}\right]\left(\text{Cos}\left[\frac{e}{2}\right]-\text{Sin}\left[\frac{e}{2}\right]\right)\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^2+$$

$$48\left(\text{Cos}\left[\frac{e}{2}\right]+\text{Sin}\left[\frac{e}{2}\right]\right) \text{Sin}\left[\frac{f x}{2}\right]\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^2+$$

$$\left.\frac{4\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^2}{\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^3}-\frac{36\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^2}{\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]}\right) \sqrt{a(1+\text{Sin}[e+f x])}$$

- **Problem 92: Result unnecessarily involves imaginary or complex numbers.**

$$\int \sqrt{a+a \text{Sin}[e+f x]} \text{Tan}[e+f x]^2 \, dx$$

Optimal (type 3, 101 leaves, 4 steps):

$$-\frac{\sqrt{a} \text{ArcTanh}\left[\frac{\sqrt{a} \text{Cos}[e+f x]}{\sqrt{2} \sqrt{a+a \text{Sin}[e+f x]}}\right]}{\sqrt{2} f}+\frac{5 \text{Sec}[e+f x] \sqrt{a+a \text{Sin}[e+f x]}}{f}-\frac{2 \text{Sec}[e+f x](a+a \text{Sin}[e+f x])^{3/2}}{a f}$$

Result (type 3, 114 leaves):

$$\frac{1}{f} \text{Sec}[e+f x]$$

$$\left(3+(1-i)(-1)^{1/4} \text{ArcTanh}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{3/4} \text{Sec}\left[\frac{f x}{4}\right]\left(\text{Cos}\left[\frac{1}{4}(2 e+f x)\right]-\text{Sin}\left[\frac{1}{4}(2 e+f x)\right]\right)\right]\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)-\right.$$

$$\left.2 \text{Sin}[e+f x]\right) \sqrt{a(1+\text{Sin}[e+f x])}$$

- **Problem 93: Result more than twice size of optimal antiderivative.**

$$\int \text{Cot}[e+f x]^2 \sqrt{a+a \text{Sin}[e+f x]} \, dx$$

Optimal (type 3, 89 leaves, 4 steps):

$$-\frac{\sqrt{a} \text{ArcTanh}\left[\frac{\sqrt{a} \text{Cos}[e+f x]}{\sqrt{a+a \text{Sin}[e+f x]}}\right]}{f}+\frac{3 a \text{Cos}[e+f x]}{f \sqrt{a+a \text{Sin}[e+f x]}}-\frac{\text{Cot}[e+f x] \sqrt{a+a \text{Sin}[e+f x]}}{f}$$

Result (type 3, 206 leaves):

$$\left(\mathrm{Csc}\left[\frac{1}{2}(e+fx)\right]^4\sqrt{a(1+\mathrm{Sin}[e+fx])}\left(-4\,\mathrm{Cos}\left[\frac{1}{2}(e+fx)\right]+2\,\mathrm{Cos}\left[\frac{3}{2}(e+fx)\right]+4\,\mathrm{Sin}\left[\frac{1}{2}(e+fx)\right]-\mathrm{Log}\left[1+\mathrm{Cos}\left[\frac{1}{2}(e+fx)\right]-\mathrm{Sin}\left[\frac{1}{2}(e+fx)\right]\right]\mathrm{Sin}[e+fx]+\mathrm{Log}\left[1-\mathrm{Cos}\left[\frac{1}{2}(e+fx)\right]+\mathrm{Sin}\left[\frac{1}{2}(e+fx)\right]\right]\mathrm{Sin}[e+fx]+2\,\mathrm{Sin}\left[\frac{3}{2}(e+fx)\right]\right)\right)\Big/\left(f\left(1+\mathrm{Cot}\left[\frac{1}{2}(e+fx)\right]\right)\left(\mathrm{Csc}\left[\frac{1}{4}(e+fx)\right]-\mathrm{Sec}\left[\frac{1}{4}(e+fx)\right]\right)\left(\mathrm{Csc}\left[\frac{1}{4}(e+fx)\right]+\mathrm{Sec}\left[\frac{1}{4}(e+fx)\right]\right)\right)$$

- **Problem 95: Result unnecessarily involves imaginary or complex numbers.**

$$\int (a+a\,\mathrm{Sin}[e+fx])^{3/2}\,\mathrm{Tan}[e+fx]^4\,dx$$

Optimal (type 3, 167 leaves, 14 steps):

$$-\frac{a^{3/2}\,\mathrm{ArcTanh}\left[\frac{\sqrt{a}\,\mathrm{Cos}[e+fx]}{\sqrt{2}\,\sqrt{a+a\,\mathrm{Sin}[e+fx]}}\right]}{2\sqrt{2}\,f}+\frac{2a^3\,\mathrm{Cos}[e+fx]^3}{3f(a+a\,\mathrm{Sin}[e+fx])^{3/2}}-\frac{4a^2\,\mathrm{Cos}[e+fx]}{f\sqrt{a+a\,\mathrm{Sin}[e+fx]}}-\frac{7a\,\mathrm{Sec}[e+fx]\sqrt{a+a\,\mathrm{Sin}[e+fx]}}{2f}+\frac{\mathrm{Sec}[e+fx]^3(a+a\,\mathrm{Sin}[e+fx])^{3/2}}{3f}$$

Result (type 3, 141 leaves):

$$\frac{1}{6f}a\,\mathrm{Sec}[e+fx]^3\left(\mathrm{Cos}\left[\frac{1}{2}(e+fx)\right]+\mathrm{Sin}\left[\frac{1}{2}(e+fx)\right]\right)^2\sqrt{a(1+\mathrm{Sin}[e+fx])}\left(-45+6\,\mathrm{Cos}[2(e+fx)]+(3+3\,i)(-1)^{3/4}\,\mathrm{ArcTanh}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{3/4}\left(-1+\mathrm{Tan}\left[\frac{1}{4}(e+fx)\right]\right)\right]\left(\mathrm{Cos}\left[\frac{1}{2}(e+fx)\right]-\mathrm{Sin}\left[\frac{1}{2}(e+fx)\right]\right)^3+54\,\mathrm{Sin}[e+fx]+\mathrm{Sin}[3(e+fx)]\right)$$

- **Problem 103: Result unnecessarily involves imaginary or complex numbers.**

$$\int \frac{\mathrm{Tan}[e+fx]^4}{\sqrt{a+a\,\mathrm{Sin}[e+fx]}}\,dx$$

Optimal (type 3, 150 leaves, 17 steps):

$$-\frac{67\,\mathrm{ArcTanh}\left[\frac{\sqrt{a}\,\mathrm{Cos}[e+fx]}{\sqrt{2}\,\sqrt{a+a\,\mathrm{Sin}[e+fx]}}\right]}{64\sqrt{2}\,\sqrt{a}\,f}-\frac{\mathrm{Sec}[e+fx](53+127\,\mathrm{Sin}[e+fx])}{192f\sqrt{a+a\,\mathrm{Sin}[e+fx]}}+\frac{a\,\mathrm{Sin}[e+fx]\,\mathrm{Tan}[e+fx]}{24f(a+a\,\mathrm{Sin}[e+fx])^{3/2}}+\frac{\mathrm{Tan}[e+fx]^3}{3f\sqrt{a+a\,\mathrm{Sin}[e+fx]}}$$

Result (type 3, 118 leaves):

$$\left((804+804\,i)(-1)^{3/4}\,\mathrm{ArcTanh}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{3/4}\left(-1+\mathrm{Tan}\left[\frac{1}{4}(e+fx)\right]\right)\right]\left(\mathrm{Cos}\left[\frac{1}{2}(e+fx)\right]+\mathrm{Sin}\left[\frac{1}{2}(e+fx)\right]\right)-\mathrm{Sec}[e+fx]^3(90+122\,\mathrm{Cos}[2(e+fx)]-41\,\mathrm{Sin}[e+fx]+183\,\mathrm{Sin}[3(e+fx)])\right)\Big/\left(768f\sqrt{a(1+\mathrm{Sin}[e+fx])}\right)$$

Problem 104: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{\tan[e+f x]^2}{\sqrt{a+a \sin[e+f x]}} \, dx$$

Optimal (type 3, 107 leaves, 4 steps):

$$\frac{5 \operatorname{ArcTanh}\left[\frac{\sqrt{a} \cos[e+f x]}{\sqrt{2} \sqrt{a+a \sin[e+f x]}}\right]}{4 \sqrt{2} \sqrt{a} f}-\frac{\sec[e+f x]}{2 f \sqrt{a+a \sin[e+f x]}}+\frac{3 \sec[e+f x] \sqrt{a+a \sin[e+f x]}}{4 a f}$$

Result (type 3, 118 leaves):

$$-\frac{1}{4 f \sqrt{a (1+\sin[e+f x])}} \sec[e+f x] \left(-1+(5+5 i) (-1)^{3/4} \operatorname{ArcTanh}\left[\left(\frac{1}{2}+\frac{i}{2}\right) (-1)^{3/4} \left(-1+\tan\left[\frac{1}{4} (e+f x)\right]\right)\right] \left(\cos\left[\frac{1}{2} (e+f x)\right]-\sin\left[\frac{1}{2} (e+f x)\right]\right) \left(\cos\left[\frac{1}{2} (e+f x)\right]+\sin\left[\frac{1}{2} (e+f x)\right]\right)^2-3 \sin[e+f x]\right)$$

Problem 105: Result more than twice size of optimal antiderivative.

$$\int \frac{\cot[e+f x]^2}{\sqrt{a+a \sin[e+f x]}} \, dx$$

Optimal (type 3, 62 leaves, 4 steps):

$$\frac{\operatorname{ArcTanh}\left[\frac{\sqrt{a} \cos[e+f x]}{\sqrt{a+a \sin[e+f x]}}\right]}{\sqrt{a} f}-\frac{\cot[e+f x]}{f \sqrt{a+a \sin[e+f x]}}$$

Result (type 3, 138 leaves):

$$\frac{1}{8 f \sqrt{a (1+\sin[e+f x])}} \csc\left[\frac{1}{4} (e+f x)\right] \sec\left[\frac{1}{4} (e+f x)\right] \left(-2 \cos\left[\frac{1}{2} (e+f x)\right]+2 \sin\left[\frac{1}{2} (e+f x)\right]+\left(\log\left[1+\cos\left[\frac{1}{2} (e+f x)\right]-\sin\left[\frac{1}{2} (e+f x)\right]\right]-\log\left[1-\cos\left[\frac{1}{2} (e+f x)\right]+\sin\left[\frac{1}{2} (e+f x)\right]\right]\right) \sin[e+f x]\right) \left(1+\tan\left[\frac{1}{2} (e+f x)\right]\right)$$

Problem 106: Result more than twice size of optimal antiderivative.

$$\int \frac{\cot[e+f x]^4}{\sqrt{a+a \sin[e+f x]}} \, dx$$

Optimal (type 3, 135 leaves, 11 steps):

$$-\frac{7\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\text{Cos}[e+f x]}{\sqrt{a+a\,\text{Sin}[e+f x]}}\right]}{8\sqrt{a}\,f}+\frac{9\,\text{Cot}[e+f x]}{8 f\sqrt{a+a\,\text{Sin}[e+f x]}}+\frac{\text{Cot}[e+f x]\,\text{Csc}[e+f x]}{12 f\sqrt{a+a\,\text{Sin}[e+f x]}}-\frac{\text{Cot}[e+f x]\,\text{Csc}[e+f x]^2}{3 f\sqrt{a+a\,\text{Sin}[e+f x]}}$$

Result (type 3, 292 leaves) :

$$\frac{1}{24 f\left(\text{Csc}\left[\frac{1}{4}(e+f x)\right]^2-\text{Sec}\left[\frac{1}{4}(e+f x)\right]^2\right)^3\sqrt{a\,(1+\text{Sin}[e+f x])}}$$

$$\text{Csc}\left[\frac{1}{2}(e+f x)\right]^9\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)\left(36\,\text{Cos}\left[\frac{1}{2}(e+f x)\right]-46\,\text{Cos}\left[\frac{3}{2}(e+f x)\right]-\right.$$

$$54\,\text{Cos}\left[\frac{5}{2}(e+f x)\right]-36\,\text{Sin}\left[\frac{1}{2}(e+f x)\right]-63\,\text{Log}\left[1+\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right]\text{Sin}[e+f x]+$$

$$63\,\text{Log}\left[1-\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right]\text{Sin}[e+f x]-46\,\text{Sin}\left[\frac{3}{2}(e+f x)\right]+54\,\text{Sin}\left[\frac{5}{2}(e+f x)\right]+$$

$$\left.21\,\text{Log}\left[1+\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right]\text{Sin}[3(e+f x)]-21\,\text{Log}\left[1-\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right]\text{Sin}[3(e+f x)]\right)$$

- **Problem 107: Result unnecessarily involves imaginary or complex numbers.**

$$\int\frac{\text{Tan}[e+f x]^4}{(a+a\,\text{Sin}[e+f x])^{3/2}}\,dx$$

Optimal (type 3, 177 leaves, 20 steps) :

$$\frac{7\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\text{Cos}[e+f x]}{\sqrt{2}\sqrt{a+a\,\text{Sin}[e+f x]}}\right]}{256\sqrt{2}\,a^{3/2} f}+\frac{7\,\text{Cos}[e+f x]}{256 f\,(a+a\,\text{Sin}[e+f x])^{3/2}}-$$

$$\frac{\text{Sec}[e+f x]\,(65+87\,\text{Sin}[e+f x])}{192 f\,(a+a\,\text{Sin}[e+f x])^{3/2}}+\frac{a\,\text{Sin}[e+f x]\,\text{Tan}[e+f x]}{12 f\,(a+a\,\text{Sin}[e+f x])^{5/2}}+\frac{\text{Tan}[e+f x]^3}{3 f\,(a+a\,\text{Sin}[e+f x])^{3/2}}$$

Result (type 3, 334 leaves) :

$$\frac{1}{768\, f\, (a\, (1+\text{Sin}[e+f\, x]))^{3/2}}\left(124+\frac{64\,\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]}{\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^3}-\frac{32}{\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^2}-\frac{248\,\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]}{\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]}+\right.$$

$$342\,\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)-171\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^2-$$

$$(21+21\,i)\,(-1)^{3/4}\,\text{ArcTanh}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{3/4}\left(-1+\text{Tan}\left[\frac{1}{4}\,(e+f\,x)\right]\right)\right]\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^3+$$

$$\left.\frac{32\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^3}{\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^3}-\frac{192\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^3}{\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]}\right)$$

- **Problem 108: Result unnecessarily involves imaginary or complex numbers.**

$$\int\frac{\text{Tan}[e+f\,x]^2}{(a+a\,\text{Sin}[e+f\,x])^{3/2}}\,dx$$

Optimal (type 3, 134 leaves, 5 steps):

$$\frac{\text{ArcTanh}\left[\frac{\sqrt{a}\,\text{Cos}[e+f\,x]}{\sqrt{2}\,\sqrt{a+a\,\text{Sin}[e+f\,x]}}\right]}{32\,\sqrt{2}\,a^{3/2}\,f}+\frac{\text{Cos}[e+f\,x]}{32\,f\,(a+a\,\text{Sin}[e+f\,x])^{3/2}}-\frac{\text{Sec}[e+f\,x]}{4\,f\,(a+a\,\text{Sin}[e+f\,x])^{3/2}}+\frac{5\,\text{Sec}[e+f\,x]}{8\,a\,f\,\sqrt{a+a\,\text{Sin}[e+f\,x]}}$$

Result (type 3, 128 leaves):

$$-\left(\text{Sec}[e+f\,x]\left(-25-\text{Cos}[2\,(e+f\,x)]+(2+2\,i)\,(-1)^{3/4}\,\text{ArcTanh}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{3/4}\left(-1+\text{Tan}\left[\frac{1}{4}\,(e+f\,x)\right]\right)\right]\right.\right.$$

$$\left.\left.\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^4-40\,\text{Sin}[e+f\,x]\right)\right)\Big/\left(64\,f\,(a\,(1+\text{Sin}[e+f\,x]))^{3/2}\right)$$

- **Problem 109: Result unnecessarily involves imaginary or complex numbers.**

$$\int\frac{\text{Cot}[e+f\,x]^2}{(a+a\,\text{Sin}[e+f\,x])^{3/2}}\,dx$$

Optimal (type 3, 113 leaves, 6 steps):

$$\frac{3\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\text{Cos}[e+f\,x]}{\sqrt{a+a\,\text{Sin}[e+f\,x]}}\right]}{a^{3/2}\,f}-\frac{2\,\sqrt{2}\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\text{Cos}[e+f\,x]}{\sqrt{2}\,\sqrt{a+a\,\text{Sin}[e+f\,x]}}\right]}{a^{3/2}\,f}-\frac{\text{Cot}[e+f\,x]}{a\,f\,\sqrt{a+a\,\text{Sin}[e+f\,x]}}$$

Result (type 3, 206 leaves):

$$\frac{1}{4 f (a (1+\text{Sin}[e+f x]))^{3/2}}\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^3 \left((16+16 i)(-1)^{3/4} \text{ArcTanh}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{3/4}\left(-1+\text{Tan}\left[\frac{1}{4}(e+f x)\right]\right)\right]-\text{Cot}\left[\frac{1}{4}(e+f x)\right]+2\left(3 \text{Log}\left[1+\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right]-3 \text{Log}\left[1-\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right]+\text{Sec}\left[\frac{1}{2}(e+f x)\right]+\text{Csc}[e+f x] \text{Sin}\left[\frac{1}{4}(e+f x)\right]^2-\text{Csc}[e+f x] \text{Sin}\left[\frac{1}{4}(e+f x)\right] \text{Sin}\left[\frac{3}{4}(e+f x)\right]\right)\right)$$

- **Problem 110: Result more than twice size of optimal antiderivative.**

$$\int \frac{\text{Cot}[e+f x]^4}{(a+a \text{Sin}[e+f x])^{3/2}} \, dx$$

Optimal (type 3, 144 leaves, 10 steps):

$$-\frac{\text{ArcTanh}\left[\frac{\sqrt{a} \text{Cos}[e+f x]}{\sqrt{a+a \text{Sin}[e+f x]}}\right]}{8 a^{3/2} f}-\frac{\text{Cot}[e+f x]}{8 a f \sqrt{a+a \text{Sin}[e+f x]}}+\frac{11 \text{Cot}[e+f x] \text{Csc}[e+f x]}{12 a f \sqrt{a+a \text{Sin}[e+f x]}}-\frac{\text{Cot}[e+f x] \text{Csc}[e+f x]^2 \sqrt{a+a \text{Sin}[e+f x]}}{3 a^2 f}$$

Result (type 3, 294 leaves):

$$\frac{1}{24 f \left(\text{Csc}\left[\frac{1}{4}(e+f x)\right]^2-\text{Sec}\left[\frac{1}{4}(e+f x)\right]^2\right)^3 (a (1+\text{Sin}[e+f x]))^{3/2}}\text{Csc}\left[\frac{1}{2}(e+f x)\right]^9 \left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^3 \left(-132 \text{Cos}\left[\frac{1}{2}(e+f x)\right]+62 \text{Cos}\left[\frac{3}{2}(e+f x)\right]+6 \text{Cos}\left[\frac{5}{2}(e+f x)\right]+132 \text{Sin}\left[\frac{1}{2}(e+f x)\right]-9 \text{Log}\left[1+\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right] \text{Sin}[e+f x]+9 \text{Log}\left[1-\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right] \text{Sin}[e+f x]+62 \text{Sin}\left[\frac{3}{2}(e+f x)\right]-6 \text{Sin}\left[\frac{5}{2}(e+f x)\right]+3 \text{Log}\left[1+\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right] \text{Sin}[3 (e+f x)]-3 \text{Log}\left[1-\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right] \text{Sin}[3 (e+f x)]\right)$$

- **Problem 111: Result unnecessarily involves imaginary or complex numbers.**

$$\int \frac{\text{Tan}[e+f x]^4}{(a+a \text{Sin}[e+f x])^{5/2}} \, dx$$

Optimal (type 3, 207 leaves, 23 steps):

$$\frac{317\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\text{Cos}[e+f x]}{\sqrt{2}\,\sqrt{a+a\,\text{Sin}[e+f x]}}\right]}{4096\,\sqrt{2}\,a^{5/2}\,f}+\frac{317\,\text{Cos}[e+f x]}{3072\,f\,(a+a\,\text{Sin}[e+f x])^{5/2}}-\frac{\text{Sec}[e+f x]\,(115+129\,\text{Sin}[e+f x])}{384\,f\,(a+a\,\text{Sin}[e+f x])^{5/2}}+\frac{317\,\text{Cos}[e+f x]}{4096\,a\,f\,(a+a\,\text{Sin}[e+f x])^{3/2}}+\frac{5\,a\,\text{Sin}[e+f x]\,\text{Tan}[e+f x]}{48\,f\,(a+a\,\text{Sin}[e+f x])^{7/2}}+\frac{\text{Tan}[e+f x]^3}{3\,f\,(a+a\,\text{Sin}[e+f x])^{5/2}}$$

Result (type 3, 394 leaves) :

$$\frac{1}{12\,288\,f\,(a\,(1+\text{Sin}[e+f x]))^{5/2}}\left(1312+\frac{768\,\text{Sin}\left[\frac{1}{2}(e+f x)\right]}{\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^3}-\frac{384}{\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^2}-\frac{2624\,\text{Sin}\left[\frac{1}{2}(e+f x)\right]}{\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]}+\right.$$
$$2584\,\text{Sin}\left[\frac{1}{2}(e+f x)\right]\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)-1292\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^2+$$
$$402\,\text{Sin}\left[\frac{1}{2}(e+f x)\right]\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^3-201\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^4-$$
$$(951+951\,i)\,(-1)^{3/4}\,\text{ArcTanh}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{3/4}\left(-1+\text{Tan}\left[\frac{1}{4}(e+f x)\right]\right)\right]\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^5+$$
$$\left.\frac{256\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^5}{\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^3}-\frac{1152\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^5}{\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]}\right)$$

- **Problem 112: Result unnecessarily involves imaginary or complex numbers.**

$$\int\frac{\text{Tan}[e+f x]^2}{(a+a\,\text{Sin}[e+f x])^{5/2}}\,dx$$

Optimal (type 3, 167 leaves, 6 steps) :

$$-\frac{11\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\text{Cos}[e+f x]}{\sqrt{2}\,\sqrt{a+a\,\text{Sin}[e+f x]}}\right]}{128\,\sqrt{2}\,a^{5/2}\,f}-\frac{\text{Sec}[e+f x]}{6\,f\,(a+a\,\text{Sin}[e+f x])^{5/2}}-\frac{11\,\text{Cos}[e+f x]}{128\,a\,f\,(a+a\,\text{Sin}[e+f x])^{3/2}}+\frac{17\,\text{Sec}[e+f x]}{48\,a\,f\,(a+a\,\text{Sin}[e+f x])^{3/2}}+\frac{11\,\text{Sec}[e+f x]}{96\,a^2\,f\,\sqrt{a+a\,\text{Sin}[e+f x]}}$$

Result (type 3, 284 leaves) :

$$\frac{1}{384 f (a (1+\text{Sin}[e+f x]))^{5/2}}\left(-32+\frac{64 \text{Sin}\left[\frac{1}{2}(e+f x)\right]}{\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]}-\right.$$

$$104 \text{Sin}\left[\frac{1}{2}(e+f x)\right]\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)+52\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^2-$$

$$30 \text{Sin}\left[\frac{1}{2}(e+f x)\right]\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^3+15\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^4+(33+33 i)(-1)^{3/4}$$

$$\left.\text{ArcTanh}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{3/4}\left(-1+\text{Tan}\left[\frac{1}{4}(e+f x)\right]\right)\right]\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^5+\frac{48\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^5}{\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]}\right)$$

- **Problem 113: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int \frac{\text{Cot}[e+f x]^2}{(a+a \text{Sin}[e+f x])^{5/2}}\, dx$$

Optimal (type 3, 141 leaves, 7 steps):

$$\frac{5 \text{ArcTanh}\left[\frac{\sqrt{a}\, \text{Cos}[e+f x]}{\sqrt{a+a \text{Sin}[e+f x]}}\right]}{a^{5/2} f}-\frac{7 \text{ArcTanh}\left[\frac{\sqrt{a}\, \text{Cos}[e+f x]}{\sqrt{2}\, \sqrt{a+a \text{Sin}[e+f x]}}\right]}{\sqrt{2}\, a^{5/2} f}-\frac{2 \text{Cos}[e+f x]}{a f (a+a \text{Sin}[e+f x])^{3/2}}-\frac{\text{Cot}[e+f x]}{a f (a+a \text{Sin}[e+f x])^{3/2}}$$

Result (type 3, 451 leaves):

$$\frac{1}{4 f (a (1+\text{Sin}[e+f x]))^{5/2}}$$

$$\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^3\left(8 \text{Sin}\left[\frac{1}{2}(e+f x)\right]-4\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)+2\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^2+\right.$$

$$(28+28 i)(-1)^{3/4} \text{ArcTanh}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{3/4}\left(-1+\text{Tan}\left[\frac{1}{4}(e+f x)\right]\right)\right]\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^2-$$

$$\text{Cot}\left[\frac{1}{4}(e+f x)\right]\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^2+10 \text{Log}\left[1+\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right]$$

$$\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^2-10 \text{Log}\left[1-\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right]\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^2+$$

$$\frac{2 \text{Sin}\left[\frac{1}{4}(e+f x)\right]\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^2}{\text{Cos}\left[\frac{1}{4}(e+f x)\right]-\text{Sin}\left[\frac{1}{4}(e+f x)\right]}-\frac{2 \text{Sin}\left[\frac{1}{4}(e+f x)\right]\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^2}{\text{Cos}\left[\frac{1}{4}(e+f x)\right]+\text{Sin}\left[\frac{1}{4}(e+f x)\right]}-$$

$$\left.\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^2 \text{Tan}\left[\frac{1}{4}(e+f x)\right]\right)$$

Problem 114: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{\text{Cot}[e+f x]^4}{(a+a \,\text{Sin}[e+f x])^{5/2}} \, dx$$

Optimal (type 3, 191 leaves, 16 steps):

$$\frac{45 \,\text{ArcTanh}\left[\frac{\sqrt{a} \,\text{Cos}[e+f x]}{\sqrt{a+a \,\text{Sin}[e+f x]}}\right]}{8 a^{5/2} f}-\frac{4 \sqrt{2} \,\text{ArcTanh}\left[\frac{\sqrt{a} \,\text{Cos}[e+f x]}{\sqrt{2} \sqrt{a+a \,\text{Sin}[e+f x]}}\right]}{a^{5/2} f}-\frac{19 \,\text{Cot}[e+f x]}{8 a^2 f \sqrt{a+a \,\text{Sin}[e+f x]}}+\frac{13 \,\text{Cot}[e+f x] \,\text{Csc}[e+f x]}{12 a^2 f \sqrt{a+a \,\text{Sin}[e+f x]}}-\frac{\text{Cot}[e+f x] \,\text{Csc}[e+f x]^2}{3 a^2 f \sqrt{a+a \,\text{Sin}[e+f x]}}$$

Result (type 3, 332 leaves):

$$\frac{1}{192 f (a (1+\text{Sin}[e+f x]))^{5/2}} \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]+\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^5 \left((1536+1536 i) (-1)^{3/4} \,\text{ArcTanh}\left[\left(\frac{1}{2}+\frac{i}{2}\right) (-1)^{3/4} \left(-1+\text{Tan}\left[\frac{1}{4} (e+f x)\right]\right)\right]-\frac{1}{\left(\text{Csc}\left[\frac{1}{4} (e+f x)\right]^2-\text{Sec}\left[\frac{1}{4} (e+f x)\right]^2\right)^3} 8 \,\text{Csc}\left[\frac{1}{2} (e+f x)\right]^9 \left(396 \,\text{Cos}\left[\frac{1}{2} (e+f x)\right]-218 \,\text{Cos}\left[\frac{3}{2} (e+f x)\right]-114 \,\text{Cos}\left[\frac{5}{2} (e+f x)\right]-396 \,\text{Sin}\left[\frac{1}{2} (e+f x)\right]-405 \,\text{Log}\left[1+\text{Cos}\left[\frac{1}{2} (e+f x)\right]-\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right] \text{Sin}[e+f x]+405 \,\text{Log}\left[1-\text{Cos}\left[\frac{1}{2} (e+f x)\right]+\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right] \text{Sin}[e+f x]-218 \,\text{Sin}\left[\frac{3}{2} (e+f x)\right]+114 \,\text{Sin}\left[\frac{5}{2} (e+f x)\right]+135 \,\text{Log}\left[1+\text{Cos}\left[\frac{1}{2} (e+f x)\right]-\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right] \text{Sin}[3 (e+f x)]-135 \,\text{Log}\left[1-\text{Cos}\left[\frac{1}{2} (e+f x)\right]+\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right] \text{Sin}[3 (e+f x)]\right)\right)$$

Problem 115: Result unnecessarily involves higher level functions.

$$\int (a+a \,\text{Sin}[e+f x])^{1/3} \,\text{Tan}[e+f x]^4 \, dx$$

Optimal (type 4, 982 leaves, 10 steps):

$$-\frac{361\,\text{Sec}[e+f x]\,(a+a\,\text{Sin}[e+f x])^{1/3}}{126 f}+\frac{361\,\text{Sec}[e+f x]\,(1-\text{Sin}[e+f x])\,(a+a\,\text{Sin}[e+f x])^{1/3}}{63 f}-$$

$$\frac{\text{Sec}[e+f x]\,\left(65 a^2-142 a^2\,\text{Sin}[e+f x]\right)}{42 f\,(a-a\,\text{Sin}[e+f x])\,(a+a\,\text{Sin}[e+f x])^{2/3}}+\frac{361\left(1+\sqrt{3}\right)\text{Sec}[e+f x]\,(1-\text{Sin}[e+f x])\,(a+a\,\text{Sin}[e+f x])^{2/3}}{63 f\left(2^{1/3} a^{1/3}-\left(1+\sqrt{3}\right)(a+a\,\text{Sin}[e+f x])^{1/3}\right)}-$$

$$\left(361\times 2^{1/3}\,\text{EllipticE}\left[\text{ArcCos}\left[\frac{2^{1/3} a^{1/3}-\left(1-\sqrt{3}\right)(a+a\,\text{Sin}[e+f x])^{1/3}}{2^{1/3} a^{1/3}-\left(1+\sqrt{3}\right)(a+a\,\text{Sin}[e+f x])^{1/3}}\right],\frac{1}{4}\left(2+\sqrt{3}\right)\right]\text{Sec}[e+f x]\,(a+a\,\text{Sin}[e+f x])^{2/3}\right.$$

$$\left.\left(2^{1/3} a^{1/3}-(a+a\,\text{Sin}[e+f x])^{1/3}\right)\sqrt{\frac{2^{2/3} a^{2/3}+2^{1/3} a^{1/3}(a+a\,\text{Sin}[e+f x])^{1/3}+(a+a\,\text{Sin}[e+f x])^{2/3}}{\left(2^{1/3} a^{1/3}-\left(1+\sqrt{3}\right)(a+a\,\text{Sin}[e+f x])^{1/3}\right)^2}}\right)\Big/$$

$$\left(21\times 3^{3/4} a^{2/3} f\sqrt{-\frac{(a+a\,\text{Sin}[e+f x])^{1/3}\left(2^{1/3} a^{1/3}-(a+a\,\text{Sin}[e+f x])^{1/3}\right)}{\left(2^{1/3} a^{1/3}-\left(1+\sqrt{3}\right)(a+a\,\text{Sin}[e+f x])^{1/3}\right)^2}}\right)-$$

$$\left(361\left(1-\sqrt{3}\right)\text{EllipticF}\left[\text{ArcCos}\left[\frac{2^{1/3} a^{1/3}-\left(1-\sqrt{3}\right)(a+a\,\text{Sin}[e+f x])^{1/3}}{2^{1/3} a^{1/3}-\left(1+\sqrt{3}\right)(a+a\,\text{Sin}[e+f x])^{1/3}}\right],\frac{1}{4}\left(2+\sqrt{3}\right)\right]\text{Sec}[e+f x]\,(a+a\,\text{Sin}[e+f x])^{2/3}\right.$$

$$\left.\left(2^{1/3} a^{1/3}-(a+a\,\text{Sin}[e+f x])^{1/3}\right)\sqrt{\frac{2^{2/3} a^{2/3}+2^{1/3} a^{1/3}(a+a\,\text{Sin}[e+f x])^{1/3}+(a+a\,\text{Sin}[e+f x])^{2/3}}{\left(2^{1/3} a^{1/3}-\left(1+\sqrt{3}\right)(a+a\,\text{Sin}[e+f x])^{1/3}\right)^2}}\right)\Big/$$

$$\left(63\times 2^{2/3}\,3^{1/4} a^{2/3} f\sqrt{-\frac{(a+a\,\text{Sin}[e+f x])^{1/3}\left(2^{1/3} a^{1/3}-(a+a\,\text{Sin}[e+f x])^{1/3}\right)}{\left(2^{1/3} a^{1/3}-\left(1+\sqrt{3}\right)(a+a\,\text{Sin}[e+f x])^{1/3}\right)^2}}\right)+$$

$$\frac{3 a^2\,\text{Sin}[e+f x]\,\text{Tan}[e+f x]}{2 f\,(a-a\,\text{Sin}[e+f x])\,(a+a\,\text{Sin}[e+f x])^{2/3}}-\frac{3 a^2\,\text{Sin}[e+f x]^2\,\text{Tan}[e+f x]}{f\,(a-a\,\text{Sin}[e+f x])\,(a+a\,\text{Sin}[e+f x])^{2/3}}$$

Result (type 5, 593 leaves) :

$$\frac{1}{f}(a(1+\text{Sin}[e+fx]))^{1/3}\left(\frac{361}{63}-\frac{86}{63}\text{Sec}[e+fx](-1+2\,\text{Sin}[e+fx])+\frac{1}{21}\text{Sec}[e+fx]^3(-1+8\,\text{Sin}[e+fx])\right)+$$

$$\frac{1}{189\,f\left(\text{Cos}\left[\frac{1}{2}(e+fx)\right]+\text{Sin}\left[\frac{1}{2}(e+fx)\right]\right)}722\sqrt{2}\,(1+\text{Sin}[e+fx])^{1/6}(a(1+\text{Sin}[e+fx]))^{1/3}$$

$$\left(-\left(i\,\text{Cos}\left[\frac{\pi}{4}+\frac{1}{2}(-e-fx)\right]\right)^{1/3}\left(-\frac{3\,i\left(e^{-i\left(\frac{\pi}{4}+\frac{1}{2}(-e-fx)\right)}+e^{i\left(\frac{\pi}{4}+\frac{1}{2}(-e-fx)\right)}\right)^{2/3}\text{Hypergeometric2F1}\left[-\frac{1}{3},\frac{1}{3},\frac{2}{3},-e^{2i\left(\frac{\pi}{4}+\frac{1}{2}(-e-fx)\right)}\right]}{2^{2/3}\left(1+e^{2i\left(\frac{\pi}{4}+\frac{1}{2}(-e-fx)\right)}\right)^{2/3}}-\right.\right.$$

$$\left.\left.\frac{3\,i\,e^{i\left(\frac{\pi}{4}+\frac{1}{2}(-e-fx)\right)}\left(1+e^{2i\left(\frac{\pi}{4}+\frac{1}{2}(-e-fx)\right)}\right)^{1/3}\text{Hypergeometric2F1}\left[\frac{1}{3},\frac{2}{3},\frac{5}{3},-e^{2i\left(\frac{\pi}{4}+\frac{1}{2}(-e-fx)\right)}\right]}{2\times 2^{2/3}\left(e^{-i\left(\frac{\pi}{4}+\frac{1}{2}(-e-fx)\right)}+e^{i\left(\frac{\pi}{4}+\frac{1}{2}(-e-fx)\right)}\right)^{1/3}}\right)\right)\Big/$$

$$\left(2\left(1+\text{Cos}\left[2\left(\frac{\pi}{4}+\frac{1}{2}(-e-fx)\right)\right]\right)\right)^{1/6}+\left(3\,\text{Cos}\left[\frac{\pi}{4}+\frac{1}{2}(-e-fx)\right]^2\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{5}{6},\frac{11}{6},\text{Cos}\left[\frac{\pi}{4}+\frac{1}{2}(-e-fx)\right]^2\right]\right.$$

$$\left.\text{Sin}\left[\frac{\pi}{4}+\frac{1}{2}(-e-fx)\right]\right)\Big/\left(5\left(1+\text{Cos}\left[2\left(\frac{\pi}{4}+\frac{1}{2}(-e-fx)\right)\right]\right)^{1/6}\sqrt{\text{Sin}\left[\frac{\pi}{4}+\frac{1}{2}(-e-fx)\right]^2}\right)$$

- **Problem 116: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int(a+a\,\text{Sin}[e+fx])^{1/3}\,\text{Tan}[e+fx]^2\,dx$$

Optimal (type 5, 123 leaves, 4 steps):

$$-\frac{5\,a\,\text{Cos}[e+fx]\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{7}{6},\frac{3}{2},\frac{1}{2}(1-\text{Sin}[e+fx])\right](1+\text{Sin}[e+fx])^{1/6}}{3\times 2^{1/6}\,f\,(a+a\,\text{Sin}[e+fx])^{2/3}}+$$

$$\frac{7\,\text{Sec}[e+fx]\,(a+a\,\text{Sin}[e+fx])^{1/3}}{f}-\frac{3\,\text{Sec}[e+fx]\,(a+a\,\text{Sin}[e+fx])^{4/3}}{a\,f}$$

Result (type 5, 566 leaves):

$$\frac{(a\,(1+\mathrm{Sin}[e+f\,x]))^{1/3}\,(-5+\mathrm{Sec}[e+f\,x]\,(-1+2\,\mathrm{Sin}[e+f\,x]))}{f}-$$

$$\frac{1}{3\,f\left(\mathrm{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)}\,10\,\sqrt{2}\,(1+\mathrm{Sin}[e+f\,x])^{1/6}\,(a\,(1+\mathrm{Sin}[e+f\,x]))^{1/3}$$

$$\left(-\left(\mathrm{i}\,\mathrm{Cos}\left[\frac{\pi}{4}+\frac{1}{2}\,(-e-f\,x)\right]^{1/3}\left(-\frac{3\,\mathrm{i}\left(e^{-\mathrm{i}\left(\frac{\pi}{4}+\frac{1}{2}(-e-f\,x)\right)}+e^{\mathrm{i}\left(\frac{\pi}{4}+\frac{1}{2}(-e-f\,x)\right)}\right)^{2/3}\mathrm{Hypergeometric2F1}\left[-\frac{1}{3},\frac{1}{3},\frac{2}{3},-e^{2\,\mathrm{i}\left(\frac{\pi}{4}+\frac{1}{2}(-e-f\,x)\right)}\right]}{2^{2/3}\left(1+e^{2\,\mathrm{i}\left(\frac{\pi}{4}+\frac{1}{2}(-e-f\,x)\right)}\right)^{2/3}}-\right.\right.\right.$$

$$\left.\left.\left.\frac{3\,\mathrm{i}\,e^{\mathrm{i}\left(\frac{\pi}{4}+\frac{1}{2}(-e-f\,x)\right)}\left(1+e^{2\,\mathrm{i}\left(\frac{\pi}{4}+\frac{1}{2}(-e-f\,x)\right)}\right)^{1/3}\mathrm{Hypergeometric2F1}\left[\frac{1}{3},\frac{2}{3},\frac{5}{3},-e^{2\,\mathrm{i}\left(\frac{\pi}{4}+\frac{1}{2}(-e-f\,x)\right)}\right]}{2\times 2^{2/3}\left(e^{-\mathrm{i}\left(\frac{\pi}{4}+\frac{1}{2}(-e-f\,x)\right)}+e^{\mathrm{i}\left(\frac{\pi}{4}+\frac{1}{2}(-e-f\,x)\right)}\right)^{1/3}}\right)\right)\right/$$

$$\left(2\left(1+\mathrm{Cos}\left[2\left(\frac{\pi}{4}+\frac{1}{2}\,(-e-f\,x)\right)\right]\right)^{1/6}\right)+\left(3\,\mathrm{Cos}\left[\frac{\pi}{4}+\frac{1}{2}\,(-e-f\,x)\right]^2\mathrm{Hypergeometric2F1}\left[\frac{1}{2},\frac{5}{6},\frac{11}{6},\mathrm{Cos}\left[\frac{\pi}{4}+\frac{1}{2}\,(-e-f\,x)\right]^2\right]\right.$$

$$\left.\left.\mathrm{Sin}\left[\frac{\pi}{4}+\frac{1}{2}\,(-e-f\,x)\right]\right)\right/\left(5\left(1+\mathrm{Cos}\left[2\left(\frac{\pi}{4}+\frac{1}{2}\,(-e-f\,x)\right)\right]\right)^{1/6}\sqrt{\mathrm{Sin}\left[\frac{\pi}{4}+\frac{1}{2}\,(-e-f\,x)\right]^2}\right)\right)$$

- **Problem 117: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int \mathrm{Cot}[e+f\,x]^2\,(a+a\,\mathrm{Sin}[e+f\,x])^{1/3}\,dx$$

Optimal (type 6, 80 leaves, 3 steps):

$$\frac{1}{11\,a^2\,f}6\,\sqrt{2}\,\mathrm{AppellF1}\left[\frac{11}{6},-\frac{1}{2},2,\frac{17}{6},\frac{1}{2}\,(1+\mathrm{Sin}[e+f\,x]),1+\mathrm{Sin}[e+f\,x]\right]\mathrm{Sec}[e+f\,x]\,\sqrt{1-\mathrm{Sin}[e+f\,x]}\,(a+a\,\mathrm{Sin}[e+f\,x])^{7/3}$$

Result (type 6, 10 034 leaves):

$$\frac{(-4-\mathrm{Cot}[e+f\,x])\,(a\,(1+\mathrm{Sin}[e+f\,x]))^{1/3}}{f}+$$

$$\left((60+60\,\mathrm{i})\,\mathrm{AppellF1}\left[\frac{2}{3},\frac{1}{3},\frac{1}{3},\frac{5}{3},\left(\frac{1}{2}+\frac{\mathrm{i}}{2}\right)\left(1+\mathrm{Cot}\left[\frac{1}{2}\,(e+f\,x)\right]\right),\left(\frac{1}{2}-\frac{\mathrm{i}}{2}\right)\left(1+\mathrm{Cot}\left[\frac{1}{2}\,(e+f\,x)\right]\right)\right]\mathrm{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right.$$

$$\mathrm{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\,(a\,(1+\mathrm{Sin}[e+f\,x]))^{1/3}\left(1+\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right)$$

$$\left((5+5\,\mathrm{i})\,\mathrm{AppellF1}\left[\frac{2}{3},\frac{1}{3},\frac{1}{3},\frac{5}{3},\left(\frac{1}{2}+\frac{\mathrm{i}}{2}\right)\left(1+\mathrm{Cot}\left[\frac{1}{2}\,(e+f\,x)\right]\right),\left(\frac{1}{2}-\frac{\mathrm{i}}{2}\right)\left(1+\mathrm{Cot}\left[\frac{1}{2}\,(e+f\,x)\right]\right)\right]\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]+\right.$$

$$\mathrm{AppellF1}\left[\frac{5}{3},\frac{1}{3},\frac{4}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{\mathrm{i}}{2}\right)\left(1+\mathrm{Cot}\left[\frac{1}{2}\,(e+f\,x)\right]\right),\left(\frac{1}{2}-\frac{\mathrm{i}}{2}\right)\left(1+\mathrm{Cot}\left[\frac{1}{2}\,(e+f\,x)\right]\right)\right]\left(1+\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right)+$$

$$\text{i}\,\text{AppellF1}\left[\frac{5}{3},\frac{4}{3},\frac{1}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{\text{i}}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right),\left(\frac{1}{2}-\frac{\text{i}}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right)\right]\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\Bigg)\Bigg)\Bigg)\Bigg/$$

$$\left(f\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)\left(-400\,\text{i}\,\text{AppellF1}\left[\frac{2}{3},\frac{1}{3},\frac{1}{3},\frac{5}{3},\left(\frac{1}{2}+\frac{\text{i}}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right),\left(\frac{1}{2}-\frac{\text{i}}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right)\right]^2\right.\right.$$

$$\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)\text{Sin}\left[\frac{1}{2}(e+f x)\right]^3+8\left(\text{AppellF1}\left[\frac{5}{3},\frac{1}{3},\frac{4}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{\text{i}}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right),\right.\right.$$

$$\left.\left.\left(\frac{1}{2}-\frac{\text{i}}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right)\right]+\text{i}\,\text{AppellF1}\left[\frac{5}{3},\frac{4}{3},\frac{1}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{\text{i}}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right),\left(\frac{1}{2}-\frac{\text{i}}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right)\right]\right)^2$$

$$\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^2+5\,\text{AppellF1}\left[\frac{2}{3},\frac{1}{3},\frac{1}{3},\frac{5}{3},\left(\frac{1}{2}+\frac{\text{i}}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right),\left(\frac{1}{2}-\frac{\text{i}}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right)\right]$$

$$\left(-5\left(2\,\text{AppellF1}\left[\frac{8}{3},\frac{1}{3},\frac{7}{3},\frac{11}{3},\left(\frac{1}{2}+\frac{\text{i}}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right),\left(\frac{1}{2}-\frac{\text{i}}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right)\right]+\right.\right.$$

$$\text{i}\,\text{AppellF1}\left[\frac{8}{3},\frac{4}{3},\frac{4}{3},\frac{11}{3},\left(\frac{1}{2}+\frac{\text{i}}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right),\left(\frac{1}{2}-\frac{\text{i}}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right)\right]-$$

$$\left.2\,\text{AppellF1}\left[\frac{8}{3},\frac{7}{3},\frac{1}{3},\frac{11}{3},\left(\frac{1}{2}+\frac{\text{i}}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right),\left(\frac{1}{2}-\frac{\text{i}}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right)\right]\right)$$

$$\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^2+(2+2\,\text{i})\,\text{AppellF1}\left[\frac{5}{3},\frac{1}{3},\frac{4}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{\text{i}}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right),\right.$$

$$\left.\left(\frac{1}{2}-\frac{\text{i}}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right)\right](-2+\text{Cos}[e+f x]+\text{Cos}[2(e+f x)]-3\,\text{Sin}[e+f x])-(2-2\,\text{i})\,\text{AppellF1}\left[\frac{5}{3},\frac{4}{3},\frac{1}{3},\frac{8}{3},\right.$$

$$\left.\left.\left.\left.\left(\frac{1}{2}+\frac{\text{i}}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right),\left(\frac{1}{2}-\frac{\text{i}}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right)\right](-2+\text{Cos}[e+f x]+\text{Cos}[2(e+f x)]-3\,\text{Sin}[e+f x])\right)\right)\right)+$$

$$\left(\left(\frac{5}{2}+\frac{5\,\text{i}}{2}\right)\text{AppellF1}\left[\frac{2}{3},\frac{1}{3},\frac{1}{3},\frac{5}{3},\left(\frac{1}{2}+\frac{\text{i}}{2}\right)\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right),\left(\frac{1}{2}-\frac{\text{i}}{2}\right)\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\right]\right.$$

$$\text{Sec}\left[\frac{1}{2}(e+f x)\right]$$

$$(a(1+\text{Sin}[e+f x]))^{1/3}$$

$$\left.\left(\frac{1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{\sqrt{\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2}}\right)^{2/3}\right)\Bigg/$$

$$\left(f\left(\text{Cos}\left[\frac{1}{2}(e+fx)\right]+\text{Sin}\left[\frac{1}{2}(e+fx)\right]\right)\left((5+5\,i)\,\text{AppellF1}\left[\frac{2}{3},\frac{1}{3},\frac{1}{3},\frac{5}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Tan}\left[\frac{1}{2}(e+fx)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Tan}\left[\frac{1}{2}(e+fx)\right]\right)\right]+\right.\right.$$

$$\left(\text{AppellF1}\left[\frac{5}{3},\frac{1}{3},\frac{4}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Tan}\left[\frac{1}{2}(e+fx)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Tan}\left[\frac{1}{2}(e+fx)\right]\right)\right]+\right.$$

$$\left.\left.i\,\text{AppellF1}\left[\frac{5}{3},\frac{4}{3},\frac{1}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Tan}\left[\frac{1}{2}(e+fx)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Tan}\left[\frac{1}{2}(e+fx)\right]\right)\right]\right)\left(1+\text{Tan}\left[\frac{1}{2}(e+fx)\right]\right)\right)$$

$$\left(\left(\left((15+15\,i)\left(\left(\frac{1}{30}-\frac{i}{30}\right)\text{AppellF1}\left[\frac{5}{3},\frac{1}{3},\frac{4}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Tan}\left[\frac{1}{2}(e+fx)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Tan}\left[\frac{1}{2}(e+fx)\right]\right)\right]\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2+\right.\right.\right.\right.$$

$$\left.\left(\frac{1}{30}+\frac{i}{30}\right)\text{AppellF1}\left[\frac{5}{3},\frac{4}{3},\frac{1}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Tan}\left[\frac{1}{2}(e+fx)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Tan}\left[\frac{1}{2}(e+fx)\right]\right)\right]\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2\right)$$

$$\left.\left(\frac{1+\text{Tan}\left[\frac{1}{2}(e+fx)\right]}{\sqrt{\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2}}\right)^{2/3}\right)\Big/\left((5+5\,i)\,\text{AppellF1}\left[\frac{2}{3},\frac{1}{3},\frac{1}{3},\frac{5}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Tan}\left[\frac{1}{2}(e+fx)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Tan}\left[\frac{1}{2}(e+fx)\right]\right)\right]+\right.$$

$$\left(\text{AppellF1}\left[\frac{5}{3},\frac{1}{3},\frac{4}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Tan}\left[\frac{1}{2}(e+fx)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Tan}\left[\frac{1}{2}(e+fx)\right]\right)\right]+\right.$$

$$\left.\left.i\,\text{AppellF1}\left[\frac{5}{3},\frac{4}{3},\frac{1}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Tan}\left[\frac{1}{2}(e+fx)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Tan}\left[\frac{1}{2}(e+fx)\right]\right)\right]\right)\left(1+\text{Tan}\left[\frac{1}{2}(e+fx)\right]\right)\right)-$$

$$\left((15+15\,i)\,\text{AppellF1}\left[\frac{2}{3},\frac{1}{3},\frac{1}{3},\frac{5}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Tan}\left[\frac{1}{2}(e+fx)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Tan}\left[\frac{1}{2}(e+fx)\right]\right)\right]\left(\frac{1+\text{Tan}\left[\frac{1}{2}(e+fx)\right]}{\sqrt{\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2}}\right)^{2/3}\right.$$

$$\left(\frac{1}{2}\left(\text{AppellF1}\left[\frac{5}{3},\frac{1}{3},\frac{4}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Tan}\left[\frac{1}{2}(e+fx)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Tan}\left[\frac{1}{2}(e+fx)\right]\right)\right]+\right.\right.$$

$$\left.i\,\text{AppellF1}\left[\frac{5}{3},\frac{4}{3},\frac{1}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Tan}\left[\frac{1}{2}(e+fx)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Tan}\left[\frac{1}{2}(e+fx)\right]\right)\right]\right)\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2+$$

$$(5+5\,i)\left(\left(\frac{1}{30}-\frac{i}{30}\right)\text{AppellF1}\left[\frac{5}{3},\frac{1}{3},\frac{4}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Tan}\left[\frac{1}{2}(e+fx)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Tan}\left[\frac{1}{2}(e+fx)\right]\right)\right]\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2+\right.$$

$$\left(\frac{1}{30}+\frac{\mathrm{i}}{30}\right)\text{AppellF1}\Big[\frac{5}{3},\frac{4}{3},\frac{1}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{\mathrm{i}}{2}\right)\Big(1+\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]\Big),\left(\frac{1}{2}-\frac{\mathrm{i}}{2}\right)\Big(1+\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]\Big)\Big]\,\text{Sec}\Big[\frac{1}{2}(e+f x)\Big]^2\Big)+$$

$$\Big(\Big(\left(\frac{5}{24}-\frac{5\,\mathrm{i}}{24}\right)\text{AppellF1}\Big[\frac{8}{3},\frac{1}{3},\frac{7}{3},\frac{11}{3},\left(\frac{1}{2}+\frac{\mathrm{i}}{2}\right)\Big(1+\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]\Big),\left(\frac{1}{2}-\frac{\mathrm{i}}{2}\right)\Big(1+\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]\Big)\Big]\,\text{Sec}\Big[\frac{1}{2}(e+f x)\Big]^2+$$

$$\left(\frac{5}{96}+\frac{5\,\mathrm{i}}{96}\right)\text{AppellF1}\Big[\frac{8}{3},\frac{4}{3},\frac{4}{3},\frac{11}{3},\left(\frac{1}{2}+\frac{\mathrm{i}}{2}\right)\Big(1+\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]\Big),\left(\frac{1}{2}-\frac{\mathrm{i}}{2}\right)\Big(1+\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]\Big)\Big]\,\text{Sec}\Big[\frac{1}{2}(e+f x)\Big]^2+$$

$$\mathrm{i}\,\Big(\left(\frac{5}{96}-\frac{5\,\mathrm{i}}{96}\right)\text{AppellF1}\Big[\frac{8}{3},\frac{4}{3},\frac{4}{3},\frac{11}{3},\left(\frac{1}{2}+\frac{\mathrm{i}}{2}\right)\Big(1+\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]\Big),\left(\frac{1}{2}-\frac{\mathrm{i}}{2}\right)\Big(1+\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]\Big)\Big]\,\text{Sec}\Big[\frac{1}{2}(e+f x)\Big]^2+$$

$$\left(\frac{5}{24}+\frac{5\,\mathrm{i}}{24}\right)\text{AppellF1}\Big[\frac{8}{3},\frac{7}{3},\frac{1}{3},\frac{11}{3},\left(\frac{1}{2}+\frac{\mathrm{i}}{2}\right)\Big(1+\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]\Big),\left(\frac{1}{2}-\frac{\mathrm{i}}{2}\right)\Big(1+\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]\Big)\Big]\,\text{Sec}\Big[\frac{1}{2}(e+f x)\Big]^2\Big)\Big)$$

$$\Big(1+\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]\Big)\Big)\Big)\Big)\Big/\Big((5+5\,\mathrm{i})\,\text{AppellF1}\Big[\frac{2}{3},\frac{1}{3},\frac{1}{3},\frac{5}{3},\left(\frac{1}{2}+\frac{\mathrm{i}}{2}\right)\Big(1+\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]\Big),\left(\frac{1}{2}-\frac{\mathrm{i}}{2}\right)\Big(1+\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]\Big)\Big]+$$

$$\Big(\text{AppellF1}\Big[\frac{5}{3},\frac{1}{3},\frac{4}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{\mathrm{i}}{2}\right)\Big(1+\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]\Big),\left(\frac{1}{2}-\frac{\mathrm{i}}{2}\right)\Big(1+\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]\Big)\Big]+$$

$$\mathrm{i}\,\text{AppellF1}\Big[\frac{5}{3},\frac{4}{3},\frac{1}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{\mathrm{i}}{2}\right)\Big(1+\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]\Big),\left(\frac{1}{2}-\frac{\mathrm{i}}{2}\right)\Big(1+\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]\Big)\Big]\Big)\Big(1+\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]\Big)\Big)^2+$$

$$\Big((10+10\,\mathrm{i})\,\text{AppellF1}\Big[\frac{2}{3},\frac{1}{3},\frac{1}{3},\frac{5}{3},\left(\frac{1}{2}+\frac{\mathrm{i}}{2}\right)\Big(1+\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]\Big),\left(\frac{1}{2}-\frac{\mathrm{i}}{2}\right)\Big(1+\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]\Big)\Big]$$

$$\left(\frac{1}{2}\sqrt{\text{Sec}\Big[\frac{1}{2}(e+f x)\Big]^2}-\frac{\text{Tan}\big[\frac{1}{2}(e+f x)\big]\Big(1+\text{Tan}\big[\frac{1}{2}(e+f x)\big]\Big)}{2\sqrt{\text{Sec}\big[\frac{1}{2}(e+f x)\big]^2}}\right)\Big)\Big)\Big/$$

$$\Big(\Big(\left(\frac{1+\text{Tan}\big[\frac{1}{2}(e+f x)\big]}{\sqrt{\text{Sec}\big[\frac{1}{2}(e+f x)\big]^2}}\right)^{1/3}\Big((5+5\,\mathrm{i})\,\text{AppellF1}\Big[\frac{2}{3},\frac{1}{3},\frac{1}{3},\frac{5}{3},\left(\frac{1}{2}+\frac{\mathrm{i}}{2}\right)\Big(1+\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]\Big),\left(\frac{1}{2}-\frac{\mathrm{i}}{2}\right)\Big(1+\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]\Big)\Big]+$$

$$\Big(\text{AppellF1}\Big[\frac{5}{3},\frac{1}{3},\frac{4}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{\mathrm{i}}{2}\right)\Big(1+\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]\Big),\left(\frac{1}{2}-\frac{\mathrm{i}}{2}\right)\Big(1+\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]\Big)\Big]+$$

$$i\,\text{AppellF1}\left[\frac{5}{3},\frac{4}{3},\frac{1}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\right]\right)\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\Bigg)\Bigg)\Bigg)\Bigg)+$$

$$\Bigg(4\,\text{Cos}\left[\frac{3}{2}(e+f x)\right]\text{Csc}\left[\frac{1}{2}(e+f x)\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right](a(1+\text{Sin}[e+f x]))^{1/3}\left(\frac{1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{\sqrt{\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2}}\right)^{2/3}$$

$$\Bigg(3+3\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2-3\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2+$$

$$\Bigg(\left(\frac{3}{4}+\frac{3 i}{4}\right)\Bigg(2^{2/3}\Bigg(\text{AppellF1}\left[\frac{5}{3},\frac{1}{3},\frac{4}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right)\right]+$$

$$i\,\text{AppellF1}\left[\frac{5}{3},\frac{4}{3},\frac{1}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right)\right]\Bigg)\text{Hypergeometric2F1}\Bigg[\frac{1}{3},\frac{2}{3},\frac{5}{3},$$

$$\frac{(1+i)+(1-i)\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{2+2\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]}\Bigg]\left(i+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\left(\frac{(1+i)\left(-i+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)}{1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]}\right)^{1/3}\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)+$$

$$(5+5 i)\,\text{AppellF1}\left[\frac{2}{3},\frac{1}{3},\frac{1}{3},\frac{5}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right)\right]$$

$$\text{Tan}\left[\frac{1}{2}(e+f x)\right]\Bigg(2^{2/3}\,\text{Hypergeometric2F1}\left[\frac{1}{3},\frac{2}{3},\frac{5}{3},\frac{(1+i)+(1-i)\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{2+2\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]}\right]$$

$$\left(i+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\left(\frac{(1+i)\left(-i+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)}{1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]}\right)^{1/3}-(1-i)\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\Bigg)\Bigg)\Bigg)\Bigg)\Bigg/$$

$$\Bigg(\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\Bigg(\text{AppellF1}\left[\frac{5}{3},\frac{1}{3},\frac{4}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right)\right]+$$

$$i\,\text{AppellF1}\left[\frac{5}{3},\frac{4}{3},\frac{1}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right)\right]+\frac{1}{1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]}$$

$$(5+5\,i)\,\text{AppellF1}\left[\frac{2}{3},\frac{1}{3},\frac{1}{3},\frac{5}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right)\right]\text{Tan}\left[\frac{1}{2}(e+f x)\right]\Bigg)\Bigg)\Bigg)\Bigg)\Bigg/$$

$$\Bigg(3 f\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\Bigg(-\frac{1}{\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)^2}\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\left(\frac{1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{\sqrt{\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2}}\right)^{2/3}$$

$$\Bigg(3+3\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2-3\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2+\Bigg(\left(\frac{3}{4}+\frac{3\,i}{4}\right)\Bigg(2^{2/3}\Bigg(\text{AppellF1}\left[\frac{5}{3},\frac{1}{3},\frac{4}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\right.$$

$$\left.\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right)\right]+i\,\text{AppellF1}\left[\frac{5}{3},\frac{4}{3},\frac{1}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right)\right]\Bigg)$$

$$\text{Hypergeometric2F1}\left[\frac{1}{3},\frac{2}{3},\frac{5}{3},\frac{(1+i)+(1-i)\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{2+2\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]}\right]\left(i+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\left(\frac{(1+i)\left(-i+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)}{1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]}\right)^{1/3}$$

$$\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)+(5+5\,i)\,\text{AppellF1}\left[\frac{2}{3},\frac{1}{3},\frac{1}{3},\frac{5}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right)\right]$$

$$\text{Tan}\left[\frac{1}{2}(e+f x)\right]\Bigg(2^{2/3}\,\text{Hypergeometric2F1}\left[\frac{1}{3},\frac{2}{3},\frac{5}{3},\frac{(1+i)+(1-i)\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{2+2\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]}\right]$$

$$\left(i+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\left(\frac{(1+i)\left(-i+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)}{1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]}\right)^{1/3}-(1-i)\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\Bigg)\Bigg)\Bigg)\Bigg)\Bigg/$$

$$\Bigg(\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\Bigg(\text{AppellF1}\left[\frac{5}{3},\frac{1}{3},\frac{4}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right)\right]+$$

$$i\,\text{AppellF1}\left[\frac{5}{3},\frac{4}{3},\frac{1}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right)\right]+\frac{1}{1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]}$$

$$(5+5\,i)\,\text{AppellF1}\left[\frac{2}{3},\frac{1}{3},\frac{1}{3},\frac{5}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right)\right]\text{Tan}\left[\frac{1}{2}(e+f x)\right]\Bigg)\Bigg)+$$

$$\frac{1}{3\,(1+\text{Tan}[\frac{1}{2}(e+f x)])\,\Big(\frac{1+\text{Tan}[\frac{1}{2}(e+f x)]}{\sqrt{\text{Sec}[\frac{1}{2}(e+f x)]^2}}\Big)^{1/3}}\,4\,\Big(\frac{1}{2}\sqrt{\text{Sec}\Big[\frac{1}{2}(e+f x)\Big]^2}-\frac{\text{Tan}[\frac{1}{2}(e+f x)]\,(1+\text{Tan}[\frac{1}{2}(e+f x)])}{2\sqrt{\text{Sec}[\frac{1}{2}(e+f x)]^2}}\Big)$$

$$\Big(3+3\,\text{Sec}\Big[\frac{1}{2}(e+f x)\Big]^2-3\,\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2+\Big(\Big(\frac{3}{4}+\frac{3\,\mathrm{i}}{4}\Big)\Big(2^{2/3}\Big(\text{AppellF1}\Big[\frac{5}{3},\frac{1}{3},\frac{4}{3},\frac{8}{3},\Big(\frac{1}{2}+\frac{\mathrm{i}}{2}\Big)\Big(1+\text{Cot}\Big[\frac{1}{2}(e+f x)\Big]\Big),\Big(\frac{1}{2}-\frac{\mathrm{i}}{2}\Big)$$

$$\Big(1+\text{Cot}\Big[\frac{1}{2}(e+f x)\Big]\Big)\Big]+\mathrm{i}\,\text{AppellF1}\Big[\frac{5}{3},\frac{4}{3},\frac{1}{3},\frac{8}{3},\Big(\frac{1}{2}+\frac{\mathrm{i}}{2}\Big)\Big(1+\text{Cot}\Big[\frac{1}{2}(e+f x)\Big]\Big),\Big(\frac{1}{2}-\frac{\mathrm{i}}{2}\Big)\Big(1+\text{Cot}\Big[\frac{1}{2}(e+f x)\Big]\Big)\Big]\Big)$$

$$\text{Hypergeometric2F1}\Big[\frac{1}{3},\frac{2}{3},\frac{5}{3},\frac{(1+\mathrm{i})+(1-\mathrm{i})\,\text{Tan}[\frac{1}{2}(e+f x)]}{2+2\,\text{Tan}[\frac{1}{2}(e+f x)]}\Big]\Big(\mathrm{i}+\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]\Big)\Big(\frac{(1+\mathrm{i})\,(-\mathrm{i}+\text{Tan}[\frac{1}{2}(e+f x)])}{1+\text{Tan}[\frac{1}{2}(e+f x)]}\Big)^{1/3}$$

$$\Big(1+\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]\Big)+(5+5\,\mathrm{i})\,\text{AppellF1}\Big[\frac{2}{3},\frac{1}{3},\frac{1}{3},\frac{5}{3},\Big(\frac{1}{2}+\frac{\mathrm{i}}{2}\Big)\Big(1+\text{Cot}\Big[\frac{1}{2}(e+f x)\Big]\Big),\Big(\frac{1}{2}-\frac{\mathrm{i}}{2}\Big)\Big(1+\text{Cot}\Big[\frac{1}{2}(e+f x)\Big]\Big)\Big]$$

$$\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]\Big(2^{2/3}\,\text{Hypergeometric2F1}\Big[\frac{1}{3},\frac{2}{3},\frac{5}{3},\frac{(1+\mathrm{i})+(1-\mathrm{i})\,\text{Tan}[\frac{1}{2}(e+f x)]}{2+2\,\text{Tan}[\frac{1}{2}(e+f x)]}\Big]$$

$$\Big(\mathrm{i}+\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]\Big)\Big(\frac{(1+\mathrm{i})\,(-\mathrm{i}+\text{Tan}[\frac{1}{2}(e+f x)])}{1+\text{Tan}[\frac{1}{2}(e+f x)]}\Big)^{1/3}-(1-\mathrm{i})\Big(1+\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]\Big)\Big)\Big)\Big)\Big)\Big/$$

$$\Big(\Big(1+\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]\Big)\Big(\text{AppellF1}\Big[\frac{5}{3},\frac{1}{3},\frac{4}{3},\frac{8}{3},\Big(\frac{1}{2}+\frac{\mathrm{i}}{2}\Big)\Big(1+\text{Cot}\Big[\frac{1}{2}(e+f x)\Big]\Big),\Big(\frac{1}{2}-\frac{\mathrm{i}}{2}\Big)\Big(1+\text{Cot}\Big[\frac{1}{2}(e+f x)\Big]\Big)\Big]+\mathrm{i}\,\text{AppellF1}\Big[$$

$$\frac{5}{3},\frac{4}{3},\frac{1}{3},\frac{8}{3},\Big(\frac{1}{2}+\frac{\mathrm{i}}{2}\Big)\Big(1+\text{Cot}\Big[\frac{1}{2}(e+f x)\Big]\Big),\Big(\frac{1}{2}-\frac{\mathrm{i}}{2}\Big)\Big(1+\text{Cot}\Big[\frac{1}{2}(e+f x)\Big]\Big)\Big]+\frac{1}{1+\text{Tan}[\frac{1}{2}(e+f x)]}(5+5\,\mathrm{i})\,\text{AppellF1}\Big[\frac{2}{3},$$

$$\frac{1}{3},\frac{1}{3},\frac{5}{3},\Big(\frac{1}{2}+\frac{\mathrm{i}}{2}\Big)\Big(1+\text{Cot}\Big[\frac{1}{2}(e+f x)\Big]\Big),\Big(\frac{1}{2}-\frac{\mathrm{i}}{2}\Big)\Big(1+\text{Cot}\Big[\frac{1}{2}(e+f x)\Big]\Big)\Big]\,\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]\Big)\Big)+\frac{1}{1+\text{Tan}[\frac{1}{2}(e+f x)]}$$

$$2\Big(\frac{1+\text{Tan}[\frac{1}{2}(e+f x)]}{\sqrt{\text{Sec}[\frac{1}{2}(e+f x)]^2}}\Big)^{2/3}\Big(-\Big(\Big(\Big(\frac{3}{8}+\frac{3\,\mathrm{i}}{8}\Big)\,\text{Sec}\Big[\frac{1}{2}(e+f x)\Big]^2\Big(2^{2/3}\Big(\text{AppellF1}\Big[\frac{5}{3},\frac{1}{3},\frac{4}{3},\frac{8}{3},\Big(\frac{1}{2}+\frac{\mathrm{i}}{2}\Big)\Big(1+\text{Cot}\Big[\frac{1}{2}(e+f x)\Big]\Big),\Big(\frac{1}{2}-\frac{\mathrm{i}}{2}\Big)$$

$$\Big(1+\text{Cot}\Big[\frac{1}{2}(e+f x)\Big]\Big)\Big]+\mathrm{i}\,\text{AppellF1}\Big[\frac{5}{3},\frac{4}{3},\frac{1}{3},\frac{8}{3},\Big(\frac{1}{2}+\frac{\mathrm{i}}{2}\Big)\Big(1+\text{Cot}\Big[\frac{1}{2}(e+f x)\Big]\Big),\Big(\frac{1}{2}-\frac{\mathrm{i}}{2}\Big)\Big(1+\text{Cot}\Big[\frac{1}{2}(e+f x)\Big]\Big)\Big]\Big)$$

$$\text{Hypergeometric2F1}\left[\frac{1}{3},\frac{2}{3},\frac{5}{3},\frac{(1+i)+(1-i)\,\text{Tan}\left[\frac{1}{2}(e+fx)\right]}{2+2\,\text{Tan}\left[\frac{1}{2}(e+fx)\right]}\right]\left(i+\text{Tan}\left[\frac{1}{2}(e+fx)\right]\right)\left(\frac{(1+i)\left(-i+\text{Tan}\left[\frac{1}{2}(e+fx)\right]\right)}{1+\text{Tan}\left[\frac{1}{2}(e+fx)\right]}\right)^{1/3}$$

$$\left(1+\text{Tan}\left[\frac{1}{2}(e+fx)\right]\right)+(5+5i)\,\text{AppellF1}\left[\frac{2}{3},\frac{1}{3},\frac{1}{3},\frac{5}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+fx)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+fx)\right]\right)\right]$$

$$\text{Tan}\left[\frac{1}{2}(e+fx)\right]\left(2^{2/3}\,\text{Hypergeometric2F1}\left[\frac{1}{3},\frac{2}{3},\frac{5}{3},\frac{(1+i)+(1-i)\,\text{Tan}\left[\frac{1}{2}(e+fx)\right]}{2+2\,\text{Tan}\left[\frac{1}{2}(e+fx)\right]}\right]\right.$$

$$\left.\left.\left.\left.\left(i+\text{Tan}\left[\frac{1}{2}(e+fx)\right]\right)\left(\frac{(1+i)\left(-i+\text{Tan}\left[\frac{1}{2}(e+fx)\right]\right)}{1+\text{Tan}\left[\frac{1}{2}(e+fx)\right]}\right)^{1/3}-(1-i)\left(1+\text{Tan}\left[\frac{1}{2}(e+fx)\right]\right)\right)\right)\right)\right)\Big/$$

$$\left(\left(1+\text{Tan}\left[\frac{1}{2}(e+fx)\right]\right)^2\left(\text{AppellF1}\left[\frac{5}{3},\frac{1}{3},\frac{4}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+fx)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+fx)\right]\right)\right]+\right.\right.$$

$$i\,\text{AppellF1}\left[\frac{5}{3},\frac{4}{3},\frac{1}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+fx)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+fx)\right]\right)\right]+\frac{1}{1+\text{Tan}\left[\frac{1}{2}(e+fx)\right]}$$

$$\left.\left.\left.(5+5i)\,\text{AppellF1}\left[\frac{2}{3},\frac{1}{3},\frac{1}{3},\frac{5}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+fx)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+fx)\right]\right)\right]\text{Tan}\left[\frac{1}{2}(e+fx)\right]\right)\right)\right)-$$

$$\left(\left(\frac{3}{4}+\frac{3i}{4}\right)\left(\left(-\frac{5}{24}+\frac{5i}{24}\right)\text{AppellF1}\left[\frac{8}{3},\frac{1}{3},\frac{7}{3},\frac{11}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+fx)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+fx)\right]\right)\right]\text{Csc}\left[\frac{1}{2}(e+fx)\right]^2-\right.\right.$$

$$\left(\frac{5}{96}+\frac{5i}{96}\right)\text{AppellF1}\left[\frac{8}{3},\frac{4}{3},\frac{4}{3},\frac{11}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+fx)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+fx)\right]\right)\right]\text{Csc}\left[\frac{1}{2}(e+fx)\right]^2+i$$

$$\left(\left(-\frac{5}{96}+\frac{5i}{96}\right)\text{AppellF1}\left[\frac{8}{3},\frac{4}{3},\frac{4}{3},\frac{11}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+fx)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+fx)\right]\right)\right]\text{Csc}\left[\frac{1}{2}(e+fx)\right]^2-\right.$$

$$\left.\left(\frac{5}{24}+\frac{5i}{24}\right)\text{AppellF1}\left[\frac{8}{3},\frac{7}{3},\frac{1}{3},\frac{11}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+fx)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+fx)\right]\right)\right]\text{Csc}\left[\frac{1}{2}(e+fx)\right]^2\right)-$$

$$\left(\left(\frac{5}{2}+\frac{5i}{2}\right)\text{AppellF1}\left[\frac{2}{3},\frac{1}{3},\frac{1}{3},\frac{5}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+fx)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+fx)\right]\right)\right]\right.$$

$$\left.\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2\text{Tan}\left[\frac{1}{2}(e+fx)\right]\right)\Big/\left(1+\text{Tan}\left[\frac{1}{2}(e+fx)\right]\right)^2+\frac{1}{1+\text{Tan}\left[\frac{1}{2}(e+fx)\right]}\left(\frac{5}{2}+\frac{5i}{2}\right)\text{AppellF1}\left[\frac{2}{3},\frac{1}{3},\frac{1}{3},\frac{5}{3},\right.$$

$$\left.\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+fx)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+fx)\right]\right)\right]\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2+\frac{1}{1+\text{Tan}\left[\frac{1}{2}(e+fx)\right]}(5+5i)$$

$$\left(\left(-\frac{1}{30}+\frac{i}{30}\right)\text{AppellF1}\left[\frac{5}{3},\frac{1}{3},\frac{4}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+fx)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+fx)\right]\right)\right]\text{Csc}\left[\frac{1}{2}(e+fx)\right]^2-\right.$$

$$\left(\frac{1}{30}+\frac{\mathrm{i}}{30}\right) \mathrm{AppellF1}\left[\frac{5}{3},\frac{4}{3},\frac{1}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{\mathrm{i}}{2}\right)\left(1+\mathrm{Cot}\left[\frac{1}{2}(e+f x)\right]\right),\left(\frac{1}{2}-\frac{\mathrm{i}}{2}\right)\left(1+\mathrm{Cot}\left[\frac{1}{2}(e+f x)\right]\right)\right] \mathrm{Csc}\left[\frac{1}{2}(e+f x)\right]^2)$$

$$\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]) \Bigg(2^{2/3} \Bigg(\mathrm{AppellF1}\left[\frac{5}{3},\frac{1}{3},\frac{4}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{\mathrm{i}}{2}\right)\left(1+\mathrm{Cot}\left[\frac{1}{2}(e+f x)\right]\right),\left(\frac{1}{2}-\frac{\mathrm{i}}{2}\right)\left(1+\mathrm{Cot}\left[\frac{1}{2}(e+f x)\right]\right)\right] +$$

$$\mathrm{i}\,\mathrm{AppellF1}\left[\frac{5}{3},\frac{4}{3},\frac{1}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{\mathrm{i}}{2}\right)\left(1+\mathrm{Cot}\left[\frac{1}{2}(e+f x)\right]\right),\left(\frac{1}{2}-\frac{\mathrm{i}}{2}\right)\left(1+\mathrm{Cot}\left[\frac{1}{2}(e+f x)\right]\right)\right] \Bigg)$$

$$\mathrm{Hypergeometric2F1}\left[\frac{1}{3},\frac{2}{3},\frac{5}{3},\frac{(1+\mathrm{i})+(1-\mathrm{i})\,\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]}{2+2\,\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]}\right]\left(\mathrm{i}+\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\left(\frac{(1+\mathrm{i})\left(-\mathrm{i}+\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]\right)}{1+\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]}\right)^{1/3}$$

$$\left(1+\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]\right)+(5+5\,\mathrm{i})\,\mathrm{AppellF1}\left[\frac{2}{3},\frac{1}{3},\frac{1}{3},\frac{5}{3},\left(\frac{1}{2}+\frac{\mathrm{i}}{2}\right)\left(1+\mathrm{Cot}\left[\frac{1}{2}(e+f x)\right]\right),\left(\frac{1}{2}-\frac{\mathrm{i}}{2}\right)\left(1+\mathrm{Cot}\left[\frac{1}{2}(e+f x)\right]\right)\right]$$

$$\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right] \Bigg(2^{2/3}\,\mathrm{Hypergeometric2F1}\left[\frac{1}{3},\frac{2}{3},\frac{5}{3},\frac{(1+\mathrm{i})+(1-\mathrm{i})\,\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]}{2+2\,\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]}\right]$$

$$\left(\mathrm{i}+\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\left(\frac{(1+\mathrm{i})\left(-\mathrm{i}+\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]\right)}{1+\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]}\right)^{1/3}-(1-\mathrm{i})\left(1+\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]\right) \Bigg) \Bigg) \Bigg) \Bigg) \Big/$$

$$\Bigg(\left(1+\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]\right) \Bigg(\mathrm{AppellF1}\left[\frac{5}{3},\frac{1}{3},\frac{4}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{\mathrm{i}}{2}\right)\left(1+\mathrm{Cot}\left[\frac{1}{2}(e+f x)\right]\right),\left(\frac{1}{2}-\frac{\mathrm{i}}{2}\right)\left(1+\mathrm{Cot}\left[\frac{1}{2}(e+f x)\right]\right)\right] +$$

$$\mathrm{i}\,\mathrm{AppellF1}\left[\frac{5}{3},\frac{4}{3},\frac{1}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{\mathrm{i}}{2}\right)\left(1+\mathrm{Cot}\left[\frac{1}{2}(e+f x)\right]\right),\left(\frac{1}{2}-\frac{\mathrm{i}}{2}\right)\left(1+\mathrm{Cot}\left[\frac{1}{2}(e+f x)\right]\right)\right]+\frac{1}{1+\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]}$$

$$(5+5\,\mathrm{i})\,\mathrm{AppellF1}\left[\frac{2}{3},\frac{1}{3},\frac{1}{3},\frac{5}{3},\left(\frac{1}{2}+\frac{\mathrm{i}}{2}\right)\left(1+\mathrm{Cot}\left[\frac{1}{2}(e+f x)\right]\right),\left(\frac{1}{2}-\frac{\mathrm{i}}{2}\right)\left(1+\mathrm{Cot}\left[\frac{1}{2}(e+f x)\right]\right)\right]\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right] \Bigg)^2 \Bigg) +$$

$$\Bigg(\left(\frac{3}{4}+\frac{3\,\mathrm{i}}{4}\right) \Bigg(\frac{1}{2^{1/3}} \Bigg(\mathrm{AppellF1}\left[\frac{5}{3},\frac{1}{3},\frac{4}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{\mathrm{i}}{2}\right)\left(1+\mathrm{Cot}\left[\frac{1}{2}(e+f x)\right]\right),\left(\frac{1}{2}-\frac{\mathrm{i}}{2}\right)\left(1+\mathrm{Cot}\left[\frac{1}{2}(e+f x)\right]\right)\right] +$$

$$\mathrm{i}\,\mathrm{AppellF1}\left[\frac{5}{3},\frac{4}{3},\frac{1}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{\mathrm{i}}{2}\right)\left(1+\mathrm{Cot}\left[\frac{1}{2}(e+f x)\right]\right),\left(\frac{1}{2}-\frac{\mathrm{i}}{2}\right)\left(1+\mathrm{Cot}\left[\frac{1}{2}(e+f x)\right]\right)\right] \Bigg)\,\mathrm{Hypergeometric2F1}\left[\frac{1}{3},\frac{2}{3},\frac{5}{3},\right.$$

$$\left.\frac{(1+\mathrm{i})+(1-\mathrm{i})\,\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]}{2+2\,\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]}\right]\mathrm{Sec}\left[\frac{1}{2}(e+f x)\right]^2\left(\mathrm{i}+\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\left(\frac{(1+\mathrm{i})\left(-\mathrm{i}+\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]\right)}{1+\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]}\right)^{1/3}+$$

$$\frac{1}{2^{1/3}}\left(\text{AppellF1}\left[\frac{5}{3},\frac{1}{3},\frac{4}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+fx)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+fx)\right]\right)\right]+\right.$$

$$\left.i\,\text{AppellF1}\left[\frac{5}{3},\frac{4}{3},\frac{1}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+fx)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+fx)\right]\right)\right]\right)\text{Hypergeometric2F1}\left[\frac{1}{3},\frac{2}{3},\frac{5}{3},\right.$$

$$\left.\frac{(1+i)+(1-i)\,\text{Tan}\left[\frac{1}{2}(e+fx)\right]}{2+2\,\text{Tan}\left[\frac{1}{2}(e+fx)\right]}\right]\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2\left(\frac{(1+i)\left(-i+\text{Tan}\left[\frac{1}{2}(e+fx)\right]\right)}{1+\text{Tan}\left[\frac{1}{2}(e+fx)\right]}\right)^{1/3}\left(1+\text{Tan}\left[\frac{1}{2}(e+fx)\right]\right)+2^{2/3}$$

$$\left(\left(\left(-\frac{5}{24}+\frac{5i}{24}\right)\text{AppellF1}\left[\frac{8}{3},\frac{1}{3},\frac{7}{3},\frac{11}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+fx)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+fx)\right]\right)\right]\text{Csc}\left[\frac{1}{2}(e+fx)\right]^2-\right.\right.$$

$$\left(\frac{5}{96}+\frac{5i}{96}\right)\text{AppellF1}\left[\frac{8}{3},\frac{4}{3},\frac{4}{3},\frac{11}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+fx)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+fx)\right]\right)\right]\text{Csc}\left[\frac{1}{2}(e+fx)\right]^2+i$$

$$\left(\left(-\frac{5}{96}+\frac{5i}{96}\right)\text{AppellF1}\left[\frac{8}{3},\frac{4}{3},\frac{4}{3},\frac{11}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+fx)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+fx)\right]\right)\right]\text{Csc}\left[\frac{1}{2}(e+fx)\right]^2-\right.$$

$$\left(\frac{5}{24}+\frac{5i}{24}\right)\text{AppellF1}\left[\frac{8}{3},\frac{7}{3},\frac{1}{3},\frac{11}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+fx)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+fx)\right]\right)\right]$$

$$\left.\left.\text{Csc}\left[\frac{1}{2}(e+fx)\right]^2\right)\right)\text{Hypergeometric2F1}\left[\frac{1}{3},\frac{2}{3},\frac{5}{3},\frac{(1+i)+(1-i)\,\text{Tan}\left[\frac{1}{2}(e+fx)\right]}{2+2\,\text{Tan}\left[\frac{1}{2}(e+fx)\right]}\right]$$

$$\left(i+\text{Tan}\left[\frac{1}{2}(e+fx)\right]\right)\left(\frac{(1+i)\left(-i+\text{Tan}\left[\frac{1}{2}(e+fx)\right]\right)}{1+\text{Tan}\left[\frac{1}{2}(e+fx)\right]}\right)^{1/3}\left(1+\text{Tan}\left[\frac{1}{2}(e+fx)\right]\right)+\frac{1}{3\left(\frac{(1+i)\left(-i+\text{Tan}\left[\frac{1}{2}(e+fx)\right]\right)}{1+\text{Tan}\left[\frac{1}{2}(e+fx)\right]}\right)^{2/3}}$$

$$2^{2/3}\left(\text{AppellF1}\left[\frac{5}{3},\frac{1}{3},\frac{4}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+fx)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+fx)\right]\right)\right]+\right.$$

$$\left.i\,\text{AppellF1}\left[\frac{5}{3},\frac{4}{3},\frac{1}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+fx)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+fx)\right]\right)\right]\right)$$

$$\text{Hypergeometric2F1}\left[\frac{1}{3},\frac{2}{3},\frac{5}{3},\frac{(1+i)+(1-i)\,\text{Tan}\left[\frac{1}{2}(e+fx)\right]}{2+2\,\text{Tan}\left[\frac{1}{2}(e+fx)\right]}\right]\left(i+\text{Tan}\left[\frac{1}{2}(e+fx)\right]\right)\left(1+\text{Tan}\left[\frac{1}{2}(e+fx)\right]\right)$$

$$\left(-\frac{\left(\frac{1}{2}+\frac{i}{2}\right)\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2\left(-i+\text{Tan}\left[\frac{1}{2}(e+fx)\right]\right)}{\left(1+\text{Tan}\left[\frac{1}{2}(e+fx)\right]\right)^2}+\frac{\left(\frac{1}{2}+\frac{i}{2}\right)\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2}{1+\text{Tan}\left[\frac{1}{2}(e+fx)\right]}\right)+\left(\frac{5}{2}+\frac{5i}{2}\right)$$

$$\text{AppellF1}\left[\frac{2}{3},\frac{1}{3},\frac{1}{3},\frac{5}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+fx)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+fx)\right]\right)\right]\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2$$

$$\left(2^{2/3}\,\text{Hypergeometric2F1}\left[\frac{1}{3},\frac{2}{3},\frac{5}{3},\frac{(1+i)+(1-i)\,\text{Tan}\left[\frac{1}{2}(e+fx)\right]}{2+2\,\text{Tan}\left[\frac{1}{2}(e+fx)\right]}\right]\left(i+\text{Tan}\left[\frac{1}{2}(e+fx)\right]\right)\right.$$

$$\left(\frac{(1+\text{i})\left(-\text{i}+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)}{1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]}\right)^{1/3}-(1-\text{i})\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\Bigg)+(5+5\,\text{i})$$

$$\left(\left(-\frac{1}{30}+\frac{\text{i}}{30}\right)\text{AppellF1}\left[\frac{5}{3},\frac{1}{3},\frac{4}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{\text{i}}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right),\left(\frac{1}{2}-\frac{\text{i}}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right)\right]\text{Csc}\left[\frac{1}{2}(e+f x)\right]^2-\right.$$

$$\left.\left(\frac{1}{30}+\frac{\text{i}}{30}\right)\text{AppellF1}\left[\frac{5}{3},\frac{4}{3},\frac{1}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{\text{i}}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right),\left(\frac{1}{2}-\frac{\text{i}}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right)\right]\text{Csc}\left[\frac{1}{2}(e+f x)\right]^2\right)$$

$$\text{Tan}\left[\frac{1}{2}(e+f x)\right]\left(2^{2/3}\,\text{Hypergeometric2F1}\left[\frac{1}{3},\frac{2}{3},\frac{5}{3},\frac{(1+\text{i})+(1-\text{i})\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{2+2\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]}\right]\left(\text{i}+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\right.$$

$$\left(\left(\frac{(1+\text{i})\left(-\text{i}+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)}{1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]}\right)^{1/3}-(1-\text{i})\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\right)+\frac{1}{3\left((1+\text{i})+(1-\text{i})\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)}$$

$$2\times 2^{2/3}\left(\text{AppellF1}\left[\frac{5}{3},\frac{1}{3},\frac{4}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{\text{i}}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right),\left(\frac{1}{2}-\frac{\text{i}}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right)\right]+\right.$$

$$\left.\text{i}\,\text{AppellF1}\left[\frac{5}{3},\frac{4}{3},\frac{1}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{\text{i}}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right),\left(\frac{1}{2}-\frac{\text{i}}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right)\right]\right)$$

$$\left(\text{i}+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\left(\frac{(1+\text{i})\left(-\text{i}+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)}{1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]}\right)^{1/3}\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\left(2+2\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)$$

$$\left(-\frac{\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\left((1+\text{i})+(1-\text{i})\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)}{\left(2+2\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)^2}+\frac{\left(\frac{1}{2}-\frac{\text{i}}{2}\right)\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2}{2+2\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]}\right)$$

$$\left(-\text{Hypergeometric2F1}\left[\frac{1}{3},\frac{2}{3},\frac{5}{3},\frac{(1+\text{i})+(1-\text{i})\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{2+2\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]}\right]+\frac{1}{\left(1-\frac{(1+\text{i})+(1-\text{i})\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{2+2\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]}\right)^{1/3}}\right)+(5+5\,\text{i})$$

$$\text{AppellF1}\left[\frac{2}{3},\frac{1}{3},\frac{1}{3},\frac{5}{3},\left(\frac{1}{2}+\frac{\text{i}}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right),\left(\frac{1}{2}-\frac{\text{i}}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right)\right]\text{Tan}\left[\frac{1}{2}(e+f x)\right]$$

$$\left(\left(-\frac{1}{2}+\frac{\text{i}}{2}\right)\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2+\frac{1}{2^{1/3}}\text{Hypergeometric2F1}\left[\frac{1}{3},\frac{2}{3},\frac{5}{3},\frac{(1+\text{i})+(1-\text{i})\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{2+2\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]}\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\right.$$

$$\left(\frac{(1+i)\left(-i+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)}{1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]}\right)^{1/3}+\Bigg(2^{2/3}\,\text{Hypergeometric2F1}\left[\frac{1}{3},\frac{2}{3},\frac{5}{3},\frac{(1+i)+(1-i)\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{2+2\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]}\right]$$

$$\left(i+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\left(-\frac{\left(\frac{1}{2}+\frac{i}{2}\right)\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\left(-i+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)}{\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)^2}+\frac{\left(\frac{1}{2}+\frac{i}{2}\right)\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2}{1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]}\right)\Bigg)\Big/$$

$$\left(3\left(\frac{(1+i)\left(-i+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)}{1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]}\right)^{2/3}\right)+\Bigg(2\times 2^{2/3}\left(i+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\left(\frac{(1+i)\left(-i+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)}{1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]}\right)^{1/3}$$

$$\left(2+2\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\left(-\frac{\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\left((1+i)+(1-i)\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)}{\left(2+2\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)^2}+\frac{\left(\frac{1}{2}-\frac{i}{2}\right)\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2}{2+2\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]}\right)$$

$$\Bigg(-\text{Hypergeometric2F1}\left[\frac{1}{3},\frac{2}{3},\frac{5}{3},\frac{(1+i)+(1-i)\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{2+2\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]}\right]+$$

$$\frac{1}{\left(1-\frac{(1+i)+(1-i)\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{2+2\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]}\right)^{1/3}}\Bigg)\Bigg)\Big/\left(3\left((1+i)+(1-i)\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\right)\Bigg)\Bigg)\Big/$$

$$\Bigg(\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\Bigg(\text{AppellF1}\left[\frac{5}{3},\frac{1}{3},\frac{4}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right)\right]+$$

$$i\,\text{AppellF1}\left[\frac{5}{3},\frac{4}{3},\frac{1}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right)\right]+\frac{1}{1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]}(5+5i)$$

$$\text{AppellF1}\left[\frac{2}{3},\frac{1}{3},\frac{1}{3},\frac{5}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right)\right]\text{Tan}\left[\frac{1}{2}(e+f x)\right]\Bigg)\Bigg)\Bigg)\Bigg)$$

- **Problem 118: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int \text{Cot}[e+f x]^4 \,(a+a\,\text{Sin}[e+f x])^{1/3}\,dx$$

Optimal (type 6, 80 leaves, 3 steps):

$$\frac{1}{17 a^3 f}12\sqrt{2}\,\text{AppellF1}\left[\frac{17}{6},-\frac{3}{2},4,\frac{23}{6},\frac{1}{2}(1+\text{Sin}[e+f x]),1+\text{Sin}[e+f x]\right]\text{Sec}[e+f x]\sqrt{1-\text{Sin}[e+f x]}\,(a+a\,\text{Sin}[e+f x])^{10/3}$$

Result (type 6, 9225 leaves):

$$\frac{\left(\frac{239}{54}+\frac{77}{54}\text{Cot}[e+f x]-\frac{1}{18}\text{Cot}[e+f x]\,\text{Csc}[e+f x]-\frac{1}{3}\text{Cot}[e+f x]\,\text{Csc}[e+f x]^2\right)(a\,(1+\text{Sin}[e+f x]))^{1/3}}{f}-$$

$$\left(\left(\frac{560}{9}+\frac{560\,i}{9}\right)\text{AppellF1}\left[\frac{2}{3},\frac{1}{3},\frac{1}{3},\frac{5}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right)\right]\right.$$

$$\text{Cos}\left[\frac{1}{2}(e+f x)\right]^2\text{Sin}\left[\frac{1}{2}(e+f x)\right](a\,(1+\text{Sin}[e+f x]))^{1/3}\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)$$

$$\left((5+5\,i)\,\text{AppellF1}\left[\frac{2}{3},\frac{1}{3},\frac{1}{3},\frac{5}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right)\right]\text{Tan}\left[\frac{1}{2}(e+f x)\right]+\right.$$

$$\text{AppellF1}\left[\frac{5}{3},\frac{1}{3},\frac{4}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right)\right]\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)+$$

$$\left.\left.i\,\text{AppellF1}\left[\frac{5}{3},\frac{4}{3},\frac{1}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right)\right]\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\right)\right)\Big/$$

$$\left(f\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)\left(-400\,i\,\text{AppellF1}\left[\frac{2}{3},\frac{1}{3},\frac{1}{3},\frac{5}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right)\right]^2\right.\right.$$

$$\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)\text{Sin}\left[\frac{1}{2}(e+f x)\right]^3+8\left(\text{AppellF1}\left[\frac{5}{3},\frac{1}{3},\frac{4}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right),\right.\right.$$

$$\left.\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right)\right]+i\,\text{AppellF1}\left[\frac{5}{3},\frac{4}{3},\frac{1}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right)\right]\Big)^2$$

$$\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^2+5\,\text{AppellF1}\left[\frac{2}{3},\frac{1}{3},\frac{1}{3},\frac{5}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right)\right]$$

$$\left(-5\left(2\,\text{AppellF1}\left[\frac{8}{3},\frac{1}{3},\frac{7}{3},\frac{11}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right)\right]+\right.\right.$$

$$i\,\text{AppellF1}\left[\frac{8}{3},\frac{4}{3},\frac{4}{3},\frac{11}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right)\right]-$$

$$\left.\left.2\,\text{AppellF1}\left[\frac{8}{3},\frac{7}{3},\frac{1}{3},\frac{11}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right)\right]\right)\right)$$

$$\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^2+(2+2\,i)\,\text{AppellF1}\left[\frac{5}{3},\frac{1}{3},\frac{4}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right),\right.$$

$$\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right)\Big]\ (-2+\text{Cos}[e+f x]+\text{Cos}[2(e+f x)]-3\,\text{Sin}[e+f x])-(2-2 i)\,\text{AppellF1}\Big[\frac{5}{3},\frac{4}{3},\frac{1}{3},\frac{8}{3},$$

$$\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right)\Big]\ (-2+\text{Cos}[e+f x]+\text{Cos}[2(e+f x)]-3\,\text{Sin}[e+f x])\Big)\Big)\Big)\Big)+$$

$$\Big(\Big(\left(\frac{1420}{27}+\frac{1420\,i}{27}\right)\text{AppellF1}\Big[\frac{2}{3},\frac{1}{3},\frac{1}{3},\frac{5}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\Big]$$

$$\text{Cos}\left[\frac{1}{2}(e+f x)\right]^4\,\text{Csc}[e+f x]$$

$$\text{Sin}\left[\frac{1}{2}(e+f x)\right]\,(a\,(1+\text{Sin}[e+f x]))^{1/3}$$

$$\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)$$

$$\Big((5+5 i)\,\text{AppellF1}\Big[\frac{2}{3},\frac{1}{3},\frac{1}{3},\frac{5}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\Big]+$$

$$\Big(\text{AppellF1}\Big[\frac{5}{3},\frac{1}{3},\frac{4}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\Big]+$$

$$i\,\text{AppellF1}\Big[\frac{5}{3},\frac{4}{3},\frac{1}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\Big]\Big)\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\Big)\Big)\Big)\Big/$$

$$\Big(f\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)\Big(-8\,\Big(\text{AppellF1}\Big[\frac{5}{3},\frac{1}{3},\frac{4}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\Big]+$$

$$i\,\text{AppellF1}\Big[\frac{5}{3},\frac{4}{3},\frac{1}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\Big]\Big)^2\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^2+$$

$$5\,\text{AppellF1}\Big[\frac{2}{3},\frac{1}{3},\frac{1}{3},\frac{5}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\Big]$$

$$\Big(5\,\Big(2\,\text{AppellF1}\Big[\frac{8}{3},\frac{1}{3},\frac{7}{3},\frac{11}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\Big]+$$

$$i\,\text{AppellF1}\Big[\frac{8}{3},\frac{4}{3},\frac{4}{3},\frac{11}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\Big]-$$

$$2\,\text{AppellF1}\Big[\frac{8}{3},\frac{7}{3},\frac{1}{3},\frac{11}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\Big]\Big)$$

$$\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^2+(2+2 i)\,\text{AppellF1}\Big[\frac{5}{3},\frac{1}{3},\frac{4}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right),$$

$$\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\Big]\ (2+\text{Cos}[e+f x]-\text{Cos}[2(e+f x)]+3\,\text{Sin}[e+f x])-(2-2 i)\,\text{AppellF1}\Big[\frac{5}{3},\frac{4}{3},\frac{1}{3},\frac{8}{3},$$

$$\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\Big]\ (2+\text{Cos}[e+f x]-\text{Cos}[2(e+f x)]+3\,\text{Sin}[e+f x])\Big)-$$

$$50\,i\,\text{AppellF1}\left[\frac{2}{3},\frac{1}{3},\frac{1}{3},\frac{5}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\right]^2$$

$$(3+4\,\text{Cos}[e+f x]+\text{Cos}[2(e+f x)]-2\,\text{Sin}[e+f x]-\text{Sin}[2(e+f x)])\Big)\Big)-$$

$$\left(\left(\frac{239}{216}+\frac{239\,i}{216}\right)\text{Cos}\left[\frac{3}{2}(e+f x)\right]\text{Csc}[e+f x]\,(a\,(1+\text{Sin}[e+f x]))^{1/3}\left(\frac{1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{\sqrt{\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2}}\right)^{2/3}\right.$$

$$\left((2-2\,i)\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2+(2-2\,i)\,\text{Cos}[e+f x]\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2+\right.$$

$$\left(2^{2/3}\left(\text{AppellF1}\left[\frac{5}{3},\frac{1}{3},\frac{4}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right)\right]+\right.\right.$$

$$\left.i\,\text{AppellF1}\left[\frac{5}{3},\frac{4}{3},\frac{1}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right)\right]\right)\text{Hypergeometric2F1}\left[\frac{1}{3},\frac{2}{3},\frac{5}{3},\right.$$

$$\left.\frac{(1+i)+(1-i)\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{2+2\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]}\right]\left(i+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\left(\frac{(1+i)\left(-i+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)}{1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]}\right)^{1/3}\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)+$$

$$(5+5\,i)\,\text{AppellF1}\left[\frac{2}{3},\frac{1}{3},\frac{1}{3},\frac{5}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right)\right]$$

$$\text{Tan}\left[\frac{1}{2}(e+f x)\right]\left(2^{2/3}\,\text{Hypergeometric2F1}\left[\frac{1}{3},\frac{2}{3},\frac{5}{3},\frac{(1+i)+(1-i)\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{2+2\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]}\right]\right.$$

$$\left.\left.\left.\left(i+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\left(\frac{(1+i)\left(-i+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)}{1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]}\right)^{1/3}-(1-i)\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\right)\right)\right)\Big/$$

$$\left(\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\left(\text{AppellF1}\left[\frac{5}{3},\frac{1}{3},\frac{4}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right)\right]+\right.\right.$$

$$i\,\text{AppellF1}\left[\frac{5}{3},\frac{4}{3},\frac{1}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right)\right]+\frac{1}{1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]}$$

$$(5+5\,i)\,\text{AppellF1}\left[\frac{2}{3},\frac{1}{3},\frac{1}{3},\frac{5}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f\,x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f\,x)\right]\right)\right]\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]\Bigg)\Bigg)\Bigg)\Bigg)\Bigg/$$

$$\Bigg(f\left(\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)\left(1+\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]\right)\Bigg(-\frac{1}{\left(1+\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]\right)^2}\left(\frac{3}{8}+\frac{3\,i}{8}\right)\text{Sec}\left[\frac{1}{2}(e+f\,x)\right]^2$$

$$\left(\frac{1+\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]}{\sqrt{\text{Sec}\left[\frac{1}{2}(e+f\,x)\right]^2}}\right)^{2/3}\Bigg((2-2\,i)\,\text{Sec}\left[\frac{1}{2}(e+f\,x)\right]^2+(2-2\,i)\,\text{Cos}[e+f\,x]\,\text{Sec}\left[\frac{1}{2}(e+f\,x)\right]^2+\Bigg(2^{2/3}\Bigg(\text{AppellF1}\left[\frac{5}{3},\frac{1}{3},\frac{4}{3},\frac{8}{3},\right.$$

$$\left.\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f\,x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f\,x)\right]\right)\right]+i\,\text{AppellF1}\left[\frac{5}{3},\frac{4}{3},\frac{1}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f\,x)\right]\right),\right.$$

$$\left.\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f\,x)\right]\right)\right]\Bigg)\,\text{Hypergeometric2F1}\left[\frac{1}{3},\frac{2}{3},\frac{5}{3},\frac{(1+i)+(1-i)\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]}{2+2\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]}\right]\left(i+\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]\right)$$

$$\left(\frac{(1+i)\left(-i+\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]\right)}{1+\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]}\right)^{1/3}\left(1+\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]\right)+(5+5\,i)\,\text{AppellF1}\left[\frac{2}{3},\frac{1}{3},\frac{1}{3},\frac{5}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f\,x)\right]\right),\right.$$

$$\left.\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f\,x)\right]\right)\right]\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]\Bigg(2^{2/3}\,\text{Hypergeometric2F1}\left[\frac{1}{3},\frac{2}{3},\frac{5}{3},\frac{(1+i)+(1-i)\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]}{2+2\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]}\right]$$

$$\left(i+\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]\right)\left(\frac{(1+i)\left(-i+\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]\right)}{1+\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]}\right)^{1/3}-(1-i)\left(1+\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]\right)\Bigg)\Bigg)\Bigg)\Bigg/$$

$$\Bigg(\left(1+\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]\right)\Bigg(\text{AppellF1}\left[\frac{5}{3},\frac{1}{3},\frac{4}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f\,x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f\,x)\right]\right)\right]+$$

$$i\,\text{AppellF1}\left[\frac{5}{3},\frac{4}{3},\frac{1}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f\,x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f\,x)\right]\right)\right]+\frac{1}{1+\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]}$$

$$(5+5\,i)\,\text{AppellF1}\left[\frac{2}{3},\frac{1}{3},\frac{1}{3},\frac{5}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right)\right]\text{Tan}\left[\frac{1}{2}(e+f x)\right]\Bigg)\Bigg)\Bigg)+$$

$$\frac{1}{\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\left(\frac{1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{\sqrt{\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2}}\right)^{1/3}}\left(\frac{1}{2}+\frac{i}{2}\right)\left(\frac{1}{2}\sqrt{\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2}-\frac{\text{Tan}\left[\frac{1}{2}(e+f x)\right]\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)}{2\sqrt{\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2}}\right)$$

$$\Bigg((2-2\,i)\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2+(2-2\,i)\,\text{Cos}[e+f x]\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2+\Bigg(2^{2/3}\Bigg(\text{AppellF1}\left[\frac{5}{3},\frac{1}{3},\frac{4}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right),\right.$$

$$\left.\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right)\right]+i\,\text{AppellF1}\left[\frac{5}{3},\frac{4}{3},\frac{1}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right)\right]\Bigg)$$

$$\text{Hypergeometric2F1}\left[\frac{1}{3},\frac{2}{3},\frac{5}{3},\frac{(1+i)+(1-i)\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{2+2\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]}\right]\left(i+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\left(\frac{(1+i)\left(-i+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)}{1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]}\right)^{1/3}$$

$$\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)+(5+5\,i)\,\text{AppellF1}\left[\frac{2}{3},\frac{1}{3},\frac{1}{3},\frac{5}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right)\right]$$

$$\text{Tan}\left[\frac{1}{2}(e+f x)\right]\Bigg(2^{2/3}\,\text{Hypergeometric2F1}\left[\frac{1}{3},\frac{2}{3},\frac{5}{3},\frac{(1+i)+(1-i)\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{2+2\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]}\right]$$

$$\left(i+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\left(\frac{(1+i)\left(-i+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)}{1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]}\right)^{1/3}-(1-i)\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\Bigg)\Bigg)\Bigg)\Bigg/$$

$$\Bigg(\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\Bigg(\text{AppellF1}\left[\frac{5}{3},\frac{1}{3},\frac{4}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right)\right]+i$$

$$\text{AppellF1}\left[\frac{5}{3},\frac{4}{3},\frac{1}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right)\right]+\frac{1}{1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]}(5+5\,i)$$

$$\text{AppellF1}\left[\frac{2}{3},\frac{1}{3},\frac{1}{3},\frac{5}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right)\right]\text{Tan}\left[\frac{1}{2}(e+f x)\right]\Bigg)\Bigg)\Bigg)+$$

$$\frac{1}{1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]}\left(\frac{3}{4}+\frac{3 i}{4}\right)\left(\frac{1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{\sqrt{\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2}}\right)^{2/3}\left((-2+2 i)\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Sin}[e+f x]+\right.$$

$$(2-2 i)\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]+(2-2 i)\,\text{Cos}[e+f x]\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]-$$

$$\left(\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\left(2^{2/3}\left(\text{AppellF1}\left[\frac{5}{3},\frac{1}{3},\frac{4}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right)\right]+\right.\right.\right.$$

$$\left.i\,\text{AppellF1}\left[\frac{5}{3},\frac{4}{3},\frac{1}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right)\right]\right)$$

$$\text{Hypergeometric2F1}\left[\frac{1}{3},\frac{2}{3},\frac{5}{3},\frac{(1+i)+(1-i)\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{2+2\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]}\right]\left(i+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\left(\frac{(1+i)\left(-i+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)}{1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]}\right)^{1/3}$$

$$\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)+(5+5 i)\,\text{AppellF1}\left[\frac{2}{3},\frac{1}{3},\frac{1}{3},\frac{5}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right)\right]$$

$$\text{Tan}\left[\frac{1}{2}(e+f x)\right]\left(2^{2/3}\,\text{Hypergeometric2F1}\left[\frac{1}{3},\frac{2}{3},\frac{5}{3},\frac{(1+i)+(1-i)\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{2+2\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]}\right]\right.$$

$$\left.\left.\left.\left.\left(i+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\left(\frac{(1+i)\left(-i+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)}{1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]}\right)^{1/3}-(1-i)\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\right)\right)\right)\right)\Big/$$

$$\left(2\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)^2\left(\text{AppellF1}\left[\frac{5}{3},\frac{1}{3},\frac{4}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right)\right]+\right.\right.$$

$$i\,\text{AppellF1}\left[\frac{5}{3},\frac{4}{3},\frac{1}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right)\right]+\frac{1}{1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]}(5+5 i)$$

$$\left.\left.\text{AppellF1}\left[\frac{2}{3},\frac{1}{3},\frac{1}{3},\frac{5}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right)\right]\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\right)-$$

$$\left(\left(\left(-\frac{5}{24}+\frac{5 i}{24}\right)\text{AppellF1}\left[\frac{8}{3},\frac{1}{3},\frac{7}{3},\frac{11}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right)\right]\text{Csc}\left[\frac{1}{2}(e+f x)\right]^2-\right.\right.$$

$$\left(\frac{5}{96}+\frac{5 i}{96}\right)\text{AppellF1}\left[\frac{8}{3},\frac{4}{3},\frac{4}{3},\frac{11}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right)\right]\text{Csc}\left[\frac{1}{2}(e+f x)\right]^2+i$$

$$\Big(\Big(-\frac{5}{96}+\frac{5 i}{96}\Big)\,\text{AppellF1}\Big[\frac{8}{3},\frac{4}{3},\frac{4}{3},\frac{11}{3},\Big(\frac{1}{2}+\frac{i}{2}\Big)\Big(1+\text{Cot}\Big[\frac{1}{2}(e+f x)\Big]\Big),\Big(\frac{1}{2}-\frac{i}{2}\Big)\Big(1+\text{Cot}\Big[\frac{1}{2}(e+f x)\Big]\Big)\Big]\,\text{Csc}\Big[\frac{1}{2}(e+f x)\Big]^2-$$

$$\Big(\frac{5}{24}+\frac{5 i}{24}\Big)\,\text{AppellF1}\Big[\frac{8}{3},\frac{7}{3},\frac{1}{3},\frac{11}{3},\Big(\frac{1}{2}+\frac{i}{2}\Big)\Big(1+\text{Cot}\Big[\frac{1}{2}(e+f x)\Big]\Big),\Big(\frac{1}{2}-\frac{i}{2}\Big)\Big(1+\text{Cot}\Big[\frac{1}{2}(e+f x)\Big]\Big)\Big]\,\text{Csc}\Big[\frac{1}{2}(e+f x)\Big]^2\Big)-$$

$$\Big(\Big(\frac{5}{2}+\frac{5 i}{2}\Big)\,\text{AppellF1}\Big[\frac{2}{3},\frac{1}{3},\frac{1}{3},\frac{5}{3},\Big(\frac{1}{2}+\frac{i}{2}\Big)\Big(1+\text{Cot}\Big[\frac{1}{2}(e+f x)\Big]\Big),\Big(\frac{1}{2}-\frac{i}{2}\Big)\Big(1+\text{Cot}\Big[\frac{1}{2}(e+f x)\Big]\Big)\Big]$$

$$\text{Sec}\Big[\frac{1}{2}(e+f x)\Big]^2\,\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]\Big)\Big/\Big(1+\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]\Big)^2+\frac{1}{1+\text{Tan}\big[\frac{1}{2}(e+f x)\big]}\Big(\frac{5}{2}+\frac{5 i}{2}\Big)\,\text{AppellF1}\Big[\frac{2}{3},\frac{1}{3},\frac{1}{3},\frac{5}{3},$$

$$\Big(\frac{1}{2}+\frac{i}{2}\Big)\Big(1+\text{Cot}\Big[\frac{1}{2}(e+f x)\Big]\Big),\Big(\frac{1}{2}-\frac{i}{2}\Big)\Big(1+\text{Cot}\Big[\frac{1}{2}(e+f x)\Big]\Big)\Big]\,\text{Sec}\Big[\frac{1}{2}(e+f x)\Big]^2+\frac{1}{1+\text{Tan}\big[\frac{1}{2}(e+f x)\big]}(5+5 i)$$

$$\Big(\Big(-\frac{1}{30}+\frac{i}{30}\Big)\,\text{AppellF1}\Big[\frac{5}{3},\frac{1}{3},\frac{4}{3},\frac{8}{3},\Big(\frac{1}{2}+\frac{i}{2}\Big)\Big(1+\text{Cot}\Big[\frac{1}{2}(e+f x)\Big]\Big),\Big(\frac{1}{2}-\frac{i}{2}\Big)\Big(1+\text{Cot}\Big[\frac{1}{2}(e+f x)\Big]\Big)\Big]\,\text{Csc}\Big[\frac{1}{2}(e+f x)\Big]^2-$$

$$\Big(\frac{1}{30}+\frac{i}{30}\Big)\,\text{AppellF1}\Big[\frac{5}{3},\frac{4}{3},\frac{1}{3},\frac{8}{3},\Big(\frac{1}{2}+\frac{i}{2}\Big)\Big(1+\text{Cot}\Big[\frac{1}{2}(e+f x)\Big]\Big),\Big(\frac{1}{2}-\frac{i}{2}\Big)\Big(1+\text{Cot}\Big[\frac{1}{2}(e+f x)\Big]\Big)\Big]\,\text{Csc}\Big[\frac{1}{2}(e+f x)\Big]^2\Big)$$

$$\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]\Big)\Big/\Big(2^{2/3}\Big(\text{AppellF1}\Big[\frac{5}{3},\frac{1}{3},\frac{4}{3},\frac{8}{3},\Big(\frac{1}{2}+\frac{i}{2}\Big)\Big(1+\text{Cot}\Big[\frac{1}{2}(e+f x)\Big]\Big),\Big(\frac{1}{2}-\frac{i}{2}\Big)\Big(1+\text{Cot}\Big[\frac{1}{2}(e+f x)\Big]\Big)\Big]+$$

$$i\,\text{AppellF1}\Big[\frac{5}{3},\frac{4}{3},\frac{1}{3},\frac{8}{3},\Big(\frac{1}{2}+\frac{i}{2}\Big)\Big(1+\text{Cot}\Big[\frac{1}{2}(e+f x)\Big]\Big),\Big(\frac{1}{2}-\frac{i}{2}\Big)\Big(1+\text{Cot}\Big[\frac{1}{2}(e+f x)\Big]\Big)\Big]\Big)\Big)$$

$$\text{Hypergeometric2F1}\Big[\frac{1}{3},\frac{2}{3},\frac{5}{3},\frac{(1+i)+(1-i)\,\text{Tan}\big[\frac{1}{2}(e+f x)\big]}{2+2\,\text{Tan}\big[\frac{1}{2}(e+f x)\big]}\Big]\Big(i+\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]\Big)\Big(\frac{(1+i)\big(-i+\text{Tan}\big[\frac{1}{2}(e+f x)\big]\big)}{1+\text{Tan}\big[\frac{1}{2}(e+f x)\big]}\Big)^{1/3}$$

$$\Big(1+\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]\Big)+(5+5 i)\,\text{AppellF1}\Big[\frac{2}{3},\frac{1}{3},\frac{1}{3},\frac{5}{3},\Big(\frac{1}{2}+\frac{i}{2}\Big)\Big(1+\text{Cot}\Big[\frac{1}{2}(e+f x)\Big]\Big),\Big(\frac{1}{2}-\frac{i}{2}\Big)\Big(1+\text{Cot}\Big[\frac{1}{2}(e+f x)\Big]\Big)\Big]$$

$$\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]\Big(2^{2/3}\,\text{Hypergeometric2F1}\Big[\frac{1}{3},\frac{2}{3},\frac{5}{3},\frac{(1+i)+(1-i)\,\text{Tan}\big[\frac{1}{2}(e+f x)\big]}{2+2\,\text{Tan}\big[\frac{1}{2}(e+f x)\big]}\Big]$$

$$\Big(i+\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]\Big)\Big(\frac{(1+i)\big(-i+\text{Tan}\big[\frac{1}{2}(e+f x)\big]\big)}{1+\text{Tan}\big[\frac{1}{2}(e+f x)\big]}\Big)^{1/3}-(1-i)\Big(1+\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]\Big)\Big)\Big)\Big)\Big)\Big/$$

$$\Big(\Big(1+\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]\Big)\Big(\text{AppellF1}\Big[\frac{5}{3},\frac{1}{3},\frac{4}{3},\frac{8}{3},\Big(\frac{1}{2}+\frac{i}{2}\Big)\Big(1+\text{Cot}\Big[\frac{1}{2}(e+f x)\Big]\Big),\Big(\frac{1}{2}-\frac{i}{2}\Big)\Big(1+\text{Cot}\Big[\frac{1}{2}(e+f x)\Big]\Big)\Big]+$$

$$i\,\text{AppellF1}\Big[\frac{5}{3},\frac{4}{3},\frac{1}{3},\frac{8}{3},\Big(\frac{1}{2}+\frac{i}{2}\Big)\Big(1+\text{Cot}\Big[\frac{1}{2}(e+f x)\Big]\Big),\Big(\frac{1}{2}-\frac{i}{2}\Big)\Big(1+\text{Cot}\Big[\frac{1}{2}(e+f x)\Big]\Big)\Big]\Big)+\frac{1}{1+\text{Tan}\big[\frac{1}{2}(e+f x)\big]}$$

$$(5+5\,i)\,\text{AppellF1}\Big[\frac{2}{3},\frac{1}{3},\frac{1}{3},\frac{5}{3},\Big(\frac{1}{2}+\frac{i}{2}\Big)\Big(1+\text{Cot}\Big[\frac{1}{2}(e+f\,x)\Big]\Big),\Big(\frac{1}{2}-\frac{i}{2}\Big)\Big(1+\text{Cot}\Big[\frac{1}{2}(e+f\,x)\Big]\Big)\Big]\,\text{Tan}\Big[\frac{1}{2}(e+f\,x)\Big]\Big)^2\Big)+$$

$$\Big(\frac{1}{2^{1/3}}\Big(\text{AppellF1}\Big[\frac{5}{3},\frac{1}{3},\frac{4}{3},\frac{8}{3},\Big(\frac{1}{2}+\frac{i}{2}\Big)\Big(1+\text{Cot}\Big[\frac{1}{2}(e+f\,x)\Big]\Big),\Big(\frac{1}{2}-\frac{i}{2}\Big)\Big(1+\text{Cot}\Big[\frac{1}{2}(e+f\,x)\Big]\Big)\Big]+$$

$$i\,\text{AppellF1}\Big[\frac{5}{3},\frac{4}{3},\frac{1}{3},\frac{8}{3},\Big(\frac{1}{2}+\frac{i}{2}\Big)\Big(1+\text{Cot}\Big[\frac{1}{2}(e+f\,x)\Big]\Big),\Big(\frac{1}{2}-\frac{i}{2}\Big)\Big(1+\text{Cot}\Big[\frac{1}{2}(e+f\,x)\Big]\Big)\Big]\Big)\,\text{Hypergeometric2F1}\Big[\frac{1}{3},\frac{2}{3},$$

$$\frac{5}{3},\frac{(1+i)+(1-i)\,\text{Tan}\big[\frac{1}{2}(e+f\,x)\big]}{2+2\,\text{Tan}\big[\frac{1}{2}(e+f\,x)\big]}\Big]\,\text{Sec}\Big[\frac{1}{2}(e+f\,x)\Big]^2\Big(i+\text{Tan}\Big[\frac{1}{2}(e+f\,x)\Big]\Big)\Big(\frac{(1+i)\big(-i+\text{Tan}\big[\frac{1}{2}(e+f\,x)\big]\big)}{1+\text{Tan}\big[\frac{1}{2}(e+f\,x)\big]}\Big)^{1/3}+$$

$$\frac{1}{2^{1/3}}\Big(\text{AppellF1}\Big[\frac{5}{3},\frac{1}{3},\frac{4}{3},\frac{8}{3},\Big(\frac{1}{2}+\frac{i}{2}\Big)\Big(1+\text{Cot}\Big[\frac{1}{2}(e+f\,x)\Big]\Big),\Big(\frac{1}{2}-\frac{i}{2}\Big)\Big(1+\text{Cot}\Big[\frac{1}{2}(e+f\,x)\Big]\Big)\Big]+$$

$$i\,\text{AppellF1}\Big[\frac{5}{3},\frac{4}{3},\frac{1}{3},\frac{8}{3},\Big(\frac{1}{2}+\frac{i}{2}\Big)\Big(1+\text{Cot}\Big[\frac{1}{2}(e+f\,x)\Big]\Big),\Big(\frac{1}{2}-\frac{i}{2}\Big)\Big(1+\text{Cot}\Big[\frac{1}{2}(e+f\,x)\Big]\Big)\Big]\Big)\,\text{Hypergeometric2F1}\Big[\frac{1}{3},\frac{2}{3},$$

$$\frac{5}{3},\frac{(1+i)+(1-i)\,\text{Tan}\big[\frac{1}{2}(e+f\,x)\big]}{2+2\,\text{Tan}\big[\frac{1}{2}(e+f\,x)\big]}\Big]\,\text{Sec}\Big[\frac{1}{2}(e+f\,x)\Big]^2\Big(\frac{(1+i)\big(-i+\text{Tan}\big[\frac{1}{2}(e+f\,x)\big]\big)}{1+\text{Tan}\big[\frac{1}{2}(e+f\,x)\big]}\Big)^{1/3}\Big(1+\text{Tan}\Big[\frac{1}{2}(e+f\,x)\Big]\Big)+$$

$$2^{2/3}\Big(\Big(-\frac{5}{24}+\frac{5\,i}{24}\Big)\text{AppellF1}\Big[\frac{8}{3},\frac{1}{3},\frac{7}{3},\frac{11}{3},\Big(\frac{1}{2}+\frac{i}{2}\Big)\Big(1+\text{Cot}\Big[\frac{1}{2}(e+f\,x)\Big]\Big),\Big(\frac{1}{2}-\frac{i}{2}\Big)\Big(1+\text{Cot}\Big[\frac{1}{2}(e+f\,x)\Big]\Big)\Big]\,\text{Csc}\Big[\frac{1}{2}(e+f\,x)\Big]^2-$$

$$\Big(\frac{5}{96}+\frac{5\,i}{96}\Big)\text{AppellF1}\Big[\frac{8}{3},\frac{4}{3},\frac{4}{3},\frac{11}{3},\Big(\frac{1}{2}+\frac{i}{2}\Big)\Big(1+\text{Cot}\Big[\frac{1}{2}(e+f\,x)\Big]\Big),\Big(\frac{1}{2}-\frac{i}{2}\Big)\Big(1+\text{Cot}\Big[\frac{1}{2}(e+f\,x)\Big]\Big)\Big]\,\text{Csc}\Big[\frac{1}{2}(e+f\,x)\Big]^2+$$

$$i\Big(\Big(-\frac{5}{96}+\frac{5\,i}{96}\Big)\text{AppellF1}\Big[\frac{8}{3},\frac{4}{3},\frac{4}{3},\frac{11}{3},\Big(\frac{1}{2}+\frac{i}{2}\Big)\Big(1+\text{Cot}\Big[\frac{1}{2}(e+f\,x)\Big]\Big),\Big(\frac{1}{2}-\frac{i}{2}\Big)\Big(1+\text{Cot}\Big[\frac{1}{2}(e+f\,x)\Big]\Big)\Big]\,\text{Csc}\Big[\frac{1}{2}(e+f\,x)\Big]^2-$$

$$\Big(\frac{5}{24}+\frac{5\,i}{24}\Big)\text{AppellF1}\Big[\frac{8}{3},\frac{7}{3},\frac{1}{3},\frac{11}{3},\Big(\frac{1}{2}+\frac{i}{2}\Big)\Big(1+\text{Cot}\Big[\frac{1}{2}(e+f\,x)\Big]\Big),\Big(\frac{1}{2}-\frac{i}{2}\Big)\Big(1+\text{Cot}\Big[\frac{1}{2}(e+f\,x)\Big]\Big)\Big]\,\text{Csc}\Big[\frac{1}{2}(e+f\,x)\Big]^2\Big)\Big)$$

$$\text{Hypergeometric2F1}\Big[\frac{1}{3},\frac{2}{3},\frac{5}{3},\frac{(1+i)+(1-i)\,\text{Tan}\big[\frac{1}{2}(e+f\,x)\big]}{2+2\,\text{Tan}\big[\frac{1}{2}(e+f\,x)\big]}\Big]\Big(i+\text{Tan}\Big[\frac{1}{2}(e+f\,x)\Big]\Big)\Big(\frac{(1+i)\big(-i+\text{Tan}\big[\frac{1}{2}(e+f\,x)\big]\big)}{1+\text{Tan}\big[\frac{1}{2}(e+f\,x)\big]}\Big)^{1/3}$$

$$\Big(1+\text{Tan}\Big[\frac{1}{2}(e+f\,x)\Big]\Big)+\frac{1}{3\Big(\frac{(1+i)\left(-i+\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]\right)}{1+\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]}\Big)^{2/3}}\,2^{2/3}\Big(\text{AppellF1}\Big[\frac{5}{3},\frac{1}{3},\frac{4}{3},\frac{8}{3},\Big(\frac{1}{2}+\frac{i}{2}\Big)\Big(1+\text{Cot}\Big[\frac{1}{2}(e+f\,x)\Big]\Big),\Big(\frac{1}{2}-\frac{i}{2}\Big)$$

$$\Big(1+\text{Cot}\Big[\frac{1}{2}(e+f\,x)\Big]\Big)\Big]+i\,\text{AppellF1}\Big[\frac{5}{3},\frac{4}{3},\frac{1}{3},\frac{8}{3},\Big(\frac{1}{2}+\frac{i}{2}\Big)\Big(1+\text{Cot}\Big[\frac{1}{2}(e+f\,x)\Big]\Big),\Big(\frac{1}{2}-\frac{i}{2}\Big)\Big(1+\text{Cot}\Big[\frac{1}{2}(e+f\,x)\Big]\Big)\Big]\Big)$$

$$\text{Hypergeometric2F1}\left[\frac{1}{3},\frac{2}{3},\frac{5}{3},\frac{(1+i)+(1-i)\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{2+2\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]}\right]\left(i+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)$$

$$\left(-\frac{\left(\frac{1}{2}+\frac{i}{2}\right)\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\left(-i+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)}{\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)^2}+\frac{\left(\frac{1}{2}+\frac{i}{2}\right)\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2}{1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]}\right)+$$

$$\left(\frac{5}{2}+\frac{5 i}{2}\right)\text{AppellF1}\left[\frac{2}{3},\frac{1}{3},\frac{1}{3},\frac{5}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right)\right]$$

$$\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\left(2^{2/3}\,\text{Hypergeometric2F1}\left[\frac{1}{3},\frac{2}{3},\frac{5}{3},\frac{(1+i)+(1-i)\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{2+2\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]}\right]\right.$$

$$\left.\left(i+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\left(\frac{(1+i)\left(-i+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)}{1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]}\right)^{1/3}-(1-i)\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\right)+$$

$$(5+5 i)\left(\left(-\frac{1}{30}+\frac{i}{30}\right)\text{AppellF1}\left[\frac{5}{3},\frac{1}{3},\frac{4}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right)\right]\text{Csc}\left[\frac{1}{2}(e+f x)\right]^2-\right.$$

$$\left.\left(\frac{1}{30}+\frac{i}{30}\right)\text{AppellF1}\left[\frac{5}{3},\frac{4}{3},\frac{1}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right)\right]\text{Csc}\left[\frac{1}{2}(e+f x)\right]^2\right)$$

$$\text{Tan}\left[\frac{1}{2}(e+f x)\right]\left(2^{2/3}\,\text{Hypergeometric2F1}\left[\frac{1}{3},\frac{2}{3},\frac{5}{3},\frac{(1+i)+(1-i)\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{2+2\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]}\right]\left(i+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\right.$$

$$\left.\left(\frac{(1+i)\left(-i+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)}{1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]}\right)^{1/3}-(1-i)\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\right)+\frac{1}{3\left((1+i)+(1-i)\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)}$$

$$2\times 2^{2/3}\left(\text{AppellF1}\left[\frac{5}{3},\frac{1}{3},\frac{4}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right)\right]+\right.$$

$$\left.i\,\text{AppellF1}\left[\frac{5}{3},\frac{4}{3},\frac{1}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right)\right]\right)$$

$$\left(i+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\left(\frac{(1+i)\left(-i+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)}{1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]}\right)^{1/3}\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\left(2+2\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)$$

$$\left(-\frac{\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\left((1+i)+(1-i)\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)}{\left(2+2\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)^2}+\frac{\left(\frac{1}{2}-\frac{i}{2}\right)\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2}{2+2\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]}\right)$$

$$\Bigg(-\text{Hypergeometric2F1}\Big[\frac{1}{3},\frac{2}{3},\frac{5}{3},\frac{(1+i)+(1-i)\,\text{Tan}\big[\frac{1}{2}(e+f\,x)\big]}{2+2\,\text{Tan}\big[\frac{1}{2}(e+f\,x)\big]}\Big]+\frac{1}{\Big(1-\frac{(1+i)+(1-i)\,\text{Tan}[\frac{1}{2}(e+f\,x)]}{2+2\,\text{Tan}[\frac{1}{2}(e+f\,x)]}\Big)^{1/3}}\Bigg)+$$

$$(5+5\,i)\,\text{AppellF1}\Big[\frac{2}{3},\frac{1}{3},\frac{1}{3},\frac{5}{3},\Big(\frac{1}{2}+\frac{i}{2}\Big)\Big(1+\text{Cot}\Big[\frac{1}{2}(e+f\,x)\Big]\Big),\Big(\frac{1}{2}-\frac{i}{2}\Big)\Big(1+\text{Cot}\Big[\frac{1}{2}(e+f\,x)\Big]\Big)\Big]\,\text{Tan}\Big[\frac{1}{2}(e+f\,x)\Big]$$

$$\Bigg(\Big(-\frac{1}{2}+\frac{i}{2}\Big)\,\text{Sec}\Big[\frac{1}{2}(e+f\,x)\Big]^2+\frac{1}{2^{1/3}}\text{Hypergeometric2F1}\Big[\frac{1}{3},\frac{2}{3},\frac{5}{3},\frac{(1+i)+(1-i)\,\text{Tan}\big[\frac{1}{2}(e+f\,x)\big]}{2+2\,\text{Tan}\big[\frac{1}{2}(e+f\,x)\big]}\Big]\,\text{Sec}\Big[\frac{1}{2}(e+f\,x)\Big]^2$$

$$\Bigg(\frac{(1+i)\big(-i+\text{Tan}\big[\frac{1}{2}(e+f\,x)\big]\big)}{1+\text{Tan}\big[\frac{1}{2}(e+f\,x)\big]}\Bigg)^{1/3}+\Bigg(2^{2/3}\,\text{Hypergeometric2F1}\Big[\frac{1}{3},\frac{2}{3},\frac{5}{3},\frac{(1+i)+(1-i)\,\text{Tan}\big[\frac{1}{2}(e+f\,x)\big]}{2+2\,\text{Tan}\big[\frac{1}{2}(e+f\,x)\big]}\Big]$$

$$\Big(i+\text{Tan}\Big[\frac{1}{2}(e+f\,x)\Big]\Big)\Bigg(-\frac{\big(\frac{1}{2}+\frac{i}{2}\big)\,\text{Sec}\big[\frac{1}{2}(e+f\,x)\big]^2\big(-i+\text{Tan}\big[\frac{1}{2}(e+f\,x)\big]\big)}{\big(1+\text{Tan}\big[\frac{1}{2}(e+f\,x)\big]\big)^2}+\frac{\big(\frac{1}{2}+\frac{i}{2}\big)\,\text{Sec}\big[\frac{1}{2}(e+f\,x)\big]^2}{1+\text{Tan}\big[\frac{1}{2}(e+f\,x)\big]}\Bigg)\Bigg)\Bigg)\Big/$$

$$\Bigg(3\Bigg(\frac{(1+i)\big(-i+\text{Tan}\big[\frac{1}{2}(e+f\,x)\big]\big)}{1+\text{Tan}\big[\frac{1}{2}(e+f\,x)\big]}\Bigg)^{2/3}\Bigg)+\Bigg(2\times 2^{2/3}\Big(i+\text{Tan}\Big[\frac{1}{2}(e+f\,x)\Big]\Big)\Bigg(\frac{(1+i)\big(-i+\text{Tan}\big[\frac{1}{2}(e+f\,x)\big]\big)}{1+\text{Tan}\big[\frac{1}{2}(e+f\,x)\big]}\Bigg)^{1/3}$$

$$\Big(2+2\,\text{Tan}\Big[\frac{1}{2}(e+f\,x)\Big]\Big)\Bigg(-\frac{\text{Sec}\big[\frac{1}{2}(e+f\,x)\big]^2\big((1+i)+(1-i)\,\text{Tan}\big[\frac{1}{2}(e+f\,x)\big]\big)}{\big(2+2\,\text{Tan}\big[\frac{1}{2}(e+f\,x)\big]\big)^2}+\frac{\big(\frac{1}{2}-\frac{i}{2}\big)\,\text{Sec}\big[\frac{1}{2}(e+f\,x)\big]^2}{2+2\,\text{Tan}\big[\frac{1}{2}(e+f\,x)\big]}\Bigg)$$

$$\Bigg(-\text{Hypergeometric2F1}\Big[\frac{1}{3},\frac{2}{3},\frac{5}{3},\frac{(1+i)+(1-i)\,\text{Tan}\big[\frac{1}{2}(e+f\,x)\big]}{2+2\,\text{Tan}\big[\frac{1}{2}(e+f\,x)\big]}\Big]+$$

$$\frac{1}{\Big(1-\frac{(1+i)+(1-i)\,\text{Tan}[\frac{1}{2}(e+f\,x)]}{2+2\,\text{Tan}[\frac{1}{2}(e+f\,x)]}\Big)^{1/3}}\Bigg)\Bigg)\Big/\Bigg(3\Big((1+i)+(1-i)\,\text{Tan}\Big[\frac{1}{2}(e+f\,x)\Big]\Big)\Bigg)\Bigg)\Bigg)\Big/$$

$$\left(\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\left(\text{AppellF1}\left[\frac{5}{3},\frac{1}{3},\frac{4}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right)\right]+i\,\text{AppellF1}\left[\frac{5}{3},\frac{4}{3},\frac{1}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right)\right]+\frac{1}{1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]}(5+5i)\,\text{AppellF1}\left[\frac{2}{3},\frac{1}{3},\frac{1}{3},\frac{5}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right)\right]\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\right)\right)\right)$$

Problem 119: Result unnecessarily involves higher level functions.

$$\int \frac{\text{Tan}[e+f x]^4}{(a+a\,\text{Sin}[e+f x])^{1/3}}\,dx$$

Optimal (type 4, 551 leaves, 8 steps):

$$\frac{973\,\text{Sec}[e+f x]}{396 f (a+a\,\text{Sin}[e+f x])^{1/3}}-\frac{973\,\text{Sec}[e+f x](1-\text{Sin}[e+f x])}{495 f (a+a\,\text{Sin}[e+f x])^{1/3}}-\frac{\text{Sec}[e+f x](95 a+356 a\,\text{Sin}[e+f x])}{132 f (1-\text{Sin}[e+f x])(a+a\,\text{Sin}[e+f x])^{4/3}}+$$
$$\left(973\,\text{EllipticF}\left[\text{ArcCos}\left[\frac{2^{1/3}a^{1/3}-\left(1-\sqrt{3}\right)(a+a\,\text{Sin}[e+f x])^{1/3}}{2^{1/3}a^{1/3}-\left(1+\sqrt{3}\right)(a+a\,\text{Sin}[e+f x])^{1/3}}\right],\frac{1}{4}\left(2+\sqrt{3}\right)\right]\text{Sec}[e+f x](a+a\,\text{Sin}[e+f x])^{2/3}\left(2^{1/3}a^{1/3}-(a+a\,\text{Sin}[e+f x])^{1/3}\right)\sqrt{\frac{2^{2/3}a^{2/3}+2^{1/3}a^{1/3}(a+a\,\text{Sin}[e+f x])^{1/3}+(a+a\,\text{Sin}[e+f x])^{2/3}}{\left(2^{1/3}a^{1/3}-\left(1+\sqrt{3}\right)(a+a\,\text{Sin}[e+f x])^{1/3}\right)^2}}\right)\Bigg/$$
$$\left(495\times 2^{1/3}\,3^{1/4}a^{4/3}f\sqrt{-\frac{(a+a\,\text{Sin}[e+f x])^{1/3}\left(2^{1/3}a^{1/3}-(a+a\,\text{Sin}[e+f x])^{1/3}\right)}{\left(2^{1/3}a^{1/3}-\left(1+\sqrt{3}\right)(a+a\,\text{Sin}[e+f x])^{1/3}\right)^2}}\right)+$$
$$\frac{3a^2\,\text{Sin}[e+f x]\,\text{Tan}[e+f x]}{4 f (a-a\,\text{Sin}[e+f x])(a+a\,\text{Sin}[e+f x])^{4/3}}+\frac{3a^2\,\text{Sin}[e+f x]^2\,\text{Tan}[e+f x]}{f (a-a\,\text{Sin}[e+f x])(a+a\,\text{Sin}[e+f x])^{4/3}}$$

Result (type 5, 128 leaves):

$$\left(973\sqrt{2}\ \text{Cos}[e+f x]\ \text{Hypergeometric2F1}\left[\frac{1}{6},\frac{1}{2},\frac{7}{6},\text{Sin}\left[\frac{1}{4}(2e+\pi+2fx)\right]^2\right]+\right.$$
$$\left.\text{Sec}[e+fx]^3\sqrt{1-\text{Sin}[e+fx]}\ (-49-64\,\text{Cos}[2(e+fx)]+22\,\text{Sin}[e+fx]-128\,\text{Sin}[3(e+fx)])\right)\Big/$$
$$\left(495 f\sqrt{1-\text{Sin}[e+fx]}\ (a(1+\text{Sin}[e+fx]))^{1/3}\right)$$

- **Problem 121: Unable to integrate problem.**

$$\int \frac{\text{Cot}[e+fx]^2}{(a+a\,\text{Sin}[e+fx])^{1/3}}\,dx$$

Optimal (type 6, 80 leaves, 3 steps):

$$\frac{1}{7a^2 f}6\sqrt{2}\ \text{AppellF1}\left[\frac{7}{6},-\frac{1}{2},2,\frac{13}{6},\frac{1}{2}(1+\text{Sin}[e+fx]),1+\text{Sin}[e+fx]\right]\text{Sec}[e+fx]\sqrt{1-\text{Sin}[e+fx]}\ (a+a\,\text{Sin}[e+fx])^{5/3}$$

Result (type 8, 25 leaves):

$$\int \frac{\text{Cot}[e+fx]^2}{(a+a\,\text{Sin}[e+fx])^{1/3}}\,dx$$

- **Problem 122: Unable to integrate problem.**

$$\int \frac{\text{Cot}[e+fx]^4}{(a+a\,\text{Sin}[e+fx])^{1/3}}\,dx$$

Optimal (type 6, 80 leaves, 3 steps):

$$\frac{1}{13a^3 f}12\sqrt{2}\ \text{AppellF1}\left[\frac{13}{6},-\frac{3}{2},4,\frac{19}{6},\frac{1}{2}(1+\text{Sin}[e+fx]),1+\text{Sin}[e+fx]\right]\text{Sec}[e+fx]\sqrt{1-\text{Sin}[e+fx]}\ (a+a\,\text{Sin}[e+fx])^{8/3}$$

Result (type 8, 25 leaves):

$$\int \frac{\text{Cot}[e+fx]^4}{(a+a\,\text{Sin}[e+fx])^{1/3}}\,dx$$

- **Problem 123: Attempted integration timed out after 120 seconds.**

$$\int (a+a\,\text{Sin}[e+fx])^3\,(g\,\text{Tan}[e+fx])^p\,dx$$

Optimal (type 5, 269 leaves, 10 steps):

$$\frac{a^3\,\text{Hypergeometric2F1}\left[1,\frac{1+p}{2},\frac{3+p}{2},-\text{Tan}[e+f\,x]^2\right]\,(g\,\text{Tan}[e+f\,x])^{1+p}}{f\,g\,(1+p)}+$$

$$\frac{3\,a^3\,\left(\text{Cos}[e+f\,x]^2\right)^{\frac{1+p}{2}}\,\text{Hypergeometric2F1}\left[\frac{1+p}{2},\frac{2+p}{2},\frac{4+p}{2},\text{Sin}[e+f\,x]^2\right]\,\text{Sin}[e+f\,x]\,(g\,\text{Tan}[e+f\,x])^{1+p}}{f\,g\,(2+p)}+$$

$$\frac{a^3\,\left(\text{Cos}[e+f\,x]^2\right)^{\frac{1+p}{2}}\,\text{Hypergeometric2F1}\left[\frac{1+p}{2},\frac{4+p}{2},\frac{6+p}{2},\text{Sin}[e+f\,x]^2\right]\,\text{Sin}[e+f\,x]^3\,(g\,\text{Tan}[e+f\,x])^{1+p}}{f\,g\,(4+p)}+$$

$$\frac{3\,a^3\,\text{Hypergeometric2F1}\left[2,\frac{3+p}{2},\frac{5+p}{2},-\text{Tan}[e+f\,x]^2\right]\,(g\,\text{Tan}[e+f\,x])^{3+p}}{f\,g^3\,(3+p)}$$

Result (type 1, 1 leaves) :

???

- **Problem 124: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int (a+a\,\text{Sin}[e+f\,x])^2\,(g\,\text{Tan}[e+f\,x])^p\,dx$$

Optimal (type 5, 187 leaves, 8 steps) :

$$\frac{a^2\,\text{Hypergeometric2F1}\left[1,\frac{1+p}{2},\frac{3+p}{2},-\text{Tan}[e+f\,x]^2\right]\,(g\,\text{Tan}[e+f\,x])^{1+p}}{f\,g\,(1+p)}+$$

$$\frac{2\,a^2\,\left(\text{Cos}[e+f\,x]^2\right)^{\frac{1+p}{2}}\,\text{Hypergeometric2F1}\left[\frac{1+p}{2},\frac{2+p}{2},\frac{4+p}{2},\text{Sin}[e+f\,x]^2\right]\,\text{Sin}[e+f\,x]\,(g\,\text{Tan}[e+f\,x])^{1+p}}{f\,g\,(2+p)}+$$

$$\frac{a^2\,\text{Hypergeometric2F1}\left[2,\frac{3+p}{2},\frac{5+p}{2},-\text{Tan}[e+f\,x]^2\right]\,(g\,\text{Tan}[e+f\,x])^{3+p}}{f\,g^3\,(3+p)}$$

Result (type 6, 9890 leaves) :

$$\left(2^{1+p}\,(a+a\,\text{Sin}[e+f\,x])^2\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\,\left(-\frac{\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]}{-1+\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2}\right)^p\right.$$

$$\left(\left((3+p)\,\text{AppellF1}\left[\frac{1+p}{2},p,1,\frac{3+p}{2},\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]\,\left(1+\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right)^2\right)\right/$$

$$\left((1+p)\,\left((3+p)\,\text{AppellF1}\left[\frac{1+p}{2},p,1,\frac{3+p}{2},\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]-2\,\left(\text{AppellF1}\left[\frac{3+p}{2},p,2,\frac{5+p}{2},\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\right.\right.\right.$$

$$\left.\left.\left.-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]-p\,\text{AppellF1}\left[\frac{3+p}{2},1+p,1,\frac{5+p}{2},\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]\right)\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right)\right)+$$

$$\left(4\,(3+p)\,\text{AppellF1}\left[\frac{1+p}{2},p,2,\frac{3+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)\right)\Big/\left((1+p)\left((3+p)\,\text{AppellF1}\left[\frac{1+p}{2},p,2,\frac{3+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+2\left(-2\,\text{AppellF1}\left[\frac{3+p}{2},p,3,\frac{5+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+p\,\text{AppellF1}\left[\frac{3+p}{2},1+p,2,\frac{5+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)\right)-$$

$$\left(4\,(3+p)\,\text{AppellF1}\left[\frac{1+p}{2},p,3,\frac{3+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right)\Big/\left((1+p)\left((3+p)\,\text{AppellF1}\left[\frac{1+p}{2},p,3,\frac{3+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+2\left(-3\,\text{AppellF1}\left[\frac{3+p}{2},p,4,\frac{5+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+p\,\text{AppellF1}\left[\frac{3+p}{2},1+p,3,\frac{5+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)\right)+$$

$$\left(4\,(4+p)\,\text{AppellF1}\left[\frac{2+p}{2},p,2,\frac{4+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Tan}\left[\frac{1}{2}(e+f x)\right]\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)\right)\Big/\left((2+p)\left((4+p)\,\text{AppellF1}\left[\frac{2+p}{2},p,2,\frac{4+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+2\left(-2\,\text{AppellF1}\left[\frac{4+p}{2},p,3,\frac{6+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+p\,\text{AppellF1}\left[\frac{4+p}{2},1+p,2,\frac{6+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)\right)\Bigg)$$

$$\text{Tan}[e+f x]^{-p}\,(g\,\text{Tan}[e+f x])^p\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]^4\text{Tan}[e+f x]^p+4\,\text{Cos}\left[\frac{1}{2}(e+f x)\right]^3\text{Sin}\left[\frac{1}{2}(e+f x)\right]\text{Tan}[e+f x]^p+6\,\text{Cos}\left[\frac{1}{2}(e+f x)\right]^2\text{Sin}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}[e+f x]^p+4\,\text{Cos}\left[\frac{1}{2}(e+f x)\right]\text{Sin}\left[\frac{1}{2}(e+f x)\right]^3\text{Tan}[e+f x]^p+\text{Sin}\left[\frac{1}{2}(e+f x)\right]^4\text{Tan}[e+f x]^p\right)\Bigg)\Bigg/$$

$$\Bigg(f\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^4\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)^3$$

$$\left(-\frac{1}{\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)^4}\,3\times 2^{1+p}\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\left(-\frac{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}\right)^p\right.$$

$$\left(\left((3+p)\,\text{AppellF1}\left[\frac{1+p}{2},p,1,\frac{3+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)^2\right)\Big/\left((1+p)\right.\right.$$

$$\left((3+p)\,\text{AppellF1}\left[\frac{1+p}{2},p,1,\frac{3+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]-2\left(\text{AppellF1}\left[\frac{3+p}{2},p,2,\frac{5+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\right.\right.$$

$$\left.\left.\left.-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]-p\,\text{AppellF1}\left[\frac{3+p}{2},1+p,1,\frac{5+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)\right)+$$

$$\left(4\,(3+p)\,\text{AppellF1}\left[\frac{1+p}{2},p,2,\frac{3+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)\right)\Big/\left((1+p)\left((3+p)\right.\right.$$

$$\text{AppellF1}\left[\frac{1+p}{2},p,2,\frac{3+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+2\left(-2\,\text{AppellF1}\left[\frac{3+p}{2},p,3,\frac{5+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\right.\right.$$

$$\left.\left.\left.-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+p\,\text{AppellF1}\left[\frac{3+p}{2},1+p,2,\frac{5+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)\right)-$$

$$\left(4\,(3+p)\,\text{AppellF1}\left[\frac{1+p}{2},p,3,\frac{3+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right)\Big/\left((1+p)\left((3+p)\,\text{AppellF1}\left[\frac{1+p}{2},p,3,\right.\right.\right.$$

$$\left.\frac{3+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+2\left(-3\,\text{AppellF1}\left[\frac{3+p}{2},p,4,\frac{5+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+\right.$$

$$\left.\left.\left.p\,\text{AppellF1}\left[\frac{3+p}{2},1+p,3,\frac{5+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)\right)+$$

$$\left(4\,(4+p)\,\text{AppellF1}\left[\frac{2+p}{2},p,2,\frac{4+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Tan}\left[\frac{1}{2}(e+f x)\right]\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)\right)\Big/$$

$$\left((2+p)\left((4+p)\,\text{AppellF1}\left[\frac{2+p}{2},p,2,\frac{4+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+2\left(-2\,\text{AppellF1}\left[\frac{4+p}{2},p,3,\frac{6+p}{2},\right.\right.\right.$$

$$\left.\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+p\,\text{AppellF1}\left[\frac{4+p}{2},1+p,2,\frac{6+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right)$$

$$\left.\left.\left.\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)\right)\right)+\frac{1}{\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)^3}\,2^p\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\left(-\frac{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}\right)^p$$

$$\left(\left((3+p)\,\text{AppellF1}\left[\frac{1+p}{2},p,1,\frac{3+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)^2\right)\Big/\left((1+p)\right.\right.$$

$$\left((3+p)\,\text{AppellF1}\left[\frac{1+p}{2},p,1,\frac{3+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]-2\left(\text{AppellF1}\left[\frac{3+p}{2},p,2,\frac{5+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\right.\right.$$

$$\left.\left.\left.-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]-p\,\text{AppellF1}\left[\frac{3+p}{2},1+p,1,\frac{5+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)\right)+$$

$$\left(4\,(3+p)\,\text{AppellF1}\left[\frac{1+p}{2},p,2,\frac{3+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)\right)\Big/$$

$$\Big((1+p)\ \Big((3+p)\ \text{AppellF1}\Big[\frac{1+p}{2},\ p,\ 2,\ \frac{3+p}{2},\ \text{Tan}\Big[\frac{1}{2}\ (e+f\,x)\Big]^2,\ -\text{Tan}\Big[\frac{1}{2}\ (e+f\,x)\Big]^2\Big]+$$

$$2\ \Big(-2\ \text{AppellF1}\Big[\frac{3+p}{2},\ p,\ 3,\ \frac{5+p}{2},\ \text{Tan}\Big[\frac{1}{2}\ (e+f\,x)\Big]^2,\ -\text{Tan}\Big[\frac{1}{2}\ (e+f\,x)\Big]^2\Big]+$$

$$p\ \text{AppellF1}\Big[\frac{3+p}{2},\ 1+p,\ 2,\ \frac{5+p}{2},\ \text{Tan}\Big[\frac{1}{2}\ (e+f\,x)\Big]^2,\ -\text{Tan}\Big[\frac{1}{2}\ (e+f\,x)\Big]^2\Big]\Big)\ \text{Tan}\Big[\frac{1}{2}\ (e+f\,x)\Big]^2\Big)\Big)-$$

$$\Big(4\ (3+p)\ \text{AppellF1}\Big[\frac{1+p}{2},\ p,\ 3,\ \frac{3+p}{2},\ \text{Tan}\Big[\frac{1}{2}\ (e+f\,x)\Big]^2,\ -\text{Tan}\Big[\frac{1}{2}\ (e+f\,x)\Big]^2\Big]\Big)\Big/\ \Big((1+p)\ \Big((3+p)\ \text{AppellF1}\Big[\frac{1+p}{2},\ p,$$

$$3,\ \frac{3+p}{2},\ \text{Tan}\Big[\frac{1}{2}\ (e+f\,x)\Big]^2,\ -\text{Tan}\Big[\frac{1}{2}\ (e+f\,x)\Big]^2\Big]+2\ \Big(-3\ \text{AppellF1}\Big[\frac{3+p}{2},\ p,\ 4,\ \frac{5+p}{2},\ \text{Tan}\Big[\frac{1}{2}\ (e+f\,x)\Big]^2,\ -\text{Tan}\Big[\frac{1}{2}\ (e+f\,x)\Big]^2\Big]+$$

$$p\ \text{AppellF1}\Big[\frac{3+p}{2},\ 1+p,\ 3,\ \frac{5+p}{2},\ \text{Tan}\Big[\frac{1}{2}\ (e+f\,x)\Big]^2,\ -\text{Tan}\Big[\frac{1}{2}\ (e+f\,x)\Big]^2\Big]\Big)\ \text{Tan}\Big[\frac{1}{2}\ (e+f\,x)\Big]^2\Big)\Big)+$$

$$\Big(4\ (4+p)\ \text{AppellF1}\Big[\frac{2+p}{2},\ p,\ 2,\ \frac{4+p}{2},\ \text{Tan}\Big[\frac{1}{2}\ (e+f\,x)\Big]^2,\ -\text{Tan}\Big[\frac{1}{2}\ (e+f\,x)\Big]^2\Big]\ \text{Tan}\Big[\frac{1}{2}\ (e+f\,x)\Big]\ \Big(1+\text{Tan}\Big[\frac{1}{2}\ (e+f\,x)\Big]^2\Big)\Big)\Big/$$

$$\Big((2+p)\ \Big((4+p)\ \text{AppellF1}\Big[\frac{2+p}{2},\ p,\ 2,\ \frac{4+p}{2},\ \text{Tan}\Big[\frac{1}{2}\ (e+f\,x)\Big]^2,\ -\text{Tan}\Big[\frac{1}{2}\ (e+f\,x)\Big]^2\Big]+$$

$$2\ \Big(-2\ \text{AppellF1}\Big[\frac{4+p}{2},\ p,\ 3,\ \frac{6+p}{2},\ \text{Tan}\Big[\frac{1}{2}\ (e+f\,x)\Big]^2,\ -\text{Tan}\Big[\frac{1}{2}\ (e+f\,x)\Big]^2\Big]+$$

$$p\ \text{AppellF1}\Big[\frac{4+p}{2},\ 1+p,\ 2,\ \frac{6+p}{2},\ \text{Tan}\Big[\frac{1}{2}\ (e+f\,x)\Big]^2,\ -\text{Tan}\Big[\frac{1}{2}\ (e+f\,x)\Big]^2\Big]\Big)\ \text{Tan}\Big[\frac{1}{2}\ (e+f\,x)\Big]^2\Big)\Big)\Big)+\frac{1}{\Big(1+\text{Tan}\big[\frac{1}{2}\ (e+f\,x)\big]^2\Big)^3}$$

$$2^{1+p}\ p\ \text{Tan}\Big[\frac{1}{2}\ (e+f\,x)\Big]\ \left(-\frac{\text{Tan}\big[\frac{1}{2}\ (e+f\,x)\big]}{-1+\text{Tan}\big[\frac{1}{2}\ (e+f\,x)\big]^2}\right)^{-1+p}\ \left(\frac{\text{Sec}\big[\frac{1}{2}\ (e+f\,x)\big]^2\ \text{Tan}\big[\frac{1}{2}\ (e+f\,x)\big]^2}{\Big(-1+\text{Tan}\big[\frac{1}{2}\ (e+f\,x)\big]^2\Big)^2}-\frac{\text{Sec}\big[\frac{1}{2}\ (e+f\,x)\big]^2}{2\ \Big(-1+\text{Tan}\big[\frac{1}{2}\ (e+f\,x)\big]^2\Big)}\right)$$

$$\Big(\Big((3+p)\ \text{AppellF1}\Big[\frac{1+p}{2},\ p,\ 1,\ \frac{3+p}{2},\ \text{Tan}\Big[\frac{1}{2}\ (e+f\,x)\Big]^2,\ -\text{Tan}\Big[\frac{1}{2}\ (e+f\,x)\Big]^2\Big]\ \Big(1+\text{Tan}\Big[\frac{1}{2}\ (e+f\,x)\Big]^2\Big)^2\Big)\Big/\ \Big((1+p)$$

$$\Big((3+p)\ \text{AppellF1}\Big[\frac{1+p}{2},\ p,\ 1,\ \frac{3+p}{2},\ \text{Tan}\Big[\frac{1}{2}\ (e+f\,x)\Big]^2,\ -\text{Tan}\Big[\frac{1}{2}\ (e+f\,x)\Big]^2\Big]-2\ \Big(\text{AppellF1}\Big[\frac{3+p}{2},\ p,\ 2,\ \frac{5+p}{2},\ \text{Tan}\Big[\frac{1}{2}\ (e+f\,x)\Big]^2,$$

$$-\text{Tan}\Big[\frac{1}{2}\ (e+f\,x)\Big]^2\Big]-p\ \text{AppellF1}\Big[\frac{3+p}{2},\ 1+p,\ 1,\ \frac{5+p}{2},\ \text{Tan}\Big[\frac{1}{2}\ (e+f\,x)\Big]^2,\ -\text{Tan}\Big[\frac{1}{2}\ (e+f\,x)\Big]^2\Big]\Big)\ \text{Tan}\Big[\frac{1}{2}\ (e+f\,x)\Big]^2\Big)\Big)+$$

$$\Big(4\ (3+p)\ \text{AppellF1}\Big[\frac{1+p}{2},\ p,\ 2,\ \frac{3+p}{2},\ \text{Tan}\Big[\frac{1}{2}\ (e+f\,x)\Big]^2,\ -\text{Tan}\Big[\frac{1}{2}\ (e+f\,x)\Big]^2\Big]\ \Big(1+\text{Tan}\Big[\frac{1}{2}\ (e+f\,x)\Big]^2\Big)\Big)\Big/$$

$$\Big((1+p)\ \Big((3+p)\ \text{AppellF1}\Big[\frac{1+p}{2},\ p,\ 2,\ \frac{3+p}{2},\ \text{Tan}\Big[\frac{1}{2}\ (e+f\,x)\Big]^2,\ -\text{Tan}\Big[\frac{1}{2}\ (e+f\,x)\Big]^2\Big]+$$

$$2\ \Big(-2\ \text{AppellF1}\Big[\frac{3+p}{2},\ p,\ 3,\ \frac{5+p}{2},\ \text{Tan}\Big[\frac{1}{2}\ (e+f\,x)\Big]^2,\ -\text{Tan}\Big[\frac{1}{2}\ (e+f\,x)\Big]^2\Big]+$$

$$
\begin{aligned}
&p\,\text{AppellF1}\left[\frac{3+p}{2},1+p,2,\frac{5+p}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\Bigg)\Bigg)-\\
&\left(4(3+p)\,\text{AppellF1}\left[\frac{1+p}{2},p,3,\frac{3+p}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\right)\Big/\Bigg((1+p)\Bigg((3+p)\,\text{AppellF1}\left[\frac{1+p}{2},p,\right.\\
&\quad 3,\frac{3+p}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\Big]+2\Bigg(-3\,\text{AppellF1}\left[\frac{3+p}{2},p,4,\frac{5+p}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]+\\
&\quad p\,\text{AppellF1}\left[\frac{3+p}{2},1+p,3,\frac{5+p}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\Bigg)\Bigg)\Bigg)+\\
&\left(4(4+p)\,\text{AppellF1}\left[\frac{2+p}{2},p,2,\frac{4+p}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\text{Tan}\left[\frac{1}{2}(e+fx)\right]\left(1+\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right)\right)\Big/\\
&\Bigg((2+p)\Bigg((4+p)\,\text{AppellF1}\left[\frac{2+p}{2},p,2,\frac{4+p}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]+\\
&\quad 2\Bigg(-2\,\text{AppellF1}\left[\frac{4+p}{2},p,3,\frac{6+p}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]+\\
&\quad p\,\text{AppellF1}\left[\frac{4+p}{2},1+p,2,\frac{6+p}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\Bigg)\Bigg)\Bigg)+\\
&\frac{1}{\left(1+\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right)^3}2^{1+p}\,\text{Tan}\left[\frac{1}{2}(e+fx)\right]\left(-\frac{\text{Tan}\left[\frac{1}{2}(e+fx)\right]}{-1+\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2}\right)^p\Bigg(\Bigg(2(3+p)\,\text{AppellF1}\left[\frac{1+p}{2},p,1,\frac{3+p}{2},\right.\\
&\quad \text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\Big]\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2\text{Tan}\left[\frac{1}{2}(e+fx)\right]\left(1+\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right)\Bigg)\Big/\Bigg((1+p)\\
&\quad\Bigg((3+p)\,\text{AppellF1}\left[\frac{1+p}{2},p,1,\frac{3+p}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]-2\Bigg(\text{AppellF1}\left[\frac{3+p}{2},p,2,\frac{5+p}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,\right.\\
&\quad -\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\Big]-p\,\text{AppellF1}\left[\frac{3+p}{2},1+p,1,\frac{5+p}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\Bigg)\Bigg)\Bigg)+\\
&\Bigg((3+p)\Bigg(-1/(3+p)(1+p)\,\text{AppellF1}\left[1+\frac{1+p}{2},p,2,1+\frac{3+p}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2\\
&\quad \text{Tan}\left[\frac{1}{2}(e+fx)\right]+1/(3+p)p(1+p)\,\text{AppellF1}\left[1+\frac{1+p}{2},1+p,1,1+\frac{3+p}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,\right.\\
&\quad -\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\Big]\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2\text{Tan}\left[\frac{1}{2}(e+fx)\right]\Bigg)\left(1+\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right)^2\Bigg)\Big/\Bigg((1+p)\\
&\quad\Bigg((3+p)\,\text{AppellF1}\left[\frac{1+p}{2},p,1,\frac{3+p}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]-2\Bigg(\text{AppellF1}\left[\frac{3+p}{2},p,2,\frac{5+p}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,\right.\\
&\quad -\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\Big]-p\,\text{AppellF1}\left[\frac{3+p}{2},1+p,1,\frac{5+p}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\Bigg)\Bigg)\Bigg)+
\end{aligned}
$$

$$\left(4\,(3+p)\,\text{AppellF1}\left[\frac{1+p}{2},\,p,\,2,\,\frac{3+p}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]\,\text{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]^2\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right)\Big/$$

$$\left((1+p)\,\left((3+p)\,\text{AppellF1}\left[\frac{1+p}{2},\,p,\,2,\,\frac{3+p}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]+\right.\right.$$

$$2\,\left(-2\,\text{AppellF1}\left[\frac{3+p}{2},\,p,\,3,\,\frac{5+p}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]+\right.$$

$$\left.\left.\left.p\,\text{AppellF1}\left[\frac{3+p}{2},\,1+p,\,2,\,\frac{5+p}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]\right)\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right)\right)+$$

$$\left(4\,(3+p)\,\left(-1/(3+p)\,2\,(1+p)\,\text{AppellF1}\left[1+\frac{1+p}{2},\,p,\,3,\,1+\frac{3+p}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]\right.\right.$$

$$\text{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]^2\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]+1/(3+p)\,p\,(1+p)\,\text{AppellF1}\left[1+\frac{1+p}{2},\,1+p,\,2,\,1+\frac{3+p}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\right.$$

$$\left.\left.\left.-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]\,\text{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]^2\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right)\,\left(1+\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right)\right)\Big/\,\left((1+p)\,\left((3+p)\,\text{AppellF1}\left[\frac{1+p}{2},\,p,\,2,\right.\right.\right.$$

$$\left.\frac{3+p}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]+2\,\left(-2\,\text{AppellF1}\left[\frac{3+p}{2},\,p,\,3,\,\frac{5+p}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]+\right.$$

$$\left.\left.\left.p\,\text{AppellF1}\left[\frac{3+p}{2},\,1+p,\,2,\,\frac{5+p}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]\right)\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right)\right)-$$

$$\left(4\,(3+p)\,\left(-1/(3+p)\,3\,(1+p)\,\text{AppellF1}\left[1+\frac{1+p}{2},\,p,\,4,\,1+\frac{3+p}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]\right.\right.$$

$$\text{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]^2\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]+1/(3+p)\,p\,(1+p)\,\text{AppellF1}\left[1+\frac{1+p}{2},\,1+p,\,3,\,1+\frac{3+p}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\right.$$

$$\left.\left.\left.-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]\,\text{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]^2\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right)\right)\Big/\,\left((1+p)\,\left((3+p)\,\text{AppellF1}\left[\frac{1+p}{2},\,p,\,3,\,\frac{3+p}{2},\right.\right.\right.$$

$$\left.\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]+2\,\left(-3\,\text{AppellF1}\left[\frac{3+p}{2},\,p,\,4,\,\frac{5+p}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]+\right.$$

$$\left.\left.\left.p\,\text{AppellF1}\left[\frac{3+p}{2},\,1+p,\,3,\,\frac{5+p}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]\right)\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right)\right)+$$

$$\left(4\,(4+p)\,\text{AppellF1}\left[\frac{2+p}{2},\,p,\,2,\,\frac{4+p}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]\,\text{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]^2\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right)\Big/$$

$$\left((2+p)\,\left((4+p)\,\text{AppellF1}\left[\frac{2+p}{2},\,p,\,2,\,\frac{4+p}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]+\right.\right.$$

$$2\,\left(-2\,\text{AppellF1}\left[\frac{4+p}{2},\,p,\,3,\,\frac{6+p}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]+\right.$$

$$\left.\left.\left.p\,\text{AppellF1}\left[\frac{4+p}{2},\,1+p,\,2,\,\frac{6+p}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]\right)\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right)\right)+$$

$$\left(2\,(4+p)\,\text{AppellF1}\left[\frac{2+p}{2},\,p,\,2,\,\frac{4+p}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]\text{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]^2\left(1+\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right)\right)\Big/$$

$$\left((2+p)\left((4+p)\,\text{AppellF1}\left[\frac{2+p}{2},\,p,\,2,\,\frac{4+p}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]+\right.\right.$$

$$2\left(-2\,\text{AppellF1}\left[\frac{4+p}{2},\,p,\,3,\,\frac{6+p}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]+\right.$$

$$\left.\left.\left.p\,\text{AppellF1}\left[\frac{4+p}{2},\,1+p,\,2,\,\frac{6+p}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right)\right)+$$

$$\left(4\,(4+p)\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\left(-1/(4+p)\,2\,(2+p)\,\text{AppellF1}\left[1+\frac{2+p}{2},\,p,\,3,\,1+\frac{4+p}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]\right.\right.$$

$$\text{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]^2\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]+1/(4+p)\,p\,(2+p)\,\text{AppellF1}\left[1+\frac{2+p}{2},\,1+p,\,2,\,1+\frac{4+p}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\right.$$

$$\left.\left.\left.-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]\text{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]^2\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right)\left(1+\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right)\right)\Big/\left((2+p)\left((4+p)\,\text{AppellF1}\left[\frac{2+p}{2},\,p,\,2,\right.\right.\right.$$

$$\left.\frac{4+p}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]+2\left(-2\,\text{AppellF1}\left[\frac{4+p}{2},\,p,\,3,\,\frac{6+p}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]+\right.$$

$$\left.\left.\left.p\,\text{AppellF1}\left[\frac{4+p}{2},\,1+p,\,2,\,\frac{6+p}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right)\right)-$$

$$\left((3+p)\,\text{AppellF1}\left[\frac{1+p}{2},\,p,\,1,\,\frac{3+p}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right)^2\right.$$

$$\left(-2\left(\text{AppellF1}\left[\frac{3+p}{2},\,p,\,2,\,\frac{5+p}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]-p\,\text{AppellF1}\left[\frac{3+p}{2},\,1+p,\,1,\right.\right.\right.$$

$$\left.\left.\frac{5+p}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]\right)\text{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]^2\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]+(3+p)\left(-\frac{1}{3+p}\right.$$

$$(1+p)\,\text{AppellF1}\left[1+\frac{1+p}{2},\,p,\,2,\,1+\frac{3+p}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]\text{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]^2\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]+\frac{1}{3+p}$$

$$\left.p\,(1+p)\,\text{AppellF1}\left[1+\frac{1+p}{2},\,1+p,\,1,\,1+\frac{3+p}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]\text{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]^2\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right)-$$

$$2\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\left(-\frac{1}{5+p}2\,(3+p)\,\text{AppellF1}\left[1+\frac{3+p}{2},\,p,\,3,\,1+\frac{5+p}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]\right.$$

$$\text{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]^2\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]+\frac{1}{5+p}p\,(3+p)\,\text{AppellF1}\left[1+\frac{3+p}{2},\,1+p,\,2,\,1+\frac{5+p}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\right.$$

$$\left.-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]\text{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]^2\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]-p\left(-\frac{1}{5+p}(3+p)\,\text{AppellF1}\left[1+\frac{3+p}{2},\,1+p,\,2,\,1+\frac{5+p}{2},\right.\right.$$

$$\left.\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]\text{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]^2\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]+\frac{1}{5+p}(1+p)\,(3+p)\,\text{AppellF1}\left[1+\frac{3+p}{2},\right.$$

$$2+p,\ 1,\ 1+\frac{5+p}{2},\ \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\ -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\ \text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\ \text{Tan}\left[\frac{1}{2}(e+f x)\right]\Big]\Big)\Big)\Big)\Big)\Big/\ \Big((1+p)$$

$$\Big((3+p)\ \text{AppellF1}\left[\frac{1+p}{2},\ p,\ 1,\ \frac{3+p}{2},\ \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\ -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]-2\ \Big(\text{AppellF1}\left[\frac{3+p}{2},\ p,\ 2,\ \frac{5+p}{2},\ \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\right.$$

$$\left.-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]-p\ \text{AppellF1}\left[\frac{3+p}{2},\ 1+p,\ 1,\ \frac{5+p}{2},\ \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\ -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\Big)\ \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big)^2\Big)-$$

$$\Big(4\ (3+p)\ \text{AppellF1}\left[\frac{1+p}{2},\ p,\ 2,\ \frac{3+p}{2},\ \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\ -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\ \Big(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big)$$

$$\Big(2\ \Big(-2\ \text{AppellF1}\left[\frac{3+p}{2},\ p,\ 3,\ \frac{5+p}{2},\ \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\ -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+p\ \text{AppellF1}\left[\frac{3+p}{2},\ 1+p,\ 2,\ \frac{5+p}{2},\right.$$

$$\left.\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\ -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\Big)\ \text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\ \text{Tan}\left[\frac{1}{2}(e+f x)\right]+(3+p)\ \Big(-\frac{1}{3+p}2\ (1+p)$$

$$\text{AppellF1}\left[1+\frac{1+p}{2},\ p,\ 3,\ 1+\frac{3+p}{2},\ \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\ -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\ \text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\ \text{Tan}\left[\frac{1}{2}(e+f x)\right]+\frac{1}{3+p}$$

$$p\ (1+p)\ \text{AppellF1}\left[1+\frac{1+p}{2},\ 1+p,\ 2,\ 1+\frac{3+p}{2},\ \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\ -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\ \text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\ \text{Tan}\left[\frac{1}{2}(e+f x)\right]\Big)+$$

$$2\ \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\ \Big(-2\ \Big(-\frac{1}{5+p}3\ (3+p)\ \text{AppellF1}\left[1+\frac{3+p}{2},\ p,\ 4,\ 1+\frac{5+p}{2},\ \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\ -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\ \text{Tan}\left[\frac{1}{2}(e+f x)\right]+\frac{1}{5+p}p\ (3+p)\ \text{AppellF1}\left[1+\frac{3+p}{2},\ 1+p,\ 3,\ 1+\frac{5+p}{2},\ \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\right.$$

$$\left.-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\ \text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\ \text{Tan}\left[\frac{1}{2}(e+f x)\right]\Big)+p\ \Big(-\frac{1}{5+p}2\ (3+p)\ \text{AppellF1}\left[1+\frac{3+p}{2},\ 1+p,\ 3,\ 1+\frac{5+p}{2},\right.$$

$$\left.\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\ -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\ \text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\ \text{Tan}\left[\frac{1}{2}(e+f x)\right]+\frac{1}{5+p}(1+p)\ (3+p)\ \text{AppellF1}\left[1+\frac{3+p}{2},\right.$$

$$\left.2+p,\ 2,\ 1+\frac{5+p}{2},\ \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\ -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\ \text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\ \text{Tan}\left[\frac{1}{2}(e+f x)\right]\Big)\Big)\Big)\Big)\Big/$$

$$\Big((1+p)\ \Big((3+p)\ \text{AppellF1}\left[\frac{1+p}{2},\ p,\ 2,\ \frac{3+p}{2},\ \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\ -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+2\ \Big(-2\ \text{AppellF1}\left[\frac{3+p}{2},\ p,\ 3,\ \frac{5+p}{2},\right.$$

$$\left.\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\ -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+p\ \text{AppellF1}\left[\frac{3+p}{2},\ 1+p,\ 2,\ \frac{5+p}{2},\ \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\ -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\Big)$$

$$\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big)^2\Big)+\Big(4\ (3+p)\ \text{AppellF1}\left[\frac{1+p}{2},\ p,\ 3,\ \frac{3+p}{2},\ \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\ -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]$$

$$\Big(2\ \Big(-3\ \text{AppellF1}\left[\frac{3+p}{2},\ p,\ 4,\ \frac{5+p}{2},\ \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\ -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+p\ \text{AppellF1}\left[\frac{3+p}{2},\ 1+p,\ 3,\ \frac{5+p}{2},\right.$$

$$\text{Tan}[\tfrac{1}{2}(e+f x)]^2,\ -\text{Tan}[\tfrac{1}{2}(e+f x)]^2]) \ \text{Sec}[\tfrac{1}{2}(e+f x)]^2\ \text{Tan}[\tfrac{1}{2}(e+f x)] + (3+p)\ (-\frac{1}{3+p} 3\ (1+p)$$

$$\text{AppellF1}[1+\frac{1+p}{2}, p, 4, 1+\frac{3+p}{2}, \text{Tan}[\tfrac{1}{2}(e+f x)]^2, -\text{Tan}[\tfrac{1}{2}(e+f x)]^2]\ \text{Sec}[\tfrac{1}{2}(e+f x)]^2\ \text{Tan}[\tfrac{1}{2}(e+f x)] + \frac{1}{3+p}$$

$$p\ (1+p)\ \text{AppellF1}[1+\frac{1+p}{2}, 1+p, 3, 1+\frac{3+p}{2}, \text{Tan}[\tfrac{1}{2}(e+f x)]^2, -\text{Tan}[\tfrac{1}{2}(e+f x)]^2]\ \text{Sec}[\tfrac{1}{2}(e+f x)]^2\ \text{Tan}[\tfrac{1}{2}(e+f x)]]) +$$

$$2\,\text{Tan}[\tfrac{1}{2}(e+f x)]^2\ (-3\ (-\frac{1}{5+p} 4\ (3+p)\ \text{AppellF1}[1+\frac{3+p}{2}, p, 5, 1+\frac{5+p}{2}, \text{Tan}[\tfrac{1}{2}(e+f x)]^2, -\text{Tan}[\tfrac{1}{2}(e+f x)]^2]$$

$$\text{Sec}[\tfrac{1}{2}(e+f x)]^2\ \text{Tan}[\tfrac{1}{2}(e+f x)] + \frac{1}{5+p} p\ (3+p)\ \text{AppellF1}[1+\frac{3+p}{2}, 1+p, 4, 1+\frac{5+p}{2}, \text{Tan}[\tfrac{1}{2}(e+f x)]^2,$$

$$-\text{Tan}[\tfrac{1}{2}(e+f x)]^2]\ \text{Sec}[\tfrac{1}{2}(e+f x)]^2\ \text{Tan}[\tfrac{1}{2}(e+f x)]) + p\ (-\frac{1}{5+p} 3\ (3+p)\ \text{AppellF1}[1+\frac{3+p}{2}, 1+p, 4, 1+\frac{5+p}{2},$$

$$\text{Tan}[\tfrac{1}{2}(e+f x)]^2, -\text{Tan}[\tfrac{1}{2}(e+f x)]^2]\ \text{Sec}[\tfrac{1}{2}(e+f x)]^2\ \text{Tan}[\tfrac{1}{2}(e+f x)] + \frac{1}{5+p}(1+p)\ (3+p)\ \text{AppellF1}[1+\frac{3+p}{2},$$

$$2+p, 3, 1+\frac{5+p}{2}, \text{Tan}[\tfrac{1}{2}(e+f x)]^2, -\text{Tan}[\tfrac{1}{2}(e+f x)]^2]\ \text{Sec}[\tfrac{1}{2}(e+f x)]^2\ \text{Tan}[\tfrac{1}{2}(e+f x)]))))\Big/$$

$$((1+p)\ ((3+p)\ \text{AppellF1}[\frac{1+p}{2}, p, 3, \frac{3+p}{2}, \text{Tan}[\tfrac{1}{2}(e+f x)]^2, -\text{Tan}[\tfrac{1}{2}(e+f x)]^2] + 2\ (-3\,\text{AppellF1}[\frac{3+p}{2},$$

$$p, 4, \frac{5+p}{2}, \text{Tan}[\tfrac{1}{2}(e+f x)]^2, -\text{Tan}[\tfrac{1}{2}(e+f x)]^2] +$$

$$p\,\text{AppellF1}[\frac{3+p}{2}, 1+p, 3, \frac{5+p}{2}, \text{Tan}[\tfrac{1}{2}(e+f x)]^2, -\text{Tan}[\tfrac{1}{2}(e+f x)]^2])\ \text{Tan}[\tfrac{1}{2}(e+f x)]^2)^2) -$$

$$(4\ (4+p)\ \text{AppellF1}[\frac{2+p}{2}, p, 2, \frac{4+p}{2}, \text{Tan}[\tfrac{1}{2}(e+f x)]^2, -\text{Tan}[\tfrac{1}{2}(e+f x)]^2]\ \text{Tan}[\tfrac{1}{2}(e+f x)]\ (1+\text{Tan}[\tfrac{1}{2}(e+f x)]^2)$$

$$(2\ (-2\,\text{AppellF1}[\frac{4+p}{2}, p, 3, \frac{6+p}{2}, \text{Tan}[\tfrac{1}{2}(e+f x)]^2, -\text{Tan}[\tfrac{1}{2}(e+f x)]^2] + p\,\text{AppellF1}[\frac{4+p}{2}, 1+p, 2, \frac{6+p}{2},$$

$$\text{Tan}[\tfrac{1}{2}(e+f x)]^2, -\text{Tan}[\tfrac{1}{2}(e+f x)]^2])\ \text{Sec}[\tfrac{1}{2}(e+f x)]^2\ \text{Tan}[\tfrac{1}{2}(e+f x)] + (4+p)\ (-\frac{1}{4+p} 2\ (2+p)$$

$$\text{AppellF1}[1+\frac{2+p}{2}, p, 3, 1+\frac{4+p}{2}, \text{Tan}[\tfrac{1}{2}(e+f x)]^2, -\text{Tan}[\tfrac{1}{2}(e+f x)]^2]\ \text{Sec}[\tfrac{1}{2}(e+f x)]^2\ \text{Tan}[\tfrac{1}{2}(e+f x)] + \frac{1}{4+p}$$

$$p\ (2+p)\ \text{AppellF1}[1+\frac{2+p}{2}, 1+p, 2, 1+\frac{4+p}{2}, \text{Tan}[\tfrac{1}{2}(e+f x)]^2, -\text{Tan}[\tfrac{1}{2}(e+f x)]^2]\ \text{Sec}[\tfrac{1}{2}(e+f x)]^2\ \text{Tan}[\tfrac{1}{2}(e+f x)]]) +$$

$$2\,\text{Tan}[\tfrac{1}{2}(e+f x)]^2\ (-2\ (-\frac{1}{6+p} 3\ (4+p)\ \text{AppellF1}[1+\frac{4+p}{2}, p, 4, 1+\frac{6+p}{2}, \text{Tan}[\tfrac{1}{2}(e+f x)]^2, -\text{Tan}[\tfrac{1}{2}(e+f x)]^2]$$

$$\text{Sec}[\tfrac{1}{2}(e+f x)]^2\ \text{Tan}[\tfrac{1}{2}(e+f x)] + \frac{1}{6+p} p\ (4+p)\ \text{AppellF1}[1+\frac{4+p}{2}, 1+p, 3, 1+\frac{6+p}{2}, \text{Tan}[\tfrac{1}{2}(e+f x)]^2,$$

$$-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big]\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]\Bigg)+p\left(-\frac{1}{6+p}2\,(4+p)\,\text{AppellF1}\left[1+\frac{4+p}{2},\,1+p,\,3,\,1+\frac{6+p}{2},\right.\right.$$

$$\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big]\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]+\frac{1}{6+p}(1+p)\,(4+p)\,\text{AppellF1}\left[1+\frac{4+p}{2},\right.$$

$$\left.\left.2+p,\,2,\,1+\frac{6+p}{2},\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\Bigg)\Bigg)\Bigg)\Bigg/$$

$$\Bigg((2+p)\,\Bigg((4+p)\,\text{AppellF1}\left[\frac{2+p}{2},\,p,\,2,\,\frac{4+p}{2},\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+2\,\Bigg(-2\,\text{AppellF1}\left[\frac{4+p}{2},\right.$$

$$\left.p,\,3,\,\frac{6+p}{2},\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+$$

$$p\,\text{AppellF1}\left[\frac{4+p}{2},\,1+p,\,2,\,\frac{6+p}{2},\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\Bigg)\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Bigg)^2\Bigg)\Bigg)\Bigg)$$

- **Problem 125: Unable to integrate problem.**

$$\int (a+a\,\text{Sin}[e+f x])\,(g\,\text{Tan}[e+f x])^p\,dx$$

Optimal (type 5, 129 leaves, 6 steps) :

$$\frac{a\,\text{Hypergeometric2F1}\left[1,\,\frac{1+p}{2},\,\frac{3+p}{2},\,-\text{Tan}[e+f x]^2\right]\,(g\,\text{Tan}[e+f x])^{1+p}}{f\,g\,(1+p)}+$$

$$\frac{a\,\left(\text{Cos}[e+f x]^2\right)^{\frac{1+p}{2}}\,\text{Hypergeometric2F1}\left[\frac{1+p}{2},\,\frac{2+p}{2},\,\frac{4+p}{2},\,\text{Sin}[e+f x]^2\right]\,\text{Sin}[e+f x]\,(g\,\text{Tan}[e+f x])^{1+p}}{f\,g\,(2+p)}$$

Result (type 8, 23 leaves) :

$$\int (a+a\,\text{Sin}[e+f x])\,(g\,\text{Tan}[e+f x])^p\,dx$$

- **Problem 126: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int \frac{(g\,\text{Tan}[e+f x])^p}{a+a\,\text{Sin}[e+f x]}\,dx$$

Optimal (type 5, 108 leaves, 4 steps) :

$$\frac{(g\,\text{Tan}[e+f x])^{1+p}}{a\,f\,g\,(1+p)}-\frac{\left(\text{Cos}[e+f x]^2\right)^{\frac{3+p}{2}}\,\text{Hypergeometric2F1}\left[\frac{2+p}{2},\,\frac{3+p}{2},\,\frac{4+p}{2},\,\text{Sin}[e+f x]^2\right]\,\text{Sec}[e+f x]\,(g\,\text{Tan}[e+f x])^{2+p}}{a\,f\,g^2\,(2+p)}$$

Result (type 6, 2539 leaves) :

$$\left(2\,(2+p)\,\text{AppellF1}\left[1+p,\,p,\,2+p,\,2+p,\,\text{Tan}\left[\frac{1}{2}(e+f x)\right],\,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]\,\left(-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)^{-p}\right.$$

$$\text{Tan}\left[\frac{1}{2}(e+f x)\right]\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)^{-2-p}\left(-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)^p \text{Tan}[e+f x]^p (g\,\text{Tan}[e+f x])^p\Big)\Big/$$

$$\Big(f(1+p)(a+a\,\text{Sin}[e+f x])\Big((2+p)\,\text{AppellF1}\left[1+p,p,2+p,2+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]+$$

$$\Big(-(2+p)\,\text{AppellF1}\left[2+p,p,3+p,3+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]+$$

$$p\,\text{AppellF1}\left[2+p,1+p,2+p,3+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]\Big)\text{Tan}\left[\frac{1}{2}(e+f x)\right]\Big)$$

$$\Big(\Big(2p(2+p)\,\text{AppellF1}\left[1+p,p,2+p,2+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]\text{Sec}[e+f x]^2\left(-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)^{-p}$$

$$\text{Tan}\left[\frac{1}{2}(e+f x)\right]\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)^{-2-p}\left(-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)^p\text{Tan}[e+f x]^{-1+p}\Big)\Big/$$

$$\Big((1+p)\Big((2+p)\,\text{AppellF1}\left[1+p,p,2+p,2+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]+$$

$$\Big(-(2+p)\,\text{AppellF1}\left[2+p,p,3+p,3+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]+$$

$$p\,\text{AppellF1}\left[2+p,1+p,2+p,3+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]\Big)\text{Tan}\left[\frac{1}{2}(e+f x)\right]\Big)\Big)+$$

$$\Big(2p(2+p)\,\text{AppellF1}\left[1+p,p,2+p,2+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\left(-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)^{-p}$$

$$\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)^{-2-p}\left(-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)^{-1+p}\text{Tan}[e+f x]^p\Big)\Big/$$

$$\Big((1+p)\Big((2+p)\,\text{AppellF1}\left[1+p,p,2+p,2+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]+$$

$$\Big(-(2+p)\,\text{AppellF1}\left[2+p,p,3+p,3+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]+$$

$$p\,\text{AppellF1}\left[2+p,1+p,2+p,3+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]\Big)\text{Tan}\left[\frac{1}{2}(e+f x)\right]\Big)\Big)+$$

$$\Big((-2-p)(2+p)\,\text{AppellF1}\left[1+p,p,2+p,2+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2$$

$$\left(-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)^{-p}\text{Tan}\left[\frac{1}{2}(e+f x)\right]\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)^{-3-p}\left(-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)^p\text{Tan}[e+f x]^p\Big)\Big/$$

$$\Big((1+p)\Big((2+p)\,\text{AppellF1}\left[1+p,p,2+p,2+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]+$$

$$\left(-(2+p)\,\text{AppellF1}\left[2+p,p,3+p,3+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]+\right.$$

$$\left.\left.\left.p\,\text{AppellF1}\left[2+p,1+p,2+p,3+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]\right)\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\right)+$$

$$\left((2+p)\,\text{AppellF1}\left[1+p,p,2+p,2+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\left(-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)^{-p}\right.$$

$$\left.\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)^{-2-p}\left(-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)^p\text{Tan}[e+f x]^p\right)\Big/$$

$$\left((1+p)\left((2+p)\,\text{AppellF1}\left[1+p,p,2+p,2+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]+\right.\right.$$

$$\left(-(2+p)\,\text{AppellF1}\left[2+p,p,3+p,3+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]+\right.$$

$$\left.\left.\left.p\,\text{AppellF1}\left[2+p,1+p,2+p,3+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]\right)\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\right)-$$

$$\left(p(2+p)\,\text{AppellF1}\left[1+p,p,2+p,2+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\left(-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)^{-1-p}\right.$$

$$\left.\text{Tan}\left[\frac{1}{2}(e+f x)\right]\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)^{-2-p}\left(-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)^p\text{Tan}[e+f x]^p\right)\Big/$$

$$\left((1+p)\left((2+p)\,\text{AppellF1}\left[1+p,p,2+p,2+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]+\right.\right.$$

$$\left(-(2+p)\,\text{AppellF1}\left[2+p,p,3+p,3+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]+\right.$$

$$\left.\left.\left.p\,\text{AppellF1}\left[2+p,1+p,2+p,3+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]\right)\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\right)+$$

$$\left(2(2+p)\left(-\frac{1}{2}(1+p)\,\text{AppellF1}\left[2+p,p,3+p,3+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2+\frac{1}{2(2+p)}\right.\right.$$

$$\left.p(1+p)\,\text{AppellF1}\left[2+p,1+p,2+p,3+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\right)$$

$$\left.\left(-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)^{-p}\text{Tan}\left[\frac{1}{2}(e+f x)\right]\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)^{-2-p}\left(-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)^p\text{Tan}[e+f x]^p\right)\Big/$$

$$\left((1+p)\left((2+p)\,\text{AppellF1}\left[1+p,p,2+p,2+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]+\right.\right.$$

$$\left(-(2+p)\,\text{AppellF1}\left[2+p,p,3+p,3+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]+\right.$$

$$\left.\left.\left.p\,\text{AppellF1}\left[2+p,1+p,2+p,3+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]\right)\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\right)-$$

$$\left(2\,(2+p)\,\text{AppellF1}\left[1+p,\,p,\,2+p,\,2+p,\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right],\,-\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]\right]\left(-1+\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]\right)^{-p}\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]\right.$$

$$\left(1+\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]\right)^{-2-p}\left(\frac{1}{2}\left(-(2+p)\,\text{AppellF1}\left[2+p,\,p,\,3+p,\,3+p,\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right],\,-\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]\right]+\right.\right.$$

$$\left.p\,\text{AppellF1}\left[2+p,\,1+p,\,2+p,\,3+p,\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right],\,-\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]\right]\right)\text{Sec}\left[\frac{1}{2}(e+f\,x)\right]^2+$$

$$(2+p)\left(-\frac{1}{2}(1+p)\,\text{AppellF1}\left[2+p,\,p,\,3+p,\,3+p,\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right],\,-\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]\right]\text{Sec}\left[\frac{1}{2}(e+f\,x)\right]^2+\right.$$

$$\left.\frac{1}{2\,(2+p)}p\,(1+p)\,\text{AppellF1}\left[2+p,\,1+p,\,2+p,\,3+p,\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right],\,-\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]\right]\text{Sec}\left[\frac{1}{2}(e+f\,x)\right]^2\right)+$$

$$\left(-(2+p)\left(-\frac{1}{2}(2+p)\,\text{AppellF1}\left[3+p,\,p,\,4+p,\,4+p,\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right],\,-\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]\right]\text{Sec}\left[\frac{1}{2}(e+f\,x)\right]^2+\right.\right.$$

$$\left.\frac{1}{2\,(3+p)}p\,(2+p)\,\text{AppellF1}\left[3+p,\,1+p,\,3+p,\,4+p,\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right],\,-\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]\right]\text{Sec}\left[\frac{1}{2}(e+f\,x)\right]^2\right)+$$

$$p\left(-\frac{1}{2\,(3+p)}(2+p)^2\,\text{AppellF1}\left[3+p,\,1+p,\,3+p,\,4+p,\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right],\,-\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]\right]\text{Sec}\left[\frac{1}{2}(e+f\,x)\right]^2+\right.$$

$$\left.\left.\left.\frac{1}{2\,(3+p)}(1+p)\,(2+p)\,\text{HypergeometricPFQ}\left[\left\{\frac{3}{2}+\frac{p}{2},\,2+p\right\},\,\left\{\frac{5}{2}+\frac{p}{2}\right\},\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+f\,x)\right]^2\right)\right)\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]\right)$$

$$\left.\left(-1+\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]^2\right)^p\text{Tan}[e+f\,x]^p\right)\Big/\left((1+p)\left((2+p)\,\text{AppellF1}\left[1+p,\,p,\,2+p,\,2+p,\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right],\,-\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]\right]+\right.\right.$$

$$\left(-(2+p)\,\text{AppellF1}\left[2+p,\,p,\,3+p,\,3+p,\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right],\,-\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]\right]+p\right.$$

$$\left.\left.\left.\text{AppellF1}\left[2+p,\,1+p,\,2+p,\,3+p,\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right],\,-\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]\right]\right)\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]\right)^2\right)\right)$$

- **Problem 127: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int\frac{(g\,\text{Tan}[e+f\,x])^p}{(a+a\,\text{Sin}[e+f\,x])^2}\,dx$$

Optimal (type 5, 138 leaves, 10 steps):

$$\frac{(g\,\text{Tan}[e+f\,x])^{1+p}}{a^2\,f\,g\,(1+p)}-\frac{2\left(\text{Cos}[e+f\,x]^2\right)^{\frac{5+p}{2}}\text{Hypergeometric2F1}\left[\frac{2+p}{2},\,\frac{5+p}{2},\,\frac{4+p}{2},\,\text{Sin}[e+f\,x]^2\right]\text{Sec}[e+f\,x]^3\,(g\,\text{Tan}[e+f\,x])^{2+p}}{a^2\,f\,g^2\,(2+p)}+\frac{2\,(g\,\text{Tan}[e+f\,x])^{3+p}}{a^2\,f\,g^3\,(3+p)}$$

Result (type 6, 7283 leaves):

$$\left(2^{1+p}\,(2+p)\left(-1+\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]\right)^{-p}\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]\left(1+\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]\right)^{-4-p}\left(-\frac{\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]}{-1+\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]^2}\right)^p\right.$$

$$\left(-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)^p \Bigg(\Bigg(\text{AppellF1}\left[1+p,p,2+p,2+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)^2\Bigg)\Big/$$
$$\Bigg((2+p)\,\text{AppellF1}\left[1+p,p,2+p,2+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]-(2+p)\,\text{AppellF1}\left[2+p,p,3+p,3+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],\right.$$
$$\left.-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]\text{Tan}\left[\frac{1}{2}(e+f x)\right]+p\,\text{AppellF1}\left[2+p,1+p,2+p,3+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]\text{Tan}\left[\frac{1}{2}(e+f x)\right]\Bigg)-$$
$$\Bigg(2\,\text{AppellF1}\left[1+p,p,3+p,2+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\Bigg)\Big/$$
$$\Bigg((2+p)\,\text{AppellF1}\left[1+p,p,3+p,2+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]-(3+p)\,\text{AppellF1}\left[2+p,p,4+p,3+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],\right.$$
$$\left.-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]\text{Tan}\left[\frac{1}{2}(e+f x)\right]+p\,\text{AppellF1}\left[2+p,1+p,3+p,3+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]\text{Tan}\left[\frac{1}{2}(e+f x)\right]\Bigg)+$$
$$\Bigg(2\,\text{AppellF1}\left[1+p,p,4+p,2+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]\Bigg)\Big/\Bigg((2+p)\,\text{AppellF1}\left[1+p,p,4+p,2+p,\right.$$
$$\left.\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]-(4+p)\,\text{AppellF1}\left[2+p,p,5+p,3+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]\text{Tan}\left[\frac{1}{2}(e+f x)\right]+$$
$$p\,\text{AppellF1}\left[2+p,1+p,4+p,3+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]\text{Tan}\left[\frac{1}{2}(e+f x)\right]\Bigg)\Bigg)(g\,\text{Tan}[e+f x])^p\Bigg)\Big/$$
$$\Bigg(f(1+p)(a+a\,\text{Sin}[e+f x])^2\Bigg(\frac{1}{1+p}2^{1+p}p(2+p)\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\left(-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)^{-p}\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2$$
$$\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)^{-4-p}\left(-\frac{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}\right)^p\left(-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)^{-1+p}$$
$$\Bigg(\Bigg(\text{AppellF1}\left[1+p,p,2+p,2+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)^2\Bigg)\Big/\Bigg((2+p)\,\text{AppellF1}\left[1+p,p,2+p,\right.$$
$$\left.2+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]-(2+p)\,\text{AppellF1}\left[2+p,p,3+p,3+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]$$
$$\text{Tan}\left[\frac{1}{2}(e+f x)\right]+p\,\text{AppellF1}\left[2+p,1+p,2+p,3+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]\text{Tan}\left[\frac{1}{2}(e+f x)\right]\Bigg)-$$
$$\Bigg(2\,\text{AppellF1}\left[1+p,p,3+p,2+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\Bigg)\Big/\Bigg((2+p)\,\text{AppellF1}\left[1+p,p,\right.$$
$$\left.3+p,2+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]-(3+p)\,\text{AppellF1}\left[2+p,p,4+p,3+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]$$

$$\text{Tan}\left[\frac{1}{2}(e+f x)\right]+p\,\text{AppellF1}\left[2+p,1+p,3+p,3+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]\text{Tan}\left[\frac{1}{2}(e+f x)\right]\Bigg)+$$

$$\left(2\,\text{AppellF1}\left[1+p,p,4+p,2+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]\right)\Big/\left((2+p)\,\text{AppellF1}\left[1+p,p,4+p,2+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],\right.\right.$$

$$-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\Big]-(4+p)\,\text{AppellF1}\left[2+p,p,5+p,3+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]\text{Tan}\left[\frac{1}{2}(e+f x)\right]+$$

$$p\,\text{AppellF1}\left[2+p,1+p,4+p,3+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]\text{Tan}\left[\frac{1}{2}(e+f x)\right]\Bigg)\Bigg)+$$

$$\frac{1}{1+p}2^p(-4-p)(2+p)\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\left(-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)^{-p}\text{Tan}\left[\frac{1}{2}(e+f x)\right]\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)^{-5-p}$$

$$\left(-\frac{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}\right)^p\left(-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)^p$$

$$\Bigg(\Bigg(\text{AppellF1}\left[1+p,p,2+p,2+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)^2\Bigg)\Big/$$

$$\Bigg((2+p)\,\text{AppellF1}\left[1+p,p,2+p,2+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]-$$

$$(2+p)\,\text{AppellF1}\left[2+p,p,3+p,3+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]\text{Tan}\left[\frac{1}{2}(e+f x)\right]+$$

$$p\,\text{AppellF1}\left[2+p,1+p,2+p,3+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]\text{Tan}\left[\frac{1}{2}(e+f x)\right]\Bigg)-$$

$$\left(2\,\text{AppellF1}\left[1+p,p,3+p,2+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\right)\Big/$$

$$\Bigg((2+p)\,\text{AppellF1}\left[1+p,p,3+p,2+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]-$$

$$(3+p)\,\text{AppellF1}\left[2+p,p,4+p,3+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]\text{Tan}\left[\frac{1}{2}(e+f x)\right]+$$

$$p\,\text{AppellF1}\left[2+p,1+p,3+p,3+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]\text{Tan}\left[\frac{1}{2}(e+f x)\right]\Bigg)+$$

$$\left(2\,\text{AppellF1}\left[1+p,p,4+p,2+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]\right)\Big/\left((2+p)\,\text{AppellF1}\left[1+p,p,4+p,2+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],\right.\right.$$

$$-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\Big]-(4+p)\,\text{AppellF1}\left[2+p,p,5+p,3+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]\text{Tan}\left[\frac{1}{2}(e+f x)\right]+$$

$$p\,\text{AppellF1}\left[2+p,1+p,4+p,3+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]\text{Tan}\left[\frac{1}{2}(e+f x)\right]\Bigg)\Bigg)+$$

$$\frac{1}{1+p} 2^p (2+p) \text{Sec}\left[\frac{1}{2}(e+f x)\right]^2 \left(-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)^{-p} \left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)^{-4-p} \left(-\frac{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}\right)^p$$

$$\left(-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)^p \left(\left(\text{AppellF1}\left[1+p, p, 2+p, 2+p, \text{Tan}\left[\frac{1}{2}(e+f x)\right], -\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right] \left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)^2\right) \Big/\right.$$

$$\left((2+p) \text{AppellF1}\left[1+p, p, 2+p, 2+p, \text{Tan}\left[\frac{1}{2}(e+f x)\right], -\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right] -\right.$$

$$(2+p) \text{AppellF1}\left[2+p, p, 3+p, 3+p, \text{Tan}\left[\frac{1}{2}(e+f x)\right], -\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right] \text{Tan}\left[\frac{1}{2}(e+f x)\right] +$$

$$\left. p \text{AppellF1}\left[2+p, 1+p, 2+p, 3+p, \text{Tan}\left[\frac{1}{2}(e+f x)\right], -\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right] \text{Tan}\left[\frac{1}{2}(e+f x)\right]\right) -$$

$$\left(2 \text{AppellF1}\left[1+p, p, 3+p, 2+p, \text{Tan}\left[\frac{1}{2}(e+f x)\right], -\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right] \left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\right) \Big/$$

$$\left((2+p) \text{AppellF1}\left[1+p, p, 3+p, 2+p, \text{Tan}\left[\frac{1}{2}(e+f x)\right], -\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right] -\right.$$

$$(3+p) \text{AppellF1}\left[2+p, p, 4+p, 3+p, \text{Tan}\left[\frac{1}{2}(e+f x)\right], -\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right] \text{Tan}\left[\frac{1}{2}(e+f x)\right] +$$

$$\left. p \text{AppellF1}\left[2+p, 1+p, 3+p, 3+p, \text{Tan}\left[\frac{1}{2}(e+f x)\right], -\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right] \text{Tan}\left[\frac{1}{2}(e+f x)\right]\right) +$$

$$\left(2 \text{AppellF1}\left[1+p, p, 4+p, 2+p, \text{Tan}\left[\frac{1}{2}(e+f x)\right], -\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]\right) \Big/ \left((2+p) \text{AppellF1}\left[1+p, p, 4+p, 2+p, \text{Tan}\left[\frac{1}{2}(e+f x)\right],\right.\right.$$

$$\left. -\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right] - (4+p) \text{AppellF1}\left[2+p, p, 5+p, 3+p, \text{Tan}\left[\frac{1}{2}(e+f x)\right], -\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right] \text{Tan}\left[\frac{1}{2}(e+f x)\right] +$$

$$\left.\left. p \text{AppellF1}\left[2+p, 1+p, 4+p, 3+p, \text{Tan}\left[\frac{1}{2}(e+f x)\right], -\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right] \text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\right) -$$

$$\frac{1}{1+p} 2^p p (2+p) \text{Sec}\left[\frac{1}{2}(e+f x)\right]^2 \left(-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)^{-1-p} \text{Tan}\left[\frac{1}{2}(e+f x)\right] \left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)^{-4-p}$$

$$\left(-\frac{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}\right)^p \left(-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)^p$$

$$\left(\left(\text{AppellF1}\left[1+p, p, 2+p, 2+p, \text{Tan}\left[\frac{1}{2}(e+f x)\right], -\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right] \left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)^2\right) \Big/\right.$$

$$\left((2+p) \text{AppellF1}\left[1+p, p, 2+p, 2+p, \text{Tan}\left[\frac{1}{2}(e+f x)\right], -\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right] -\right.$$

$$(2+p) \text{AppellF1}\left[2+p, p, 3+p, 3+p, \text{Tan}\left[\frac{1}{2}(e+f x)\right], -\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right] \text{Tan}\left[\frac{1}{2}(e+f x)\right] +$$

$$p\,\text{AppellF1}\left[2+p,1+p,2+p,3+p,\text{Tan}\left[\tfrac{1}{2}(e+f x)\right],-\text{Tan}\left[\tfrac{1}{2}(e+f x)\right]\right]\text{Tan}\left[\tfrac{1}{2}(e+f x)\right]\Big)-$$

$$\left(2\,\text{AppellF1}\left[1+p,p,3+p,2+p,\text{Tan}\left[\tfrac{1}{2}(e+f x)\right],-\text{Tan}\left[\tfrac{1}{2}(e+f x)\right]\right]\left(1+\text{Tan}\left[\tfrac{1}{2}(e+f x)\right]\right)\right)\Big/$$

$$\Big((2+p)\,\text{AppellF1}\left[1+p,p,3+p,2+p,\text{Tan}\left[\tfrac{1}{2}(e+f x)\right],-\text{Tan}\left[\tfrac{1}{2}(e+f x)\right]\right]-$$

$$(3+p)\,\text{AppellF1}\left[2+p,p,4+p,3+p,\text{Tan}\left[\tfrac{1}{2}(e+f x)\right],-\text{Tan}\left[\tfrac{1}{2}(e+f x)\right]\right]\text{Tan}\left[\tfrac{1}{2}(e+f x)\right]+$$

$$p\,\text{AppellF1}\left[2+p,1+p,3+p,3+p,\text{Tan}\left[\tfrac{1}{2}(e+f x)\right],-\text{Tan}\left[\tfrac{1}{2}(e+f x)\right]\right]\text{Tan}\left[\tfrac{1}{2}(e+f x)\right]\Big)+$$

$$\left(2\,\text{AppellF1}\left[1+p,p,4+p,2+p,\text{Tan}\left[\tfrac{1}{2}(e+f x)\right],-\text{Tan}\left[\tfrac{1}{2}(e+f x)\right]\right]\right)\Big/\Big((2+p)\,\text{AppellF1}\left[1+p,p,4+p,2+p,\text{Tan}\left[\tfrac{1}{2}(e+f x)\right],\right.$$

$$\left.-\text{Tan}\left[\tfrac{1}{2}(e+f x)\right]\right]-(4+p)\,\text{AppellF1}\left[2+p,p,5+p,3+p,\text{Tan}\left[\tfrac{1}{2}(e+f x)\right],-\text{Tan}\left[\tfrac{1}{2}(e+f x)\right]\right]\text{Tan}\left[\tfrac{1}{2}(e+f x)\right]+$$

$$p\,\text{AppellF1}\left[2+p,1+p,4+p,3+p,\text{Tan}\left[\tfrac{1}{2}(e+f x)\right],-\text{Tan}\left[\tfrac{1}{2}(e+f x)\right]\right]\text{Tan}\left[\tfrac{1}{2}(e+f x)\right]\Big)\Big)+$$

$$\frac{1}{1+p}2^{1+p}(2+p)\left(-1+\text{Tan}\left[\tfrac{1}{2}(e+f x)\right]\right)^{-p}\text{Tan}\left[\tfrac{1}{2}(e+f x)\right]\left(1+\text{Tan}\left[\tfrac{1}{2}(e+f x)\right]\right)^{-4-p}\left(-\frac{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}\right)^p$$

$$\left(-1+\text{Tan}\left[\tfrac{1}{2}(e+f x)\right]^2\right)^p$$

$$\Big(\Big(\text{AppellF1}\left[1+p,p,2+p,2+p,\text{Tan}\left[\tfrac{1}{2}(e+f x)\right],-\text{Tan}\left[\tfrac{1}{2}(e+f x)\right]\right]\text{Sec}\left[\tfrac{1}{2}(e+f x)\right]^2\left(1+\text{Tan}\left[\tfrac{1}{2}(e+f x)\right]\right)\Big)\Big/$$

$$\Big((2+p)\,\text{AppellF1}\left[1+p,p,2+p,2+p,\text{Tan}\left[\tfrac{1}{2}(e+f x)\right],-\text{Tan}\left[\tfrac{1}{2}(e+f x)\right]\right]-$$

$$(2+p)\,\text{AppellF1}\left[2+p,p,3+p,3+p,\text{Tan}\left[\tfrac{1}{2}(e+f x)\right],-\text{Tan}\left[\tfrac{1}{2}(e+f x)\right]\right]\text{Tan}\left[\tfrac{1}{2}(e+f x)\right]+$$

$$p\,\text{AppellF1}\left[2+p,1+p,2+p,3+p,\text{Tan}\left[\tfrac{1}{2}(e+f x)\right],-\text{Tan}\left[\tfrac{1}{2}(e+f x)\right]\right]\text{Tan}\left[\tfrac{1}{2}(e+f x)\right]\Big)+$$

$$\Big(\Big(-\tfrac{1}{2}(1+p)\,\text{AppellF1}\left[2+p,p,3+p,3+p,\text{Tan}\left[\tfrac{1}{2}(e+f x)\right],-\text{Tan}\left[\tfrac{1}{2}(e+f x)\right]\right]\text{Sec}\left[\tfrac{1}{2}(e+f x)\right]^2+$$

$$1/(2(2+p))p(1+p)\,\text{AppellF1}\left[2+p,1+p,2+p,3+p,\text{Tan}\left[\tfrac{1}{2}(e+f x)\right],-\text{Tan}\left[\tfrac{1}{2}(e+f x)\right]\right]\text{Sec}\left[\tfrac{1}{2}(e+f x)\right]^2\Big)$$

$$\left(1+\text{Tan}\left[\tfrac{1}{2}(e+f x)\right]\right)^2\Big)\Big/\Big((2+p)\,\text{AppellF1}\left[1+p,p,2+p,2+p,\text{Tan}\left[\tfrac{1}{2}(e+f x)\right],-\text{Tan}\left[\tfrac{1}{2}(e+f x)\right]\right]-$$

$$(2+p)\,\text{AppellF1}\left[2+p,p,3+p,3+p,\text{Tan}\left[\frac{1}{2}(e+fx)\right],-\text{Tan}\left[\frac{1}{2}(e+fx)\right]\right]\text{Tan}\left[\frac{1}{2}(e+fx)\right]+$$

$$p\,\text{AppellF1}\left[2+p,1+p,2+p,3+p,\text{Tan}\left[\frac{1}{2}(e+fx)\right],-\text{Tan}\left[\frac{1}{2}(e+fx)\right]\right]\text{Tan}\left[\frac{1}{2}(e+fx)\right]\Big)-$$

$$\Big(\text{AppellF1}\left[1+p,p,3+p,2+p,\text{Tan}\left[\frac{1}{2}(e+fx)\right],-\text{Tan}\left[\frac{1}{2}(e+fx)\right]\right]\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2\Big)\Big/$$

$$\Big((2+p)\,\text{AppellF1}\left[1+p,p,3+p,2+p,\text{Tan}\left[\frac{1}{2}(e+fx)\right],-\text{Tan}\left[\frac{1}{2}(e+fx)\right]\right]-$$

$$(3+p)\,\text{AppellF1}\left[2+p,p,4+p,3+p,\text{Tan}\left[\frac{1}{2}(e+fx)\right],-\text{Tan}\left[\frac{1}{2}(e+fx)\right]\right]\text{Tan}\left[\frac{1}{2}(e+fx)\right]+$$

$$p\,\text{AppellF1}\left[2+p,1+p,3+p,3+p,\text{Tan}\left[\frac{1}{2}(e+fx)\right],-\text{Tan}\left[\frac{1}{2}(e+fx)\right]\right]\text{Tan}\left[\frac{1}{2}(e+fx)\right]\Big)-$$

$$\Big(2\Big(-1/(2(2+p))(1+p)(3+p)\,\text{AppellF1}\left[2+p,p,4+p,3+p,\text{Tan}\left[\frac{1}{2}(e+fx)\right],-\text{Tan}\left[\frac{1}{2}(e+fx)\right]\right]\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2+$$

$$1/(2(2+p))\,p\,(1+p)\,\text{AppellF1}\left[2+p,1+p,3+p,3+p,\text{Tan}\left[\frac{1}{2}(e+fx)\right],-\text{Tan}\left[\frac{1}{2}(e+fx)\right]\right]\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2\Big)$$

$$\Big(1+\text{Tan}\left[\frac{1}{2}(e+fx)\right]\Big)\Big)\Big/\Big((2+p)\,\text{AppellF1}\left[1+p,p,3+p,2+p,\text{Tan}\left[\frac{1}{2}(e+fx)\right],-\text{Tan}\left[\frac{1}{2}(e+fx)\right]\right]-$$

$$(3+p)\,\text{AppellF1}\left[2+p,p,4+p,3+p,\text{Tan}\left[\frac{1}{2}(e+fx)\right],-\text{Tan}\left[\frac{1}{2}(e+fx)\right]\right]\text{Tan}\left[\frac{1}{2}(e+fx)\right]+$$

$$p\,\text{AppellF1}\left[2+p,1+p,3+p,3+p,\text{Tan}\left[\frac{1}{2}(e+fx)\right],-\text{Tan}\left[\frac{1}{2}(e+fx)\right]\right]\text{Tan}\left[\frac{1}{2}(e+fx)\right]\Big)+$$

$$\Big(2\Big(-1/(2(2+p))(1+p)(4+p)\,\text{AppellF1}\left[2+p,p,5+p,3+p,\text{Tan}\left[\frac{1}{2}(e+fx)\right],-\text{Tan}\left[\frac{1}{2}(e+fx)\right]\right]\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2+$$

$$1/(2(2+p))\,p\,(1+p)\,\text{AppellF1}\left[2+p,1+p,4+p,3+p,\text{Tan}\left[\frac{1}{2}(e+fx)\right],-\text{Tan}\left[\frac{1}{2}(e+fx)\right]\right]\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2\Big)\Big)\Big/$$

$$\Big((2+p)\,\text{AppellF1}\left[1+p,p,4+p,2+p,\text{Tan}\left[\frac{1}{2}(e+fx)\right],-\text{Tan}\left[\frac{1}{2}(e+fx)\right]\right]-$$

$$(4+p)\,\text{AppellF1}\left[2+p,p,5+p,3+p,\text{Tan}\left[\frac{1}{2}(e+fx)\right],-\text{Tan}\left[\frac{1}{2}(e+fx)\right]\right]\text{Tan}\left[\frac{1}{2}(e+fx)\right]+$$

$$p\,\text{AppellF1}\left[2+p,1+p,4+p,3+p,\text{Tan}\left[\frac{1}{2}(e+fx)\right],-\text{Tan}\left[\frac{1}{2}(e+fx)\right]\right]\text{Tan}\left[\frac{1}{2}(e+fx)\right]\Big)+$$

$$\Big(2\,\text{AppellF1}\left[1+p,p,3+p,2+p,\text{Tan}\left[\frac{1}{2}(e+fx)\right],-\text{Tan}\left[\frac{1}{2}(e+fx)\right]\right]\Big(1+\text{Tan}\left[\frac{1}{2}(e+fx)\right]\Big)$$

$$\Big(-\frac{1}{2}(3+p)\,\text{AppellF1}\left[2+p,p,4+p,3+p,\text{Tan}\left[\frac{1}{2}(e+fx)\right],-\text{Tan}\left[\frac{1}{2}(e+fx)\right]\right]\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2+$$

$$\frac{1}{2} p \,\text{AppellF1}\left[2+p, 1+p, 3+p, 3+p, \text{Tan}\left[\frac{1}{2}(e+f x)\right], -\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right] \text{Sec}\left[\frac{1}{2}(e+f x)\right]^2 +$$

$$(2+p)\left(-\frac{1}{2(2+p)}(1+p)(3+p)\,\text{AppellF1}\left[2+p, p, 4+p, 3+p, \text{Tan}\left[\frac{1}{2}(e+f x)\right], -\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right] \text{Sec}\left[\frac{1}{2}(e+f x)\right]^2 +\right.$$

$$\left.\frac{1}{2(2+p)} p(1+p)\,\text{AppellF1}\left[2+p, 1+p, 3+p, 3+p, \text{Tan}\left[\frac{1}{2}(e+f x)\right], -\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right] \text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\right) - (3+p)$$

$$\left(-\frac{1}{2(3+p)}(2+p)(4+p)\,\text{AppellF1}\left[3+p, p, 5+p, 4+p, \text{Tan}\left[\frac{1}{2}(e+f x)\right], -\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right] \text{Sec}\left[\frac{1}{2}(e+f x)\right]^2 + \frac{1}{2(3+p)}\right.$$

$$\left. p(2+p)\,\text{AppellF1}\left[3+p, 1+p, 4+p, 4+p, \text{Tan}\left[\frac{1}{2}(e+f x)\right], -\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right] \text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\right) \text{Tan}\left[\frac{1}{2}(e+f x)\right] +$$

$$p\left(-\frac{1}{2}(2+p)\,\text{AppellF1}\left[3+p, 1+p, 4+p, 4+p, \text{Tan}\left[\frac{1}{2}(e+f x)\right], -\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right] \text{Sec}\left[\frac{1}{2}(e+f x)\right]^2 + \frac{1}{2(3+p)}(1+p)\right.$$

$$\left.\left.\left.(2+p)\,\text{AppellF1}\left[3+p, 2+p, 3+p, 4+p, \text{Tan}\left[\frac{1}{2}(e+f x)\right], -\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right] \text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\right) \text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\right) \Big/$$

$$\left((2+p)\,\text{AppellF1}\left[1+p, p, 3+p, 2+p, \text{Tan}\left[\frac{1}{2}(e+f x)\right], -\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right] - (3+p)\,\text{AppellF1}\left[2+p, p, 4+p,\right.\right.$$

$$3+p, \text{Tan}\left[\frac{1}{2}(e+f x)\right], -\text{Tan}\left[\frac{1}{2}(e+f x)\right]\Big] \text{Tan}\left[\frac{1}{2}(e+f x)\right] + p\,\text{AppellF1}\left[2+p, 1+p, 3+p, 3+p, \text{Tan}\left[\frac{1}{2}(e+f x)\right],\right.$$

$$\left.\left. -\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right] \text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)^2 - \left(2\,\text{AppellF1}\left[1+p, p, 4+p, 2+p, \text{Tan}\left[\frac{1}{2}(e+f x)\right], -\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]\right.$$

$$\left(-\frac{1}{2}(4+p)\,\text{AppellF1}\left[2+p, p, 5+p, 3+p, \text{Tan}\left[\frac{1}{2}(e+f x)\right], -\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right] \text{Sec}\left[\frac{1}{2}(e+f x)\right]^2 +\right.$$

$$\frac{1}{2} p\,\text{AppellF1}\left[2+p, 1+p, 4+p, 3+p, \text{Tan}\left[\frac{1}{2}(e+f x)\right], -\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right] \text{Sec}\left[\frac{1}{2}(e+f x)\right]^2 +$$

$$(2+p)\left(-\frac{1}{2(2+p)}(1+p)(4+p)\,\text{AppellF1}\left[2+p, p, 5+p, 3+p, \text{Tan}\left[\frac{1}{2}(e+f x)\right], -\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right] \text{Sec}\left[\frac{1}{2}(e+f x)\right]^2 +\right.$$

$$\left.\frac{1}{2(2+p)} p(1+p)\,\text{AppellF1}\left[2+p, 1+p, 4+p, 3+p, \text{Tan}\left[\frac{1}{2}(e+f x)\right], -\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right] \text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\right) - (4+p)$$

$$\left(-\frac{1}{2(3+p)}(2+p)(5+p)\,\text{AppellF1}\left[3+p, p, 6+p, 4+p, \text{Tan}\left[\frac{1}{2}(e+f x)\right], -\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right] \text{Sec}\left[\frac{1}{2}(e+f x)\right]^2 + \frac{1}{2(3+p)}\right.$$

$$\left. p(2+p)\,\text{AppellF1}\left[3+p, 1+p, 5+p, 4+p, \text{Tan}\left[\frac{1}{2}(e+f x)\right], -\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right] \text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\right) \text{Tan}\left[\frac{1}{2}(e+f x)\right] +$$

$$p\left(-\frac{1}{2(3+p)}(2+p)(4+p)\,\text{AppellF1}\left[3+p, 1+p, 5+p, 4+p, \text{Tan}\left[\frac{1}{2}(e+f x)\right], -\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right] \text{Sec}\left[\frac{1}{2}(e+f x)\right]^2 +\right.$$

$$\left.\frac{1}{2(3+p)}(1+p)(2+p)\,\text{AppellF1}\left[3+p, 2+p, 4+p, 4+p, \text{Tan}\left[\frac{1}{2}(e+f x)\right], -\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right] \text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\right)$$

$$\text{Tan}\left[\frac{1}{2}(e+f x)\right]\Bigg)\Bigg)\Bigg/\Bigg((2+p)\,\text{AppellF1}\left[1+p,p,4+p,2+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]-$$

$$(4+p)\,\text{AppellF1}\left[2+p,p,5+p,3+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]\text{Tan}\left[\frac{1}{2}(e+f x)\right]+$$

$$p\,\text{AppellF1}\left[2+p,1+p,4+p,3+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]\text{Tan}\left[\frac{1}{2}(e+f x)\right]\Bigg)^2-$$

$$\Bigg(\text{AppellF1}\left[1+p,p,2+p,2+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)^2$$

$$\Bigg(-\frac{1}{2}(2+p)\,\text{AppellF1}\left[2+p,p,3+p,3+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2+$$

$$\frac{1}{2}p\,\text{AppellF1}\left[2+p,1+p,2+p,3+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2+$$

$$(2+p)\Bigg(-\frac{1}{2}(1+p)\,\text{AppellF1}\left[2+p,p,3+p,3+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2+$$

$$\frac{1}{2(2+p)}p(1+p)\,\text{AppellF1}\left[2+p,1+p,2+p,3+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\Bigg)-$$

$$(2+p)\Bigg(-\frac{1}{2}(2+p)\,\text{AppellF1}\left[3+p,p,4+p,4+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2+\frac{1}{2(3+p)}$$

$$p(2+p)\,\text{AppellF1}\left[3+p,1+p,3+p,4+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\Bigg)\text{Tan}\left[\frac{1}{2}(e+f x)\right]+$$

$$p\Bigg(-\frac{1}{2(3+p)}(2+p)^2\,\text{AppellF1}\left[3+p,1+p,3+p,4+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2+\frac{1}{2(3+p)}$$

$$(1+p)(2+p)\,\text{HypergeometricPFQ}\left[\left\{\frac{3}{2}+\frac{p}{2},2+p\right\},\left\{\frac{5}{2}+\frac{p}{2}\right\},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\Bigg)\text{Tan}\left[\frac{1}{2}(e+f x)\right]\Bigg)\Bigg)\Bigg/$$

$$\Bigg((2+p)\,\text{AppellF1}\left[1+p,p,2+p,2+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]-(2+p)\,\text{AppellF1}\Big[2+p,p,$$

$$3+p,3+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\Big]\text{Tan}\left[\frac{1}{2}(e+f x)\right]+$$

$$p\,\text{AppellF1}\left[2+p,1+p,2+p,3+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]\text{Tan}\left[\frac{1}{2}(e+f x)\right]\Bigg)^2\Bigg)+$$

$$\frac{1}{1+p}2^{1+p}p(2+p)\left(-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)^{-p}\text{Tan}\left[\frac{1}{2}(e+f x)\right]\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)^{-4-p}\left(-\frac{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}\right)^{-1+p}$$

$$\left(-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)^p$$

$$\left(\left(\text{AppellF1}\left[1+p,\,p,\,2+p,\,2+p,\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right],\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right]\,\left(1+\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^2\right)\Big/\right.$$

$$\left((2+p)\,\text{AppellF1}\left[1+p,\,p,\,2+p,\,2+p,\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right],\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right]-\right.$$

$$(2+p)\,\text{AppellF1}\left[2+p,\,p,\,3+p,\,3+p,\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right],\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right]\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]+$$

$$\left.p\,\text{AppellF1}\left[2+p,\,1+p,\,2+p,\,3+p,\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right],\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right]\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right)-$$

$$\left(2\,\text{AppellF1}\left[1+p,\,p,\,3+p,\,2+p,\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right],\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right]\,\left(1+\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right)\right)\Big/$$

$$\left((2+p)\,\text{AppellF1}\left[1+p,\,p,\,3+p,\,2+p,\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right],\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right]-\right.$$

$$(3+p)\,\text{AppellF1}\left[2+p,\,p,\,4+p,\,3+p,\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right],\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right]\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]+$$

$$\left.p\,\text{AppellF1}\left[2+p,\,1+p,\,3+p,\,3+p,\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right],\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right]\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right)+$$

$$\left(2\,\text{AppellF1}\left[1+p,\,p,\,4+p,\,2+p,\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right],\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right]\right)\Big/$$

$$\left((2+p)\,\text{AppellF1}\left[1+p,\,p,\,4+p,\,2+p,\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right],\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right]-\right.$$

$$(4+p)\,\text{AppellF1}\left[2+p,\,p,\,5+p,\,3+p,\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right],\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right]\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]+$$

$$\left.\left.p\,\text{AppellF1}\left[2+p,\,1+p,\,4+p,\,3+p,\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right],\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right]\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right)\right)$$

$$\left.\left.\left(\frac{\text{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]^2\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2}{\left(-1+\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right)^2}-\frac{\text{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]^2}{2\,\left(-1+\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right)}\right)\right)\right)$$

■ **Problem 128: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int\frac{(g\,\text{Tan}[e+f\,x])^p}{(a+a\,\text{Sin}[e+f\,x])^3}\,dx$$

Optimal (type 5, 248 leaves, 13 steps):

$$\frac{(g\,\text{Tan}[e+f\,x])^{1+p}}{a^3\,f\,g\,(1+p)}-\frac{3\,\left(\text{Cos}[e+f\,x]^2\right)^{\frac{7+p}{2}}\,\text{Hypergeometric2F1}\left[\frac{2+p}{2},\frac{7+p}{2},\frac{4+p}{2},\text{Sin}[e+f\,x]^2\right]\,\text{Sec}[e+f\,x]^5\,(g\,\text{Tan}[e+f\,x])^{2+p}}{a^3\,f\,g^2\,(2+p)}+\frac{5\,(g\,\text{Tan}[e+f\,x])^{3+p}}{a^3\,f\,g^3\,(3+p)}-$$
$$\frac{\left(\text{Cos}[e+f\,x]^2\right)^{\frac{7+p}{2}}\,\text{Hypergeometric2F1}\left[\frac{4+p}{2},\frac{7+p}{2},\frac{6+p}{2},\text{Sin}[e+f\,x]^2\right]\,\text{Sec}[e+f\,x]^3\,(g\,\text{Tan}[e+f\,x])^{4+p}}{a^3\,f\,g^4\,(4+p)}+\frac{4\,(g\,\text{Tan}[e+f\,x])^{5+p}}{a^3\,f\,g^5\,(5+p)}$$

Result (type 6, 11 802 leaves) :

$$\left(2^{1+p}\,(2+p)\,\left(-1+\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^{-p}\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\,\left(1+\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^{-6-p}\,\left(-\frac{\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]}{-1+\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2}\right)^p\right.$$
$$\left(-1+\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right)^p\,\left(\left(\text{AppellF1}\left[1+p,p,2+p,2+p,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right],-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right]\,\left(1+\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^4\right)\Big/\right.$$
$$\left((2+p)\,\text{AppellF1}\left[1+p,p,2+p,2+p,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right],-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right]-(2+p)\,\text{AppellF1}\left[2+p,p,3+p,3+p,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right],\right.\right.$$
$$\left.\left.-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right]\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]+p\,\text{AppellF1}\left[2+p,1+p,2+p,3+p,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right],-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right]\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right)-$$
$$\left(4\,\text{AppellF1}\left[1+p,p,3+p,2+p,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right],-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right]\,\left(1+\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^3\right)\Big/$$
$$\left((2+p)\,\text{AppellF1}\left[1+p,p,3+p,2+p,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right],-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right]-(3+p)\,\text{AppellF1}\left[2+p,p,4+p,3+p,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right],\right.\right.$$
$$\left.\left.-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right]\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]+p\,\text{AppellF1}\left[2+p,1+p,3+p,3+p,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right],-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right]\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right)+$$
$$\left(8\,\text{AppellF1}\left[1+p,p,4+p,2+p,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right],-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right]\,\left(1+\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^2\right)\Big/$$
$$\left((2+p)\,\text{AppellF1}\left[1+p,p,4+p,2+p,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right],-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right]-(4+p)\,\text{AppellF1}\left[2+p,p,5+p,3+p,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right],\right.\right.$$
$$\left.\left.-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right]\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]+p\,\text{AppellF1}\left[2+p,1+p,4+p,3+p,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right],-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right]\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right)-$$
$$\left(8\,\text{AppellF1}\left[1+p,p,5+p,2+p,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right],-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right]\,\left(1+\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right)\right)\Big/$$
$$\left((2+p)\,\text{AppellF1}\left[1+p,p,5+p,2+p,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right],-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right]-(5+p)\,\text{AppellF1}\left[2+p,p,6+p,3+p,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right],\right.\right.$$
$$\left.\left.-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right]\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]+p\,\text{AppellF1}\left[2+p,1+p,5+p,3+p,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right],-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right]\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right)+$$
$$\left(4\,\text{AppellF1}\left[1+p,p,6+p,2+p,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right],-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right]\right)\Big/\left((2+p)\,\text{AppellF1}\left[1+p,p,6+p,2+p,\right.\right.$$

$$\text{Tan}\left[\frac{1}{2}(e+f x)\right], -\text{Tan}\left[\frac{1}{2}(e+f x)\right]\Big] - (6+p)\,\text{AppellF1}\left[2+p, p, 7+p, 3+p, \text{Tan}\left[\frac{1}{2}(e+f x)\right], -\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right] \text{Tan}\left[\frac{1}{2}(e+f x)\right] +$$

$$p\,\text{AppellF1}\left[2+p, 1+p, 6+p, 3+p, \text{Tan}\left[\frac{1}{2}(e+f x)\right], -\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right] \text{Tan}\left[\frac{1}{2}(e+f x)\right]\Big)\Big)\, (g\,\text{Tan}[e+f x])^p\Big) \Big/$$

$$\Bigg(f\,(1+p)\,(a+a\,\text{Sin}[e+f x])^3 \Bigg(\frac{1}{1+p} 2^{1+p} p\,(2+p)\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2 \left(-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)^{-p} \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2$$

$$\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)^{-6-p} \left(-\frac{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}\right)^p \left(-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)^{-1+p}$$

$$\Bigg(\Bigg(\text{AppellF1}\left[1+p, p, 2+p, 2+p, \text{Tan}\left[\frac{1}{2}(e+f x)\right], -\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right] \left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)^4\Bigg) \Big/ \Big((2+p)\,\text{AppellF1}\Big[1+p, p, 2+p,$$

$$2+p, \text{Tan}\left[\frac{1}{2}(e+f x)\right], -\text{Tan}\left[\frac{1}{2}(e+f x)\right]\Big] - (2+p)\,\text{AppellF1}\left[2+p, p, 3+p, 3+p, \text{Tan}\left[\frac{1}{2}(e+f x)\right], -\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]$$

$$\text{Tan}\left[\frac{1}{2}(e+f x)\right] + p\,\text{AppellF1}\left[2+p, 1+p, 2+p, 3+p, \text{Tan}\left[\frac{1}{2}(e+f x)\right], -\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right] \text{Tan}\left[\frac{1}{2}(e+f x)\right]\Big) -$$

$$\left(4\,\text{AppellF1}\left[1+p, p, 3+p, 2+p, \text{Tan}\left[\frac{1}{2}(e+f x)\right], -\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right] \left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)^3\right) \Big/ \Big((2+p)\,\text{AppellF1}\Big[1+p, p,$$

$$3+p, 2+p, \text{Tan}\left[\frac{1}{2}(e+f x)\right], -\text{Tan}\left[\frac{1}{2}(e+f x)\right]\Big] - (3+p)\,\text{AppellF1}\left[2+p, p, 4+p, 3+p, \text{Tan}\left[\frac{1}{2}(e+f x)\right], -\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]$$

$$\text{Tan}\left[\frac{1}{2}(e+f x)\right] + p\,\text{AppellF1}\left[2+p, 1+p, 3+p, 3+p, \text{Tan}\left[\frac{1}{2}(e+f x)\right], -\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right] \text{Tan}\left[\frac{1}{2}(e+f x)\right]\Big) +$$

$$\left(8\,\text{AppellF1}\left[1+p, p, 4+p, 2+p, \text{Tan}\left[\frac{1}{2}(e+f x)\right], -\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right] \left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)^2\right) \Big/ \Big((2+p)\,\text{AppellF1}\Big[1+p, p,$$

$$4+p, 2+p, \text{Tan}\left[\frac{1}{2}(e+f x)\right], -\text{Tan}\left[\frac{1}{2}(e+f x)\right]\Big] - (4+p)\,\text{AppellF1}\left[2+p, p, 5+p, 3+p, \text{Tan}\left[\frac{1}{2}(e+f x)\right], -\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]$$

$$\text{Tan}\left[\frac{1}{2}(e+f x)\right] + p\,\text{AppellF1}\left[2+p, 1+p, 4+p, 3+p, \text{Tan}\left[\frac{1}{2}(e+f x)\right], -\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right] \text{Tan}\left[\frac{1}{2}(e+f x)\right]\Big) -$$

$$\left(8\,\text{AppellF1}\left[1+p, p, 5+p, 2+p, \text{Tan}\left[\frac{1}{2}(e+f x)\right], -\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right] \left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\right) \Big/$$

$$\Big((2+p)\,\text{AppellF1}\left[1+p, p, 5+p, 2+p, \text{Tan}\left[\frac{1}{2}(e+f x)\right], -\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right] -$$

$$(5+p)\,\text{AppellF1}\left[2+p, p, 6+p, 3+p, \text{Tan}\left[\frac{1}{2}(e+f x)\right], -\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right] \text{Tan}\left[\frac{1}{2}(e+f x)\right] +$$

$$p\,\text{AppellF1}\left[2+p,1+p,5+p,3+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]\text{Tan}\left[\frac{1}{2}(e+f x)\right]\Bigg)+$$

$$\left(4\,\text{AppellF1}\left[1+p,p,6+p,2+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]\right)\Big/\Bigg((2+p)\,\text{AppellF1}\left[1+p,p,6+p,2+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],\right.$$

$$\left.-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]-(6+p)\,\text{AppellF1}\left[2+p,p,7+p,3+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]\text{Tan}\left[\frac{1}{2}(e+f x)\right]+$$

$$p\,\text{AppellF1}\left[2+p,1+p,6+p,3+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]\text{Tan}\left[\frac{1}{2}(e+f x)\right]\Bigg)\Bigg)+$$

$$\frac{1}{1+p}2^p(-6-p)(2+p)\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\left(-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)^{-p}\text{Tan}\left[\frac{1}{2}(e+f x)\right]\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)^{-7-p}$$

$$\left(-\frac{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}\right)^p\left(-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)^p$$

$$\Bigg(\Bigg(\text{AppellF1}\left[1+p,p,2+p,2+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)^4\Bigg)\Big/$$

$$\Bigg((2+p)\,\text{AppellF1}\left[1+p,p,2+p,2+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]-$$

$$(2+p)\,\text{AppellF1}\left[2+p,p,3+p,3+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]\text{Tan}\left[\frac{1}{2}(e+f x)\right]+$$

$$p\,\text{AppellF1}\left[2+p,1+p,2+p,3+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]\text{Tan}\left[\frac{1}{2}(e+f x)\right]\Bigg)-$$

$$\left(4\,\text{AppellF1}\left[1+p,p,3+p,2+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)^3\right)\Big/$$

$$\Bigg((2+p)\,\text{AppellF1}\left[1+p,p,3+p,2+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]-$$

$$(3+p)\,\text{AppellF1}\left[2+p,p,4+p,3+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]\text{Tan}\left[\frac{1}{2}(e+f x)\right]+$$

$$p\,\text{AppellF1}\left[2+p,1+p,3+p,3+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]\text{Tan}\left[\frac{1}{2}(e+f x)\right]\Bigg)+$$

$$\left(8\,\text{AppellF1}\left[1+p,p,4+p,2+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)^2\right)\Big/$$

$$\Bigg((2+p)\,\text{AppellF1}\left[1+p,p,4+p,2+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]-$$

$$(4+p)\,\text{AppellF1}\left[2+p,p,5+p,3+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]\text{Tan}\left[\frac{1}{2}(e+f x)\right]+$$

$$p\,\text{AppellF1}\left[2+p,1+p,4+p,3+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]\text{Tan}\left[\frac{1}{2}(e+f x)\right]\Bigg)-$$

$$\left(8\,\text{AppellF1}\left[1+p,p,5+p,2+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\right)\Big/$$

$$\Bigg((2+p)\,\text{AppellF1}\left[1+p,p,5+p,2+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]-$$

$$(5+p)\,\text{AppellF1}\left[2+p,p,6+p,3+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]\text{Tan}\left[\frac{1}{2}(e+f x)\right]+$$

$$p\,\text{AppellF1}\left[2+p,1+p,5+p,3+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]\text{Tan}\left[\frac{1}{2}(e+f x)\right]\Bigg)+$$

$$\left(4\,\text{AppellF1}\left[1+p,p,6+p,2+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]\right)\Big/\Bigg((2+p)\,\text{AppellF1}\Big[1+p,p,6+p,2+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],$$

$$-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\Big]-(6+p)\,\text{AppellF1}\left[2+p,p,7+p,3+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]\text{Tan}\left[\frac{1}{2}(e+f x)\right]+$$

$$p\,\text{AppellF1}\left[2+p,1+p,6+p,3+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]\text{Tan}\left[\frac{1}{2}(e+f x)\right]\Bigg)\Bigg)+$$

$$\frac{1}{1+p}2^p(2+p)\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\left(-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)^{-p}\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)^{-6-p}\left(-\frac{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}\right)^p$$

$$\left(-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)^p\Bigg(\Bigg(\text{AppellF1}\left[1+p,p,2+p,2+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)^4\Bigg)\Big/$$

$$\Bigg((2+p)\,\text{AppellF1}\left[1+p,p,2+p,2+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]-$$

$$(2+p)\,\text{AppellF1}\left[2+p,p,3+p,3+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]\text{Tan}\left[\frac{1}{2}(e+f x)\right]+$$

$$p\,\text{AppellF1}\left[2+p,1+p,2+p,3+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]\text{Tan}\left[\frac{1}{2}(e+f x)\right]\Bigg)-$$

$$\left(4\,\text{AppellF1}\left[1+p,p,3+p,2+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)^3\right)\Big/$$

$$\Bigg((2+p)\,\text{AppellF1}\left[1+p,p,3+p,2+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]-$$

$$(3+p)\,\text{AppellF1}\left[2+p,p,4+p,3+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]\text{Tan}\left[\frac{1}{2}(e+f x)\right]+$$

$$p\,\text{AppellF1}\left[2+p,1+p,3+p,3+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]\text{Tan}\left[\frac{1}{2}(e+f x)\right]\Bigg)+$$

$$\left(8\,\text{AppellF1}\left[1+p,\,p,\,4+p,\,2+p,\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right],\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right]\left(1+\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^2\right)\Big/$$

$$\left((2+p)\,\text{AppellF1}\left[1+p,\,p,\,4+p,\,2+p,\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right],\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right]-\right.$$

$$(4+p)\,\text{AppellF1}\left[2+p,\,p,\,5+p,\,3+p,\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right],\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right]\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]+$$

$$\left.p\,\text{AppellF1}\left[2+p,\,1+p,\,4+p,\,3+p,\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right],\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right]\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right)-$$

$$\left(8\,\text{AppellF1}\left[1+p,\,p,\,5+p,\,2+p,\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right],\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right]\left(1+\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right)\right)\Big/$$

$$\left((2+p)\,\text{AppellF1}\left[1+p,\,p,\,5+p,\,2+p,\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right],\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right]-\right.$$

$$(5+p)\,\text{AppellF1}\left[2+p,\,p,\,6+p,\,3+p,\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right],\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right]\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]+$$

$$\left.p\,\text{AppellF1}\left[2+p,\,1+p,\,5+p,\,3+p,\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right],\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right]\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right)+$$

$$\left(4\,\text{AppellF1}\left[1+p,\,p,\,6+p,\,2+p,\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right],\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right]\right)\Big/\left((2+p)\,\text{AppellF1}\left[1+p,\,p,\,6+p,\,2+p,\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right],\right.\right.$$

$$-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\Big]-(6+p)\,\text{AppellF1}\left[2+p,\,p,\,7+p,\,3+p,\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right],\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right]\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]+$$

$$\left.\left.p\,\text{AppellF1}\left[2+p,\,1+p,\,6+p,\,3+p,\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right],\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right]\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right)\right)-$$

$$\frac{1}{1+p}\,2^p\,p\,(2+p)\,\text{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]^2\left(-1+\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^{-1-p}\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\left(1+\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^{-6-p}$$

$$\left(-\frac{\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]}{-1+\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2}\right)^p\left(-1+\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right)^p$$

$$\left(\left(\text{AppellF1}\left[1+p,\,p,\,2+p,\,2+p,\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right],\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right]\left(1+\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^4\right)\Big/\right.$$

$$\left((2+p)\,\text{AppellF1}\left[1+p,\,p,\,2+p,\,2+p,\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right],\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right]-\right.$$

$$(2+p)\,\text{AppellF1}\left[2+p,\,p,\,3+p,\,3+p,\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right],\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right]\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]+$$

$$\left.p\,\text{AppellF1}\left[2+p,\,1+p,\,2+p,\,3+p,\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right],\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right]\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right)-$$

$$\left(4\,\text{AppellF1}\left[1+p,\,p,\,3+p,\,2+p,\,\text{Tan}\left[\frac{1}{2}(e+f x)\right],\,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)^3\right)\Big/$$
$$\left((2+p)\,\text{AppellF1}\left[1+p,\,p,\,3+p,\,2+p,\,\text{Tan}\left[\frac{1}{2}(e+f x)\right],\,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]-\right.$$
$$(3+p)\,\text{AppellF1}\left[2+p,\,p,\,4+p,\,3+p,\,\text{Tan}\left[\frac{1}{2}(e+f x)\right],\,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]\text{Tan}\left[\frac{1}{2}(e+f x)\right]+$$
$$\left.p\,\text{AppellF1}\left[2+p,\,1+p,\,3+p,\,3+p,\,\text{Tan}\left[\frac{1}{2}(e+f x)\right],\,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)+$$
$$\left(8\,\text{AppellF1}\left[1+p,\,p,\,4+p,\,2+p,\,\text{Tan}\left[\frac{1}{2}(e+f x)\right],\,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)^2\right)\Big/$$
$$\left((2+p)\,\text{AppellF1}\left[1+p,\,p,\,4+p,\,2+p,\,\text{Tan}\left[\frac{1}{2}(e+f x)\right],\,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]-\right.$$
$$(4+p)\,\text{AppellF1}\left[2+p,\,p,\,5+p,\,3+p,\,\text{Tan}\left[\frac{1}{2}(e+f x)\right],\,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]\text{Tan}\left[\frac{1}{2}(e+f x)\right]+$$
$$\left.p\,\text{AppellF1}\left[2+p,\,1+p,\,4+p,\,3+p,\,\text{Tan}\left[\frac{1}{2}(e+f x)\right],\,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)-$$
$$\left(8\,\text{AppellF1}\left[1+p,\,p,\,5+p,\,2+p,\,\text{Tan}\left[\frac{1}{2}(e+f x)\right],\,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\right)\Big/$$
$$\left((2+p)\,\text{AppellF1}\left[1+p,\,p,\,5+p,\,2+p,\,\text{Tan}\left[\frac{1}{2}(e+f x)\right],\,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]-\right.$$
$$(5+p)\,\text{AppellF1}\left[2+p,\,p,\,6+p,\,3+p,\,\text{Tan}\left[\frac{1}{2}(e+f x)\right],\,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]\text{Tan}\left[\frac{1}{2}(e+f x)\right]+$$
$$\left.p\,\text{AppellF1}\left[2+p,\,1+p,\,5+p,\,3+p,\,\text{Tan}\left[\frac{1}{2}(e+f x)\right],\,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)+$$
$$\left(4\,\text{AppellF1}\left[1+p,\,p,\,6+p,\,2+p,\,\text{Tan}\left[\frac{1}{2}(e+f x)\right],\,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]\right)\Big/\left((2+p)\,\text{AppellF1}\left[1+p,\,p,\,6+p,\,2+p,\,\text{Tan}\left[\frac{1}{2}(e+f x)\right],\right.\right.$$
$$-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]-(6+p)\,\text{AppellF1}\left[2+p,\,p,\,7+p,\,3+p,\,\text{Tan}\left[\frac{1}{2}(e+f x)\right],\,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]\text{Tan}\left[\frac{1}{2}(e+f x)\right]+$$
$$\left.\left.p\,\text{AppellF1}\left[2+p,\,1+p,\,6+p,\,3+p,\,\text{Tan}\left[\frac{1}{2}(e+f x)\right],\,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\right)+$$
$$\frac{1}{1+p}2^{1+p}(2+p)\left(-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)^{-p}\text{Tan}\left[\frac{1}{2}(e+f x)\right]\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)^{-6-p}\left(-\frac{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}\right)^p$$
$$\left(-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)^p$$

$$\Bigg(\Bigg(2\,\text{AppellF1}\Big[1+p,\,p,\,2+p,\,2+p,\,\text{Tan}\Big[\tfrac{1}{2}(e+f\,x)\Big],\,-\text{Tan}\Big[\tfrac{1}{2}(e+f\,x)\Big]\Big]\,\text{Sec}\Big[\tfrac{1}{2}(e+f\,x)\Big]^2\,\Big(1+\text{Tan}\Big[\tfrac{1}{2}(e+f\,x)\Big]\Big)^3\Bigg)\Big/$$

$$\Big((2+p)\,\text{AppellF1}\Big[1+p,\,p,\,2+p,\,2+p,\,\text{Tan}\Big[\tfrac{1}{2}(e+f\,x)\Big],\,-\text{Tan}\Big[\tfrac{1}{2}(e+f\,x)\Big]\Big]-$$

$$(2+p)\,\text{AppellF1}\Big[2+p,\,p,\,3+p,\,3+p,\,\text{Tan}\Big[\tfrac{1}{2}(e+f\,x)\Big],\,-\text{Tan}\Big[\tfrac{1}{2}(e+f\,x)\Big]\Big]\,\text{Tan}\Big[\tfrac{1}{2}(e+f\,x)\Big]+$$

$$p\,\text{AppellF1}\Big[2+p,\,1+p,\,2+p,\,3+p,\,\text{Tan}\Big[\tfrac{1}{2}(e+f\,x)\Big],\,-\text{Tan}\Big[\tfrac{1}{2}(e+f\,x)\Big]\Big]\,\text{Tan}\Big[\tfrac{1}{2}(e+f\,x)\Big]\Big)+$$

$$\Bigg(\Bigg(-\tfrac{1}{2}(1+p)\,\text{AppellF1}\Big[2+p,\,p,\,3+p,\,3+p,\,\text{Tan}\Big[\tfrac{1}{2}(e+f\,x)\Big],\,-\text{Tan}\Big[\tfrac{1}{2}(e+f\,x)\Big]\Big]\,\text{Sec}\Big[\tfrac{1}{2}(e+f\,x)\Big]^2+$$

$$1/(2\,(2+p))\,p\,(1+p)\,\text{AppellF1}\Big[2+p,\,1+p,\,2+p,\,3+p,\,\text{Tan}\Big[\tfrac{1}{2}(e+f\,x)\Big],\,-\text{Tan}\Big[\tfrac{1}{2}(e+f\,x)\Big]\Big]\,\text{Sec}\Big[\tfrac{1}{2}(e+f\,x)\Big]^2\Bigg)$$

$$\Big(1+\text{Tan}\Big[\tfrac{1}{2}(e+f\,x)\Big]\Big)^4\Bigg)\Big/\Big((2+p)\,\text{AppellF1}\Big[1+p,\,p,\,2+p,\,2+p,\,\text{Tan}\Big[\tfrac{1}{2}(e+f\,x)\Big],\,-\text{Tan}\Big[\tfrac{1}{2}(e+f\,x)\Big]\Big]-$$

$$(2+p)\,\text{AppellF1}\Big[2+p,\,p,\,3+p,\,3+p,\,\text{Tan}\Big[\tfrac{1}{2}(e+f\,x)\Big],\,-\text{Tan}\Big[\tfrac{1}{2}(e+f\,x)\Big]\Big]\,\text{Tan}\Big[\tfrac{1}{2}(e+f\,x)\Big]+$$

$$p\,\text{AppellF1}\Big[2+p,\,1+p,\,2+p,\,3+p,\,\text{Tan}\Big[\tfrac{1}{2}(e+f\,x)\Big],\,-\text{Tan}\Big[\tfrac{1}{2}(e+f\,x)\Big]\Big]\,\text{Tan}\Big[\tfrac{1}{2}(e+f\,x)\Big]\Big)-$$

$$\Bigg(6\,\text{AppellF1}\Big[1+p,\,p,\,3+p,\,2+p,\,\text{Tan}\Big[\tfrac{1}{2}(e+f\,x)\Big],\,-\text{Tan}\Big[\tfrac{1}{2}(e+f\,x)\Big]\Big]\,\text{Sec}\Big[\tfrac{1}{2}(e+f\,x)\Big]^2\,\Big(1+\text{Tan}\Big[\tfrac{1}{2}(e+f\,x)\Big]\Big)^2\Bigg)\Big/$$

$$\Big((2+p)\,\text{AppellF1}\Big[1+p,\,p,\,3+p,\,2+p,\,\text{Tan}\Big[\tfrac{1}{2}(e+f\,x)\Big],\,-\text{Tan}\Big[\tfrac{1}{2}(e+f\,x)\Big]\Big]-$$

$$(3+p)\,\text{AppellF1}\Big[2+p,\,p,\,4+p,\,3+p,\,\text{Tan}\Big[\tfrac{1}{2}(e+f\,x)\Big],\,-\text{Tan}\Big[\tfrac{1}{2}(e+f\,x)\Big]\Big]\,\text{Tan}\Big[\tfrac{1}{2}(e+f\,x)\Big]+$$

$$p\,\text{AppellF1}\Big[2+p,\,1+p,\,3+p,\,3+p,\,\text{Tan}\Big[\tfrac{1}{2}(e+f\,x)\Big],\,-\text{Tan}\Big[\tfrac{1}{2}(e+f\,x)\Big]\Big]\,\text{Tan}\Big[\tfrac{1}{2}(e+f\,x)\Big]\Big)-$$

$$\Bigg(4\,\Bigg(-1/(2\,(2+p))\,(1+p)\,(3+p)\,\text{AppellF1}\Big[2+p,\,p,\,4+p,\,3+p,\,\text{Tan}\Big[\tfrac{1}{2}(e+f\,x)\Big],\,-\text{Tan}\Big[\tfrac{1}{2}(e+f\,x)\Big]\Big]\,\text{Sec}\Big[\tfrac{1}{2}(e+f\,x)\Big]^2+$$

$$1/(2\,(2+p))\,p\,(1+p)\,\text{AppellF1}\Big[2+p,\,1+p,\,3+p,\,3+p,\,\text{Tan}\Big[\tfrac{1}{2}(e+f\,x)\Big],\,-\text{Tan}\Big[\tfrac{1}{2}(e+f\,x)\Big]\Big]\,\text{Sec}\Big[\tfrac{1}{2}(e+f\,x)\Big]^2\Bigg)$$

$$\Big(1+\text{Tan}\Big[\tfrac{1}{2}(e+f\,x)\Big]\Big)^3\Bigg)\Big/\Big((2+p)\,\text{AppellF1}\Big[1+p,\,p,\,3+p,\,2+p,\,\text{Tan}\Big[\tfrac{1}{2}(e+f\,x)\Big],\,-\text{Tan}\Big[\tfrac{1}{2}(e+f\,x)\Big]\Big]-$$

$$(3+p)\,\text{AppellF1}\Big[2+p,\,p,\,4+p,\,3+p,\,\text{Tan}\Big[\tfrac{1}{2}(e+f\,x)\Big],\,-\text{Tan}\Big[\tfrac{1}{2}(e+f\,x)\Big]\Big]\,\text{Tan}\Big[\tfrac{1}{2}(e+f\,x)\Big]+$$

$$p\,\text{AppellF1}\Big[2+p,\,1+p,\,3+p,\,3+p,\,\text{Tan}\Big[\tfrac{1}{2}(e+f\,x)\Big],\,-\text{Tan}\Big[\tfrac{1}{2}(e+f\,x)\Big]\Big]\,\text{Tan}\Big[\tfrac{1}{2}(e+f\,x)\Big]\Big)+$$

$$\left(8\,\text{AppellF1}\left[1+p,\,p,\,4+p,\,2+p,\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right],\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right]\,\text{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]^2\,\left(1+\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right)\right)\Big/$$
$$\left((2+p)\,\text{AppellF1}\left[1+p,\,p,\,4+p,\,2+p,\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right],\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right]-\right.$$
$$(4+p)\,\text{AppellF1}\left[2+p,\,p,\,5+p,\,3+p,\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right],\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right]\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]+$$
$$\left.p\,\text{AppellF1}\left[2+p,\,1+p,\,4+p,\,3+p,\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right],\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right]\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right)+$$
$$\left(8\,\left(-1/(2\,(2+p))\,(1+p)\,(4+p)\,\text{AppellF1}\left[2+p,\,p,\,5+p,\,3+p,\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right],\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right]\,\text{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]^2+\right.\right.$$
$$\left.1/(2\,(2+p))\,p\,(1+p)\,\text{AppellF1}\left[2+p,\,1+p,\,4+p,\,3+p,\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right],\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right]\,\text{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right)$$
$$\left.\left(1+\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^2\right)\Big/\left((2+p)\,\text{AppellF1}\left[1+p,\,p,\,4+p,\,2+p,\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right],\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right]-\right.$$
$$(4+p)\,\text{AppellF1}\left[2+p,\,p,\,5+p,\,3+p,\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right],\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right]\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]+$$
$$\left.p\,\text{AppellF1}\left[2+p,\,1+p,\,4+p,\,3+p,\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right],\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right]\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right)-$$
$$\left(4\,\text{AppellF1}\left[1+p,\,p,\,5+p,\,2+p,\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right],\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right]\,\text{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right)\Big/$$
$$\left((2+p)\,\text{AppellF1}\left[1+p,\,p,\,5+p,\,2+p,\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right],\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right]-\right.$$
$$(5+p)\,\text{AppellF1}\left[2+p,\,p,\,6+p,\,3+p,\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right],\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right]\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]+$$
$$\left.p\,\text{AppellF1}\left[2+p,\,1+p,\,5+p,\,3+p,\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right],\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right]\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right)-$$
$$\left(8\,\left(-1/(2\,(2+p))\,(1+p)\,(5+p)\,\text{AppellF1}\left[2+p,\,p,\,6+p,\,3+p,\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right],\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right]\,\text{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]^2+\right.\right.$$
$$\left.1/(2\,(2+p))\,p\,(1+p)\,\text{AppellF1}\left[2+p,\,1+p,\,5+p,\,3+p,\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right],\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right]\,\text{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right)$$
$$\left.\left(1+\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right)\right)\Big/\left((2+p)\,\text{AppellF1}\left[1+p,\,p,\,5+p,\,2+p,\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right],\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right]-\right.$$
$$(5+p)\,\text{AppellF1}\left[2+p,\,p,\,6+p,\,3+p,\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right],\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right]\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]+$$
$$\left.p\,\text{AppellF1}\left[2+p,\,1+p,\,5+p,\,3+p,\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right],\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right]\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right)+$$

$$
\begin{aligned}
&\Bigg(4\left(-1/(2\,(2+p))\,(1+p)\,(6+p)\,\text{AppellF1}\left[2+p,p,7+p,3+p,\text{Tan}\left[\tfrac{1}{2}(e+f\,x)\right],-\text{Tan}\left[\tfrac{1}{2}(e+f\,x)\right]\right]\text{Sec}\left[\tfrac{1}{2}(e+f\,x)\right]^2+\right.\\
&\quad\left.1/(2\,(2+p))\,p\,(1+p)\,\text{AppellF1}\left[2+p,1+p,6+p,3+p,\text{Tan}\left[\tfrac{1}{2}(e+f\,x)\right],-\text{Tan}\left[\tfrac{1}{2}(e+f\,x)\right]\right]\text{Sec}\left[\tfrac{1}{2}(e+f\,x)\right]^2\right)\Bigg)\Big/\\
&\Bigg((2+p)\,\text{AppellF1}\left[1+p,p,6+p,2+p,\text{Tan}\left[\tfrac{1}{2}(e+f\,x)\right],-\text{Tan}\left[\tfrac{1}{2}(e+f\,x)\right]\right]-\\
&\quad(6+p)\,\text{AppellF1}\left[2+p,p,7+p,3+p,\text{Tan}\left[\tfrac{1}{2}(e+f\,x)\right],-\text{Tan}\left[\tfrac{1}{2}(e+f\,x)\right]\right]\text{Tan}\left[\tfrac{1}{2}(e+f\,x)\right]+\\
&\quad p\,\text{AppellF1}\left[2+p,1+p,6+p,3+p,\text{Tan}\left[\tfrac{1}{2}(e+f\,x)\right],-\text{Tan}\left[\tfrac{1}{2}(e+f\,x)\right]\right]\text{Tan}\left[\tfrac{1}{2}(e+f\,x)\right]\Bigg)+\\
&\Bigg(4\,\text{AppellF1}\left[1+p,p,3+p,2+p,\text{Tan}\left[\tfrac{1}{2}(e+f\,x)\right],-\text{Tan}\left[\tfrac{1}{2}(e+f\,x)\right]\right]\left(1+\text{Tan}\left[\tfrac{1}{2}(e+f\,x)\right]\right)^3\\
&\quad\Bigg(-\frac{1}{2}(3+p)\,\text{AppellF1}\left[2+p,p,4+p,3+p,\text{Tan}\left[\tfrac{1}{2}(e+f\,x)\right],-\text{Tan}\left[\tfrac{1}{2}(e+f\,x)\right]\right]\text{Sec}\left[\tfrac{1}{2}(e+f\,x)\right]^2+\\
&\quad\frac{1}{2}p\,\text{AppellF1}\left[2+p,1+p,3+p,3+p,\text{Tan}\left[\tfrac{1}{2}(e+f\,x)\right],-\text{Tan}\left[\tfrac{1}{2}(e+f\,x)\right]\right]\text{Sec}\left[\tfrac{1}{2}(e+f\,x)\right]^2+\\
&\quad(2+p)\left(-\frac{1}{2\,(2+p)}(1+p)\,(3+p)\,\text{AppellF1}\left[2+p,p,4+p,3+p,\text{Tan}\left[\tfrac{1}{2}(e+f\,x)\right],-\text{Tan}\left[\tfrac{1}{2}(e+f\,x)\right]\right]\text{Sec}\left[\tfrac{1}{2}(e+f\,x)\right]^2+\right.\\
&\quad\left.\frac{1}{2\,(2+p)}p\,(1+p)\,\text{AppellF1}\left[2+p,1+p,3+p,3+p,\text{Tan}\left[\tfrac{1}{2}(e+f\,x)\right],-\text{Tan}\left[\tfrac{1}{2}(e+f\,x)\right]\right]\text{Sec}\left[\tfrac{1}{2}(e+f\,x)\right]^2\right)-(3+p)\\
&\quad\left(-\frac{1}{2\,(3+p)}(2+p)\,(4+p)\,\text{AppellF1}\left[3+p,p,5+p,4+p,\text{Tan}\left[\tfrac{1}{2}(e+f\,x)\right],-\text{Tan}\left[\tfrac{1}{2}(e+f\,x)\right]\right]\text{Sec}\left[\tfrac{1}{2}(e+f\,x)\right]^2+\frac{1}{2\,(3+p)}\right.\\
&\quad\left.p\,(2+p)\,\text{AppellF1}\left[3+p,1+p,4+p,4+p,\text{Tan}\left[\tfrac{1}{2}(e+f\,x)\right],-\text{Tan}\left[\tfrac{1}{2}(e+f\,x)\right]\right]\text{Sec}\left[\tfrac{1}{2}(e+f\,x)\right]^2\right)\text{Tan}\left[\tfrac{1}{2}(e+f\,x)\right]+\\
&\quad p\left(-\frac{1}{2}(2+p)\,\text{AppellF1}\left[3+p,1+p,4+p,4+p,\text{Tan}\left[\tfrac{1}{2}(e+f\,x)\right],-\text{Tan}\left[\tfrac{1}{2}(e+f\,x)\right]\right]\text{Sec}\left[\tfrac{1}{2}(e+f\,x)\right]^2+\frac{1}{2\,(3+p)}(1+p)\right.\\
&\quad\left.(2+p)\,\text{AppellF1}\left[3+p,2+p,3+p,4+p,\text{Tan}\left[\tfrac{1}{2}(e+f\,x)\right],-\text{Tan}\left[\tfrac{1}{2}(e+f\,x)\right]\right]\text{Sec}\left[\tfrac{1}{2}(e+f\,x)\right]^2\right)\text{Tan}\left[\tfrac{1}{2}(e+f\,x)\right]\Bigg)\Bigg)\Big/\\
&\Bigg((2+p)\,\text{AppellF1}\left[1+p,p,3+p,2+p,\text{Tan}\left[\tfrac{1}{2}(e+f\,x)\right],-\text{Tan}\left[\tfrac{1}{2}(e+f\,x)\right]\right]-(3+p)\,\text{AppellF1}\Big[2+p,p,\\
&\quad 4+p,3+p,\text{Tan}\left[\tfrac{1}{2}(e+f\,x)\right],-\text{Tan}\left[\tfrac{1}{2}(e+f\,x)\right]\Big]\text{Tan}\left[\tfrac{1}{2}(e+f\,x)\right]+\\
&\quad p\,\text{AppellF1}\left[2+p,1+p,3+p,3+p,\text{Tan}\left[\tfrac{1}{2}(e+f\,x)\right],-\text{Tan}\left[\tfrac{1}{2}(e+f\,x)\right]\right]\text{Tan}\left[\tfrac{1}{2}(e+f\,x)\right]\Bigg)^2-\\
&\Bigg(8\,\text{AppellF1}\left[1+p,p,4+p,2+p,\text{Tan}\left[\tfrac{1}{2}(e+f\,x)\right],-\text{Tan}\left[\tfrac{1}{2}(e+f\,x)\right]\right]\left(1+\text{Tan}\left[\tfrac{1}{2}(e+f\,x)\right]\right)^2
\end{aligned}
$$

$$\left(-\frac{1}{2}(4+p)\,\text{AppellF1}\left[2+p,p,5+p,3+p,\text{Tan}\left[\frac{1}{2}(e+fx)\right],-\text{Tan}\left[\frac{1}{2}(e+fx)\right]\right]\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2+\right.$$

$$\frac{1}{2}p\,\text{AppellF1}\left[2+p,1+p,4+p,3+p,\text{Tan}\left[\frac{1}{2}(e+fx)\right],-\text{Tan}\left[\frac{1}{2}(e+fx)\right]\right]\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2+$$

$$(2+p)\left(-\frac{1}{2(2+p)}(1+p)(4+p)\,\text{AppellF1}\left[2+p,p,5+p,3+p,\text{Tan}\left[\frac{1}{2}(e+fx)\right],-\text{Tan}\left[\frac{1}{2}(e+fx)\right]\right]\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2+\right.$$

$$\left.\frac{1}{2(2+p)}p(1+p)\,\text{AppellF1}\left[2+p,1+p,4+p,3+p,\text{Tan}\left[\frac{1}{2}(e+fx)\right],-\text{Tan}\left[\frac{1}{2}(e+fx)\right]\right]\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2\right)-(4+p)$$

$$\left(-\frac{1}{2(3+p)}(2+p)(5+p)\,\text{AppellF1}\left[3+p,p,6+p,4+p,\text{Tan}\left[\frac{1}{2}(e+fx)\right],-\text{Tan}\left[\frac{1}{2}(e+fx)\right]\right]\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2+\frac{1}{2(3+p)}\right.$$

$$\left.p(2+p)\,\text{AppellF1}\left[3+p,1+p,5+p,4+p,\text{Tan}\left[\frac{1}{2}(e+fx)\right],-\text{Tan}\left[\frac{1}{2}(e+fx)\right]\right]\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2\right)\text{Tan}\left[\frac{1}{2}(e+fx)\right]+$$

$$p\left(-\frac{1}{2(3+p)}(2+p)(4+p)\,\text{AppellF1}\left[3+p,1+p,5+p,4+p,\text{Tan}\left[\frac{1}{2}(e+fx)\right],-\text{Tan}\left[\frac{1}{2}(e+fx)\right]\right]\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2+\right.$$

$$\left.\frac{1}{2(3+p)}(1+p)(2+p)\,\text{AppellF1}\left[3+p,2+p,4+p,4+p,\text{Tan}\left[\frac{1}{2}(e+fx)\right],-\text{Tan}\left[\frac{1}{2}(e+fx)\right]\right]\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2\right)$$

$$\left.\left.\text{Tan}\left[\frac{1}{2}(e+fx)\right]\right]\right)\Big/\left((2+p)\,\text{AppellF1}\left[1+p,p,4+p,2+p,\text{Tan}\left[\frac{1}{2}(e+fx)\right],-\text{Tan}\left[\frac{1}{2}(e+fx)\right]\right]-\right.$$

$$(4+p)\,\text{AppellF1}\left[2+p,p,5+p,3+p,\text{Tan}\left[\frac{1}{2}(e+fx)\right],-\text{Tan}\left[\frac{1}{2}(e+fx)\right]\right]\text{Tan}\left[\frac{1}{2}(e+fx)\right]+$$

$$\left.p\,\text{AppellF1}\left[2+p,1+p,4+p,3+p,\text{Tan}\left[\frac{1}{2}(e+fx)\right],-\text{Tan}\left[\frac{1}{2}(e+fx)\right]\right]\text{Tan}\left[\frac{1}{2}(e+fx)\right]\right)^2+$$

$$\left(8\,\text{AppellF1}\left[1+p,p,5+p,2+p,\text{Tan}\left[\frac{1}{2}(e+fx)\right],-\text{Tan}\left[\frac{1}{2}(e+fx)\right]\right]\left(1+\text{Tan}\left[\frac{1}{2}(e+fx)\right]\right)\right.$$

$$\left(-\frac{1}{2}(5+p)\,\text{AppellF1}\left[2+p,p,6+p,3+p,\text{Tan}\left[\frac{1}{2}(e+fx)\right],-\text{Tan}\left[\frac{1}{2}(e+fx)\right]\right]\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2+\right.$$

$$\frac{1}{2}p\,\text{AppellF1}\left[2+p,1+p,5+p,3+p,\text{Tan}\left[\frac{1}{2}(e+fx)\right],-\text{Tan}\left[\frac{1}{2}(e+fx)\right]\right]\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2+(2+p)$$

$$\left(-\frac{1}{2(2+p)}(1+p)(5+p)\,\text{AppellF1}\left[2+p,p,6+p,3+p,\text{Tan}\left[\frac{1}{2}(e+fx)\right],-\text{Tan}\left[\frac{1}{2}(e+fx)\right]\right]\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2+\frac{1}{2(2+p)}\right.$$

$$\left.p(1+p)\,\text{AppellF1}\left[2+p,1+p,5+p,3+p,\text{Tan}\left[\frac{1}{2}(e+fx)\right],-\text{Tan}\left[\frac{1}{2}(e+fx)\right]\right]\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2\right)-(5+p)\left(-\frac{1}{2(3+p)}\right.$$

$$(2+p)(6+p)\,\text{AppellF1}\left[3+p,p,7+p,4+p,\text{Tan}\left[\frac{1}{2}(e+fx)\right],-\text{Tan}\left[\frac{1}{2}(e+fx)\right]\right]\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2+\frac{1}{2(3+p)}p(2+p)$$

$$\left.\text{AppellF1}\left[3+p,1+p,6+p,4+p,\text{Tan}\left[\frac{1}{2}(e+fx)\right],-\text{Tan}\left[\frac{1}{2}(e+fx)\right]\right]\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2\right)\text{Tan}\left[\frac{1}{2}(e+fx)\right]+p\left(-\frac{1}{2(3+p)}\right.$$

$$(2+p)\ (5+p)\ \text{AppellF1}\left[3+p,1+p,6+p,4+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2+\frac{1}{2(3+p)}(1+p)$$

$$(2+p)\ \text{AppellF1}\left[3+p,2+p,5+p,4+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\Bigg)\text{Tan}\left[\frac{1}{2}(e+f x)\right]\Bigg)\Bigg)\Bigg/$$

$$\Bigg((2+p)\ \text{AppellF1}\left[1+p,p,5+p,2+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]-(5+p)\ \text{AppellF1}\Big[2+p,p,6+p,$$

$$3+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\Big]\text{Tan}\left[\frac{1}{2}(e+f x)\right]+p\ \text{AppellF1}\Big[2+p,1+p,5+p,3+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],$$

$$-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\Big]\text{Tan}\left[\frac{1}{2}(e+f x)\right]\Bigg)^2-\Bigg(4\ \text{AppellF1}\left[1+p,p,6+p,2+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]$$

$$\Bigg(-\frac{1}{2}(6+p)\ \text{AppellF1}\left[2+p,p,7+p,3+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2+$$

$$\frac{1}{2}p\ \text{AppellF1}\left[2+p,1+p,6+p,3+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2+$$

$$(2+p)\ \Bigg(-\frac{1}{2(2+p)}(1+p)\ (6+p)\ \text{AppellF1}\left[2+p,p,7+p,3+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2+$$

$$\frac{1}{2(2+p)}p\ (1+p)\ \text{AppellF1}\left[2+p,1+p,6+p,3+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\Bigg)-(6+p)$$

$$\Bigg(-\frac{1}{2(3+p)}(2+p)\ (7+p)\ \text{AppellF1}\left[3+p,p,8+p,4+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2+\frac{1}{2(3+p)}$$

$$p\ (2+p)\ \text{AppellF1}\left[3+p,1+p,7+p,4+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\Bigg)\text{Tan}\left[\frac{1}{2}(e+f x)\right]+$$

$$p\ \Bigg(-\frac{1}{2(3+p)}(2+p)\ (6+p)\ \text{AppellF1}\left[3+p,1+p,7+p,4+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2+$$

$$\frac{1}{2(3+p)}(1+p)\ (2+p)\ \text{AppellF1}\left[3+p,2+p,6+p,4+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\Bigg)$$

$$\text{Tan}\left[\frac{1}{2}(e+f x)\right]\Bigg)\Bigg)\Bigg/\Bigg((2+p)\ \text{AppellF1}\left[1+p,p,6+p,2+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]-$$

$$(6+p)\ \text{AppellF1}\left[2+p,p,7+p,3+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]\text{Tan}\left[\frac{1}{2}(e+f x)\right]+$$

$$p\ \text{AppellF1}\left[2+p,1+p,6+p,3+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]\text{Tan}\left[\frac{1}{2}(e+f x)\right]\Bigg)^2-$$

$$\Bigg(\text{AppellF1}\left[1+p,p,2+p,2+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)^4$$

$$\Bigg(-\frac{1}{2}(2+p)\ \text{AppellF1}\left[2+p,p,3+p,3+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2+$$

$$\frac{1}{2} p\,\text{AppellF1}\left[2+p,1+p,2+p,3+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2+$$

$$(2+p)\left(-\frac{1}{2}(1+p)\,\text{AppellF1}\left[2+p,p,3+p,3+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2+\right.$$

$$\left.\frac{1}{2(2+p)}p(1+p)\,\text{AppellF1}\left[2+p,1+p,2+p,3+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\right)-$$

$$(2+p)\left(-\frac{1}{2}(2+p)\,\text{AppellF1}\left[3+p,p,4+p,4+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2+\frac{1}{2(3+p)}\right.$$

$$\left.p(2+p)\,\text{AppellF1}\left[3+p,1+p,3+p,4+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\right)\text{Tan}\left[\frac{1}{2}(e+f x)\right]+$$

$$p\left(-\frac{1}{2(3+p)}(2+p)^2\,\text{AppellF1}\left[3+p,1+p,3+p,4+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2+\frac{1}{2(3+p)}\right.$$

$$\left.\left.\left.(1+p)(2+p)\,\text{HypergeometricPFQ}\left[\left\{\frac{3}{2}+\frac{p}{2},2+p\right\},\left\{\frac{5}{2}+\frac{p}{2}\right\},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\right)\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\right)\Big/$$

$$\left((2+p)\,\text{AppellF1}\left[1+p,p,2+p,2+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]-(2+p)\,\text{AppellF1}\left[2+p,p,\right.\right.$$

$$3+p,3+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\Big]\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]+$$

$$\left.\left.p\,\text{AppellF1}\left[2+p,1+p,2+p,3+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)^2\right)+$$

$$\frac{1}{1+p}2^{1+p}p(2+p)\left(-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)^{-p}\text{Tan}\left[\frac{1}{2}(e+f x)\right]\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)^{-6-p}\left(-\frac{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}\right)^{-1+p}$$

$$\left(-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)^p$$

$$\left(\left(\text{AppellF1}\left[1+p,p,2+p,2+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)^4\right)\Big/\right.$$

$$\left((2+p)\,\text{AppellF1}\left[1+p,p,2+p,2+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]-\right.$$

$$(2+p)\,\text{AppellF1}\left[2+p,p,3+p,3+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]\text{Tan}\left[\frac{1}{2}(e+f x)\right]+$$

$$\left.p\,\text{AppellF1}\left[2+p,1+p,2+p,3+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)-$$

$$\left(4\,\text{AppellF1}\left[1+p,p,3+p,2+p,\text{Tan}\left[\frac{1}{2}(e+f x)\right],-\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)^3\right)\Big/$$

$$\left((2+p)\,\text{AppellF1}\left[1+p,\,p,\,3+p,\,2+p,\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right],\,-\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]\right]-\right.$$
$$(3+p)\,\text{AppellF1}\left[2+p,\,p,\,4+p,\,3+p,\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right],\,-\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]\right]\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]+$$
$$\left.p\,\text{AppellF1}\left[2+p,\,1+p,\,3+p,\,3+p,\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right],\,-\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]\right]\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]\right)+$$
$$\left(8\,\text{AppellF1}\left[1+p,\,p,\,4+p,\,2+p,\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right],\,-\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]\right]\left(1+\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]\right)^2\right)\Big/$$
$$\left((2+p)\,\text{AppellF1}\left[1+p,\,p,\,4+p,\,2+p,\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right],\,-\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]\right]-\right.$$
$$(4+p)\,\text{AppellF1}\left[2+p,\,p,\,5+p,\,3+p,\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right],\,-\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]\right]\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]+$$
$$\left.p\,\text{AppellF1}\left[2+p,\,1+p,\,4+p,\,3+p,\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right],\,-\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]\right]\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]\right)-$$
$$\left(8\,\text{AppellF1}\left[1+p,\,p,\,5+p,\,2+p,\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right],\,-\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]\right]\left(1+\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]\right)\right)\Big/$$
$$\left((2+p)\,\text{AppellF1}\left[1+p,\,p,\,5+p,\,2+p,\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right],\,-\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]\right]-\right.$$
$$(5+p)\,\text{AppellF1}\left[2+p,\,p,\,6+p,\,3+p,\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right],\,-\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]\right]\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]+$$
$$\left.p\,\text{AppellF1}\left[2+p,\,1+p,\,5+p,\,3+p,\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right],\,-\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]\right]\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]\right)+$$
$$\left(4\,\text{AppellF1}\left[1+p,\,p,\,6+p,\,2+p,\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right],\,-\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]\right]\right)\Big/$$
$$\left((2+p)\,\text{AppellF1}\left[1+p,\,p,\,6+p,\,2+p,\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right],\,-\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]\right]-\right.$$
$$(6+p)\,\text{AppellF1}\left[2+p,\,p,\,7+p,\,3+p,\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right],\,-\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]\right]\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]+$$
$$\left.\left.p\,\text{AppellF1}\left[2+p,\,1+p,\,6+p,\,3+p,\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right],\,-\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]\right]\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]\right)\right)$$
$$\left.\left.\left.\left(\frac{\text{Sec}\left[\frac{1}{2}(e+f\,x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]^2}{\left(-1+\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]^2\right)^2}-\frac{\text{Sec}\left[\frac{1}{2}(e+f\,x)\right]^2}{2\left(-1+\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]^2\right)}\right)\right)\right)\right)$$

- **Problem 129: Result more than twice size of optimal antiderivative.**

$$\int(a+a\,\text{Sin}[e+f\,x])^m\,(g\,\text{Tan}[e+f\,x])^p\,dx$$

Optimal (type 6, 111 leaves, 4 steps):

$$\frac{1}{f g (1+p)}\text{AppellF1}\left[1+p,\frac{1+p}{2},\frac{1}{2}(1-2m+p),2+p,\text{Sin}[e+f x],-\text{Sin}[e+f x]\right](1-\text{Sin}[e+f x])^{\frac{1+p}{2}}(1+\text{Sin}[e+f x])^{\frac{1}{2}(1-2m+p)}(a+a\,\text{Sin}[e+f x])^m(g\,\text{Tan}[e+f x])^{1+p}$$

Result (type 6, 3773 leaves):

$$\left(2(-3+p)\,\text{AppellF1}\left[\frac{1-p}{2},-p,1+m,\frac{3-p}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right.$$
$$\left.\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\left(\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{-m}(a+a\,\text{Sin}[e+f x])^m\,\text{Tan}[e+f x]^p\,(g\,\text{Tan}[e+f x])^p\right)\Big/$$
$$\left(f(-1+p)\left(2p\,\text{AppellF1}\left[\frac{3-p}{2},1-p,1+m,\frac{5-p}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.\right.$$
$$2(1+m)\,\text{AppellF1}\left[\frac{3-p}{2},-p,2+m,\frac{5-p}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$
$$\left.(-3+p)\,\text{AppellF1}\left[\frac{1-p}{2},-p,1+m,\frac{3-p}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)$$
$$\left(\left(2(-3+p)\,p\,\text{AppellF1}\left[\frac{1-p}{2},-p,1+m,\frac{3-p}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right.\right.$$
$$\left.\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\left(\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{-m}\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]^{-1+p}\right)\Big/$$
$$\left((-1+p)\left(2p\,\text{AppellF1}\left[\frac{3-p}{2},1-p,1+m,\frac{5-p}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.\right.$$
$$2(1+m)\,\text{AppellF1}\left[\frac{3-p}{2},-p,2+m,\frac{5-p}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$
$$\left.\left.(-3+p)\,\text{AppellF1}\left[\frac{1-p}{2},-p,1+m,\frac{3-p}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\right)+$$
$$\left(2(-3+p)\,\text{AppellF1}\left[\frac{1-p}{2},-p,1+m,\frac{3-p}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right.$$
$$\left.\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\left(\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{-m}\text{Tan}[e+f x]^p\right)\Big/$$
$$\left((-1+p)\left(2p\,\text{AppellF1}\left[\frac{3-p}{2},1-p,1+m,\frac{5-p}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.\right.$$
$$2(1+m)\,\text{AppellF1}\left[\frac{3-p}{2},-p,2+m,\frac{5-p}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$
$$\left.\left.(-3+p)\,\text{AppellF1}\left[\frac{1-p}{2},-p,1+m,\frac{3-p}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\right)+$$

$$\Big(2\,m\,(-3+p)\,\text{AppellF1}\Big[\frac{1-p}{2},\,-p,\,1+m,\,\frac{3-p}{2},\,\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]$$

$$\text{Cos}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\,\Big(\text{Sec}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)^{-m}\,\text{Tan}[e+f\,x]^p\Big)\Big/$$

$$\Big((-1+p)\,\Big(2\,p\,\text{AppellF1}\Big[\frac{3-p}{2},\,1-p,\,1+m,\,\frac{5-p}{2},\,\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+$$

$$2\,(1+m)\,\text{AppellF1}\Big[\frac{3-p}{2},\,-p,\,2+m,\,\frac{5-p}{2},\,\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+$$

$$(-3+p)\,\text{AppellF1}\Big[\frac{1-p}{2},\,-p,\,1+m,\,\frac{3-p}{2},\,\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\,\text{Cot}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)\Big)+$$

$$\Big((-3+p)\,\text{AppellF1}\Big[\frac{1-p}{2},\,-p,\,1+m,\,\frac{3-p}{2},\,\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]$$

$$\text{Cot}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\,\Big(\text{Sec}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)^{-m}\,\text{Tan}[e+f\,x]^p\Big)\Big/$$

$$\Big((-1+p)\,\Big(2\,p\,\text{AppellF1}\Big[\frac{3-p}{2},\,1-p,\,1+m,\,\frac{5-p}{2},\,\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+$$

$$2\,(1+m)\,\text{AppellF1}\Big[\frac{3-p}{2},\,-p,\,2+m,\,\frac{5-p}{2},\,\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+$$

$$(-3+p)\,\text{AppellF1}\Big[\frac{1-p}{2},\,-p,\,1+m,\,\frac{3-p}{2},\,\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\,\text{Cot}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)\Big)-$$

$$\Big(2\,(-3+p)\,\text{Cos}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\,\text{Cot}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\,\Big(\text{Sec}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)^{-m}$$

$$\Big(-\frac{1}{3-p}(1-p)\,p\,\text{AppellF1}\Big[1+\frac{1-p}{2},\,1-p,\,1+m,\,1+\frac{3-p}{2},\,\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]$$

$$\text{Sec}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]-\frac{1}{3-p}(1+m)\,(1-p)\,\text{AppellF1}\Big[1+\frac{1-p}{2},\,-p,\,2+m,\,1+\frac{3-p}{2},$$

$$\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\Big)\,\text{Tan}[e+f\,x]^p\Big)\Big/$$

$$\Big((-1+p)\,\Big(2\,p\,\text{AppellF1}\Big[\frac{3-p}{2},\,1-p,\,1+m,\,\frac{5-p}{2},\,\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+$$

$$2\,(1+m)\,\text{AppellF1}\Big[\frac{3-p}{2},\,-p,\,2+m,\,\frac{5-p}{2},\,\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+$$

$$(-3+p)\,\text{AppellF1}\Big[\frac{1-p}{2},\,-p,\,1+m,\,\frac{3-p}{2},\,\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\,\text{Cot}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)\Big)+$$

$$\Big(2\,(-3+p)\,\text{AppellF1}\Big[\frac{1-p}{2},\,-p,\,1+m,\,\frac{3-p}{2},\,\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\,\text{Cos}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\,\text{Cot}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]$$

$$\left(\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{-m}\left(-(-3+p)\,\text{AppellF1}\left[\frac{1-p}{2},-p,1+m,\frac{3-p}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2+(-3+p)\,\text{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\left(-\frac{1}{3-p}(1-p)\,p\,\text{AppellF1}\left[1+\frac{1-p}{2},1-p,1+m,1+\frac{3-p}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{1}{3-p}(1+m)(1-p)\,\text{AppellF1}\left[1+\frac{1-p}{2},-p,2+m,1+\frac{3-p}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)+2p\left(-\frac{1}{5-p}(1+m)(3-p)\,\text{AppellF1}\left[1+\frac{3-p}{2},1-p,2+m,1+\frac{5-p}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]+\frac{1}{5-p}(1-p)(3-p)\,\text{AppellF1}\left[1+\frac{3-p}{2},2-p,1+m,1+\frac{5-p}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)+2(1+m)\left(-\frac{1}{5-p}(3-p)\,p\,\text{AppellF1}\left[1+\frac{3-p}{2},1-p,2+m,1+\frac{5-p}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{1}{5-p}(2+m)(3-p)\,\text{AppellF1}\left[1+\frac{3-p}{2},-p,3+m,1+\frac{5-p}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)\right)\text{Tan}[e+f x]^p\Big) \Big/$$

$$\left((-1+p)\left(2p\,\text{AppellF1}\left[\frac{3-p}{2},1-p,1+m,\frac{5-p}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+2(1+m)\,\text{AppellF1}\left[\frac{3-p}{2},-p,2+m,\frac{5-p}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+(-3+p)\,\text{AppellF1}\left[\frac{1-p}{2},-p,1+m,\frac{3-p}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^2\right)\Big)\Big)$$

Problem 130: Unable to integrate problem.

$$\int (a+a\,\text{Sin}[e+f x])^m\,\text{Tan}[e+f x]^3\,dx$$

Optimal (type 5, 163 leaves, 4 steps):

$$\frac{a(4+m)\,\text{Hypergeometric2F1}\left[1,-1+m,m,\frac{1}{2}(1+\text{Sin}[e+f x])\right](a+a\,\text{Sin}[e+f x])^{-1+m}}{4f(1-m)}-\frac{a^2\,\text{Sin}[e+f x]^2\,(a+a\,\text{Sin}[e+f x])^{-1+m}}{f\,m\,(a-a\,\text{Sin}[e+f x])}+\frac{(a+a\,\text{Sin}[e+f x])^{-1+m}\left(a\left(2-3m-m^2\right)+2\,a\,m\,\text{Sin}[e+f x]\right)}{2f(1-m)\,m\,(1-\text{Sin}[e+f x])}$$

Result (type 8, 23 leaves):

$$\int (a+a\,\mathrm{Sin}[e+f\,x])^m\,\mathrm{Tan}[e+f\,x]^3\,dx$$

- **Problem 131: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int (a+a\,\mathrm{Sin}[e+f\,x])^m\,\mathrm{Tan}[e+f\,x]\,dx$$

Optimal (type 5, 72 leaves, 3 steps):

$$-\frac{(a+a\,\mathrm{Sin}[e+f\,x])^m}{2\,f\,m}+\frac{\mathrm{Hypergeometric2F1}\left[1,1+m,2+m,\frac{1}{2}(1+\mathrm{Sin}[e+f\,x])\right](a+a\,\mathrm{Sin}[e+f\,x])^{1+m}}{4\,a\,f\,(1+m)}$$

Result (type 6, 9890 leaves):

$$-\Bigg(\Bigg(\mathrm{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\mathrm{Sin}[e+f\,x]\,(a+a\,\mathrm{Sin}[e+f\,x])^m\left(\frac{1-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{1+\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}\right)^{2m}$$

$$\Bigg(-\Bigg(\Bigg(2\,\mathrm{AppellF1}\left[1,1-2m,2m,2,\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\Bigg)\Bigg/$$

$$\Bigg(\left(-1+\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\Bigg(-2\,\mathrm{AppellF1}\left[1,1-2m,2m,2,\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+$$

$$\Bigg(2\,m\,\mathrm{AppellF1}\left[2,1-2m,1+2m,3,\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+$$

$$(-1+2m)\,\mathrm{AppellF1}\left[2,2-2m,2m,3,\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\Bigg)\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Bigg)\Bigg)\Bigg)+$$

$$\Bigg(4\,\mathrm{AppellF1}\left[1,-2m,1+2m,2,\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\Bigg)\Bigg/$$

$$\Bigg(\left(1+\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\Bigg(-2\,\mathrm{AppellF1}\left[1,-2m,1+2m,2,\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+$$

$$\Bigg(2\,m\,\mathrm{AppellF1}\left[2,1-2m,1+2m,3,\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+(1+2m)$$

$$\mathrm{AppellF1}\left[2,-2m,2+2m,3,\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\Bigg)\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Bigg)\Bigg)+$$

$$\Bigg((1+m)\,\mathrm{AppellF1}\left[1+2m,2m,1,2+2m,\frac{1}{2}-\frac{1}{2}\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,1-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\left(-1+\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\Bigg)\Bigg/$$

$$\Bigg((1+2m)\Bigg(2\,(1+m)\,\mathrm{AppellF1}\left[1+2m,2m,1,2+2m,\frac{1}{2}-\frac{1}{2}\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,1-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]-$$

$$\Bigg(\mathrm{AppellF1}\left[2+2m,2m,2,3+2m,\frac{1}{2}-\frac{1}{2}\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,1-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+m\,\mathrm{AppellF1}\Big[2+2m,$$

$$1+2m,1,3+2m,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\Big]\Big)\left(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)\Big)\Big)\Big)\Big)\Big/$$

$$\Bigg(f\left(\text{Cos}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+fx\right)\right]-\text{Sin}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+fx\right)\right]\right)\left(\text{Cos}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+fx\right)\right]+\text{Sin}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+fx\right)\right]\right)$$

$$\left(-\frac{1}{2}\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]\text{Csc}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\left(\frac{1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2}\right)^{2m}\right.$$

$$\Bigg(-\Bigg(\Bigg(2\,\text{AppellF1}\left[1,1-2m,2m,2,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^4\Bigg)\Big/$$

$$\Bigg(\left(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)\Bigg(-2\,\text{AppellF1}\left[1,1-2m,2m,2,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+$$

$$\Bigg(2m\,\text{AppellF1}\left[2,1-2m,1+2m,3,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+$$

$$(-1+2m)\,\text{AppellF1}\left[2,2-2m,2m,3,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\Bigg)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\Bigg)\Bigg)\Bigg)+$$

$$\Bigg(4\,\text{AppellF1}\left[1,-2m,1+2m,2,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^4\Bigg)\Big/$$

$$\Bigg(\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)\Bigg(-2\,\text{AppellF1}\left[1,-2m,1+2m,2,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+$$

$$\Bigg(2m\,\text{AppellF1}\left[2,1-2m,1+2m,3,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+$$

$$(1+2m)\,\text{AppellF1}\left[2,-2m,2+2m,3,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\Bigg)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\Bigg)\Bigg)+$$

$$\Bigg((1+m)\,\text{AppellF1}\left[1+2m,2m,1,2+2m,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\left(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)\Bigg)\Big/$$

$$\Bigg((1+2m)\Bigg(2(1+m)\,\text{AppellF1}\left[1+2m,2m,1,2+2m,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]-$$

$$\Bigg(\text{AppellF1}\left[2+2m,2m,2,3+2m,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+m\,\text{AppellF1}\Big[2+2m,$$

$$1+2m,1,3+2m,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\Big]\Bigg)\left(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)\Bigg)\Bigg)\Bigg)+$$

$$2\,m\,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\left(\frac{1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}\right)^{-1+2\,m}\left(-\frac{\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)}{2\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^2}-\right.$$

$$\left.\frac{\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]}{2\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)}\right)$$

$$\left(-\left(\left(2\,\text{AppellF1}\left[1,1-2\,m,2\,m,2,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\right)\right/\right.$$

$$\left(\left(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\left(-2\,\text{AppellF1}\left[1,1-2\,m,2\,m,2,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.\right.$$

$$\left(2\,m\,\text{AppellF1}\left[2,1-2\,m,1+2\,m,3,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.$$

$$\left.\left.\left.(-1+2\,m)\,\text{AppellF1}\left[2,2-2\,m,2\,m,3,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\right)+$$

$$\left(4\,\text{AppellF1}\left[1,-2\,m,1+2\,m,2,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\right)\Big/$$

$$\left(\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\left(-2\,\text{AppellF1}\left[1,-2\,m,1+2\,m,2,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.\right.$$

$$\left(2\,m\,\text{AppellF1}\left[2,1-2\,m,1+2\,m,3,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.$$

$$\left.\left.\left.(1+2\,m)\,\text{AppellF1}\left[2,-2\,m,2+2\,m,3,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\right)+$$

$$\left((1+m)\,\text{AppellF1}\left[1+2\,m,2\,m,1,2+2\,m,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\left(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\right)\Big/$$

$$\left((1+2\,m)\left(2\,(1+m)\,\text{AppellF1}\left[1+2\,m,2\,m,1,2+2\,m,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]-\right.\right.$$

$$\left(\text{AppellF1}\left[2+2\,m,2\,m,2,3+2\,m,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+m\,\text{AppellF1}\left[2+2\,m,\right.\right.$$

$$\left.\left.\left.\left.\left.1+2\,m,1,3+2\,m,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\left(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\right)\right)\right)+$$

$$\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\left(\frac{1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}\right)^{2\,m}\left(\left(\text{AppellF1}\left[1,1-2\,m,2\,m,2,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\right.\right.\right.$$

$$\left.-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^5\Big)\Big/$$

$$\left(\left(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^2 \left(-2\,\text{AppellF1}\left[1,1-2 m,2 m,2,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.\right.$$

$$\left(2 m\,\text{AppellF1}\left[2,1-2 m,1+2 m,3,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$\left.\left.\left.(-1+2 m)\,\text{AppellF1}\left[2,2-2 m,2 m,3,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right) \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\right)-$$

$$\left(2\,\text{AppellF1}\left[1,1-2 m,2 m,2,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right] \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^3\right)\Big/$$

$$\left(\left(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right) \left(-2\,\text{AppellF1}\left[1,1-2 m,2 m,2,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.\right.$$

$$\left(2 m\,\text{AppellF1}\left[2,1-2 m,1+2 m,3,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$\left.\left.\left.(-1+2 m)\,\text{AppellF1}\left[2,2-2 m,2 m,3,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right) \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\right)-$$

$$\left(2\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^4 \left(-\frac{1}{2} m\,\text{AppellF1}\left[2,1-2 m,1+2 m,3,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right.\right.$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]+\frac{1}{4}(1-2 m)\,\text{AppellF1}\left[2,2-2 m,2 m,3,\right.$$

$$\left.\left.\left.\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right] \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)\right)\Big/$$

$$\left(\left(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right) \left(-2\,\text{AppellF1}\left[1,1-2 m,2 m,2,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.\right.$$

$$\left(2 m\,\text{AppellF1}\left[2,1-2 m,1+2 m,3,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$\left.\left.\left.(-1+2 m)\,\text{AppellF1}\left[2,2-2 m,2 m,3,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right) \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\right)-$$

$$\left(2\,\text{AppellF1}\left[1,-2 m,1+2 m,2,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right] \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^5\right)\Big/$$

$$\left(\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^2 \left(-2\,\text{AppellF1}\left[1,-2 m,1+2 m,2,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.\right.$$

$$\left(2 m\,\text{AppellF1}\left[2,1-2 m,1+2 m,3,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$\left.\left.\left.(1+2 m)\,\text{AppellF1}\left[2,-2 m,2+2 m,3,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right) \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\right)+$$

$$\left(4\,\text{AppellF1}\left[1,-2 m,1+2 m,2,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right] \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^3\right)\Big/$$

$$\Big(\Big(1+\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big)\ \Big(-2\,\text{AppellF1}\Big[1,-2m,1+2m,2,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]+$$

$$\Big(2\,m\,\text{AppellF1}\Big[2,1-2m,1+2m,3,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]+$$

$$(1+2m)\,\text{AppellF1}\Big[2,-2m,2+2m,3,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\Big)\ \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big)\Big)+$$

$$\Big(4\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^4\ \Big(-\frac{1}{2}\,m\,\text{AppellF1}\Big[2,1-2m,1+2m,3,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]$$

$$\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]-\frac{1}{4}(1+2m)\,\text{AppellF1}\Big[2,-2m,2+2m,3,$$

$$\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]\Big)\Big)\Big)\Big/$$

$$\Big(\Big(1+\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big)\ \Big(-2\,\text{AppellF1}\Big[1,-2m,1+2m,2,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]+$$

$$\Big(2\,m\,\text{AppellF1}\Big[2,1-2m,1+2m,3,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]+$$

$$(1+2m)\,\text{AppellF1}\Big[2,-2m,2+2m,3,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\Big)\ \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big)\Big)+$$

$$\Big((1+m)\,\text{AppellF1}\Big[1+2m,2m,1,2+2m,\frac{1}{2}-\frac{1}{2}\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]$$

$$\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]\Big)\Big/$$

$$\Big(2(1+2m)\ \Big(2(1+m)\,\text{AppellF1}\Big[1+2m,2m,1,2+2m,\frac{1}{2}-\frac{1}{2}\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]-$$

$$\Big(\text{AppellF1}\Big[2+2m,2m,2,3+2m,\frac{1}{2}-\frac{1}{2}\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]+m\,\text{AppellF1}\Big[2+2m,$$

$$1+2m,1,3+2m,\frac{1}{2}-\frac{1}{2}\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\Big)\ \Big(-1+\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big)\Big)\Big)+$$

$$\Big((1+m)\ \Big(-\frac{1}{2(2+2m)}(1+2m)\,\text{AppellF1}\Big[2+2m,2m,2,3+2m,\frac{1}{2}-\frac{1}{2}\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]$$

$$\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]-\frac{1}{2(2+2m)}m\,(1+2m)$$

$$\text{AppellF1}\Big[2+2m,1+2m,1,3+2m,\frac{1}{2}-\frac{1}{2}\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]$$

$$\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]\Big)\ \Big(-1+\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big)\Big)\Big/$$

$$\Bigg(\Big((1+2m)\Big(2(1+m)\,\text{AppellF1}\Big[1+2m,\,2m,\,1,\,2+2m,\,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]-$$

$$\Big(\text{AppellF1}\Big[2+2m,\,2m,\,2,\,3+2m,\,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]+m\,\text{AppellF1}\Big[2+2m,$$

$$1+2m,\,1,\,3+2m,\,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\Big)\left(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\Big)\Big)+$$

$$\Big(2\,\text{AppellF1}\Big[1,\,1-2m,\,2m,\,2,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^4$$

$$\Big(\frac{1}{2}\Big(2m\,\text{AppellF1}\Big[2,\,1-2m,\,1+2m,\,3,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]+(-1+2m)\,\text{AppellF1}\Big[2,\,2-2m,$$

$$2m,\,3,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\Big)\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-2$$

$$\Big(-\frac{1}{2}m\,\text{AppellF1}\Big[2,\,1-2m,\,1+2m,\,3,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]+\frac{1}{4}(1-2m)\,\text{AppellF1}\Big[2,\,2-2m,\,2m,\,3,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\Big)+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big(2m\Big(-\frac{1}{3}(1+2m)\,\text{AppellF1}\Big[3,\,1-2m,$$

$$2+2m,\,4,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]+$$

$$\frac{1}{3}(1-2m)\,\text{AppellF1}\Big[3,\,2-2m,\,1+2m,\,4,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\Big)+(-1+2m)\Big(-\frac{2}{3}m\,\text{AppellF1}\Big[3,\,2-2m,\,1+2m,\,4,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,$$

$$-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]+\frac{1}{3}(2-2m)\,\text{AppellF1}\Big[3,\,3-2m,\,2m,$$

$$4,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\Big)\Big)\Big)\Big)\Bigg)\Big/$$

$$\Bigg(\Big(\left(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\Big(-2\,\text{AppellF1}\Big[1,\,1-2m,\,2m,\,2,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]+$$

$$\Big(2m\,\text{AppellF1}\Big[2,\,1-2m,\,1+2m,\,3,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]+$$

$$(-1+2m)\,\text{AppellF1}\Big[2,\,2-2m,\,2m,\,3,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\Big)\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big)^2\Big)-$$

$$\Big(4\,\text{AppellF1}\Big[1,\,-2m,\,1+2m,\,2,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^4$$

$$\Bigg(\frac{1}{2}\Bigg(2\,m\,\text{AppellF1}\left[2,1-2m,1+2m,3,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$(1+2m)\,\text{AppellF1}\left[2,-2m,2+2m,3,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\Bigg)\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-2\Bigg(-\frac{1}{2}\,m\,\text{AppellF1}\left[2,1-2m,1+2m,3,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{1}{4}(1+2m)\,\text{AppellF1}\Bigg[2,-2m,2+2m,3,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,$$

$$-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg]\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\Bigg)+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2$$

$$\Bigg(2\,m\Bigg(-\frac{1}{3}(1+2m)\,\text{AppellF1}\left[3,1-2m,2+2m,4,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]+\frac{1}{3}(1-2m)\,\text{AppellF1}\left[3,2-2m,1+2m,4,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\Bigg)+(1+2m)\Bigg(-\frac{2}{3}\,m\,\text{AppellF1}\Bigg[3,1-2m,2+2m,4,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,$$

$$-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg]\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{1}{3}(2+2m)\,\text{AppellF1}\Bigg[3,-2m,3+2m,$$

$$4,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg]\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\Bigg)\Bigg)\Bigg)\Bigg)\Bigg/$$

$$\Bigg(\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\Bigg(-2\,\text{AppellF1}\left[1,-2m,1+2m,2,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$\Bigg(2\,m\,\text{AppellF1}\left[2,1-2m,1+2m,3,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$(1+2m)\,\text{AppellF1}\left[2,-2m,2+2m,3,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\Bigg)\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)^2\Bigg)-$$

$$\Bigg((1+m)\,\text{AppellF1}\left[1+2m,2m,1,2+2m,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]$$

$$\left(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\Bigg(-\frac{1}{2}\Bigg(\text{AppellF1}\left[2+2m,2m,2,3+2m,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$m\,\text{AppellF1}\left[2+2m,1+2m,1,3+2m,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\Bigg)\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]+2(1+m)\Bigg(-\frac{1}{2(2+2m)}(1+2m)\,\text{AppellF1}\Bigg[2+2m,2m,2,3+2m,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,$$

$$1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg]\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{1}{2(2+2m)}m(1+2m)\,\text{AppellF1}\Big[2+2m,1+2m,$$

$$1,\ 3+2m,\ \frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\ 1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\ \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\Bigg)-$$

$$\left(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\Bigg(-\frac{1}{3+2m}(2+2m)\ \text{AppellF1}\Big[3+2m,\ 2m,\ 3,\ 4+2m,\ \frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,$$

$$1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\ \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{1}{2(3+2m)}m\,(2+2m)\ \text{AppellF1}\Big[3+2m,\ 1+2m,$$

$$2,\ 4+2m,\ \frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\ 1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\ \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]+$$

$$m\Bigg(-\frac{1}{2(3+2m)}(2+2m)\ \text{AppellF1}\Big[3+2m,\ 1+2m,\ 2,\ 4+2m,\ \frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\ 1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{1}{4(3+2m)}(1+2m)\,(2+2m)\ \text{AppellF1}\Big[3+2m,\ 2+2m,\ 1,\ 4+2m,$$

$$\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\ 1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\ \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\Bigg)\Bigg)\Bigg)\Bigg)\Bigg)\Bigg/$$

$$\Bigg((1+2m)\Bigg(2\,(1+m)\ \text{AppellF1}\Big[1+2m,\ 2m,\ 1,\ 2+2m,\ \frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\ 1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]-$$

$$\Bigg(\text{AppellF1}\Big[2+2m,\ 2m,\ 2,\ 3+2m,\ \frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\ 1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]+m\ \text{AppellF1}\Big[2+2m,\ 1+2m,$$

$$1,\ 3+2m,\ \frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\ 1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\Bigg)\left(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^2\Bigg)\Bigg)\Bigg)\Bigg)$$

- **Problem 132: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int \text{Cot}[e+f x]\,(a+a\,\text{Sin}[e+f x])^m\,dx$$

Optimal (type 5, 43 leaves, 2 steps):

$$-\frac{\text{Hypergeometric2F1}[1,\ 1+m,\ 2+m,\ 1+\text{Sin}[e+f x]]\,(a+a\,\text{Sin}[e+f x])^{1+m}}{a\,f\,(1+m)}$$

Result (type 6, 12 204 leaves):

$$-\frac{1}{f}\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{-2m}(a+a\,\text{Sin}[e+f x])^m$$

$$\Bigg(\frac{1}{2m}\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2m}\left(-1+(-\text{Csc}[e+f x])^m\ \text{Hypergeometric2F1}\Big[m,\ m,\ 1+m,\ 2\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Csc}[e+f x]\Big]\right)+$$

$$\Bigg(\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2+2m}\text{Csc}[e+f x]\left(\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{-m}$$

$$\left(4\,m\,\text{Hypergeometric2F1}\left[\frac{1}{2},1+m,\frac{3}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\left(\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^m\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]+\right.$$

$$\text{AppellF1}\left[2\,m,m,m,1+2\,m,-\frac{1+i}{-1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]},-\frac{1-i}{-1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]}\right]\left(\frac{-i+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]}{-1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]}\right)^m$$

$$\left(\frac{i+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]}{-1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]}\right)^m-\text{AppellF1}\left[2\,m,m,m,1+2\,m,\frac{1-i}{1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]},\frac{1+i}{1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]}\right]$$

$$\left.\left(\frac{-i+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]}{1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]}\right)^m\left(\frac{i+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]}{1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]}\right)^m\right)\Bigg)\Bigg/$$

$$\left(16\,m\left(-\frac{1}{8}\left(\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{-m}\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\left(4\,m\,\text{Hypergeometric2F1}\left[\frac{1}{2},1+m,\frac{3}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right.\right.\right.$$

$$\left(\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^m\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]+\text{AppellF1}\left[2\,m,m,m,1+2\,m,-\frac{1+i}{-1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]},\right.$$

$$\left.-\frac{1-i}{-1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]}\right]\left(\frac{-i+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]}{-1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]}\right)^m\left(\frac{i+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]}{-1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]}\right)^m-\text{AppellF1}\left[2\,m,m,m,1+2\,m,\right.$$

$$\left.\left.\frac{1-i}{1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]},\frac{1+i}{1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]}\right]\left(\frac{-i+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]}{1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]}\right)^m\left(\frac{i+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]}{1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]}\right)^m\right)+$$

$$\frac{1}{8\,m}\left(\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{-m}\left(2\,m\,\text{Hypergeometric2F1}\left[\frac{1}{2},1+m,\frac{3}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\left(\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{1+m}+\right.$$

$$4\,m^2\,\text{Hypergeometric2F1}\left[\frac{1}{2},1+m,\frac{3}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\left(\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^m\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2+\left(\left((1-i)\,m^2\right.\right.$$

$$\left.\text{AppellF1}\left[1+2\,m,m,1+m,2+2\,m,-\frac{1+i}{-1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]},-\frac{1-i}{-1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]}\right]\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\Bigg/$$

$$\left((1+2\,m)\left(-1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\right)^2\right)+\left((1+i)\,m^2\,\text{AppellF1}\left[1+2\,m,1+m,m,2+2\,m,-\frac{1+i}{-1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]},\right.\right.$$

$$\left.\left.-\frac{1-i}{-1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]}\right]\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\Bigg/\left((1+2\,m)\left(-1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\right)^2\right)\Bigg)$$

$$\left(\frac{-i+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}{-1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}\right)^m \left(\frac{i+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}{-1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}\right)^m + m\,\text{AppellF1}\Big[2 m, m, m, 1+2 m,$$

$$-\frac{1+i}{-1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}, -\frac{1-i}{-1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}\Big] \left(\frac{-i+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}{-1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}\right)^{-1+m} \left(\frac{i+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}{-1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}\right)^m$$

$$\left(\frac{\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{2\left(-1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)} - \frac{\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\left(-i+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)}{2\left(-1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)^2}\right) + m\,\text{AppellF1}\Big[2 m, m, m, 1+2 m,$$

$$-\frac{1+i}{-1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}, -\frac{1-i}{-1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}\Big] \left(\frac{-i+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}{-1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}\right)^m \left(\frac{i+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}{-1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}\right)^{-1+m}$$

$$\left(\frac{\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{2\left(-1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)} - \frac{\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\left(i+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)}{2\left(-1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)^2}\right) - \left(\frac{-i+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}{1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}\right)^m$$

$$\left(\frac{i+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}{1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}\right)^m \Bigg(-\Bigg((1+i)\, m^2\, \text{AppellF1}\Big[1+2 m, m, 1+m, 2+2 m, \frac{1-i}{1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]},$$

$$\frac{1+i}{1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}\Big] \text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg) \Big/ \left((1+2 m)\left(1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)^2\right) -$$

$$\Bigg((1-i)\, m^2\, \text{AppellF1}\Big[1+2 m, 1+m, m, 2+2 m, \frac{1-i}{1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}, \frac{1+i}{1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}\Big]$$

$$\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg) \Big/ \left((1+2 m)\left(1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)^2\right)\Bigg) - m\,\text{AppellF1}\Big[2 m, m, m, 1+2 m,$$

$$\frac{1-i}{1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}, \frac{1+i}{1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}\Big] \left(\frac{-i+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}{1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}\right)^{-1+m} \left(\frac{i+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}{1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}\right)^m$$

$$\left(-\frac{\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\left(-i+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)}{2\left(1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)^2} + \frac{\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{2\left(1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)}\right) - m\,\text{AppellF1}\Big[2 m, m, m,$$

$$1+2 m, \frac{1-i}{1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}, \frac{1+i}{1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}\Big] \left(\frac{-i+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}{1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}\right)^m \left(\frac{i+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}{1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}\right)^{-1+m}$$

$$\left(-\frac{\mathrm{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\left(\mathrm{i}+\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)}{2\left(1+\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)^2}+\frac{\mathrm{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{2\left(1+\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)}\right)+2 m\left(\mathrm{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{1+m}$$

$$\left(-\mathrm{Hypergeometric2F1}\left[\frac{1}{2},1+m,\frac{3}{2},-\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\left(1+\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{-1-m}\right)\Bigg)\Bigg)\Bigg)\Bigg)-$$

$$\Bigg(\mathrm{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2 m}\mathrm{Csc}[e+f x]\left(\mathrm{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{-m}\mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2$$

$$\Bigg(4 m\,\mathrm{Hypergeometric2F1}\left[\frac{1}{2},1+m,\frac{3}{2},-\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\left(\mathrm{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^m\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]-$$

$$\mathrm{AppellF1}\left[2 m,m,m,1+2 m,-\frac{1+\mathrm{i}}{-1+\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]},-\frac{1-\mathrm{i}}{-1+\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}\right]\left(\frac{-\mathrm{i}+\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}{-1+\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}\right)^m$$

$$\left(\frac{\mathrm{i}+\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}{-1+\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}\right)^m+\mathrm{AppellF1}\left[2 m,m,m,1+2 m,\frac{1-\mathrm{i}}{1+\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]},\frac{1+\mathrm{i}}{1+\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}\right]$$

$$\left(\frac{-\mathrm{i}+\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}{1+\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}\right)^m\left(\frac{\mathrm{i}+\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}{1+\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}\right)^m\Bigg)\Bigg)\Bigg/$$

$$\Bigg(16 m\Bigg(\frac{1}{8}\left(\mathrm{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{-m}\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\Bigg(4 m\,\mathrm{Hypergeometric2F1}\left[\frac{1}{2},1+m,\frac{3}{2},-\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]$$

$$\left(\mathrm{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^m\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]-\mathrm{AppellF1}\left[2 m,m,m,1+2 m,-\frac{1+\mathrm{i}}{-1+\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]},\right.$$

$$\left.-\frac{1-\mathrm{i}}{-1+\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}\right]\left(\frac{-\mathrm{i}+\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}{-1+\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}\right)^m\left(\frac{\mathrm{i}+\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}{-1+\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}\right)^m+\mathrm{AppellF1}\left[2 m,m,m,1+2 m,\right.$$

$$\left.\frac{1-\mathrm{i}}{1+\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]},\frac{1+\mathrm{i}}{1+\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}\right]\left(\frac{-\mathrm{i}+\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}{1+\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}\right)^m\left(\frac{\mathrm{i}+\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}{1+\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}\right)^m\Bigg)-$$

$$\frac{1}{8 m}\left(\mathrm{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{-m}\Bigg(2 m\,\mathrm{Hypergeometric2F1}\left[\frac{1}{2},1+m,\frac{3}{2},-\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\left(\mathrm{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{1+m}+$$

$$4 m^2\,\mathrm{Hypergeometric2F1}\left[\frac{1}{2},1+m,\frac{3}{2},-\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\left(\mathrm{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^m\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2-\Bigg(\Bigg((1-\mathrm{i})\,m^2$$

$$\text{AppellF1}\left[1+2m,\ m,\ 1+m,\ 2+2m,\ -\frac{1+i}{-1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]},\ -\frac{1-i}{-1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}\right]\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)\Big/$$

$$\left((1+2m)\left(-1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)^2\right)+\Bigg((1+i)\,m^2\,\text{AppellF1}\left[1+2m,\ 1+m,\ m,\ 2+2m,\ -\frac{1+i}{-1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]},\right.$$

$$\left.-\frac{1-i}{-1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}\right]\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)\Big/\left((1+2m)\left(-1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)^2\right)\Bigg)$$

$$\left(\frac{-i+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}{-1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}\right)^m\left(\frac{i+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}{-1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}\right)^m-m\,\text{AppellF1}\Big[2m,\ m,\ m,\ 1+2m,$$

$$-\frac{1+i}{-1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]},\ -\frac{1-i}{-1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}\Big]\left(\frac{-i+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}{-1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}\right)^{-1+m}\left(\frac{i+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}{-1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}\right)^m$$

$$\left(\frac{\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{2\left(-1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)}-\frac{\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\left(-i+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)}{2\left(-1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)^2}\right)-m\,\text{AppellF1}\Big[2m,\ m,\ m,\ 1+2m,$$

$$-\frac{1+i}{-1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]},\ -\frac{1-i}{-1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}\Big]\left(\frac{-i+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}{-1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}\right)^m\left(\frac{i+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}{-1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}\right)^{-1+m}$$

$$\left(\frac{\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{2\left(-1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)}-\frac{\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\left(i+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)}{2\left(-1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)^2}\right)+\left(\frac{-i+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}{1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}\right)^m$$

$$\left(\frac{i+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}{1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}\right)^m\Bigg(-\Bigg((1+i)\,m^2\,\text{AppellF1}\left[1+2m,\ m,\ 1+m,\ 2+2m,\ \frac{1-i}{1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]},\right.$$

$$\left.\frac{1+i}{1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}\right]\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)\Big/\left((1+2m)\left(1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)^2\right)-$$

$$\Bigg((1-i)\,m^2\,\text{AppellF1}\left[1+2m,\ 1+m,\ m,\ 2+2m,\ \frac{1-i}{1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]},\ \frac{1+i}{1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}\right]$$

$$\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)\Big/\left((1+2m)\left(1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)^2\right)\Bigg)+m\,\text{AppellF1}\Big[2m,\ m,\ m,\ 1+2m,$$

$$\frac{1-i}{1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]},\ \frac{1+i}{1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}\Big]\left(\frac{-i+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}{1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}\right)^{-1+m}\left(\frac{i+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}{1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}\right)^m$$

$$\left(-\frac{\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\left(-i+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)}{2\left(1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)^2}+\frac{\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{2\left(1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)}\right)+m\,\text{AppellF1}\Big[2m,m,m,$$

$$1+2m,\frac{1-i}{1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]},\frac{1+i}{1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}\Big]\left(\frac{-i+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}{1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}\right)^m\left(\frac{i+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}{1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}\right)^{-1+m}$$

$$\left(-\frac{\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\left(i+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)}{2\left(1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)^2}+\frac{\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{2\left(1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)}\right)+2m\left(\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{1+m}$$

$$\left(-\text{Hypergeometric2F1}\left[\frac{1}{2},1+m,\frac{3}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\left(1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{-1-m}\right)\Bigg)\Bigg)\Bigg)\Bigg)\Bigg)+$$

$$\frac{1}{f}\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{-2m}(a+a\,\text{Sin}[e+f x])^m\Bigg(-\frac{1}{2m}\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2m}\Big(-1+(-\text{Csc}[e+f x])^m$$

$$\text{Hypergeometric2F1}\left[m,m,1+m,2\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Csc}[e+f x]\right]\Big)+$$

$$\Bigg(\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2+2m}\left(\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{-m}\Bigg(4m\,\text{Hypergeometric2F1}\left[\frac{1}{2},1+m,\frac{3}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]$$

$$\left(\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^m\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]+$$

$$\text{AppellF1}\left[2m,m,m,1+2m,-\frac{1+i}{-1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]},-\frac{1-i}{-1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}\right]$$

$$\left(\frac{-i+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}{-1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}\right)^m\left(\frac{i+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}{-1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}\right)^m-$$

$$\text{AppellF1}\left[2m,m,m,1+2m,\frac{1-i}{1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]},\frac{1+i}{1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}\right]$$

$$\left(\frac{-i+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}{1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}\right)^m\left(\frac{i+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}{1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}\right)^m\Bigg)\Bigg)\Bigg/$$

$$\Bigg(16m\left(\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]-\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)\left(\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]+\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)$$

$$\left(-\frac{1}{8}\left(\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{-m}\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\right.$$

$$\left(4\,m\,\text{Hypergeometric2F1}\left[\frac{1}{2},1+m,\frac{3}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\left(\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^m\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]+\right.$$

$$\text{AppellF1}\left[2m,m,m,1+2m,-\frac{1+i}{-1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]},-\frac{1-i}{-1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}\right]\left(\frac{-i+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}{-1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}\right)^m$$

$$\left(\frac{i+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}{-1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}\right)^m-\text{AppellF1}\left[2m,m,m,1+2m,\frac{1-i}{1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]},\frac{1+i}{1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}\right]$$

$$\left.\left(\frac{-i+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}{1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}\right)^m\left(\frac{i+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}{1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}\right)^m\right)+$$

$$\frac{1}{8m}\left(\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{-m}\left(2\,m\,\text{Hypergeometric2F1}\left[\frac{1}{2},1+m,\frac{3}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\left(\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{1+m}+\right.$$

$$4\,m^2\,\text{Hypergeometric2F1}\left[\frac{1}{2},1+m,\frac{3}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\left(\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^m\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2+$$

$$\left(\left((1-i)\,m^2\,\text{AppellF1}\left[1+2m,m,1+m,2+2m,-\frac{1+i}{-1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]},-\frac{1-i}{-1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}\right]\right.\right.$$

$$\left.\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\Big/\left((1+2m)\left(-1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)^2\right)+\left((1+i)\,m^2\right.$$

$$\left.\text{AppellF1}\left[1+2m,1+m,m,2+2m,-\frac{1+i}{-1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]},-\frac{1-i}{-1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}\right]\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\Big/$$

$$\left.\left((1+2m)\left(-1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)^2\right)\right)\left(\frac{-i+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}{-1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}\right)^m\left(\frac{i+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}{-1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}\right)^m+$$

$$m\,\text{AppellF1}\left[2m,m,m,1+2m,-\frac{1+i}{-1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]},-\frac{1-i}{-1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}\right]\left(\frac{-i+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}{-1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}\right)^{-1+m}$$

$$\left(\frac{i+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}{-1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}\right)^m\left(\frac{\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{2\left(-1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)}-\frac{\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\left(-i+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)}{2\left(-1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)^2}\right)+$$

$$m\,\text{AppellF1}\Big[2\,m,\,m,\,m,\,1+2\,m,\,-\frac{1+i}{-1+\text{Tan}\big[\frac{1}{2}\,(-e+\frac{\pi}{2}-f\,x)\big]},\,-\frac{1-i}{-1+\text{Tan}\big[\frac{1}{2}\,(-e+\frac{\pi}{2}-f\,x)\big]}\Big]$$

$$\Bigg(\frac{-i+\text{Tan}\big[\frac{1}{2}\,(-e+\frac{\pi}{2}-f\,x)\big]}{-1+\text{Tan}\big[\frac{1}{2}\,(-e+\frac{\pi}{2}-f\,x)\big]}\Bigg)^{m}\,\Bigg(\frac{i+\text{Tan}\big[\frac{1}{2}\,(-e+\frac{\pi}{2}-f\,x)\big]}{-1+\text{Tan}\big[\frac{1}{2}\,(-e+\frac{\pi}{2}-f\,x)\big]}\Bigg)^{-1+m}\,\Bigg(\frac{\text{Sec}\big[\frac{1}{2}\,(-e+\frac{\pi}{2}-f\,x)\big]^{2}}{2\,(-1+\text{Tan}\big[\frac{1}{2}\,(-e+\frac{\pi}{2}-f\,x)\big])}-$$

$$\frac{\text{Sec}\big[\frac{1}{2}\,(-e+\frac{\pi}{2}-f\,x)\big]^{2}\,(i+\text{Tan}\big[\frac{1}{2}\,(-e+\frac{\pi}{2}-f\,x)\big])}{2\,(-1+\text{Tan}\big[\frac{1}{2}\,(-e+\frac{\pi}{2}-f\,x)\big])^{2}}\Bigg)-\Bigg(\frac{-i+\text{Tan}\big[\frac{1}{2}\,(-e+\frac{\pi}{2}-f\,x)\big]}{1+\text{Tan}\big[\frac{1}{2}\,(-e+\frac{\pi}{2}-f\,x)\big]}\Bigg)^{m}\,\Bigg(\frac{i+\text{Tan}\big[\frac{1}{2}\,(-e+\frac{\pi}{2}-f\,x)\big]}{1+\text{Tan}\big[\frac{1}{2}\,(-e+\frac{\pi}{2}-f\,x)\big]}\Bigg)^{m}$$

$$\Bigg(-\Bigg((1+i)\,m^{2}\,\text{AppellF1}\Big[1+2\,m,\,m,\,1+m,\,2+2\,m,\,\frac{1-i}{1+\text{Tan}\big[\frac{1}{2}\,(-e+\frac{\pi}{2}-f\,x)\big]},\,\frac{1+i}{1+\text{Tan}\big[\frac{1}{2}\,(-e+\frac{\pi}{2}-f\,x)\big]}\Big]\,\text{Sec}\Big[\frac{1}{2}\,\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^{2}\Bigg)\Big/$$

$$\Bigg((1+2\,m)\,\Big(1+\text{Tan}\Big[\frac{1}{2}\,\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\Big)^{2}\Bigg)-\Bigg((1-i)\,m^{2}\,\text{AppellF1}\Big[1+2\,m,\,1+m,\,m,\,2+2\,m,\,\frac{1-i}{1+\text{Tan}\big[\frac{1}{2}\,(-e+\frac{\pi}{2}-f\,x)\big]},$$

$$\frac{1+i}{1+\text{Tan}\big[\frac{1}{2}\,(-e+\frac{\pi}{2}-f\,x)\big]}\Big]\,\text{Sec}\Big[\frac{1}{2}\,\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^{2}\Bigg)\Big/\Bigg((1+2\,m)\,\Big(1+\text{Tan}\Big[\frac{1}{2}\,\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\Big)^{2}\Bigg)-m\,\text{AppellF1}\Big[2\,m,\,m,\,m,$$

$$1+2\,m,\,\frac{1-i}{1+\text{Tan}\big[\frac{1}{2}\,(-e+\frac{\pi}{2}-f\,x)\big]},\,\frac{1+i}{1+\text{Tan}\big[\frac{1}{2}\,(-e+\frac{\pi}{2}-f\,x)\big]}\Big]\,\Bigg(\frac{-i+\text{Tan}\big[\frac{1}{2}\,(-e+\frac{\pi}{2}-f\,x)\big]}{1+\text{Tan}\big[\frac{1}{2}\,(-e+\frac{\pi}{2}-f\,x)\big]}\Bigg)^{-1+m}\,\Bigg(\frac{i+\text{Tan}\big[\frac{1}{2}\,(-e+\frac{\pi}{2}-f\,x)\big]}{1+\text{Tan}\big[\frac{1}{2}\,(-e+\frac{\pi}{2}-f\,x)\big]}\Bigg)^{m}$$

$$\Bigg(-\frac{\text{Sec}\big[\frac{1}{2}\,(-e+\frac{\pi}{2}-f\,x)\big]^{2}\,(-i+\text{Tan}\big[\frac{1}{2}\,(-e+\frac{\pi}{2}-f\,x)\big])}{2\,(1+\text{Tan}\big[\frac{1}{2}\,(-e+\frac{\pi}{2}-f\,x)\big])^{2}}+\frac{\text{Sec}\big[\frac{1}{2}\,(-e+\frac{\pi}{2}-f\,x)\big]^{2}}{2\,(1+\text{Tan}\big[\frac{1}{2}\,(-e+\frac{\pi}{2}-f\,x)\big])}\Bigg)-m\,\text{AppellF1}\Big[2\,m,\,m,\,m,$$

$$1+2\,m,\,\frac{1-i}{1+\text{Tan}\big[\frac{1}{2}\,(-e+\frac{\pi}{2}-f\,x)\big]},\,\frac{1+i}{1+\text{Tan}\big[\frac{1}{2}\,(-e+\frac{\pi}{2}-f\,x)\big]}\Big]\,\Bigg(\frac{-i+\text{Tan}\big[\frac{1}{2}\,(-e+\frac{\pi}{2}-f\,x)\big]}{1+\text{Tan}\big[\frac{1}{2}\,(-e+\frac{\pi}{2}-f\,x)\big]}\Bigg)^{m}\,\Bigg(\frac{i+\text{Tan}\big[\frac{1}{2}\,(-e+\frac{\pi}{2}-f\,x)\big]}{1+\text{Tan}\big[\frac{1}{2}\,(-e+\frac{\pi}{2}-f\,x)\big]}\Bigg)^{-1+m}$$

$$\Bigg(-\frac{\text{Sec}\big[\frac{1}{2}\,(-e+\frac{\pi}{2}-f\,x)\big]^{2}\,(i+\text{Tan}\big[\frac{1}{2}\,(-e+\frac{\pi}{2}-f\,x)\big])}{2\,(1+\text{Tan}\big[\frac{1}{2}\,(-e+\frac{\pi}{2}-f\,x)\big])^{2}}+\frac{\text{Sec}\big[\frac{1}{2}\,(-e+\frac{\pi}{2}-f\,x)\big]^{2}}{2\,(1+\text{Tan}\big[\frac{1}{2}\,(-e+\frac{\pi}{2}-f\,x)\big])}\Bigg)+2\,m\,\Big(\text{Sec}\Big[\frac{1}{2}\,\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^{2}\Big)^{1+m}$$

$$\Bigg(-\text{Hypergeometric2F1}\Big[\frac{1}{2},\,1+m,\,\frac{3}{2},\,-\text{Tan}\Big[\frac{1}{2}\,\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^{2}\Big]+\Big(1+\text{Tan}\Big[\frac{1}{2}\,\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^{2}\Big)^{-1-m}\Bigg)\Bigg)\Bigg)\Bigg)-$$

$$\Bigg(\text{Cos}\Big[\frac{1}{2}\,\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^{2\,m}\,\Big(\text{Sec}\Big[\frac{1}{2}\,\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^{2}\Big)^{-m}\,\text{Sin}\Big[\frac{1}{2}\,\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^{2}\,\Bigg(4\,m\,\text{Hypergeometric2F1}\Big[\frac{1}{2},\,1+m,\,\frac{3}{2},$$

$$-\text{Tan}\Big[\frac{1}{2}\,\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^{2}\Big]\,\Big(\text{Sec}\Big[\frac{1}{2}\,\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^{2}\Big)^{m}\,\text{Tan}\Big[\frac{1}{2}\,\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]-$$

$$\text{AppellF1}\left[2m, m, m, 1+2m, -\frac{1+i}{-1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-fx\right)\right]}, -\frac{1-i}{-1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-fx\right)\right]}\right]$$

$$\left(\frac{-i+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-fx\right)\right]}{-1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-fx\right)\right]}\right)^m \left(\frac{i+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-fx\right)\right]}{-1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-fx\right)\right]}\right)^m +$$

$$\text{AppellF1}\left[2m, m, m, 1+2m, \frac{1-i}{1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-fx\right)\right]}, \frac{1+i}{1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-fx\right)\right]}\right]$$

$$\left(\frac{-i+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-fx\right)\right]}{1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-fx\right)\right]}\right)^m \left(\frac{i+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-fx\right)\right]}{1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-fx\right)\right]}\right)^m\Bigg)\Bigg)\Bigg/$$

$$\Bigg(16\,m\left(\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-fx\right)\right]-\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-fx\right)\right]\right)\left(\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-fx\right)\right]+\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-fx\right)\right]\right)$$

$$\Bigg(\frac{1}{8}\left(\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)^{-m}\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-fx\right)\right]$$

$$\Bigg(4\,m\,\text{Hypergeometric2F1}\left[\frac{1}{2}, 1+m, \frac{3}{2}, -\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\left(\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)^m\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-fx\right)\right]-$$

$$\text{AppellF1}\left[2m, m, m, 1+2m, -\frac{1+i}{-1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-fx\right)\right]}, -\frac{1-i}{-1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-fx\right)\right]}\right]\left(\frac{-i+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-fx\right)\right]}{-1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-fx\right)\right]}\right)^m$$

$$\left(\frac{i+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-fx\right)\right]}{-1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-fx\right)\right]}\right)^m+\text{AppellF1}\left[2m, m, m, 1+2m, \frac{1-i}{1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-fx\right)\right]}, \frac{1+i}{1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-fx\right)\right]}\right]$$

$$\left(\frac{-i+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-fx\right)\right]}{1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-fx\right)\right]}\right)^m\left(\frac{i+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-fx\right)\right]}{1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-fx\right)\right]}\right)^m\Bigg)-$$

$$\frac{1}{8m}\left(\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)^{-m}\Bigg(2\,m\,\text{Hypergeometric2F1}\left[\frac{1}{2}, 1+m, \frac{3}{2}, -\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\left(\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)^{1+m}+$$

$$4\,m^2\,\text{Hypergeometric2F1}\left[\frac{1}{2}, 1+m, \frac{3}{2}, -\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\left(\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)^m\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-fx\right)\right]^2-$$

$$\Bigg(\Bigg((1-i)\,m^2\,\text{AppellF1}\left[1+2m, m, 1+m, 2+2m, -\frac{1+i}{-1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-fx\right)\right]}, -\frac{1-i}{-1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-fx\right)\right]}\right]$$

$$\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)\Big/\left((1+2 m)\left(-1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)^2\right)+\Bigg((1+i)\, m^2$$

$$\text{AppellF1}\left[1+2 m,1+m,m,2+2 m,-\frac{1+i}{-1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]},-\frac{1-i}{-1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}\right]\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)\Big/$$

$$\left((1+2 m)\left(-1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)^2\right)\Bigg)\left(\frac{-i+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}{-1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}\right)^m\left(\frac{i+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}{-1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}\right)^m-$$

$$m\,\text{AppellF1}\left[2 m,m,m,1+2 m,-\frac{1+i}{-1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]},-\frac{1-i}{-1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}\right]\left(\frac{-i+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}{-1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}\right)^{-1+m}$$

$$\left(\frac{i+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}{-1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}\right)^m\left(\frac{\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{2\left(-1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)}-\frac{\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\left(-i+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)}{2\left(-1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)^2}\right)-$$

$$m\,\text{AppellF1}\left[2 m,m,m,1+2 m,-\frac{1+i}{-1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]},-\frac{1-i}{-1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}\right]$$

$$\left(\frac{-i+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}{-1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}\right)^m\left(\frac{i+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}{-1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}\right)^{-1+m}\left(\frac{\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{2\left(-1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)}-\right.$$

$$\left.\frac{\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\left(i+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)}{2\left(-1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)^2}\right)+\left(\frac{-i+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}{1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}\right)^m\left(\frac{i+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}{1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}\right)^m$$

$$\Bigg(-\Bigg((1+i)\, m^2\,\text{AppellF1}\left[1+2 m,m,1+m,2+2 m,\frac{1-i}{1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]},\frac{1+i}{1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}\right]\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)\Big/$$

$$\left((1+2 m)\left(1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)^2\right)-\Bigg((1-i)\, m^2\,\text{AppellF1}\left[1+2 m,1+m,m,2+2 m,\frac{1-i}{1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]},\right.$$

$$\left.\frac{1+i}{1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}\right]\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)\Big/\left((1+2 m)\left(1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)^2\right)+m\,\text{AppellF1}\Big[2 m,m,m,$$

$$1+2 m,\frac{1-i}{1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]},\frac{1+i}{1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}\Big]\left(\frac{-i+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}{1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}\right)^{-1+m}\left(\frac{i+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}{1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}\right)^m$$

$$\left(-\frac{\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\left(-i+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)}{2\left(1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)^2}+\frac{\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{2\left(1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)}\right)+m\,\text{AppellF1}\Big[2 m,m,m,$$

$$1+2\,m,\ \frac{1-i}{1+\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]},\ \frac{1+i}{1+\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]}\Bigg]\left(\frac{-i+\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]}{1+\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]}\right)^m\left(\frac{i+\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]}{1+\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]}\right)^{-1+m}$$

$$\left(-\frac{\mathrm{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\left(i+\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\right)}{2\left(1+\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\right)^2}+\frac{\mathrm{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{2\left(1+\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\right)}\right)+2\,m\left(\mathrm{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{1+m}$$

$$\left(-\mathrm{Hypergeometric2F1}\left[\frac{1}{2},\ 1+m,\ \frac{3}{2},\ -\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\left(1+\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{-1-m}\right)\Bigg)\Bigg)\Bigg)\Bigg)$$

- **Problem 133: Unable to integrate problem.**

$$\int \mathrm{Cot}[e+f\,x]^3\,(a+a\,\mathrm{Sin}[e+f\,x])^m\,dx$$

Optimal (type 5, 83 leaves, 3 steps):

$$-\frac{\mathrm{Csc}[e+f\,x]^2\,(a+a\,\mathrm{Sin}[e+f\,x])^{2+m}}{2\,a^2\,f}-\frac{(2-m)\,\mathrm{Hypergeometric2F1}[2,\,2+m,\,3+m,\,1+\mathrm{Sin}[e+f\,x]]\,(a+a\,\mathrm{Sin}[e+f\,x])^{2+m}}{2\,a^2\,f\,(2+m)}$$

Result (type 8, 23 leaves):

$$\int \mathrm{Cot}[e+f\,x]^3\,(a+a\,\mathrm{Sin}[e+f\,x])^m\,dx$$

- **Problem 134: Unable to integrate problem.**

$$\int \mathrm{Cot}[e+f\,x]^5\,(a+a\,\mathrm{Sin}[e+f\,x])^m\,dx$$

Optimal (type 5, 123 leaves, 4 steps):

$$\frac{(9-m)\,\mathrm{Csc}[e+f\,x]^3\,(a+a\,\mathrm{Sin}[e+f\,x])^{3+m}}{12\,a^3\,f}-\frac{\mathrm{Csc}[e+f\,x]^4\,(a+a\,\mathrm{Sin}[e+f\,x])^{3+m}}{4\,a^3\,f}-\frac{\left(12-9\,m+m^2\right)\,\mathrm{Hypergeometric2F1}[3,\,3+m,\,4+m,\,1+\mathrm{Sin}[e+f\,x]]\,(a+a\,\mathrm{Sin}[e+f\,x])^{3+m}}{12\,a^3\,f\,(3+m)}$$

Result (type 8, 23 leaves):

$$\int \mathrm{Cot}[e+f\,x]^5\,(a+a\,\mathrm{Sin}[e+f\,x])^m\,dx$$

- **Problem 135: Unable to integrate problem.**

$$\int (a+a\,\mathrm{Sin}[e+f\,x])^m\,\mathrm{Tan}[e+f\,x]^4\,dx$$

Optimal (type 5, 311 leaves, 6 steps):

$$\frac{1}{3 f (1-m) m} 2^{-\frac{3}{2}+m} \left(9-12 m-7 m^2+6 m^3+m^4\right) \text{Hypergeometric2F1}\left[\frac{1}{2}, \frac{5}{2}-m, \frac{3}{2}, \frac{1}{2} (1-\text{Sin}[e+f x])\right] \text{Sec}[e+f x] (1-\text{Sin}[e+f x]) (1+\text{Sin}[e+f x])^{\frac{1}{2}-m} (a+a \text{Sin}[e+f x])^m - \frac{\text{Sec}[e+f x] (a+a \text{Sin}[e+f x])^{-1+m} \left(a \left(6-m-7 m^2-m^3\right)-a \left(9-6 m-8 m^2-m^3\right) \text{Sin}[e+f x]\right)}{3 f (1-m) m (1-\text{Sin}[e+f x])} + \frac{a^2 \text{Sin}[e+f x] (a+a \text{Sin}[e+f x])^{-1+m} \text{Tan}[e+f x]}{f (1-m) (a-a \text{Sin}[e+f x])} - \frac{a^2 \text{Sin}[e+f x]^2 (a+a \text{Sin}[e+f x])^{-1+m} \text{Tan}[e+f x]}{f m (a-a \text{Sin}[e+f x])}$$

Result (type 8, 23 leaves) :

$$\int (a+a \text{Sin}[e+f x])^m \text{Tan}[e+f x]^4 \, dx$$

Problem 136: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int (a+a \text{Sin}[e+f x])^m \text{Tan}[e+f x]^2 \, dx$$

Optimal (type 5, 157 leaves, 5 steps) :

$$\frac{\text{Sec}[e+f x] (a+a \text{Sin}[e+f x])^m}{f (1-m) m} + \frac{1}{f (1-m) m} 2^{-\frac{1}{2}+m} \left(1-m-m^2\right) \text{Hypergeometric2F1}\left[-\frac{1}{2}, \frac{3}{2}-m, \frac{1}{2}, \frac{1}{2} (1-\text{Sin}[e+f x])\right] \text{Sec}[e+f x] (1+\text{Sin}[e+f x])^{\frac{1}{2}-m} (a+a \text{Sin}[e+f x])^m - \frac{\text{Sec}[e+f x] (a+a \text{Sin}[e+f x])^{1+m}}{a f m}$$

Result (type 6, 25 720 leaves) : Display of huge result suppressed!

Problem 138: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \text{Cot}[e+f x]^2 (a+a \text{Sin}[e+f x])^m \, dx$$

Optimal (type 6, 89 leaves, 3 steps) :

$$\frac{1}{a^2 f (3+2 m)} 2 \sqrt{2} \, \text{AppellF1}\left[\frac{3}{2}+m, -\frac{1}{2}, 2, \frac{5}{2}+m, \frac{1}{2} (1+\text{Sin}[e+f x]), 1+\text{Sin}[e+f x]\right] \text{Sec}[e+f x] \sqrt{1-\text{Sin}[e+f x]} (a+a \text{Sin}[e+f x])^{2+m}$$

Result (type 6, 47 775 leaves) : Display of huge result suppressed!

Problem 139: Unable to integrate problem.

$$\int \text{Cot}[e+f x]^4 (a+a \text{Sin}[e+f x])^m \, dx$$

Optimal (type 6, 89 leaves, 3 steps) :

$$\frac{1}{a^3 f (5+2 m)} 4 \sqrt{2} \, \text{AppellF1}\left[\frac{5}{2}+m, -\frac{3}{2}, 4, \frac{7}{2}+m, \frac{1}{2} (1+\text{Sin}[e+f x]), 1+\text{Sin}[e+f x]\right] \text{Sec}[e+f x] \sqrt{1-\text{Sin}[e+f x]} (a+a \text{Sin}[e+f x])^{3+m}$$

Result (type 8, 23 leaves) :

$$\int \cot[e+f x]^4 (a+a \sin[e+f x])^m \, dx$$

Problem 158: Result more than twice size of optimal antiderivative.

$$\int \cot[c+d x]^4 (a+b \sin[c+d x])^2 \, dx$$

Optimal (type 3, 133 leaves, 13 steps):

$$a^2 x-\frac{3 b^2 x}{2}+\frac{3 a b \operatorname{ArcTanh}[\cos[c+d x]]}{d}-\frac{3 a b \cos[c+d x]}{d}+\frac{a^2 \cot[c+d x]}{d}-\frac{3 b^2 \cot[c+d x]}{2 d}+\frac{b^2 \cos[c+d x]^2 \cot[c+d x]}{2 d}-\frac{a b \cos[c+d x] \cot[c+d x]^2}{d}-\frac{a^2 \cot[c+d x]^3}{3 d}$$

Result (type 3, 293 leaves):

$$\frac{\left(2 a^2-3 b^2\right) (c+d x)}{2 d}-\frac{2 a b \cos[c+d x]}{d}+\frac{\left(4 a^2 \cos\left[\frac{1}{2} (c+d x)\right]-3 b^2 \cos\left[\frac{1}{2} (c+d x)\right]\right) \csc\left[\frac{1}{2} (c+d x)\right]}{6 d}-\frac{a b \csc\left[\frac{1}{2} (c+d x)\right]^2}{4 d}-\frac{a^2 \cot\left[\frac{1}{2} (c+d x)\right] \csc\left[\frac{1}{2} (c+d x)\right]^2}{24 d}+\frac{3 a b \log\left[\cos\left[\frac{1}{2} (c+d x)\right]\right]}{d}-\frac{3 a b \log\left[\sin\left[\frac{1}{2} (c+d x)\right]\right]}{d}+\frac{a b \sec\left[\frac{1}{2} (c+d x)\right]^2}{4 d}+\frac{\sec\left[\frac{1}{2} (c+d x)\right] \left(-4 a^2 \sin\left[\frac{1}{2} (c+d x)\right]+3 b^2 \sin\left[\frac{1}{2} (c+d x)\right]\right)}{6 d}-\frac{b^2 \sin[2 (c+d x)]}{4 d}+\frac{a^2 \sec\left[\frac{1}{2} (c+d x)\right]^2 \tan\left[\frac{1}{2} (c+d x)\right]}{24 d}$$

Problem 175: Result more than twice size of optimal antiderivative.

$$\int \frac{\cot[c+d x]^5}{a+b \sin[c+d x]} \, dx$$

Optimal (type 3, 148 leaves, 3 steps):

$$-\frac{b \left(2 a^2-b^2\right) \csc[c+d x]}{a^4 d}+\frac{\left(2 a^2-b^2\right) \csc[c+d x]^2}{2 a^3 d}+\frac{b \csc[c+d x]^3}{3 a^2 d}-\frac{\csc[c+d x]^4}{4 a d}+\frac{\left(a^2-b^2\right)^2 \log[\sin[c+d x]]}{a^5 d}-\frac{\left(a^2-b^2\right)^2 \log[a+b \sin[c+d x]]}{a^5 d}$$

Result (type 3, 347 leaves):

$$\frac{\left(-11 a^2 b \cos\left[\frac{1}{2} (c+d x)\right]+6 b^3 \cos\left[\frac{1}{2} (c+d x)\right]\right) \csc\left[\frac{1}{2} (c+d x)\right]}{12 a^4 d}+\frac{\left(7 a^2-4 b^2\right) \csc\left[\frac{1}{2} (c+d x)\right]^2}{32 a^3 d}+\frac{b \cot\left[\frac{1}{2} (c+d x)\right] \csc\left[\frac{1}{2} (c+d x)\right]^2}{24 a^2 d}-\frac{\csc\left[\frac{1}{2} (c+d x)\right]^4}{64 a d}+\frac{\left(a^4-2 a^2 b^2+b^4\right) \log[\sin[c+d x]]}{a^5 d}+\frac{\left(-a^4+2 a^2 b^2-b^4\right) \log[a+b \sin[c+d x]]}{a^5 d}+\frac{\left(7 a^2-4 b^2\right) \sec\left[\frac{1}{2} (c+d x)\right]^2}{32 a^3 d}-\frac{\sec\left[\frac{1}{2} (c+d x)\right]^4}{64 a d}+\frac{\sec\left[\frac{1}{2} (c+d x)\right] \left(-11 a^2 b \sin\left[\frac{1}{2} (c+d x)\right]+6 b^3 \sin\left[\frac{1}{2} (c+d x)\right]\right)}{12 a^4 d}+\frac{b \sec\left[\frac{1}{2} (c+d x)\right]^2 \tan\left[\frac{1}{2} (c+d x)\right]}{24 a^2 d}$$

Problem 179: Result more than twice size of optimal antiderivative.

$$\int \frac{\cot[c+d x]^4}{a+b \sin[c+d x]} \, dx$$

Optimal (type 3, 154 leaves, 7 steps):

$$\frac{2 \left(a^2-b^2\right)^{3/2} \text{ArcTan}\left[\frac{b+a \tan\left[\frac{1}{2} (c+d x)\right]}{\sqrt{a^2-b^2}}\right]}{a^4 d}-\frac{b \left(3 a^2-2 b^2\right) \text{ArcTanh}[\cos[c+d x]]}{2 a^4 d}+\frac{\left(4 a^2-3 b^2\right) \cot[c+d x]}{3 a^3 d}+\frac{b \cot[c+d x] \csc[c+d x]}{2 a^2 d}-\frac{\cot[c+d x] \csc[c+d x]^2}{3 a d}$$

Result (type 3, 350 leaves):

$$\frac{2 \left(a^2-b^2\right)^{3/2} \text{ArcTan}\left[\frac{\sec\left[\frac{1}{2} (c+d x)\right] \left(b \cos\left[\frac{1}{2} (c+d x)\right]+a \sin\left[\frac{1}{2} (c+d x)\right]\right)}{\sqrt{a^2-b^2}}\right]}{a^4 d}+\frac{\left(4 a^2 \cos\left[\frac{1}{2} (c+d x)\right]-3 b^2 \cos\left[\frac{1}{2} (c+d x)\right]\right) \csc\left[\frac{1}{2} (c+d x)\right]}{6 a^3 d}+$$
$$\frac{b \csc\left[\frac{1}{2} (c+d x)\right]^2}{8 a^2 d}-\frac{\cot\left[\frac{1}{2} (c+d x)\right] \csc\left[\frac{1}{2} (c+d x)\right]^2}{24 a d}+\frac{\left(-3 a^2 b+2 b^3\right) \text{Log}\left[\cos\left[\frac{1}{2} (c+d x)\right]\right]}{2 a^4 d}+\frac{\left(3 a^2 b-2 b^3\right) \text{Log}\left[\sin\left[\frac{1}{2} (c+d x)\right]\right]}{2 a^4 d}-$$
$$\frac{b \sec\left[\frac{1}{2} (c+d x)\right]^2}{8 a^2 d}+\frac{\sec\left[\frac{1}{2} (c+d x)\right] \left(-4 a^2 \sin\left[\frac{1}{2} (c+d x)\right]+3 b^2 \sin\left[\frac{1}{2} (c+d x)\right]\right)}{6 a^3 d}+\frac{\sec\left[\frac{1}{2} (c+d x)\right]^2 \tan\left[\frac{1}{2} (c+d x)\right]}{24 a d}$$

Problem 186: Result more than twice size of optimal antiderivative.

$$\int \frac{\cot[c+d x]^5}{(a+b \sin[c+d x])^2} \, dx$$

Optimal (type 3, 188 leaves, 3 steps):

$$-\frac{4 b \left(a^2-b^2\right) \csc[c+d x]}{a^5 d}+\frac{\left(2 a^2-3 b^2\right) \csc[c+d x]^2}{2 a^4 d}+\frac{2 b \csc[c+d x]^3}{3 a^3 d}-\frac{\csc[c+d x]^4}{4 a^2 d}+$$
$$\frac{\left(a^4-6 a^2 b^2+5 b^4\right) \text{Log}[\sin[c+d x]]}{a^6 d}-\frac{\left(a^4-6 a^2 b^2+5 b^4\right) \text{Log}[a+b \sin[c+d x]]}{a^6 d}+\frac{\left(a^2-b^2\right)^2}{a^5 d (a+b \sin[c+d x])}$$

Result (type 3, 380 leaves):

$$\frac{\left(-11\,a^2\,b\,\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+12\,b^3\,\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\,\text{Csc}\left[\frac{1}{2}\,(c+d\,x)\right]}{6\,a^5\,d}+\frac{\left(7\,a^2-12\,b^2\right)\,\text{Csc}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{32\,a^4\,d}+$$

$$\frac{b\,\text{Cot}\left[\frac{1}{2}\,(c+d\,x)\right]\,\text{Csc}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{12\,a^3\,d}-\frac{\text{Csc}\left[\frac{1}{2}\,(c+d\,x)\right]^4}{64\,a^2\,d}+\frac{\left(a^4-6\,a^2\,b^2+5\,b^4\right)\,\text{Log}[\text{Sin}[c+d\,x]]}{a^6\,d}+$$

$$\frac{\left(-a^4+6\,a^2\,b^2-5\,b^4\right)\,\text{Log}[a+b\,\text{Sin}[c+d\,x]]}{a^6\,d}+\frac{\left(7\,a^2-12\,b^2\right)\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{32\,a^4\,d}-\frac{\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^4}{64\,a^2\,d}+$$

$$\frac{\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]\,\left(-11\,a^2\,b\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]+12\,b^3\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)}{6\,a^5\,d}+\frac{(a-b)^2\,(a+b)^2}{a^5\,d\,(a+b\,\text{Sin}[c+d\,x])}+\frac{b\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]}{12\,a^3\,d}$$

- **Problem 192: Result unnecessarily involves imaginary or complex numbers.**

$$\int\frac{\text{Tan}[c+d\,x]^5}{(a+b\,\text{Sin}[c+d\,x])^3}\,dx$$

Optimal (type 3, 321 leaves, 5 steps):

$$-\frac{\left(8\,a^2-5\,a\,b-b^2\right)\,\text{Log}[1-\text{Sin}[c+d\,x]]}{16\,(a+b)^5\,d}-\frac{\left(8\,a^2+5\,a\,b-b^2\right)\,\text{Log}[1+\text{Sin}[c+d\,x]]}{16\,(a-b)^5\,d}+$$

$$\frac{a^3\,\left(a^4+13\,a^2\,b^2+10\,b^4\right)\,\text{Log}[a+b\,\text{Sin}[c+d\,x]]}{\left(a^2-b^2\right)^5\,d}-\frac{a^5}{2\,\left(a^2-b^2\right)^3\,d\,(a+b\,\text{Sin}[c+d\,x])^2}-\frac{a^4\,\left(a^2+5\,b^2\right)}{\left(a^2-b^2\right)^4\,d\,(a+b\,\text{Sin}[c+d\,x])}+$$

$$\frac{\text{Sec}[c+d\,x]^4\,\left(a\,\left(a^2+3\,b^2\right)-b\,\left(3\,a^2+b^2\right)\,\text{Sin}[c+d\,x]\right)}{4\,\left(a^2-b^2\right)^3\,d}-\frac{\text{Sec}[c+d\,x]^2\,\left(8\,a^3\,\left(a^2+5\,b^2\right)-b\,\left(27\,a^4+22\,a^2\,b^2-b^4\right)\,\text{Sin}[c+d\,x]\right)}{8\,\left(a^2-b^2\right)^4\,d}$$

Result (type 3, 588 leaves):

$$-\frac{2\,i\,(a^7+13\,a^5\,b^2+10\,a^3\,b^4)\,(c+d\,x)}{(a-b)^5\,(a+b)^5\,d}+\frac{1}{8\,(a-b)^5\,d}$$

$$i\,(-8\,a^2-5\,a\,b+b^2)\,\text{ArcTan}\left[\text{Csc}[c+d\,x]\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\right]+$$

$$\frac{1}{8\,(a+b)^5\,d}i\,(-8\,a^2+5\,a\,b+b^2)\,\text{ArcTan}\left[\text{Csc}[c+d\,x]\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\right]+$$

$$\frac{(-8\,a^2+5\,a\,b+b^2)\,\text{Log}\left[\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2\right]}{16\,(a+b)^5\,d}+\frac{(-8\,a^2-5\,a\,b+b^2)\,\text{Log}\left[\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2\right]}{16\,(a-b)^5\,d}+$$

$$\frac{(a^7+13\,a^5\,b^2+10\,a^3\,b^4)\,\text{Log}[a+b\,\text{Sin}[c+d\,x]]}{(a^2-b^2)^5\,d}+\frac{1}{16\,(a+b)^3\,d\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^4}+$$

$$\frac{-7\,a-b}{16\,(a+b)^4\,d\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}+\frac{1}{16\,(a-b)^3\,d\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^4}+$$

$$\frac{-7\,a+b}{16\,(a-b)^4\,d\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}-\frac{a^5}{2\,(a-b)^3\,(a+b)^3\,d\,(a+b\,\text{Sin}[c+d\,x])^2}-\frac{a^4\,(a^2+5\,b^2)}{(a-b)^4\,(a+b)^4\,d\,(a+b\,\text{Sin}[c+d\,x])}$$

- **Problem 193: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int\frac{\text{Tan}[c+d\,x]^3}{(a+b\,\text{Sin}[c+d\,x])^3}\,dx$$

Optimal (type 3, 232 leaves, 4 steps):

$$\frac{(2\,a-b)\,\text{Log}[1-\text{Sin}[c+d\,x]]}{4\,(a+b)^4\,d}+\frac{(2\,a+b)\,\text{Log}[1+\text{Sin}[c+d\,x]]}{4\,(a-b)^4\,d}-\frac{a\,(a^4+8\,a^2\,b^2+3\,b^4)\,\text{Log}[a+b\,\text{Sin}[c+d\,x]]}{(a^2-b^2)^4\,d}+$$

$$\frac{a^3}{2\,(a^2-b^2)^2\,d\,(a+b\,\text{Sin}[c+d\,x])^2}+\frac{a^2\,(a^2+3\,b^2)}{(a^2-b^2)^3\,d\,(a+b\,\text{Sin}[c+d\,x])}+\frac{\text{Sec}[c+d\,x]^2\,\left(a\,(a^2+3\,b^2)-b\,(3\,a^2+b^2)\,\text{Sin}[c+d\,x]\right)}{2\,(a^2-b^2)^3\,d}$$

Result (type 3, 471 leaves):

$$\frac{2\,i\,\left(a^5+8\,a^3\,b^2+3\,a\,b^4\right)\,(c+d\,x)}{(a-b)^4\,(a+b)^4\,d}+\frac{1}{2\,(a+b)^4\,d}$$

$$i\,(2\,a-b)\,\text{ArcTan}\left[\text{Csc}[c+d\,x]\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\right]+\frac{1}{2\,(a-b)^4\,d}$$

$$i\,(2\,a+b)\,\text{ArcTan}\left[\text{Csc}[c+d\,x]\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\right]+$$

$$\frac{(2\,a-b)\,\text{Log}\left[\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2\right]}{4\,(a+b)^4\,d}+\frac{(2\,a+b)\,\text{Log}\left[\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2\right]}{4\,(a-b)^4\,d}+$$

$$\frac{\left(-a^5-8\,a^3\,b^2-3\,a\,b^4\right)\,\text{Log}[a+b\,\text{Sin}[c+d\,x]]}{\left(a^2-b^2\right)^4\,d}+\frac{1}{4\,(a+b)^3\,d\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}+$$

$$\frac{1}{4\,(a-b)^3\,d\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}+\frac{a^3}{2\,(a-b)^2\,(a+b)^2\,d\,(a+b\,\text{Sin}[c+d\,x])^2}+\frac{a^2\,\left(a^2+3\,b^2\right)}{(a-b)^3\,(a+b)^3\,d\,(a+b\,\text{Sin}[c+d\,x])}$$

- **Problem 203: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int (a+b\,\text{Sin}[e+f\,x])^3\,(g\,\text{Tan}[e+f\,x])^p\,dx$$

Optimal (type 5, 271 leaves, 10 steps):

$$\frac{a^3\,\text{Hypergeometric2F1}\left[1,\frac{1+p}{2},\frac{3+p}{2},-\text{Tan}[e+f\,x]^2\right]\,(g\,\text{Tan}[e+f\,x])^{1+p}}{f\,g\,(1+p)}+\frac{1}{f\,g\,(2+p)}$$

$$3\,a^2\,b\,\left(\text{Cos}[e+f\,x]^2\right)^{\frac{1+p}{2}}\,\text{Hypergeometric2F1}\left[\frac{1+p}{2},\frac{2+p}{2},\frac{4+p}{2},\text{Sin}[e+f\,x]^2\right]\,\text{Sin}[e+f\,x]\,(g\,\text{Tan}[e+f\,x])^{1+p}+$$

$$\frac{b^3\,\left(\text{Cos}[e+f\,x]^2\right)^{\frac{1+p}{2}}\,\text{Hypergeometric2F1}\left[\frac{1+p}{2},\frac{4+p}{2},\frac{6+p}{2},\text{Sin}[e+f\,x]^2\right]\,\text{Sin}[e+f\,x]^3\,(g\,\text{Tan}[e+f\,x])^{1+p}}{f\,g\,(4+p)}+$$

$$\frac{3\,a\,b^2\,\text{Hypergeometric2F1}\left[2,\frac{3+p}{2},\frac{5+p}{2},-\text{Tan}[e+f\,x]^2\right]\,(g\,\text{Tan}[e+f\,x])^{3+p}}{f\,g^3\,(3+p)}$$

Result (type 6, 16820 leaves):

$$\left(\left(\left(\left(a^3\,(3+p)\,\text{AppellF1}\left[\frac{1+p}{2},p,1,\frac{3+p}{2},\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\,\left(-\frac{\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]}{-1+\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2}\right)^p\right)\right/\right.\right.\right.$$

$$\left((1+p)\,\left(1+\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right)\,\left((3+p)\,\text{AppellF1}\left[\frac{1+p}{2},p,1,\frac{3+p}{2},\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]-\right.\right.$$

$$2\,\left(\text{AppellF1}\left[\frac{3+p}{2},p,2,\frac{5+p}{2},\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]-\right.$$

$$p\,\text{AppellF1}\left[\frac{3+p}{2},1+p,1,\frac{5+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right])\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2))+$$

$$(12\,a\,b^2\,(3+p)\,\text{AppellF1}\left[\frac{1+p}{2},p,2,\frac{3+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Tan}\left[\frac{1}{2}(e+f x)\right]\left(-\frac{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}\right)^p)\Big/$$

$$((1+p)\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)^2((3+p)\,\text{AppellF1}\left[\frac{1+p}{2},p,2,\frac{3+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+$$

$$2(-2\,\text{AppellF1}\left[\frac{3+p}{2},p,3,\frac{5+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+$$

$$p\,\text{AppellF1}\left[\frac{3+p}{2},1+p,2,\frac{5+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right])\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2))-$$

$$(12\,a\,b^2\,(3+p)\,\text{AppellF1}\left[\frac{1+p}{2},p,3,\frac{3+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Tan}\left[\frac{1}{2}(e+f x)\right]\left(-\frac{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}\right)^p)\Big/$$

$$((1+p)\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)^3((3+p)\,\text{AppellF1}\left[\frac{1+p}{2},p,3,\frac{3+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+$$

$$2(-3\,\text{AppellF1}\left[\frac{3+p}{2},p,4,\frac{5+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+$$

$$p\,\text{AppellF1}\left[\frac{3+p}{2},1+p,3,\frac{5+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right])\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2))+$$

$$(6\,a^2\,b\,(4+p)\,\text{AppellF1}\left[\frac{2+p}{2},p,2,\frac{4+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\left(-\frac{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}\right)^p)\Big/$$

$$((2+p)\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)^2((4+p)\,\text{AppellF1}\left[\frac{2+p}{2},p,2,\frac{4+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+$$

$$2(-2\,\text{AppellF1}\left[\frac{4+p}{2},p,3,\frac{6+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+$$

$$p\,\text{AppellF1}\left[\frac{4+p}{2},1+p,2,\frac{6+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right])\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2))+$$

$$(8\,b^3\,(4+p)\,\text{AppellF1}\left[\frac{2+p}{2},p,3,\frac{4+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\left(-\frac{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}\right)^p)\Big/$$

$$((2+p)\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)^3((4+p)\,\text{AppellF1}\left[\frac{2+p}{2},p,3,\frac{4+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+$$

$$2(-3\,\text{AppellF1}\left[\frac{4+p}{2},p,4,\frac{6+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+$$

$$p \,\text{AppellF1}\left[\frac{4+p}{2}, 1+p, 3, \frac{6+p}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Bigg)\Bigg) -$$

$$\left(8 b^3 (4+p) \,\text{AppellF1}\left[\frac{2+p}{2}, p, 4, \frac{4+p}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2 \left(-\frac{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}\right)^p\right) \Big/$$

$$\left((2+p) \left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)^4 \left((4+p) \,\text{AppellF1}\left[\frac{2+p}{2}, p, 4, \frac{4+p}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] +\right.\right.$$

$$2 \left(-4 \,\text{AppellF1}\left[\frac{4+p}{2}, p, 5, \frac{6+p}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] +\right.$$

$$p \,\text{AppellF1}\left[\frac{4+p}{2}, 1+p, 4, \frac{6+p}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Bigg)\Bigg)\Bigg)$$

$$\text{Tan}[e+f x]^{-p} (g \,\text{Tan}[e+f x])^p \left(-\frac{1}{8} b^3 \,\text{Sin}[3 (e+f x)] \,\text{Tan}[e+f x]^p - a^3 \,\text{Sin}[e+f x]^3 \,\text{Sin}[3 (e+f x)] \,\text{Tan}[e+f x]^p +\right.$$

$$\frac{3}{8} i b^3 \,\text{Sin}[2 (e+f x)] \,\text{Sin}[3 (e+f x)] \,\text{Tan}[e+f x]^p +$$

$$\frac{3}{8} b^3 \,\text{Sin}[2 (e+f x)]^2 \,\text{Sin}[3 (e+f x)] \,\text{Tan}[e+f x]^p -$$

$$\frac{1}{8} i b^3 \,\text{Sin}[2 (e+f x)]^3 \,\text{Sin}[3 (e+f x)] \,\text{Tan}[e+f x]^p +$$

$$\text{Cos}[e+f x]^3 \left(a^3 \,\text{Cos}[3 (e+f x)] \,\text{Tan}[e+f x]^p - i a^3 \,\text{Sin}[3 (e+f x)] \,\text{Tan}[e+f x]^p\right) +$$

$$\text{Cos}[2 (e+f x)]^3 \left(\frac{1}{8} i b^3 \,\text{Cos}[3 (e+f x)] \,\text{Tan}[e+f x]^p + \frac{1}{8} b^3 \,\text{Sin}[3 (e+f x)] \,\text{Tan}[e+f x]^p\right) +$$

$$\text{Sin}[e+f x]^2 \left(-\frac{3}{2} a^2 b \,\text{Sin}[3 (e+f x)] \,\text{Tan}[e+f x]^p + \frac{3}{2} i a^2 b \,\text{Sin}[2 (e+f x)] \,\text{Sin}[3 (e+f x)] \,\text{Tan}[e+f x]^p\right) +$$

$$\text{Sin}[e+f x] \left(-\frac{3}{4} a b^2 \,\text{Sin}[3 (e+f x)] \,\text{Tan}[e+f x]^p + \frac{3}{2} i a b^2 \,\text{Sin}[2 (e+f x)] \,\text{Sin}[3 (e+f x)] \,\text{Tan}[e+f x]^p +\right.$$

$$\left.\frac{3}{4} a b^2 \,\text{Sin}[2 (e+f x)]^2 \,\text{Sin}[3 (e+f x)] \,\text{Tan}[e+f x]^p\right) + \text{Cos}[2 (e+f x)]^2$$

$$\left(-\frac{3}{8} b^3 \,\text{Sin}[3 (e+f x)] \,\text{Tan}[e+f x]^p - \frac{3}{4} a b^2 \,\text{Sin}[e+f x] \,\text{Sin}[3 (e+f x)] \,\text{Tan}[e+f x]^p + \frac{3}{8} i b^3 \,\text{Sin}[2 (e+f x)] \,\text{Sin}[3 (e+f x)]\right.$$

$$\left.\text{Tan}[e+f x]^p + \text{Cos}[3 (e+f x)] \left(-\frac{3}{8} i b^3 \,\text{Tan}[e+f x]^p - \frac{3}{4} i a b^2 \,\text{Sin}[e+f x] \,\text{Tan}[e+f x]^p - \frac{3}{8} b^3 \,\text{Sin}[2 (e+f x)] \,\text{Tan}[e+f x]^p\right)\right) +$$

$$\text{Cos}[3 (e+f x)] \left(-\frac{1}{8} i b^3 \,\text{Tan}[e+f x]^p - i a^3 \,\text{Sin}[e+f x]^3 \,\text{Tan}[e+f x]^p - \frac{3}{8} b^3 \,\text{Sin}[2 (e+f x)] \,\text{Tan}[e+f x]^p + \frac{3}{8} i b^3 \,\text{Sin}[2 (e+f x)]^2\right.$$

$$\text{Tan}[e+f x]^p + \frac{1}{8} b^3 \,\text{Sin}[2 (e+f x)]^3 \,\text{Tan}[e+f x]^p + \text{Sin}[e+f x]^2 \left(-\frac{3}{2} i a^2 b \,\text{Tan}[e+f x]^p - \frac{3}{2} a^2 b \,\text{Sin}[2 (e+f x)] \,\text{Tan}[e+f x]^p\right) +$$

$$\text{Sin}[e+f x]\left(-\frac{3}{4}\,i\,a\,b^2\,\text{Tan}[e+f x]^p-\frac{3}{2}\,a\,b^2\,\text{Sin}[2\,(e+f x)]\,\text{Tan}[e+f x]^p+\frac{3}{4}\,i\,a\,b^2\,\text{Sin}[2\,(e+f x)]^2\,\text{Tan}[e+f x]^p\right)\Bigg)+$$

$$\text{Cos}[e+f x]^2\left(\frac{3}{2}\,a^2\,b\,\text{Sin}[3\,(e+f x)]\,\text{Tan}[e+f x]^p+3\,a^3\,\text{Sin}[e+f x]\,\text{Sin}[3\,(e+f x)]\,\text{Tan}[e+f x]^p-\frac{3}{2}\,i\,a^2\,b\,\text{Sin}[2\,(e+f x)]\,\text{Sin}[3\,(e+f x)]\right.$$

$$\text{Tan}[e+f x]^p+\text{Cos}[3\,(e+f x)]\left(\frac{3}{2}\,i\,a^2\,b\,\text{Tan}[e+f x]^p+3\,i\,a^3\,\text{Sin}[e+f x]\,\text{Tan}[e+f x]^p+\frac{3}{2}\,a^2\,b\,\text{Sin}[2\,(e+f x)]\,\text{Tan}[e+f x]^p\right)+$$

$$\left.\text{Cos}[2\,(e+f x)]\left(-\frac{3}{2}\,i\,a^2\,b\,\text{Cos}[3\,(e+f x)]\,\text{Tan}[e+f x]^p-\frac{3}{2}\,a^2\,b\,\text{Sin}[3\,(e+f x)]\,\text{Tan}[e+f x]^p\right)\right)+$$

$$\text{Cos}[e+f x]\left(\frac{3}{4}\,i\,a\,b^2\,\text{Sin}[3\,(e+f x)]\,\text{Tan}[e+f x]^p+3\,i\,a^3\,\text{Sin}[e+f x]^2\,\text{Sin}[3\,(e+f x)]\,\text{Tan}[e+f x]^p+\right.$$

$$\frac{3}{2}\,a\,b^2\,\text{Sin}[2\,(e+f x)]\,\text{Sin}[3\,(e+f x)]\,\text{Tan}[e+f x]^p-\frac{3}{4}\,i\,a\,b^2\,\text{Sin}[2\,(e+f x)]^2\,\text{Sin}[3\,(e+f x)]\,\text{Tan}[e+f x]^p+$$

$$\text{Cos}[2\,(e+f x)]^2\left(-\frac{3}{4}\,a\,b^2\,\text{Cos}[3\,(e+f x)]\,\text{Tan}[e+f x]^p+\frac{3}{4}\,i\,a\,b^2\,\text{Sin}[3\,(e+f x)]\,\text{Tan}[e+f x]^p\right)+$$

$$\text{Sin}[e+f x]\left(3\,i\,a^2\,b\,\text{Sin}[3\,(e+f x)]\,\text{Tan}[e+f x]^p+3\,a^2\,b\,\text{Sin}[2\,(e+f x)]\,\text{Sin}[3\,(e+f x)]\,\text{Tan}[e+f x]^p\right)+$$

$$\text{Cos}[3\,(e+f x)]\left(-\frac{3}{4}\,a\,b^2\,\text{Tan}[e+f x]^p-3\,a^3\,\text{Sin}[e+f x]^2\,\text{Tan}[e+f x]^p+\frac{3}{2}\,i\,a\,b^2\,\text{Sin}[2\,(e+f x)]\,\text{Tan}[e+f x]^p+\right.$$

$$\left.\frac{3}{4}\,a\,b^2\,\text{Sin}[2\,(e+f x)]^2\,\text{Tan}[e+f x]^p+\text{Sin}[e+f x]\left(-3\,a^2\,b\,\text{Tan}[e+f x]^p+3\,i\,a^2\,b\,\text{Sin}[2\,(e+f x)]\,\text{Tan}[e+f x]^p\right)\right)+\text{Cos}[2\,(e+f x)]$$

$$\left(-\frac{3}{2}\,i\,a\,b^2\,\text{Sin}[3\,(e+f x)]\,\text{Tan}[e+f x]^p-3\,i\,a^2\,b\,\text{Sin}[e+f x]\,\text{Sin}[3\,(e+f x)]\,\text{Tan}[e+f x]^p-\frac{3}{2}\,a\,b^2\,\text{Sin}[2\,(e+f x)]\,\text{Sin}[3\,(e+f x)]\right.$$

$$\left.\left.\text{Tan}[e+f x]^p+\text{Cos}[3\,(e+f x)]\left(\frac{3}{2}\,a\,b^2\,\text{Tan}[e+f x]^p+3\,a^2\,b\,\text{Sin}[e+f x]\,\text{Tan}[e+f x]^p-\frac{3}{2}\,i\,a\,b^2\,\text{Sin}[2\,(e+f x)]\,\text{Tan}[e+f x]^p\right)\right)\right)+$$

$$\text{Cos}[2\,(e+f x)]\left(\frac{3}{8}\,b^3\,\text{Sin}[3\,(e+f x)]\,\text{Tan}[e+f x]^p+\frac{3}{2}\,a^2\,b\,\text{Sin}[e+f x]^2\,\text{Sin}[3\,(e+f x)]\,\text{Tan}[e+f x]^p-\right.$$

$$\frac{3}{4}\,i\,b^3\,\text{Sin}[2\,(e+f x)]\,\text{Sin}[3\,(e+f x)]\,\text{Tan}[e+f x]^p-\frac{3}{8}\,b^3\,\text{Sin}[2\,(e+f x)]^2\,\text{Sin}[3\,(e+f x)]\,\text{Tan}[e+f x]^p+$$

$$\text{Sin}[e+f x]\left(\frac{3}{2}\,a\,b^2\,\text{Sin}[3\,(e+f x)]\,\text{Tan}[e+f x]^p-\frac{3}{2}\,i\,a\,b^2\,\text{Sin}[2\,(e+f x)]\,\text{Sin}[3\,(e+f x)]\,\text{Tan}[e+f x]^p\right)+$$

$$\text{Cos}[3\,(e+f x)]\left(\frac{3}{8}\,i\,b^3\,\text{Tan}[e+f x]^p+\frac{3}{2}\,i\,a^2\,b\,\text{Sin}[e+f x]^2\,\text{Tan}[e+f x]^p+\frac{3}{4}\,b^3\,\text{Sin}[2\,(e+f x)]\,\text{Tan}[e+f x]^p-\right.$$

$$\left.\left.\frac{3}{8}\,i\,b^3\,\text{Sin}[2\,(e+f x)]^2\,\text{Tan}[e+f x]^p+\text{Sin}[e+f x]\left(\frac{3}{2}\,i\,a\,b^2\,\text{Tan}[e+f x]^p+\frac{3}{2}\,a\,b^2\,\text{Sin}[2\,(e+f x)]\,\text{Tan}[e+f x]^p\right)\right)\right)\Bigg)\Bigg)\Bigg)\Bigg/$$

$$\left(f\left(-\left(a^3\,(3+p)\,\text{AppellF1}\left[\frac{1+p}{2},p,1,\frac{3+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right.\right.\right.$$

$$\left.\left(-\frac{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}\right)^p\right)\Big/\left((1+p)\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)^2\right.$$

$$\left((3+p)\,\text{AppellF1}\left[\frac{1+p}{2},p,1,\frac{3+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]-2\left(\text{AppellF1}\left[\frac{3+p}{2},p,2,\frac{5+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\right.\right.\right.$$

$$\left.\left.\left.-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]-p\,\text{AppellF1}\left[\frac{3+p}{2},1+p,1,\frac{5+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)\right)+$$

$$\left(a^3\,(3+p)\,\text{AppellF1}\left[\frac{1+p}{2},p,1,\frac{3+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\left(-\frac{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}\right)^p\right)\Big/$$

$$\left(2\,(1+p)\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)\left((3+p)\,\text{AppellF1}\left[\frac{1+p}{2},p,1,\frac{3+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]-\right.\right.$$

$$2\left(\text{AppellF1}\left[\frac{3+p}{2},p,2,\frac{5+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]-\right.$$

$$\left.\left.\left.p\,\text{AppellF1}\left[\frac{3+p}{2},1+p,1,\frac{5+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)\right)+$$

$$\left(a^3\,(3+p)\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]\left(-1/(3+p)(1+p)\,\text{AppellF1}\left[1+\frac{1+p}{2},p,2,1+\frac{3+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right.\right.$$

$$\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]+1/(3+p)p\,(1+p)\,\text{AppellF1}\left[1+\frac{1+p}{2},1+p,1,1+\frac{3+p}{2},\right.$$

$$\left.\left.\left.\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\left(-\frac{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}\right)^p\right)\Big/$$

$$\left((1+p)\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)\left((3+p)\,\text{AppellF1}\left[\frac{1+p}{2},p,1,\frac{3+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]-\right.\right.$$

$$2\left(\text{AppellF1}\left[\frac{3+p}{2},p,2,\frac{5+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]-\right.$$

$$\left.\left.\left.p\,\text{AppellF1}\left[\frac{3+p}{2},1+p,1,\frac{5+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)\right)-$$

$$\left(24\,a\,b^2\,(3+p)\,\text{AppellF1}\left[\frac{1+p}{2},p,2,\frac{3+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right.$$

$$\left(-\frac{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}\right)^p\Bigg) \Bigg/ \left((1+p)\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)^3\right.$$

$$\Bigg((3+p)\,\text{AppellF1}\left[\frac{1+p}{2}, p, 2, \frac{3+p}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] + 2\Bigg(-2\,\text{AppellF1}\left[\frac{3+p}{2}, p, 3, \frac{5+p}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\right.$$

$$\left.-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] + p\,\text{AppellF1}\left[\frac{3+p}{2}, 1+p, 2, \frac{5+p}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\Bigg)\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Bigg)\Bigg) +$$

$$\Bigg(6\,a\,b^2\,(3+p)\,\text{AppellF1}\left[\frac{1+p}{2}, p, 2, \frac{3+p}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\left(-\frac{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}\right)^p\Bigg) \Bigg/$$

$$\Bigg((1+p)\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)^2\Bigg((3+p)\,\text{AppellF1}\left[\frac{1+p}{2}, p, 2, \frac{3+p}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] +$$

$$2\Bigg(-2\,\text{AppellF1}\left[\frac{3+p}{2}, p, 3, \frac{5+p}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] +$$

$$p\,\text{AppellF1}\left[\frac{3+p}{2}, 1+p, 2, \frac{5+p}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\Bigg)\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Bigg)\Bigg) +$$

$$\Bigg(12\,a\,b^2\,(3+p)\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]\Bigg(-1/(3+p)\,2\,(1+p)\,\text{AppellF1}\left[1+\frac{1+p}{2}, p, 3, 1+\frac{3+p}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\,\text{Tan}\left[\frac{1}{2}(e+f x)\right] + 1/(3+p)\,p\,(1+p)\,\text{AppellF1}\Bigg[1+\frac{1+p}{2}, 1+p, 2, 1+\frac{3+p}{2},$$

$$\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Bigg]\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]\Bigg)\left(-\frac{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}\right)^p\Bigg) \Bigg/$$

$$\Bigg((1+p)\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)^2\Bigg((3+p)\,\text{AppellF1}\left[\frac{1+p}{2}, p, 2, \frac{3+p}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] +$$

$$2\Bigg(-2\,\text{AppellF1}\left[\frac{3+p}{2}, p, 3, \frac{5+p}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] +$$

$$p\,\text{AppellF1}\left[\frac{3+p}{2}, 1+p, 2, \frac{5+p}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\Bigg)\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Bigg)\Bigg) +$$

$$\Bigg(36\,a\,b^2\,(3+p)\,\text{AppellF1}\left[\frac{1+p}{2}, p, 3, \frac{3+p}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2$$

$$\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\left(-\frac{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}\right)^p\Bigg) \Bigg/$$

$$\left((1+p)\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)^4\left((3+p)\,\text{AppellF1}\left[\frac{1+p}{2},p,3,\frac{3+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+\right.\right.$$

$$2\left(-3\,\text{AppellF1}\left[\frac{3+p}{2},p,4,\frac{5+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+\right.$$

$$\left.\left.\left.p\,\text{AppellF1}\left[\frac{3+p}{2},1+p,3,\frac{5+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)\right)-$$

$$\left(6\,a\,b^2(3+p)\,\text{AppellF1}\left[\frac{1+p}{2},p,3,\frac{3+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\left(-\frac{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}\right)^p\right)\Big/$$

$$\left((1+p)\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)^3\left((3+p)\,\text{AppellF1}\left[\frac{1+p}{2},p,3,\frac{3+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+\right.\right.$$

$$2\left(-3\,\text{AppellF1}\left[\frac{3+p}{2},p,4,\frac{5+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+\right.$$

$$\left.\left.\left.p\,\text{AppellF1}\left[\frac{3+p}{2},1+p,3,\frac{5+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)\right)-$$

$$\left(12\,a\,b^2(3+p)\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]\left(-1/(3+p)\,3\,(1+p)\,\text{AppellF1}\left[1+\frac{1+p}{2},p,4,1+\frac{3+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right.\right.$$

$$\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]+1/(3+p)\,p\,(1+p)\,\text{AppellF1}\left[1+\frac{1+p}{2},1+p,3,1+\frac{3+p}{2},\right.$$

$$\left.\left.\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\left(-\frac{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}\right)^p\right)\Big/$$

$$\left((1+p)\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)^3\left((3+p)\,\text{AppellF1}\left[\frac{1+p}{2},p,3,\frac{3+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+\right.\right.$$

$$2\left(-3\,\text{AppellF1}\left[\frac{3+p}{2},p,4,\frac{5+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+\right.$$

$$\left.\left.\left.p\,\text{AppellF1}\left[\frac{3+p}{2},1+p,3,\frac{5+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)\right)-$$

$$\left(12\,a^2\,b\,(4+p)\,\text{AppellF1}\left[\frac{2+p}{2},p,2,\frac{4+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\right.$$

$$\left.\text{Tan}\left[\frac{1}{2}(e+f x)\right]^3\left(-\frac{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}\right)^p\right)\Big/$$

$$\left((2+p)\left(1+\operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)^3\left((4+p)\operatorname{AppellF1}\left[\frac{2+p}{2},p,2,\frac{4+p}{2},\operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+\right.\right.$$

$$2\left(-2\operatorname{AppellF1}\left[\frac{4+p}{2},p,3,\frac{6+p}{2},\operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+\right.$$

$$\left.\left.\left.p\operatorname{AppellF1}\left[\frac{4+p}{2},1+p,2,\frac{6+p}{2},\operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right)\operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)\right)+$$

$$\left(6a^2b(4+p)\operatorname{AppellF1}\left[\frac{2+p}{2},p,2,\frac{4+p}{2},\operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\operatorname{Sec}\left[\frac{1}{2}(e+f x)\right]^2\right.$$

$$\left.\operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]\left(-\frac{\operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]}{-1+\operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]^2}\right)^p\right)\Big/$$

$$\left((2+p)\left(1+\operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)^2\left((4+p)\operatorname{AppellF1}\left[\frac{2+p}{2},p,2,\frac{4+p}{2},\operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+\right.\right.$$

$$2\left(-2\operatorname{AppellF1}\left[\frac{4+p}{2},p,3,\frac{6+p}{2},\operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+\right.$$

$$\left.\left.\left.p\operatorname{AppellF1}\left[\frac{4+p}{2},1+p,2,\frac{6+p}{2},\operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right)\operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)\right)+$$

$$\left(6a^2b(4+p)\operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]^2\left(-1/(4+p)2(2+p)\operatorname{AppellF1}\left[1+\frac{2+p}{2},p,3,1+\frac{4+p}{2},\operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right.\right.$$

$$\operatorname{Sec}\left[\frac{1}{2}(e+f x)\right]^2\operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]+1/(4+p)p(2+p)\operatorname{AppellF1}\left[1+\frac{2+p}{2},1+p,2,1+\frac{4+p}{2},\right.$$

$$\left.\left.\operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\operatorname{Sec}\left[\frac{1}{2}(e+f x)\right]^2\operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\left(-\frac{\operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]}{-1+\operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]^2}\right)^p\right)\Big/$$

$$\left((2+p)\left(1+\operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)^2\left((4+p)\operatorname{AppellF1}\left[\frac{2+p}{2},p,2,\frac{4+p}{2},\operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+\right.\right.$$

$$2\left(-2\operatorname{AppellF1}\left[\frac{4+p}{2},p,3,\frac{6+p}{2},\operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+\right.$$

$$\left.\left.\left.p\operatorname{AppellF1}\left[\frac{4+p}{2},1+p,2,\frac{6+p}{2},\operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right)\operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)\right)-$$

$$\left(24b^3(4+p)\operatorname{AppellF1}\left[\frac{2+p}{2},p,3,\frac{4+p}{2},\operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\operatorname{Sec}\left[\frac{1}{2}(e+f x)\right]^2\right.$$

$$\tan\left[\frac{1}{2}(e+fx)\right]^3\left(-\frac{\tan\left[\frac{1}{2}(e+fx)\right]}{-1+\tan\left[\frac{1}{2}(e+fx)\right]^2}\right)^p\Bigg)\Big/$$

$$\Bigg((2+p)\left(1+\tan\left[\frac{1}{2}(e+fx)\right]^2\right)^4\Bigg((4+p)\,\text{AppellF1}\left[\frac{2+p}{2},p,3,\frac{4+p}{2},\tan\left[\frac{1}{2}(e+fx)\right]^2,-\tan\left[\frac{1}{2}(e+fx)\right]^2\right]+$$

$$2\Bigg(-3\,\text{AppellF1}\left[\frac{4+p}{2},p,4,\frac{6+p}{2},\tan\left[\frac{1}{2}(e+fx)\right]^2,-\tan\left[\frac{1}{2}(e+fx)\right]^2\right]+$$

$$p\,\text{AppellF1}\left[\frac{4+p}{2},1+p,3,\frac{6+p}{2},\tan\left[\frac{1}{2}(e+fx)\right]^2,-\tan\left[\frac{1}{2}(e+fx)\right]^2\right]\Bigg)\tan\left[\frac{1}{2}(e+fx)\right]^2\Bigg)\Bigg)+$$

$$\Bigg(8b^3(4+p)\,\text{AppellF1}\left[\frac{2+p}{2},p,3,\frac{4+p}{2},\tan\left[\frac{1}{2}(e+fx)\right]^2,-\tan\left[\frac{1}{2}(e+fx)\right]^2\right]\sec\left[\frac{1}{2}(e+fx)\right]^2$$

$$\tan\left[\frac{1}{2}(e+fx)\right]\left(-\frac{\tan\left[\frac{1}{2}(e+fx)\right]}{-1+\tan\left[\frac{1}{2}(e+fx)\right]^2}\right)^p\Bigg)\Big/$$

$$\Bigg((2+p)\left(1+\tan\left[\frac{1}{2}(e+fx)\right]^2\right)^3\Bigg((4+p)\,\text{AppellF1}\left[\frac{2+p}{2},p,3,\frac{4+p}{2},\tan\left[\frac{1}{2}(e+fx)\right]^2,-\tan\left[\frac{1}{2}(e+fx)\right]^2\right]+$$

$$2\Bigg(-3\,\text{AppellF1}\left[\frac{4+p}{2},p,4,\frac{6+p}{2},\tan\left[\frac{1}{2}(e+fx)\right]^2,-\tan\left[\frac{1}{2}(e+fx)\right]^2\right]+$$

$$p\,\text{AppellF1}\left[\frac{4+p}{2},1+p,3,\frac{6+p}{2},\tan\left[\frac{1}{2}(e+fx)\right]^2,-\tan\left[\frac{1}{2}(e+fx)\right]^2\right]\Bigg)\tan\left[\frac{1}{2}(e+fx)\right]^2\Bigg)\Bigg)+$$

$$\Bigg(8b^3(4+p)\tan\left[\frac{1}{2}(e+fx)\right]^2\Bigg(-1/(4+p)3(2+p)\,\text{AppellF1}\left[1+\frac{2+p}{2},p,4,1+\frac{4+p}{2},\tan\left[\frac{1}{2}(e+fx)\right]^2,-\tan\left[\frac{1}{2}(e+fx)\right]^2\right]$$

$$\sec\left[\frac{1}{2}(e+fx)\right]^2\tan\left[\frac{1}{2}(e+fx)\right]+1/(4+p)p(2+p)\,\text{AppellF1}\left[1+\frac{2+p}{2},1+p,3,1+\frac{4+p}{2},\right.$$

$$\left.\tan\left[\frac{1}{2}(e+fx)\right]^2,-\tan\left[\frac{1}{2}(e+fx)\right]^2\right]\sec\left[\frac{1}{2}(e+fx)\right]^2\tan\left[\frac{1}{2}(e+fx)\right]\Bigg)\left(-\frac{\tan\left[\frac{1}{2}(e+fx)\right]}{-1+\tan\left[\frac{1}{2}(e+fx)\right]^2}\right)^p\Bigg)\Big/$$

$$\Bigg((2+p)\left(1+\tan\left[\frac{1}{2}(e+fx)\right]^2\right)^3\Bigg((4+p)\,\text{AppellF1}\left[\frac{2+p}{2},p,3,\frac{4+p}{2},\tan\left[\frac{1}{2}(e+fx)\right]^2,-\tan\left[\frac{1}{2}(e+fx)\right]^2\right]+$$

$$2\Bigg(-3\,\text{AppellF1}\left[\frac{4+p}{2},p,4,\frac{6+p}{2},\tan\left[\frac{1}{2}(e+fx)\right]^2,-\tan\left[\frac{1}{2}(e+fx)\right]^2\right]+$$

$$p\,\text{AppellF1}\left[\frac{4+p}{2},1+p,3,\frac{6+p}{2},\tan\left[\frac{1}{2}(e+fx)\right]^2,-\tan\left[\frac{1}{2}(e+fx)\right]^2\right]\Bigg)\tan\left[\frac{1}{2}(e+fx)\right]^2\Bigg)\Bigg)+$$

$$\left(32\,b^3\,(4+p)\,\text{AppellF1}\left[\frac{2+p}{2},\,p,\,4,\,\frac{4+p}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]\,\text{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right.$$

$$\left.\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^3\left(-\frac{\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]}{-1+\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2}\right)^p\right)\Big/$$

$$\left((2+p)\,\left(1+\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right)^5\left((4+p)\,\text{AppellF1}\left[\frac{2+p}{2},\,p,\,4,\,\frac{4+p}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]+\right.\right.$$

$$2\left(-4\,\text{AppellF1}\left[\frac{4+p}{2},\,p,\,5,\,\frac{6+p}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]+\right.$$

$$\left.\left.\left.p\,\text{AppellF1}\left[\frac{4+p}{2},\,1+p,\,4,\,\frac{6+p}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]\right)\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right)\right)-$$

$$\left(8\,b^3\,(4+p)\,\text{AppellF1}\left[\frac{2+p}{2},\,p,\,4,\,\frac{4+p}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]\,\text{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right.$$

$$\left.\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\left(-\frac{\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]}{-1+\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2}\right)^p\right)\Big/$$

$$\left((2+p)\,\left(1+\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right)^4\left((4+p)\,\text{AppellF1}\left[\frac{2+p}{2},\,p,\,4,\,\frac{4+p}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]+\right.\right.$$

$$2\left(-4\,\text{AppellF1}\left[\frac{4+p}{2},\,p,\,5,\,\frac{6+p}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]+\right.$$

$$\left.\left.\left.p\,\text{AppellF1}\left[\frac{4+p}{2},\,1+p,\,4,\,\frac{6+p}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]\right)\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right)\right)-$$

$$\left(8\,b^3\,(4+p)\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\left(-1/(4+p)\,4\,(2+p)\,\text{AppellF1}\left[1+\frac{2+p}{2},\,p,\,5,\,1+\frac{4+p}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]\right.\right.$$

$$\text{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]^2\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]+1/(4+p)\,p\,(2+p)\,\text{AppellF1}\left[1+\frac{2+p}{2},\,1+p,\,4,\,1+\frac{4+p}{2},\right.$$

$$\left.\left.\left.\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]\,\text{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]^2\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right)\left(-\frac{\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]}{-1+\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2}\right)^p\right)\Big/$$

$$\left((2+p)\,\left(1+\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right)^4\left((4+p)\,\text{AppellF1}\left[\frac{2+p}{2},\,p,\,4,\,\frac{4+p}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]+\right.\right.$$

$$2\left(-4\,\text{AppellF1}\left[\frac{4+p}{2},\,p,\,5,\,\frac{6+p}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]+\right.$$

$$p\,\text{AppellF1}\left[\frac{4+p}{2},1+p,4,\frac{6+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big)\Big)+$$

$$\Big(a^3 p(3+p)\,\text{AppellF1}\left[\frac{1+p}{2},p,1,\frac{3+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Tan}\left[\frac{1}{2}(e+f x)\right]\left(-\frac{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}\right)^{-1+p}$$

$$\left(\frac{\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}{\left(-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)^2}-\frac{\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2}{2\left(-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)}\right)\Big)\Big/$$

$$\Big((1+p)\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)\Big((3+p)\,\text{AppellF1}\left[\frac{1+p}{2},p,1,\frac{3+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]-$$

$$2\Big(\text{AppellF1}\left[\frac{3+p}{2},p,2,\frac{5+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]-$$

$$p\,\text{AppellF1}\left[\frac{3+p}{2},1+p,1,\frac{5+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\Big)\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big)\Big)+$$

$$\Big(12\,a\,b^2 p(3+p)\,\text{AppellF1}\left[\frac{1+p}{2},p,2,\frac{3+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Tan}\left[\frac{1}{2}(e+f x)\right]$$

$$\left(-\frac{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}\right)^{-1+p}\left(\frac{\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}{\left(-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)^2}-\frac{\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2}{2\left(-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)}\right)\Big)\Big/$$

$$\Big((1+p)\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)^2\Big((3+p)\,\text{AppellF1}\left[\frac{1+p}{2},p,2,\frac{3+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+$$

$$2\Big(-2\,\text{AppellF1}\left[\frac{3+p}{2},p,3,\frac{5+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+$$

$$p\,\text{AppellF1}\left[\frac{3+p}{2},1+p,2,\frac{5+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\Big)\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big)\Big)-$$

$$\Big(12\,a\,b^2 p(3+p)\,\text{AppellF1}\left[\frac{1+p}{2},p,3,\frac{3+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Tan}\left[\frac{1}{2}(e+f x)\right]$$

$$\left(-\frac{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}\right)^{-1+p}\left(\frac{\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}{\left(-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)^2}-\frac{\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2}{2\left(-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)}\right)\Big)\Big/$$

$$\Big((1+p)\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)^3\Big((3+p)\,\text{AppellF1}\left[\frac{1+p}{2},p,3,\frac{3+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+$$

$$2\left(-3\,\text{AppellF1}\left[\frac{3+p}{2},p,4,\frac{5+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+\right.$$

$$\left.\left.p\,\text{AppellF1}\left[\frac{3+p}{2},1+p,3,\frac{5+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)\right)+$$

$$\left(6\,a^2\,b\,p\,(4+p)\,\text{AppellF1}\left[\frac{2+p}{2},p,2,\frac{4+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right.$$

$$\left.\left(-\frac{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}\right)^{-1+p}\left(\frac{\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}{\left(-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)^2}-\frac{\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2}{2\left(-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)}\right)\right)\Big/$$

$$\left((2+p)\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)^2\left((4+p)\,\text{AppellF1}\left[\frac{2+p}{2},p,2,\frac{4+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+\right.\right.$$

$$2\left(-2\,\text{AppellF1}\left[\frac{4+p}{2},p,3,\frac{6+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+\right.$$

$$\left.\left.\left.p\,\text{AppellF1}\left[\frac{4+p}{2},1+p,2,\frac{6+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)\right)+$$

$$\left(8\,b^3\,p\,(4+p)\,\text{AppellF1}\left[\frac{2+p}{2},p,3,\frac{4+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right.$$

$$\left.\left(-\frac{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}\right)^{-1+p}\left(\frac{\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}{\left(-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)^2}-\frac{\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2}{2\left(-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)}\right)\right)\Big/$$

$$\left((2+p)\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)^3\left((4+p)\,\text{AppellF1}\left[\frac{2+p}{2},p,3,\frac{4+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+\right.\right.$$

$$2\left(-3\,\text{AppellF1}\left[\frac{4+p}{2},p,4,\frac{6+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+\right.$$

$$\left.\left.\left.p\,\text{AppellF1}\left[\frac{4+p}{2},1+p,3,\frac{6+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)\right)-$$

$$\left(8\,b^3\,p\,(4+p)\,\text{AppellF1}\left[\frac{2+p}{2},p,4,\frac{4+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right.$$

$$\left.\left(-\frac{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}\right)^{-1+p}\left(\frac{\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}{\left(-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)^2}-\frac{\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2}{2\left(-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)}\right)\right)\Big/$$

$$\Big((2+p)\left(1+\text{Tan}[\tfrac{1}{2}(e+f x)]^2\right)^4\Big((4+p)\,\text{AppellF1}[\tfrac{2+p}{2}, p, 4, \tfrac{4+p}{2}, \text{Tan}[\tfrac{1}{2}(e+f x)]^2, -\text{Tan}[\tfrac{1}{2}(e+f x)]^2] +$$

$$2\Big(-4\,\text{AppellF1}[\tfrac{4+p}{2}, p, 5, \tfrac{6+p}{2}, \text{Tan}[\tfrac{1}{2}(e+f x)]^2, -\text{Tan}[\tfrac{1}{2}(e+f x)]^2] +$$

$$p\,\text{AppellF1}[\tfrac{4+p}{2}, 1+p, 4, \tfrac{6+p}{2}, \text{Tan}[\tfrac{1}{2}(e+f x)]^2, -\text{Tan}[\tfrac{1}{2}(e+f x)]^2]\Big)\,\text{Tan}[\tfrac{1}{2}(e+f x)]^2\Big)\Big) -$$

$$\Big(a^3(3+p)\,\text{AppellF1}[\tfrac{1+p}{2}, p, 1, \tfrac{3+p}{2}, \text{Tan}[\tfrac{1}{2}(e+f x)]^2, -\text{Tan}[\tfrac{1}{2}(e+f x)]^2]\,\text{Tan}[\tfrac{1}{2}(e+f x)]\left(-\frac{\text{Tan}[\frac{1}{2}(e+f x)]}{-1+\text{Tan}[\frac{1}{2}(e+f x)]^2}\right)^p$$

$$\Big(-2\Big(\text{AppellF1}[\tfrac{3+p}{2}, p, 2, \tfrac{5+p}{2}, \text{Tan}[\tfrac{1}{2}(e+f x)]^2, -\text{Tan}[\tfrac{1}{2}(e+f x)]^2] -$$

$$p\,\text{AppellF1}[\tfrac{3+p}{2}, 1+p, 1, \tfrac{5+p}{2}, \text{Tan}[\tfrac{1}{2}(e+f x)]^2, -\text{Tan}[\tfrac{1}{2}(e+f x)]^2]\Big)\,\text{Sec}[\tfrac{1}{2}(e+f x)]^2\,\text{Tan}[\tfrac{1}{2}(e+f x)] +$$

$$(3+p)\Big(-\frac{1}{3+p}(1+p)\,\text{AppellF1}[1+\tfrac{1+p}{2}, p, 2, 1+\tfrac{3+p}{2}, \text{Tan}[\tfrac{1}{2}(e+f x)]^2, -\text{Tan}[\tfrac{1}{2}(e+f x)]^2]\,\text{Sec}[\tfrac{1}{2}(e+f x)]^2\,\text{Tan}[\tfrac{1}{2}(e+f x)] +$$

$$\frac{1}{3+p}p(1+p)\,\text{AppellF1}[1+\tfrac{1+p}{2}, 1+p, 1, 1+\tfrac{3+p}{2}, \text{Tan}[\tfrac{1}{2}(e+f x)]^2, -\text{Tan}[\tfrac{1}{2}(e+f x)]^2]\,\text{Sec}[\tfrac{1}{2}(e+f x)]^2\,\text{Tan}[\tfrac{1}{2}(e+f x)]\Big) -$$

$$2\,\text{Tan}[\tfrac{1}{2}(e+f x)]^2\Big(-\frac{1}{5+p}2(3+p)\,\text{AppellF1}[1+\tfrac{3+p}{2}, p, 3, 1+\tfrac{5+p}{2}, \text{Tan}[\tfrac{1}{2}(e+f x)]^2, -\text{Tan}[\tfrac{1}{2}(e+f x)]^2]\,\text{Sec}[\tfrac{1}{2}(e+f x)]^2\,\text{Tan}[$$

$$\tfrac{1}{2}(e+f x)] + \frac{1}{5+p}p(3+p)\,\text{AppellF1}[1+\tfrac{3+p}{2}, 1+p, 2, 1+\tfrac{5+p}{2}, \text{Tan}[\tfrac{1}{2}(e+f x)]^2, -\text{Tan}[\tfrac{1}{2}(e+f x)]^2]\,\text{Sec}[\tfrac{1}{2}(e+f x)]^2$$

$$\text{Tan}[\tfrac{1}{2}(e+f x)] - p\Big(-\frac{1}{5+p}(3+p)\,\text{AppellF1}[1+\tfrac{3+p}{2}, 1+p, 2, 1+\tfrac{5+p}{2}, \text{Tan}[\tfrac{1}{2}(e+f x)]^2, -\text{Tan}[\tfrac{1}{2}(e+f x)]^2]$$

$$\text{Sec}[\tfrac{1}{2}(e+f x)]^2\,\text{Tan}[\tfrac{1}{2}(e+f x)] + \frac{1}{5+p}(1+p)(3+p)\,\text{AppellF1}[1+\tfrac{3+p}{2}, 2+p, 1, 1+\tfrac{5+p}{2},$$

$$\text{Tan}[\tfrac{1}{2}(e+f x)]^2, -\text{Tan}[\tfrac{1}{2}(e+f x)]^2]\,\text{Sec}[\tfrac{1}{2}(e+f x)]^2\,\text{Tan}[\tfrac{1}{2}(e+f x)]\Big)\Big)\Big)\Big)\Big)\Big/\Big((1+p)\left(1+\text{Tan}[\tfrac{1}{2}(e+f x)]^2\right)$$

$$\Big((3+p)\,\text{AppellF1}[\tfrac{1+p}{2}, p, 1, \tfrac{3+p}{2}, \text{Tan}[\tfrac{1}{2}(e+f x)]^2, -\text{Tan}[\tfrac{1}{2}(e+f x)]^2] - 2\Big(\text{AppellF1}[\tfrac{3+p}{2}, p, 2, \tfrac{5+p}{2}, \text{Tan}[\tfrac{1}{2}(e+f x)]^2,$$

$$-\text{Tan}[\tfrac{1}{2}(e+f x)]^2] - p\,\text{AppellF1}[\tfrac{3+p}{2}, 1+p, 1, \tfrac{5+p}{2}, \text{Tan}[\tfrac{1}{2}(e+f x)]^2, -\text{Tan}[\tfrac{1}{2}(e+f x)]^2]\Big)\,\text{Tan}[\tfrac{1}{2}(e+f x)]^2\Big)^2\Big) -$$

$$\Big(12\,a\,b^2(3+p)\,\text{AppellF1}[\tfrac{1+p}{2}, p, 2, \tfrac{3+p}{2}, \text{Tan}[\tfrac{1}{2}(e+f x)]^2, -\text{Tan}[\tfrac{1}{2}(e+f x)]^2]\,\text{Tan}[\tfrac{1}{2}(e+f x)]\left(-\frac{\text{Tan}[\frac{1}{2}(e+f x)]}{-1+\text{Tan}[\frac{1}{2}(e+f x)]^2}\right)^p$$

$$\Big(2\Big(-2\,\text{AppellF1}\Big[\frac{3+p}{2},p,3,\frac{5+p}{2},\text{Tan}\Big[\frac{1}{2}(e+f\,x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(e+f\,x)\Big]^2\Big]+$$

$$p\,\text{AppellF1}\Big[\frac{3+p}{2},1+p,2,\frac{5+p}{2},\text{Tan}\Big[\frac{1}{2}(e+f\,x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(e+f\,x)\Big]^2\Big]\Big)\,\text{Sec}\Big[\frac{1}{2}(e+f\,x)\Big]^2\,\text{Tan}\Big[\frac{1}{2}(e+f\,x)\Big]+(3+p)$$

$$\Big(-\frac{1}{3+p}2\,(1+p)\,\text{AppellF1}\Big[1+\frac{1+p}{2},p,3,1+\frac{3+p}{2},\text{Tan}\Big[\frac{1}{2}(e+f\,x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(e+f\,x)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{2}(e+f\,x)\Big]^2\,\text{Tan}\Big[\frac{1}{2}(e+f\,x)\Big]+$$

$$\frac{1}{3+p}p\,(1+p)\,\text{AppellF1}\Big[1+\frac{1+p}{2},1+p,2,1+\frac{3+p}{2},\text{Tan}\Big[\frac{1}{2}(e+f\,x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(e+f\,x)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{2}(e+f\,x)\Big]^2\,\text{Tan}\Big[\frac{1}{2}(e+f\,x)\Big]\Big)+$$

$$2\,\text{Tan}\Big[\frac{1}{2}(e+f\,x)\Big]^2\,\Big(-2\,\Big(-\frac{1}{5+p}3\,(3+p)\,\text{AppellF1}\Big[1+\frac{3+p}{2},p,4,1+\frac{5+p}{2},\text{Tan}\Big[\frac{1}{2}(e+f\,x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(e+f\,x)\Big]^2\Big]$$

$$\text{Sec}\Big[\frac{1}{2}(e+f\,x)\Big]^2\,\text{Tan}\Big[\frac{1}{2}(e+f\,x)\Big]+\frac{1}{5+p}p\,(3+p)\,\text{AppellF1}\Big[1+\frac{3+p}{2},1+p,3,1+\frac{5+p}{2},\text{Tan}\Big[\frac{1}{2}(e+f\,x)\Big]^2,$$

$$-\text{Tan}\Big[\frac{1}{2}(e+f\,x)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{2}(e+f\,x)\Big]^2\,\text{Tan}\Big[\frac{1}{2}(e+f\,x)\Big]\Big)+p\,\Big(-\frac{1}{5+p}2\,(3+p)\,\text{AppellF1}\Big[1+\frac{3+p}{2},1+p,3,$$

$$1+\frac{5+p}{2},\text{Tan}\Big[\frac{1}{2}(e+f\,x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(e+f\,x)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{2}(e+f\,x)\Big]^2\,\text{Tan}\Big[\frac{1}{2}(e+f\,x)\Big]+\frac{1}{5+p}(1+p)\,(3+p)$$

$$\text{AppellF1}\Big[1+\frac{3+p}{2},2+p,2,1+\frac{5+p}{2},\text{Tan}\Big[\frac{1}{2}(e+f\,x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(e+f\,x)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{2}(e+f\,x)\Big]^2\,\text{Tan}\Big[\frac{1}{2}(e+f\,x)\Big]\Big)\Big)\Big)\Big)\Big/$$

$$\Big((1+p)\,\Big(1+\text{Tan}\Big[\frac{1}{2}(e+f\,x)\Big]^2\Big)^2\,\Big((3+p)\,\text{AppellF1}\Big[\frac{1+p}{2},p,2,\frac{3+p}{2},\text{Tan}\Big[\frac{1}{2}(e+f\,x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(e+f\,x)\Big]^2\Big]+$$

$$2\,\Big(-2\,\text{AppellF1}\Big[\frac{3+p}{2},p,3,\frac{5+p}{2},\text{Tan}\Big[\frac{1}{2}(e+f\,x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(e+f\,x)\Big]^2\Big]+p$$

$$\text{AppellF1}\Big[\frac{3+p}{2},1+p,2,\frac{5+p}{2},\text{Tan}\Big[\frac{1}{2}(e+f\,x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(e+f\,x)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{2}(e+f\,x)\Big]^2\Big)^2\Big)+$$

$$\Big(12\,a\,b^2\,(3+p)\,\text{AppellF1}\Big[\frac{1+p}{2},p,3,\frac{3+p}{2},\text{Tan}\Big[\frac{1}{2}(e+f\,x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(e+f\,x)\Big]^2\Big]\,\text{Tan}\Big[\frac{1}{2}(e+f\,x)\Big]\,\left(-\frac{\text{Tan}\Big[\frac{1}{2}(e+f\,x)\Big]}{-1+\text{Tan}\Big[\frac{1}{2}(e+f\,x)\Big]^2}\right)^p$$

$$\Big(2\,\Big(-3\,\text{AppellF1}\Big[\frac{3+p}{2},p,4,\frac{5+p}{2},\text{Tan}\Big[\frac{1}{2}(e+f\,x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(e+f\,x)\Big]^2\Big]+$$

$$p\,\text{AppellF1}\Big[\frac{3+p}{2},1+p,3,\frac{5+p}{2},\text{Tan}\Big[\frac{1}{2}(e+f\,x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(e+f\,x)\Big]^2\Big]\Big)\,\text{Sec}\Big[\frac{1}{2}(e+f\,x)\Big]^2\,\text{Tan}\Big[\frac{1}{2}(e+f\,x)\Big]+(3+p)$$

$$\Big(-\frac{1}{3+p}3\,(1+p)\,\text{AppellF1}\Big[1+\frac{1+p}{2},p,4,1+\frac{3+p}{2},\text{Tan}\Big[\frac{1}{2}(e+f\,x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(e+f\,x)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{2}(e+f\,x)\Big]^2\,\text{Tan}\Big[\frac{1}{2}(e+f\,x)\Big]+$$

$$\frac{1}{3+p}p\,(1+p)\,\text{AppellF1}\Big[1+\frac{1+p}{2},1+p,3,1+\frac{3+p}{2},\text{Tan}\Big[\frac{1}{2}(e+f\,x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(e+f\,x)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{2}(e+f\,x)\Big]^2\,\text{Tan}\Big[\frac{1}{2}(e+f\,x)\Big]\Big)+$$

$$2\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\left(-3\left(-\frac{1}{5+p}4(3+p)\,\text{AppellF1}\left[1+\frac{3+p}{2},p,5,1+\frac{5+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right.\right.$$

$$\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]+\frac{1}{5+p}p(3+p)\,\text{AppellF1}\left[1+\frac{3+p}{2},1+p,4,1+\frac{5+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\right.$$

$$\left.\left.-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)+p\left(-\frac{1}{5+p}3(3+p)\,\text{AppellF1}\left[1+\frac{3+p}{2},1+p,4,\right.\right.$$

$$1+\frac{5+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]+\frac{1}{5+p}(1+p)(3+p)$$

$$\left.\left.\left.\left.\text{AppellF1}\left[1+\frac{3+p}{2},2+p,3,1+\frac{5+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\right)\right)\right)\Big/$$

$$\left((1+p)\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)^3\left((3+p)\,\text{AppellF1}\left[\frac{1+p}{2},p,3,\frac{3+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+\right.\right.$$

$$2\left(-3\,\text{AppellF1}\left[\frac{3+p}{2},p,4,\frac{5+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+p\right.$$

$$\left.\left.\left.\text{AppellF1}\left[\frac{3+p}{2},1+p,3,\frac{5+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)^2\right)-$$

$$\left(6a^2b(4+p)\,\text{AppellF1}\left[\frac{2+p}{2},p,2,\frac{4+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\left(-\frac{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}\right)^p\right.$$

$$\left(2\left(-2\,\text{AppellF1}\left[\frac{4+p}{2},p,3,\frac{6+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+\right.\right.$$

$$\left.p\,\text{AppellF1}\left[\frac{4+p}{2},1+p,2,\frac{6+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right)\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]+(4+p)$$

$$\left(-\frac{1}{4+p}2(2+p)\,\text{AppellF1}\left[1+\frac{2+p}{2},p,3,1+\frac{4+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]+\right.$$

$$\left.\frac{1}{4+p}p(2+p)\,\text{AppellF1}\left[1+\frac{2+p}{2},1+p,2,1+\frac{4+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)+$$

$$2\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\left(-2\left(-\frac{1}{6+p}3(4+p)\,\text{AppellF1}\left[1+\frac{4+p}{2},p,4,1+\frac{6+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right.\right.$$

$$\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]+\frac{1}{6+p}p(4+p)\,\text{AppellF1}\left[1+\frac{4+p}{2},1+p,3,1+\frac{6+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\right.$$

$$\left.\left.-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)+p\left(-\frac{1}{6+p}2(4+p)\,\text{AppellF1}\left[1+\frac{4+p}{2},1+p,3,\right.\right.$$

$$1+\frac{6+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]+\frac{1}{6+p}(1+p)(4+p)$$

$$\text{AppellF1}\left[1+\frac{4+p}{2},\,2+p,\,2,\,1+\frac{6+p}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]\,\text{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]^2\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\Big)\Big)\Big)\Big)\Big)\Big/$$

$$\Big((2+p)\,\left(1+\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right)^2\,\Big((4+p)\,\text{AppellF1}\left[\frac{2+p}{2},\,p,\,2,\,\frac{4+p}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]+$$

$$2\,\Big(-2\,\text{AppellF1}\left[\frac{4+p}{2},\,p,\,3,\,\frac{6+p}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]+p$$

$$\text{AppellF1}\left[\frac{4+p}{2},\,1+p,\,2,\,\frac{6+p}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]\Big)\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\Big)^2\Big)-$$

$$\Big(8\,b^3\,(4+p)\,\text{AppellF1}\left[\frac{2+p}{2},\,p,\,3,\,\frac{4+p}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\,\left(-\frac{\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]}{-1+\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2}\right)^p$$

$$\Big(2\,\Big(-3\,\text{AppellF1}\left[\frac{4+p}{2},\,p,\,4,\,\frac{6+p}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]+$$

$$p\,\text{AppellF1}\left[\frac{4+p}{2},\,1+p,\,3,\,\frac{6+p}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]\Big)\,\text{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]^2\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]+(4+p)$$

$$\Big(-\frac{1}{4+p}3\,(2+p)\,\text{AppellF1}\left[1+\frac{2+p}{2},\,p,\,4,\,1+\frac{4+p}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]\,\text{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]^2\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]+$$

$$\frac{1}{4+p}p\,(2+p)\,\text{AppellF1}\left[1+\frac{2+p}{2},\,1+p,\,3,\,1+\frac{4+p}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]\,\text{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]^2\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\Big)+$$

$$2\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\,\Big(-3\,\Big(-\frac{1}{6+p}4\,(4+p)\,\text{AppellF1}\left[1+\frac{4+p}{2},\,p,\,5,\,1+\frac{6+p}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]^2\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]+\frac{1}{6+p}p\,(4+p)\,\text{AppellF1}\Big[1+\frac{4+p}{2},\,1+p,\,4,\,1+\frac{6+p}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,$$

$$-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\Big]\,\text{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]^2\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\Big)+p\,\Big(-\frac{1}{6+p}3\,(4+p)\,\text{AppellF1}\Big[1+\frac{4+p}{2},\,1+p,\,4,$$

$$1+\frac{6+p}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\Big]\,\text{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]^2\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]+\frac{1}{6+p}(1+p)\,(4+p)$$

$$\text{AppellF1}\left[1+\frac{4+p}{2},\,2+p,\,3,\,1+\frac{6+p}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]\,\text{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]^2\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\Big)\Big)\Big)\Big)\Big)\Big/$$

$$\Big((2+p)\,\left(1+\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right)^3\,\Big((4+p)\,\text{AppellF1}\left[\frac{2+p}{2},\,p,\,3,\,\frac{4+p}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]+$$

$$2\,\Big(-3\,\text{AppellF1}\left[\frac{4+p}{2},\,p,\,4,\,\frac{6+p}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]+p$$

$$\text{AppellF1}\left[\frac{4+p}{2},1+p,3,\frac{6+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big)^2\Big)+$$

$$\Big(8\,b^3\,(4+p)\,\text{AppellF1}\left[\frac{2+p}{2},p,4,\frac{4+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\left(-\frac{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}\right)^p$$

$$\Big(2\,\Big(-4\,\text{AppellF1}\left[\frac{4+p}{2},p,5,\frac{6+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+$$

$$p\,\text{AppellF1}\left[\frac{4+p}{2},1+p,4,\frac{6+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\Big)\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]+(4+p)$$

$$\Big(-\frac{1}{4+p}4\,(2+p)\,\text{AppellF1}\left[1+\frac{2+p}{2},p,5,1+\frac{4+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]+$$

$$\frac{1}{4+p}p\,(2+p)\,\text{AppellF1}\left[1+\frac{2+p}{2},1+p,4,1+\frac{4+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]\Big)+$$

$$2\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\,\Big(-4\,\Big(-\frac{1}{6+p}5\,(4+p)\,\text{AppellF1}\left[1+\frac{4+p}{2},p,6,1+\frac{6+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]+\frac{1}{6+p}p\,(4+p)\,\text{AppellF1}\Big[1+\frac{4+p}{2},1+p,5,1+\frac{6+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,$$

$$-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big]\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]\Big)+p\,\Big(-\frac{1}{6+p}4\,(4+p)\,\text{AppellF1}\Big[1+\frac{4+p}{2},1+p,5,$$

$$1+\frac{6+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big]\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]+\frac{1}{6+p}(1+p)\,(4+p)$$

$$\text{AppellF1}\left[1+\frac{4+p}{2},2+p,4,1+\frac{6+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]\Big)\Big)\Big)\Big)\Big/$$

$$\Big((2+p)\,\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)^4\,\Big((4+p)\,\text{AppellF1}\left[\frac{2+p}{2},p,4,\frac{4+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+$$

$$2\,\Big(-4\,\text{AppellF1}\left[\frac{4+p}{2},p,5,\frac{6+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+p$$

$$\text{AppellF1}\left[\frac{4+p}{2},1+p,4,\frac{6+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\Big)\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big)^2\Big)\Big)$$

- **Problem 204: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int(a+b\,\text{Sin}[e+f x])^2\,(g\,\text{Tan}[e+f x])^p\,dx$$

Optimal (type 5, 186 leaves, 8 steps) :

$$\frac{a^2\,\text{Hypergeometric2F1}\left[1,\frac{1+p}{2},\frac{3+p}{2},-\text{Tan}[e+f x]^2\right]\,(g\,\text{Tan}[e+f x])^{1+p}}{f\,g\,(1+p)}+\frac{1}{f\,g\,(2+p)}$$

$$2\,a\,b\,\left(\text{Cos}[e+f x]^2\right)^{\frac{1+p}{2}}\,\text{Hypergeometric2F1}\left[\frac{1+p}{2},\frac{2+p}{2},\frac{4+p}{2},\text{Sin}[e+f x]^2\right]\,\text{Sin}[e+f x]\,(g\,\text{Tan}[e+f x])^{1+p}+$$

$$\frac{b^2\,\text{Hypergeometric2F1}\left[2,\frac{3+p}{2},\frac{5+p}{2},-\text{Tan}[e+f x]^2\right]\,(g\,\text{Tan}[e+f x])^{3+p}}{f\,g^3\,(3+p)}$$

Result (type 6, 10 333 leaves) :

$$\left(2^{1+p}\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]\left(-\frac{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}\right)^p\right.$$

$$\left(\left(\left(a^2\,(3+p)\,\text{AppellF1}\left[\frac{1+p}{2},p,1,\frac{3+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)^2\right)\right/\right.$$

$$\left((1+p)\left((3+p)\,\text{AppellF1}\left[\frac{1+p}{2},p,1,\frac{3+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]-2\left(\text{AppellF1}\left[\frac{3+p}{2},p,2,\frac{5+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\right.\right.\right.$$

$$\left.\left.\left.-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]-p\,\text{AppellF1}\left[\frac{3+p}{2},1+p,1,\frac{5+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)\right)+$$

$$\left(4\,b^2\,(3+p)\,\text{AppellF1}\left[\frac{1+p}{2},p,2,\frac{3+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)\right)\Big/$$

$$\left((1+p)\left((3+p)\,\text{AppellF1}\left[\frac{1+p}{2},p,2,\frac{3+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+\right.\right.$$

$$2\left(-2\,\text{AppellF1}\left[\frac{3+p}{2},p,3,\frac{5+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+\right.$$

$$\left.\left.\left.p\,\text{AppellF1}\left[\frac{3+p}{2},1+p,2,\frac{5+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)\right)-$$

$$\left(4\,b^2\,(3+p)\,\text{AppellF1}\left[\frac{1+p}{2},p,3,\frac{3+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right)\Big/\left((1+p)\right.$$

$$\left((3+p)\,\text{AppellF1}\left[\frac{1+p}{2},p,3,\frac{3+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+2\left(-3\,\text{AppellF1}\left[\frac{3+p}{2},p,4,\frac{5+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\right.\right.\right.$$

$$\left.\left.\left.-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+p\,\text{AppellF1}\left[\frac{3+p}{2},1+p,3,\frac{5+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)\right)+$$

$$\left(4\,a\,b\,(4+p)\,\text{AppellF1}\left[\frac{2+p}{2},p,2,\frac{4+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Tan}\left[\frac{1}{2}(e+f x)\right]\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)\right)\Big/$$

$$\left((2+p)\left((4+p)\,\text{AppellF1}\left[\frac{2+p}{2},p,2,\frac{4+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+\right.\right.$$

$$2\left(-2\,\text{AppellF1}\left[\frac{4+p}{2},\,p,\,3,\,\frac{6+p}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]+\right.$$

$$\left.\left.\left.p\,\text{AppellF1}\left[\frac{4+p}{2},\,1+p,\,2,\,\frac{6+p}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right)\right)\right)$$

$$\text{Tan}[e+f\,x]^{-p}\,(g\,\text{Tan}[e+f\,x])^p\left(-\frac{1}{4}\,b^2\,\text{Cos}[2\,(e+f\,x)]^3\,\text{Tan}[e+f\,x]^p+\frac{1}{4}\,\mathbb{i}\,b^2\,\text{Sin}[2\,(e+f\,x)]\,\text{Tan}[e+f\,x]^p+\right.$$

$$\mathbb{i}\,a^2\,\text{Sin}[e+f\,x]^2\,\text{Sin}[2\,(e+f\,x)]\,\text{Tan}[e+f\,x]^p+$$

$$\frac{1}{2}\,b^2\,\text{Sin}[2\,(e+f\,x)]^2\,\text{Tan}[e+f\,x]^p-$$

$$\frac{1}{4}\,\mathbb{i}\,b^2\,\text{Sin}[2\,(e+f\,x)]^3\,\text{Tan}[e+f\,x]^p+$$

$$\text{Cos}[e+f\,x]^2\left(a^2\,\text{Cos}[2\,(e+f\,x)]\,\text{Tan}[e+f\,x]^p-\mathbb{i}\,a^2\,\text{Sin}[2\,(e+f\,x)]\,\text{Tan}[e+f\,x]^p\right)+$$

$$\text{Cos}[2\,(e+f\,x)]^2\left(\frac{1}{2}\,b^2\,\text{Tan}[e+f\,x]^p+a\,b\,\text{Sin}[e+f\,x]\,\text{Tan}[e+f\,x]^p-\frac{1}{4}\,\mathbb{i}\,b^2\,\text{Sin}[2\,(e+f\,x)]\,\text{Tan}[e+f\,x]^p\right)+$$

$$\text{Sin}[e+f\,x]\left(\mathbb{i}\,a\,b\,\text{Sin}[2\,(e+f\,x)]\,\text{Tan}[e+f\,x]^p+a\,b\,\text{Sin}[2\,(e+f\,x)]^2\,\text{Tan}[e+f\,x]^p\right)+$$

$$\text{Cos}[2\,(e+f\,x)]\left(-\frac{1}{4}\,b^2\,\text{Tan}[e+f\,x]^p-a\,b\,\text{Sin}[e+f\,x]\,\text{Tan}[e+f\,x]^p-a^2\,\text{Sin}[e+f\,x]^2\,\text{Tan}[e+f\,x]^p-\frac{1}{4}\,b^2\,\text{Sin}[2\,(e+f\,x)]^2\,\text{Tan}[e+f\,x]^p\right)+$$

$$\text{Cos}[e+f\,x]\left(-\mathbb{i}\,a\,b\,\text{Cos}[2\,(e+f\,x)]^2\,\text{Tan}[e+f\,x]^p+a\,b\,\text{Sin}[2\,(e+f\,x)]\,\text{Tan}[e+f\,x]^p+2\,a^2\,\text{Sin}[e+f\,x]\,\text{Sin}[2\,(e+f\,x)]\,\text{Tan}[e+f\,x]^p-\right.$$

$$\left.\left.\mathbb{i}\,a\,b\,\text{Sin}[2\,(e+f\,x)]^2\,\text{Tan}[e+f\,x]^p+\text{Cos}[2\,(e+f\,x)]\left(\mathbb{i}\,a\,b\,\text{Tan}[e+f\,x]^p+2\,\mathbb{i}\,a^2\,\text{Sin}[e+f\,x]\,\text{Tan}[e+f\,x]^p\right)\right)\right)\Big/$$

$$\left(f\left(1+\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right)^3\left(-\frac{1}{\left(1+\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right)^4}\,3\times 2^{1+p}\,\text{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]^2\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\left(-\frac{\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]}{-1+\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2}\right)^p\right.\right.$$

$$\left(\left(a^2\,(3+p)\,\text{AppellF1}\left[\frac{1+p}{2},\,p,\,1,\,\frac{3+p}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right)^2\right)\Big/\left((1+p)\right.\right.$$

$$\left((3+p)\,\text{AppellF1}\left[\frac{1+p}{2},\,p,\,1,\,\frac{3+p}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]-2\left(\text{AppellF1}\left[\frac{3+p}{2},\,p,\,2,\,\frac{5+p}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\right.\right.\right.$$

$$\left.\left.\left.\left.-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]-p\,\text{AppellF1}\left[\frac{3+p}{2},\,1+p,\,1,\,\frac{5+p}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right)\right)+$$

$$\left(4\,b^2\,(3+p)\,\text{AppellF1}\left[\frac{1+p}{2},\,p,\,2,\,\frac{3+p}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right)\right)\Big/\left((1+p)\left((3+p)\right.\right.$$

$$\text{AppellF1}\left[\frac{1+p}{2},\,p,\,2,\,\frac{3+p}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]+2\left(-2\,\text{AppellF1}\left[\frac{3+p}{2},\,p,\,3,\,\frac{5+p}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\right.\right.$$

$$\left.\left.\left.-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]+p\,\text{AppellF1}\left[\frac{3+p}{2},\,1+p,\,2,\,\frac{5+p}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right)\right)-$$

$$\left(4 b^2 (3+p) \text{AppellF1}\left[\frac{1+p}{2}, p, 3, \frac{3+p}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right) \Big/ \Big((1+p) \Big((3+p) \text{AppellF1}\left[\frac{1+p}{2}, p, 3,\right.$$

$$\left.\frac{3+p}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] + 2 \Big(-3 \text{AppellF1}\left[\frac{3+p}{2}, p, 4, \frac{5+p}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] +$$

$$p \text{AppellF1}\left[\frac{3+p}{2}, 1+p, 3, \frac{5+p}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\Big) \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big)\Big) +$$

$$\left(4 a b (4+p) \text{AppellF1}\left[\frac{2+p}{2}, p, 2, \frac{4+p}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] \text{Tan}\left[\frac{1}{2}(e+f x)\right] \left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)\right) \Big/$$

$$\Big((2+p) \Big((4+p) \text{AppellF1}\left[\frac{2+p}{2}, p, 2, \frac{4+p}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] + 2 \Big(-2 \text{AppellF1}\left[\frac{4+p}{2}, p, 3, \frac{6+p}{2},\right.$$

$$\left.\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] + p \text{AppellF1}\left[\frac{4+p}{2}, 1+p, 2, \frac{6+p}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\Big)$$

$$\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big)\Big)\Big) + \frac{1}{\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)^3} 2^p \text{Sec}\left[\frac{1}{2}(e+f x)\right]^2 \left(-\frac{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}\right)^p$$

$$\Big(\Big(a^2 (3+p) \text{AppellF1}\left[\frac{1+p}{2}, p, 1, \frac{3+p}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] \left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)^2\Big) \Big/ \Big((1+p)$$

$$\Big((3+p) \text{AppellF1}\left[\frac{1+p}{2}, p, 1, \frac{3+p}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] - 2 \Big(\text{AppellF1}\left[\frac{3+p}{2}, p, 2, \frac{5+p}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\right.$$

$$\left.-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] - p \text{AppellF1}\left[\frac{3+p}{2}, 1+p, 1, \frac{5+p}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\Big) \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big)\Big) +$$

$$\left(4 b^2 (3+p) \text{AppellF1}\left[\frac{1+p}{2}, p, 2, \frac{3+p}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] \left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)\right) \Big/$$

$$\Big((1+p) \Big((3+p) \text{AppellF1}\left[\frac{1+p}{2}, p, 2, \frac{3+p}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] +$$

$$2 \Big(-2 \text{AppellF1}\left[\frac{3+p}{2}, p, 3, \frac{5+p}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] +$$

$$p \text{AppellF1}\left[\frac{3+p}{2}, 1+p, 2, \frac{5+p}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\Big) \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big)\Big) -$$

$$\left(4 b^2 (3+p) \text{AppellF1}\left[\frac{1+p}{2}, p, 3, \frac{3+p}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right) \Big/ \Big((1+p) \Big((3+p) \text{AppellF1}\left[\frac{1+p}{2}, p,\right.$$

$$\left.3, \frac{3+p}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] + 2 \Big(-3 \text{AppellF1}\left[\frac{3+p}{2}, p, 4, \frac{5+p}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] +$$

$$p \text{AppellF1}\left[\frac{3+p}{2}, 1+p, 3, \frac{5+p}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\Big) \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big)\Big) +$$

$$\left(4\,a\,b\,(4+p)\,\text{AppellF1}\left[\frac{2+p}{2},p,2,\frac{4+p}{2},\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]^2\right]\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]\left(1+\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]^2\right)\right)\Big/$$
$$\left((2+p)\left((4+p)\,\text{AppellF1}\left[\frac{2+p}{2},p,2,\frac{4+p}{2},\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]^2\right]+\right.\right.$$
$$2\left(-2\,\text{AppellF1}\left[\frac{4+p}{2},p,3,\frac{6+p}{2},\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]^2\right]+\right.$$
$$\left.\left.\left.p\,\text{AppellF1}\left[\frac{4+p}{2},1+p,2,\frac{6+p}{2},\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]^2\right)\right)\right)+\frac{1}{\left(1+\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]^2\right)^3}$$
$$2^{1+p}\,p\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]\left(-\frac{\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]}{-1+\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]^2}\right)^{-1+p}\left(\frac{\text{Sec}\left[\frac{1}{2}(e+f\,x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]^2}{\left(-1+\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]^2\right)^2}-\frac{\text{Sec}\left[\frac{1}{2}(e+f\,x)\right]^2}{2\left(-1+\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]^2\right)}\right)$$
$$\left(\left(a^2\,(3+p)\,\text{AppellF1}\left[\frac{1+p}{2},p,1,\frac{3+p}{2},\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]^2\right)^2\right)\Big/\left((1+p)\right.\right.$$
$$\left((3+p)\,\text{AppellF1}\left[\frac{1+p}{2},p,1,\frac{3+p}{2},\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]^2\right]-2\left(\text{AppellF1}\left[\frac{3+p}{2},p,2,\frac{5+p}{2},\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]^2,\right.\right.\right.$$
$$\left.\left.\left.\left.-\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]^2\right]-p\,\text{AppellF1}\left[\frac{3+p}{2},1+p,1,\frac{5+p}{2},\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]^2\right)\right)+$$
$$\left(4\,b^2\,(3+p)\,\text{AppellF1}\left[\frac{1+p}{2},p,2,\frac{3+p}{2},\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]^2\right)\right)\Big/$$
$$\left((1+p)\left((3+p)\,\text{AppellF1}\left[\frac{1+p}{2},p,2,\frac{3+p}{2},\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]^2\right]+\right.\right.$$
$$2\left(-2\,\text{AppellF1}\left[\frac{3+p}{2},p,3,\frac{5+p}{2},\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]^2\right]+\right.$$
$$\left.\left.\left.p\,\text{AppellF1}\left[\frac{3+p}{2},1+p,2,\frac{5+p}{2},\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]^2\right)\right)-$$
$$\left(4\,b^2\,(3+p)\,\text{AppellF1}\left[\frac{1+p}{2},p,3,\frac{3+p}{2},\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]^2\right]\right)\Big/\left((1+p)\left((3+p)\,\text{AppellF1}\left[\frac{1+p}{2},p,\right.\right.\right.$$
$$3,\frac{3+p}{2},\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]^2\right]+2\left(-3\,\text{AppellF1}\left[\frac{3+p}{2},p,4,\frac{5+p}{2},\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]^2\right]+\right.$$
$$\left.\left.\left.p\,\text{AppellF1}\left[\frac{3+p}{2},1+p,3,\frac{5+p}{2},\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]^2\right)\right)+$$
$$\left(4\,a\,b\,(4+p)\,\text{AppellF1}\left[\frac{2+p}{2},p,2,\frac{4+p}{2},\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]^2\right]\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]\left(1+\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]^2\right)\right)\Big/$$
$$\left((2+p)\left((4+p)\,\text{AppellF1}\left[\frac{2+p}{2},p,2,\frac{4+p}{2},\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]^2\right]+\right.\right.$$

$$2\left(-2\,\text{AppellF1}\left[\frac{4+p}{2},p,3,\frac{6+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+\right.$$

$$\left.\left.\left.p\,\text{AppellF1}\left[\frac{4+p}{2},1+p,2,\frac{6+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)\right)\right)+$$

$$\frac{1}{\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)^3}\,2^{1+p}\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]\left(-\frac{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{-1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}\right)^p\left(\left(2a^2(3+p)\,\text{AppellF1}\left[\frac{1+p}{2},p,1,\frac{3+p}{2},\right.\right.\right.$$

$$\left.\left.\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)\right)\Big/\left((1+p)\right.$$

$$\left((3+p)\,\text{AppellF1}\left[\frac{1+p}{2},p,1,\frac{3+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]-2\left(\text{AppellF1}\left[\frac{3+p}{2},p,2,\frac{5+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\right.\right.\right.$$

$$\left.\left.\left.\left.-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]-p\,\text{AppellF1}\left[\frac{3+p}{2},1+p,1,\frac{5+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)\right)+$$

$$\left(a^2(3+p)\left(-1/(3+p)(1+p)\,\text{AppellF1}\left[1+\frac{1+p}{2},p,2,1+\frac{3+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right.\right.$$

$$\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]+1/(3+p)p(1+p)\,\text{AppellF1}\left[1+\frac{1+p}{2},1+p,1,1+\frac{3+p}{2},\right.$$

$$\left.\left.\left.\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)^2\right)\Big/\left((1+p)\right.$$

$$\left((3+p)\,\text{AppellF1}\left[\frac{1+p}{2},p,1,\frac{3+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]-2\left(\text{AppellF1}\left[\frac{3+p}{2},p,2,\frac{5+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\right.\right.\right.$$

$$\left.\left.\left.\left.-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]-p\,\text{AppellF1}\left[\frac{3+p}{2},1+p,1,\frac{5+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)\right)+$$

$$\left(4b^2(3+p)\,\text{AppellF1}\left[\frac{1+p}{2},p,2,\frac{3+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\Big/$$

$$\left((1+p)\left((3+p)\,\text{AppellF1}\left[\frac{1+p}{2},p,2,\frac{3+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+\right.\right.$$

$$2\left(-2\,\text{AppellF1}\left[\frac{3+p}{2},p,3,\frac{5+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+\right.$$

$$\left.\left.\left.p\,\text{AppellF1}\left[\frac{3+p}{2},1+p,2,\frac{5+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)\right)+$$

$$\left(4b^2(3+p)\left(-1/(3+p)2(1+p)\,\text{AppellF1}\left[1+\frac{1+p}{2},p,3,1+\frac{3+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right.\right.$$

$$\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]+1/(3+p)p(1+p)\,\text{AppellF1}\left[1+\frac{1+p}{2},1+p,2,1+\frac{3+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\right.$$

$$-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\Big]\,\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2\text{Tan}\left[\frac{1}{2}(e+fx)\right]\Big)\left(1+\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right)\Big)\Big/\Big((1+p)\Big((3+p)\,\text{AppellF1}\Big[\frac{1+p}{2},p,2,$$

$$\frac{3+p}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\Big]+2\Big(-2\,\text{AppellF1}\Big[\frac{3+p}{2},p,3,\frac{5+p}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\Big]+$$

$$p\,\text{AppellF1}\Big[\frac{3+p}{2},1+p,2,\frac{5+p}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\Big]\Big)\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\Big)\Big)-$$

$$\Big(4b^2(3+p)\Big(-1/(3+p)3(1+p)\,\text{AppellF1}\Big[1+\frac{1+p}{2},p,4,1+\frac{3+p}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\Big]$$

$$\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2\text{Tan}\left[\frac{1}{2}(e+fx)\right]+1/(3+p)p(1+p)\,\text{AppellF1}\Big[1+\frac{1+p}{2},1+p,3,1+\frac{3+p}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,$$

$$-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\Big]\,\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2\text{Tan}\left[\frac{1}{2}(e+fx)\right]\Big)\Big)\Big/\Big((1+p)\Big((3+p)\,\text{AppellF1}\Big[\frac{1+p}{2},p,3,\frac{3+p}{2},$$

$$\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\Big]+2\Big(-3\,\text{AppellF1}\Big[\frac{3+p}{2},p,4,\frac{5+p}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\Big]+$$

$$p\,\text{AppellF1}\Big[\frac{3+p}{2},1+p,3,\frac{5+p}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\Big]\Big)\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\Big)\Big)+$$

$$\Big(4ab(4+p)\,\text{AppellF1}\Big[\frac{2+p}{2},p,2,\frac{4+p}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\Big]\,\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\Big)\Big/$$

$$\Big((2+p)\Big((4+p)\,\text{AppellF1}\Big[\frac{2+p}{2},p,2,\frac{4+p}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\Big]+$$

$$2\Big(-2\,\text{AppellF1}\Big[\frac{4+p}{2},p,3,\frac{6+p}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\Big]+$$

$$p\,\text{AppellF1}\Big[\frac{4+p}{2},1+p,2,\frac{6+p}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\Big]\Big)\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\Big)\Big)+$$

$$\Big(2ab(4+p)\,\text{AppellF1}\Big[\frac{2+p}{2},p,2,\frac{4+p}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\Big]\,\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2\left(1+\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right)\Big)\Big/$$

$$\Big((2+p)\Big((4+p)\,\text{AppellF1}\Big[\frac{2+p}{2},p,2,\frac{4+p}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\Big]+$$

$$2\Big(-2\,\text{AppellF1}\Big[\frac{4+p}{2},p,3,\frac{6+p}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\Big]+$$

$$p\,\text{AppellF1}\Big[\frac{4+p}{2},1+p,2,\frac{6+p}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\Big]\Big)\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\Big)\Big)+$$

$$\Big(4ab(4+p)\,\text{Tan}\left[\frac{1}{2}(e+fx)\right]\Big(-1/(4+p)2(2+p)\,\text{AppellF1}\Big[1+\frac{2+p}{2},p,3,1+\frac{4+p}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\Big]$$

$$\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2\text{Tan}\left[\frac{1}{2}(e+fx)\right]+1/(4+p)p(2+p)\,\text{AppellF1}\Big[1+\frac{2+p}{2},1+p,2,1+\frac{4+p}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,$$

$$-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big]\ \text{Sec}\left[\frac{1}{2}(e+f x)\right]^2 \text{Tan}\left[\frac{1}{2}(e+f x)\right]\Big)\Big)\ \left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)\Big)\Big/\ \Big((2+p)\ \Big((4+p)\ \text{AppellF1}\Big[\frac{2+p}{2},\ p,\ 2,$$

$$\frac{4+p}{2},\ \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\ -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big]+2\ \Big(-2\ \text{AppellF1}\Big[\frac{4+p}{2},\ p,\ 3,\ \frac{6+p}{2},\ \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\ -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big]+$$

$$p\ \text{AppellF1}\Big[\frac{4+p}{2},\ 1+p,\ 2,\ \frac{6+p}{2},\ \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\ -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big]\Big)\ \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big)\Big)-$$

$$\Big(a^2\ (3+p)\ \text{AppellF1}\Big[\frac{1+p}{2},\ p,\ 1,\ \frac{3+p}{2},\ \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\ -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big]\ \left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)^2$$

$$\Big(-2\ \Big(\text{AppellF1}\Big[\frac{3+p}{2},\ p,\ 2,\ \frac{5+p}{2},\ \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\ -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big]-p\ \text{AppellF1}\Big[\frac{3+p}{2},\ 1+p,\ 1,$$

$$\frac{5+p}{2},\ \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\ -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big]\Big)\ \text{Sec}\left[\frac{1}{2}(e+f x)\right]^2 \text{Tan}\left[\frac{1}{2}(e+f x)\right]+(3+p)\ \Big(-\frac{1}{3+p}$$

$$(1+p)\ \text{AppellF1}\Big[1+\frac{1+p}{2},\ p,\ 2,\ 1+\frac{3+p}{2},\ \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\ -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big]\ \text{Sec}\left[\frac{1}{2}(e+f x)\right]^2 \text{Tan}\left[\frac{1}{2}(e+f x)\right]+\frac{1}{3+p}$$

$$p\ (1+p)\ \text{AppellF1}\Big[1+\frac{1+p}{2},\ 1+p,\ 1,\ 1+\frac{3+p}{2},\ \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\ -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big]\ \text{Sec}\left[\frac{1}{2}(e+f x)\right]^2 \text{Tan}\left[\frac{1}{2}(e+f x)\right]\Big)-$$

$$2\ \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\ \Big(-\frac{1}{5+p}2\ (3+p)\ \text{AppellF1}\Big[1+\frac{3+p}{2},\ p,\ 3,\ 1+\frac{5+p}{2},\ \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\ -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big]$$

$$\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2 \text{Tan}\left[\frac{1}{2}(e+f x)\right]+\frac{1}{5+p}p\ (3+p)\ \text{AppellF1}\Big[1+\frac{3+p}{2},\ 1+p,\ 2,\ 1+\frac{5+p}{2},\ \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,$$

$$-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big]\ \text{Sec}\left[\frac{1}{2}(e+f x)\right]^2 \text{Tan}\left[\frac{1}{2}(e+f x)\right]-p\ \Big(-\frac{1}{5+p}(3+p)\ \text{AppellF1}\Big[1+\frac{3+p}{2},\ 1+p,\ 2,\ 1+\frac{5+p}{2},$$

$$\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\ -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big]\ \text{Sec}\left[\frac{1}{2}(e+f x)\right]^2 \text{Tan}\left[\frac{1}{2}(e+f x)\right]+\frac{1}{5+p}(1+p)\ (3+p)\ \text{AppellF1}\Big[1+\frac{3+p}{2},$$

$$2+p,\ 1,\ 1+\frac{5+p}{2},\ \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\ -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big]\ \text{Sec}\left[\frac{1}{2}(e+f x)\right]^2 \text{Tan}\left[\frac{1}{2}(e+f x)\right]\Big)\Big)\Big)\Big)\Big/\ \Big((1+p)$$

$$\Big((3+p)\ \text{AppellF1}\Big[\frac{1+p}{2},\ p,\ 1,\ \frac{3+p}{2},\ \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\ -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big]-2\ \Big(\text{AppellF1}\Big[\frac{3+p}{2},\ p,\ 2,\ \frac{5+p}{2},\ \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,$$

$$-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big]-p\ \text{AppellF1}\Big[\frac{3+p}{2},\ 1+p,\ 1,\ \frac{5+p}{2},\ \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\ -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big]\Big)\ \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big)^2\Big)-$$

$$\Big(4\ b^2\ (3+p)\ \text{AppellF1}\Big[\frac{1+p}{2},\ p,\ 2,\ \frac{3+p}{2},\ \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\ -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big]\ \left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)$$

$$\Big(2\ \Big(-2\ \text{AppellF1}\Big[\frac{3+p}{2},\ p,\ 3,\ \frac{5+p}{2},\ \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\ -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big]+p\ \text{AppellF1}\Big[\frac{3+p}{2},\ 1+p,\ 2,\ \frac{5+p}{2},$$

$$\text{Tan}[\tfrac{1}{2}(e+f x)]^2,\ -\text{Tan}[\tfrac{1}{2}(e+f x)]^2]\big)\ \text{Sec}[\tfrac{1}{2}(e+f x)]^2\ \text{Tan}[\tfrac{1}{2}(e+f x)] + (3+p)\ \big(-\frac{1}{3+p}2\ (1+p)$$

$$\text{AppellF1}[1+\frac{1+p}{2},\ p,\ 3,\ 1+\frac{3+p}{2},\ \text{Tan}[\tfrac{1}{2}(e+f x)]^2,\ -\text{Tan}[\tfrac{1}{2}(e+f x)]^2]\ \text{Sec}[\tfrac{1}{2}(e+f x)]^2\ \text{Tan}[\tfrac{1}{2}(e+f x)] + \frac{1}{3+p}$$

$$p\ (1+p)\ \text{AppellF1}[1+\frac{1+p}{2},\ 1+p,\ 2,\ 1+\frac{3+p}{2},\ \text{Tan}[\tfrac{1}{2}(e+f x)]^2,\ -\text{Tan}[\tfrac{1}{2}(e+f x)]^2]\ \text{Sec}[\tfrac{1}{2}(e+f x)]^2\ \text{Tan}[\tfrac{1}{2}(e+f x)]\big)\big) +$$

$$2\,\text{Tan}[\tfrac{1}{2}(e+f x)]^2\ \big(-2\ \big(-\frac{1}{5+p}3\ (3+p)\ \text{AppellF1}[1+\frac{3+p}{2},\ p,\ 4,\ 1+\frac{5+p}{2},\ \text{Tan}[\tfrac{1}{2}(e+f x)]^2,\ -\text{Tan}[\tfrac{1}{2}(e+f x)]^2]$$

$$\text{Sec}[\tfrac{1}{2}(e+f x)]^2\ \text{Tan}[\tfrac{1}{2}(e+f x)] + \frac{1}{5+p}p\ (3+p)\ \text{AppellF1}[1+\frac{3+p}{2},\ 1+p,\ 3,\ 1+\frac{5+p}{2},\ \text{Tan}[\tfrac{1}{2}(e+f x)]^2,$$

$$-\text{Tan}[\tfrac{1}{2}(e+f x)]^2]\ \text{Sec}[\tfrac{1}{2}(e+f x)]^2\ \text{Tan}[\tfrac{1}{2}(e+f x)]\big) + p\ \big(-\frac{1}{5+p}2\ (3+p)\ \text{AppellF1}[1+\frac{3+p}{2},\ 1+p,\ 3,\ 1+\frac{5+p}{2},$$

$$\text{Tan}[\tfrac{1}{2}(e+f x)]^2,\ -\text{Tan}[\tfrac{1}{2}(e+f x)]^2]\ \text{Sec}[\tfrac{1}{2}(e+f x)]^2\ \text{Tan}[\tfrac{1}{2}(e+f x)] + \frac{1}{5+p}(1+p)\ (3+p)\ \text{AppellF1}[1+\frac{3+p}{2},$$

$$2+p,\ 2,\ 1+\frac{5+p}{2},\ \text{Tan}[\tfrac{1}{2}(e+f x)]^2,\ -\text{Tan}[\tfrac{1}{2}(e+f x)]^2]\ \text{Sec}[\tfrac{1}{2}(e+f x)]^2\ \text{Tan}[\tfrac{1}{2}(e+f x)]\big)\big)\big)\big)\Big/$$

$$\Big((1+p)\ \Big((3+p)\ \text{AppellF1}[\frac{1+p}{2},\ p,\ 2,\ \frac{3+p}{2},\ \text{Tan}[\tfrac{1}{2}(e+f x)]^2,\ -\text{Tan}[\tfrac{1}{2}(e+f x)]^2] + 2\ \big(-2\,\text{AppellF1}[\frac{3+p}{2},\ p,\ 3,\ \frac{5+p}{2},$$

$$\text{Tan}[\tfrac{1}{2}(e+f x)]^2,\ -\text{Tan}[\tfrac{1}{2}(e+f x)]^2] + p\,\text{AppellF1}[\frac{3+p}{2},\ 1+p,\ 2,\ \frac{5+p}{2},\ \text{Tan}[\tfrac{1}{2}(e+f x)]^2,\ -\text{Tan}[\tfrac{1}{2}(e+f x)]^2]\big)$$

$$\text{Tan}[\tfrac{1}{2}(e+f x)]^2\Big)^2\Big) + \Big(4\,b^2\ (3+p)\ \text{AppellF1}[\frac{1+p}{2},\ p,\ 3,\ \frac{3+p}{2},\ \text{Tan}[\tfrac{1}{2}(e+f x)]^2,\ -\text{Tan}[\tfrac{1}{2}(e+f x)]^2]$$

$$\Big(2\ \big(-3\,\text{AppellF1}[\frac{3+p}{2},\ p,\ 4,\ \frac{5+p}{2},\ \text{Tan}[\tfrac{1}{2}(e+f x)]^2,\ -\text{Tan}[\tfrac{1}{2}(e+f x)]^2] + p\,\text{AppellF1}[\frac{3+p}{2},\ 1+p,\ 3,\ \frac{5+p}{2},$$

$$\text{Tan}[\tfrac{1}{2}(e+f x)]^2,\ -\text{Tan}[\tfrac{1}{2}(e+f x)]^2]\big)\ \text{Sec}[\tfrac{1}{2}(e+f x)]^2\ \text{Tan}[\tfrac{1}{2}(e+f x)] + (3+p)\ \big(-\frac{1}{3+p}3\ (1+p)$$

$$\text{AppellF1}[1+\frac{1+p}{2},\ p,\ 4,\ 1+\frac{3+p}{2},\ \text{Tan}[\tfrac{1}{2}(e+f x)]^2,\ -\text{Tan}[\tfrac{1}{2}(e+f x)]^2]\ \text{Sec}[\tfrac{1}{2}(e+f x)]^2\ \text{Tan}[\tfrac{1}{2}(e+f x)] + \frac{1}{3+p}$$

$$p\ (1+p)\ \text{AppellF1}[1+\frac{1+p}{2},\ 1+p,\ 3,\ 1+\frac{3+p}{2},\ \text{Tan}[\tfrac{1}{2}(e+f x)]^2,\ -\text{Tan}[\tfrac{1}{2}(e+f x)]^2]\ \text{Sec}[\tfrac{1}{2}(e+f x)]^2\ \text{Tan}[\tfrac{1}{2}(e+f x)]\big) +$$

$$2\,\text{Tan}[\tfrac{1}{2}(e+f x)]^2\ \big(-3\ \big(-\frac{1}{5+p}4\ (3+p)\ \text{AppellF1}[1+\frac{3+p}{2},\ p,\ 5,\ 1+\frac{5+p}{2},\ \text{Tan}[\tfrac{1}{2}(e+f x)]^2,\ -\text{Tan}[\tfrac{1}{2}(e+f x)]^2]$$

$$\text{Sec}[\tfrac{1}{2}(e+f x)]^2\ \text{Tan}[\tfrac{1}{2}(e+f x)] + \frac{1}{5+p}p\ (3+p)\ \text{AppellF1}[1+\frac{3+p}{2},\ 1+p,\ 4,\ 1+\frac{5+p}{2},\ \text{Tan}[\tfrac{1}{2}(e+f x)]^2,$$

$$-\text{Tan}[\tfrac{1}{2}(e+f x)]^2]\ \text{Sec}[\tfrac{1}{2}(e+f x)]^2\ \text{Tan}[\tfrac{1}{2}(e+f x)]]) + p\ (-\frac{1}{5+p} 3\ (3+p)\ \text{AppellF1}[1+\frac{3+p}{2},\ 1+p,\ 4,\ 1+\frac{5+p}{2},$$

$$\text{Tan}[\tfrac{1}{2}(e+f x)]^2,\ -\text{Tan}[\tfrac{1}{2}(e+f x)]^2]\ \text{Sec}[\tfrac{1}{2}(e+f x)]^2\ \text{Tan}[\tfrac{1}{2}(e+f x)] + \frac{1}{5+p}(1+p)\ (3+p)\ \text{AppellF1}[1+\frac{3+p}{2},$$

$$2+p,\ 3,\ 1+\frac{5+p}{2},\ \text{Tan}[\tfrac{1}{2}(e+f x)]^2,\ -\text{Tan}[\tfrac{1}{2}(e+f x)]^2]\ \text{Sec}[\tfrac{1}{2}(e+f x)]^2\ \text{Tan}[\tfrac{1}{2}(e+f x)]])))))\Big/$$

$$((1+p)\ ((3+p)\ \text{AppellF1}[\frac{1+p}{2},\ p,\ 3,\ \frac{3+p}{2},\ \text{Tan}[\tfrac{1}{2}(e+f x)]^2,\ -\text{Tan}[\tfrac{1}{2}(e+f x)]^2] + 2\ (-3\ \text{AppellF1}[\frac{3+p}{2},$$

$$p,\ 4,\ \frac{5+p}{2},\ \text{Tan}[\tfrac{1}{2}(e+f x)]^2,\ -\text{Tan}[\tfrac{1}{2}(e+f x)]^2] +$$

$$p\ \text{AppellF1}[\frac{3+p}{2},\ 1+p,\ 3,\ \frac{5+p}{2},\ \text{Tan}[\tfrac{1}{2}(e+f x)]^2,\ -\text{Tan}[\tfrac{1}{2}(e+f x)]^2])\ \text{Tan}[\tfrac{1}{2}(e+f x)]^2)^2) -$$

$$(4\ a\ b\ (4+p)\ \text{AppellF1}[\frac{2+p}{2},\ p,\ 2,\ \frac{4+p}{2},\ \text{Tan}[\tfrac{1}{2}(e+f x)]^2,\ -\text{Tan}[\tfrac{1}{2}(e+f x)]^2]\ \text{Tan}[\tfrac{1}{2}(e+f x)]\ (1+\text{Tan}[\tfrac{1}{2}(e+f x)]^2)$$

$$(2\ (-2\ \text{AppellF1}[\frac{4+p}{2},\ p,\ 3,\ \frac{6+p}{2},\ \text{Tan}[\tfrac{1}{2}(e+f x)]^2,\ -\text{Tan}[\tfrac{1}{2}(e+f x)]^2] + p\ \text{AppellF1}[\frac{4+p}{2},\ 1+p,\ 2,\ \frac{6+p}{2},$$

$$\text{Tan}[\tfrac{1}{2}(e+f x)]^2,\ -\text{Tan}[\tfrac{1}{2}(e+f x)]^2])\ \text{Sec}[\tfrac{1}{2}(e+f x)]^2\ \text{Tan}[\tfrac{1}{2}(e+f x)] + (4+p)\ (-\frac{1}{4+p} 2\ (2+p)$$

$$\text{AppellF1}[1+\frac{2+p}{2},\ p,\ 3,\ 1+\frac{4+p}{2},\ \text{Tan}[\tfrac{1}{2}(e+f x)]^2,\ -\text{Tan}[\tfrac{1}{2}(e+f x)]^2]\ \text{Sec}[\tfrac{1}{2}(e+f x)]^2\ \text{Tan}[\tfrac{1}{2}(e+f x)] + \frac{1}{4+p}$$

$$p\ (2+p)\ \text{AppellF1}[1+\frac{2+p}{2},\ 1+p,\ 2,\ 1+\frac{4+p}{2},\ \text{Tan}[\tfrac{1}{2}(e+f x)]^2,\ -\text{Tan}[\tfrac{1}{2}(e+f x)]^2]\ \text{Sec}[\tfrac{1}{2}(e+f x)]^2\ \text{Tan}[\tfrac{1}{2}(e+f x)]]) +$$

$$2\ \text{Tan}[\tfrac{1}{2}(e+f x)]^2\ (-2\ (-\frac{1}{6+p} 3\ (4+p)\ \text{AppellF1}[1+\frac{4+p}{2},\ p,\ 4,\ 1+\frac{6+p}{2},\ \text{Tan}[\tfrac{1}{2}(e+f x)]^2,\ -\text{Tan}[\tfrac{1}{2}(e+f x)]^2]$$

$$\text{Sec}[\tfrac{1}{2}(e+f x)]^2\ \text{Tan}[\tfrac{1}{2}(e+f x)] + \frac{1}{6+p} p\ (4+p)\ \text{AppellF1}[1+\frac{4+p}{2},\ 1+p,\ 3,\ 1+\frac{6+p}{2},\ \text{Tan}[\tfrac{1}{2}(e+f x)]^2,$$

$$-\text{Tan}[\tfrac{1}{2}(e+f x)]^2]\ \text{Sec}[\tfrac{1}{2}(e+f x)]^2\ \text{Tan}[\tfrac{1}{2}(e+f x)]]) + p\ (-\frac{1}{6+p} 2\ (4+p)\ \text{AppellF1}[1+\frac{4+p}{2},\ 1+p,\ 3,\ 1+\frac{6+p}{2},$$

$$\text{Tan}[\tfrac{1}{2}(e+f x)]^2,\ -\text{Tan}[\tfrac{1}{2}(e+f x)]^2]\ \text{Sec}[\tfrac{1}{2}(e+f x)]^2\ \text{Tan}[\tfrac{1}{2}(e+f x)] + \frac{1}{6+p}(1+p)\ (4+p)\ \text{AppellF1}[1+\frac{4+p}{2},$$

$$2+p,\ 2,\ 1+\frac{6+p}{2},\ \text{Tan}[\tfrac{1}{2}(e+f x)]^2,\ -\text{Tan}[\tfrac{1}{2}(e+f x)]^2]\ \text{Sec}[\tfrac{1}{2}(e+f x)]^2\ \text{Tan}[\tfrac{1}{2}(e+f x)]])))))\Big/$$

$$((2+p)\ ((4+p)\ \text{AppellF1}[\frac{2+p}{2},\ p,\ 2,\ \frac{4+p}{2},\ \text{Tan}[\tfrac{1}{2}(e+f x)]^2,\ -\text{Tan}[\tfrac{1}{2}(e+f x)]^2] + 2\ (-2\ \text{AppellF1}[\frac{4+p}{2},$$

$$p,\ 3,\ \frac{6+p}{2},\ \text{Tan}[\tfrac{1}{2}(e+f x)]^2,\ -\text{Tan}[\tfrac{1}{2}(e+f x)]^2] +$$

$$p\,\text{AppellF1}\left[\frac{4+p}{2},1+p,2,\frac{6+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Bigg)^2\Bigg)\Bigg)\Bigg)\Bigg)$$

- **Problem 205: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int (a+b\,\text{Sin}[e+f x])\,(g\,\text{Tan}[e+f x])^p\,dx$$

Optimal (type 5, 129 leaves, 6 steps):

$$\frac{a\,\text{Hypergeometric2F1}\left[1,\frac{1+p}{2},\frac{3+p}{2},-\text{Tan}[e+f x]^2\right](g\,\text{Tan}[e+f x])^{1+p}}{f g (1+p)}+$$

$$\frac{b\left(\text{Cos}[e+f x]^2\right)^{\frac{1+p}{2}}\text{Hypergeometric2F1}\left[\frac{1+p}{2},\frac{2+p}{2},\frac{4+p}{2},\text{Sin}[e+f x]^2\right]\text{Sin}[e+f x]\,(g\,\text{Tan}[e+f x])^{1+p}}{f g (2+p)}$$

Result (type 6, 4945 leaves):

$$\Bigg(2\,\text{Cos}\left[\frac{1}{2}(e+f x)\right]^3\text{Sin}\left[\frac{1}{2}(e+f x)\right]\Bigg(\Bigg(a(3+p)\,\text{AppellF1}\left[\frac{1+p}{2},p,1,\frac{3+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\Bigg)\Bigg/$$

$$\Bigg((1+p)\Bigg((3+p)\,\text{AppellF1}\left[\frac{1+p}{2},p,1,\frac{3+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]-2\Bigg(\text{AppellF1}\left[\frac{3+p}{2},p,2,\frac{5+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\right.$$

$$\left.-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]-p\,\text{AppellF1}\left[\frac{3+p}{2},1+p,1,\frac{5+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\Bigg)\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Bigg)\Bigg)+$$

$$\Bigg(2\,b\,(4+p)\,\text{AppellF1}\left[\frac{2+p}{2},p,2,\frac{4+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Tan}\left[\frac{1}{2}(e+f x)\right]\Bigg)\Bigg/$$

$$\Bigg((2+p)\Bigg((4+p)\,\text{AppellF1}\left[\frac{2+p}{2},p,2,\frac{4+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+$$

$$2\Bigg(-2\,\text{AppellF1}\left[\frac{4+p}{2},p,3,\frac{6+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+$$

$$p\,\text{AppellF1}\left[\frac{4+p}{2},1+p,2,\frac{6+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\Bigg)\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Bigg)\Bigg)\Bigg)$$

$$(g\,\text{Tan}[e+f x])^p\Bigg(a\,\text{Cos}[e+f x]^2\,\text{Tan}[e+f x]^p-\frac{1}{2}b\,\text{Cos}[2(e+f x)]\,\text{Sin}[e+f x]\,\text{Tan}[e+f x]^p+a\,\text{Sin}[e+f x]^2\,\text{Tan}[e+f x]^p+$$

$$\text{Sin}[e+f x]\left(\frac{1}{2}b\,\text{Tan}[e+f x]^p-\frac{1}{2}i\,b\,\text{Sin}[2(e+f x)]\,\text{Tan}[e+f x]^p\right)+$$

$$\text{Cos}[e+f x]\left(\frac{1}{2}i\,b\,\text{Tan}[e+f x]^p-\frac{1}{2}i\,b\,\text{Cos}[2(e+f x)]\,\text{Tan}[e+f x]^p+\frac{1}{2}b\,\text{Sin}[2(e+f x)]\,\text{Tan}[e+f x]^p\right)\Bigg)\Bigg)\Bigg/$$

$$\Bigg(f\Bigg(2\,p\,\text{Cos}\left[\frac{1}{2}(e+f x)\right]^3\text{Sec}[e+f x]^2\,\text{Sin}\left[\frac{1}{2}(e+f x)\right]$$

$$\left(\left(a\,(3+p)\,\text{AppellF1}\left[\frac{1+p}{2},\,p,\,1,\,\frac{3+p}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]\,\text{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right)\Big/\left((1+p)\right.\right.$$

$$\left((3+p)\,\text{AppellF1}\left[\frac{1+p}{2},\,p,\,1,\,\frac{3+p}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]-2\,\left(\text{AppellF1}\left[\frac{3+p}{2},\,p,\,2,\,\frac{5+p}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\right.\right.\right.$$

$$\left.\left.\left.-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]-p\,\text{AppellF1}\left[\frac{3+p}{2},\,1+p,\,1,\,\frac{5+p}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]\right)\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right)\right)+$$

$$\left(2\,b\,(4+p)\,\text{AppellF1}\left[\frac{2+p}{2},\,p,\,2,\,\frac{4+p}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right)\Big/$$

$$\left((2+p)\,\left((4+p)\,\text{AppellF1}\left[\frac{2+p}{2},\,p,\,2,\,\frac{4+p}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]+\right.\right.$$

$$2\,\left(-2\,\text{AppellF1}\left[\frac{4+p}{2},\,p,\,3,\,\frac{6+p}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]+\right.$$

$$\left.\left.\left.\left.p\,\text{AppellF1}\left[\frac{4+p}{2},\,1+p,\,2,\,\frac{6+p}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]\right)\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right)\right)\right)\,\text{Tan}[e+f\,x]^{-1+p}+$$

$$\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]^4\,\left(\left(a\,(3+p)\,\text{AppellF1}\left[\frac{1+p}{2},\,p,\,1,\,\frac{3+p}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]\,\text{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right)\Big/\left((1+p)\right.\right.$$

$$\left((3+p)\,\text{AppellF1}\left[\frac{1+p}{2},\,p,\,1,\,\frac{3+p}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]-2\,\left(\text{AppellF1}\left[\frac{3+p}{2},\,p,\,2,\,\frac{5+p}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\right.\right.\right.$$

$$\left.\left.\left.-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]-p\,\text{AppellF1}\left[\frac{3+p}{2},\,1+p,\,1,\,\frac{5+p}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]\right)\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right)\right)+$$

$$\left(2\,b\,(4+p)\,\text{AppellF1}\left[\frac{2+p}{2},\,p,\,2,\,\frac{4+p}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right)\Big/$$

$$\left((2+p)\,\left((4+p)\,\text{AppellF1}\left[\frac{2+p}{2},\,p,\,2,\,\frac{4+p}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]+\right.\right.$$

$$2\,\left(-2\,\text{AppellF1}\left[\frac{4+p}{2},\,p,\,3,\,\frac{6+p}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]+p\,\text{AppellF1}\left[\frac{4+p}{2},\,1+p,\,2,\,\frac{6+p}{2},\right.\right.$$

$$\left.\left.\left.\left.\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]\right)\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right)\right)\right)\,\text{Tan}[e+f\,x]^p-3\,\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]^2\,\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]^2$$

$$\left(\left(a\,(3+p)\,\text{AppellF1}\left[\frac{1+p}{2},\,p,\,1,\,\frac{3+p}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]\,\text{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right)\Big/\left((1+p)\right.\right.$$

$$\left((3+p)\,\text{AppellF1}\left[\frac{1+p}{2},\,p,\,1,\,\frac{3+p}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]-2\,\left(\text{AppellF1}\left[\frac{3+p}{2},\,p,\,2,\,\frac{5+p}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\right.\right.\right.$$

$$\left.\left.\left.-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]-p\,\text{AppellF1}\left[\frac{3+p}{2},\,1+p,\,1,\,\frac{5+p}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]\right)\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right)\right)+$$

$$\left(2\,b\,(4+p)\,\text{AppellF1}\left[\frac{2+p}{2},\,p,\,2,\,\frac{4+p}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right)\Big/$$

$$\left((2+p)\left((4+p)\,\text{AppellF1}\left[\frac{2+p}{2},p,2,\frac{4+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+\right.\right.$$

$$2\left(-2\,\text{AppellF1}\left[\frac{4+p}{2},p,3,\frac{6+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+p\,\text{AppellF1}\left[\frac{4+p}{2},1+p,2,\frac{6+p}{2},\right.\right.$$

$$\left.\left.\left.\left.\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)\right)\right)\text{Tan}[e+f x]^p+2\,\text{Cos}\left[\frac{1}{2}(e+f x)\right]^3\text{Sin}\left[\frac{1}{2}(e+f x)\right]$$

$$\left(\left(a\,(3+p)\,\text{AppellF1}\left[\frac{1+p}{2},p,1,\frac{3+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\Big/\left((1+p)\right.\right.$$

$$\left((3+p)\,\text{AppellF1}\left[\frac{1+p}{2},p,1,\frac{3+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]-2\left(\text{AppellF1}\left[\frac{3+p}{2},p,2,\frac{5+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\right.\right.\right.$$

$$\left.\left.\left.\left.-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]-p\,\text{AppellF1}\left[\frac{3+p}{2},1+p,1,\frac{5+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)\right)+$$

$$\left(a\,(3+p)\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\left(-1/(3+p)(1+p)\,\text{AppellF1}\left[1+\frac{1+p}{2},p,2,1+\frac{3+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right.\right.$$

$$\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]+1/(3+p)p(1+p)\,\text{AppellF1}\left[1+\frac{1+p}{2},1+p,1,1+\right.$$

$$\left.\left.\left.\frac{3+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\right)\Big/\left((1+p)\right.$$

$$\left((3+p)\,\text{AppellF1}\left[\frac{1+p}{2},p,1,\frac{3+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]-2\left(\text{AppellF1}\left[\frac{3+p}{2},p,2,\frac{5+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\right.\right.\right.$$

$$\left.\left.\left.\left.-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]-p\,\text{AppellF1}\left[\frac{3+p}{2},1+p,1,\frac{5+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)\right)+$$

$$\left(b\,(4+p)\,\text{AppellF1}\left[\frac{2+p}{2},p,2,\frac{4+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\right)\Big/\left((2+p)\right.$$

$$\left((4+p)\,\text{AppellF1}\left[\frac{2+p}{2},p,2,\frac{4+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+2\left(-2\,\text{AppellF1}\left[\frac{4+p}{2},p,3,\frac{6+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\right.\right.\right.$$

$$\left.\left.\left.\left.-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+p\,\text{AppellF1}\left[\frac{4+p}{2},1+p,2,\frac{6+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)\right)+$$

$$\left(2\,b\,(4+p)\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]\left(-1/(4+p)2(2+p)\,\text{AppellF1}\left[1+\frac{2+p}{2},p,3,1+\frac{4+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\right.\right.\right.$$

$$\left.-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]+1/(4+p)p(2+p)$$

$$\left.\left.\text{AppellF1}\left[1+\frac{2+p}{2},1+p,2,1+\frac{4+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\right)\Big/\left((2+p)\right.$$

$$\left((4+p)\,\text{AppellF1}\left[\frac{2+p}{2},p,2,\frac{4+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+2\left(-2\,\text{AppellF1}\left[\frac{4+p}{2},p,3,\frac{6+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\right.\right.\right.$$

$$-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big]+p\,\text{AppellF1}\Big[\frac{4+p}{2},1+p,2,\frac{6+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big]\Big)\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big)\Big)-$$

$$\Big(a\,(3+p)\,\text{AppellF1}\Big[\frac{1+p}{2},p,1,\frac{3+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big]\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2$$

$$\Big(-2\,\Big(\text{AppellF1}\Big[\frac{3+p}{2},p,2,\frac{5+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big]-$$

$$p\,\text{AppellF1}\Big[\frac{3+p}{2},1+p,1,\frac{5+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big]\Big)\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]+(3+p)\,\Big(-\frac{1}{3+p}$$

$$(1+p)\,\text{AppellF1}\Big[1+\frac{1+p}{2},p,2,1+\frac{3+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big]\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]+\frac{1}{3+p}$$

$$p\,(1+p)\,\text{AppellF1}\Big[1+\frac{1+p}{2},1+p,1,1+\frac{3+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big]\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]\Big)-$$

$$2\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\,\Big(-\frac{1}{5+p}2\,(3+p)\,\text{AppellF1}\Big[1+\frac{3+p}{2},p,3,1+\frac{5+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big]\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2$$

$$\text{Tan}\left[\frac{1}{2}(e+f x)\right]+\frac{1}{5+p}p\,(3+p)\,\text{AppellF1}\Big[1+\frac{3+p}{2},1+p,2,1+\frac{5+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big]$$

$$\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]-p\,\Big(-\frac{1}{5+p}(3+p)\,\text{AppellF1}\Big[1+\frac{3+p}{2},1+p,2,1+\frac{5+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,$$

$$-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big]\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]+\frac{1}{5+p}(1+p)\,(3+p)\,\text{AppellF1}\Big[1+\frac{3+p}{2},2+p,$$

$$1,1+\frac{5+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big]\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]\Big)\Big)\Big)\Big)\Big)\Big/\Big((1+p)$$

$$\Big((3+p)\,\text{AppellF1}\Big[\frac{1+p}{2},p,1,\frac{3+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big]-2\,\Big(\text{AppellF1}\Big[\frac{3+p}{2},p,2,\frac{5+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,$$

$$-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big]-p\,\text{AppellF1}\Big[\frac{3+p}{2},1+p,1,\frac{5+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big]\Big)\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big)^2\Big)-$$

$$\Big(2\,b\,(4+p)\,\text{AppellF1}\Big[\frac{2+p}{2},p,2,\frac{4+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big]\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]$$

$$\Big(2\,\Big(-2\,\text{AppellF1}\Big[\frac{4+p}{2},p,3,\frac{6+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big]+$$

$$p\,\text{AppellF1}\Big[\frac{4+p}{2},1+p,2,\frac{6+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big]\Big)\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]+(4+p)\,\Big(-\frac{1}{4+p}$$

$$2\,(2+p)\,\text{AppellF1}\Big[1+\frac{2+p}{2},p,3,1+\frac{4+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big]\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]+\frac{1}{4+p}$$

$$p\,(2+p)\,\text{AppellF1}\Big[1+\frac{2+p}{2},1+p,2,1+\frac{4+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big]\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]\Big)+$$

$$2\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2 \left(-2\left(-\frac{1}{6+p}3(4+p)\,\text{AppellF1}\left[1+\frac{4+p}{2},p,4,1+\frac{6+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right.\right.$$
$$\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]+\frac{1}{6+p}p(4+p)\,\text{AppellF1}\left[1+\frac{4+p}{2},1+p,3,1+\frac{6+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\right.$$
$$\left.\left.-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)+p\left(-\frac{1}{6+p}2(4+p)\,\text{AppellF1}\left[1+\frac{4+p}{2},1+p,3,\right.\right.$$
$$\left.1+\frac{6+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]+\frac{1}{6+p}(1+p)(4+p)$$
$$\left.\left.\left.\left.\text{AppellF1}\left[1+\frac{4+p}{2},2+p,2,1+\frac{6+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\right)\right)\right)\Big/$$
$$\left((2+p)\left((4+p)\,\text{AppellF1}\left[\frac{2+p}{2},p,2,\frac{4+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+2\right.\right.$$
$$\left(-2\,\text{AppellF1}\left[\frac{4+p}{2},p,3,\frac{6+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+\right.$$
$$\left.\left.\left.p\,\text{AppellF1}\left[\frac{4+p}{2},1+p,2,\frac{6+p}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)^2\right)\text{Tan}[e+f x]^p\Big)\Big)$$

Problem 206: Result more than twice size of optimal antiderivative.

$$\int \frac{(g\,\text{Tan}[e+f x])^p}{a+b\,\text{Sin}[e+f x]}\,dx$$

Optimal (type 6, 284 leaves, 0 steps) :

$$\frac{1}{(a^2-b^2)\,f\,(-1+p)}$$
$$a\,g\left(1-\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right)^{\frac{1}{2}(-1+p)}\text{Hypergeometric2F1}\left[\frac{1-p}{2},\frac{1-p}{2},\frac{3-p}{2},\frac{\text{Cos}[e+f x]^2-\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}}{1-\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}}\right]\left(\text{Sin}[e+f x]^2\right)^{\frac{1-p}{2}}(g\,\text{Tan}[e+f x])^{-1+p}+$$
$$\frac{1}{(-a^2+b^2)\,f\,(-1+p)}b\,\text{AppellF1}\left[\frac{1-p}{2},-\frac{p}{2},1,\frac{3-p}{2},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]\text{Cos}[e+f x]\left(\text{Sin}[e+f x]^2\right)^{-p/2}(g\,\text{Tan}[e+f x])^p$$

Result (type 6, 3354 leaves) :

$$\Big(\text{Tan}[e+f x]^{1+p}(g\,\text{Tan}[e+f x])^p$$
$$\left(\frac{\text{Hypergeometric2F1}\left[1,\frac{1+p}{2},\frac{3+p}{2},\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]}{a\,(1+p)}-\frac{\text{Hypergeometric2F1}\left[\frac{1}{2},1+\frac{p}{2},2+\frac{p}{2},-\text{Tan}[e+f x]^2\right]\text{Tan}[e+f x]}{2\,b+b\,p}-\right.$$

$$\left(a^2 \left(a^2-b^2\right) (4+p) \,\text{AppellF1}\left[\frac{2+p}{2}, -\frac{1}{2}, 1, \frac{4+p}{2}, -\text{Tan}[e+f x]^2, \frac{\left(-a^2+b^2\right) \text{Tan}[e+f x]^2}{a^2}\right] \text{Tan}[e+f x] \sqrt{1+\text{Tan}[e+f x]^2}\right) \Big/$$
$$\left(b (2+p) \left(a^2 (4+p) \,\text{AppellF1}\left[\frac{2+p}{2}, -\frac{1}{2}, 1, \frac{4+p}{2}, -\text{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\right] +\right.\right.$$
$$\left(-2 \left(a^2-b^2\right) \text{AppellF1}\left[\frac{4+p}{2}, -\frac{1}{2}, 2, \frac{6+p}{2}, -\text{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\right] + a^2 \,\text{AppellF1}\left[\frac{4+p}{2}, \frac{1}{2}, 1,\right.\right.$$
$$\left.\left.\left.\left.\frac{6+p}{2}, -\text{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\right]\right) \text{Tan}[e+f x]^2\right) \left(b^2 \text{Tan}[e+f x]^2 - a^2 \left(1+\text{Tan}[e+f x]^2\right)\right)\right)\right) \Big/$$

$$\left(f (a+b \,\text{Sin}[e+f x]) \left((1+p) \,\text{Sec}[e+f x]^2 \,\text{Tan}[e+f x]^p \left(\frac{\text{Hypergeometric2F1}\left[1, \frac{1+p}{2}, \frac{3+p}{2}, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\right]}{a (1+p)} -\right.\right.\right.$$
$$\frac{\text{Hypergeometric2F1}\left[\frac{1}{2}, 1+\frac{p}{2}, 2+\frac{p}{2}, -\text{Tan}[e+f x]^2\right] \text{Tan}[e+f x]}{2 b+b p} -$$
$$\left(a^2 \left(a^2-b^2\right) (4+p) \,\text{AppellF1}\left[\frac{2+p}{2}, -\frac{1}{2}, 1, \frac{4+p}{2}, -\text{Tan}[e+f x]^2, \frac{\left(-a^2+b^2\right) \text{Tan}[e+f x]^2}{a^2}\right] \text{Tan}[e+f x] \sqrt{1+\text{Tan}[e+f x]^2}\right) \Big/$$
$$\left(b (2+p) \left(a^2 (4+p) \,\text{AppellF1}\left[\frac{2+p}{2}, -\frac{1}{2}, 1, \frac{4+p}{2}, -\text{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\right] +\right.\right.$$
$$\left(-2 \left(a^2-b^2\right) \text{AppellF1}\left[\frac{4+p}{2}, -\frac{1}{2}, 2, \frac{6+p}{2}, -\text{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\right] + a^2 \,\text{AppellF1}\left[\frac{4+p}{2}, \frac{1}{2}, 1,\right.\right.$$
$$\left.\left.\left.\left.\frac{6+p}{2}, -\text{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\right]\right) \text{Tan}[e+f x]^2\right) \left(b^2 \text{Tan}[e+f x]^2 - a^2 \left(1+\text{Tan}[e+f x]^2\right)\right)\right)\right) +$$

$$\text{Tan}[e+f x]^{1+p} \left(-\frac{\text{Hypergeometric2F1}\left[\frac{1}{2}, 1+\frac{p}{2}, 2+\frac{p}{2}, -\text{Tan}[e+f x]^2\right] \text{Sec}[e+f x]^2}{2 b+b p} -\right.$$

$$\frac{2 \left(1+\frac{p}{2}\right) \text{Sec}[e+f x]^2 \left(-\text{Hypergeometric2F1}\left[\frac{1}{2}, 1+\frac{p}{2}, 2+\frac{p}{2}, -\text{Tan}[e+f x]^2\right] + \frac{1}{\sqrt{1+\text{Tan}[e+f x]^2}}\right)}{2 b+b p} +$$
$$\left(a^2 \left(a^2-b^2\right) (4+p) \,\text{AppellF1}\left[\frac{2+p}{2}, -\frac{1}{2}, 1, \frac{4+p}{2}, -\text{Tan}[e+f x]^2, \frac{\left(-a^2+b^2\right) \text{Tan}[e+f x]^2}{a^2}\right]\right.$$

$$\text{Tan}[e+f x]\left(-2 a^2 \text{Sec}[e+f x]^2 \text{Tan}[e+f x]+2 b^2 \text{Sec}[e+f x]^2 \text{Tan}[e+f x]\right)\sqrt{1+\text{Tan}[e+f x]^2}\Bigg)\Bigg/$$

$$\Bigg(b(2+p)\Bigg(a^2(4+p)\,\text{AppellF1}\left[\frac{2+p}{2},-\frac{1}{2},1,\frac{4+p}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+$$

$$\Bigg(-2\left(a^2-b^2\right)\text{AppellF1}\left[\frac{4+p}{2},-\frac{1}{2},2,\frac{6+p}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+a^2\,\text{AppellF1}\Big[\frac{4+p}{2},\frac{1}{2},1,$$

$$\frac{6+p}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\Big]\Bigg)\text{Tan}[e+f x]^2\Bigg)\left(b^2\,\text{Tan}[e+f x]^2-a^2\left(1+\text{Tan}[e+f x]^2\right)\right)^2\Bigg)-$$

$$\left(a^2\left(a^2-b^2\right)(4+p)\,\text{AppellF1}\left[\frac{2+p}{2},-\frac{1}{2},1,\frac{4+p}{2},-\text{Tan}[e+f x]^2,\frac{\left(-a^2+b^2\right)\text{Tan}[e+f x]^2}{a^2}\right]\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]^2\right)\Bigg/$$

$$\Bigg(b(2+p)\sqrt{1+\text{Tan}[e+f x]^2}\,\Bigg(a^2(4+p)\,\text{AppellF1}\left[\frac{2+p}{2},-\frac{1}{2},1,\frac{4+p}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+$$

$$\Bigg(-2\left(a^2-b^2\right)\text{AppellF1}\left[\frac{4+p}{2},-\frac{1}{2},2,\frac{6+p}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+a^2\,\text{AppellF1}\Big[\frac{4+p}{2},\frac{1}{2},1,$$

$$\frac{6+p}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\Big]\Bigg)\text{Tan}[e+f x]^2\Bigg)\left(b^2\,\text{Tan}[e+f x]^2-a^2\left(1+\text{Tan}[e+f x]^2\right)\right)\Bigg)-$$

$$\left(a^2\left(a^2-b^2\right)(4+p)\,\text{AppellF1}\left[\frac{2+p}{2},-\frac{1}{2},1,\frac{4+p}{2},-\text{Tan}[e+f x]^2,\frac{\left(-a^2+b^2\right)\text{Tan}[e+f x]^2}{a^2}\right]\text{Sec}[e+f x]^2\sqrt{1+\text{Tan}[e+f x]^2}\right)\Bigg/$$

$$\Bigg(b(2+p)\Bigg(a^2(4+p)\,\text{AppellF1}\left[\frac{2+p}{2},-\frac{1}{2},1,\frac{4+p}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+$$

$$\Bigg(-2\left(a^2-b^2\right)\text{AppellF1}\left[\frac{4+p}{2},-\frac{1}{2},2,\frac{6+p}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+a^2\,\text{AppellF1}\Big[\frac{4+p}{2},\frac{1}{2},1,$$

$$\frac{6+p}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\Big]\Bigg)\text{Tan}[e+f x]^2\Bigg)\left(b^2\,\text{Tan}[e+f x]^2-a^2\left(1+\text{Tan}[e+f x]^2\right)\right)\Bigg)-$$

$$\Bigg(a^2\left(a^2-b^2\right)(4+p)\,\text{Tan}[e+f x]\Bigg(\frac{1}{a^2(4+p)}2\left(-a^2+b^2\right)(2+p)\,\text{AppellF1}\Big[1+\frac{2+p}{2},-\frac{1}{2},2,1+\frac{4+p}{2},-\text{Tan}[e+f x]^2,$$

$$\frac{\left(-a^2+b^2\right)\text{Tan}[e+f x]^2}{a^2}\Big]\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]+\frac{1}{4+p}(2+p)\,\text{AppellF1}\Big[1+\frac{2+p}{2},\frac{1}{2},1,1+$$

$$\frac{4+p}{2},-\text{Tan}[e+f x]^2,\frac{\left(-a^2+b^2\right)\text{Tan}[e+f x]^2}{a^2}\Big]\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]\Bigg)\sqrt{1+\text{Tan}[e+f x]^2}\Bigg)\Bigg/$$

$$\Bigg(b(2+p)\Bigg(a^2(4+p)\,\text{AppellF1}\left[\frac{2+p}{2},-\frac{1}{2},1,\frac{4+p}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+$$

$$\left(-2\left(a^2-b^2\right)\text{AppellF1}\left[\frac{4+p}{2},-\frac{1}{2},2,\frac{6+p}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+a^2\,\text{AppellF1}\left[\frac{4+p}{2},\frac{1}{2},1,\frac{6+p}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]\right)\text{Tan}[e+f x]^2\right)\left(b^2\,\text{Tan}[e+f x]^2-a^2\left(1+\text{Tan}[e+f x]^2\right)\right)\Bigg)+\frac{1}{a}$$

$$\text{Csc}[e+f x]\,\text{Sec}[e+f x]\left(-\text{Hypergeometric2F1}\left[1,\frac{1+p}{2},\frac{3+p}{2},\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+\frac{1}{1-\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2}\right)+$$

$$\Bigg(a^2\left(a^2-b^2\right)(4+p)\,\text{AppellF1}\left[\frac{2+p}{2},-\frac{1}{2},1,\frac{4+p}{2},-\text{Tan}[e+f x]^2,\frac{\left(-a^2+b^2\right)\text{Tan}[e+f x]^2}{a^2}\right]\text{Tan}[e+f x]\sqrt{1+\text{Tan}[e+f x]^2}$$

$$\Bigg(2\left(-2\left(a^2-b^2\right)\text{AppellF1}\left[\frac{4+p}{2},-\frac{1}{2},2,\frac{6+p}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+a^2\,\text{AppellF1}\left[\frac{4+p}{2},\frac{1}{2},1,\frac{6+p}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]\right)\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]+a^2(4+p)\Bigg(\frac{1}{4+p}2\left(-1+\frac{b^2}{a^2}\right)(2+p)\,\text{AppellF1}\left[1+\frac{2+p}{2},-\frac{1}{2},2,1+\frac{4+p}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]+\frac{1}{4+p}(2+p)\,\text{AppellF1}\left[1+\frac{2+p}{2},\frac{1}{2},1,1+\frac{4+p}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]\Bigg)+\text{Tan}[e+f x]^2\Bigg(-2\left(a^2-b^2\right)\Bigg(\frac{1}{6+p}4\left(-1+\frac{b^2}{a^2}\right)(4+p)\,\text{AppellF1}\left[1+\frac{4+p}{2},-\frac{1}{2},3,1+\frac{6+p}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]+\frac{1}{6+p}(4+p)\,\text{AppellF1}\left[1+\frac{4+p}{2},\frac{1}{2},2,1+\frac{6+p}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]\Bigg)+a^2\Bigg(\frac{1}{6+p}2\left(-1+\frac{b^2}{a^2}\right)(4+p)\,\text{AppellF1}\left[1+\frac{4+p}{2},\frac{1}{2},2,1+\frac{6+p}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]-\frac{1}{6+p}(4+p)\,\text{AppellF1}\left[1+\frac{4+p}{2},\frac{3}{2},1,1+\frac{6+p}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]\Bigg)\Bigg)\Bigg)\Bigg)\Bigg/$$

$$\Bigg(b(2+p)\Bigg(a^2(4+p)\,\text{AppellF1}\left[\frac{2+p}{2},-\frac{1}{2},1,\frac{4+p}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+\left(-2\left(a^2-b^2\right)\text{AppellF1}\left[\frac{4+p}{2},-\frac{1}{2},2,\frac{6+p}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+a^2\,\text{AppellF1}\left[\frac{4+p}{2},\frac{1}{2},1,\frac{6+p}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]\right)\text{Tan}[e+f x]^2\Bigg)^2\left(b^2\,\text{Tan}[e+f x]^2-a^2\left(1+\text{Tan}[e+f x]^2\right)\right)\Bigg)\Bigg)\Bigg)\Bigg)$$

■ **Problem 207: Result more than twice size of optimal antiderivative.**

$$\int \frac{(g\,\text{Tan}[e+f\,x])^p}{(a+b\,\text{Sin}[e+f\,x])^2}\,dx$$

Optimal (type 6, 737 leaves, 0 steps):

$$\frac{1}{2\left(a^2-b^2\right)^2\left(-a^2+b^2\right)f}a^2\,\text{Cos}[e+f\,x]\,\left(1-\text{Cos}[e+f\,x]^2\right)^{\frac{1}{2}(-1+q)}$$

$$\left(1-\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right)^{-2+\frac{3-q}{2}+\frac{1}{2}(-1+q)}\left(\left(2\left(a^2-b^2\right)+b^2\,(1+q)\,\text{Cos}[e+f\,x]^2\right)\text{HurwitzLerchPhi}\left[-\frac{a^2\,\text{Cot}[e+f\,x]^2}{a^2-b^2},\,1,\,\frac{1-q}{2}\right]-\right.$$

$$\left.b^2\,(-1+q)\,\text{Cos}[e+f\,x]^2\,\text{HurwitzLerchPhi}\left[-\frac{a^2\,\text{Cot}[e+f\,x]^2}{a^2-b^2},\,1,\,\frac{3-q}{2}\right]\right)\text{Sin}[e+f\,x]\,\left(\text{Sin}[e+f\,x]^2\right)^{\frac{1}{2}(-1-q)}\,(g\,\text{Tan}[e+f\,x])^q-$$

$$\frac{1}{\left(a^2-b^2\right)^2 f\,(-1+q)}a^2\,\text{Cos}[e+f\,x]\,\left(1-\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right)^{\frac{1}{2}(-1+q)}\,\text{Hypergeometric2F1}\left[\frac{1-q}{2},\,\frac{1-q}{2},\,\frac{3-q}{2},\,\frac{\text{Cos}[e+f\,x]^2-\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}}{1-\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}}\right]$$

$$\text{Sin}[e+f\,x]\,\left(\text{Sin}[e+f\,x]^2\right)^{\frac{1}{2}(-1-q)}\,(g\,\text{Tan}[e+f\,x])^q+\frac{1}{\left(a^2-b^2\right)^2 f\,(-1+q)}$$

$$b^2\,\text{Cos}[e+f\,x]\,\left(1-\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right)^{\frac{1}{2}(-1+q)}\,\text{Hypergeometric2F1}\left[\frac{1-q}{2},\,\frac{1-q}{2},\,\frac{3-q}{2},\,\frac{\text{Cos}[e+f\,x]^2-\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}}{1-\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}}\right]$$

$$\text{Sin}[e+f\,x]\,\left(\text{Sin}[e+f\,x]^2\right)^{\frac{1}{2}(-1-q)}\,(g\,\text{Tan}[e+f\,x])^q-\frac{1}{\left(a^2-b^2\right)^2 f\,(-1+q)}$$

$$2\,a\,b\,\text{AppellF1}\left[\frac{1-q}{2},\,-\frac{q}{2},\,2,\,\frac{3-q}{2},\,\text{Cos}[e+f\,x]^2,\,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]\text{Cos}[e+f\,x]\,\left(\text{Sin}[e+f\,x]^2\right)^{-q/2}\,(g\,\text{Tan}[e+f\,x])^q$$

Result (type 6, 3387 leaves):

$$\left(\text{Tan}[e+f\,x]^{1+p}\,(g\,\text{Tan}[e+f\,x])^p\left(\frac{1}{a^2\,(1+p)}\left(-\left(a^2+b^2\right)\text{Hypergeometric2F1}\left[1,\,\frac{1+p}{2},\,\frac{3+p}{2},\,\frac{\left(-a^2+b^2\right)\text{Tan}[e+f\,x]^2}{a^2}\right]+\right.\right.\right.$$

$$\left.\left.2\,b^2\,\text{Hypergeometric2F1}\left[2,\,\frac{1+p}{2},\,\frac{3+p}{2},\,\frac{\left(-a^2+b^2\right)\text{Tan}[e+f\,x]^2}{a^2}\right]\right)\right)+$$

$$\left(2\,a^3\,b\left(a^2-b^2\right)(4+p)\,\text{AppellF1}\left[\frac{2+p}{2},\,-\frac{1}{2},\,2,\,\frac{4+p}{2},\,-\text{Tan}[e+f\,x]^2,\,\frac{\left(-a^2+b^2\right)\text{Tan}[e+f\,x]^2}{a^2}\right]\text{Tan}[e+f\,x]\,\sqrt{1+\text{Tan}[e+f\,x]^2}\right)\Big/$$

$$\left((2+p)\left(a^2\,(4+p)\,\text{AppellF1}\left[\frac{2+p}{2},\,-\frac{1}{2},\,2,\,\frac{4+p}{2},\,-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\right]+\right.\right.$$

$$\left(-4\left(a^2-b^2\right)\text{AppellF1}\left[\frac{4+p}{2},\,-\frac{1}{2},\,3,\,\frac{6+p}{2},\,-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\right]+a^2\,\text{AppellF1}\left[\frac{4+p}{2},\,\frac{1}{2},\,2,\right.\right.$$

$$\frac{6+p}{2}, -\text{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\Big]\Big) \text{Tan}[e+f x]^2\Big) \left(b^2 \text{Tan}[e+f x]^2 - a^2 \left(1+\text{Tan}[e+f x]^2\right)\right)^2\Big)\Big)\Big) \Big/$$

$$\Bigg(\left(-a^2+b^2\right) f \left(a+b \text{Sin}[e+f x]\right)^2 \Bigg(\frac{1}{-a^2+b^2} (1+p) \text{Sec}[e+f x]^2 \text{Tan}[e+f x]^p \Bigg(\frac{1}{a^2 (1+p)} \Big(-\left(a^2+b^2\right) \text{Hypergeometric2F1}\Big[1,$$

$$\frac{1+p}{2}, \frac{3+p}{2}, \frac{\left(-a^2+b^2\right) \text{Tan}[e+f x]^2}{a^2}\Big] + 2 b^2 \text{Hypergeometric2F1}\Big[2, \frac{1+p}{2}, \frac{3+p}{2}, \frac{\left(-a^2+b^2\right) \text{Tan}[e+f x]^2}{a^2}\Big]\Big) +$$

$$\Big(2 a^3 b \left(a^2-b^2\right) (4+p) \text{AppellF1}\Big[\frac{2+p}{2}, -\frac{1}{2}, 2, \frac{4+p}{2}, -\text{Tan}[e+f x]^2, \frac{\left(-a^2+b^2\right) \text{Tan}[e+f x]^2}{a^2}\Big] \text{Tan}[e+f x] \sqrt{1+\text{Tan}[e+f x]^2}\Big) \Big/$$

$$\Big((2+p) \Big(a^2 (4+p) \text{AppellF1}\Big[\frac{2+p}{2}, -\frac{1}{2}, 2, \frac{4+p}{2}, -\text{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\Big] +$$

$$\Big(-4 \left(a^2-b^2\right) \text{AppellF1}\Big[\frac{4+p}{2}, -\frac{1}{2}, 3, \frac{6+p}{2}, -\text{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\Big] + a^2 \text{AppellF1}\Big[\frac{4+p}{2}, \frac{1}{2}, 2,$$

$$\frac{6+p}{2}, -\text{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\Big]\Big) \text{Tan}[e+f x]^2\Big) \left(b^2 \text{Tan}[e+f x]^2 - a^2 \left(1+\text{Tan}[e+f x]^2\right)\right)^2\Big)\Big) +$$

$$\frac{1}{-a^2+b^2} \text{Tan}[e+f x]^{1+p} \Bigg(-\Big(\Big(\Big(4 a^3 b \left(a^2-b^2\right) (4+p) \text{AppellF1}\Big[\frac{2+p}{2}, -\frac{1}{2}, 2, \frac{4+p}{2}, -\text{Tan}[e+f x]^2, \frac{\left(-a^2+b^2\right) \text{Tan}[e+f x]^2}{a^2}\Big]$$

$$\text{Tan}[e+f x] \left(-2 a^2 \text{Sec}[e+f x]^2 \text{Tan}[e+f x] + 2 b^2 \text{Sec}[e+f x]^2 \text{Tan}[e+f x]\right) \sqrt{1+\text{Tan}[e+f x]^2}\Big) \Big/$$

$$\Big((2+p) \Big(a^2 (4+p) \text{AppellF1}\Big[\frac{2+p}{2}, -\frac{1}{2}, 2, \frac{4+p}{2}, -\text{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\Big] +$$

$$\Big(-4 \left(a^2-b^2\right) \text{AppellF1}\Big[\frac{4+p}{2}, -\frac{1}{2}, 3, \frac{6+p}{2}, -\text{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\Big] + a^2 \text{AppellF1}\Big[\frac{4+p}{2}, \frac{1}{2}, 2,$$

$$\frac{6+p}{2}, -\text{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\Big]\Big) \text{Tan}[e+f x]^2\Big) \left(b^2 \text{Tan}[e+f x]^2 - a^2 \left(1+\text{Tan}[e+f x]^2\right)\right)^3\Big)\Big) +$$

$$\Big(2 a^3 b \left(a^2-b^2\right) (4+p) \text{AppellF1}\Big[\frac{2+p}{2}, -\frac{1}{2}, 2, \frac{4+p}{2}, -\text{Tan}[e+f x]^2, \frac{\left(-a^2+b^2\right) \text{Tan}[e+f x]^2}{a^2}\Big] \text{Sec}[e+f x]^2 \text{Tan}[e+f x]^2\Big) \Big/$$

$$\Big((2+p) \sqrt{1+\text{Tan}[e+f x]^2} \Big(a^2 (4+p) \text{AppellF1}\Big[\frac{2+p}{2}, -\frac{1}{2}, 2, \frac{4+p}{2}, -\text{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\Big] +$$

$$\Big(-4 \left(a^2-b^2\right) \text{AppellF1}\Big[\frac{4+p}{2}, -\frac{1}{2}, 3, \frac{6+p}{2}, -\text{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\Big] + a^2 \text{AppellF1}\Big[\frac{4+p}{2}, \frac{1}{2}, 2,$$

$$\frac{6+p}{2}, -\text{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\Big]\Big) \text{Tan}[e+f x]^2\Big) \left(b^2 \text{Tan}[e+f x]^2-a^2 \left(1+\text{Tan}[e+f x]^2\right)\right)^2\Big)+$$

$$\Big(2 a^3 b \left(a^2-b^2\right) (4+p) \text{AppellF1}\Big[\frac{2+p}{2}, -\frac{1}{2}, 2, \frac{4+p}{2}, -\text{Tan}[e+f x]^2, \frac{\left(-a^2+b^2\right) \text{Tan}[e+f x]^2}{a^2}\Big] \text{Sec}[e+f x]^2 \sqrt{1+\text{Tan}[e+f x]^2}\Big)\Big/$$

$$\Big((2+p) \Big(a^2 (4+p) \text{AppellF1}\Big[\frac{2+p}{2}, -\frac{1}{2}, 2, \frac{4+p}{2}, -\text{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\Big]+$$

$$\Big(-4 \left(a^2-b^2\right) \text{AppellF1}\Big[\frac{4+p}{2}, -\frac{1}{2}, 3, \frac{6+p}{2}, -\text{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\Big]+a^2 \text{AppellF1}\Big[\frac{4+p}{2}, \frac{1}{2}, 2,$$

$$\frac{6+p}{2}, -\text{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\Big]\Big) \text{Tan}[e+f x]^2\Big) \left(b^2 \text{Tan}[e+f x]^2-a^2 \left(1+\text{Tan}[e+f x]^2\right)\right)^2\Big)+$$

$$\Big(2 a^3 b \left(a^2-b^2\right) (4+p) \text{Tan}[e+f x] \Big(\frac{1}{a^2 (4+p)} 4 \left(-a^2+b^2\right) (2+p) \text{AppellF1}\Big[1+\frac{2+p}{2}, -\frac{1}{2}, 3, 1+\frac{4+p}{2}, -\text{Tan}[e+f x]^2,$$

$$\frac{\left(-a^2+b^2\right) \text{Tan}[e+f x]^2}{a^2}\Big] \text{Sec}[e+f x]^2 \text{Tan}[e+f x]+\frac{1}{4+p} (2+p) \text{AppellF1}\Big[1+\frac{2+p}{2}, \frac{1}{2}, 2,$$

$$1+\frac{4+p}{2}, -\text{Tan}[e+f x]^2, \frac{\left(-a^2+b^2\right) \text{Tan}[e+f x]^2}{a^2}\Big] \text{Sec}[e+f x]^2 \text{Tan}[e+f x]\Big) \sqrt{1+\text{Tan}[e+f x]^2}\Big)\Big/$$

$$\Big((2+p) \Big(a^2 (4+p) \text{AppellF1}\Big[\frac{2+p}{2}, -\frac{1}{2}, 2, \frac{4+p}{2}, -\text{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\Big]+$$

$$\Big(-4 \left(a^2-b^2\right) \text{AppellF1}\Big[\frac{4+p}{2}, -\frac{1}{2}, 3, \frac{6+p}{2}, -\text{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\Big]+a^2 \text{AppellF1}\Big[\frac{4+p}{2}, \frac{1}{2}, 2,$$

$$\frac{6+p}{2}, -\text{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\Big]\Big) \text{Tan}[e+f x]^2\Big) \left(b^2 \text{Tan}[e+f x]^2-a^2 \left(1+\text{Tan}[e+f x]^2\right)\right)^2\Big)-$$

$$\Big(2 a^3 b \left(a^2-b^2\right) (4+p) \text{AppellF1}\Big[\frac{2+p}{2}, -\frac{1}{2}, 2, \frac{4+p}{2}, -\text{Tan}[e+f x]^2, \frac{\left(-a^2+b^2\right) \text{Tan}[e+f x]^2}{a^2}\Big] \text{Tan}[e+f x]$$

$$\sqrt{1+\text{Tan}[e+f x]^2} \Big(2 \Big(-4 \left(a^2-b^2\right) \text{AppellF1}\Big[\frac{4+p}{2}, -\frac{1}{2}, 3, \frac{6+p}{2}, -\text{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\Big]+$$

$$a^2 \text{AppellF1}\Big[\frac{4+p}{2}, \frac{1}{2}, 2, \frac{6+p}{2}, -\text{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\Big]\Big) \text{Sec}[e+f x]^2 \text{Tan}[e+f x]+a^2 (4+p) \Big(\frac{1}{4+p}$$

$$4 \left(-1+\frac{b^2}{a^2}\right) (2+p) \text{AppellF1}\Big[1+\frac{2+p}{2}, -\frac{1}{2}, 3, 1+\frac{4+p}{2}, -\text{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\Big] \text{Sec}[e+f x]^2 \text{Tan}[e+f x]+$$

$$\frac{1}{4+p} (2+p) \text{AppellF1}\Big[1+\frac{2+p}{2}, \frac{1}{2}, 2, 1+\frac{4+p}{2}, -\text{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\Big] \text{Sec}[e+f x]^2 \text{Tan}[e+f x]\Big)+$$

$$\text{Tan}[e+f x]^2 \left(-4 \left(a^2-b^2\right) \left(\frac{1}{6+p} 6 \left(-1+\frac{b^2}{a^2}\right) (4+p) \text{AppellF1}\left[1+\frac{4+p}{2},-\frac{1}{2},4,1+\frac{6+p}{2},-\text{Tan}[e+f x]^2,\right.\right.\right.$$

$$\left.\left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\right] \text{Sec}[e+f x]^2 \text{Tan}[e+f x]+\frac{1}{6+p} (4+p) \text{AppellF1}\left[1+\frac{4+p}{2},\frac{1}{2},3,1+\frac{6+p}{2},\right.$$

$$\left.\left.-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\right] \text{Sec}[e+f x]^2 \text{Tan}[e+f x]\right)+a^2 \left(\frac{1}{6+p} 4 \left(-1+\frac{b^2}{a^2}\right) (4+p)\right.$$

$$\text{AppellF1}\left[1+\frac{4+p}{2},\frac{1}{2},3,1+\frac{6+p}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\right] \text{Sec}[e+f x]^2 \text{Tan}[e+f x]-\frac{1}{6+p}$$

$$\left.\left.\left.\left.(4+p) \text{AppellF1}\left[1+\frac{4+p}{2},\frac{3}{2},2,1+\frac{6+p}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\right] \text{Sec}[e+f x]^2 \text{Tan}[e+f x]\right)\right)\right)\right) \Big/$$

$$\left((2+p) \left(a^2 (4+p) \text{AppellF1}\left[\frac{2+p}{2},-\frac{1}{2},2,\frac{4+p}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\right]+\right.\right.$$

$$\left(-4 \left(a^2-b^2\right) \text{AppellF1}\left[\frac{4+p}{2},-\frac{1}{2},3,\frac{6+p}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\right]+a^2 \text{AppellF1}\left[\frac{4+p}{2},\frac{1}{2},2,\frac{6+p}{2},\right.\right.$$

$$\left.\left.\left.-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\right]\right) \text{Tan}[e+f x]^2\right)^2 \left(b^2 \text{Tan}[e+f x]^2-a^2 \left(1+\text{Tan}[e+f x]^2\right)\right)^2\right)+\frac{1}{a^2 (1+p)}$$

$$\left(2 b^2 (1+p) \text{Csc}[e+f x] \text{Sec}[e+f x] \left(-\text{Hypergeometric2F1}\left[2,\frac{1+p}{2},\frac{3+p}{2},\frac{\left(-a^2+b^2\right) \text{Tan}[e+f x]^2}{a^2}\right]+\frac{1}{\left(1-\frac{\left(-a^2+b^2\right) \text{Tan}[e+f x]^2}{a^2}\right)^2}\right)-\right.$$

$$\left.\left.\left.\left.\left(a^2+b^2\right) (1+p) \text{Csc}[e+f x] \text{Sec}[e+f x] \left(-\text{Hypergeometric2F1}\left[1,\frac{1+p}{2},\frac{3+p}{2},\frac{\left(-a^2+b^2\right) \text{Tan}[e+f x]^2}{a^2}\right]+\frac{1}{1-\frac{\left(-a^2+b^2\right) \text{Tan}[e+f x]^2}{a^2}}\right)\right)\right)\right)\right)$$

Test results for the 837 problems in "4.1.2.1 (a+b sin)^m (c+d sin)^n.m"

- **Problem 4: Result more than twice size of optimal antiderivative.**

$$\int \frac{\text{Sin}[x]^3}{a+a \text{Sin}[x]} \, dx$$

Optimal (type 3, 42 leaves, 2 steps) :

$$\frac{3 x}{2 a}+\frac{2 \text{Cos}[x]}{a}-\frac{3 \text{Cos}[x] \text{Sin}[x]}{2 a}+\frac{\text{Cos}[x] \text{Sin}[x]^2}{a+a \text{Sin}[x]}$$

Result (type 3, 87 leaves) :

$$\frac{1}{8\,a\,(1+\mathrm{Sin}[x])}\left(\mathrm{Cos}\left[\frac{x}{2}\right]+\mathrm{Sin}\left[\frac{x}{2}\right]\right)\left(4\,(1+3\,x)\,\mathrm{Cos}\left[\frac{x}{2}\right]+3\,\mathrm{Cos}\left[\frac{3\,x}{2}\right]+\mathrm{Cos}\left[\frac{5\,x}{2}\right]-20\,\mathrm{Sin}\left[\frac{x}{2}\right]+12\,x\,\mathrm{Sin}\left[\frac{x}{2}\right]+3\,\mathrm{Sin}\left[\frac{3\,x}{2}\right]-\mathrm{Sin}\left[\frac{5\,x}{2}\right]\right)$$

- **Problem 6: Result more than twice size of optimal antiderivative.**

$$\int\frac{\mathrm{Sin}[x]}{a+a\,\mathrm{Sin}[x]}\,dx$$

Optimal (type 3, 17 leaves, 2 steps) :

$$\frac{x}{a}+\frac{\mathrm{Cos}[x]}{a+a\,\mathrm{Sin}[x]}$$

Result (type 3, 42 leaves) :

$$\frac{\left(\mathrm{Cos}\left[\frac{x}{2}\right]+\mathrm{Sin}\left[\frac{x}{2}\right]\right)\left(x\,\mathrm{Cos}\left[\frac{x}{2}\right]+(-2+x)\,\mathrm{Sin}\left[\frac{x}{2}\right]\right)}{a\,(1+\mathrm{Sin}[x])}$$

- **Problem 7: Result more than twice size of optimal antiderivative.**

$$\int\frac{1}{a+a\,\mathrm{Sin}[x]}\,dx$$

Optimal (type 3, 12 leaves, 1 step) :

$$-\frac{\mathrm{Cos}[x]}{a+a\,\mathrm{Sin}[x]}$$

Result (type 3, 29 leaves) :

$$\frac{2\,\mathrm{Sin}\left[\frac{x}{2}\right]\left(\mathrm{Cos}\left[\frac{x}{2}\right]+\mathrm{Sin}\left[\frac{x}{2}\right]\right)}{a+a\,\mathrm{Sin}[x]}$$

- **Problem 8: Result more than twice size of optimal antiderivative.**

$$\int\frac{\mathrm{Csc}[x]}{a+a\,\mathrm{Sin}[x]}\,dx$$

Optimal (type 3, 20 leaves, 3 steps) :

$$-\frac{\mathrm{ArcTanh}[\mathrm{Cos}[x]]}{a}+\frac{\mathrm{Cos}[x]}{a+a\,\mathrm{Sin}[x]}$$

Result (type 3, 74 leaves) :

$$-\frac{\left(\mathrm{Cos}\left[\frac{x}{2}\right]+\mathrm{Sin}\left[\frac{x}{2}\right]\right)\left(\mathrm{Cos}\left[\frac{x}{2}\right]\left(\mathrm{Log}\left[\mathrm{Cos}\left[\frac{x}{2}\right]\right]-\mathrm{Log}\left[\mathrm{Sin}\left[\frac{x}{2}\right]\right]\right)+\left(2+\mathrm{Log}\left[\mathrm{Cos}\left[\frac{x}{2}\right]\right]-\mathrm{Log}\left[\mathrm{Sin}\left[\frac{x}{2}\right]\right]\right)\mathrm{Sin}\left[\frac{x}{2}\right]\right)}{a\,(1+\mathrm{Sin}[x])}$$

Problem 9: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Csc}[x]^2}{a + a\,\text{Sin}[x]}\, dx$$

Optimal (type 3, 26 leaves, 5 steps):

$$\frac{\text{ArcTanh}[\text{Cos}[x]]}{a} - \frac{2\,\text{Cot}[x]}{a} + \frac{\text{Cot}[x]}{a + a\,\text{Sin}[x]}$$

Result (type 3, 63 leaves):

$$\frac{-\text{Cot}\left[\frac{x}{2}\right] + 2\,\text{Log}\left[\text{Cos}\left[\frac{x}{2}\right]\right] - 2\,\text{Log}\left[\text{Sin}\left[\frac{x}{2}\right]\right] + \frac{4\,\text{Sin}\left[\frac{x}{2}\right]}{\text{Cos}\left[\frac{x}{2}\right]+\text{Sin}\left[\frac{x}{2}\right]} + \text{Tan}\left[\frac{x}{2}\right]}{2\,a}$$

Problem 11: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Csc}[x]^4}{a + a\,\text{Sin}[x]}\, dx$$

Optimal (type 3, 55 leaves, 6 steps):

$$\frac{3\,\text{ArcTanh}[\text{Cos}[x]]}{2\,a} - \frac{4\,\text{Cot}[x]}{a} - \frac{4\,\text{Cot}[x]^3}{3\,a} + \frac{3\,\text{Cot}[x]\,\text{Csc}[x]}{2\,a} + \frac{\text{Cot}[x]\,\text{Csc}[x]^2}{a + a\,\text{Sin}[x]}$$

Result (type 3, 113 leaves):

$$\frac{1}{24\,a}\left(-20\,\text{Cot}\left[\frac{x}{2}\right] + 3\,\text{Csc}\left[\frac{x}{2}\right]^2 + 36\,\text{Log}\left[\text{Cos}\left[\frac{x}{2}\right]\right] - 36\,\text{Log}\left[\text{Sin}\left[\frac{x}{2}\right]\right] - 3\,\text{Sec}\left[\frac{x}{2}\right]^2 + 8\,\text{Csc}[x]^3\,\text{Sin}\left[\frac{x}{2}\right]^4 + \frac{48\,\text{Sin}\left[\frac{x}{2}\right]}{\text{Cos}\left[\frac{x}{2}\right] + \text{Sin}\left[\frac{x}{2}\right]} - \frac{1}{2}\,\text{Csc}\left[\frac{x}{2}\right]^4\,\text{Sin}[x] + 20\,\text{Tan}\left[\frac{x}{2}\right]\right)$$

Problem 17: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Csc}[x]}{(a + a\,\text{Sin}[x])^2}\, dx$$

Optimal (type 3, 38 leaves, 4 steps):

$$-\frac{\text{ArcTanh}[\text{Cos}[x]]}{a^2} + \frac{4\,\text{Cos}[x]}{3\,a^2\,(1 + \text{Sin}[x])} + \frac{\text{Cos}[x]}{3\,(a + a\,\text{Sin}[x])^2}$$

Result (type 3, 129 leaves):

$$\frac{1}{6\,a^2\,(1 + \text{Sin}[x])^2}\left(\text{Cos}\left[\frac{x}{2}\right] + \text{Sin}\left[\frac{x}{2}\right]\right)\left(\text{Cos}\left[\frac{3\,x}{2}\right]\left(8 + 3\,\text{Log}\left[\text{Cos}\left[\frac{x}{2}\right]\right] - 3\,\text{Log}\left[\text{Sin}\left[\frac{x}{2}\right]\right]\right) + \text{Cos}\left[\frac{x}{2}\right]\left(-6 - 9\,\text{Log}\left[\text{Cos}\left[\frac{x}{2}\right]\right] + 9\,\text{Log}\left[\text{Sin}\left[\frac{x}{2}\right]\right]\right) - 6\left(3 + 2\,\text{Log}\left[\text{Cos}\left[\frac{x}{2}\right]\right] + \text{Cos}[x]\left(\text{Log}\left[\text{Cos}\left[\frac{x}{2}\right]\right] - \text{Log}\left[\text{Sin}\left[\frac{x}{2}\right]\right]\right) - 2\,\text{Log}\left[\text{Sin}\left[\frac{x}{2}\right]\right]\right)\text{Sin}\left[\frac{x}{2}\right]\right)$$

- **Problem 18: Result more than twice size of optimal antiderivative.**

$$\int \frac{\mathrm{Csc}[x]^2}{(a+a\,\mathrm{Sin}[x])^2}\,dx$$

Optimal (type 3, 45 leaves, 6 steps):

$$\frac{2\,\mathrm{ArcTanh}[\mathrm{Cos}[x]]}{a^2}-\frac{10\,\mathrm{Cot}[x]}{3\,a^2}+\frac{2\,\mathrm{Cot}[x]}{a^2\,(1+\mathrm{Sin}[x])}+\frac{\mathrm{Cot}[x]}{3\,(a+a\,\mathrm{Sin}[x])^2}$$

Result (type 3, 166 leaves):

$$\frac{1}{6\,(a+a\,\mathrm{Sin}[x])^2}\left(\mathrm{Cos}\left[\frac{x}{2}\right]+\mathrm{Sin}\left[\frac{x}{2}\right]\right)\left(4\,\mathrm{Sin}\left[\frac{x}{2}\right]-2\left(\mathrm{Cos}\left[\frac{x}{2}\right]+\mathrm{Sin}\left[\frac{x}{2}\right]\right)+28\,\mathrm{Sin}\left[\frac{x}{2}\right]\left(\mathrm{Cos}\left[\frac{x}{2}\right]+\mathrm{Sin}\left[\frac{x}{2}\right]\right)^2-3\,\mathrm{Cot}\left[\frac{x}{2}\right]\left(\mathrm{Cos}\left[\frac{x}{2}\right]+\mathrm{Sin}\left[\frac{x}{2}\right]\right)^3+\right.$$
$$\left.12\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{x}{2}\right]\right]\left(\mathrm{Cos}\left[\frac{x}{2}\right]+\mathrm{Sin}\left[\frac{x}{2}\right]\right)^3-12\,\mathrm{Log}\left[\mathrm{Sin}\left[\frac{x}{2}\right]\right]\left(\mathrm{Cos}\left[\frac{x}{2}\right]+\mathrm{Sin}\left[\frac{x}{2}\right]\right)^3+3\left(\mathrm{Cos}\left[\frac{x}{2}\right]+\mathrm{Sin}\left[\frac{x}{2}\right]\right)^3\mathrm{Tan}\left[\frac{x}{2}\right]\right)$$

- **Problem 19: Result more than twice size of optimal antiderivative.**

$$\int \frac{\mathrm{Csc}[x]^3}{(a+a\,\mathrm{Sin}[x])^2}\,dx$$

Optimal (type 3, 64 leaves, 7 steps):

$$-\frac{7\,\mathrm{ArcTanh}[\mathrm{Cos}[x]]}{2\,a^2}+\frac{16\,\mathrm{Cot}[x]}{3\,a^2}-\frac{7\,\mathrm{Cot}[x]\,\mathrm{Csc}[x]}{2\,a^2}+\frac{8\,\mathrm{Cot}[x]\,\mathrm{Csc}[x]}{3\,a^2\,(1+\mathrm{Sin}[x])}+\frac{\mathrm{Cot}[x]\,\mathrm{Csc}[x]}{3\,(a+a\,\mathrm{Sin}[x])^2}$$

Result (type 3, 203 leaves):

$$\frac{1}{24\,a^2\,(1+\mathrm{Sin}[x])^2}\left(\mathrm{Cos}\left[\frac{x}{2}\right]+\mathrm{Sin}\left[\frac{x}{2}\right]\right)$$
$$\left(-16\,\mathrm{Sin}\left[\frac{x}{2}\right]-3\left(1+\mathrm{Cot}\left[\frac{x}{2}\right]\right)^3\mathrm{Sin}\left[\frac{x}{2}\right]+8\left(\mathrm{Cos}\left[\frac{x}{2}\right]+\mathrm{Sin}\left[\frac{x}{2}\right]\right)-160\,\mathrm{Sin}\left[\frac{x}{2}\right]\left(\mathrm{Cos}\left[\frac{x}{2}\right]+\mathrm{Sin}\left[\frac{x}{2}\right]\right)^2+24\,\mathrm{Cot}\left[\frac{x}{2}\right]\left(\mathrm{Cos}\left[\frac{x}{2}\right]+\mathrm{Sin}\left[\frac{x}{2}\right]\right)^3-\right.$$
$$\left.84\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{x}{2}\right]\right]\left(\mathrm{Cos}\left[\frac{x}{2}\right]+\mathrm{Sin}\left[\frac{x}{2}\right]\right)^3+84\,\mathrm{Log}\left[\mathrm{Sin}\left[\frac{x}{2}\right]\right]\left(\mathrm{Cos}\left[\frac{x}{2}\right]+\mathrm{Sin}\left[\frac{x}{2}\right]\right)^3-24\left(\mathrm{Cos}\left[\frac{x}{2}\right]+\mathrm{Sin}\left[\frac{x}{2}\right]\right)^3\mathrm{Tan}\left[\frac{x}{2}\right]+3\,\mathrm{Cos}\left[\frac{x}{2}\right]\left(1+\mathrm{Tan}\left[\frac{x}{2}\right]\right)^3\right)$$

- **Problem 20: Result more than twice size of optimal antiderivative.**

$$\int \frac{\mathrm{Csc}[x]^4}{(a+a\,\mathrm{Sin}[x])^2}\,dx$$

Optimal (type 3, 65 leaves, 7 steps):

$$\frac{5\,\mathrm{ArcTanh}[\mathrm{Cos}[x]]}{a^2}-\frac{4\,\mathrm{Cot}[x]}{a^2}-\frac{\mathrm{Cot}[x]^3}{3\,a^2}+\frac{\mathrm{Cot}[x]\,\mathrm{Csc}[x]}{a^2}-\frac{\mathrm{Cos}[x]}{3\,a^2\,(1+\mathrm{Sin}[x])^2}-\frac{13\,\mathrm{Cos}[x]}{3\,a^2\,(1+\mathrm{Sin}[x])}$$

Result (type 3, 374 leaves):

$$\frac{2\,\text{Sin}\left[\frac{x}{2}\right]\left(\text{Cos}\left[\frac{x}{2}\right]+\text{Sin}\left[\frac{x}{2}\right]\right)}{3\,(a+a\,\text{Sin}[x])^2}-\frac{\left(\text{Cos}\left[\frac{x}{2}\right]+\text{Sin}\left[\frac{x}{2}\right]\right)^2}{3\,(a+a\,\text{Sin}[x])^2}+\frac{26\,\text{Sin}\left[\frac{x}{2}\right]\left(\text{Cos}\left[\frac{x}{2}\right]+\text{Sin}\left[\frac{x}{2}\right]\right)^3}{3\,(a+a\,\text{Sin}[x])^2}-\frac{11\,\text{Cot}\left[\frac{x}{2}\right]\left(\text{Cos}\left[\frac{x}{2}\right]+\text{Sin}\left[\frac{x}{2}\right]\right)^4}{6\,(a+a\,\text{Sin}[x])^2}+$$
$$\frac{\text{Csc}\left[\frac{x}{2}\right]^2\left(\text{Cos}\left[\frac{x}{2}\right]+\text{Sin}\left[\frac{x}{2}\right]\right)^4}{4\,(a+a\,\text{Sin}[x])^2}-\frac{\text{Cot}\left[\frac{x}{2}\right]\text{Csc}\left[\frac{x}{2}\right]^2\left(\text{Cos}\left[\frac{x}{2}\right]+\text{Sin}\left[\frac{x}{2}\right]\right)^4}{24\,(a+a\,\text{Sin}[x])^2}+\frac{5\,\text{Log}\left[\text{Cos}\left[\frac{x}{2}\right]\right]\left(\text{Cos}\left[\frac{x}{2}\right]+\text{Sin}\left[\frac{x}{2}\right]\right)^4}{(a+a\,\text{Sin}[x])^2}-$$
$$\frac{5\,\text{Log}\left[\text{Sin}\left[\frac{x}{2}\right]\right]\left(\text{Cos}\left[\frac{x}{2}\right]+\text{Sin}\left[\frac{x}{2}\right]\right)^4}{(a+a\,\text{Sin}[x])^2}-\frac{\text{Sec}\left[\frac{x}{2}\right]^2\left(\text{Cos}\left[\frac{x}{2}\right]+\text{Sin}\left[\frac{x}{2}\right]\right)^4}{4\,(a+a\,\text{Sin}[x])^2}+\frac{11\left(\text{Cos}\left[\frac{x}{2}\right]+\text{Sin}\left[\frac{x}{2}\right]\right)^4\text{Tan}\left[\frac{x}{2}\right]}{6\,(a+a\,\text{Sin}[x])^2}+\frac{\text{Sec}\left[\frac{x}{2}\right]^2\left(\text{Cos}\left[\frac{x}{2}\right]+\text{Sin}\left[\frac{x}{2}\right]\right)^4\text{Tan}\left[\frac{x}{2}\right]}{24\,(a+a\,\text{Sin}[x])^2}$$

- **Problem 28: Result more than twice size of optimal antiderivative.**

$$\int \frac{\text{Csc}[x]}{(a+a\,\text{Sin}[x])^3}\,dx$$

Optimal (type 3, 58 leaves, 5 steps):

$$-\frac{\text{ArcTanh}[\text{Cos}[x]]}{a^3}+\frac{\text{Cos}[x]}{5\,(a+a\,\text{Sin}[x])^3}+\frac{7\,\text{Cos}[x]}{15\,a\,(a+a\,\text{Sin}[x])^2}+\frac{22\,\text{Cos}[x]}{15\,(a^3+a^3\,\text{Sin}[x])}$$

Result (type 3, 160 leaves):

$$\frac{1}{15\,(a+a\,\text{Sin}[x])^3}\left(\text{Cos}\left[\frac{x}{2}\right]+\text{Sin}\left[\frac{x}{2}\right]\right)\left(-6\,\text{Sin}\left[\frac{x}{2}\right]+3\left(\text{Cos}\left[\frac{x}{2}\right]+\text{Sin}\left[\frac{x}{2}\right]\right)-14\,\text{Sin}\left[\frac{x}{2}\right]\left(\text{Cos}\left[\frac{x}{2}\right]+\text{Sin}\left[\frac{x}{2}\right]\right)^2+7\left(\text{Cos}\left[\frac{x}{2}\right]+\text{Sin}\left[\frac{x}{2}\right]\right)^3-\right.$$
$$\left.44\,\text{Sin}\left[\frac{x}{2}\right]\left(\text{Cos}\left[\frac{x}{2}\right]+\text{Sin}\left[\frac{x}{2}\right]\right)^4-15\,\text{Log}\left[\text{Cos}\left[\frac{x}{2}\right]\right]\left(\text{Cos}\left[\frac{x}{2}\right]+\text{Sin}\left[\frac{x}{2}\right]\right)^5+15\,\text{Log}\left[\text{Sin}\left[\frac{x}{2}\right]\right]\left(\text{Cos}\left[\frac{x}{2}\right]+\text{Sin}\left[\frac{x}{2}\right]\right)^5\right)$$

- **Problem 29: Result more than twice size of optimal antiderivative.**

$$\int \frac{\text{Csc}[x]^2}{(a+a\,\text{Sin}[x])^3}\,dx$$

Optimal (type 3, 65 leaves, 7 steps):

$$\frac{3\,\text{ArcTanh}[\text{Cos}[x]]}{a^3}-\frac{24\,\text{Cot}[x]}{5\,a^3}+\frac{\text{Cot}[x]}{5\,(a+a\,\text{Sin}[x])^3}+\frac{3\,\text{Cot}[x]}{5\,a\,(a+a\,\text{Sin}[x])^2}+\frac{3\,\text{Cot}[x]}{a^3+a^3\,\text{Sin}[x]}$$

Result (type 3, 206 leaves):

$$\frac{1}{10\,(a+a\,\text{Sin}[x])^3}$$
$$\left(\text{Cos}\left[\frac{x}{2}\right]+\text{Sin}\left[\frac{x}{2}\right]\right)\left(4\,\text{Sin}\left[\frac{x}{2}\right]-2\left(\text{Cos}\left[\frac{x}{2}\right]+\text{Sin}\left[\frac{x}{2}\right]\right)+16\,\text{Sin}\left[\frac{x}{2}\right]\left(\text{Cos}\left[\frac{x}{2}\right]+\text{Sin}\left[\frac{x}{2}\right]\right)^2-8\left(\text{Cos}\left[\frac{x}{2}\right]+\text{Sin}\left[\frac{x}{2}\right]\right)^3+76\,\text{Sin}\left[\frac{x}{2}\right]\left(\text{Cos}\left[\frac{x}{2}\right]+\text{Sin}\left[\frac{x}{2}\right]\right)^4-\right.$$
$$\left.5\,\text{Cot}\left[\frac{x}{2}\right]\left(\text{Cos}\left[\frac{x}{2}\right]+\text{Sin}\left[\frac{x}{2}\right]\right)^5+30\,\text{Log}\left[\text{Cos}\left[\frac{x}{2}\right]\right]\left(\text{Cos}\left[\frac{x}{2}\right]+\text{Sin}\left[\frac{x}{2}\right]\right)^5-30\,\text{Log}\left[\text{Sin}\left[\frac{x}{2}\right]\right]\left(\text{Cos}\left[\frac{x}{2}\right]+\text{Sin}\left[\frac{x}{2}\right]\right)^5+5\left(\text{Cos}\left[\frac{x}{2}\right]+\text{Sin}\left[\frac{x}{2}\right]\right)^5\text{Tan}\left[\frac{x}{2}\right]\right)$$

Problem 30: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Csc}[x]^3}{(a+a\,\text{Sin}[x])^3}\,dx$$

Optimal (type 3, 86 leaves, 8 steps):

$$-\frac{13\,\text{ArcTanh}[\text{Cos}[x]]}{2\,a^3}+\frac{152\,\text{Cot}[x]}{15\,a^3}-\frac{13\,\text{Cot}[x]\,\text{Csc}[x]}{2\,a^3}+\frac{\text{Cot}[x]\,\text{Csc}[x]}{5\,(a+a\,\text{Sin}[x])^3}+\frac{11\,\text{Cot}[x]\,\text{Csc}[x]}{15\,a\,(a+a\,\text{Sin}[x])^2}+\frac{76\,\text{Cot}[x]\,\text{Csc}[x]}{15\,\left(a^3+a^3\,\text{Sin}[x]\right)}$$

Result (type 3, 247 leaves):

$$\frac{1}{120\,a^3\,(1+\text{Sin}[x])^3}\left(\text{Cos}\left[\frac{x}{2}\right]+\text{Sin}\left[\frac{x}{2}\right]\right)$$
$$\left(-48\,\text{Sin}\left[\frac{x}{2}\right]-15\left(1+\text{Cot}\left[\frac{x}{2}\right]\right)^5\text{Sin}\left[\frac{x}{2}\right]^3+24\left(\text{Cos}\left[\frac{x}{2}\right]+\text{Sin}\left[\frac{x}{2}\right]\right)-272\,\text{Sin}\left[\frac{x}{2}\right]\left(\text{Cos}\left[\frac{x}{2}\right]+\text{Sin}\left[\frac{x}{2}\right]\right)^2+136\left(\text{Cos}\left[\frac{x}{2}\right]+\text{Sin}\left[\frac{x}{2}\right]\right)^3-\right.$$
$$1712\,\text{Sin}\left[\frac{x}{2}\right]\left(\text{Cos}\left[\frac{x}{2}\right]+\text{Sin}\left[\frac{x}{2}\right]\right)^4+180\,\text{Cot}\left[\frac{x}{2}\right]\left(\text{Cos}\left[\frac{x}{2}\right]+\text{Sin}\left[\frac{x}{2}\right]\right)^5-780\,\text{Log}\left[\text{Cos}\left[\frac{x}{2}\right]\right]\left(\text{Cos}\left[\frac{x}{2}\right]+\text{Sin}\left[\frac{x}{2}\right]\right)^5+$$
$$\left.780\,\text{Log}\left[\text{Sin}\left[\frac{x}{2}\right]\right]\left(\text{Cos}\left[\frac{x}{2}\right]+\text{Sin}\left[\frac{x}{2}\right]\right)^5-180\left(\text{Cos}\left[\frac{x}{2}\right]+\text{Sin}\left[\frac{x}{2}\right]\right)^5\text{Tan}\left[\frac{x}{2}\right]+15\,\text{Cos}\left[\frac{x}{2}\right]^3\left(1+\text{Tan}\left[\frac{x}{2}\right]\right)^5\right)$$

Problem 31: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Csc}[x]^4}{(a+a\,\text{Sin}[x])^3}\,dx$$

Optimal (type 3, 103 leaves, 8 steps):

$$\frac{23\,\text{ArcTanh}[\text{Cos}[x]]}{2\,a^3}-\frac{136\,\text{Cot}[x]}{5\,a^3}-\frac{136\,\text{Cot}[x]^3}{15\,a^3}+\frac{23\,\text{Cot}[x]\,\text{Csc}[x]}{2\,a^3}+\frac{\text{Cot}[x]\,\text{Csc}[x]^2}{5\,(a+a\,\text{Sin}[x])^3}+\frac{13\,\text{Cot}[x]\,\text{Csc}[x]^2}{15\,a\,(a+a\,\text{Sin}[x])^2}+\frac{23\,\text{Cot}[x]\,\text{Csc}[x]^2}{3\,\left(a^3+a^3\,\text{Sin}[x]\right)}$$

Result (type 3, 299 leaves):

$$\frac{1}{120\,a^3\,(1+\text{Sin}[x])^3}\left(\text{Cos}\left[\frac{x}{2}\right]+\text{Sin}\left[\frac{x}{2}\right]\right)$$
$$\left(48\,\text{Sin}\left[\frac{x}{2}\right]-5\,\text{Cos}\left[\frac{x}{2}\right]\left(1+\text{Cot}\left[\frac{x}{2}\right]\right)^5\text{Sin}\left[\frac{x}{2}\right]^2+45\left(1+\text{Cot}\left[\frac{x}{2}\right]\right)^5\text{Sin}\left[\frac{x}{2}\right]^3-24\left(\text{Cos}\left[\frac{x}{2}\right]+\text{Sin}\left[\frac{x}{2}\right]\right)+352\,\text{Sin}\left[\frac{x}{2}\right]\left(\text{Cos}\left[\frac{x}{2}\right]+\text{Sin}\left[\frac{x}{2}\right]\right)^2-\right.$$
$$176\left(\text{Cos}\left[\frac{x}{2}\right]+\text{Sin}\left[\frac{x}{2}\right]\right)^3+2752\,\text{Sin}\left[\frac{x}{2}\right]\left(\text{Cos}\left[\frac{x}{2}\right]+\text{Sin}\left[\frac{x}{2}\right]\right)^4-400\,\text{Cot}\left[\frac{x}{2}\right]\left(\text{Cos}\left[\frac{x}{2}\right]+\text{Sin}\left[\frac{x}{2}\right]\right)^5+1380\,\text{Log}\left[\text{Cos}\left[\frac{x}{2}\right]\right]\left(\text{Cos}\left[\frac{x}{2}\right]+\text{Sin}\left[\frac{x}{2}\right]\right)^5-$$
$$\left.1380\,\text{Log}\left[\text{Sin}\left[\frac{x}{2}\right]\right]\left(\text{Cos}\left[\frac{x}{2}\right]+\text{Sin}\left[\frac{x}{2}\right]\right)^5+400\left(\text{Cos}\left[\frac{x}{2}\right]+\text{Sin}\left[\frac{x}{2}\right]\right)^5\text{Tan}\left[\frac{x}{2}\right]-45\,\text{Cos}\left[\frac{x}{2}\right]^3\left(1+\text{Tan}\left[\frac{x}{2}\right]\right)^5+5\,\text{Cos}\left[\frac{x}{2}\right]^2\text{Sin}\left[\frac{x}{2}\right]\left(1+\text{Tan}\left[\frac{x}{2}\right]\right)^5\right)$$

Problem 36: Result more than twice size of optimal antiderivative.

$$\int \sqrt{a+a\,\text{Sin}[c+d\,x]}\,dx$$

Optimal (type 3, 26 leaves, 1 step):

$$-\frac{2\,a\,\text{Cos}[c+d\,x]}{d\,\sqrt{a+a\,\text{Sin}[c+d\,x]}}$$

Result (type 3, 65 leaves) :

$$\frac{2\left(-\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)\sqrt{a\,(1+\text{Sin}[c+d\,x])}}{d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)}$$

Problem 37: Result more than twice size of optimal antiderivative.

$$\int \text{Csc}[c+d\,x]\,\sqrt{a+a\,\text{Sin}[c+d\,x]}\,dx$$

Optimal (type 3, 37 leaves, 2 steps) :

$$-\frac{2\,\sqrt{a}\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\text{Cos}[c+d\,x]}{\sqrt{a+a\,\text{Sin}[c+d\,x]}}\right]}{d}$$

Result (type 3, 94 leaves) :

$$\left(\left(-\text{Log}\left[1+\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]+\text{Log}\left[1-\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]\right)\sqrt{a\,(1+\text{Sin}[c+d\,x])}\right)\Big/ \left(d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)\right)$$

Problem 38: Result more than twice size of optimal antiderivative.

$$\int \text{Csc}[c+d\,x]^2\,\sqrt{a+a\,\text{Sin}[c+d\,x]}\,dx$$

Optimal (type 3, 64 leaves, 3 steps) :

$$-\frac{\sqrt{a}\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\text{Cos}[c+d\,x]}{\sqrt{a+a\,\text{Sin}[c+d\,x]}}\right]}{d}-\frac{a\,\text{Cot}[c+d\,x]}{d\,\sqrt{a+a\,\text{Sin}[c+d\,x]}}$$

Result (type 3, 178 leaves) :

$$-\left(\text{Csc}\left[\frac{1}{2}(c+d\,x)\right]^4\sqrt{a\,(1+\text{Sin}[c+d\,x])}\left(2\,\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-2\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]+\left(\text{Log}\left[1+\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]-\text{Log}\left[1-\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]\right)\text{Sin}[c+d\,x]\right)\right)\Big/ \left(d\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right)\left(\text{Csc}\left[\frac{1}{4}(c+d\,x)\right]-\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]\right)\left(\text{Csc}\left[\frac{1}{4}(c+d\,x)\right]+\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]\right)\right)$$

Problem 39: Result more than twice size of optimal antiderivative.

$$\int \text{Csc}[c+d\,x]^3\,\sqrt{a+a\,\text{Sin}[c+d\,x]}\,dx$$

Optimal (type 3, 102 leaves, 4 steps):

$$-\frac{3\sqrt{a}\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\text{Cos}[c+d x]}{\sqrt{a+a\,\text{Sin}[c+d x]}}\right]}{4 d}-\frac{3 a\,\text{Cot}[c+d x]}{4 d\sqrt{a+a\,\text{Sin}[c+d x]}}-\frac{a\,\text{Cot}[c+d x]\,\text{Csc}[c+d x]}{2 d\sqrt{a+a\,\text{Sin}[c+d x]}}$$

Result (type 3, 249 leaves):

$$\frac{1}{4 d\left(1+\text{Cot}\left[\frac{1}{2}(c+d x)\right]\right)\left(\text{Csc}\left[\frac{1}{4}(c+d x)\right]^2-\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2\right)^2}$$
$$\text{Csc}\left[\frac{1}{2}(c+d x)\right]^7\sqrt{a\,(1+\text{Sin}[c+d x])}\left(-2\,\text{Cos}\left[\frac{1}{2}(c+d x)\right]-6\,\text{Cos}\left[\frac{3}{2}(c+d x)\right]-3\,\text{Log}\left[1+\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]+\right.$$
$$3\,\text{Cos}[2(c+d x)]\,\text{Log}\left[1+\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]+3\,\text{Log}\left[1-\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]-$$
$$\left.3\,\text{Cos}[2(c+d x)]\,\text{Log}\left[1-\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]+2\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]-6\,\text{Sin}\left[\frac{3}{2}(c+d x)\right]\right)$$

Problem 40: Result more than twice size of optimal antiderivative.

$$\int \text{Csc}[c+d x]^4\sqrt{a+a\,\text{Sin}[c+d x]}\,dx$$

Optimal (type 3, 138 leaves, 5 steps):

$$-\frac{5\sqrt{a}\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\text{Cos}[c+d x]}{\sqrt{a+a\,\text{Sin}[c+d x]}}\right]}{8 d}-\frac{5 a\,\text{Cot}[c+d x]}{8 d\sqrt{a+a\,\text{Sin}[c+d x]}}-\frac{5 a\,\text{Cot}[c+d x]\,\text{Csc}[c+d x]}{12 d\sqrt{a+a\,\text{Sin}[c+d x]}}-\frac{a\,\text{Cot}[c+d x]\,\text{Csc}[c+d x]^2}{3 d\sqrt{a+a\,\text{Sin}[c+d x]}}$$

Result (type 3, 285 leaves):

$$\frac{1}{24 d\left(1+\text{Cot}\left[\frac{1}{2}(c+d x)\right]\right)\left(\text{Csc}\left[\frac{1}{4}(c+d x)\right]^2-\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2\right)^3}$$
$$\text{Csc}\left[\frac{1}{2}(c+d x)\right]^{10}\sqrt{a\,(1+\text{Sin}[c+d x])}\left(-84\,\text{Cos}\left[\frac{1}{2}(c+d x)\right]-10\,\text{Cos}\left[\frac{3}{2}(c+d x)\right]+\right.$$
$$30\,\text{Cos}\left[\frac{5}{2}(c+d x)\right]+84\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]-45\,\text{Log}\left[1+\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]\text{Sin}[c+d x]+$$
$$45\,\text{Log}\left[1-\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]\text{Sin}[c+d x]-10\,\text{Sin}\left[\frac{3}{2}(c+d x)\right]-30\,\text{Sin}\left[\frac{5}{2}(c+d x)\right]+$$
$$\left.15\,\text{Log}\left[1+\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]\text{Sin}[3(c+d x)]-15\,\text{Log}\left[1-\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]\text{Sin}[3(c+d x)]\right)$$

Problem 41: Result more than twice size of optimal antiderivative.

$$\int \text{Csc}[c+d x]\sqrt{a-a\,\text{Sin}[c+d x]}\,dx$$

Optimal (type 3, 38 leaves, 2 steps):

$$-\frac{2\sqrt{a}\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\text{Cos}[c+d\,x]}{\sqrt{a-a\,\text{Sin}[c+d\,x]}}\right]}{d}$$

Result (type 3, 97 leaves):

$$\left(\left(\text{Log}\left[1-\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]-\text{Log}\left[1+\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]\right)\sqrt{a-a\,\text{Sin}[c+d\,x]}\right)\Big/\left(d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)\right)$$

Problem 42: Result more than twice size of optimal antiderivative.

$$\int \text{Csc}[c+d\,x]\,\sqrt{-a+a\,\text{Sin}[c+d\,x]}\,dx$$

Optimal (type 3, 39 leaves, 2 steps):

$$\frac{2\sqrt{a}\,\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Cos}[c+d\,x]}{\sqrt{-a+a\,\text{Sin}[c+d\,x]}}\right]}{d}$$

Result (type 3, 96 leaves):

$$\left(\left(\text{Log}\left[1-\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]-\text{Log}\left[1+\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]\right)\sqrt{a\,(-1+\text{Sin}[c+d\,x])}\right)\Big/\left(d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)\right)$$

Problem 43: Result more than twice size of optimal antiderivative.

$$\int \text{Csc}[c+d\,x]\,\sqrt{-a-a\,\text{Sin}[c+d\,x]}\,dx$$

Optimal (type 3, 40 leaves, 2 steps):

$$\frac{2\sqrt{a}\,\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Cos}[c+d\,x]}{\sqrt{-a-a\,\text{Sin}[c+d\,x]}}\right]}{d}$$

Result (type 3, 95 leaves):

$$\left(\left(-\text{Log}\left[1+\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]+\text{Log}\left[1-\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]\right)\sqrt{-a\,(1+\text{Sin}[c+d\,x])}\right)\Big/\left(d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)\right)$$

Problem 49: Result more than twice size of optimal antiderivative.

$$\int \operatorname{Csc}[c+d x]^2 (a+a \operatorname{Sin}[c+d x])^{3/2} \, dx$$

Optimal (type 3, 66 leaves, 4 steps):

$$-\frac{3 a^{3/2} \operatorname{ArcTanh}\left[\frac{\sqrt{a} \operatorname{Cos}[c+d x]}{\sqrt{a+a \operatorname{Sin}[c+d x]}}\right]}{d}-\frac{a^2 \operatorname{Cot}[c+d x]}{d \sqrt{a+a \operatorname{Sin}[c+d x]}}$$

Result (type 3, 180 leaves):

$$-\left(a \operatorname{Csc}\left[\frac{1}{2} (c+d x)\right]^4 \sqrt{a (1+\operatorname{Sin}[c+d x])} \left(2 \operatorname{Cos}\left[\frac{1}{2} (c+d x)\right]-2 \operatorname{Sin}\left[\frac{1}{2} (c+d x)\right]+ 3 \left(\operatorname{Log}\left[1+\operatorname{Cos}\left[\frac{1}{2} (c+d x)\right]-\operatorname{Sin}\left[\frac{1}{2} (c+d x)\right]\right]-\operatorname{Log}\left[1-\operatorname{Cos}\left[\frac{1}{2} (c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2} (c+d x)\right]\right]\right) \operatorname{Sin}[c+d x]\right)\right) \Big/ \left(d \left(1+\operatorname{Cot}\left[\frac{1}{2} (c+d x)\right]\right) \left(\operatorname{Csc}\left[\frac{1}{4} (c+d x)\right]-\operatorname{Sec}\left[\frac{1}{4} (c+d x)\right]\right) \left(\operatorname{Csc}\left[\frac{1}{4} (c+d x)\right]+\operatorname{Sec}\left[\frac{1}{4} (c+d x)\right]\right)\right)$$

Problem 50: Result more than twice size of optimal antiderivative.

$$\int \operatorname{Csc}[c+d x]^3 (a+a \operatorname{Sin}[c+d x])^{3/2} \, dx$$

Optimal (type 3, 106 leaves, 5 steps):

$$-\frac{7 a^{3/2} \operatorname{ArcTanh}\left[\frac{\sqrt{a} \operatorname{Cos}[c+d x]}{\sqrt{a+a \operatorname{Sin}[c+d x]}}\right]}{4 d}-\frac{7 a^2 \operatorname{Cot}[c+d x]}{4 d \sqrt{a+a \operatorname{Sin}[c+d x]}}-\frac{a^2 \operatorname{Cot}[c+d x] \operatorname{Csc}[c+d x]}{2 d \sqrt{a+a \operatorname{Sin}[c+d x]}}$$

Result (type 3, 250 leaves):

$$\frac{1}{4 d \left(1+\operatorname{Cot}\left[\frac{1}{2} (c+d x)\right]\right) \left(\operatorname{Csc}\left[\frac{1}{4} (c+d x)\right]^2-\operatorname{Sec}\left[\frac{1}{4} (c+d x)\right]^2\right)^2} a \operatorname{Csc}\left[\frac{1}{2} (c+d x)\right]^7 \sqrt{a (1+\operatorname{Sin}[c+d x])} \left(6 \operatorname{Cos}\left[\frac{1}{2} (c+d x)\right]-14 \operatorname{Cos}\left[\frac{3}{2} (c+d x)\right]-7 \operatorname{Log}\left[1+\operatorname{Cos}\left[\frac{1}{2} (c+d x)\right]-\operatorname{Sin}\left[\frac{1}{2} (c+d x)\right]\right]+ 7 \operatorname{Cos}[2 (c+d x)] \operatorname{Log}\left[1+\operatorname{Cos}\left[\frac{1}{2} (c+d x)\right]-\operatorname{Sin}\left[\frac{1}{2} (c+d x)\right]\right]+7 \operatorname{Log}\left[1-\operatorname{Cos}\left[\frac{1}{2} (c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2} (c+d x)\right]\right]- 7 \operatorname{Cos}[2 (c+d x)] \operatorname{Log}\left[1-\operatorname{Cos}\left[\frac{1}{2} (c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2} (c+d x)\right]\right]-6 \operatorname{Sin}\left[\frac{1}{2} (c+d x)\right]-14 \operatorname{Sin}\left[\frac{3}{2} (c+d x)\right]\right)$$

Problem 58: Result more than twice size of optimal antiderivative.

$$\int \operatorname{Csc}[c+d x]^3 (a+a \operatorname{Sin}[c+d x])^{5/2} \, dx$$

Optimal (type 3, 106 leaves, 4 steps):

$$-\frac{19\,a^{5/2}\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\text{Cos}[c+d\,x]}{\sqrt{a+a\,\text{Sin}[c+d\,x]}}\right]}{4\,d}-\frac{9\,a^3\,\text{Cot}[c+d\,x]}{4\,d\,\sqrt{a+a\,\text{Sin}[c+d\,x]}}-\frac{a^2\,\text{Cot}[c+d\,x]\,\text{Csc}[c+d\,x]\,\sqrt{a+a\,\text{Sin}[c+d\,x]}}{2\,d}$$

Result (type 3, 252 leaves):

$$\frac{1}{4\,d\,\left(1+\text{Cot}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\,\left(\text{Csc}\left[\frac{1}{4}\,(c+d\,x)\right]^2-\text{Sec}\left[\frac{1}{4}\,(c+d\,x)\right]^2\right)^2}$$
$$a^2\,\text{Csc}\left[\frac{1}{2}\,(c+d\,x)\right]^7\,\sqrt{a\,(1+\text{Sin}[c+d\,x])}\,\left(14\,\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-22\,\text{Cos}\left[\frac{3}{2}\,(c+d\,x)\right]-19\,\text{Log}\left[1+\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]+\right.$$
$$19\,\text{Cos}[2\,(c+d\,x)]\,\text{Log}\left[1+\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]+19\,\text{Log}\left[1-\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]-$$
$$\left.19\,\text{Cos}[2\,(c+d\,x)]\,\text{Log}\left[1-\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]-14\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]-22\,\text{Sin}\left[\frac{3}{2}\,(c+d\,x)\right]\right)$$

Problem 60: Result more than twice size of optimal antiderivative.

$$\int \text{Csc}[c+d\,x]^5\,(a+a\,\text{Sin}[c+d\,x])^{5/2}\,dx$$

Optimal (type 3, 182 leaves, 6 steps):

$$-\frac{163\,a^{5/2}\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\text{Cos}[c+d\,x]}{\sqrt{a+a\,\text{Sin}[c+d\,x]}}\right]}{64\,d}-\frac{163\,a^3\,\text{Cot}[c+d\,x]}{64\,d\,\sqrt{a+a\,\text{Sin}[c+d\,x]}}-\frac{163\,a^3\,\text{Cot}[c+d\,x]\,\text{Csc}[c+d\,x]}{96\,d\,\sqrt{a+a\,\text{Sin}[c+d\,x]}}-$$
$$\frac{17\,a^3\,\text{Cot}[c+d\,x]\,\text{Csc}[c+d\,x]^2}{24\,d\,\sqrt{a+a\,\text{Sin}[c+d\,x]}}-\frac{a^2\,\text{Cot}[c+d\,x]\,\text{Csc}[c+d\,x]^3\,\sqrt{a+a\,\text{Sin}[c+d\,x]}}{4\,d}$$

Result (type 3, 370 leaves):

$$-\frac{1}{192\,d\,\left(1+\text{Cot}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\,\left(\text{Csc}\left[\frac{1}{4}\,(c+d\,x)\right]^2-\text{Sec}\left[\frac{1}{4}\,(c+d\,x)\right]^2\right)^4}$$
$$a^2\,\text{Csc}\left[\frac{1}{2}\,(c+d\,x)\right]^{13}\,\sqrt{a\,(1+\text{Sin}[c+d\,x])}\,\left(-1030\,\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+3102\,\text{Cos}\left[\frac{3}{2}\,(c+d\,x)\right]-326\,\text{Cos}\left[\frac{5}{2}\,(c+d\,x)\right]-978\,\text{Cos}\left[\frac{7}{2}\,(c+d\,x)\right]+\right.$$
$$1467\,\text{Log}\left[1+\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]-1956\,\text{Cos}[2\,(c+d\,x)]\,\text{Log}\left[1+\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]+$$
$$489\,\text{Cos}[4\,(c+d\,x)]\,\text{Log}\left[1+\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]-1467\,\text{Log}\left[1-\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]+$$
$$1956\,\text{Cos}[2\,(c+d\,x)]\,\text{Log}\left[1-\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]-489\,\text{Cos}[4\,(c+d\,x)]\,\text{Log}\left[1-\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]+$$
$$\left.1030\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]+3102\,\text{Sin}\left[\frac{3}{2}\,(c+d\,x)\right]+326\,\text{Sin}\left[\frac{5}{2}\,(c+d\,x)\right]-978\,\text{Sin}\left[\frac{7}{2}\,(c+d\,x)\right]\right)$$

Problem 61: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{\text{Sin}[c+d x]^3}{\sqrt{a+a \text{Sin}[c+d x]}}\,dx$$

Optimal (type 3, 139 leaves, 6 steps):

$$\frac{\sqrt{2}\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\text{Cos}[c+d x]}{\sqrt{2}\,\sqrt{a+a \text{Sin}[c+d x]}}\right]}{\sqrt{a}\,d}-\frac{28\,\text{Cos}[c+d x]}{15\,d\,\sqrt{a+a \text{Sin}[c+d x]}}-\frac{2\,\text{Cos}[c+d x]\,\text{Sin}[c+d x]^2}{5\,d\,\sqrt{a+a \text{Sin}[c+d x]}}+\frac{2\,\text{Cos}[c+d x]\,\sqrt{a+a \text{Sin}[c+d x]}}{15\,a\,d}$$

Result (type 3, 150 leaves):

$$\left(\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)\left((-60-60\,i)\,(-1)^{3/4}\,\text{ArcTanh}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{3/4}\left(-1+\text{Tan}\left[\frac{1}{4}(c+d x)\right]\right)\right]-60\,\text{Cos}\left[\frac{1}{2}(c+d x)\right]+5\,\text{Cos}\left[\frac{3}{2}(c+d x)\right]+3\,\text{Cos}\left[\frac{5}{2}(c+d x)\right]+60\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]+5\,\text{Sin}\left[\frac{3}{2}(c+d x)\right]-3\,\text{Sin}\left[\frac{5}{2}(c+d x)\right]\right)\right)\Big/\left(30\,d\,\sqrt{a\,(1+\text{Sin}[c+d x])}\right)$$

Problem 62: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{\text{Sin}[c+d x]^2}{\sqrt{a+a \text{Sin}[c+d x]}}\,dx$$

Optimal (type 3, 105 leaves, 4 steps):

$$-\frac{\sqrt{2}\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\text{Cos}[c+d x]}{\sqrt{2}\,\sqrt{a+a \text{Sin}[c+d x]}}\right]}{\sqrt{a}\,d}+\frac{4\,\text{Cos}[c+d x]}{3\,d\,\sqrt{a+a \text{Sin}[c+d x]}}-\frac{2\,\text{Cos}[c+d x]\,\sqrt{a+a \text{Sin}[c+d x]}}{3\,a\,d}$$

Result (type 3, 105 leaves):

$$-\frac{1}{3\,d\,\sqrt{a\,(1+\text{Sin}[c+d x])}}\left((-6-6\,i)\,(-1)^{3/4}\,\text{ArcTanh}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{3/4}\left(-1+\text{Tan}\left[\frac{1}{4}(c+d x)\right]\right)\right]-2\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3\right)\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)$$

Problem 63: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{\text{Sin}[c+d x]}{\sqrt{a+a \text{Sin}[c+d x]}}\,dx$$

Optimal (type 3, 72 leaves, 3 steps):

$$\frac{\sqrt{2}\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\text{Cos}[c+d x]}{\sqrt{2}\,\sqrt{a+a \text{Sin}[c+d x]}}\right]}{\sqrt{a}\,d}-\frac{2\,\text{Cos}[c+d x]}{d\,\sqrt{a+a \text{Sin}[c+d x]}}$$

Result (type 3, 98 leaves):

$$-\frac{1}{d\sqrt{a\,(1+\text{Sin}[c+d\,x])}}2\left((1+i)\,(-1)^{3/4}\,\text{ArcTanh}\left[\left(\frac{1}{2}+\frac{i}{2}\right)\,(-1)^{3/4}\left(-1+\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]\right)\right]+\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)$$

- **Problem 64: Result unnecessarily involves imaginary or complex numbers.**

$$\int\frac{1}{\sqrt{a+a\,\text{Sin}[c+d\,x]}}\,dx$$

Optimal (type 3, 47 leaves, 2 steps):

$$-\frac{\sqrt{2}\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\text{Cos}[c+d\,x]}{\sqrt{2}\,\sqrt{a+a\,\text{Sin}[c+d\,x]}}\right]}{\sqrt{a}\,d}$$

Result (type 3, 73 leaves):

$$\frac{(2+2\,i)\,(-1)^{3/4}\,\text{ArcTanh}\left[\left(\frac{1}{2}+\frac{i}{2}\right)\,(-1)^{3/4}\left(-1+\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]\right)\right]\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)}{d\sqrt{a\,(1+\text{Sin}[c+d\,x])}}$$

- **Problem 65: Result unnecessarily involves imaginary or complex numbers.**

$$\int\frac{\text{Csc}[c+d\,x]}{\sqrt{a+a\,\text{Sin}[c+d\,x]}}\,dx$$

Optimal (type 3, 84 leaves, 5 steps):

$$-\frac{2\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\text{Cos}[c+d\,x]}{\sqrt{a+a\,\text{Sin}[c+d\,x]}}\right]}{\sqrt{a}\,d}+\frac{\sqrt{2}\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\text{Cos}[c+d\,x]}{\sqrt{2}\,\sqrt{a+a\,\text{Sin}[c+d\,x]}}\right]}{\sqrt{a}\,d}$$

Result (type 3, 128 leaves):

$$-\frac{1}{d\sqrt{a\,(1+\text{Sin}[c+d\,x])}}\left((2+2\,i)\,(-1)^{3/4}\,\text{ArcTanh}\left[\left(\frac{1}{2}+\frac{i}{2}\right)\,(-1)^{3/4}\left(-1+\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]\right)\right]+\right.$$
$$\left.\text{Log}\left[1+\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]-\text{Log}\left[1-\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\right)\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)$$

- **Problem 66: Result unnecessarily involves imaginary or complex numbers.**

$$\int\frac{\text{Csc}[c+d\,x]^2}{\sqrt{a+a\,\text{Sin}[c+d\,x]}}\,dx$$

Optimal (type 3, 109 leaves, 6 steps):

$$\frac{\text{ArcTanh}\left[\frac{\sqrt{a}\,\text{Cos}[c+d\,x]}{\sqrt{a+a\,\text{Sin}[c+d\,x]}}\right]}{\sqrt{a}\,d}-\frac{\sqrt{2}\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\text{Cos}[c+d\,x]}{\sqrt{2}\,\sqrt{a+a\,\text{Sin}[c+d\,x]}}\right]}{\sqrt{a}\,d}-\frac{\text{Cot}[c+d\,x]}{d\,\sqrt{a+a\,\text{Sin}[c+d\,x]}}$$

Result (type 3, 168 leaves) :

$$\frac{1}{4\,d\,\sqrt{a\,(1+\text{Sin}[c+d\,x])}}\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\left((8+8\,i)\,(-1)^{3/4}\,\text{ArcTanh}\left[\left(\frac{1}{2}+\frac{i}{2}\right)\,(-1)^{3/4}\left(-1+\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]\right)\right]-\text{Cot}\left[\frac{1}{4}\,(c+d\,x)\right]+\right.$$
$$\left.2\,\text{Log}\left[1+\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]-2\,\text{Log}\left[1-\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]+2\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]\right)$$

- **Problem 67: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int\frac{\text{Csc}[c+d\,x]^3}{\sqrt{a+a\,\text{Sin}[c+d\,x]}}\,dx$$

Optimal (type 3, 146 leaves, 7 steps) :

$$-\frac{7\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\text{Cos}[c+d\,x]}{\sqrt{a+a\,\text{Sin}[c+d\,x]}}\right]}{4\,\sqrt{a}\,d}+\frac{\sqrt{2}\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\text{Cos}[c+d\,x]}{\sqrt{2}\,\sqrt{a+a\,\text{Sin}[c+d\,x]}}\right]}{\sqrt{a}\,d}+\frac{\text{Cot}[c+d\,x]}{4\,d\,\sqrt{a+a\,\text{Sin}[c+d\,x]}}-\frac{\text{Cot}[c+d\,x]\,\text{Csc}[c+d\,x]}{2\,d\,\sqrt{a+a\,\text{Sin}[c+d\,x]}}$$

Result (type 3, 767 leaves) :

$$-\frac{\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]}{4 d \sqrt{a(1+\text{Sin}[c+d x])}}+\frac{1}{d \sqrt{a(1+\text{Sin}[c+d x])}}$$

$$(2+2 i)(-1)^{3/4} \text{ArcTanh}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{3/4} \text{Sec}\left[\frac{1}{4}(c+d x)\right]\left(\text{Cos}\left[\frac{1}{4}(c+d x)\right]-\text{Sin}\left[\frac{1}{4}(c+d x)\right]\right)\right]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)+$$

$$\frac{\text{Cot}\left[\frac{1}{4}(c+d x)\right]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)}{8 d \sqrt{a(1+\text{Sin}[c+d x])}}-\frac{\text{Csc}\left[\frac{1}{4}(c+d x)\right]^2\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)}{32 d \sqrt{a(1+\text{Sin}[c+d x])}}-$$

$$\frac{7 \text{Log}\left[1+\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)}{8 d \sqrt{a(1+\text{Sin}[c+d x])}}+$$

$$\frac{7 \text{Log}\left[1-\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)}{8 d \sqrt{a(1+\text{Sin}[c+d x])}}+$$

$$\frac{\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)}{32 d \sqrt{a(1+\text{Sin}[c+d x])}}+\frac{\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]}{16 d\left(\text{Cos}\left[\frac{1}{4}(c+d x)\right]-\text{Sin}\left[\frac{1}{4}(c+d x)\right]\right)^2 \sqrt{a(1+\text{Sin}[c+d x])}}-$$

$$\frac{\text{Sin}\left[\frac{1}{4}(c+d x)\right]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)}{4 d\left(\text{Cos}\left[\frac{1}{4}(c+d x)\right]-\text{Sin}\left[\frac{1}{4}(c+d x)\right]\right) \sqrt{a(1+\text{Sin}[c+d x])}}-\frac{\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]}{16 d\left(\text{Cos}\left[\frac{1}{4}(c+d x)\right]+\text{Sin}\left[\frac{1}{4}(c+d x)\right]\right)^2 \sqrt{a(1+\text{Sin}[c+d x])}}+$$

$$\frac{\text{Sin}\left[\frac{1}{4}(c+d x)\right]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)}{4 d\left(\text{Cos}\left[\frac{1}{4}(c+d x)\right]+\text{Sin}\left[\frac{1}{4}(c+d x)\right]\right) \sqrt{a(1+\text{Sin}[c+d x])}}+\frac{\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right) \text{Tan}\left[\frac{1}{4}(c+d x)\right]}{8 d \sqrt{a(1+\text{Sin}[c+d x])}}$$

- **Problem 68: Result unnecessarily involves imaginary or complex numbers.**

$$\int \frac{\text{Sin}[c+d x]^4}{(a+a \text{Sin}[c+d x])^{3/2}} \, dx$$

Optimal (type 3, 183 leaves, 7 steps):

$$\frac{15 \text{ArcTanh}\left[\frac{\sqrt{a} \text{Cos}[c+d x]}{\sqrt{2} \sqrt{a+a \text{Sin}[c+d x]}}\right]}{2 \sqrt{2} a^{3/2} d}+\frac{\text{Cos}[c+d x] \text{Sin}[c+d x]^3}{2 d(a+a \text{Sin}[c+d x])^{3/2}}-$$

$$\frac{31 \text{Cos}[c+d x]}{5 a d \sqrt{a+a \text{Sin}[c+d x]}}-\frac{9 \text{Cos}[c+d x] \text{Sin}[c+d x]^2}{10 a d \sqrt{a+a \text{Sin}[c+d x]}}+\frac{13 \text{Cos}[c+d x] \sqrt{a+a \text{Sin}[c+d x]}}{10 a^2 d}$$

Result (type 3, 178 leaves):

$$\frac{1}{20\,d\,(a\,(1+\text{Sin}[c+d\,x]))^{3/2}}\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\left(-55\,\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-41\,\text{Cos}\left[\frac{3}{2}\,(c+d\,x)\right]-3\,\text{Cos}\left[\frac{5}{2}\,(c+d\,x)\right]+\text{Cos}\left[\frac{7}{2}\,(c+d\,x)\right]+55\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]-(150+150\,i)\,(-1)^{3/4}\,\text{ArcTanh}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{3/4}\left(-1+\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]\right)\right](1+\text{Sin}[c+d\,x])-41\,\text{Sin}\left[\frac{3}{2}\,(c+d\,x)\right]+3\,\text{Sin}\left[\frac{5}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{7}{2}\,(c+d\,x)\right]\right)$$

Problem 69: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{\text{Sin}[c+d\,x]^3}{(a+a\,\text{Sin}[c+d\,x])^{3/2}}\,dx$$

Optimal (type 3, 145 leaves, 6 steps):

$$-\frac{11\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\text{Cos}[c+d\,x]}{\sqrt{2}\,\sqrt{a+a\,\text{Sin}[c+d\,x]}}\right]}{2\,\sqrt{2}\,a^{3/2}\,d}+\frac{\text{Cos}[c+d\,x]\,\text{Sin}[c+d\,x]^2}{2\,d\,(a+a\,\text{Sin}[c+d\,x])^{3/2}}+\frac{13\,\text{Cos}[c+d\,x]}{3\,a\,d\,\sqrt{a+a\,\text{Sin}[c+d\,x]}}-\frac{7\,\text{Cos}[c+d\,x]\,\sqrt{a+a\,\text{Sin}[c+d\,x]}}{6\,a^2\,d}$$

Result (type 3, 156 leaves):

$$\left(\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\left(11\,\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+7\,\text{Cos}\left[\frac{3}{2}\,(c+d\,x)\right]+\text{Cos}\left[\frac{5}{2}\,(c+d\,x)\right]-11\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]+(33+33\,i)\,(-1)^{3/4}\,\text{ArcTanh}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{3/4}\left(-1+\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]\right)\right](1+\text{Sin}[c+d\,x])+7\,\text{Sin}\left[\frac{3}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{5}{2}\,(c+d\,x)\right]\right)\right)\Big/\left(6\,d\,(a\,(1+\text{Sin}[c+d\,x]))^{3/2}\right)$$

Problem 70: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{\text{Sin}[c+d\,x]^2}{(a+a\,\text{Sin}[c+d\,x])^{3/2}}\,dx$$

Optimal (type 3, 105 leaves, 4 steps):

$$\frac{7\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\text{Cos}[c+d\,x]}{\sqrt{2}\,\sqrt{a+a\,\text{Sin}[c+d\,x]}}\right]}{2\,\sqrt{2}\,a^{3/2}\,d}-\frac{\text{Cos}[c+d\,x]}{2\,d\,(a+a\,\text{Sin}[c+d\,x])^{3/2}}-\frac{2\,\text{Cos}[c+d\,x]}{a\,d\,\sqrt{a+a\,\text{Sin}[c+d\,x]}}$$

Result (type 3, 134 leaves):

$$-\left(\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\left(3\,\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+2\,\text{Cos}\left[\frac{3}{2}\,(c+d\,x)\right]-3\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]+(7+7\,i)\,(-1)^{3/4}\,\text{ArcTanh}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{3/4}\left(-1+\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]\right)\right](1+\text{Sin}[c+d\,x])+2\,\text{Sin}\left[\frac{3}{2}\,(c+d\,x)\right]\right)\right)\Big/\left(2\,d\,(a\,(1+\text{Sin}[c+d\,x]))^{3/2}\right)$$

Problem 71: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{\text{Sin}[c+d\,x]}{(a+a\,\text{Sin}[c+d\,x])^{3/2}}\,dx$$

Optimal (type 3, 77 leaves, 3 steps):

$$-\frac{3\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\text{Cos}[c+d\,x]}{\sqrt{2}\,\sqrt{a+a\,\text{Sin}[c+d\,x]}}\right]}{2\,\sqrt{2}\,a^{3/2}\,d}+\frac{\text{Cos}[c+d\,x]}{2\,d\,(a+a\,\text{Sin}[c+d\,x])^{3/2}}$$

Result (type 3, 108 leaves):

$$\left(\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]+(3+3\,i)\,(-1)^{3/4}\,\text{ArcTanh}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{3/4}\left(-1+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]\right)\right]\,(1+\text{Sin}[c+d\,x])\right)\right)\Big/\left(2\,d\,(a\,(1+\text{Sin}[c+d\,x]))^{3/2}\right)$$

Problem 72: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{1}{(a+a\,\text{Sin}[c+d\,x])^{3/2}}\,dx$$

Optimal (type 3, 77 leaves, 3 steps):

$$-\frac{\text{ArcTanh}\left[\frac{\sqrt{a}\,\text{Cos}[c+d\,x]}{\sqrt{2}\,\sqrt{a+a\,\text{Sin}[c+d\,x]}}\right]}{2\,\sqrt{2}\,a^{3/2}\,d}-\frac{\text{Cos}[c+d\,x]}{2\,d\,(a+a\,\text{Sin}[c+d\,x])^{3/2}}$$

Result (type 3, 108 leaves):

$$\left(\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)\left(-\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]+(1+i)\,(-1)^{3/4}\,\text{ArcTanh}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{3/4}\left(-1+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]\right)\right]\,(1+\text{Sin}[c+d\,x])\right)\right)\Big/\left(2\,d\,(a\,(1+\text{Sin}[c+d\,x]))^{3/2}\right)$$

Problem 73: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{\text{Csc}[c+d\,x]}{(a+a\,\text{Sin}[c+d\,x])^{3/2}}\,dx$$

Optimal (type 3, 114 leaves, 6 steps):

$$-\frac{2\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\text{Cos}[c+d\,x]}{\sqrt{a+a\,\text{Sin}[c+d\,x]}}\right]}{a^{3/2}\,d}+\frac{5\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\text{Cos}[c+d\,x]}{\sqrt{2}\,\sqrt{a+a\,\text{Sin}[c+d\,x]}}\right]}{2\,\sqrt{2}\,a^{3/2}\,d}+\frac{\text{Cos}[c+d\,x]}{2\,d\,(a+a\,\text{Sin}[c+d\,x])^{3/2}}$$

Result (type 3, 223 leaves) :

$$\frac{1}{2\,d\,(a\,(1+\mathrm{Sin}[c+d\,x]))^{3/2}}\left(\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\left(\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]-(5+5\,i)\,(-1)^{3/4}\,\mathrm{ArcTanh}\left[\left(\frac{1}{2}+\frac{i}{2}\right)\,(-1)^{3/4}\left(-1+\mathrm{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]\right)\right]\left(\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2-2\,\mathrm{Log}\left[1+\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\left(\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2+2\,\mathrm{Log}\left[1-\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\left(\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2\right)$$

- **Problem 74: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int\frac{\mathrm{Csc}[c+d\,x]^2}{(a+a\,\mathrm{Sin}[c+d\,x])^{3/2}}\,dx$$

Optimal (type 3, 144 leaves, 7 steps) :

$$\frac{3\,\mathrm{ArcTanh}\left[\frac{\sqrt{a}\,\mathrm{Cos}[c+d\,x]}{\sqrt{a+a\,\mathrm{Sin}[c+d\,x]}}\right]}{a^{3/2}\,d}-\frac{9\,\mathrm{ArcTanh}\left[\frac{\sqrt{a}\,\mathrm{Cos}[c+d\,x]}{\sqrt{2}\,\sqrt{a+a\,\mathrm{Sin}[c+d\,x]}}\right]}{2\,\sqrt{2}\,a^{3/2}\,d}+\frac{\mathrm{Cot}[c+d\,x]}{2\,d\,(a+a\,\mathrm{Sin}[c+d\,x])^{3/2}}-\frac{3\,\mathrm{Cot}[c+d\,x]}{2\,a\,d\,\sqrt{a+a\,\mathrm{Sin}[c+d\,x]}}$$

Result (type 3, 449 leaves) :

$$\frac{1}{4\,d\,(a\,(1+\mathrm{Sin}[c+d\,x]))^{3/2}}\left(\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\left(4\,\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]-2\left(\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)+2\left(\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2+(18+18\,i)\,(-1)^{3/4}\,\mathrm{ArcTanh}\left[\left(\frac{1}{2}+\frac{i}{2}\right)\,(-1)^{3/4}\left(-1+\mathrm{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]\right)\right]\left(\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2-\mathrm{Cot}\left[\frac{1}{4}\,(c+d\,x)\right]\left(\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2+6\,\mathrm{Log}\left[1+\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\left(\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2-6\,\mathrm{Log}\left[1-\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\left(\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2+\frac{2\,\mathrm{Sin}\left[\frac{1}{4}\,(c+d\,x)\right]\left(\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}{\mathrm{Cos}\left[\frac{1}{4}\,(c+d\,x)\right]-\mathrm{Sin}\left[\frac{1}{4}\,(c+d\,x)\right]}-\frac{2\,\mathrm{Sin}\left[\frac{1}{4}\,(c+d\,x)\right]\left(\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}{\mathrm{Cos}\left[\frac{1}{4}\,(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{4}\,(c+d\,x)\right]}-\left(\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2\,\mathrm{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]\right)$$

■ **Problem 75: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int \frac{\text{Csc}[c+d x]^3}{(a+a \text{Sin}[c+d x])^{3/2}} \, dx$$

Optimal (type 3, 186 leaves, 8 steps):

$$-\frac{19 \text{ArcTanh}\left[\frac{\sqrt{a} \text{Cos}[c+d x]}{\sqrt{a+a \text{Sin}[c+d x]}}\right]}{4 a^{3/2} d}+\frac{13 \text{ArcTanh}\left[\frac{\sqrt{a} \text{Cos}[c+d x]}{\sqrt{2} \sqrt{a+a \text{Sin}[c+d x]}}\right]}{2 \sqrt{2} a^{3/2} d}+\frac{\text{Cot}[c+d x] \text{Csc}[c+d x]}{2 d (a+a \text{Sin}[c+d x])^{3/2}}+\frac{7 \text{Cot}[c+d x]}{4 a d \sqrt{a+a \text{Sin}[c+d x]}}-\frac{\text{Cot}[c+d x] \text{Csc}[c+d x]}{a d \sqrt{a+a \text{Sin}[c+d x]}}$$

Result (type 3, 889 leaves):

$$-\frac{\text{Sin}\left[\frac{1}{2}(c+d x)\right]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)}{d (a (1+\text{Sin}[c+d x]))^{3/2}}+$$

$$\frac{\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2}{2 d (a (1+\text{Sin}[c+d x]))^{3/2}}-\frac{3\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3}{4 d (a (1+\text{Sin}[c+d x]))^{3/2}}+\frac{1}{d (a (1+\text{Sin}[c+d x]))^{3/2}}$$

$$\left(\frac{13}{2}+\frac{13 i}{2}\right) (-1)^{3/4} \text{ArcTanh}\left[\left(\frac{1}{2}+\frac{i}{2}\right) (-1)^{3/4} \text{Sec}\left[\frac{1}{4}(c+d x)\right]\left(\text{Cos}\left[\frac{1}{4}(c+d x)\right]-\text{Sin}\left[\frac{1}{4}(c+d x)\right]\right)\right]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3+$$

$$\frac{3 \text{Cot}\left[\frac{1}{4}(c+d x)\right]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3}{8 d (a (1+\text{Sin}[c+d x]))^{3/2}}-\frac{\text{Csc}\left[\frac{1}{4}(c+d x)\right]^2\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3}{32 d (a (1+\text{Sin}[c+d x]))^{3/2}}-$$

$$\frac{19 \text{Log}\left[1+\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3}{8 d (a (1+\text{Sin}[c+d x]))^{3/2}}+$$

$$\frac{19 \text{Log}\left[1-\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3}{8 d (a (1+\text{Sin}[c+d x]))^{3/2}}+$$

$$\frac{\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3}{32 d (a (1+\text{Sin}[c+d x]))^{3/2}}+\frac{\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3}{16 d\left(\text{Cos}\left[\frac{1}{4}(c+d x)\right]-\text{Sin}\left[\frac{1}{4}(c+d x)\right]\right)^2 (a (1+\text{Sin}[c+d x]))^{3/2}}-$$

$$\frac{3 \text{Sin}\left[\frac{1}{4}(c+d x)\right]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3}{4 d\left(\text{Cos}\left[\frac{1}{4}(c+d x)\right]-\text{Sin}\left[\frac{1}{4}(c+d x)\right]\right) (a (1+\text{Sin}[c+d x]))^{3/2}}-\frac{\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3}{16 d\left(\text{Cos}\left[\frac{1}{4}(c+d x)\right]+\text{Sin}\left[\frac{1}{4}(c+d x)\right]\right)^2 (a (1+\text{Sin}[c+d x]))^{3/2}}+$$

$$\frac{3 \text{Sin}\left[\frac{1}{4}(c+d x)\right]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3}{4 d\left(\text{Cos}\left[\frac{1}{4}(c+d x)\right]+\text{Sin}\left[\frac{1}{4}(c+d x)\right]\right) (a (1+\text{Sin}[c+d x]))^{3/2}}+\frac{3\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3 \text{Tan}\left[\frac{1}{4}(c+d x)\right]}{8 d (a (1+\text{Sin}[c+d x]))^{3/2}}$$

■ **Problem 76: Result unnecessarily involves imaginary or complex numbers.**

$$\int \frac{\text{Sin}[c+d x]^5}{(a+a \text{Sin}[c+d x])^{5/2}} \, dx$$

Optimal (type 3, 221 leaves, 8 steps):

$$\frac{283\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\text{Cos}[c+d\,x]}{\sqrt{2}\,\sqrt{a+a\,\text{Sin}[c+d\,x]}}\right]}{16\,\sqrt{2}\,a^{5/2}\,d}+\frac{\text{Cos}[c+d\,x]\,\text{Sin}[c+d\,x]^4}{4\,d\,(a+a\,\text{Sin}[c+d\,x])^{5/2}}+\frac{21\,\text{Cos}[c+d\,x]\,\text{Sin}[c+d\,x]^3}{16\,a\,d\,(a+a\,\text{Sin}[c+d\,x])^{3/2}}-\frac{1729\,\text{Cos}[c+d\,x]}{120\,a^2\,d\,\sqrt{a+a\,\text{Sin}[c+d\,x]}}-\frac{157\,\text{Cos}[c+d\,x]\,\text{Sin}[c+d\,x]^2}{80\,a^2\,d\,\sqrt{a+a\,\text{Sin}[c+d\,x]}}+\frac{787\,\text{Cos}[c+d\,x]\,\sqrt{a+a\,\text{Sin}[c+d\,x]}}{240\,a^3\,d}$$

Result (type 3, 221 leaves):

$$-\frac{1}{480\,d\,(a\,(1+\text{Sin}[c+d\,x]))^{5/2}}\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)\left(2547\,\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+3603\,\text{Cos}\left[\frac{3}{2}(c+d\,x)\right]-872\,\text{Cos}\left[\frac{5}{2}(c+d\,x)\right]+52\,\text{Cos}\left[\frac{7}{2}(c+d\,x)\right]+12\,\text{Cos}\left[\frac{9}{2}(c+d\,x)\right]-2547\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]+(8490+8490\,i)\,(-1)^{3/4}\,\text{ArcTanh}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{3/4}\left(-1+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]\right)\right]\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4+3603\,\text{Sin}\left[\frac{3}{2}(c+d\,x)\right]+872\,\text{Sin}\left[\frac{5}{2}(c+d\,x)\right]+52\,\text{Sin}\left[\frac{7}{2}(c+d\,x)\right]-12\,\text{Sin}\left[\frac{9}{2}(c+d\,x)\right]\right)$$

- **Problem 77: Result unnecessarily involves imaginary or complex numbers.**

$$\int\frac{\text{Sin}[c+d\,x]^4}{(a+a\,\text{Sin}[c+d\,x])^{5/2}}\,dx$$

Optimal (type 3, 183 leaves, 7 steps):

$$-\frac{163\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\text{Cos}[c+d\,x]}{\sqrt{2}\,\sqrt{a+a\,\text{Sin}[c+d\,x]}}\right]}{16\,\sqrt{2}\,a^{5/2}\,d}+\frac{\text{Cos}[c+d\,x]\,\text{Sin}[c+d\,x]^3}{4\,d\,(a+a\,\text{Sin}[c+d\,x])^{5/2}}+\frac{17\,\text{Cos}[c+d\,x]\,\text{Sin}[c+d\,x]^2}{16\,a\,d\,(a+a\,\text{Sin}[c+d\,x])^{3/2}}+\frac{197\,\text{Cos}[c+d\,x]}{24\,a^2\,d\,\sqrt{a+a\,\text{Sin}[c+d\,x]}}-\frac{95\,\text{Cos}[c+d\,x]\,\sqrt{a+a\,\text{Sin}[c+d\,x]}}{48\,a^3\,d}$$

Result (type 3, 197 leaves):

$$\frac{1}{96\,d\,(a\,(1+\text{Sin}[c+d\,x]))^{5/2}}\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)\left(279\,\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+399\,\text{Cos}\left[\frac{3}{2}(c+d\,x)\right]-88\,\text{Cos}\left[\frac{5}{2}(c+d\,x)\right]+8\,\text{Cos}\left[\frac{7}{2}(c+d\,x)\right]-279\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]+(978+978\,i)\,(-1)^{3/4}\,\text{ArcTanh}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{3/4}\left(-1+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]\right)\right]\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4+399\,\text{Sin}\left[\frac{3}{2}(c+d\,x)\right]+88\,\text{Sin}\left[\frac{5}{2}(c+d\,x)\right]+8\,\text{Sin}\left[\frac{7}{2}(c+d\,x)\right]\right)$$

Problem 78: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{\text{Sin}[c+d x]^3}{(a+a \text{Sin}[c+d x])^{5/2}} \, dx$$

Optimal (type 3, 145 leaves, 6 steps):

$$\frac{75 \text{ArcTanh}\left[\frac{\sqrt{a} \text{Cos}[c+d x]}{\sqrt{2} \sqrt{a+a \text{Sin}[c+d x]}}\right]}{16 \sqrt{2} a^{5/2} d}+\frac{\text{Cos}[c+d x] \text{Sin}[c+d x]^2}{4 d (a+a \text{Sin}[c+d x])^{5/2}}-\frac{13 \text{Cos}[c+d x]}{16 a d (a+a \text{Sin}[c+d x])^{3/2}}-\frac{9 \text{Cos}[c+d x]}{4 a^2 d \sqrt{a+a \text{Sin}[c+d x]}}$$

Result (type 3, 173 leaves):

$$\left(\left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right) \left(-45 \text{Cos}\left[\frac{1}{2} (c+d x)\right]-69 \text{Cos}\left[\frac{3}{2} (c+d x)\right]+16 \text{Cos}\left[\frac{5}{2} (c+d x)\right]+45 \text{Sin}\left[\frac{1}{2} (c+d x)\right]-(150+150 i) (-1)^{3/4} \text{ArcTanh}\left[\left(\frac{1}{2}+\frac{i}{2}\right) (-1)^{3/4} \left(-1+\text{Tan}\left[\frac{1}{4} (c+d x)\right]\right)\right] \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^4-69 \text{Sin}\left[\frac{3}{2} (c+d x)\right]-16 \text{Sin}\left[\frac{5}{2} (c+d x)\right]\right)\right) \Big/ \left(32 d (a (1+\text{Sin}[c+d x]))^{5/2}\right)$$

Problem 79: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{\text{Sin}[c+d x]^2}{(a+a \text{Sin}[c+d x])^{5/2}} \, dx$$

Optimal (type 3, 107 leaves, 4 steps):

$$-\frac{19 \text{ArcTanh}\left[\frac{\sqrt{a} \text{Cos}[c+d x]}{\sqrt{2} \sqrt{a+a \text{Sin}[c+d x]}}\right]}{16 \sqrt{2} a^{5/2} d}-\frac{\text{Cos}[c+d x]}{4 d (a+a \text{Sin}[c+d x])^{5/2}}+\frac{13 \text{Cos}[c+d x]}{16 a d (a+a \text{Sin}[c+d x])^{3/2}}$$

Result (type 3, 196 leaves):

$$\frac{1}{16 d (a (1+\text{Sin}[c+d x]))^{5/2}} \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right) \left(8 \text{Sin}\left[\frac{1}{2} (c+d x)\right]-4 \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)-26 \text{Sin}\left[\frac{1}{2} (c+d x)\right] \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^2+13 \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^3+(19+19 i) (-1)^{3/4} \text{ArcTanh}\left[\left(\frac{1}{2}+\frac{i}{2}\right) (-1)^{3/4} \left(-1+\text{Tan}\left[\frac{1}{4} (c+d x)\right]\right)\right] \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^4\right)$$

Problem 80: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{\text{Sin}[c+d x]}{(a+a \text{Sin}[c+d x])^{5/2}} \, dx$$

Optimal (type 3, 107 leaves, 4 steps):

$$-\frac{5\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\text{Cos}[c+d\,x]}{\sqrt{2}\,\sqrt{a+a\,\text{Sin}[c+d\,x]}}\right]}{16\,\sqrt{2}\,a^{5/2}\,d}+\frac{\text{Cos}[c+d\,x]}{4\,d\,(a+a\,\text{Sin}[c+d\,x])^{5/2}}-\frac{5\,\text{Cos}[c+d\,x]}{16\,a\,d\,(a+a\,\text{Sin}[c+d\,x])^{3/2}}$$

Result (type 3, 196 leaves):

$$\frac{1}{16\,d\,(a\,(1+\text{Sin}[c+d\,x]))^{5/2}}\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)\left(-8\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]+4\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)+\right.$$
$$10\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2-5\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^3+$$
$$\left.(5+5\,i)\,(-1)^{3/4}\,\text{ArcTanh}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{3/4}\left(-1+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]\right)\right]\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4\right)$$

Problem 81: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{1}{(a+a\,\text{Sin}[c+d\,x])^{5/2}}\,dx$$

Optimal (type 3, 107 leaves, 4 steps):

$$-\frac{3\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\text{Cos}[c+d\,x]}{\sqrt{2}\,\sqrt{a+a\,\text{Sin}[c+d\,x]}}\right]}{16\,\sqrt{2}\,a^{5/2}\,d}-\frac{\text{Cos}[c+d\,x]}{4\,d\,(a+a\,\text{Sin}[c+d\,x])^{5/2}}-\frac{3\,\text{Cos}[c+d\,x]}{16\,a\,d\,(a+a\,\text{Sin}[c+d\,x])^{3/2}}$$

Result (type 3, 196 leaves):

$$\frac{1}{16\,d\,(a\,(1+\text{Sin}[c+d\,x]))^{5/2}}\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)\left(8\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]-4\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)+\right.$$
$$6\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2-3\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^3+$$
$$\left.(3+3\,i)\,(-1)^{3/4}\,\text{ArcTanh}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{3/4}\left(-1+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]\right)\right]\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4\right)$$

Problem 82: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int\frac{\text{Csc}[c+d\,x]}{(a+a\,\text{Sin}[c+d\,x])^{5/2}}\,dx$$

Optimal (type 3, 144 leaves, 7 steps):

$$-\frac{2\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\text{Cos}[c+d\,x]}{\sqrt{a+a\,\text{Sin}[c+d\,x]}}\right]}{a^{5/2}\,d}+\frac{43\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\text{Cos}[c+d\,x]}{\sqrt{2}\,\sqrt{a+a\,\text{Sin}[c+d\,x]}}\right]}{16\,\sqrt{2}\,a^{5/2}\,d}+\frac{\text{Cos}[c+d\,x]}{4\,d\,(a+a\,\text{Sin}[c+d\,x])^{5/2}}+\frac{11\,\text{Cos}[c+d\,x]}{16\,a\,d\,(a+a\,\text{Sin}[c+d\,x])^{3/2}}$$

Result (type 3, 296 leaves):

$$\frac{1}{16\, d\, (a\, (1+\text{Sin}[c+d\, x]))^{5/2}} \left(\text{Cos}\left[\frac{1}{2}(c+d\, x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\, x)\right]\right)$$
$$\left(-8\,\text{Sin}\left[\frac{1}{2}(c+d\, x)\right]+4\left(\text{Cos}\left[\frac{1}{2}(c+d\, x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\, x)\right]\right)-22\,\text{Sin}\left[\frac{1}{2}(c+d\, x)\right]\left(\text{Cos}\left[\frac{1}{2}(c+d\, x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\, x)\right]\right)^2+\right.$$
$$11\left(\text{Cos}\left[\frac{1}{2}(c+d\, x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\, x)\right]\right)^3-(43+43\, i)\,(-1)^{3/4}\,\text{ArcTanh}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{3/4}\left(-1+\text{Tan}\left[\frac{1}{4}(c+d\, x)\right]\right)\right]$$
$$\left(\text{Cos}\left[\frac{1}{2}(c+d\, x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\, x)\right]\right)^4-16\,\text{Log}\left[1+\text{Cos}\left[\frac{1}{2}(c+d\, x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\, x)\right]\right]\left(\text{Cos}\left[\frac{1}{2}(c+d\, x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\, x)\right]\right)^4+$$
$$\left.16\,\text{Log}\left[1-\text{Cos}\left[\frac{1}{2}(c+d\, x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\, x)\right]\right]\left(\text{Cos}\left[\frac{1}{2}(c+d\, x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\, x)\right]\right)^4\right)$$

- **Problem 83: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int \frac{\text{Csc}[c+d\, x]^2}{(a+a\,\text{Sin}[c+d\, x])^{5/2}}\, dx$$

Optimal (type 3, 174 leaves, 8 steps):

$$\frac{5\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\text{Cos}[c+d\, x]}{\sqrt{a+a\,\text{Sin}[c+d\, x]}}\right]}{a^{5/2}\, d}-\frac{115\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\text{Cos}[c+d\, x]}{\sqrt{2}\,\sqrt{a+a\,\text{Sin}[c+d\, x]}}\right]}{16\,\sqrt{2}\, a^{5/2}\, d}+\frac{\text{Cot}[c+d\, x]}{4\, d\,(a+a\,\text{Sin}[c+d\, x])^{5/2}}+\frac{15\,\text{Cot}[c+d\, x]}{16\, a\, d\,(a+a\,\text{Sin}[c+d\, x])^{3/2}}-\frac{35\,\text{Cot}[c+d\, x]}{16\, a^2\, d\,\sqrt{a+a\,\text{Sin}[c+d\, x]}}$$

Result (type 3, 509 leaves):

$$\frac{1}{16\, d\, (a\, (1 + \operatorname{Sin}[c + d\, x]))^{5/2}} \left(\operatorname{Cos}\left[\frac{1}{2}\,(c + d\, x)\right] + \operatorname{Sin}\left[\frac{1}{2}\,(c + d\, x)\right]\right)$$

$$\left(8 \operatorname{Sin}\left[\frac{1}{2}\,(c + d\, x)\right] - 4 \left(\operatorname{Cos}\left[\frac{1}{2}\,(c + d\, x)\right] + \operatorname{Sin}\left[\frac{1}{2}\,(c + d\, x)\right]\right) + 38 \operatorname{Sin}\left[\frac{1}{2}\,(c + d\, x)\right] \left(\operatorname{Cos}\left[\frac{1}{2}\,(c + d\, x)\right] + \operatorname{Sin}\left[\frac{1}{2}\,(c + d\, x)\right]\right)^2 -\right.$$

$$19 \left(\operatorname{Cos}\left[\frac{1}{2}\,(c + d\, x)\right] + \operatorname{Sin}\left[\frac{1}{2}\,(c + d\, x)\right]\right)^3 + 8 \left(\operatorname{Cos}\left[\frac{1}{2}\,(c + d\, x)\right] + \operatorname{Sin}\left[\frac{1}{2}\,(c + d\, x)\right]\right)^4 +$$

$$(115 + 115\, i)\, (-1)^{3/4} \operatorname{ArcTanh}\left[\left(\frac{1}{2} + \frac{i}{2}\right) (-1)^{3/4} \left(-1 + \operatorname{Tan}\left[\frac{1}{4}\,(c + d\, x)\right]\right)\right] \left(\operatorname{Cos}\left[\frac{1}{2}\,(c + d\, x)\right] + \operatorname{Sin}\left[\frac{1}{2}\,(c + d\, x)\right]\right)^4 -$$

$$4 \operatorname{Cot}\left[\frac{1}{4}\,(c + d\, x)\right] \left(\operatorname{Cos}\left[\frac{1}{2}\,(c + d\, x)\right] + \operatorname{Sin}\left[\frac{1}{2}\,(c + d\, x)\right]\right)^4 + 40 \operatorname{Log}\left[1 + \operatorname{Cos}\left[\frac{1}{2}\,(c + d\, x)\right] - \operatorname{Sin}\left[\frac{1}{2}\,(c + d\, x)\right]\right]$$

$$\left(\operatorname{Cos}\left[\frac{1}{2}\,(c + d\, x)\right] + \operatorname{Sin}\left[\frac{1}{2}\,(c + d\, x)\right]\right)^4 - 40 \operatorname{Log}\left[1 - \operatorname{Cos}\left[\frac{1}{2}\,(c + d\, x)\right] + \operatorname{Sin}\left[\frac{1}{2}\,(c + d\, x)\right]\right] \left(\operatorname{Cos}\left[\frac{1}{2}\,(c + d\, x)\right] + \operatorname{Sin}\left[\frac{1}{2}\,(c + d\, x)\right]\right)^4 +$$

$$\frac{8 \operatorname{Sin}\left[\frac{1}{4}\,(c + d\, x)\right] \left(\operatorname{Cos}\left[\frac{1}{2}\,(c + d\, x)\right] + \operatorname{Sin}\left[\frac{1}{2}\,(c + d\, x)\right]\right)^4}{\operatorname{Cos}\left[\frac{1}{4}\,(c + d\, x)\right] - \operatorname{Sin}\left[\frac{1}{4}\,(c + d\, x)\right]} - \frac{8 \operatorname{Sin}\left[\frac{1}{4}\,(c + d\, x)\right] \left(\operatorname{Cos}\left[\frac{1}{2}\,(c + d\, x)\right] + \operatorname{Sin}\left[\frac{1}{2}\,(c + d\, x)\right]\right)^4}{\operatorname{Cos}\left[\frac{1}{4}\,(c + d\, x)\right] + \operatorname{Sin}\left[\frac{1}{4}\,(c + d\, x)\right]} -$$

$$\left.4 \left(\operatorname{Cos}\left[\frac{1}{2}\,(c + d\, x)\right] + \operatorname{Sin}\left[\frac{1}{2}\,(c + d\, x)\right]\right)^4 \operatorname{Tan}\left[\frac{1}{4}\,(c + d\, x)\right]\right)$$

- **Problem 84: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int \frac{\operatorname{Csc}[c + d\, x]^3}{(a + a \operatorname{Sin}[c + d\, x])^{5/2}}\, dx$$

Optimal (type 3, 224 leaves, 9 steps):

$$-\frac{39 \operatorname{ArcTanh}\left[\frac{\sqrt{a}\, \operatorname{Cos}[c+d\, x]}{\sqrt{a+a \operatorname{Sin}[c+d\, x]}}\right]}{4\, a^{5/2}\, d} + \frac{219 \operatorname{ArcTanh}\left[\frac{\sqrt{a}\, \operatorname{Cos}[c+d\, x]}{\sqrt{2}\, \sqrt{a+a \operatorname{Sin}[c+d\, x]}}\right]}{16\, \sqrt{2}\, a^{5/2}\, d} + \frac{\operatorname{Cot}[c + d\, x] \operatorname{Csc}[c + d\, x]}{4\, d\, (a + a \operatorname{Sin}[c + d\, x])^{5/2}} +$$

$$\frac{19 \operatorname{Cot}[c + d\, x] \operatorname{Csc}[c + d\, x]}{16\, a\, d\, (a + a \operatorname{Sin}[c + d\, x])^{3/2}} + \frac{63 \operatorname{Cot}[c + d\, x]}{16\, a^2\, d\, \sqrt{a + a \operatorname{Sin}[c + d\, x]}} - \frac{31 \operatorname{Cot}[c + d\, x] \operatorname{Csc}[c + d\, x]}{16\, a^2\, d\, \sqrt{a + a \operatorname{Sin}[c + d\, x]}}$$

Result (type 3, 680 leaves):

$$\frac{1}{32\, d\, (a\,(1+\mathrm{Sin}[c+d\,x]))^{5/2}} \left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)$$

$$\left(-16\,\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]+8\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)-108\,\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2+\right.$$

$$54\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^3-40\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4-$$

$$(438+438\,i)\,(-1)^{3/4}\,\mathrm{ArcTanh}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{3/4}\left(-1+\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]\right)\right]\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4+$$

$$20\,\mathrm{Cot}\left[\frac{1}{4}(c+d\,x)\right]\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4-\mathrm{Csc}\left[\frac{1}{4}(c+d\,x)\right]^2\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4-$$

$$156\,\mathrm{Log}\left[1+\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4+$$

$$156\,\mathrm{Log}\left[1-\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4+$$

$$\mathrm{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4+\frac{2\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4}{\left(\mathrm{Cos}\left[\frac{1}{4}(c+d\,x)\right]-\mathrm{Sin}\left[\frac{1}{4}(c+d\,x)\right]\right)^2}-$$

$$\frac{40\,\mathrm{Sin}\left[\frac{1}{4}(c+d\,x)\right]\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4}{\mathrm{Cos}\left[\frac{1}{4}(c+d\,x)\right]-\mathrm{Sin}\left[\frac{1}{4}(c+d\,x)\right]}-\frac{2\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4}{\left(\mathrm{Cos}\left[\frac{1}{4}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{4}(c+d\,x)\right]\right)^2}+$$

$$\left.\frac{40\,\mathrm{Sin}\left[\frac{1}{4}(c+d\,x)\right]\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4}{\mathrm{Cos}\left[\frac{1}{4}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{4}(c+d\,x)\right]}+20\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]\right)$$

- **Problem 85: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int \frac{\sqrt{a+a\,\mathrm{Sin}[e+f\,x]}}{\sqrt{\mathrm{Sin}[e+f\,x]}}\,dx$$

Optimal (type 3, 37 leaves, 2 steps):

$$-\frac{2\sqrt{a}\,\mathrm{ArcSin}\left[\frac{\sqrt{a}\,\mathrm{Cos}[e+f\,x]}{\sqrt{a+a\,\mathrm{Sin}[e+f\,x]}}\right]}{f}$$

Result (type 3, 143 leaves):

$$-\left(\sqrt{2}\,\sqrt{-1+e^{2 i (e+f x)}}\left(\text{ArcTan}\left[\frac{1}{\sqrt{-1+e^{2 i (e+f x)}}}\right]+i\,\text{Log}\left[e^{i (e+f x)}+\sqrt{-1+e^{2 i (e+f x)}}\right]\right)\sqrt{a\,(1+\text{Sin}[e+f x])}\right)\Big/\left(\left(i+e^{i (e+f x)}\right)\sqrt{-i\,e^{-i (e+f x)}\left(-1+e^{2 i (e+f x)}\right)}\;f\right)$$

- **Problem 86: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int \frac{\sqrt{a-a\,\text{Sin}[e+f x]}}{\sqrt{-\text{Sin}[e+f x]}}\,dx$$

Optimal (type 3, 38 leaves, 2 steps):

$$\frac{2\sqrt{a}\;\text{ArcSin}\left[\frac{\sqrt{a}\;\text{Cos}[e+f x]}{\sqrt{a-a\,\text{Sin}[e+f x]}}\right]}{f}$$

Result (type 3, 143 leaves):

$$\frac{\sqrt{2}\,\sqrt{-1+e^{2 i (e+f x)}}\left(\text{ArcTan}\left[\frac{1}{\sqrt{-1+e^{2 i (e+f x)}}}\right]-i\,\text{Log}\left[e^{i (e+f x)}+\sqrt{-1+e^{2 i (e+f x)}}\right]\right)\sqrt{a-a\,\text{Sin}[e+f x]}}{\left(-i+e^{i (e+f x)}\right)\sqrt{i\,e^{-i (e+f x)}\left(-1+e^{2 i (e+f x)}\right)}\;f}$$

- **Problem 87: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int \frac{1}{\sqrt{\text{Sin}[x]}\,\sqrt{1+\text{Sin}[x]}}\,dx$$

Optimal (type 3, 17 leaves, 2 steps):

$$-\sqrt{2}\;\text{ArcSin}\left[\frac{\text{Cos}[x]}{1+\text{Sin}[x]}\right]$$

Result (type 4, 123 leaves):

$$\left(2\left(\text{EllipticF}\left[\text{ArcSin}\left[\frac{1}{\sqrt{\text{Tan}\left[\frac{x}{4}\right]}}\right],-1\right]+\text{EllipticPi}\left[1-\sqrt{2},-\text{ArcSin}\left[\frac{1}{\sqrt{\text{Tan}\left[\frac{x}{4}\right]}}\right],-1\right]+\text{EllipticPi}\left[1+\sqrt{2},-\text{ArcSin}\left[\frac{1}{\sqrt{\text{Tan}\left[\frac{x}{4}\right]}}\right],-1\right]\right)\text{Sec}\left[\frac{x}{4}\right]^2\left(\text{Cos}\left[\frac{x}{2}\right]+\text{Sin}\left[\frac{x}{2}\right]\right)\sqrt{\text{Sin}[x]}\right)\Big/\left(\sqrt{1-\text{Cot}\left[\frac{x}{4}\right]^2}\,\sqrt{1+\text{Sin}[x]}\;\text{Tan}\left[\frac{x}{4}\right]^{3/2}\right)$$

- **Problem 88: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int \frac{1}{\sqrt{\text{Sin}[x]}\ \sqrt{a+a\,\text{Sin}[x]}}\,dx$$

Optimal (type 3, 42 leaves, 2 steps):

$$-\frac{\sqrt{2}\ \text{ArcTan}\left[\frac{\sqrt{a}\ \text{Cos}[x]}{\sqrt{2}\ \sqrt{\text{Sin}[x]}\ \sqrt{a+a\,\text{Sin}[x]}}\right]}{\sqrt{a}}$$

Result (type 4, 125 leaves):

$$\left(2\left(\text{EllipticF}\left[\text{ArcSin}\left[\frac{1}{\sqrt{\text{Tan}\left[\frac{x}{4}\right]}}\right],-1\right]+\text{EllipticPi}\left[1-\sqrt{2},-\text{ArcSin}\left[\frac{1}{\sqrt{\text{Tan}\left[\frac{x}{4}\right]}}\right],-1\right]+\text{EllipticPi}\left[1+\sqrt{2},-\text{ArcSin}\left[\frac{1}{\sqrt{\text{Tan}\left[\frac{x}{4}\right]}}\right],-1\right]\right)\right.$$
$$\left.\text{Sec}\left[\frac{x}{4}\right]^2\left(\text{Cos}\left[\frac{x}{2}\right]+\text{Sin}\left[\frac{x}{2}\right]\right)\sqrt{\text{Sin}[x]}\right)\Bigg/\left(\sqrt{1-\text{Cot}\left[\frac{x}{4}\right]^2}\ \sqrt{a\,(1+\text{Sin}[x])}\ \text{Tan}\left[\frac{x}{4}\right]^{3/2}\right)$$

- **Problem 89: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int \frac{1}{\sqrt{1-\text{Sin}[x]}\ \sqrt{\text{Sin}[x]}}\,dx$$

Optimal (type 3, 31 leaves, 2 steps):

$$\sqrt{2}\ \text{ArcTanh}\left[\frac{\text{Cos}[x]}{\sqrt{2}\ \sqrt{1-\text{Sin}[x]}\ \sqrt{\text{Sin}[x]}}\right]$$

Result (type 4, 125 leaves):

$$\left(2\left(\text{EllipticF}\left[\text{ArcSin}\left[\frac{1}{\sqrt{\text{Tan}\left[\frac{x}{4}\right]}}\right],-1\right]+\text{EllipticPi}\left[-1-\sqrt{2},-\text{ArcSin}\left[\frac{1}{\sqrt{\text{Tan}\left[\frac{x}{4}\right]}}\right],-1\right]+\text{EllipticPi}\left[-1+\sqrt{2},-\text{ArcSin}\left[\frac{1}{\sqrt{\text{Tan}\left[\frac{x}{4}\right]}}\right],-1\right]\right)\right.$$
$$\left.\text{Sec}\left[\frac{x}{4}\right]^2\left(\text{Cos}\left[\frac{x}{2}\right]-\text{Sin}\left[\frac{x}{2}\right]\right)\text{Sin}[x]\right)\Bigg/\left(\sqrt{1-\text{Cot}\left[\frac{x}{4}\right]^2}\ \sqrt{-(-1+\text{Sin}[x])\,\text{Sin}[x]}\ \text{Tan}\left[\frac{x}{4}\right]^{3/2}\right)$$

- **Problem 90: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int \frac{1}{\sqrt{\text{Sin}[x]}\ \sqrt{a - a\,\text{Sin}[x]}}\, dx$$

Optimal (type 3, 42 leaves, 2 steps):

$$\frac{\sqrt{2}\ \text{ArcTanh}\left[\frac{\sqrt{a}\ \text{Cos}[x]}{\sqrt{2}\ \sqrt{\text{Sin}[x]}\ \sqrt{a-a\,\text{Sin}[x]}}\right]}{\sqrt{a}}$$

Result (type 4, 128 leaves):

$$\left(2 \left(\text{EllipticF}\left[\text{ArcSin}\left[\frac{1}{\sqrt{\text{Tan}\left[\frac{x}{4}\right]}}\right], -1\right] + \text{EllipticPi}\left[-1 - \sqrt{2}, -\text{ArcSin}\left[\frac{1}{\sqrt{\text{Tan}\left[\frac{x}{4}\right]}}\right], -1\right] + \text{EllipticPi}\left[-1 + \sqrt{2}, -\text{ArcSin}\left[\frac{1}{\sqrt{\text{Tan}\left[\frac{x}{4}\right]}}\right], -1\right]\right)\right.$$
$$\left.\text{Sec}\left[\frac{x}{4}\right]^2 \left(\text{Cos}\left[\frac{x}{2}\right] - \text{Sin}\left[\frac{x}{2}\right]\right) \sqrt{\text{Sin}[x]}\right) \Big/ \left(\sqrt{1 - \text{Cot}\left[\frac{x}{4}\right]^2}\ \sqrt{a - a\,\text{Sin}[x]}\ \text{Tan}\left[\frac{x}{4}\right]^{3/2}\right)$$

- **Problem 91: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int \frac{\text{Sin}[c + d\,x]^{1/3}}{(a + a\,\text{Sin}[c + d\,x])^2}\, dx$$

Optimal (type 5, 184 leaves, 5 steps):

$$\frac{4\,\text{Cos}[c + d\,x]\ \text{Hypergeometric2F1}\left[\frac{1}{6}, \frac{1}{2}, \frac{7}{6}, \text{Sin}[c + d\,x]^2\right] \text{Sin}[c + d\,x]^{1/3}}{9\,a^2\,d\,\sqrt{\text{Cos}[c + d\,x]^2}} -$$
$$\frac{\text{Cos}[c + d\,x]\ \text{Hypergeometric2F1}\left[\frac{1}{2}, \frac{2}{3}, \frac{5}{3}, \text{Sin}[c + d\,x]^2\right] \text{Sin}[c + d\,x]^{4/3}}{36\,a^2\,d\,\sqrt{\text{Cos}[c + d\,x]^2}} - \frac{\text{Cos}[c + d\,x]\ \text{Sin}[c + d\,x]^{1/3}}{9\,a^2\,d\,(1 + \text{Sin}[c + d\,x])} - \frac{\text{Cos}[c + d\,x]\ \text{Sin}[c + d\,x]^{1/3}}{3\,d\,(a + a\,\text{Sin}[c + d\,x])^2}$$

Result (type 5, 598 leaves):

$$\frac{1}{d\,(a+a\,\text{Sin}[c+d\,x])^2}\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^4$$

$$\left(\frac{2\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]}{3\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^3}-\frac{1}{3\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}+\frac{2\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]}{9\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)}\right)\text{Sin}[c+d\,x]^{1/3}+$$

$$\left(\text{Cos}[c+d\,x]\,\text{Hypergeometric2F1}\left[\frac{1}{3},\frac{1}{2},\frac{3}{2},\text{Cos}[c+d\,x]^2\right]\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^4\text{Sin}[c+d\,x]^{4/3}\right)\Big/$$

$$\left(27\,d\,\left(\text{Sin}[c+d\,x]^2\right)^{2/3}(a+a\,\text{Sin}[c+d\,x])^2\right)+\left((-4+\text{Cos}[c+d\,x])\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^4\right.$$

$$\left(-\frac{1}{9}\,\text{Sin}[c+d\,x]^{1/3}-\left(2\,(-1)^{2/3}\,\text{EllipticF}\left[\text{ArcCos}\left[\frac{1+(-1)^{1/3}\left(1-\sqrt{3}\right)\text{Sin}[c+d\,x]^{2/3}}{1+(-1)^{1/3}\left(1+\sqrt{3}\right)\text{Sin}[c+d\,x]^{2/3}}\right],\frac{1}{4}\left(2+\sqrt{3}\right)\right]\left(1+(-1)^{1/3}\left(1+\sqrt{3}\right)\text{Sin}[c+d\,x]^{2/3}\right)^2\right.\right.$$

$$\left.\sqrt{\frac{(-1)^{1/3}\left(1+(-1)^{1/3}\,\text{Sin}[c+d\,x]^{2/3}\right)\text{Sin}[c+d\,x]^{2/3}}{\left(1+(-1)^{1/3}\left(1+\sqrt{3}\right)\text{Sin}[c+d\,x]^{2/3}\right)^2}}\sqrt{\frac{1-(-1)^{1/3}\,\text{Sin}[c+d\,x]^{2/3}+(-1)^{2/3}\,\text{Sin}[c+d\,x]^{4/3}}{\left(1+(-1)^{1/3}\left(1+\sqrt{3}\right)\text{Sin}[c+d\,x]^{2/3}\right)^2}}\right)\Big/$$

$$\left.\left.\left(9\times 3^{1/4}\,\text{Sin}[c+d\,x]^{1/3}\sqrt{1-\text{Sin}[c+d\,x]^2}\right)\right)\right)\Big/\left(d\left(\text{Cos}[c+d\,x]-4\sqrt{\text{Cos}[c+d\,x]^2}\,\text{Sec}[c+d\,x]\right)(a+a\,\text{Sin}[c+d\,x])^2\right)$$

- **Problem 96: Unable to integrate problem.**

$$\int \text{Csc}[c+d\,x]\,(a+a\,\text{Sin}[c+d\,x])^{2/3}\,dx$$

Optimal (type 6, 77 leaves, 4 steps):

$$-\frac{2\times 2^{1/6}\,\text{AppellF1}\left[\frac{1}{2},1,-\frac{1}{6},\frac{3}{2},1-\text{Sin}[c+d\,x],\frac{1}{2}\,(1-\text{Sin}[c+d\,x])\right]\text{Cos}[c+d\,x]\,(a+a\,\text{Sin}[c+d\,x])^{2/3}}{d\,(1+\text{Sin}[c+d\,x])^{7/6}}$$

Result (type 8, 23 leaves):

$$\int \text{Csc}[c+d\,x]\,(a+a\,\text{Sin}[c+d\,x])^{2/3}\,dx$$

- **Problem 97: Mathematica result simpler than optimal antiderivative, IF it can be verified!**

$$\int \text{Csc}[c+d\,x]^2\,(a+a\,\text{Sin}[c+d\,x])^{2/3}\,dx$$

Optimal (type 6, 77 leaves, 4 steps):

$$-\frac{2\times 2^{1/6}\,\text{AppellF1}\left[\frac{1}{2},2,-\frac{1}{6},\frac{3}{2},1-\text{Sin}[c+d\,x],\frac{1}{2}\,(1-\text{Sin}[c+d\,x])\right]\text{Cos}[c+d\,x]\,(a+a\,\text{Sin}[c+d\,x])^{2/3}}{d\,(1+\text{Sin}[c+d\,x])^{7/6}}$$

Result (type 5, 143 leaves):

$$-\left(2\,e^{i\,(c+d\,x)}\left(-i-e^{i\,(c+d\,x)}+\left(1+i\,e^{-i\,(c+d\,x)}\right)^{2/3}\left(-i+e^{i\,(c+d\,x)}\right)\text{Hypergeometric2F1}\left[\frac{1}{3},\frac{2}{3},\frac{4}{3},-i\,e^{-i\,(c+d\,x)}\right]\right)(a\,(1+\text{Sin}[c+d\,x]))^{2/3}\right)\Big/\left(d\left(-i+e^{i\,(c+d\,x)}\right)\left(i+e^{i\,(c+d\,x)}\right)^2\right)$$

- **Problem 98: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int \text{Sin}[c+d\,x]^3\,(a+a\,\text{Sin}[c+d\,x])^{4/3}\,dx$$

Optimal (type 5, 162 leaves, 6 steps):

$$-\frac{388\times 2^{5/6}\,a\,\text{Cos}[c+d\,x]\,\text{Hypergeometric2F1}\left[-\frac{5}{6},\frac{1}{2},\frac{3}{2},\frac{1}{2}\,(1-\text{Sin}[c+d\,x])\right](a+a\,\text{Sin}[c+d\,x])^{1/3}}{455\,d\,(1+\text{Sin}[c+d\,x])^{5/6}}-\frac{72\,\text{Cos}[c+d\,x]\,(a+a\,\text{Sin}[c+d\,x])^{4/3}}{455\,d}-\frac{3\,\text{Cos}[c+d\,x]\,\text{Sin}[c+d\,x]^2\,(a+a\,\text{Sin}[c+d\,x])^{4/3}}{13\,d}-\frac{6\,\text{Cos}[c+d\,x]\,(a+a\,\text{Sin}[c+d\,x])^{7/3}}{65\,a\,d}$$

Result (type 5, 346 leaves):

$$\frac{1}{91\,d\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^3}$$
$$(a\,(1+\text{Sin}[c+d\,x]))^{4/3}\left(-\frac{1}{40\left(1+i\,e^{-i\,(c+d\,x)}\right)^{2/3}\sqrt{1-\text{Sin}[c+d\,x]}}\,291\,(-1)^{3/4}\,e^{-\frac{3}{2}\,i\,(c+d\,x)}\left(i+e^{i\,(c+d\,x)}\right)\left(-20\,e^{i\,(c+d\,x)}\sqrt{\text{Cos}\left[\frac{1}{4}\,(2\,c+\pi+2\,d\,x)\right]^2}\right.\right.$$
$$\text{Hypergeometric2F1}\left[-\frac{1}{3},\frac{1}{3},\frac{2}{3},-i\,e^{-i\,(c+d\,x)}\right]+2\left(1+i\,e^{-i\,(c+d\,x)}\right)^{2/3}\left(1+e^{2\,i\,(c+d\,x)}\right)\text{Hypergeometric2F1}\left[\frac{1}{2},\right.$$
$$\left.\left.\frac{5}{6},\frac{11}{6},\text{Sin}\left[\frac{1}{4}\,(2\,c+\pi+2\,d\,x)\right]^2\right]-5\,i\,\text{Hypergeometric2F1}\left[\frac{1}{3},\frac{2}{3},\frac{5}{3},-i\,e^{-i\,(c+d\,x)}\right]\sqrt{2-2\,\text{Sin}[c+d\,x]}\right)-$$
$$\left.\frac{3}{40}\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)(-1940+790\,\text{Cos}[c+d\,x]-98\,\text{Cos}[3\,(c+d\,x)]+278\,\text{Sin}[2\,(c+d\,x)]-35\,\text{Sin}[4\,(c+d\,x)])\right)$$

- **Problem 99: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int \text{Sin}[c+d\,x]^2\,(a+a\,\text{Sin}[c+d\,x])^{4/3}\,dx$$

Optimal (type 5, 127 leaves, 4 steps):

$$-\frac{37\times 2^{5/6}\,a\,\text{Cos}[c+d\,x]\,\text{Hypergeometric2F1}\left[-\frac{5}{6},\frac{1}{2},\frac{3}{2},\frac{1}{2}\,(1-\text{Sin}[c+d\,x])\right]\,(a+a\,\text{Sin}[c+d\,x])^{1/3}}{35\,d\,(1+\text{Sin}[c+d\,x])^{5/6}}+\frac{9\,\text{Cos}[c+d\,x]\,(a+a\,\text{Sin}[c+d\,x])^{4/3}}{70\,d}-\frac{3\,\text{Cos}[c+d\,x]\,(a+a\,\text{Sin}[c+d\,x])^{7/3}}{10\,a\,d}$$

Result (type 5, 336 leaves) :

$$\frac{1}{28\,d\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^3}(a\,(1+\text{Sin}[c+d\,x]))^{4/3}\left(-\frac{1}{40\,\left(1+i\,e^{-i\,(c+d\,x)}\right)^{2/3}\sqrt{1-\text{Sin}[c+d\,x]}}111\,(-1)^{3/4}\,e^{-\frac{3}{2}\,i\,(c+d\,x)}\,\left(i+e^{i\,(c+d\,x)}\right)\left(-20\,e^{i\,(c+d\,x)}\sqrt{\text{Cos}\left[\frac{1}{4}\,(2\,c+\pi+2\,d\,x)\right]^2}\right.\right.$$
$$\text{Hypergeometric2F1}\left[-\frac{1}{3},\frac{1}{3},\frac{2}{3},-i\,e^{-i\,(c+d\,x)}\right]+2\,\left(1+i\,e^{-i\,(c+d\,x)}\right)^{2/3}\,\left(1+e^{2\,i\,(c+d\,x)}\right)\,\text{Hypergeometric2F1}\left[\frac{1}{2},\right.$$
$$\left.\left.\frac{5}{6},\frac{11}{6},\text{Sin}\left[\frac{1}{4}\,(2\,c+\pi+2\,d\,x)\right]^2\right]-5\,i\,\text{Hypergeometric2F1}\left[\frac{1}{3},\frac{2}{3},\frac{5}{3},-i\,e^{-i\,(c+d\,x)}\right]\sqrt{2-2\,\text{Sin}[c+d\,x]}\right)-$$
$$\left.\frac{3}{10}\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\,(-185+60\,\text{Cos}[c+d\,x]-7\,\text{Cos}[3\,(c+d\,x)]+22\,\text{Sin}[2\,(c+d\,x)])\right)$$

- **Problem 100: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int \text{Sin}[c+d\,x]\,(a+a\,\text{Sin}[c+d\,x])^{4/3}\,dx$$

Optimal (type 5, 97 leaves, 3 steps) :

$$-\frac{8\times 2^{5/6}\,a\,\text{Cos}[c+d\,x]\,\text{Hypergeometric2F1}\left[-\frac{5}{6},\frac{1}{2},\frac{3}{2},\frac{1}{2}\,(1-\text{Sin}[c+d\,x])\right]\,(a+a\,\text{Sin}[c+d\,x])^{1/3}}{7\,d\,(1+\text{Sin}[c+d\,x])^{5/6}}-\frac{3\,\text{Cos}[c+d\,x]\,(a+a\,\text{Sin}[c+d\,x])^{4/3}}{7\,d}$$

Result (type 5, 324 leaves) :

$$\frac{1}{7 d \left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3}$$
$$(a (1+\text{Sin}[c+d x]))^{4/3} \left(-\frac{1}{4 \left(1+i e^{-i (c+d x)}\right)^{2/3} \sqrt{1-\text{Sin}[c+d x]}} 3 (-1)^{3/4} e^{-\frac{3}{2} i (c+d x)} \left(i+e^{i (c+d x)}\right) \left(-20 e^{i (c+d x)} \sqrt{\text{Cos}\left[\frac{1}{4}(2 c+\pi+2 d x)\right]^2}\right.\right.$$
$$\text{Hypergeometric2F1}\left[-\frac{1}{3},\frac{1}{3},\frac{2}{3},-i e^{-i (c+d x)}\right]+2 \left(1+i e^{-i (c+d x)}\right)^{2/3} \left(1+e^{2 i (c+d x)}\right) \text{Hypergeometric2F1}\left[\frac{1}{2},\right.$$
$$\left.\left.\frac{5}{6},\frac{11}{6},\text{Sin}\left[\frac{1}{4}(2 c+\pi+2 d x)\right]^2\right]-5 i\, \text{Hypergeometric2F1}\left[\frac{1}{3},\frac{2}{3},\frac{5}{3},-i e^{-i (c+d x)}\right] \sqrt{2-2 \text{Sin}[c+d x]}\right)-$$
$$\left.\frac{3}{2}\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)(-10+4 \text{Cos}[c+d x]+\text{Sin}[2 (c+d x)])\right)$$

Problem 101: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int (a+a \text{Sin}[c+d x])^{4/3} \, dx$$

Optimal (type 5, 67 leaves, 2 steps):

$$-\frac{2\times 2^{5/6} a \text{Cos}[c+d x] \text{Hypergeometric2F1}\left[-\frac{5}{6},\frac{1}{2},\frac{3}{2},\frac{1}{2}(1-\text{Sin}[c+d x])\right] (a+a \text{Sin}[c+d x])^{1/3}}{d (1+\text{Sin}[c+d x])^{5/6}}$$

Result (type 5, 314 leaves):

$$\frac{1}{2 d \left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3}$$
$$\left(-\frac{3}{2}(-5+\text{Cos}[c+d x]) \left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)-\frac{1}{8 \left(1+i e^{-i (c+d x)}\right)^{2/3} \sqrt{1-\text{Sin}[c+d x]}} 3 (-1)^{3/4}\right.$$
$$e^{-\frac{3}{2} i (c+d x)} \left(i+e^{i (c+d x)}\right) \left(-20 e^{i (c+d x)} \sqrt{\text{Cos}\left[\frac{1}{4}(2 c+\pi+2 d x)\right]^2} \text{Hypergeometric2F1}\left[-\frac{1}{3},\frac{1}{3},\frac{2}{3},-i e^{-i (c+d x)}\right]+\right.$$
$$2 \left(1+i e^{-i (c+d x)}\right)^{2/3} \left(1+e^{2 i (c+d x)}\right) \text{Hypergeometric2F1}\left[\frac{1}{2},\frac{5}{6},\frac{11}{6},\text{Sin}\left[\frac{1}{4}(2 c+\pi+2 d x)\right]^2\right]-$$
$$\left.\left.5 i\, \text{Hypergeometric2F1}\left[\frac{1}{3},\frac{2}{3},\frac{5}{3},-i e^{-i (c+d x)}\right] \sqrt{2-2 \text{Sin}[c+d x]}\right)\right) (a (1+\text{Sin}[c+d x]))^{4/3}$$

Problem 102: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \text{Csc}[c+d x]\,(a+a\,\text{Sin}[c+d x])^{4/3}\,dx$$

Optimal (type 6, 78 leaves, 4 steps):

$$-\frac{1}{d\,(1+\text{Sin}[c+d x])^{5/6}} 2\times 2^{5/6}\,a\,\text{AppellF1}\left[\frac{1}{2},1,-\frac{5}{6},\frac{3}{2},1-\text{Sin}[c+d x],\frac{1}{2}(1-\text{Sin}[c+d x])\right]\text{Cos}[c+d x]\,(a+a\,\text{Sin}[c+d x])^{1/3}$$

Result (type 6, 9193 leaves):

$$\frac{3\,(a\,(1+\text{Sin}[c+d x]))^{4/3}}{d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2}-$$

$$\left((120+120\,i)\,\text{AppellF1}\left[\frac{2}{3},\frac{1}{3},\frac{1}{3},\frac{5}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d x)\right]\right)\right]\text{Cos}\left[\frac{1}{2}(c+d x)\right]^2\right.$$

$$\text{Sin}\left[\frac{1}{2}(c+d x)\right](a\,(1+\text{Sin}[c+d x]))^{4/3}\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right)$$

$$\left((5+5\,i)\,\text{AppellF1}\left[\frac{2}{3},\frac{1}{3},\frac{1}{3},\frac{5}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d x)\right]\right)\right]\text{Tan}\left[\frac{1}{2}(c+d x)\right]+\right.$$

$$\text{AppellF1}\left[\frac{5}{3},\frac{1}{3},\frac{4}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d x)\right]\right)\right]\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right)+$$

$$\left.\left.i\,\text{AppellF1}\left[\frac{5}{3},\frac{4}{3},\frac{1}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d x)\right]\right)\right]\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right)\right)\right)\Big/$$

$$\left(d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3\left(-400\,i\,\text{AppellF1}\left[\frac{2}{3},\frac{1}{3},\frac{1}{3},\frac{5}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d x)\right]\right)\right]^2\right.\right.$$

$$\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)\text{Sin}\left[\frac{1}{2}(c+d x)\right]^3+8\left(\text{AppellF1}\left[\frac{5}{3},\frac{1}{3},\frac{4}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d x)\right]\right),\right.\right.$$

$$\left.\left.\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d x)\right]\right)\right]+i\,\text{AppellF1}\left[\frac{5}{3},\frac{4}{3},\frac{1}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d x)\right]\right)\right]\right)^2$$

$$\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2+5\,\text{AppellF1}\left[\frac{2}{3},\frac{1}{3},\frac{1}{3},\frac{5}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d x)\right]\right)\right]$$

$$\left(-5\left(2\,\text{AppellF1}\left[\frac{8}{3},\frac{1}{3},\frac{7}{3},\frac{11}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d x)\right]\right)\right]+\right.\right.$$

$$i\,\text{AppellF1}\left[\frac{8}{3},\frac{4}{3},\frac{4}{3},\frac{11}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d x)\right]\right)\right]-$$

$$\left.2\,\text{AppellF1}\left[\frac{8}{3},\frac{7}{3},\frac{1}{3},\frac{11}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d x)\right]\right)\right]\right)$$

$$\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2+(2+2\,i)\,\text{AppellF1}\left[\frac{5}{3},\frac{1}{3},\frac{4}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d x)\right]\right),\right.$$

$$\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right)\Big]\,(-2+\text{Cos}[c+d\,x]+\text{Cos}[2\,(c+d\,x)]-3\,\text{Sin}[c+d\,x])-(2-2\,i)\,\text{AppellF1}\Big[\frac{5}{3},\frac{4}{3},\frac{1}{3},\frac{8}{3},$$

$$\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right)\Big]\,(-2+\text{Cos}[c+d\,x]+\text{Cos}[2\,(c+d\,x)]-3\,\text{Sin}[c+d\,x])\Big)\Big)\Big)-$$

$$\Big((120+120\,i)\,\text{AppellF1}\Big[\frac{2}{3},\frac{1}{3},\frac{1}{3},\frac{5}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)\Big]$$

$$\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]^4\text{Csc}[c+d\,x]$$

$$\text{Sin}\left[\frac{1}{2}(c+d\,x)\right](a\,(1+\text{Sin}[c+d\,x]))^{4/3}$$

$$\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)$$

$$\Big((5+5\,i)\,\text{AppellF1}\Big[\frac{2}{3},\frac{1}{3},\frac{1}{3},\frac{5}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)\Big]+$$

$$\Big(\text{AppellF1}\Big[\frac{5}{3},\frac{1}{3},\frac{4}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)\Big]+$$

$$i\,\text{AppellF1}\Big[\frac{5}{3},\frac{4}{3},\frac{1}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)\Big]\Big)\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)\Big)\Big)\Big/$$

$$\Big(d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^3\Big(-8\,\Big(\text{AppellF1}\Big[\frac{5}{3},\frac{1}{3},\frac{4}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)\Big]+$$

$$i\,\text{AppellF1}\Big[\frac{5}{3},\frac{4}{3},\frac{1}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)\Big]\Big)^2\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2+$$

$$5\,\text{AppellF1}\Big[\frac{2}{3},\frac{1}{3},\frac{1}{3},\frac{5}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)\Big]$$

$$\Big(5\,\Big(2\,\text{AppellF1}\Big[\frac{8}{3},\frac{1}{3},\frac{7}{3},\frac{11}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)\Big]+$$

$$i\,\text{AppellF1}\Big[\frac{8}{3},\frac{4}{3},\frac{4}{3},\frac{11}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)\Big]-$$

$$2\,\text{AppellF1}\Big[\frac{8}{3},\frac{7}{3},\frac{1}{3},\frac{11}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)\Big]\Big)$$

$$\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2+(2+2\,i)\,\text{AppellF1}\Big[\frac{5}{3},\frac{1}{3},\frac{4}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right),$$

$$\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)\Big]\,(2+\text{Cos}[c+d\,x]-\text{Cos}[2\,(c+d\,x)]+3\,\text{Sin}[c+d\,x])-(2-2\,i)\,\text{AppellF1}\Big[\frac{5}{3},\frac{4}{3},\frac{1}{3},\frac{8}{3},$$

$$\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)\Big]\,(2+\text{Cos}[c+d\,x]-\text{Cos}[2\,(c+d\,x)]+3\,\text{Sin}[c+d\,x])\Big)-$$

$$50\,i\,\text{AppellF1}\left[\frac{2}{3},\frac{1}{3},\frac{1}{3},\frac{5}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)\right]^2$$

$$(3+4\,\text{Cos}[c+d\,x]+\text{Cos}[2(c+d\,x)]-2\,\text{Sin}[c+d\,x]-\text{Sin}[2(c+d\,x)])\Bigg)\Bigg)-$$

$$\left(\left(\frac{3}{4}+\frac{3\,i}{4}\right)\text{Cos}\left[\frac{3}{2}(c+d\,x)\right]\text{Csc}[c+d\,x]\,(a\,(1+\text{Sin}[c+d\,x]))^{4/3}\left(\frac{1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{\sqrt{\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2}}\right)^{2/3}\right.$$

$$\left((2-2\,i)\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2+(2-2\,i)\,\text{Cos}[c+d\,x]\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2+\right.$$

$$\left(2^{2/3}\left(\text{AppellF1}\left[\frac{5}{3},\frac{1}{3},\frac{4}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right)\right]+\right.\right.$$

$$\left.i\,\text{AppellF1}\left[\frac{5}{3},\frac{4}{3},\frac{1}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right)\right]\right)\text{Hypergeometric2F1}\left[\frac{1}{3},\frac{2}{3},\frac{5}{3},\right.$$

$$\left.\frac{(1+i)+(1-i)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{2+2\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}\right]\left(i+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)\left(\frac{(1+i)\left(-i+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)}{1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}\right)^{1/3}\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)+$$

$$(5+5\,i)\,\text{AppellF1}\left[\frac{2}{3},\frac{1}{3},\frac{1}{3},\frac{5}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right)\right]$$

$$\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\left(2^{2/3}\,\text{Hypergeometric2F1}\left[\frac{1}{3},\frac{2}{3},\frac{5}{3},\frac{(1+i)+(1-i)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{2+2\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}\right]\right.$$

$$\left.\left.\left.\left(i+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)\left(\frac{(1+i)\left(-i+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)}{1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}\right)^{1/3}-(1-i)\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)\right)\right)\right)\Big/$$

$$\left(\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)\left(\text{AppellF1}\left[\frac{5}{3},\frac{1}{3},\frac{4}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right)\right]+\right.\right.$$

$$i\,\text{AppellF1}\left[\frac{5}{3},\frac{4}{3},\frac{1}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right)\right]+\frac{1}{1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}$$

$$(5+5\,i)\,\text{AppellF1}\left[\frac{2}{3},\frac{1}{3},\frac{1}{3},\frac{5}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right)\right]\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\Bigg)\Bigg)\Bigg)\Bigg)\Bigg/$$

$$\Bigg(d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^3\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)\Bigg(-\frac{1}{\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)^2}\left(\frac{3}{8}+\frac{3\,i}{8}\right)\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2$$

$$\left(\frac{1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{\sqrt{\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2}}\right)^{2/3}\Bigg((2-2\,i)\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2+(2-2\,i)\,\text{Cos}[c+d\,x]\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2+\Bigg(2^{2/3}\Bigg(\text{AppellF1}\left[\frac{5}{3},\frac{1}{3},\frac{4}{3},\frac{8}{3},\right.$$

$$\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right)\Big]+i\,\text{AppellF1}\left[\frac{5}{3},\frac{4}{3},\frac{1}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right),\right.$$

$$\left.\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right)\right]\Bigg)\,\text{Hypergeometric2F1}\left[\frac{1}{3},\frac{2}{3},\frac{5}{3},\frac{(1+i)+(1-i)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{2+2\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}\right]\left(i+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)$$

$$\left(\frac{(1+i)\left(-i+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)}{1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}\right)^{1/3}\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)+(5+5\,i)\,\text{AppellF1}\left[\frac{2}{3},\frac{1}{3},\frac{1}{3},\frac{5}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right),\right.$$

$$\left.\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right)\right]\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\Bigg(2^{2/3}\,\text{Hypergeometric2F1}\left[\frac{1}{3},\frac{2}{3},\frac{5}{3},\frac{(1+i)+(1-i)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{2+2\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}\right]$$

$$\left(i+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)\left(\frac{(1+i)\left(-i+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)}{1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}\right)^{1/3}-(1-i)\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)\Bigg)\Bigg)\Bigg)\Bigg/$$

$$\Bigg(\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)\Bigg(\text{AppellF1}\left[\frac{5}{3},\frac{1}{3},\frac{4}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right)\right]+$$

$$i\,\text{AppellF1}\left[\frac{5}{3},\frac{4}{3},\frac{1}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right)\right]+\frac{1}{1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}$$

$$(5+5\,i)\,\text{AppellF1}\left[\frac{2}{3},\frac{1}{3},\frac{1}{3},\frac{5}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right)\right]\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\Bigg)\Bigg)\Bigg)+$$

$$\frac{1}{\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)\left(\frac{1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{\sqrt{\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2}}\right)^{1/3}}\left(\frac{1}{2}+\frac{i}{2}\right)\left(\frac{1}{2}\sqrt{\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2}-\frac{\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)}{2\sqrt{\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2}}\right)$$

$$\Bigg((2-2\,i)\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2+(2-2\,i)\,\text{Cos}[c+d\,x]\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2+\Bigg(2^{2/3}\Bigg(\text{AppellF1}\left[\frac{5}{3},\frac{1}{3},\frac{4}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right),\right.$$

$$\left.\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right)\right]+i\,\text{AppellF1}\left[\frac{5}{3},\frac{4}{3},\frac{1}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right)\right]\Bigg)$$

$$\text{Hypergeometric2F1}\left[\frac{1}{3},\frac{2}{3},\frac{5}{3},\frac{(1+i)+(1-i)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{2+2\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}\right]\left(i+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)\left(\frac{(1+i)\left(-i+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)}{1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}\right)^{1/3}$$

$$\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)+(5+5\,i)\,\text{AppellF1}\left[\frac{2}{3},\frac{1}{3},\frac{1}{3},\frac{5}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right)\right]$$

$$\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\Bigg(2^{2/3}\,\text{Hypergeometric2F1}\left[\frac{1}{3},\frac{2}{3},\frac{5}{3},\frac{(1+i)+(1-i)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{2+2\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}\right]$$

$$\left(i+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)\left(\frac{(1+i)\left(-i+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)}{1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}\right)^{1/3}-(1-i)\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)\Bigg)\Bigg)\Bigg)\Bigg/$$

$$\Bigg(\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)\Bigg(\text{AppellF1}\left[\frac{5}{3},\frac{1}{3},\frac{4}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right)\right]+i$$

$$\text{AppellF1}\left[\frac{5}{3},\frac{4}{3},\frac{1}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right)\right]+\frac{1}{1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}(5+5\,i)$$

$$\text{AppellF1}\left[\frac{2}{3},\frac{1}{3},\frac{1}{3},\frac{5}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right)\right]\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\Bigg)\Bigg)\Bigg)+$$

$$\frac{1}{1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]}\left(\frac{3}{4}+\frac{3\,i}{4}\right)\left(\frac{1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]}{\sqrt{\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2}}\right)^{2/3}\Bigg((-2+2\,i)\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\text{Sin}[c+d\,x]+$$

$$(2-2\,i)\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]+(2-2\,i)\,\text{Cos}[c+d\,x]\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]-$$

$$\Bigg(\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\Bigg(2^{2/3}\Bigg(\text{AppellF1}\left[\frac{5}{3},\frac{1}{3},\frac{4}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}\,(c+d\,x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\right]+$$

$$i\,\text{AppellF1}\left[\frac{5}{3},\frac{4}{3},\frac{1}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}\,(c+d\,x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\right]\Bigg)$$

$$\text{Hypergeometric2F1}\left[\frac{1}{3},\frac{2}{3},\frac{5}{3},\frac{(1+i)+(1-i)\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]}{2+2\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]}\right]\left(i+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\left(\frac{(1+i)\left(-i+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right)}{1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]}\right)^{1/3}$$

$$\left(1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right)+(5+5\,i)\,\text{AppellF1}\left[\frac{2}{3},\frac{1}{3},\frac{1}{3},\frac{5}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}\,(c+d\,x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\right]$$

$$\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\Bigg(2^{2/3}\,\text{Hypergeometric2F1}\left[\frac{1}{3},\frac{2}{3},\frac{5}{3},\frac{(1+i)+(1-i)\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]}{2+2\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]}\right]$$

$$\left(i+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\left(\frac{(1+i)\left(-i+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right)}{1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]}\right)^{1/3}-(1-i)\left(1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\Bigg)\Bigg)\Bigg)\Bigg/$$

$$\Bigg(2\left(1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2\Bigg(\text{AppellF1}\left[\frac{5}{3},\frac{1}{3},\frac{4}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}\,(c+d\,x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\right]+$$

$$i\,\text{AppellF1}\left[\frac{5}{3},\frac{4}{3},\frac{1}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}\,(c+d\,x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\right]+\frac{1}{1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]}(5+5\,i)$$

$$\text{AppellF1}\left[\frac{2}{3},\frac{1}{3},\frac{1}{3},\frac{5}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}\,(c+d\,x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\right]\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\Bigg)\Bigg)-$$

$$\Bigg(\Bigg(\Bigg(\left(-\frac{5}{24}+\frac{5\,i}{24}\right)\text{AppellF1}\left[\frac{8}{3},\frac{1}{3},\frac{7}{3},\frac{11}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}\,(c+d\,x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\right]\text{Csc}\left[\frac{1}{2}\,(c+d\,x)\right]^2-$$

$$\left(\frac{5}{96}+\frac{5\,i}{96}\right)\text{AppellF1}\left[\frac{8}{3},\frac{4}{3},\frac{4}{3},\frac{11}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}\,(c+d\,x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\right]\text{Csc}\left[\frac{1}{2}\,(c+d\,x)\right]^2+i$$

$$\left(\left(-\frac{5}{96}+\frac{5\,i}{96}\right)\text{AppellF1}\left[\frac{8}{3},\frac{4}{3},\frac{4}{3},\frac{11}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right)\right]\text{Csc}\left[\frac{1}{2}(c+d\,x)\right]^2-\right.$$

$$\left.\left(\frac{5}{24}+\frac{5\,i}{24}\right)\text{AppellF1}\left[\frac{8}{3},\frac{7}{3},\frac{1}{3},\frac{11}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right)\right]\text{Csc}\left[\frac{1}{2}(c+d\,x)\right]^2\right)-$$

$$\left(\left(\frac{5}{2}+\frac{5\,i}{2}\right)\text{AppellF1}\left[\frac{2}{3},\frac{1}{3},\frac{1}{3},\frac{5}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right)\right]\right.$$

$$\left.\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)\Big/\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)^2+\frac{1}{1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}\left(\frac{5}{2}+\frac{5\,i}{2}\right)\text{AppellF1}\left[\frac{2}{3},\frac{1}{3},\frac{1}{3},\frac{5}{3},\right.$$

$$\left.\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right)\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2+\frac{1}{1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}(5+5\,i)$$

$$\left(\left(-\frac{1}{30}+\frac{i}{30}\right)\text{AppellF1}\left[\frac{5}{3},\frac{1}{3},\frac{4}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right)\right]\text{Csc}\left[\frac{1}{2}(c+d\,x)\right]^2-\right.$$

$$\left.\left(\frac{1}{30}+\frac{i}{30}\right)\text{AppellF1}\left[\frac{5}{3},\frac{4}{3},\frac{1}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right)\right]\text{Csc}\left[\frac{1}{2}(c+d\,x)\right]^2\right)$$

$$\left.\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)\left(2^{2/3}\left(\text{AppellF1}\left[\frac{5}{3},\frac{1}{3},\frac{4}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right)\right]+\right.\right.$$

$$\left.\left.i\,\text{AppellF1}\left[\frac{5}{3},\frac{4}{3},\frac{1}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right)\right]\right)\right)$$

$$\text{Hypergeometric2F1}\left[\frac{1}{3},\frac{2}{3},\frac{5}{3},\frac{(1+i)+(1-i)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{2+2\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}\right]\left(i+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)\left(\frac{(1+i)\left(-i+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)}{1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}\right)^{1/3}$$

$$\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)+(5+5\,i)\,\text{AppellF1}\left[\frac{2}{3},\frac{1}{3},\frac{1}{3},\frac{5}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right)\right]$$

$$\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\left(2^{2/3}\,\text{Hypergeometric2F1}\left[\frac{1}{3},\frac{2}{3},\frac{5}{3},\frac{(1+i)+(1-i)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{2+2\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}\right]\right.$$

$$\left.\left.\left.\left(i+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)\left(\frac{(1+i)\left(-i+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)}{1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}\right)^{1/3}-(1-i)\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)\right)\right)\right)\Big/$$

$$\left(\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)\left(\text{AppellF1}\left[\frac{5}{3},\frac{1}{3},\frac{4}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right)\right]+\right.\right.$$

$$i\,\text{AppellF1}\left[\frac{5}{3},\frac{4}{3},\frac{1}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right)\right]+\frac{1}{1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}$$

$$(5+5\,i)\,\text{AppellF1}\left[\frac{2}{3},\frac{1}{3},\frac{1}{3},\frac{5}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right)\right]\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\Bigg)^2\Bigg)+$$

$$\Bigg(\frac{1}{2^{1/3}}\left(\text{AppellF1}\left[\frac{5}{3},\frac{1}{3},\frac{4}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right)\right]+\right.$$

$$\left.i\,\text{AppellF1}\left[\frac{5}{3},\frac{4}{3},\frac{1}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right)\right]\right)\text{Hypergeometric2F1}\left[\frac{1}{3},\frac{2}{3},\right.$$

$$\left.\frac{5}{3},\frac{(1+i)+(1-i)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{2+2\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\left(i+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)\left(\frac{(1+i)\left(-i+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)}{1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}\right)^{1/3}+$$

$$\frac{1}{2^{1/3}}\left(\text{AppellF1}\left[\frac{5}{3},\frac{1}{3},\frac{4}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right)\right]+\right.$$

$$\left.i\,\text{AppellF1}\left[\frac{5}{3},\frac{4}{3},\frac{1}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right)\right]\right)\text{Hypergeometric2F1}\left[\frac{1}{3},\frac{2}{3},\right.$$

$$\left.\frac{5}{3},\frac{(1+i)+(1-i)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{2+2\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\left(\frac{(1+i)\left(-i+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)}{1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}\right)^{1/3}\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)+$$

$$2^{2/3}\left(\left(\left(-\frac{5}{24}+\frac{5\,i}{24}\right)\text{AppellF1}\left[\frac{8}{3},\frac{1}{3},\frac{7}{3},\frac{11}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right)\right]\text{Csc}\left[\frac{1}{2}(c+d\,x)\right]^2-\right.\right.$$

$$\left.\left(\frac{5}{96}+\frac{5\,i}{96}\right)\text{AppellF1}\left[\frac{8}{3},\frac{4}{3},\frac{4}{3},\frac{11}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right)\right]\text{Csc}\left[\frac{1}{2}(c+d\,x)\right]^2\right)+$$

$$i\left(\left(-\frac{5}{96}+\frac{5\,i}{96}\right)\text{AppellF1}\left[\frac{8}{3},\frac{4}{3},\frac{4}{3},\frac{11}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right)\right]\text{Csc}\left[\frac{1}{2}(c+d\,x)\right]^2-\right.$$

$$\left.\left.\left(\frac{5}{24}+\frac{5\,i}{24}\right)\text{AppellF1}\left[\frac{8}{3},\frac{7}{3},\frac{1}{3},\frac{11}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right)\right]\text{Csc}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)$$

$$\text{Hypergeometric2F1}\left[\frac{1}{3},\frac{2}{3},\frac{5}{3},\frac{(1+i)+(1-i)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{2+2\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}\right]\left(i+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)\left(\frac{(1+i)\left(-i+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)}{1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}\right)^{1/3}$$

$$\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)+\frac{1}{3\left(\frac{(1+i)\left(-i+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)}{1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}\right)^{2/3}}2^{2/3}\left(\text{AppellF1}\left[\frac{5}{3},\frac{1}{3},\frac{4}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\right.\right.$$

$$\left.\left.\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right)\right]+i\,\text{AppellF1}\left[\frac{5}{3},\frac{4}{3},\frac{1}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right)\right]\right)$$

$$\text{Hypergeometric2F1}\left[\frac{1}{3},\frac{2}{3},\frac{5}{3},\frac{(1+i)+(1-i)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{2+2\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}\right]\left(i+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)$$

$$\left(-\frac{\left(\frac{1}{2}+\frac{i}{2}\right)\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\left(-i+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)}{\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)^2}+\frac{\left(\frac{1}{2}+\frac{i}{2}\right)\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2}{1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}\right)+$$

$$\left(\frac{5}{2}+\frac{5\,i}{2}\right)\text{AppellF1}\left[\frac{2}{3},\frac{1}{3},\frac{1}{3},\frac{5}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right)\right]$$

$$\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\left(2^{2/3}\,\text{Hypergeometric2F1}\left[\frac{1}{3},\frac{2}{3},\frac{5}{3},\frac{(1+i)+(1-i)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{2+2\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}\right]\right.$$

$$\left.\left(i+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)\left(\frac{(1+i)\left(-i+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)}{1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}\right)^{1/3}-(1-i)\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)\right)+$$

$$(5+5\,i)\left(\left(-\frac{1}{30}+\frac{i}{30}\right)\text{AppellF1}\left[\frac{5}{3},\frac{1}{3},\frac{4}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right)\right]\text{Csc}\left[\frac{1}{2}(c+d\,x)\right]^2-\right.$$

$$\left.\left(\frac{1}{30}+\frac{i}{30}\right)\text{AppellF1}\left[\frac{5}{3},\frac{4}{3},\frac{1}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right)\right]\text{Csc}\left[\frac{1}{2}(c+d\,x)\right]^2\right)$$

$$\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\left(2^{2/3}\,\text{Hypergeometric2F1}\left[\frac{1}{3},\frac{2}{3},\frac{5}{3},\frac{(1+i)+(1-i)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{2+2\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}\right]\left(i+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)\right.$$

$$\left.\left(\frac{(1+i)\left(-i+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)}{1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}\right)^{1/3}-(1-i)\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)\right)+\frac{1}{3\left((1+i)+(1-i)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)}$$

$$2\times 2^{2/3}\left(\text{AppellF1}\left[\frac{5}{3},\frac{1}{3},\frac{4}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right)\right]+\right.$$

$$\left.i\,\text{AppellF1}\left[\frac{5}{3},\frac{4}{3},\frac{1}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right)\right]\right)$$

$$\left(i+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)\left(\frac{(1+i)\left(-i+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)}{1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}\right)^{1/3}\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)\left(2+2\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)$$

$$\left(-\frac{\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\left((1+i)+(1-i)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)}{\left(2+2\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)^2}+\frac{\left(\frac{1}{2}-\frac{i}{2}\right)\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2}{2+2\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}\right)$$

$$\left(-\text{Hypergeometric2F1}\left[\frac{1}{3},\frac{2}{3},\frac{5}{3},\frac{(1+i)+(1-i)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{2+2\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}\right]+\frac{1}{\left(1-\frac{(1+i)+(1-i)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{2+2\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}\right)^{1/3}}\right)+$$

$$(5+5\,i)\,\text{AppellF1}\left[\frac{2}{3},\frac{1}{3},\frac{1}{3},\frac{5}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right)\right]\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]$$

$$\left(\left(-\frac{1}{2}+\frac{i}{2}\right)\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2+\frac{1}{2^{1/3}}\text{Hypergeometric2F1}\left[\frac{1}{3},\frac{2}{3},\frac{5}{3},\frac{(1+i)+(1-i)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{2+2\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\right.$$

$$\left(\frac{(1+i)\left(-i+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)}{1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}\right)^{1/3}+\left(2^{2/3}\,\text{Hypergeometric2F1}\left[\frac{1}{3},\frac{2}{3},\frac{5}{3},\frac{(1+i)+(1-i)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{2+2\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}\right]\right.$$

$$\left.\left(i+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)\left(-\frac{\left(\frac{1}{2}+\frac{i}{2}\right)\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\left(-i+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)}{\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)^2}+\frac{\left(\frac{1}{2}+\frac{i}{2}\right)\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2}{1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}\right)\right)\Big/$$

$$\left(3\left(\frac{(1+i)\left(-i+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)}{1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}\right)^{2/3}\right)+\left(2\times2^{2/3}\left(i+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)\left(\frac{(1+i)\left(-i+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)}{1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}\right)^{1/3}\right.$$

$$\left(2+2\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)\left(-\frac{\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\left((1+i)+(1-i)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)}{\left(2+2\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)^2}+\frac{\left(\frac{1}{2}-\frac{i}{2}\right)\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2}{2+2\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}\right)$$

$$\left(-\text{Hypergeometric2F1}\left[\frac{1}{3},\frac{2}{3},\frac{5}{3},\frac{(1+i)+(1-i)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{2+2\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}\right]+\right.$$

$$\left.\left.\left.\frac{1}{\left(1-\frac{(1+i)+(1-i)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{2+2\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}\right)^{1/3}}\right)\right)\Big/\left(3\left((1+i)+(1-i)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)\right)\right)\Big/$$

$$\left(\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right)\left(\text{AppellF1}\left[\frac{5}{3},\frac{1}{3},\frac{4}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d x)\right]\right)\right]+i\right.\right.$$

$$\text{AppellF1}\left[\frac{5}{3},\frac{4}{3},\frac{1}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d x)\right]\right)\right]\Big)+\frac{1}{1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]}(5+5 i)$$

$$\left.\left.\left.\text{AppellF1}\left[\frac{2}{3},\frac{1}{3},\frac{1}{3},\frac{5}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d x)\right]\right)\right]\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right)\right)\right)\right)$$

- **Problem 103: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int \text{Csc}[c+d x]^2 (a+a \text{Sin}[c+d x])^{4/3} dx$$

Optimal (type 6, 78 leaves, 4 steps):

$$-\frac{1}{d(1+\text{Sin}[c+d x])^{5/6}} 2\times 2^{5/6} a \text{AppellF1}\left[\frac{1}{2},2,-\frac{5}{6},\frac{3}{2},1-\text{Sin}[c+d x],\frac{1}{2}(1-\text{Sin}[c+d x])\right]\text{Cos}[c+d x](a+a \text{Sin}[c+d x])^{1/3}$$

Result (type 6, 9202 leaves):

$$\frac{(-1-\text{Cot}[c+d x])(a(1+\text{Sin}[c+d x]))^{4/3}}{d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2}-$$

$$\left((60+60 i)\text{AppellF1}\left[\frac{2}{3},\frac{1}{3},\frac{1}{3},\frac{5}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d x)\right]\right)\right]\text{Cos}\left[\frac{1}{2}(c+d x)\right]^2\right.$$

$$\text{Sin}\left[\frac{1}{2}(c+d x)\right](a(1+\text{Sin}[c+d x]))^{4/3}\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right)$$

$$\left((5+5 i)\text{AppellF1}\left[\frac{2}{3},\frac{1}{3},\frac{1}{3},\frac{5}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d x)\right]\right)\right]\text{Tan}\left[\frac{1}{2}(c+d x)\right]+\right.$$

$$\text{AppellF1}\left[\frac{5}{3},\frac{1}{3},\frac{4}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d x)\right]\right)\right]\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right)+$$

$$\left.\left.i\,\text{AppellF1}\left[\frac{5}{3},\frac{4}{3},\frac{1}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d x)\right]\right)\right]\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right)\right)\right)\Big/$$

$$\left(d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3\left(-400 i\,\text{AppellF1}\left[\frac{2}{3},\frac{1}{3},\frac{1}{3},\frac{5}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d x)\right]\right)\right]^2\right.\right.$$

$$\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)\text{Sin}\left[\frac{1}{2}(c+d x)\right]^3+8\left(\text{AppellF1}\left[\frac{5}{3},\frac{1}{3},\frac{4}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d x)\right]\right),\right.\right.$$

$$\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d x)\right]\right)\Big]+i\,\text{AppellF1}\left[\frac{5}{3},\frac{4}{3},\frac{1}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d x)\right]\right)\right]\Big)^2$$

$$\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2+5\,\text{AppellF1}\left[\frac{2}{3},\frac{1}{3},\frac{1}{3},\frac{5}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d x)\right]\right)\right]$$

$$\Big(-5\Big(2\,\text{AppellF1}\left[\frac{8}{3},\frac{1}{3},\frac{7}{3},\frac{11}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d x)\right]\right)\right]+$$

$$i\,\text{AppellF1}\left[\frac{8}{3},\frac{4}{3},\frac{4}{3},\frac{11}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d x)\right]\right)\right]-$$

$$2\,\text{AppellF1}\left[\frac{8}{3},\frac{7}{3},\frac{1}{3},\frac{11}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d x)\right]\right)\right]\Big)$$

$$\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2+(2+2 i)\,\text{AppellF1}\left[\frac{5}{3},\frac{1}{3},\frac{4}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d x)\right]\right),\right.$$

$$\left.\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d x)\right]\right)\right](-2+\text{Cos}[c+d x]+\text{Cos}[2(c+d x)]-3\,\text{Sin}[c+d x])-(2-2 i)\,\text{AppellF1}\left[\frac{5}{3},\frac{4}{3},\frac{1}{3},\frac{8}{3},\right.$$

$$\left.\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d x)\right]\right)\right](-2+\text{Cos}[c+d x]+\text{Cos}[2(c+d x)]-3\,\text{Sin}[c+d x])\Big)\Big)-$$

$$\Big((160+160 i)\,\text{AppellF1}\left[\frac{2}{3},\frac{1}{3},\frac{1}{3},\frac{5}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right)\right]$$

$$\text{Cos}\left[\frac{1}{2}(c+d x)\right]^4\text{Csc}[c+d x]$$

$$\text{Sin}\left[\frac{1}{2}(c+d x)\right](a(1+\text{Sin}[c+d x]))^{4/3}$$

$$\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right)$$

$$\Big((5+5 i)\,\text{AppellF1}\left[\frac{2}{3},\frac{1}{3},\frac{1}{3},\frac{5}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right)\right]+$$

$$\Big(\text{AppellF1}\left[\frac{5}{3},\frac{1}{3},\frac{4}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right)\right]+$$

$$i\,\text{AppellF1}\left[\frac{5}{3},\frac{4}{3},\frac{1}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right)\right]\Big)\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right)\Big)\Big)\Big/$$

$$\Big(d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3\Big(-8\Big(\text{AppellF1}\left[\frac{5}{3},\frac{1}{3},\frac{4}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right)\right]+$$

$$i\,\text{AppellF1}\left[\frac{5}{3},\frac{4}{3},\frac{1}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right)\right]\Big)^2\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2+$$

$$5\,\text{AppellF1}\left[\frac{2}{3},\frac{1}{3},\frac{1}{3},\frac{5}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right)\right]$$

$$\left(5\left(2\,\text{AppellF1}\left[\frac{8}{3},\frac{1}{3},\frac{7}{3},\frac{11}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)\right]+\right.\right.$$

$$i\,\text{AppellF1}\left[\frac{8}{3},\frac{4}{3},\frac{4}{3},\frac{11}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)\right]-$$

$$\left.2\,\text{AppellF1}\left[\frac{8}{3},\frac{7}{3},\frac{1}{3},\frac{11}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)\right]\right)$$

$$\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2+(2+2\,i)\,\text{AppellF1}\left[\frac{5}{3},\frac{1}{3},\frac{4}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right),\right.$$

$$\left.\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)\right](2+\text{Cos}[c+d\,x]-\text{Cos}[2(c+d\,x)]+3\,\text{Sin}[c+d\,x])-(2-2\,i)\,\text{AppellF1}\left[\frac{5}{3},\frac{4}{3},\frac{1}{3},\frac{8}{3},\right.$$

$$\left.\left.\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)\right](2+\text{Cos}[c+d\,x]-\text{Cos}[2(c+d\,x)]+3\,\text{Sin}[c+d\,x])\right)-$$

$$50\,i\,\text{AppellF1}\left[\frac{2}{3},\frac{1}{3},\frac{1}{3},\frac{5}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)\right]^2$$

$$\left.\left.(3+4\,\text{Cos}[c+d\,x]+\text{Cos}[2(c+d\,x)]-2\,\text{Sin}[c+d\,x]-\text{Sin}[2(c+d\,x)])\right)\right)+$$

$$\left(\left(\frac{1}{4}+\frac{i}{4}\right)\text{Cos}\left[\frac{3}{2}(c+d\,x)\right]\text{Csc}[c+d\,x]\,(a\,(1+\text{Sin}[c+d\,x]))^{4/3}\left(\frac{1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{\sqrt{\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2}}\right)^{2/3}\right.$$

$$\left((2-2\,i)\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2+(2-2\,i)\,\text{Cos}[c+d\,x]\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2+\right.$$

$$\left(2^{2/3}\left(\text{AppellF1}\left[\frac{5}{3},\frac{1}{3},\frac{4}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right)\right]+\right.\right.$$

$$\left.i\,\text{AppellF1}\left[\frac{5}{3},\frac{4}{3},\frac{1}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right)\right]\right)\text{Hypergeometric2F1}\left[\frac{1}{3},\frac{2}{3},\frac{5}{3},\right.$$

$$\left.\frac{(1+i)+(1-i)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{2+2\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}\right]\left(i+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)\left(\frac{(1+i)\left(-i+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)}{1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}\right)^{1/3}\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)+$$

$$(5+5\,i)\,\text{AppellF1}\left[\frac{2}{3},\frac{1}{3},\frac{1}{3},\frac{5}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right)\right]$$

$$\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\left(2^{2/3}\,\text{Hypergeometric2F1}\left[\frac{1}{3},\frac{2}{3},\frac{5}{3},\frac{(1+i)+(1-i)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{2+2\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}\right]\right.$$

$$\left(\mathrm{i}+\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]\right)\left(\frac{(1+\mathrm{i})\left(-\mathrm{i}+\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]\right)}{1+\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]}\right)^{1/3}-(1-\mathrm{i})\left(1+\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]\right)\Bigg)\Bigg)\Bigg)\Big/$$

$$\Bigg(\left(1+\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]\right)\Bigg(\mathrm{AppellF1}\left[\frac{5}{3},\frac{1}{3},\frac{4}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{\mathrm{i}}{2}\right)\left(1+\mathrm{Cot}\left[\frac{1}{2}(c+d x)\right]\right),\left(\frac{1}{2}-\frac{\mathrm{i}}{2}\right)\left(1+\mathrm{Cot}\left[\frac{1}{2}(c+d x)\right]\right)\right]+$$

$$\mathrm{i}\,\mathrm{AppellF1}\left[\frac{5}{3},\frac{4}{3},\frac{1}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{\mathrm{i}}{2}\right)\left(1+\mathrm{Cot}\left[\frac{1}{2}(c+d x)\right]\right),\left(\frac{1}{2}-\frac{\mathrm{i}}{2}\right)\left(1+\mathrm{Cot}\left[\frac{1}{2}(c+d x)\right]\right)\right]+\frac{1}{1+\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]}$$

$$(5+5\,\mathrm{i})\,\mathrm{AppellF1}\left[\frac{2}{3},\frac{1}{3},\frac{1}{3},\frac{5}{3},\left(\frac{1}{2}+\frac{\mathrm{i}}{2}\right)\left(1+\mathrm{Cot}\left[\frac{1}{2}(c+d x)\right]\right),\left(\frac{1}{2}-\frac{\mathrm{i}}{2}\right)\left(1+\mathrm{Cot}\left[\frac{1}{2}(c+d x)\right]\right)\right]\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]\Bigg)\Bigg)\Bigg)\Bigg)\Big/$$

$$\Bigg(d\left(\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^{3}\left(1+\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]\right)\Bigg(-\frac{1}{\left(1+\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]\right)^{2}}\left(\frac{3}{8}+\frac{3\,\mathrm{i}}{8}\right)\mathrm{Sec}\left[\frac{1}{2}(c+d x)\right]^{2}$$

$$\left(\frac{1+\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]}{\sqrt{\mathrm{Sec}\left[\frac{1}{2}(c+d x)\right]^{2}}}\right)^{2/3}\Bigg((2-2\,\mathrm{i})\,\mathrm{Sec}\left[\frac{1}{2}(c+d x)\right]^{2}+(2-2\,\mathrm{i})\,\mathrm{Cos}[c+d x]\,\mathrm{Sec}\left[\frac{1}{2}(c+d x)\right]^{2}+\Bigg(2^{2/3}\Bigg(\mathrm{AppellF1}\left[\frac{5}{3},\frac{1}{3},\frac{4}{3},\frac{8}{3},\right.$$

$$\left.\left(\frac{1}{2}+\frac{\mathrm{i}}{2}\right)\left(1+\mathrm{Cot}\left[\frac{1}{2}(c+d x)\right]\right),\left(\frac{1}{2}-\frac{\mathrm{i}}{2}\right)\left(1+\mathrm{Cot}\left[\frac{1}{2}(c+d x)\right]\right)\right]+\mathrm{i}\,\mathrm{AppellF1}\left[\frac{5}{3},\frac{4}{3},\frac{1}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{\mathrm{i}}{2}\right)\left(1+\mathrm{Cot}\left[\frac{1}{2}(c+d x)\right]\right),\right.$$

$$\left.\left(\frac{1}{2}-\frac{\mathrm{i}}{2}\right)\left(1+\mathrm{Cot}\left[\frac{1}{2}(c+d x)\right]\right)\right]\Bigg)\mathrm{Hypergeometric2F1}\left[\frac{1}{3},\frac{2}{3},\frac{5}{3},\frac{(1+\mathrm{i})+(1-\mathrm{i})\,\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]}{2+2\,\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]}\right]\left(\mathrm{i}+\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]\right)$$

$$\left(\frac{(1+\mathrm{i})\left(-\mathrm{i}+\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]\right)}{1+\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]}\right)^{1/3}\left(1+\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]\right)+(5+5\,\mathrm{i})\,\mathrm{AppellF1}\left[\frac{2}{3},\frac{1}{3},\frac{1}{3},\frac{5}{3},\left(\frac{1}{2}+\frac{\mathrm{i}}{2}\right)\left(1+\mathrm{Cot}\left[\frac{1}{2}(c+d x)\right]\right),\right.$$

$$\left.\left(\frac{1}{2}-\frac{\mathrm{i}}{2}\right)\left(1+\mathrm{Cot}\left[\frac{1}{2}(c+d x)\right]\right)\right]\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]\Bigg(2^{2/3}\,\mathrm{Hypergeometric2F1}\left[\frac{1}{3},\frac{2}{3},\frac{5}{3},\frac{(1+\mathrm{i})+(1-\mathrm{i})\,\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]}{2+2\,\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]}\right]$$

$$\left(\mathrm{i}+\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)\left(\frac{(1+\mathrm{i})\left(-\mathrm{i}+\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)}{1+\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]}\right)^{1/3}-(1-\mathrm{i})\left(1+\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)\Bigg)\Bigg)\Bigg/$$

$$\Bigg(\left(1+\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)\Bigg(\mathrm{AppellF1}\left[\frac{5}{3},\frac{1}{3},\frac{4}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{\mathrm{i}}{2}\right)\left(1+\mathrm{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right),\left(\frac{1}{2}-\frac{\mathrm{i}}{2}\right)\left(1+\mathrm{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right)\right]+$$

$$\mathrm{i}\,\mathrm{AppellF1}\left[\frac{5}{3},\frac{4}{3},\frac{1}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{\mathrm{i}}{2}\right)\left(1+\mathrm{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right),\left(\frac{1}{2}-\frac{\mathrm{i}}{2}\right)\left(1+\mathrm{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right)\right]+\frac{1}{1+\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]}$$

$$(5+5\,\mathrm{i})\,\mathrm{AppellF1}\left[\frac{2}{3},\frac{1}{3},\frac{1}{3},\frac{5}{3},\left(\frac{1}{2}+\frac{\mathrm{i}}{2}\right)\left(1+\mathrm{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right),\left(\frac{1}{2}-\frac{\mathrm{i}}{2}\right)\left(1+\mathrm{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right)\right]\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]\Bigg)\Bigg)\Bigg)+$$

$$\frac{1}{\left(1+\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)\left(\frac{1+\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{\sqrt{\mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2}}\right)^{1/3}}\left(\frac{1}{2}+\frac{\mathrm{i}}{2}\right)\left(\frac{1}{2}\sqrt{\mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2}-\frac{\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]\left(1+\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)}{2\sqrt{\mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2}}\right)$$

$$\Bigg((2-2\,\mathrm{i})\,\mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2+(2-2\,\mathrm{i})\,\mathrm{Cos}[c+d\,x]\,\mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2+\Bigg(2^{2/3}\Bigg(\mathrm{AppellF1}\left[\frac{5}{3},\frac{1}{3},\frac{4}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{\mathrm{i}}{2}\right)\left(1+\mathrm{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right),\right.$$

$$\left.\left(\frac{1}{2}-\frac{\mathrm{i}}{2}\right)\left(1+\mathrm{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right)\right]+\mathrm{i}\,\mathrm{AppellF1}\left[\frac{5}{3},\frac{4}{3},\frac{1}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{\mathrm{i}}{2}\right)\left(1+\mathrm{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right),\left(\frac{1}{2}-\frac{\mathrm{i}}{2}\right)\left(1+\mathrm{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right)\right]\Bigg)$$

$$\mathrm{Hypergeometric2F1}\left[\frac{1}{3},\frac{2}{3},\frac{5}{3},\frac{(1+\mathrm{i})+(1-\mathrm{i})\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{2+2\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]}\right]\left(\mathrm{i}+\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)\left(\frac{(1+\mathrm{i})\left(-\mathrm{i}+\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)}{1+\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]}\right)^{1/3}$$

$$\left(1+\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)+(5+5\,\mathrm{i})\,\mathrm{AppellF1}\left[\frac{2}{3},\frac{1}{3},\frac{1}{3},\frac{5}{3},\left(\frac{1}{2}+\frac{\mathrm{i}}{2}\right)\left(1+\mathrm{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right),\left(\frac{1}{2}-\frac{\mathrm{i}}{2}\right)\left(1+\mathrm{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right)\right]$$

$$\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]\Bigg(2^{2/3}\,\mathrm{Hypergeometric2F1}\left[\frac{1}{3},\frac{2}{3},\frac{5}{3},\frac{(1+\mathrm{i})+(1-\mathrm{i})\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{2+2\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]}\right]$$

$$\left(\mathrm{i}+\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)\left(\frac{(1+\mathrm{i})\left(-\mathrm{i}+\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)}{1+\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]}\right)^{1/3}-(1-\mathrm{i})\left(1+\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)\Bigg)\Bigg)\Bigg/$$

$$\Bigg(\left(1+\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)\Bigg(\mathrm{AppellF1}\left[\frac{5}{3},\frac{1}{3},\frac{4}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{\mathrm{i}}{2}\right)\left(1+\mathrm{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right),\left(\frac{1}{2}-\frac{\mathrm{i}}{2}\right)\left(1+\mathrm{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right)\right]+\mathrm{i}$$

$$\text{AppellF1}\left[\frac{5}{3},\frac{4}{3},\frac{1}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d x)\right]\right)\right]+\frac{1}{1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]}(5+5 i)$$

$$\text{AppellF1}\left[\frac{2}{3},\frac{1}{3},\frac{1}{3},\frac{5}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d x)\right]\right)\right]\text{Tan}\left[\frac{1}{2}(c+d x)\right]\Bigg)\Bigg)\Bigg)+$$

$$\frac{1}{1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]}\left(\frac{3}{4}+\frac{3 i}{4}\right)\left(\frac{1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]}{\sqrt{\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2}}\right)^{2/3}\Bigg((-2+2 i)\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Sin}[c+d x]+$$

$$(2-2 i)\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]+(2-2 i)\,\text{Cos}[c+d x]\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]-$$

$$\Bigg(\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\Bigg(2^{2/3}\Bigg(\text{AppellF1}\left[\frac{5}{3},\frac{1}{3},\frac{4}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d x)\right]\right)\right]+$$

$$i\,\text{AppellF1}\left[\frac{5}{3},\frac{4}{3},\frac{1}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d x)\right]\right)\right]\Bigg)$$

$$\text{Hypergeometric2F1}\left[\frac{1}{3},\frac{2}{3},\frac{5}{3},\frac{(1+i)+(1-i)\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]}{2+2\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]}\right]\left(i+\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right)\left(\frac{(1+i)\left(-i+\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right)}{1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]}\right)^{1/3}$$

$$\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right)+(5+5 i)\,\text{AppellF1}\left[\frac{2}{3},\frac{1}{3},\frac{1}{3},\frac{5}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d x)\right]\right)\right]$$

$$\text{Tan}\left[\frac{1}{2}(c+d x)\right]\Bigg(2^{2/3}\,\text{Hypergeometric2F1}\left[\frac{1}{3},\frac{2}{3},\frac{5}{3},\frac{(1+i)+(1-i)\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]}{2+2\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]}\right]$$

$$\left(i+\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right)\left(\frac{(1+i)\left(-i+\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right)}{1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]}\right)^{1/3}-(1-i)\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right)\Bigg)\Bigg)\Bigg)\Bigg/$$

$$\Bigg(2\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right)^2\Bigg(\text{AppellF1}\left[\frac{5}{3},\frac{1}{3},\frac{4}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d x)\right]\right)\right]+$$

$$i\,\text{AppellF1}\left[\frac{5}{3},\frac{4}{3},\frac{1}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d x)\right]\right)\right]+\frac{1}{1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]}(5+5 i)$$

$$\text{AppellF1}\left[\frac{2}{3},\frac{1}{3},\frac{1}{3},\frac{5}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d x)\right]\right)\right]\text{Tan}\left[\frac{1}{2}(c+d x)\right]\Bigg)\Bigg)-$$

$$\left(\left(\left(\left(-\frac{5}{24}+\frac{5\,i}{24}\right)\text{AppellF1}\left[\frac{8}{3},\frac{1}{3},\frac{7}{3},\frac{11}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right)\right]\text{Csc}\left[\frac{1}{2}(c+d\,x)\right]^2-\right.\right.\right.$$

$$\left(\frac{5}{96}+\frac{5\,i}{96}\right)\text{AppellF1}\left[\frac{8}{3},\frac{4}{3},\frac{4}{3},\frac{11}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right)\right]\text{Csc}\left[\frac{1}{2}(c+d\,x)\right]^2+i$$

$$\left(\left(-\frac{5}{96}+\frac{5\,i}{96}\right)\text{AppellF1}\left[\frac{8}{3},\frac{4}{3},\frac{4}{3},\frac{11}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right)\right]\text{Csc}\left[\frac{1}{2}(c+d\,x)\right]^2-\right.$$

$$\left.\left(\frac{5}{24}+\frac{5\,i}{24}\right)\text{AppellF1}\left[\frac{8}{3},\frac{7}{3},\frac{1}{3},\frac{11}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right)\right]\text{Csc}\left[\frac{1}{2}(c+d\,x)\right]^2\right)-$$

$$\left(\left(\frac{5}{2}+\frac{5\,i}{2}\right)\text{AppellF1}\left[\frac{2}{3},\frac{1}{3},\frac{1}{3},\frac{5}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right)\right]\right.$$

$$\left.\left.\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)\right/\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)^2+\frac{1}{1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}\left(\frac{5}{2}+\frac{5\,i}{2}\right)\text{AppellF1}\left[\frac{2}{3},\frac{1}{3},\frac{1}{3},\frac{5}{3},\right.$$

$$\left.\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right)\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2+\frac{1}{1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}(5+5\,i)$$

$$\left(\left(-\frac{1}{30}+\frac{i}{30}\right)\text{AppellF1}\left[\frac{5}{3},\frac{1}{3},\frac{4}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right)\right]\text{Csc}\left[\frac{1}{2}(c+d\,x)\right]^2-\right.$$

$$\left.\left(\frac{1}{30}+\frac{i}{30}\right)\text{AppellF1}\left[\frac{5}{3},\frac{4}{3},\frac{1}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right)\right]\text{Csc}\left[\frac{1}{2}(c+d\,x)\right]^2\right)$$

$$\left.\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)\left(2^{2/3}\left(\text{AppellF1}\left[\frac{5}{3},\frac{1}{3},\frac{4}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right)\right]+\right.\right.$$

$$\left.\left.i\,\text{AppellF1}\left[\frac{5}{3},\frac{4}{3},\frac{1}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right)\right]\right)\right)$$

$$\text{Hypergeometric2F1}\left[\frac{1}{3},\frac{2}{3},\frac{5}{3},\frac{(1+i)+(1-i)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{2+2\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}\right]\left(i+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)\left(\frac{(1+i)\left(-i+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)}{1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}\right)^{1/3}$$

$$\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)+(5+5\,i)\,\text{AppellF1}\left[\frac{2}{3},\frac{1}{3},\frac{1}{3},\frac{5}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right)\right]$$

$$\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\left(2^{2/3}\,\text{Hypergeometric2F1}\left[\frac{1}{3},\frac{2}{3},\frac{5}{3},\frac{(1+i)+(1-i)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{2+2\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}\right]\right.$$

$$\left.\left.\left.\left.\left(i+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)\left(\frac{(1+i)\left(-i+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)}{1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}\right)^{1/3}-(1-i)\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)\right)\right)\right)\right)\right/$$

$$\Bigg(\Big(1+\text{Tan}\big[\tfrac{1}{2}(c+d\,x)\big]\Big)\Big(\text{AppellF1}\big[\tfrac{5}{3},\tfrac{1}{3},\tfrac{4}{3},\tfrac{8}{3},\big(\tfrac{1}{2}+\tfrac{i}{2}\big)\big(1+\text{Cot}\big[\tfrac{1}{2}(c+d\,x)\big]\big),\big(\tfrac{1}{2}-\tfrac{i}{2}\big)\big(1+\text{Cot}\big[\tfrac{1}{2}(c+d\,x)\big]\big)\big]+$$

$$i\,\text{AppellF1}\big[\tfrac{5}{3},\tfrac{4}{3},\tfrac{1}{3},\tfrac{8}{3},\big(\tfrac{1}{2}+\tfrac{i}{2}\big)\big(1+\text{Cot}\big[\tfrac{1}{2}(c+d\,x)\big]\big),\big(\tfrac{1}{2}-\tfrac{i}{2}\big)\big(1+\text{Cot}\big[\tfrac{1}{2}(c+d\,x)\big]\big)\big]+\frac{1}{1+\text{Tan}\big[\frac{1}{2}(c+d\,x)\big]}$$

$$(5+5\,i)\,\text{AppellF1}\big[\tfrac{2}{3},\tfrac{1}{3},\tfrac{1}{3},\tfrac{5}{3},\big(\tfrac{1}{2}+\tfrac{i}{2}\big)\big(1+\text{Cot}\big[\tfrac{1}{2}(c+d\,x)\big]\big),\big(\tfrac{1}{2}-\tfrac{i}{2}\big)\big(1+\text{Cot}\big[\tfrac{1}{2}(c+d\,x)\big]\big)\big]\,\text{Tan}\big[\tfrac{1}{2}(c+d\,x)\big]\Big)^2\Bigg)+$$

$$\Bigg(\frac{1}{2^{1/3}}\Big(\text{AppellF1}\big[\tfrac{5}{3},\tfrac{1}{3},\tfrac{4}{3},\tfrac{8}{3},\big(\tfrac{1}{2}+\tfrac{i}{2}\big)\big(1+\text{Cot}\big[\tfrac{1}{2}(c+d\,x)\big]\big),\big(\tfrac{1}{2}-\tfrac{i}{2}\big)\big(1+\text{Cot}\big[\tfrac{1}{2}(c+d\,x)\big]\big)\big]+$$

$$i\,\text{AppellF1}\big[\tfrac{5}{3},\tfrac{4}{3},\tfrac{1}{3},\tfrac{8}{3},\big(\tfrac{1}{2}+\tfrac{i}{2}\big)\big(1+\text{Cot}\big[\tfrac{1}{2}(c+d\,x)\big]\big),\big(\tfrac{1}{2}-\tfrac{i}{2}\big)\big(1+\text{Cot}\big[\tfrac{1}{2}(c+d\,x)\big]\big)\big]\Big)\,\text{Hypergeometric2F1}\big[\tfrac{1}{3},\tfrac{2}{3},$$

$$\tfrac{5}{3},\frac{(1+i)+(1-i)\,\text{Tan}\big[\frac{1}{2}(c+d\,x)\big]}{2+2\,\text{Tan}\big[\frac{1}{2}(c+d\,x)\big]}\big]\,\text{Sec}\big[\tfrac{1}{2}(c+d\,x)\big]^2\Big(i+\text{Tan}\big[\tfrac{1}{2}(c+d\,x)\big]\Big)\left(\frac{(1+i)\big(-i+\text{Tan}\big[\frac{1}{2}(c+d\,x)\big]\big)}{1+\text{Tan}\big[\frac{1}{2}(c+d\,x)\big]}\right)^{1/3}+$$

$$\frac{1}{2^{1/3}}\Big(\text{AppellF1}\big[\tfrac{5}{3},\tfrac{1}{3},\tfrac{4}{3},\tfrac{8}{3},\big(\tfrac{1}{2}+\tfrac{i}{2}\big)\big(1+\text{Cot}\big[\tfrac{1}{2}(c+d\,x)\big]\big),\big(\tfrac{1}{2}-\tfrac{i}{2}\big)\big(1+\text{Cot}\big[\tfrac{1}{2}(c+d\,x)\big]\big)\big]+$$

$$i\,\text{AppellF1}\big[\tfrac{5}{3},\tfrac{4}{3},\tfrac{1}{3},\tfrac{8}{3},\big(\tfrac{1}{2}+\tfrac{i}{2}\big)\big(1+\text{Cot}\big[\tfrac{1}{2}(c+d\,x)\big]\big),\big(\tfrac{1}{2}-\tfrac{i}{2}\big)\big(1+\text{Cot}\big[\tfrac{1}{2}(c+d\,x)\big]\big)\big]\Big)\,\text{Hypergeometric2F1}\big[\tfrac{1}{3},\tfrac{2}{3},$$

$$\tfrac{5}{3},\frac{(1+i)+(1-i)\,\text{Tan}\big[\frac{1}{2}(c+d\,x)\big]}{2+2\,\text{Tan}\big[\frac{1}{2}(c+d\,x)\big]}\big]\,\text{Sec}\big[\tfrac{1}{2}(c+d\,x)\big]^2\left(\frac{(1+i)\big(-i+\text{Tan}\big[\frac{1}{2}(c+d\,x)\big]\big)}{1+\text{Tan}\big[\frac{1}{2}(c+d\,x)\big]}\right)^{1/3}\Big(1+\text{Tan}\big[\tfrac{1}{2}(c+d\,x)\big]\Big)+$$

$$2^{2/3}\Bigg(\Big(-\tfrac{5}{24}+\tfrac{5\,i}{24}\Big)\text{AppellF1}\big[\tfrac{8}{3},\tfrac{1}{3},\tfrac{7}{3},\tfrac{11}{3},\big(\tfrac{1}{2}+\tfrac{i}{2}\big)\big(1+\text{Cot}\big[\tfrac{1}{2}(c+d\,x)\big]\big),\big(\tfrac{1}{2}-\tfrac{i}{2}\big)\big(1+\text{Cot}\big[\tfrac{1}{2}(c+d\,x)\big]\big)\big]\,\text{Csc}\big[\tfrac{1}{2}(c+d\,x)\big]^2-$$

$$\Big(\tfrac{5}{96}+\tfrac{5\,i}{96}\Big)\text{AppellF1}\big[\tfrac{8}{3},\tfrac{4}{3},\tfrac{4}{3},\tfrac{11}{3},\big(\tfrac{1}{2}+\tfrac{i}{2}\big)\big(1+\text{Cot}\big[\tfrac{1}{2}(c+d\,x)\big]\big),\big(\tfrac{1}{2}-\tfrac{i}{2}\big)\big(1+\text{Cot}\big[\tfrac{1}{2}(c+d\,x)\big]\big)\big]\,\text{Csc}\big[\tfrac{1}{2}(c+d\,x)\big]^2+$$

$$i\Big(\Big(-\tfrac{5}{96}+\tfrac{5\,i}{96}\Big)\text{AppellF1}\big[\tfrac{8}{3},\tfrac{4}{3},\tfrac{4}{3},\tfrac{11}{3},\big(\tfrac{1}{2}+\tfrac{i}{2}\big)\big(1+\text{Cot}\big[\tfrac{1}{2}(c+d\,x)\big]\big),\big(\tfrac{1}{2}-\tfrac{i}{2}\big)\big(1+\text{Cot}\big[\tfrac{1}{2}(c+d\,x)\big]\big)\big]\,\text{Csc}\big[\tfrac{1}{2}(c+d\,x)\big]^2-$$

$$\Big(\tfrac{5}{24}+\tfrac{5\,i}{24}\Big)\text{AppellF1}\big[\tfrac{8}{3},\tfrac{7}{3},\tfrac{1}{3},\tfrac{11}{3},\big(\tfrac{1}{2}+\tfrac{i}{2}\big)\big(1+\text{Cot}\big[\tfrac{1}{2}(c+d\,x)\big]\big),\big(\tfrac{1}{2}-\tfrac{i}{2}\big)\big(1+\text{Cot}\big[\tfrac{1}{2}(c+d\,x)\big]\big)\big]\,\text{Csc}\big[\tfrac{1}{2}(c+d\,x)\big]^2\Big)\Bigg)$$

$$\text{Hypergeometric2F1}\big[\tfrac{1}{3},\tfrac{2}{3},\tfrac{5}{3},\frac{(1+i)+(1-i)\,\text{Tan}\big[\frac{1}{2}(c+d\,x)\big]}{2+2\,\text{Tan}\big[\frac{1}{2}(c+d\,x)\big]}\big]\Big(i+\text{Tan}\big[\tfrac{1}{2}(c+d\,x)\big]\Big)\left(\frac{(1+i)\big(-i+\text{Tan}\big[\frac{1}{2}(c+d\,x)\big]\big)}{1+\text{Tan}\big[\frac{1}{2}(c+d\,x)\big]}\right)^{1/3}$$

$$\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)+\frac{1}{3\left(\frac{(1+i)\left(-i+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)}{1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}\right)^{2/3}}\,2^{2/3}\,\Big(\text{AppellF1}\Big[\frac{5}{3},\frac{1}{3},\frac{4}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)$$

$$\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right)\Big]+i\,\text{AppellF1}\Big[\frac{5}{3},\frac{4}{3},\frac{1}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right)\Big]\Big)$$

$$\text{Hypergeometric2F1}\left[\frac{1}{3},\frac{2}{3},\frac{5}{3},\frac{(1+i)+(1-i)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{2+2\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}\right]\left(i+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)$$

$$\left(-\frac{\left(\frac{1}{2}+\frac{i}{2}\right)\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\left(-i+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)}{\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)^2}+\frac{\left(\frac{1}{2}+\frac{i}{2}\right)\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2}{1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}\right)+$$

$$\left(\frac{5}{2}+\frac{5\,i}{2}\right)\text{AppellF1}\left[\frac{2}{3},\frac{1}{3},\frac{1}{3},\frac{5}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right)\right]$$

$$\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\Big(2^{2/3}\,\text{Hypergeometric2F1}\left[\frac{1}{3},\frac{2}{3},\frac{5}{3},\frac{(1+i)+(1-i)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{2+2\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}\right]$$

$$\left(i+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)\left(\frac{(1+i)\left(-i+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)}{1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}\right)^{1/3}-(1-i)\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)\Big)+$$

$$(5+5\,i)\Big(\Big(\left(-\frac{1}{30}+\frac{i}{30}\right)\text{AppellF1}\left[\frac{5}{3},\frac{1}{3},\frac{4}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right)\right]\text{Csc}\left[\frac{1}{2}(c+d\,x)\right]^2-$$

$$\left(\frac{1}{30}+\frac{i}{30}\right)\text{AppellF1}\left[\frac{5}{3},\frac{4}{3},\frac{1}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right)\right]\text{Csc}\left[\frac{1}{2}(c+d\,x)\right]^2\Big)$$

$$\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\Big(2^{2/3}\,\text{Hypergeometric2F1}\left[\frac{1}{3},\frac{2}{3},\frac{5}{3},\frac{(1+i)+(1-i)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{2+2\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}\right]\left(i+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)$$

$$\left(\frac{(1+i)\left(-i+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)}{1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}\right)^{1/3}-(1-i)\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)\Big)+\frac{1}{3\left((1+i)+(1-i)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)}$$

$$2\times 2^{2/3}\Big(\text{AppellF1}\left[\frac{5}{3},\frac{1}{3},\frac{4}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right)\right]+$$

$$i\,\text{AppellF1}\left[\frac{5}{3},\frac{4}{3},\frac{1}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right)\right]\Big)$$

$$\left(i+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)\left(\frac{(1+i)\left(-i+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)}{1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}\right)^{1/3}\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)\left(2+2\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)$$

$$\left(-\frac{\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\left((1+i)+(1-i)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)}{\left(2+2\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)^2}+\frac{\left(\frac{1}{2}-\frac{i}{2}\right)\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2}{2+2\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}\right)$$

$$\left(-\text{Hypergeometric2F1}\left[\frac{1}{3},\frac{2}{3},\frac{5}{3},\frac{(1+i)+(1-i)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{2+2\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}\right]+\frac{1}{\left(1-\frac{(1+i)+(1-i)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{2+2\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}\right)^{1/3}}\right)+$$

$$(5+5\,i)\,\text{AppellF1}\left[\frac{2}{3},\frac{1}{3},\frac{1}{3},\frac{5}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right)\right]\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]$$

$$\left(\left(-\frac{1}{2}+\frac{i}{2}\right)\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2+\frac{1}{2^{1/3}}\text{Hypergeometric2F1}\left[\frac{1}{3},\frac{2}{3},\frac{5}{3},\frac{(1+i)+(1-i)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{2+2\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\right.$$

$$\left(\frac{(1+i)\left(-i+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)}{1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}\right)^{1/3}+\left(2^{2/3}\,\text{Hypergeometric2F1}\left[\frac{1}{3},\frac{2}{3},\frac{5}{3},\frac{(1+i)+(1-i)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{2+2\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}\right]\right.$$

$$\left.\left.\left(i+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)\left(-\frac{\left(\frac{1}{2}+\frac{i}{2}\right)\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\left(-i+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)}{\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)^2}+\frac{\left(\frac{1}{2}+\frac{i}{2}\right)\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2}{1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}\right)\right)\right)\bigg/$$

$$\left(3\left(\frac{(1+i)\left(-i+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)}{1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}\right)^{2/3}\right)+\left(2\times2^{2/3}\left(i+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)\left(\frac{(1+i)\left(-i+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)}{1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}\right)^{1/3}\right.$$

$$\left(2+2\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)\left(-\frac{\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\left((1+i)+(1-i)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)}{\left(2+2\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)^2}+\frac{\left(\frac{1}{2}-\frac{i}{2}\right)\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2}{2+2\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}\right)$$

$$\left(-\text{Hypergeometric2F1}\left[\frac{1}{3},\frac{2}{3},\frac{5}{3},\frac{(1+i)+(1-i)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{2+2\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}\right]+\right.$$

$$\left.\left.\frac{1}{\left(1-\frac{(1+i)+(1-i)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{2+2\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}\right)^{1/3}}\right)\right) \Big/ \left(3\left((1+i)+(1-i)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)\right)\right)\Big/$$

$$\left(\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)\left(\text{AppellF1}\left[\frac{5}{3},\frac{1}{3},\frac{4}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right)\right]+i\right.\right.$$

$$\text{AppellF1}\left[\frac{5}{3},\frac{4}{3},\frac{1}{3},\frac{8}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right)\right]+\frac{1}{1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}(5+5\,i)$$

$$\left.\left.\left.\text{AppellF1}\left[\frac{2}{3},\frac{1}{3},\frac{1}{3},\frac{5}{3},\left(\frac{1}{2}+\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right),\left(\frac{1}{2}-\frac{i}{2}\right)\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right)\right]\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)\right)\right)$$

Problem 108: Unable to integrate problem.

$$\int \frac{\text{Csc}[c+d\,x]}{(a+a\,\text{Sin}[c+d\,x])^{1/3}}\,dx$$

Optimal (type 6, 77 leaves, 4 steps):

$$-\frac{2^{1/6}\,\text{AppellF1}\left[\frac{1}{2},1,\frac{5}{6},\frac{3}{2},1-\text{Sin}[c+d\,x],\frac{1}{2}(1-\text{Sin}[c+d\,x])\right]\text{Cos}[c+d\,x]}{d\,(1+\text{Sin}[c+d\,x])^{1/6}\,(a+a\,\text{Sin}[c+d\,x])^{1/3}}$$

Result (type 8, 23 leaves):

$$\int \frac{\text{Csc}[c+d\,x]}{(a+a\,\text{Sin}[c+d\,x])^{1/3}}\,dx$$

Problem 109: Mathematica result simpler than optimal antiderivative, IF it can be verified!

$$\int \frac{\text{Csc}[c+d\,x]^2}{(a+a\,\text{Sin}[c+d\,x])^{1/3}}\,dx$$

Optimal (type 6, 77 leaves, 4 steps):

$$-\frac{2^{1/6}\,\text{AppellF1}\left[\frac{1}{2},2,\frac{5}{6},\frac{3}{2},1-\text{Sin}[c+d\,x],\frac{1}{2}(1-\text{Sin}[c+d\,x])\right]\text{Cos}[c+d\,x]}{d\,(1+\text{Sin}[c+d\,x])^{1/6}\,(a+a\,\text{Sin}[c+d\,x])^{1/3}}$$

Result (type 5, 182 leaves):

$$\left(2\times 2^{2/3}\,\text{Cos}\left[\frac{1}{4}\,(2\,c-\pi+2\,d\,x)\right]^{2/3}\,(\text{Cos}[c+d\,x]+i\,\text{Sin}[c+d\,x])\right.$$
$$\left.\left(1+4\,\text{Sin}[c+d\,x]+4\,i\,\text{Cos}[c+d\,x]\,\text{Hypergeometric2F1}\left[\frac{1}{3},\frac{2}{3},\frac{4}{3},-i\,e^{-i\,(c+d\,x)}\right]\,(1+i\,\text{Cos}[c+d\,x]+\text{Sin}[c+d\,x])^{2/3}\right)\right)\Big/$$
$$\left(5\,d\,\left(e^{-\frac{1}{4}i\,(2\,c+\pi+2\,d\,x)}\,\left(i+e^{i\,(c+d\,x)}\right)\right)^{2/3}\,\left(1+e^{2\,i\,(c+d\,x)}\right)\,(a\,(1+\text{Sin}[c+d\,x]))^{1/3}\right)$$

- **Problem 114: Unable to integrate problem.**

$$\int\frac{\text{Csc}[c+d\,x]}{(a+a\,\text{Sin}[c+d\,x])^{4/3}}\,dx$$

Optimal (type 6, 80 leaves, 4 steps):

$$-\frac{\text{AppellF1}\left[\frac{1}{2},1,\frac{11}{6},\frac{3}{2},1-\text{Sin}[c+d\,x],\frac{1}{2}\,(1-\text{Sin}[c+d\,x])\right]\,\text{Cos}[c+d\,x]}{2^{5/6}\,a\,d\,(1+\text{Sin}[c+d\,x])^{1/6}\,(a+a\,\text{Sin}[c+d\,x])^{1/3}}$$

Result (type 8, 23 leaves):

$$\int\frac{\text{Csc}[c+d\,x]}{(a+a\,\text{Sin}[c+d\,x])^{4/3}}\,dx$$

- **Problem 115: Mathematica result simpler than optimal antiderivative, IF it can be verified!**

$$\int\frac{\text{Csc}[c+d\,x]^2}{(a+a\,\text{Sin}[c+d\,x])^{4/3}}\,dx$$

Optimal (type 6, 80 leaves, 4 steps):

$$-\frac{\text{AppellF1}\left[\frac{1}{2},2,\frac{11}{6},\frac{3}{2},1-\text{Sin}[c+d\,x],\frac{1}{2}\,(1-\text{Sin}[c+d\,x])\right]\,\text{Cos}[c+d\,x]}{2^{5/6}\,a\,d\,(1+\text{Sin}[c+d\,x])^{1/6}\,(a+a\,\text{Sin}[c+d\,x])^{1/3}}$$

Result (type 5, 308 leaves):

$$\left(4\,i\,2^{2/3}\,\text{Cos}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^{8/3}\left(14+35\,e^{i\left(-c+\frac{\pi}{2}-d\,x\right)}+12\,e^{2\,i\left(-c+\frac{\pi}{2}-d\,x\right)}+35\,e^{3\,i\left(-c+\frac{\pi}{2}-d\,x\right)}+\right.\right.$$
$$\left.\left.14\,e^{4\,i\left(-c+\frac{\pi}{2}-d\,x\right)}+14\left(-1+e^{i\left(-c+\frac{\pi}{2}-d\,x\right)}\right)\left(1+e^{i\left(-c+\frac{\pi}{2}-d\,x\right)}\right)^{11/3}\text{Hypergeometric2F1}\left[\frac{1}{3},\frac{2}{3},\frac{4}{3},-e^{i\left(-c+\frac{\pi}{2}-d\,x\right)}\right]\right)\right)\Big/$$
$$\left(55\,d\left(-1+e^{i\left(-c+\frac{\pi}{2}-d\,x\right)}\right)\left(1+e^{i\left(-c+\frac{\pi}{2}-d\,x\right)}\right)^3\left(e^{-\frac{1}{2}i\left(-c+\frac{\pi}{2}-d\,x\right)}\left(1+e^{i\left(-c+\frac{\pi}{2}-d\,x\right)}\right)\right)^{2/3}(a+a\,\text{Sin}[c+d\,x])^{4/3}\right)$$

- **Problem 116: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int\text{Sin}[e+f\,x]^n\,(1+\text{Sin}[e+f\,x])^{3/2}\,dx$$

Optimal (type 5, 96 leaves, 4 steps):

$$-\frac{2\,(5+4\,n)\,\mathrm{Cos}[e+f\,x]\,\mathrm{Hypergeometric2F1}\left[\frac{1}{2},-n,\frac{3}{2},1-\mathrm{Sin}[e+f\,x]\right]}{f\,(3+2\,n)\,\sqrt{1+\mathrm{Sin}[e+f\,x]}}-\frac{2\,\mathrm{Cos}[e+f\,x]\,\mathrm{Sin}[e+f\,x]^{1+n}}{f\,(3+2\,n)\,\sqrt{1+\mathrm{Sin}[e+f\,x]}}$$

Result (type 6, 20 237 leaves) : Display of huge result suppressed!

- **Problem 117: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int \mathrm{Sin}[e+f\,x]^n\,\sqrt{1+\mathrm{Sin}[e+f\,x]}\,dx$$

Optimal (type 5, 43 leaves, 2 steps) :

$$-\frac{2\,\mathrm{Cos}[e+f\,x]\,\mathrm{Hypergeometric2F1}\left[\frac{1}{2},-n,\frac{3}{2},1-\mathrm{Sin}[e+f\,x]\right]}{f\,\sqrt{1+\mathrm{Sin}[e+f\,x]}}$$

Result (type 5, 196 leaves) :

$$\left(2^{1-n}\,\left(1-e^{2\,i\,(e+f\,x)}\right)^{-n}\,\left(-i\,e^{-i\,(e+f\,x)}\,\left(-1+e^{2\,i\,(e+f\,x)}\right)\right)^n\,\left((1-2\,n)\,\mathrm{Hypergeometric2F1}\left[\frac{1}{4}\,(-1-2\,n),-n,\frac{1}{4}\,(3-2\,n),e^{2\,i\,(e+f\,x)}\right]+\right.\right.$$
$$\left.\left.i\,e^{i\,(e+f\,x)}\,(1+2\,n)\,\mathrm{Hypergeometric2F1}\left[\frac{1}{4}\,(1-2\,n),-n,\frac{1}{4}\,(5-2\,n),e^{2\,i\,(e+f\,x)}\right]\right)\,\sqrt{1+\mathrm{Sin}[e+f\,x]}\right)\Big/\left(\left(i+e^{i\,(e+f\,x)}\right)\,f\,(-1+2\,n)\,(1+2\,n)\right)$$

- **Problem 118: Result more than twice size of optimal antiderivative.**

$$\int \frac{\mathrm{Sin}[e+f\,x]^n}{\sqrt{1+\mathrm{Sin}[e+f\,x]}}\,dx$$

Optimal (type 6, 58 leaves, 3 steps) :

$$-\frac{\mathrm{AppellF1}\left[\frac{1}{2},-n,1,\frac{3}{2},1-\mathrm{Sin}[e+f\,x],\frac{1}{2}\,(1-\mathrm{Sin}[e+f\,x])\right]\,\mathrm{Cos}[e+f\,x]}{f\,\sqrt{1+\mathrm{Sin}[e+f\,x]}}$$

Result (type 6, 387 leaves) :

$$\frac{1}{f}\text{Sec}[e+f x]\,\text{Sin}[e+f x]^n\,(1+\text{Sin}[e+f x])^{3/2}$$

$$\left(\left(4\,\text{AppellF1}\left[1,\frac{1}{2},-n,2,\frac{1}{2}(1+\text{Sin}[e+f x]),1+\text{Sin}[e+f x]\right]\right)\middle/\left(8\,\text{AppellF1}\left[1,\frac{1}{2},-n,2,\frac{1}{2}(1+\text{Sin}[e+f x]),1+\text{Sin}[e+f x]\right]+\right.\right.$$

$$\left(-4\,n\,\text{AppellF1}\left[2,\frac{1}{2},1-n,3,\frac{1}{2}(1+\text{Sin}[e+f x]),1+\text{Sin}[e+f x]\right]+\text{AppellF1}\left[2,\frac{3}{2},-n,3,\frac{1}{2}(1+\text{Sin}[e+f x]),1+\text{Sin}[e+f x]\right]\right)$$

$$\left.(1+\text{Sin}[e+f x])\right)-\left((-1+2 n)\,\text{AppellF1}\left[-\frac{1}{2}-n,-\frac{1}{2},-n,\frac{1}{2}-n,\frac{2}{1+\text{Sin}[e+f x]},\frac{1}{1+\text{Sin}[e+f x]}\right](-1+\text{Sin}[e+f x])\right)\Big/$$

$$\left((1+2 n)\left(2\left(n\,\text{AppellF1}\left[\frac{1}{2}-n,-\frac{1}{2},1-n,\frac{3}{2}-n,\frac{2}{1+\text{Sin}[e+f x]},\frac{1}{1+\text{Sin}[e+f x]}\right]+\text{AppellF1}\left[\frac{1}{2}-n,\frac{1}{2},-n,\frac{3}{2}-n,\frac{2}{1+\text{Sin}[e+f x]},\right.\right.\right.\right.$$

$$\left.\left.\left.\left.\left.\frac{1}{1+\text{Sin}[e+f x]}\right]\right)+(-1+2 n)\,\text{AppellF1}\left[-\frac{1}{2}-n,-\frac{1}{2},-n,\frac{1}{2}-n,\frac{2}{1+\text{Sin}[e+f x]},\frac{1}{1+\text{Sin}[e+f x]}\right](1+\text{Sin}[e+f x])\right)\right)\right)$$

- **Problem 119: Result more than twice size of optimal antiderivative.**

$$\int\frac{\text{Sin}[e+f x]^n}{(1+\text{Sin}[e+f x])^{3/2}}\,dx$$

Optimal (type 6, 60 leaves, 3 steps) :

$$-\frac{\text{AppellF1}\left[\frac{1}{2},-n,2,\frac{3}{2},1-\text{Sin}[e+f x],\frac{1}{2}(1-\text{Sin}[e+f x])\right]\text{Cos}[e+f x]}{2 f\sqrt{1+\text{Sin}[e+f x]}}$$

Result (type 6, 624 leaves) :

$$\frac{1}{2f}\text{Sec}[e+fx]\,\text{Sin}[e+fx]^n\sqrt{1+\text{Sin}[e+fx]}\,\left(\left(4\,\text{AppellF1}\left[1,\frac{1}{2},-n,2,\frac{1}{2}(1+\text{Sin}[e+fx]),1+\text{Sin}[e+fx]\right](1+\text{Sin}[e+fx])\right)\Big/\right.$$
$$\left(8\,\text{AppellF1}\left[1,\frac{1}{2},-n,2,\frac{1}{2}(1+\text{Sin}[e+fx]),1+\text{Sin}[e+fx]\right]+\left(-4\,n\,\text{AppellF1}\left[2,\frac{1}{2},1-n,3,\frac{1}{2}(1+\text{Sin}[e+fx]),1+\text{Sin}[e+fx]\right]+\right.\right.$$
$$\left.\left.\text{AppellF1}\left[2,\frac{3}{2},-n,3,\frac{1}{2}(1+\text{Sin}[e+fx]),1+\text{Sin}[e+fx]\right]\right)(1+\text{Sin}[e+fx])\right)-$$
$$\left((-1+2n)\,\text{AppellF1}\left[-\frac{1}{2}-n,-\frac{1}{2},-n,\frac{1}{2}-n,\frac{2}{1+\text{Sin}[e+fx]},\frac{1}{1+\text{Sin}[e+fx]}\right](-1+\text{Sin}[e+fx])(1+\text{Sin}[e+fx])\right)\Big/$$
$$\left((1+2n)\left(2\left(n\,\text{AppellF1}\left[\frac{1}{2}-n,-\frac{1}{2},1-n,\frac{3}{2}-n,\frac{2}{1+\text{Sin}[e+fx]},\frac{1}{1+\text{Sin}[e+fx]}\right]+\text{AppellF1}\left[\frac{1}{2}-n,\frac{1}{2},-n,\frac{3}{2}-n,\frac{2}{1+\text{Sin}[e+fx]},\right.\right.\right.\right.$$
$$\left.\left.\left.\left.\frac{1}{1+\text{Sin}[e+fx]}\right]\right)+(-1+2n)\,\text{AppellF1}\left[-\frac{1}{2}-n,-\frac{1}{2},-n,\frac{1}{2}-n,\frac{2}{1+\text{Sin}[e+fx]},\frac{1}{1+\text{Sin}[e+fx]}\right](1+\text{Sin}[e+fx])\right)\right)-$$
$$\left(2(-3+2n)\,\text{AppellF1}\left[\frac{1}{2}-n,-\frac{1}{2},-n,\frac{3}{2}-n,\frac{2}{1+\text{Sin}[e+fx]},\frac{1}{1+\text{Sin}[e+fx]}\right](-1+\text{Sin}[e+fx])\right)\Big/$$
$$\left((-1+2n)\left(2\left(n\,\text{AppellF1}\left[\frac{3}{2}-n,-\frac{1}{2},1-n,\frac{5}{2}-n,\frac{2}{1+\text{Sin}[e+fx]},\frac{1}{1+\text{Sin}[e+fx]}\right]+\text{AppellF1}\left[\frac{3}{2}-n,\frac{1}{2},-n,\frac{5}{2}-n,\frac{2}{1+\text{Sin}[e+fx]},\right.\right.\right.\right.$$
$$\left.\left.\left.\left.\left.\frac{1}{1+\text{Sin}[e+fx]}\right]\right)+(-3+2n)\,\text{AppellF1}\left[\frac{1}{2}-n,-\frac{1}{2},-n,\frac{3}{2}-n,\frac{2}{1+\text{Sin}[e+fx]},\frac{1}{1+\text{Sin}[e+fx]}\right](1+\text{Sin}[e+fx])\right)\right)\right)$$

- **Problem 120: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int \text{Sin}[e+fx]^n\,(a+a\,\text{Sin}[e+fx])^{3/2}\,dx$$

Optimal (type 5, 106 leaves, 4 steps):

$$-\frac{2a^2(5+4n)\,\text{Cos}[e+fx]\,\text{Hypergeometric2F1}\left[\frac{1}{2},-n,\frac{3}{2},1-\text{Sin}[e+fx]\right]}{f(3+2n)\sqrt{a+a\,\text{Sin}[e+fx]}}-\frac{2a^2\,\text{Cos}[e+fx]\,\text{Sin}[e+fx]^{1+n}}{f(3+2n)\sqrt{a+a\,\text{Sin}[e+fx]}}$$

Result (type 6, 20 239 leaves): Display of huge result suppressed!

- **Problem 121: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int \text{Sin}[e+fx]^n\sqrt{a+a\,\text{Sin}[e+fx]}\,dx$$

Optimal (type 5, 46 leaves, 2 steps):

$$-\frac{2a\,\text{Cos}[e+fx]\,\text{Hypergeometric2F1}\left[\frac{1}{2},-n,\frac{3}{2},1-\text{Sin}[e+fx]\right]}{f\sqrt{a+a\,\text{Sin}[e+fx]}}$$

Result (type 5, 264 leaves):

$$\frac{1}{f(-1+2n)(1+2n)\left(\text{Cos}\left[\frac{1}{2}(e+fx)\right]+\text{Sin}\left[\frac{1}{2}(e+fx)\right]\right)}$$
$$(1+i)\,e^{-\frac{1}{2}ifx}\left(e^{ifx}(1+2n)\,\text{Hypergeometric2F1}\left[\frac{1}{4}(1-2n),-n,\frac{1}{4}(5-2n),e^{2ifx}(\text{Cos}[e]+i\,\text{Sin}[e])^2\right]\left(\text{Cos}\left[\frac{e}{2}\right]+i\,\text{Sin}\left[\frac{e}{2}\right]\right)+\right.$$
$$\left.(-1+2n)\,\text{Hypergeometric2F1}\left[\frac{1}{4}(-1-2n),-n,\frac{1}{4}(3-2n),e^{2ifx}(\text{Cos}[e]+i\,\text{Sin}[e])^2\right]\left(i\,\text{Cos}\left[\frac{e}{2}\right]+\text{Sin}\left[\frac{e}{2}\right]\right)\right)$$
$$\left(1-e^{2ifx}\text{Cos}[e]^2+e^{2ifx}\text{Sin}[e]^2-i\,e^{2ifx}\text{Sin}[2e]\right)^{-n}\text{Sin}[e+fx]^n\sqrt{a(1+\text{Sin}[e+fx])}$$

Problem 122: Result more than twice size of optimal antiderivative.

$$\int\frac{\text{Sin}[e+fx]^n}{\sqrt{a+a\,\text{Sin}[e+fx]}}\,dx$$

Optimal (type 6, 60 leaves, 4 steps):

$$-\frac{\text{AppellF1}\left[\frac{1}{2},-n,1,\frac{3}{2},1-\text{Sin}[e+fx],\frac{1}{2}(1-\text{Sin}[e+fx])\right]\text{Cos}[e+fx]}{f\sqrt{a+a\,\text{Sin}[e+fx]}}$$

Result (type 6, 426 leaves):

$$\frac{1}{f\sqrt{a(1+\text{Sin}[e+fx])}}$$
$$\text{Sec}[e+fx](1+\text{Sin}[e+fx])^2\left(\left(4\,\text{AppellF1}\left[1,\frac{1}{2},-n,2,\frac{1}{2}(1+\text{Sin}[e+fx]),1+\text{Sin}[e+fx]\right](-\text{Sin}[e+fx])^{-n}\left(-\text{Sin}[e+fx]^2\right)^n\right)\Big/\right.$$
$$\left(8\,\text{AppellF1}\left[1,\frac{1}{2},-n,2,\frac{1}{2}(1+\text{Sin}[e+fx]),1+\text{Sin}[e+fx]\right]-\left(4n\,\text{AppellF1}\left[2,\frac{1}{2},1-n,3,\frac{1}{2}(1+\text{Sin}[e+fx]),1+\text{Sin}[e+fx]\right]-\right.\right.$$
$$\left.\left.\text{AppellF1}\left[2,\frac{3}{2},-n,3,\frac{1}{2}(1+\text{Sin}[e+fx]),1+\text{Sin}[e+fx]\right]\right)(1+\text{Sin}[e+fx])\right)-$$
$$\left((-1+2n)\,\text{AppellF1}\left[-\frac{1}{2}-n,-\frac{1}{2},-n,\frac{1}{2}-n,\frac{2}{1+\text{Sin}[e+fx]},\frac{1}{1+\text{Sin}[e+fx]}\right](-1+\text{Sin}[e+fx])\,\text{Sin}[e+fx]^n\right)\Big/$$
$$\left((1+2n)\left(2\left(n\,\text{AppellF1}\left[\frac{1}{2}-n,-\frac{1}{2},1-n,\frac{3}{2}-n,\frac{2}{1+\text{Sin}[e+fx]},\frac{1}{1+\text{Sin}[e+fx]}\right]+\text{AppellF1}\left[\frac{1}{2}-n,\frac{1}{2},-n,\frac{3}{2}-n,\frac{2}{1+\text{Sin}[e+fx]},\right.\right.\right.\right.$$
$$\left.\left.\left.\left.\left.\frac{1}{1+\text{Sin}[e+fx]}\right]\right)+(-1+2n)\,\text{AppellF1}\left[-\frac{1}{2}-n,-\frac{1}{2},-n,\frac{1}{2}-n,\frac{2}{1+\text{Sin}[e+fx]},\frac{1}{1+\text{Sin}[e+fx]}\right](1+\text{Sin}[e+fx])\right)\right)\right)$$

Problem 123: Result more than twice size of optimal antiderivative.

$$\int\frac{\text{Sin}[e+fx]^n}{(a+a\,\text{Sin}[e+fx])^{3/2}}\,dx$$

Optimal (type 6, 65 leaves, 4 steps):

$$-\frac{\text{AppellF1}\left[\frac{1}{2},-n,2,\frac{3}{2},1-\text{Sin}[e+f x],\frac{1}{2}(1-\text{Sin}[e+f x])\right]\text{Cos}[e+f x]}{2 a f\sqrt{a+a\,\text{Sin}[e+f x]}}$$

Result (type 6, 796 leaves):

$$\left(\text{Cos}[e+f x]\,\text{Sin}[e+f x]^n\,(1+\text{Sin}[e+f x])\left(\frac{-a+a(1+\text{Sin}[e+f x])}{a}\right)^{-n}\right.$$
$$\left(\left(4a^2\,\text{AppellF1}\left[1,\frac{1}{2},-n,2,\frac{1}{2}(1+\text{Sin}[e+f x]),1+\text{Sin}[e+f x]\right](-\text{Sin}[e+f x])^{-n}(1+\text{Sin}[e+f x])\left(-\frac{(a-a(1+\text{Sin}[e+f x]))^2}{a^2}\right)^n\right)\right/$$
$$\left(8a\,\text{AppellF1}\left[1,\frac{1}{2},-n,2,\frac{1}{2}(1+\text{Sin}[e+f x]),1+\text{Sin}[e+f x]\right]+\right.$$
$$a\left(-4n\,\text{AppellF1}\left[2,\frac{1}{2},1-n,3,\frac{1}{2}(1+\text{Sin}[e+f x]),1+\text{Sin}[e+f x]\right]+\text{AppellF1}\left[2,\frac{3}{2},-n,3,\frac{1}{2}(1+\text{Sin}[e+f x]),1+\text{Sin}[e+f x]\right]\right)$$
$$\left.(1+\text{Sin}[e+f x])\right)-\left(a(-1+2n)\,\text{AppellF1}\left[-\frac{1}{2}-n,-\frac{1}{2},-n,\frac{1}{2}-n,\frac{2}{1+\text{Sin}[e+f x]},\frac{1}{1+\text{Sin}[e+f x]}\right]\right.$$
$$\left.\text{Sin}[e+f x]^n(1+\text{Sin}[e+f x])(-2a+a(1+\text{Sin}[e+f x]))\right)\Big/$$
$$\left((1+2n)\left(2a\left(n\,\text{AppellF1}\left[\frac{1}{2}-n,-\frac{1}{2},1-n,\frac{3}{2}-n,\frac{2}{1+\text{Sin}[e+f x]},\frac{1}{1+\text{Sin}[e+f x]}\right]+\text{AppellF1}\left[\frac{1}{2}-n,\frac{1}{2},-n,\frac{3}{2}-n,\frac{2}{1+\text{Sin}[e+f x]},\right.\right.\right.$$
$$\left.\left.\left.\frac{1}{1+\text{Sin}[e+f x]}\right]\right)+a(-1+2n)\,\text{AppellF1}\left[-\frac{1}{2}-n,-\frac{1}{2},-n,\frac{1}{2}-n,\frac{2}{1+\text{Sin}[e+f x]},\frac{1}{1+\text{Sin}[e+f x]}\right](1+\text{Sin}[e+f x])\right)\right)-$$
$$\left(2a(-3+2n)\,\text{AppellF1}\left[\frac{1}{2}-n,-\frac{1}{2},-n,\frac{3}{2}-n,\frac{2}{1+\text{Sin}[e+f x]},\frac{1}{1+\text{Sin}[e+f x]}\right]\text{Sin}[e+f x]^n(-2a+a(1+\text{Sin}[e+f x]))\right)\Big/$$
$$\left((-1+2n)\left(2a\left(n\,\text{AppellF1}\left[\frac{3}{2}-n,-\frac{1}{2},1-n,\frac{5}{2}-n,\frac{2}{1+\text{Sin}[e+f x]},\frac{1}{1+\text{Sin}[e+f x]}\right]+\text{AppellF1}\left[\frac{3}{2}-n,\frac{1}{2},-n,\frac{5}{2}-n,\frac{2}{1+\text{Sin}[e+f x]},\right.\right.\right.$$
$$\left.\left.\left.\left.\frac{1}{1+\text{Sin}[e+f x]}\right]\right)+a(-3+2n)\,\text{AppellF1}\left[\frac{1}{2}-n,-\frac{1}{2},-n,\frac{3}{2}-n,\frac{2}{1+\text{Sin}[e+f x]},\frac{1}{1+\text{Sin}[e+f x]}\right](1+\text{Sin}[e+f x])\right)\right)\right)\right)\Big/$$
$$\left(2a^2 f\sqrt{a(1+\text{Sin}[e+f x])}\sqrt{\frac{2a^2(1+\text{Sin}[e+f x])-a^2(1+\text{Sin}[e+f x])^2}{a^2}}\sqrt{1-\frac{(-a+a(1+\text{Sin}[e+f x]))^2}{a^2}}\right)$$

Problem 124: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int(d\,\text{Sin}[e+f x])^n(1+\text{Sin}[e+f x])^{3/2}\,dx$$

Optimal (type 5, 130 leaves, 4 steps):

$$-\frac{2\,\text{Cos}[e+f x](d\,\text{Sin}[e+f x])^{1+n}}{d f(3+2n)\sqrt{1+\text{Sin}[e+f x]}}+\frac{(5+4n)\,\text{Cos}[e+f x]\,\text{Hypergeometric2F1}\left[\frac{1}{2},1+n,2+n,\text{Sin}[e+f x]\right](d\,\text{Sin}[e+f x])^{1+n}}{d f(1+n)(3+2n)\sqrt{1-\text{Sin}[e+f x]}\sqrt{1+\text{Sin}[e+f x]}}$$

Result (type 6, 20 257 leaves) : Display of huge result suppressed!

Problem 125: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int (d \sin[e+f x])^n \sqrt{1+\sin[e+f x]}\, dx$$

Optimal (type 5, 72 leaves, 2 steps) :

$$\frac{\cos[e+f x]\, \text{Hypergeometric2F1}\left[\frac{1}{2}, 1+n, 2+n, \sin[e+f x]\right] (d \sin[e+f x])^{1+n}}{d f (1+n) \sqrt{1-\sin[e+f x]} \sqrt{1+\sin[e+f x]}}$$

Result (type 5, 231 leaves) :

$$\left((1+i)\, e^{-\frac{1}{2} i (e+f x)} \left(2-2 e^{2 i (e+f x)}\right)^{-n} \left(-i\, e^{-i (e+f x)} \left(-1+e^{2 i (e+f x)}\right)\right)^n \left(i (-1+2 n)\, \text{Hypergeometric2F1}\left[\frac{1}{4} (-1-2 n), -n, \frac{1}{4} (3-2 n), e^{2 i (e+f x)}\right] + e^{i (e+f x)} (1+2 n)\, \text{Hypergeometric2F1}\left[\frac{1}{4} (1-2 n), -n, \frac{1}{4} (5-2 n), e^{2 i (e+f x)}\right]\right) \sin[e+f x]^{-n} (d \sin[e+f x])^n \sqrt{1+\sin[e+f x]}\right) \Big/ \left(f (-1+2 n) (1+2 n) \left(\cos\left[\frac{1}{2} (e+f x)\right] + \sin\left[\frac{1}{2} (e+f x)\right]\right)\right)$$

Problem 126: Result more than twice size of optimal antiderivative.

$$\int \frac{(d \sin[e+f x])^n}{\sqrt{1+\sin[e+f x]}}\, dx$$

Optimal (type 6, 78 leaves, 4 steps) :

$$-\frac{1}{f \sqrt{1+\sin[e+f x]}} \text{AppellF1}\left[\frac{1}{2}, -n, 1, \frac{3}{2}, 1-\sin[e+f x], \frac{1}{2} (1-\sin[e+f x])\right] \cos[e+f x] \sin[e+f x]^{-n} (d \sin[e+f x])^n$$

Result (type 6, 389 leaves) :

$$\frac{1}{f} \sec[e+f x] (d \sin[e+f x])^n (1+\sin[e+f x])^{3/2} \left(\left(4\, \text{AppellF1}\left[1, \frac{1}{2}, -n, 2, \frac{1}{2} (1+\sin[e+f x]), 1+\sin[e+f x]\right]\right) \Big/ \left(8\, \text{AppellF1}\left[1, \frac{1}{2}, -n, 2, \frac{1}{2} (1+\sin[e+f x]), 1+\sin[e+f x]\right] + \left(-4 n\, \text{AppellF1}\left[2, \frac{1}{2}, 1-n, 3, \frac{1}{2} (1+\sin[e+f x]), 1+\sin[e+f x]\right] + \text{AppellF1}\left[2, \frac{3}{2}, -n, 3, \frac{1}{2} (1+\sin[e+f x]), 1+\sin[e+f x]\right]\right) (1+\sin[e+f x])\right) - \left((-1+2 n)\, \text{AppellF1}\left[-\frac{1}{2}-n, -\frac{1}{2}, -n, \frac{1}{2}-n, \frac{2}{1+\sin[e+f x]}, \frac{1}{1+\sin[e+f x]}\right] (-1+\sin[e+f x])\right) \Big/ \left((1+2 n) \left(2 \left(n\, \text{AppellF1}\left[\frac{1}{2}-n, -\frac{1}{2}, 1-n, \frac{3}{2}-n, \frac{2}{1+\sin[e+f x]}, \frac{1}{1+\sin[e+f x]}\right] + \text{AppellF1}\left[\frac{1}{2}-n, \frac{1}{2}, -n, \frac{3}{2}-n, \frac{2}{1+\sin[e+f x]}, \frac{1}{1+\sin[e+f x]}\right]\right) + (-1+2 n)\, \text{AppellF1}\left[-\frac{1}{2}-n, -\frac{1}{2}, -n, \frac{1}{2}-n, \frac{2}{1+\sin[e+f x]}, \frac{1}{1+\sin[e+f x]}\right] (1+\sin[e+f x])\right)\right)\right)$$

Problem 127: Result more than twice size of optimal antiderivative.

$$\int \frac{(d\,\text{Sin}[e+f\,x])^n}{(1+\text{Sin}[e+f\,x])^{3/2}}\,dx$$

Optimal (type 6, 80 leaves, 4 steps):

$$-\frac{1}{2\,f\,\sqrt{1+\text{Sin}[e+f\,x]}}\text{AppellF1}\left[\frac{1}{2},\,-n,\,2,\,\frac{3}{2},\,1-\text{Sin}[e+f\,x],\,\frac{1}{2}\,(1-\text{Sin}[e+f\,x])\right]\,\text{Cos}[e+f\,x]\,\text{Sin}[e+f\,x]^{-n}\,(d\,\text{Sin}[e+f\,x])^n$$

Result (type 6, 626 leaves):

$$\frac{1}{2\,f}\,\text{Sec}[e+f\,x]\,(d\,\text{Sin}[e+f\,x])^n\,\sqrt{1+\text{Sin}[e+f\,x]}\,\left(\left(4\,\text{AppellF1}\left[1,\,\frac{1}{2},\,-n,\,2,\,\frac{1}{2}\,(1+\text{Sin}[e+f\,x]),\,1+\text{Sin}[e+f\,x]\right]\,(1+\text{Sin}[e+f\,x])\right)\Big/\right.$$
$$\left(8\,\text{AppellF1}\left[1,\,\frac{1}{2},\,-n,\,2,\,\frac{1}{2}\,(1+\text{Sin}[e+f\,x]),\,1+\text{Sin}[e+f\,x]\right]+\left(-4\,n\,\text{AppellF1}\left[2,\,\frac{1}{2},\,1-n,\,3,\,\frac{1}{2}\,(1+\text{Sin}[e+f\,x]),\,1+\text{Sin}[e+f\,x]\right]+\right.\right.$$
$$\left.\left.\text{AppellF1}\left[2,\,\frac{3}{2},\,-n,\,3,\,\frac{1}{2}\,(1+\text{Sin}[e+f\,x]),\,1+\text{Sin}[e+f\,x]\right]\right)\,(1+\text{Sin}[e+f\,x])\right)-$$
$$\left((-1+2\,n)\,\text{AppellF1}\left[-\frac{1}{2}-n,\,-\frac{1}{2},\,-n,\,\frac{1}{2}-n,\,\frac{2}{1+\text{Sin}[e+f\,x]},\,\frac{1}{1+\text{Sin}[e+f\,x]}\right]\,(-1+\text{Sin}[e+f\,x])\,(1+\text{Sin}[e+f\,x])\right)\Big/$$
$$\left((1+2\,n)\,\left(2\,\left(n\,\text{AppellF1}\left[\frac{1}{2}-n,\,-\frac{1}{2},\,1-n,\,\frac{3}{2}-n,\,\frac{2}{1+\text{Sin}[e+f\,x]},\,\frac{1}{1+\text{Sin}[e+f\,x]}\right]+\text{AppellF1}\left[\frac{1}{2}-n,\,\frac{1}{2},\,-n,\,\frac{3}{2}-n,\,\frac{2}{1+\text{Sin}[e+f\,x]},\right.\right.\right.\right.$$
$$\left.\left.\left.\left.\frac{1}{1+\text{Sin}[e+f\,x]}\right]\right)+(-1+2\,n)\,\text{AppellF1}\left[-\frac{1}{2}-n,\,-\frac{1}{2},\,-n,\,\frac{1}{2}-n,\,\frac{2}{1+\text{Sin}[e+f\,x]},\,\frac{1}{1+\text{Sin}[e+f\,x]}\right]\,(1+\text{Sin}[e+f\,x])\right)\right)-$$
$$\left(2\,(-3+2\,n)\,\text{AppellF1}\left[\frac{1}{2}-n,\,-\frac{1}{2},\,-n,\,\frac{3}{2}-n,\,\frac{2}{1+\text{Sin}[e+f\,x]},\,\frac{1}{1+\text{Sin}[e+f\,x]}\right]\,(-1+\text{Sin}[e+f\,x])\right)\Big/$$
$$\left((-1+2\,n)\,\left(2\,\left(n\,\text{AppellF1}\left[\frac{3}{2}-n,\,-\frac{1}{2},\,1-n,\,\frac{5}{2}-n,\,\frac{2}{1+\text{Sin}[e+f\,x]},\,\frac{1}{1+\text{Sin}[e+f\,x]}\right]+\text{AppellF1}\left[\frac{3}{2}-n,\,\frac{1}{2},\,-n,\,\frac{5}{2}-n,\,\frac{2}{1+\text{Sin}[e+f\,x]},\right.\right.\right.\right.$$
$$\left.\left.\left.\left.\left.\frac{1}{1+\text{Sin}[e+f\,x]}\right]\right)+(-3+2\,n)\,\text{AppellF1}\left[\frac{1}{2}-n,\,-\frac{1}{2},\,-n,\,\frac{3}{2}-n,\,\frac{2}{1+\text{Sin}[e+f\,x]},\,\frac{1}{1+\text{Sin}[e+f\,x]}\right]\,(1+\text{Sin}[e+f\,x])\right)\right)\right)$$

Problem 128: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int (d\,\text{Sin}[e+f\,x])^n\,(a+a\,\text{Sin}[e+f\,x])^{3/2}\,dx$$

Optimal (type 5, 131 leaves, 5 steps):

$$-\left(2\,a^2\,(5+4\,n)\,\text{Cos}[e+f\,x]\,\text{Hypergeometric2F1}\left[\frac{1}{2},\,-n,\,\frac{3}{2},\,1-\text{Sin}[e+f\,x]\right]\,\text{Sin}[e+f\,x]^{-n}\,(d\,\text{Sin}[e+f\,x])^n\right)\Big/\left(f\,(3+2\,n)\,\sqrt{a+a\,\text{Sin}[e+f\,x]}\right)-$$
$$\frac{2\,a^2\,\text{Cos}[e+f\,x]\,(d\,\text{Sin}[e+f\,x])^{1+n}}{d\,f\,(3+2\,n)\,\sqrt{a+a\,\text{Sin}[e+f\,x]}}$$

Result (type 6, 20 259 leaves): Display of huge result suppressed!

Problem 129: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int (d\,\text{Sin}[e+f\,x])^n \sqrt{a+a\,\text{Sin}[e+f\,x]}\,dx$$

Optimal (type 5, 66 leaves, 3 steps):

$$-\frac{2\,a\,\text{Cos}[e+f\,x]\,\text{Hypergeometric2F1}\left[\frac{1}{2},-n,\frac{3}{2},1-\text{Sin}[e+f\,x]\right]\,\text{Sin}[e+f\,x]^{-n}\,(d\,\text{Sin}[e+f\,x])^n}{f\sqrt{a+a\,\text{Sin}[e+f\,x]}}$$

Result (type 5, 266 leaves):

$$\frac{1}{f\,(-1+2\,n)\,(1+2\,n)\,\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)}$$
$$(1+i)\,e^{-\frac{1}{2}\,i\,f\,x}\left(e^{i\,f\,x}\,(1+2\,n)\,\text{Hypergeometric2F1}\left[\frac{1}{4}\,(1-2\,n),-n,\frac{1}{4}\,(5-2\,n),e^{2\,i\,f\,x}\,(\text{Cos}[e]+i\,\text{Sin}[e])^2\right]\left(\text{Cos}\left[\frac{e}{2}\right]+i\,\text{Sin}\left[\frac{e}{2}\right]\right)+\right.$$
$$\left.(-1+2\,n)\,\text{Hypergeometric2F1}\left[\frac{1}{4}\,(-1-2\,n),-n,\frac{1}{4}\,(3-2\,n),e^{2\,i\,f\,x}\,(\text{Cos}[e]+i\,\text{Sin}[e])^2\right]\left(i\,\text{Cos}\left[\frac{e}{2}\right]+\text{Sin}\left[\frac{e}{2}\right]\right)\right)$$
$$\left(1-e^{2\,i\,f\,x}\,\text{Cos}[e]^2+e^{2\,i\,f\,x}\,\text{Sin}[e]^2-i\,e^{2\,i\,f\,x}\,\text{Sin}[2\,e]\right)^{-n}(d\,\text{Sin}[e+f\,x])^n\sqrt{a\,(1+\text{Sin}[e+f\,x])}$$

Problem 130: Result more than twice size of optimal antiderivative.

$$\int \frac{(d\,\text{Sin}[e+f\,x])^n}{\sqrt{a+a\,\text{Sin}[e+f\,x]}}\,dx$$

Optimal (type 6, 80 leaves, 5 steps):

$$-\frac{1}{f\sqrt{a+a\,\text{Sin}[e+f\,x]}}\text{AppellF1}\left[\frac{1}{2},-n,1,\frac{3}{2},1-\text{Sin}[e+f\,x],\frac{1}{2}\,(1-\text{Sin}[e+f\,x])\right]\text{Cos}[e+f\,x]\,\text{Sin}[e+f\,x]^{-n}\,(d\,\text{Sin}[e+f\,x])^n$$

Result (type 6, 446 leaves):

$$\frac{1}{f\sqrt{a\,(1+\text{Sin}[e+f\,x])}}\,\text{Sec}[e+f\,x]\,\text{Sin}[e+f\,x]^{-n}\,(d\,\text{Sin}[e+f\,x])^n\,(1+\text{Sin}[e+f\,x])^2$$
$$\left(\left(4\,\text{AppellF1}\left[1,\,\frac{1}{2},\,-n,\,2,\,\frac{1}{2}\,(1+\text{Sin}[e+f\,x]),\,1+\text{Sin}[e+f\,x]\right]\,(-\text{Sin}[e+f\,x])^{-n}\,\left(-\text{Sin}[e+f\,x]^2\right)^n\right)\right/$$
$$\left(8\,\text{AppellF1}\left[1,\,\frac{1}{2},\,-n,\,2,\,\frac{1}{2}\,(1+\text{Sin}[e+f\,x]),\,1+\text{Sin}[e+f\,x]\right]-\left(4\,n\,\text{AppellF1}\left[2,\,\frac{1}{2},\,1-n,\,3,\,\frac{1}{2}\,(1+\text{Sin}[e+f\,x]),\,1+\text{Sin}[e+f\,x]\right]-\right.\right.$$
$$\left.\left.\text{AppellF1}\left[2,\,\frac{3}{2},\,-n,\,3,\,\frac{1}{2}\,(1+\text{Sin}[e+f\,x]),\,1+\text{Sin}[e+f\,x]\right]\right)\,(1+\text{Sin}[e+f\,x])\right)-$$
$$\left((-1+2\,n)\,\text{AppellF1}\left[-\frac{1}{2}-n,\,-\frac{1}{2},\,-n,\,\frac{1}{2}-n,\,\frac{2}{1+\text{Sin}[e+f\,x]},\,\frac{1}{1+\text{Sin}[e+f\,x]}\right]\,(-1+\text{Sin}[e+f\,x])\,\text{Sin}[e+f\,x]^n\right)\Big/$$
$$\left((1+2\,n)\,\left(2\,\left(n\,\text{AppellF1}\left[\frac{1}{2}-n,\,-\frac{1}{2},\,1-n,\,\frac{3}{2}-n,\,\frac{2}{1+\text{Sin}[e+f\,x]},\,\frac{1}{1+\text{Sin}[e+f\,x]}\right]+\text{AppellF1}\left[\frac{1}{2}-n,\,\frac{1}{2},\,-n,\,\frac{3}{2}-n,\,\frac{2}{1+\text{Sin}[e+f\,x]},\right.\right.\right.\right.$$
$$\left.\left.\left.\left.\frac{1}{1+\text{Sin}[e+f\,x]}\right]\right)+(-1+2\,n)\,\text{AppellF1}\left[-\frac{1}{2}-n,\,-\frac{1}{2},\,-n,\,\frac{1}{2}-n,\,\frac{2}{1+\text{Sin}[e+f\,x]},\,\frac{1}{1+\text{Sin}[e+f\,x]}\right]\,(1+\text{Sin}[e+f\,x])\right)\right)\right)$$

Problem 131: Result more than twice size of optimal antiderivative.

$$\int\frac{(d\,\text{Sin}[e+f\,x])^n}{(a+a\,\text{Sin}[e+f\,x])^{3/2}}\,dx$$

Optimal (type 6, 85 leaves, 5 steps):

$$-\frac{1}{2\,a\,f\,\sqrt{a+a\,\text{Sin}[e+f\,x]}}\text{AppellF1}\left[\frac{1}{2},\,-n,\,2,\,\frac{3}{2},\,1-\text{Sin}[e+f\,x],\,\frac{1}{2}\,(1-\text{Sin}[e+f\,x])\right]\,\text{Cos}[e+f\,x]\,\text{Sin}[e+f\,x]^{-n}\,(d\,\text{Sin}[e+f\,x])^n$$

Result (type 6, 798 leaves):

$$\left(\text{Cos}[e+f x]\,(d\,\text{Sin}[e+f x])^n\,(1+\text{Sin}[e+f x])\left(\frac{-a+a\,(1+\text{Sin}[e+f x])}{a}\right)^{-n}\right.$$

$$\left(\left(\left(4\,a^2\,\text{AppellF1}\left[1,\frac{1}{2},-n,2,\frac{1}{2}(1+\text{Sin}[e+f x]),1+\text{Sin}[e+f x]\right](-\text{Sin}[e+f x])^{-n}(1+\text{Sin}[e+f x])\left(-\frac{(a-a\,(1+\text{Sin}[e+f x]))^2}{a^2}\right)^n\right)\right/\right.$$

$$\left(8\,a\,\text{AppellF1}\left[1,\frac{1}{2},-n,2,\frac{1}{2}(1+\text{Sin}[e+f x]),1+\text{Sin}[e+f x]\right]+\right.$$

$$a\left(-4\,n\,\text{AppellF1}\left[2,\frac{1}{2},1-n,3,\frac{1}{2}(1+\text{Sin}[e+f x]),1+\text{Sin}[e+f x]\right]+\text{AppellF1}\left[2,\frac{3}{2},-n,3,\frac{1}{2}(1+\text{Sin}[e+f x]),1+\text{Sin}[e+f x]\right]\right)$$

$$\left.(1+\text{Sin}[e+f x])\right)-\left(a\,(-1+2\,n)\,\text{AppellF1}\left[-\frac{1}{2}-n,-\frac{1}{2},-n,\frac{1}{2}-n,\frac{2}{1+\text{Sin}[e+f x]},\frac{1}{1+\text{Sin}[e+f x]}\right]\right.$$

$$\left.\text{Sin}[e+f x]^n\,(1+\text{Sin}[e+f x])\,(-2\,a+a\,(1+\text{Sin}[e+f x]))\right)\Big/$$

$$\left((1+2\,n)\left(2\,a\left(n\,\text{AppellF1}\left[\frac{1}{2}-n,-\frac{1}{2},1-n,\frac{3}{2}-n,\frac{2}{1+\text{Sin}[e+f x]},\frac{1}{1+\text{Sin}[e+f x]}\right]+\text{AppellF1}\left[\frac{1}{2}-n,\frac{1}{2},-n,\frac{3}{2}-n,\frac{2}{1+\text{Sin}[e+f x]},\right.\right.\right.\right.$$

$$\left.\left.\left.\left.\frac{1}{1+\text{Sin}[e+f x]}\right]\right)+a\,(-1+2\,n)\,\text{AppellF1}\left[\frac{1}{2}-n,\frac{1}{2},-n,\frac{1}{2}-n,\frac{2}{1+\text{Sin}[e+f x]},\frac{1}{1+\text{Sin}[e+f x]}\right](1+\text{Sin}[e+f x])\right)\right)-$$

$$\left(2\,a\,(-3+2\,n)\,\text{AppellF1}\left[\frac{1}{2}-n,-\frac{1}{2},-n,\frac{3}{2}-n,\frac{2}{1+\text{Sin}[e+f x]},\frac{1}{1+\text{Sin}[e+f x]}\right]\text{Sin}[e+f x]^n\,(-2\,a+a\,(1+\text{Sin}[e+f x]))\right)\Big/$$

$$\left((-1+2\,n)\left(2\,a\left(n\,\text{AppellF1}\left[\frac{3}{2}-n,-\frac{1}{2},1-n,\frac{5}{2}-n,\frac{2}{1+\text{Sin}[e+f x]},\frac{1}{1+\text{Sin}[e+f x]}\right]+\text{AppellF1}\left[\frac{3}{2}-n,\frac{1}{2},-n,\frac{5}{2}-n,\frac{2}{1+\text{Sin}[e+f x]},\right.\right.\right.\right.$$

$$\left.\left.\left.\left.\left.\frac{1}{1+\text{Sin}[e+f x]}\right]\right)+a\,(-3+2\,n)\,\text{AppellF1}\left[\frac{1}{2}-n,\frac{1}{2},-n,\frac{3}{2}-n,\frac{2}{1+\text{Sin}[e+f x]},\frac{1}{1+\text{Sin}[e+f x]}\right](1+\text{Sin}[e+f x])\right)\right)\right)\Big/$$

$$\left(2\,a^2\,f\,\sqrt{a\,(1+\text{Sin}[e+f x])}\,\sqrt{\frac{2\,a^2\,(1+\text{Sin}[e+f x])-a^2\,(1+\text{Sin}[e+f x])^2}{a^2}}\,\sqrt{1-\frac{(-a+a\,(1+\text{Sin}[e+f x]))^2}{a^2}}\right)$$

- **Problem 132: Result more than twice size of optimal antiderivative.**

$$\int \text{Sin}[e+f x]^n\,(1+\text{Sin}[e+f x])^m\,dx$$

Optimal (type 6, 71 leaves, 2 steps):

$$-\frac{2^{\frac{1}{2}+m}\,\text{AppellF1}\left[\frac{1}{2},-n,\frac{1}{2}-m,\frac{3}{2},1-\text{Sin}[e+f x],\frac{1}{2}(1-\text{Sin}[e+f x])\right]\text{Cos}[e+f x]}{f\,\sqrt{1+\text{Sin}[e+f x]}}$$

Result (type 6, 2805 leaves):

$$-\left(\left(3\,\text{AppellF1}\left[\frac{1}{2},-n,1+m+n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Cos}[e+f x]\left(\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{-m}\right.\right.$$

$$\text{Sin}[e+f x]^{2 n}\,(1+\text{Sin}[e+f x])^{m}\Big)\Big/\Big(f\,\Big(3\,\text{AppellF1}\Big[\frac{1}{2},-n,1+m+n,\frac{3}{2},\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^{2},-\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^{2}\Big]-$$

$$2\,\Big(n\,\text{AppellF1}\Big[\frac{3}{2},1-n,1+m+n,\frac{5}{2},\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^{2},-\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^{2}\Big]+$$

$$(1+m+n)\,\text{AppellF1}\Big[\frac{3}{2},-n,2+m+n,\frac{5}{2},\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^{2},-\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^{2}\Big]\Big)\,\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^{2}\Big)$$

$$\Big(-\Big(\Big(3\,n\,\text{AppellF1}\Big[\frac{1}{2},-n,1+m+n,\frac{3}{2},\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^{2},-\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^{2}\Big]\,\text{Cos}[e+f x]^{2}\,\Big(\text{Sec}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^{2}\Big)^{-m}$$

$$\text{Sin}[e+f x]^{-1+n}\Big)\Big/\Big(3\,\text{AppellF1}\Big[\frac{1}{2},-n,1+m+n,\frac{3}{2},\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^{2},-\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^{2}\Big]-$$

$$2\,\Big(n\,\text{AppellF1}\Big[\frac{3}{2},1-n,1+m+n,\frac{5}{2},\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^{2},-\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^{2}\Big]+(1+m+n)$$

$$\text{AppellF1}\Big[\frac{3}{2},-n,2+m+n,\frac{5}{2},\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^{2},-\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^{2}\Big]\Big)\,\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^{2}\Big)\Big)+$$

$$\Big(3\,\text{AppellF1}\Big[\frac{1}{2},-n,1+m+n,\frac{3}{2},\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^{2},-\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^{2}\Big]\,\Big(\text{Sec}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^{2}\Big)^{-m}\,\text{Sin}[e+f x]^{1+n}\Big)\Big/$$

$$\Big(3\,\text{AppellF1}\Big[\frac{1}{2},-n,1+m+n,\frac{3}{2},\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^{2},-\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^{2}\Big]-$$

$$2\,\Big(n\,\text{AppellF1}\Big[\frac{3}{2},1-n,1+m+n,\frac{5}{2},\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^{2},-\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^{2}\Big]+$$

$$(1+m+n)\,\text{AppellF1}\Big[\frac{3}{2},-n,2+m+n,\frac{5}{2},\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^{2},-\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^{2}\Big]\Big)\,\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^{2}\Big)-$$

$$\Big(3\,m\,\text{AppellF1}\Big[\frac{1}{2},-n,1+m+n,\frac{3}{2},\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^{2},-\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^{2}\Big]\,\text{Cos}[e+f x]\,\Big(\text{Sec}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^{2}\Big)^{-m}$$

$$\text{Sin}[e+f x]^{n}\,\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]\Big)\Big/\Big(3\,\text{AppellF1}\Big[\frac{1}{2},-n,1+m+n,\frac{3}{2},\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^{2},-\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^{2}\Big]-$$

$$2\,\Big(n\,\text{AppellF1}\Big[\frac{3}{2},1-n,1+m+n,\frac{5}{2},\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^{2},-\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^{2}\Big]+$$

$$(1+m+n)\,\text{AppellF1}\Big[\frac{3}{2},-n,2+m+n,\frac{5}{2},\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^{2},-\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^{2}\Big]\Big)\,\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^{2}\Big)+$$

$$\Big(3\,\text{Cos}[e+f x]\,\Big(\text{Sec}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^{2}\Big)^{-m}\,\text{Sin}[e+f x]^{n}\,\Big(-\frac{1}{3}\,n\,\text{AppellF1}\Big[\frac{3}{2},1-n,1+m+n,\frac{5}{2},\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^{2},$$

$$-\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^{2}\Big]\,\text{Sec}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^{2}\,\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]-\frac{1}{3}\,(1+m+n)$$

$$\text{AppellF1}\Big[\frac{3}{2},-n,2+m+n,\frac{5}{2},\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^{2},-\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^{2}\Big]\,\text{Sec}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^{2}\,\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]\Big)\Big)\Big/$$

$$\left(3\,\text{AppellF1}\left[\frac{1}{2},-n,1+m+n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]-\right.$$

$$2\left(n\,\text{AppellF1}\left[\frac{3}{2},1-n,1+m+n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$\left.\left.(1+m+n)\,\text{AppellF1}\left[\frac{3}{2},-n,2+m+n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)-$$

$$\left(3\,\text{AppellF1}\left[\frac{1}{2},-n,1+m+n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Cos}[e+f x]\left(\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{-m}\right.$$

$$\text{Sin}[e+f x]^n\left(-2\left(n\,\text{AppellF1}\left[\frac{3}{2},1-n,1+m+n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+(1+m+n)\,\text{AppellF1}\left[\frac{3}{2},\right.\right.\right.$$

$$\left.\left.-n,2+m+n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]+$$

$$3\left(-\frac{1}{3}n\,\text{AppellF1}\left[\frac{3}{2},1-n,1+m+n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right.$$

$$\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{1}{3}(1+m+n)\,\text{AppellF1}\left[\frac{3}{2},-n,2+m+n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]$$

$$\left.\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)-2\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2$$

$$\left(n\left(-\frac{3}{5}(1+m+n)\,\text{AppellF1}\left[\frac{5}{2},1-n,2+m+n,\frac{7}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right.\right.$$

$$\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]+\frac{3}{5}(1-n)\,\text{AppellF1}\left[\frac{5}{2},2-n,1+m+n,\frac{7}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]$$

$$\left.\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)+(1+m+n)\left(-\frac{3}{5}n\,\text{AppellF1}\left[\frac{5}{2},1-n,2+m+n,\frac{7}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\right.\right.$$

$$\left.-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{3}{5}(2+m+n)\,\text{AppellF1}\left[\frac{5}{2},-n,3+m+n,\right.$$

$$\left.\left.\left.\left.\left.\frac{7}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)\right)\right)\right)\right)\Big/$$

$$\left(3\,\text{AppellF1}\left[\frac{1}{2},-n,1+m+n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]-2\left(n\,\text{AppellF1}\left[\frac{3}{2},1-n,\right.\right.\right.$$

$$1+m+n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+(1+m+n)$$

$$\left.\left.\left.\text{AppellF1}\left[\frac{3}{2},-n,2+m+n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^2\right)\right)$$

- **Problem 133: Result more than twice size of optimal antiderivative.**

$$\int (1-\text{Sin}[e+f x])^m (-\text{Sin}[e+f x])^n \, dx$$

Optimal (type 6, 68 leaves, 2 steps):

$$\frac{2^{\frac{1}{2}+m} \text{AppellF1}\left[\frac{1}{2}, -n, \frac{1}{2}-m, \frac{3}{2}, 1+\text{Sin}[e+f x], \frac{1}{2} (1+\text{Sin}[e+f x])\right] \text{Cos}[e+f x]}{f \sqrt{1-\text{Sin}[e+f x]}}$$

Result (type 6, 4138 leaves):

$$-\Bigg(\Bigg(2 (3+2 m) \text{AppellF1}\left[\frac{1}{2}+m, -n, 1+m+n, \frac{3}{2}+m, \text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right] \left(\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{1+n}$$

$$(1-\text{Sin}[e+f x])^m (-\text{Sin}[e+f x])^n \left(\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Sin}[e+f x]\right)^n \text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right] \left(\frac{\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}{\sqrt{\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}}\right)^{2 m}\Bigg) \Bigg/$$

$$\Bigg(f (1+2 m) \left((3+2 m) \text{AppellF1}\left[\frac{1}{2}+m, -n, 1+m+n, \frac{3}{2}+m, \text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right] - \right.$$

$$2 \left(n \text{AppellF1}\left[\frac{3}{2}+m, 1-n, 1+m+n, \frac{5}{2}+m, \text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right] + \right.$$

$$\left.\left.(1+m+n) \text{AppellF1}\left[\frac{3}{2}+m, -n, 2+m+n, \frac{5}{2}+m, \text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right) \text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)$$

$$\Bigg(\Bigg((3+2 m) \text{AppellF1}\left[\frac{1}{2}+m, -n, 1+m+n, \frac{3}{2}+m, \text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right] \left(\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^n$$

$$\left(\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Sin}[e+f x]\right)^n \left(\frac{\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}{\sqrt{\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}}\right)^{2 m}\Bigg) \Bigg/$$

$$\left((1+2m)\left((3+2m)\,\text{AppellF1}\left[\frac{1}{2}+m,\,-n,\,1+m+n,\,\frac{3}{2}+m,\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]-\right.\right.$$

$$2\left(n\,\text{AppellF1}\left[\frac{3}{2}+m,\,1-n,\,1+m+n,\,\frac{5}{2}+m,\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+(1+m+n)\right.$$

$$\left.\left.\left.\text{AppellF1}\left[\frac{3}{2}+m,\,-n,\,2+m+n,\,\frac{5}{2}+m,\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\right)-$$

$$\left(2\,(3+2m)\,(1+n)\,\text{AppellF1}\left[\frac{1}{2}+m,\,-n,\,1+m+n,\,\frac{3}{2}+m,\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right.$$

$$\left.\left(\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^n\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\left(\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Sin}[e+f\,x]\right)^n\left(\frac{\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]}{\sqrt{\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}}\right)^{2m}\right)\Bigg/$$

$$\left((1+2m)\left((3+2m)\,\text{AppellF1}\left[\frac{1}{2}+m,\,-n,\,1+m+n,\,\frac{3}{2}+m,\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]-\right.\right.$$

$$2\left(n\,\text{AppellF1}\left[\frac{3}{2}+m,\,1-n,\,1+m+n,\,\frac{5}{2}+m,\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+(1+m+n)\right.$$

$$\left.\left.\left.\text{AppellF1}\left[\frac{3}{2}+m,\,-n,\,2+m+n,\,\frac{5}{2}+m,\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\right)+$$

$$\left(2\,(3+2m)\left(\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{1+n}\left(\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Sin}[e+f\,x]\right)^n\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\left(\frac{\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]}{\sqrt{\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}}\right)^{2m}\right.$$

$$\left(-\frac{1}{\frac{3}{2}+m}\left(\frac{1}{2}+m\right)n\,\text{AppellF1}\left[\frac{3}{2}+m,\,1-n,\,1+m+n,\,\frac{5}{2}+m,\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right.$$

$$\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-\frac{1}{\frac{3}{2}+m}\left(\frac{1}{2}+m\right)(1+m+n)\,\text{AppellF1}\left[\frac{3}{2}+m,\,-n,\,2+m+n,\right.$$

$$\frac{5}{2}+m,\ \mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]\ \mathrm{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\Bigg)\Bigg)\Bigg/$$

$$\Bigg((1+2\,m)\ \Bigg((3+2\,m)\ \mathrm{AppellF1}\left[\frac{1}{2}+m,\ -n,\ 1+m+n,\ \frac{3}{2}+m,\ \mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]-$$
$$2\left(n\,\mathrm{AppellF1}\left[\frac{3}{2}+m,\ 1-n,\ 1+m+n,\ \frac{5}{2}+m,\ \mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+(1+m+n)\right.$$
$$\left.\mathrm{AppellF1}\left[\frac{3}{2}+m,\ -n,\ 2+m+n,\ \frac{5}{2}+m,\ \mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Bigg)\Bigg)+$$

$$\Bigg(2\,(3+2\,m)\ n\,\mathrm{AppellF1}\left[\frac{1}{2}+m,\ -n,\ 1+m+n,\ \frac{3}{2}+m,\ \mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\left(\mathrm{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{1+n}$$

$$\left(\mathrm{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\mathrm{Sin}[e+f\,x]\right)^{-1+n}\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\left(\frac{\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]}{\sqrt{\mathrm{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}}\right)^{2\,m}$$

$$\left(-\mathrm{Cos}[e+f\,x]\ \mathrm{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2+\mathrm{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\mathrm{Sin}[e+f\,x]\ \mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\right)\Bigg)\Bigg/$$

$$\Bigg((1+2\,m)\ \Bigg((3+2\,m)\ \mathrm{AppellF1}\left[\frac{1}{2}+m,\ -n,\ 1+m+n,\ \frac{3}{2}+m,\ \mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]-$$
$$2\left(n\,\mathrm{AppellF1}\left[\frac{3}{2}+m,\ 1-n,\ 1+m+n,\ \frac{5}{2}+m,\ \mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+(1+m+n)\right.$$
$$\left.\mathrm{AppellF1}\left[\frac{3}{2}+m,\ -n,\ 2+m+n,\ \frac{5}{2}+m,\ \mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Bigg)\Bigg)+$$

$$\Bigg(4\,m\,(3+2\,m)\ \mathrm{AppellF1}\left[\frac{1}{2}+m,\ -n,\ 1+m+n,\ \frac{3}{2}+m,\ \mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]$$

$$\left(\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{1+n}\left(\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Sin}[e+f x]\right)^n\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]$$

$$\left(\frac{\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}{\sqrt{\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}}\right)^{-1+2 m}\left(\frac{1}{2}\sqrt{\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}-\frac{\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{2\sqrt{\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}}\right)\Bigg)\Bigg/$$

$$\Bigg((1+2 m)\Bigg((3+2 m)\,\text{AppellF1}\left[\frac{1}{2}+m,-n,1+m+n,\frac{3}{2}+m,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]-$$

$$2\Bigg(n\,\text{AppellF1}\left[\frac{3}{2}+m,1-n,1+m+n,\frac{5}{2}+m,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+(1+m+n)$$

$$\text{AppellF1}\left[\frac{3}{2}+m,-n,2+m+n,\frac{5}{2}+m,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\Bigg)\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)\Bigg)-$$

$$\Bigg(2(3+2 m)\,\text{AppellF1}\left[\frac{1}{2}+m,-n,1+m+n,\frac{3}{2}+m,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\left(\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{1+n}$$

$$\left(\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Sin}[e+f x]\right)^n\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\left(\frac{\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}{\sqrt{\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}}\right)^{2 m}$$

$$\Bigg(-2\Bigg(n\,\text{AppellF1}\left[\frac{3}{2}+m,1-n,1+m+n,\frac{5}{2}+m,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+(1+m+n)\,\text{AppellF1}\Bigg[\frac{3}{2}+m,-n,$$

$$2+m+n,\frac{5}{2}+m,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg]\Bigg)\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]+$$

$$(3+2 m)\Bigg(-\frac{1}{\frac{3}{2}+m}\left(\frac{1}{2}+m\right)n\,\text{AppellF1}\left[\frac{3}{2}+m,1-n,1+m+n,\frac{5}{2}+m,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{1}{\frac{3}{2}+m}\left(\frac{1}{2}+m\right)(1+m+n)\,\text{AppellF1}\Bigg[\frac{3}{2}+m,-n,2+m+n,$$

$$\frac{5}{2}+m,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg]\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\Bigg)-$$

$$2\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\left(n\left(-\frac{1}{\frac{5}{2}+m}\left(\frac{3}{2}+m\right)(1+m+n)\,\text{AppellF1}\left[\frac{5}{2}+m,\,1-n,\,2+m+n,\,\frac{7}{2}+m,\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\right.\right.\right.$$

$$\left.-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]+\frac{1}{\frac{5}{2}+m}\left(\frac{3}{2}+m\right)(1-n)\,\text{AppellF1}\left[\frac{5}{2}+m,\,2-n,\right.$$

$$\left.\left.1+m+n,\,\frac{7}{2}+m,\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\right)+$$

$$(1+m+n)\left(-\frac{1}{\frac{5}{2}+m}\left(\frac{3}{2}+m\right)n\,\text{AppellF1}\left[\frac{5}{2}+m,\,1-n,\,2+m+n,\,\frac{7}{2}+m,\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right.$$

$$\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-\frac{1}{\frac{5}{2}+m}\left(\frac{3}{2}+m\right)(2+m+n)\,\text{AppellF1}\left[\frac{5}{2}+m,\,-n,\,3+m+n,\,\frac{7}{2}+m,\right.$$

$$\left.\left.\left.\left.\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\right)\right)\right)\right)\Big/$$

$$\left((1+2m)\left((3+2m)\,\text{AppellF1}\left[\frac{1}{2}+m,\,-n,\,1+m+n,\,\frac{3}{2}+m,\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]-\right.\right.$$

$$2\left(n\,\text{AppellF1}\left[\frac{3}{2}+m,\,1-n,\,1+m+n,\,\frac{5}{2}+m,\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+(1+m+n)\right.$$

$$\left.\left.\left.\text{AppellF1}\left[\frac{3}{2}+m,\,-n,\,2+m+n,\,\frac{5}{2}+m,\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^2\right)$$

Problem 134: Result more than twice size of optimal antiderivative.

$$\int (d\,\text{Sin}[e+f\,x])^n\,(1+\text{Sin}[e+f\,x])^m\,dx$$

Optimal (type 6, 91 leaves, 3 steps) :

$$-\frac{1}{f\sqrt{1+\text{Sin}[e+f\,x]}}2^{\frac{1}{2}+m}\,\text{AppellF1}\left[\frac{1}{2},\,-n,\,\frac{1}{2}-m,\,\frac{3}{2},\,1-\text{Sin}[e+f\,x],\,\frac{1}{2}(1-\text{Sin}[e+f\,x])\right]\text{Cos}[e+f\,x]\,\text{Sin}[e+f\,x]^{-n}\,(d\,\text{Sin}[e+f\,x])^n$$

Result (type 6, 2813 leaves) :

$$-\left(\left(3\,\text{AppellF1}\left[\frac{1}{2},\,-n,\,1+m+n,\,\frac{3}{2},\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\text{Cos}[e+f\,x]\left(\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{-m}\text{Sin}[e+f\,x]^n\right.\right.$$

$$(d\,\mathrm{Sin}[e+f x])^n\,(1+\mathrm{Sin}[e+f x])^m\Bigg/\Bigg(f\Bigg(3\,\mathrm{AppellF1}\Big[\tfrac{1}{2},-n,1+m+n,\tfrac{3}{2},\mathrm{Tan}\Big[\tfrac{1}{2}\Big(-e+\tfrac{\pi}{2}-f x\Big)\Big]^2,-\mathrm{Tan}\Big[\tfrac{1}{2}\Big(-e+\tfrac{\pi}{2}-f x\Big)\Big]^2\Big]-$$
$$2\Big(n\,\mathrm{AppellF1}\Big[\tfrac{3}{2},1-n,1+m+n,\tfrac{5}{2},\mathrm{Tan}\Big[\tfrac{1}{2}\Big(-e+\tfrac{\pi}{2}-f x\Big)\Big]^2,-\mathrm{Tan}\Big[\tfrac{1}{2}\Big(-e+\tfrac{\pi}{2}-f x\Big)\Big]^2\Big]+$$
$$(1+m+n)\,\mathrm{AppellF1}\Big[\tfrac{3}{2},-n,2+m+n,\tfrac{5}{2},\mathrm{Tan}\Big[\tfrac{1}{2}\Big(-e+\tfrac{\pi}{2}-f x\Big)\Big]^2,-\mathrm{Tan}\Big[\tfrac{1}{2}\Big(-e+\tfrac{\pi}{2}-f x\Big)\Big]^2\Big]\Big)\,\mathrm{Tan}\Big[\tfrac{1}{2}\Big(-e+\tfrac{\pi}{2}-f x\Big)\Big]^2\Bigg)$$
$$\Bigg(-\Bigg(\Bigg(3\,n\,\mathrm{AppellF1}\Big[\tfrac{1}{2},-n,1+m+n,\tfrac{3}{2},\mathrm{Tan}\Big[\tfrac{1}{2}\Big(-e+\tfrac{\pi}{2}-f x\Big)\Big]^2,-\mathrm{Tan}\Big[\tfrac{1}{2}\Big(-e+\tfrac{\pi}{2}-f x\Big)\Big]^2\Big]\,\mathrm{Cos}[e+f x]^2\,\Big(\mathrm{Sec}\Big[\tfrac{1}{2}\Big(-e+\tfrac{\pi}{2}-f x\Big)\Big]^2\Big)^{-m}$$
$$\mathrm{Sin}[e+f x]^{-1+n}\Bigg)\Bigg/\Bigg(3\,\mathrm{AppellF1}\Big[\tfrac{1}{2},-n,1+m+n,\tfrac{3}{2},\mathrm{Tan}\Big[\tfrac{1}{2}\Big(-e+\tfrac{\pi}{2}-f x\Big)\Big]^2,-\mathrm{Tan}\Big[\tfrac{1}{2}\Big(-e+\tfrac{\pi}{2}-f x\Big)\Big]^2\Big]-$$
$$2\Big(n\,\mathrm{AppellF1}\Big[\tfrac{3}{2},1-n,1+m+n,\tfrac{5}{2},\mathrm{Tan}\Big[\tfrac{1}{2}\Big(-e+\tfrac{\pi}{2}-f x\Big)\Big]^2,-\mathrm{Tan}\Big[\tfrac{1}{2}\Big(-e+\tfrac{\pi}{2}-f x\Big)\Big]^2\Big]+(1+m+n)$$
$$\mathrm{AppellF1}\Big[\tfrac{3}{2},-n,2+m+n,\tfrac{5}{2},\mathrm{Tan}\Big[\tfrac{1}{2}\Big(-e+\tfrac{\pi}{2}-f x\Big)\Big]^2,-\mathrm{Tan}\Big[\tfrac{1}{2}\Big(-e+\tfrac{\pi}{2}-f x\Big)\Big]^2\Big]\Big)\,\mathrm{Tan}\Big[\tfrac{1}{2}\Big(-e+\tfrac{\pi}{2}-f x\Big)\Big]^2\Bigg)\Bigg)+$$
$$\Bigg(3\,\mathrm{AppellF1}\Big[\tfrac{1}{2},-n,1+m+n,\tfrac{3}{2},\mathrm{Tan}\Big[\tfrac{1}{2}\Big(-e+\tfrac{\pi}{2}-f x\Big)\Big]^2,-\mathrm{Tan}\Big[\tfrac{1}{2}\Big(-e+\tfrac{\pi}{2}-f x\Big)\Big]^2\Big]\Big(\mathrm{Sec}\Big[\tfrac{1}{2}\Big(-e+\tfrac{\pi}{2}-f x\Big)\Big]^2\Big)^{-m}\mathrm{Sin}[e+f x]^{1+n}\Bigg)\Bigg/$$
$$\Bigg(3\,\mathrm{AppellF1}\Big[\tfrac{1}{2},-n,1+m+n,\tfrac{3}{2},\mathrm{Tan}\Big[\tfrac{1}{2}\Big(-e+\tfrac{\pi}{2}-f x\Big)\Big]^2,-\mathrm{Tan}\Big[\tfrac{1}{2}\Big(-e+\tfrac{\pi}{2}-f x\Big)\Big]^2\Big]-$$
$$2\Big(n\,\mathrm{AppellF1}\Big[\tfrac{3}{2},1-n,1+m+n,\tfrac{5}{2},\mathrm{Tan}\Big[\tfrac{1}{2}\Big(-e+\tfrac{\pi}{2}-f x\Big)\Big]^2,-\mathrm{Tan}\Big[\tfrac{1}{2}\Big(-e+\tfrac{\pi}{2}-f x\Big)\Big]^2\Big]+$$
$$(1+m+n)\,\mathrm{AppellF1}\Big[\tfrac{3}{2},-n,2+m+n,\tfrac{5}{2},\mathrm{Tan}\Big[\tfrac{1}{2}\Big(-e+\tfrac{\pi}{2}-f x\Big)\Big]^2,-\mathrm{Tan}\Big[\tfrac{1}{2}\Big(-e+\tfrac{\pi}{2}-f x\Big)\Big]^2\Big]\Big)\,\mathrm{Tan}\Big[\tfrac{1}{2}\Big(-e+\tfrac{\pi}{2}-f x\Big)\Big]^2\Bigg)-$$
$$\Bigg(3\,m\,\mathrm{AppellF1}\Big[\tfrac{1}{2},-n,1+m+n,\tfrac{3}{2},\mathrm{Tan}\Big[\tfrac{1}{2}\Big(-e+\tfrac{\pi}{2}-f x\Big)\Big]^2,-\mathrm{Tan}\Big[\tfrac{1}{2}\Big(-e+\tfrac{\pi}{2}-f x\Big)\Big]^2\Big]\,\mathrm{Cos}[e+f x]\,\Big(\mathrm{Sec}\Big[\tfrac{1}{2}\Big(-e+\tfrac{\pi}{2}-f x\Big)\Big]^2\Big)^{-m}$$
$$\mathrm{Sin}[e+f x]^n\,\mathrm{Tan}\Big[\tfrac{1}{2}\Big(-e+\tfrac{\pi}{2}-f x\Big)\Big]\Bigg)\Bigg/\Bigg(3\,\mathrm{AppellF1}\Big[\tfrac{1}{2},-n,1+m+n,\tfrac{3}{2},\mathrm{Tan}\Big[\tfrac{1}{2}\Big(-e+\tfrac{\pi}{2}-f x\Big)\Big]^2,-\mathrm{Tan}\Big[\tfrac{1}{2}\Big(-e+\tfrac{\pi}{2}-f x\Big)\Big]^2\Big]-$$
$$2\Big(n\,\mathrm{AppellF1}\Big[\tfrac{3}{2},1-n,1+m+n,\tfrac{5}{2},\mathrm{Tan}\Big[\tfrac{1}{2}\Big(-e+\tfrac{\pi}{2}-f x\Big)\Big]^2,-\mathrm{Tan}\Big[\tfrac{1}{2}\Big(-e+\tfrac{\pi}{2}-f x\Big)\Big]^2\Big]+$$
$$(1+m+n)\,\mathrm{AppellF1}\Big[\tfrac{3}{2},-n,2+m+n,\tfrac{5}{2},\mathrm{Tan}\Big[\tfrac{1}{2}\Big(-e+\tfrac{\pi}{2}-f x\Big)\Big]^2,-\mathrm{Tan}\Big[\tfrac{1}{2}\Big(-e+\tfrac{\pi}{2}-f x\Big)\Big]^2\Big]\Big)\,\mathrm{Tan}\Big[\tfrac{1}{2}\Big(-e+\tfrac{\pi}{2}-f x\Big)\Big]^2\Bigg)+$$
$$\Bigg(3\,\mathrm{Cos}[e+f x]\,\Big(\mathrm{Sec}\Big[\tfrac{1}{2}\Big(-e+\tfrac{\pi}{2}-f x\Big)\Big]^2\Big)^{-m}\mathrm{Sin}[e+f x]^n\,\Big(-\tfrac{1}{3}\,n\,\mathrm{AppellF1}\Big[\tfrac{3}{2},1-n,1+m+n,\tfrac{5}{2},\mathrm{Tan}\Big[\tfrac{1}{2}\Big(-e+\tfrac{\pi}{2}-f x\Big)\Big]^2,$$
$$-\mathrm{Tan}\Big[\tfrac{1}{2}\Big(-e+\tfrac{\pi}{2}-f x\Big)\Big]^2\Big]\,\mathrm{Sec}\Big[\tfrac{1}{2}\Big(-e+\tfrac{\pi}{2}-f x\Big)\Big]^2\,\mathrm{Tan}\Big[\tfrac{1}{2}\Big(-e+\tfrac{\pi}{2}-f x\Big)\Big]-\tfrac{1}{3}\,(1+m+n)$$
$$\mathrm{AppellF1}\Big[\tfrac{3}{2},-n,2+m+n,\tfrac{5}{2},\mathrm{Tan}\Big[\tfrac{1}{2}\Big(-e+\tfrac{\pi}{2}-f x\Big)\Big]^2,-\mathrm{Tan}\Big[\tfrac{1}{2}\Big(-e+\tfrac{\pi}{2}-f x\Big)\Big]^2\Big]\,\mathrm{Sec}\Big[\tfrac{1}{2}\Big(-e+\tfrac{\pi}{2}-f x\Big)\Big]^2\,\mathrm{Tan}\Big[\tfrac{1}{2}\Big(-e+\tfrac{\pi}{2}-f x\Big)\Big]\Big)\Bigg)\Bigg/$$

$$\left(3\,\text{AppellF1}\left[\frac{1}{2},-n,1+m+n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]-\right.$$
$$2\left(n\,\text{AppellF1}\left[\frac{3}{2},1-n,1+m+n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.$$
$$\left.\left.(1+m+n)\,\text{AppellF1}\left[\frac{3}{2},-n,2+m+n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)-$$
$$\left(3\,\text{AppellF1}\left[\frac{1}{2},-n,1+m+n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\text{Cos}[e+f\,x]\left(\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{-m}\right.$$
$$\text{Sin}[e+f\,x]^n\left(-2\left(n\,\text{AppellF1}\left[\frac{3}{2},1-n,1+m+n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+(1+m+n)\,\text{AppellF1}\left[\frac{3}{2},\right.\right.\right.$$
$$\left.\left.-n,2+m+n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]+$$
$$3\left(-\frac{1}{3}n\,\text{AppellF1}\left[\frac{3}{2},1-n,1+m+n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right.$$
$$\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-\frac{1}{3}(1+m+n)\,\text{AppellF1}\left[\frac{3}{2},-n,2+m+n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]$$
$$\left.\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\right)-2\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2$$
$$\left(n\left(-\frac{3}{5}(1+m+n)\,\text{AppellF1}\left[\frac{5}{2},1-n,2+m+n,\frac{7}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right.\right.$$
$$\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]+\frac{3}{5}(1-n)\,\text{AppellF1}\left[\frac{5}{2},2-n,1+m+n,\frac{7}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]$$
$$\left.\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\right)+(1+m+n)\left(-\frac{3}{5}n\,\text{AppellF1}\left[\frac{5}{2},1-n,2+m+n,\frac{7}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\right.\right.$$
$$\left.-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-\frac{3}{5}(2+m+n)\,\text{AppellF1}\left[\frac{5}{2},-n,3+m+n,\right.$$
$$\left.\left.\left.\left.\left.\frac{7}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\right)\right)\right)\right)\Big/$$
$$\left(3\,\text{AppellF1}\left[\frac{1}{2},-n,1+m+n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]-2\left(n\,\text{AppellF1}\left[\frac{3}{2},1-n,\right.\right.\right.$$
$$1+m+n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+(1+m+n)$$
$$\left.\left.\left.\text{AppellF1}\left[\frac{3}{2},-n,2+m+n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^2\right)\right)$$

- **Problem 135: Result more than twice size of optimal antiderivative.**

$$\int (1-\text{Sin}[e+f x])^m (d\,\text{Sin}[e+f x])^n\, dx$$

Optimal (type 6, 90 leaves, 3 steps):

$$\frac{1}{f\sqrt{1-\text{Sin}[e+f x]}} 2^{\frac{1}{2}+m}\,\text{AppellF1}\left[\frac{1}{2},-n,\frac{1}{2}-m,\frac{3}{2},1+\text{Sin}[e+f x],\frac{1}{2}(1+\text{Sin}[e+f x])\right]\text{Cos}[e+f x]\,(-\text{Sin}[e+f x])^{-n}(d\,\text{Sin}[e+f x])^n$$

Result (type 6, 4138 leaves):

$$-\left(\left(2(3+2m)\,\text{AppellF1}\left[\frac{1}{2}+m,-n,1+m+n,\frac{3}{2}+m,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\left(\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{1+n}\right.\right.$$

$$(1-\text{Sin}[e+f x])^m(d\,\text{Sin}[e+f x])^n\left(\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Sin}[e+f x]\right)^n\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\left(\frac{\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}{\sqrt{\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}}\right)^{2m}\right)\Bigg/$$

$$\left(f(1+2m)\left((3+2m)\,\text{AppellF1}\left[\frac{1}{2}+m,-n,1+m+n,\frac{3}{2}+m,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]-\right.\right.$$

$$2\left(n\,\text{AppellF1}\left[\frac{3}{2}+m,1-n,1+m+n,\frac{5}{2}+m,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$\left.\left.(1+m+n)\,\text{AppellF1}\left[\frac{3}{2}+m,-n,2+m+n,\frac{5}{2}+m,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)$$

$$\left(\left((3+2m)\,\text{AppellF1}\left[\frac{1}{2}+m,-n,1+m+n,\frac{3}{2}+m,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\left(\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^n\right.\right.$$

$$\left(\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Sin}[e+f x]\right)^n\left(\frac{\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}{\sqrt{\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}}\right)^{2m}\right)\Bigg/$$

$$\left((1+2\,m)\left((3+2\,m)\,\text{AppellF1}\left[\frac{1}{2}+m,\,-n,\,1+m+n,\,\frac{3}{2}+m,\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]-\right.\right.$$

$$2\left(n\,\text{AppellF1}\left[\frac{3}{2}+m,\,1-n,\,1+m+n,\,\frac{5}{2}+m,\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+(1+m+n)\right.$$

$$\left.\left.\left.\text{AppellF1}\left[\frac{3}{2}+m,\,-n,\,2+m+n,\,\frac{5}{2}+m,\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\right)-$$

$$\left(2\,(3+2\,m)\,(1+n)\,\text{AppellF1}\left[\frac{1}{2}+m,\,-n,\,1+m+n,\,\frac{3}{2}+m,\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right.$$

$$\left.\left(\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^n\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\left(\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Sin}[e+f\,x]\right)^n\left(\frac{\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]}{\sqrt{\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}}\right)^{2\,m}\right)\Big/$$

$$\left((1+2\,m)\left((3+2\,m)\,\text{AppellF1}\left[\frac{1}{2}+m,\,-n,\,1+m+n,\,\frac{3}{2}+m,\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]-\right.\right.$$

$$2\left(n\,\text{AppellF1}\left[\frac{3}{2}+m,\,1-n,\,1+m+n,\,\frac{5}{2}+m,\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+(1+m+n)\right.$$

$$\left.\left.\left.\text{AppellF1}\left[\frac{3}{2}+m,\,-n,\,2+m+n,\,\frac{5}{2}+m,\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\right)+$$

$$\left(2\,(3+2\,m)\left(\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{1+n}\left(\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Sin}[e+f\,x]\right)^n\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\left(\frac{\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]}{\sqrt{\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}}\right)^{2\,m}\right.$$

$$\left(-\frac{1}{\frac{3}{2}+m}\left(\frac{1}{2}+m\right)n\,\text{AppellF1}\left[\frac{3}{2}+m,\,1-n,\,1+m+n,\,\frac{5}{2}+m,\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right.$$

$$\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-\frac{1}{\frac{3}{2}+m}\left(\frac{1}{2}+m\right)(1+m+n)\,\text{AppellF1}\left[\frac{3}{2}+m,\,-n,\,2+m+n,\right.$$

$$\left.\left.\frac{5}{2}+m,\ \text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\right)\right)\Big/$$

$$\left((1+2\,m)\left((3+2\,m)\,\text{AppellF1}\left[\frac{1}{2}+m,\ -n,\ 1+m+n,\ \frac{3}{2}+m,\ \text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]-\right.\right.$$
$$2\left(n\,\text{AppellF1}\left[\frac{3}{2}+m,\ 1-n,\ 1+m+n,\ \frac{5}{2}+m,\ \text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+(1+m+n)\right.$$
$$\left.\left.\text{AppellF1}\left[\frac{3}{2}+m,\ -n,\ 2+m+n,\ \frac{5}{2}+m,\ \text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)+$$

$$\left(2\,(3+2\,m)\,n\,\text{AppellF1}\left[\frac{1}{2}+m,\ -n,\ 1+m+n,\ \frac{3}{2}+m,\ \text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\left(\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{1+n}\right.$$

$$\left(\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Sin}[e+f\,x]\right)^{-1+n}\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\left(\frac{\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]}{\sqrt{\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}}\right)^{2\,m}$$

$$\left.\left(-\text{Cos}[e+f\,x]\,\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2+\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Sin}[e+f\,x]\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\right)\right)\Big/$$

$$\left((1+2\,m)\left((3+2\,m)\,\text{AppellF1}\left[\frac{1}{2}+m,\ -n,\ 1+m+n,\ \frac{3}{2}+m,\ \text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]-\right.\right.$$
$$2\left(n\,\text{AppellF1}\left[\frac{3}{2}+m,\ 1-n,\ 1+m+n,\ \frac{5}{2}+m,\ \text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+(1+m+n)\right.$$
$$\left.\left.\text{AppellF1}\left[\frac{3}{2}+m,\ -n,\ 2+m+n,\ \frac{5}{2}+m,\ \text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)+$$

$$\left(4\,m\,(3+2\,m)\,\text{AppellF1}\left[\frac{1}{2}+m,\ -n,\ 1+m+n,\ \frac{3}{2}+m,\ \text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right.$$

$$\left(\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{1+n}\left(\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Sin}[e+f x]\right)^n\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]$$

$$\left(\frac{\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}{\sqrt{\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}}\right)^{-1+2 m}\left(\frac{1}{2}\sqrt{\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}-\frac{\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{2\sqrt{\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}}\right)\Bigg)\Big/$$

$$\Bigg((1+2 m)\Bigg((3+2 m)\,\text{AppellF1}\left[\frac{1}{2}+m,-n,1+m+n,\frac{3}{2}+m,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]-$$

$$2\Bigg(n\,\text{AppellF1}\left[\frac{3}{2}+m,1-n,1+m+n,\frac{5}{2}+m,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+(1+m+n)$$

$$\text{AppellF1}\left[\frac{3}{2}+m,-n,2+m+n,\frac{5}{2}+m,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\Bigg)\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)-$$

$$\Bigg(2(3+2 m)\,\text{AppellF1}\left[\frac{1}{2}+m,-n,1+m+n,\frac{3}{2}+m,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\left(\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{1+n}$$

$$\left(\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Sin}[e+f x]\right)^n\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\left(\frac{\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}{\sqrt{\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}}\right)^{2 m}$$

$$\Bigg(-2\Bigg(n\,\text{AppellF1}\left[\frac{3}{2}+m,1-n,1+m+n,\frac{5}{2}+m,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+(1+m+n)\,\text{AppellF1}\Big[\frac{3}{2}+m,-n,$$

$$2+m+n,\frac{5}{2}+m,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\Bigg)\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]+$$

$$(3+2 m)\Bigg(-\frac{1}{\frac{3}{2}+m}\left(\frac{1}{2}+m\right)n\,\text{AppellF1}\left[\frac{3}{2}+m,1-n,1+m+n,\frac{5}{2}+m,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{1}{\frac{3}{2}+m}\left(\frac{1}{2}+m\right)(1+m+n)\,\text{AppellF1}\Big[\frac{3}{2}+m,-n,2+m+n,$$

$$\frac{5}{2}+m,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\Bigg)-$$

$$2\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\left(n\left(-\frac{1}{\frac{5}{2}+m}\left(\frac{3}{2}+m\right)(1+m+n)\,\text{AppellF1}\left[\frac{5}{2}+m,\,1-n,\,2+m+n,\,\frac{7}{2}+m,\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\right.\right.\right.$$

$$-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]\,\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]+\frac{1}{\frac{5}{2}+m}\left(\frac{3}{2}+m\right)(1-n)\,\text{AppellF1}\Big[\frac{5}{2}+m,\,2-n,$$

$$1+m+n,\,\frac{7}{2}+m,\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]\,\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\Bigg)+$$

$$(1+m+n)\left(-\frac{1}{\frac{5}{2}+m}\left(\frac{3}{2}+m\right)n\,\text{AppellF1}\left[\frac{5}{2}+m,\,1-n,\,2+m+n,\,\frac{7}{2}+m,\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right.$$

$$\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-\frac{1}{\frac{5}{2}+m}\left(\frac{3}{2}+m\right)(2+m+n)\,\text{AppellF1}\Big[\frac{5}{2}+m,\,-n,\,3+m+n,\,\frac{7}{2}+m,$$

$$\left.\left.\left.\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\right)\right)\right)\Bigg)\Bigg/$$

$$\left((1+2\,m)\left((3+2\,m)\,\text{AppellF1}\left[\frac{1}{2}+m,\,-n,\,1+m+n,\,\frac{3}{2}+m,\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]-\right.\right.$$

$$2\left(n\,\text{AppellF1}\left[\frac{3}{2}+m,\,1-n,\,1+m+n,\,\frac{5}{2}+m,\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+(1+m+n)\right.$$

$$\left.\left.\left.\text{AppellF1}\left[\frac{3}{2}+m,\,-n,\,2+m+n,\,\frac{5}{2}+m,\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^2\right)\right)$$

Problem 136: Result more than twice size of optimal antiderivative.

$$\int \text{Sin}[e+f\,x]^n\,(a+a\,\text{Sin}[e+f\,x])^m\,dx$$

Optimal (type 6, 87 leaves, 3 steps):

$$-\frac{1}{f}2^{\frac{1}{2}+m}\,\text{AppellF1}\left[\frac{1}{2},\,-n,\,\frac{1}{2}-m,\,\frac{3}{2},\,1-\text{Sin}[e+f\,x],\,\frac{1}{2}\,(1-\text{Sin}[e+f\,x])\right]\text{Cos}[e+f\,x]\,(1+\text{Sin}[e+f\,x])^{-\frac{1}{2}-m}\,(a+a\,\text{Sin}[e+f\,x])^m$$

Result (type 6, 2807 leaves):

$$-\left(\left(3\,\text{AppellF1}\left[\frac{1}{2},\,-n,\,1+m+n,\,\frac{3}{2},\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\text{Cos}[e+f\,x]\left(\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{-m}\right.\right.$$

$$\text{Sin}[e+f x]^{2 n} (a+a \text{Sin}[e+f x])^m\Big) \Big/ \Big(f \Big(3 \text{AppellF1}\Big[\frac{1}{2}, -n, 1+m+n, \frac{3}{2}, \text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2, -\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big] -$$

$$2 \Big(n \text{AppellF1}\Big[\frac{3}{2}, 1-n, 1+m+n, \frac{5}{2}, \text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2, -\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big] +$$

$$(1+m+n) \text{AppellF1}\Big[\frac{3}{2}, -n, 2+m+n, \frac{5}{2}, \text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2, -\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\Big) \text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big)$$

$$\Big(-\Big(\Big(3 n \text{AppellF1}\Big[\frac{1}{2}, -n, 1+m+n, \frac{3}{2}, \text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2, -\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big] \text{Cos}[e+f x]^2 \Big(\text{Sec}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big)^{-m}$$

$$\text{Sin}[e+f x]^{-1+n}\Big) \Big/ \Big(3 \text{AppellF1}\Big[\frac{1}{2}, -n, 1+m+n, \frac{3}{2}, \text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2, -\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big] -$$

$$2 \Big(n \text{AppellF1}\Big[\frac{3}{2}, 1-n, 1+m+n, \frac{5}{2}, \text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2, -\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big] + (1+m+n)$$

$$\text{AppellF1}\Big[\frac{3}{2}, -n, 2+m+n, \frac{5}{2}, \text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2, -\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\Big) \text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big)\Big) +$$

$$\Big(3 \text{AppellF1}\Big[\frac{1}{2}, -n, 1+m+n, \frac{3}{2}, \text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2, -\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big] \Big(\text{Sec}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big)^{-m} \text{Sin}[e+f x]^{1+n}\Big) \Big/$$

$$\Big(3 \text{AppellF1}\Big[\frac{1}{2}, -n, 1+m+n, \frac{3}{2}, \text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2, -\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big] -$$

$$2 \Big(n \text{AppellF1}\Big[\frac{3}{2}, 1-n, 1+m+n, \frac{5}{2}, \text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2, -\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big] +$$

$$(1+m+n) \text{AppellF1}\Big[\frac{3}{2}, -n, 2+m+n, \frac{5}{2}, \text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2, -\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\Big) \text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big) -$$

$$\Big(3 m \text{AppellF1}\Big[\frac{1}{2}, -n, 1+m+n, \frac{3}{2}, \text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2, -\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big] \text{Cos}[e+f x] \Big(\text{Sec}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big)^{-m}$$

$$\text{Sin}[e+f x]^n \text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]\Big) \Big/ \Big(3 \text{AppellF1}\Big[\frac{1}{2}, -n, 1+m+n, \frac{3}{2}, \text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2, -\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big] -$$

$$2 \Big(n \text{AppellF1}\Big[\frac{3}{2}, 1-n, 1+m+n, \frac{5}{2}, \text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2, -\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big] +$$

$$(1+m+n) \text{AppellF1}\Big[\frac{3}{2}, -n, 2+m+n, \frac{5}{2}, \text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2, -\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\Big) \text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big) +$$

$$\Big(3 \text{Cos}[e+f x] \Big(\text{Sec}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big)^{-m} \text{Sin}[e+f x]^n \Big(-\frac{1}{3} n \text{AppellF1}\Big[\frac{3}{2}, 1-n, 1+m+n, \frac{5}{2}, \text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,$$

$$-\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big] \text{Sec}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2 \text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big] - \frac{1}{3} (1+m+n)$$

$$\text{AppellF1}\Big[\frac{3}{2}, -n, 2+m+n, \frac{5}{2}, \text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2, -\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big] \text{Sec}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2 \text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]\Big)\Big) \Big/$$

$$\Big(3\,\text{AppellF1}\Big[\frac{1}{2},-n,1+m+n,\frac{3}{2},\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]-$$

$$2\,\Big(n\,\text{AppellF1}\Big[\frac{3}{2},1-n,1+m+n,\frac{5}{2},\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+$$

$$(1+m+n)\,\text{AppellF1}\Big[\frac{3}{2},-n,2+m+n,\frac{5}{2},\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)-$$

$$\Big(3\,\text{AppellF1}\Big[\frac{1}{2},-n,1+m+n,\frac{3}{2},\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\,\text{Cos}[e+f\,x]\,\Big(\text{Sec}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)^{-m}$$

$$\text{Sin}[e+f\,x]^n\,\Big(-2\,\Big(n\,\text{AppellF1}\Big[\frac{3}{2},1-n,1+m+n,\frac{5}{2},\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+(1+m+n)\,\text{AppellF1}\Big[\frac{3}{2},$$

$$-n,2+m+n,\frac{5}{2},\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\Big)\,\text{Sec}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]+$$

$$3\,\Big(-\frac{1}{3}\,n\,\text{AppellF1}\Big[\frac{3}{2},1-n,1+m+n,\frac{5}{2},\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2$$

$$\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]-\frac{1}{3}\,(1+m+n)\,\text{AppellF1}\Big[\frac{3}{2},-n,2+m+n,\frac{5}{2},\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]$$

$$\text{Sec}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\Big)-2\,\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2$$

$$\Big(n\,\Big(-\frac{3}{5}\,(1+m+n)\,\text{AppellF1}\Big[\frac{5}{2},1-n,2+m+n,\frac{7}{2},\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2$$

$$\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]+\frac{3}{5}\,(1-n)\,\text{AppellF1}\Big[\frac{5}{2},2-n,1+m+n,\frac{7}{2},\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]$$

$$\text{Sec}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\Big)\Big)+(1+m+n)\,\Big(-\frac{3}{5}\,n\,\text{AppellF1}\Big[\frac{5}{2},1-n,2+m+n,\frac{7}{2},\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,$$

$$-\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]-\frac{3}{5}\,(2+m+n)\,\text{AppellF1}\Big[\frac{5}{2},-n,3+m+n,$$

$$\frac{7}{2},\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\Big)\Big)\Big)\Big)\Big)\Big/$$

$$\Big(3\,\text{AppellF1}\Big[\frac{1}{2},-n,1+m+n,\frac{3}{2},\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]-2\,\Big(n\,\text{AppellF1}\Big[\frac{3}{2},1-n,$$

$$1+m+n,\frac{5}{2},\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+(1+m+n)$$

$$\text{AppellF1}\Big[\frac{3}{2},-n,2+m+n,\frac{5}{2},\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)^2\Big)\Big)\Big)$$

- **Problem 137: Result more than twice size of optimal antiderivative.**

$$\int (-\text{Sin}[e+f x])^n (a-a\,\text{Sin}[e+f x])^m \, dx$$

Optimal (type 6, 85 leaves, 3 steps):

$$\frac{1}{f} 2^{\frac{1}{2}+m} \text{AppellF1}\left[\frac{1}{2}, -n, \frac{1}{2}-m, \frac{3}{2}, 1+\text{Sin}[e+f x], \frac{1}{2}(1+\text{Sin}[e+f x])\right] \text{Cos}[e+f x] (1-\text{Sin}[e+f x])^{-\frac{1}{2}-m} (a-a\,\text{Sin}[e+f x])^m$$

Result (type 6, 4139 leaves):

$$-\left(\left(2 (3+2 m) \text{AppellF1}\left[\frac{1}{2}+m, -n, 1+m+n, \frac{3}{2}+m, \text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right] \left(\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{1+n} (-\text{Sin}[e+f x])^n\right.\right.$$

$$\left(\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Sin}[e+f x]\right)^n (a-a\,\text{Sin}[e+f x])^m \text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right] \left(\frac{\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}{\sqrt{\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}}\right)^{2m}\Bigg) \Bigg/$$

$$\left(f (1+2 m) \left((3+2 m) \text{AppellF1}\left[\frac{1}{2}+m, -n, 1+m+n, \frac{3}{2}+m, \text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right] -\right.\right.$$

$$2 \left(n \text{AppellF1}\left[\frac{3}{2}+m, 1-n, 1+m+n, \frac{5}{2}+m, \text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right] +\right.$$

$$\left.\left.(1+m+n) \text{AppellF1}\left[\frac{3}{2}+m, -n, 2+m+n, \frac{5}{2}+m, \text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right) \text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)$$

$$\left(\left((3+2 m) \text{AppellF1}\left[\frac{1}{2}+m, -n, 1+m+n, \frac{3}{2}+m, \text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right] \left(\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^n\right.\right.$$

$$\left(\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Sin}[e+f x]\right)^n \left(\frac{\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}{\sqrt{\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}}\right)^{2m}\Bigg) \Bigg/$$

$$\left((1+2m)\left((3+2m)\,\text{AppellF1}\left[\frac{1}{2}+m,-n,1+m+n,\frac{3}{2}+m,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]-2\left(n\,\text{AppellF1}\left[\frac{3}{2}+m,1-n,1+m+n,\frac{5}{2}+m,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+(1+m+n)\,\text{AppellF1}\left[\frac{3}{2}+m,-n,2+m+n,\frac{5}{2}+m,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\right)-$$

$$\left(2(3+2m)(1+n)\,\text{AppellF1}\left[\frac{1}{2}+m,-n,1+m+n,\frac{3}{2}+m,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right.$$

$$\left.\left(\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^n\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\left(\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Sin}[e+f x]\right)^n\left(\frac{\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}{\sqrt{\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}}\right)^{2m}\right)\Big/$$

$$\left((1+2m)\left((3+2m)\,\text{AppellF1}\left[\frac{1}{2}+m,-n,1+m+n,\frac{3}{2}+m,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]-2\left(n\,\text{AppellF1}\left[\frac{3}{2}+m,1-n,1+m+n,\frac{5}{2}+m,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+(1+m+n)\,\text{AppellF1}\left[\frac{3}{2}+m,-n,2+m+n,\frac{5}{2}+m,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\right)+$$

$$\left(2(3+2m)\left(\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{1+n}\left(\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Sin}[e+f x]\right)^n\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\left(\frac{\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}{\sqrt{\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}}\right)^{2m}\right.$$

$$\left(-\frac{1}{\frac{3}{2}+m}\left(\frac{1}{2}+m\right)n\,\text{AppellF1}\left[\frac{3}{2}+m,1-n,1+m+n,\frac{5}{2}+m,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right.$$

$$\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{1}{\frac{3}{2}+m}\left(\frac{1}{2}+m\right)(1+m+n)\,\text{AppellF1}\left[\frac{3}{2}+m,-n,2+m+n,\right.$$

$$\left.\left.\frac{5}{2}+m,\ \text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\right)\right)\Big/$$

$$\left((1+2\,m)\left((3+2\,m)\,\text{AppellF1}\left[\frac{1}{2}+m,\ -n,\ 1+m+n,\ \frac{3}{2}+m,\ \text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]-\right.\right.$$

$$2\left(n\,\text{AppellF1}\left[\frac{3}{2}+m,\ 1-n,\ 1+m+n,\ \frac{5}{2}+m,\ \text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+(1+m+n)\right.$$

$$\left.\left.\text{AppellF1}\left[\frac{3}{2}+m,\ -n,\ 2+m+n,\ \frac{5}{2}+m,\ \text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\Bigg)+$$

$$\left(2\,(3+2\,m)\,n\,\text{AppellF1}\left[\frac{1}{2}+m,\ -n,\ 1+m+n,\ \frac{3}{2}+m,\ \text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\left(\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{1+n}\right.$$

$$\left(\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Sin}[e+f\,x]\right)^{-1+n}\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\left(\frac{\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]}{\sqrt{\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}}\right)^{2\,m}$$

$$\left.\left(-\text{Cos}[e+f\,x]\,\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2+\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Sin}[e+f\,x]\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\right)\right)\Big/$$

$$\left((1+2\,m)\left((3+2\,m)\,\text{AppellF1}\left[\frac{1}{2}+m,\ -n,\ 1+m+n,\ \frac{3}{2}+m,\ \text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]-\right.\right.$$

$$2\left(n\,\text{AppellF1}\left[\frac{3}{2}+m,\ 1-n,\ 1+m+n,\ \frac{5}{2}+m,\ \text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+(1+m+n)\right.$$

$$\left.\left.\text{AppellF1}\left[\frac{3}{2}+m,\ -n,\ 2+m+n,\ \frac{5}{2}+m,\ \text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\Bigg)+$$

$$\left(4\,m\,(3+2\,m)\,\text{AppellF1}\left[\frac{1}{2}+m,\ -n,\ 1+m+n,\ \frac{3}{2}+m,\ \text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right.$$

$$\left(\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{1+n}\left(\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Sin}[e+f x]\right)^n\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]$$

$$\left(\frac{\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}{\sqrt{\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}}\right)^{-1+2m}\left(\frac{1}{2}\sqrt{\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}-\frac{\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{2\sqrt{\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}}\right)\Bigg)\Big/$$

$$\Bigg((1+2m)\left((3+2m)\,\text{AppellF1}\left[\frac{1}{2}+m,-n,1+m+n,\frac{3}{2}+m,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]-\right.$$

$$2\left(n\,\text{AppellF1}\left[\frac{3}{2}+m,1-n,1+m+n,\frac{5}{2}+m,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+(1+m+n)\right.$$

$$\left.\left.\text{AppellF1}\left[\frac{3}{2}+m,-n,2+m+n,\frac{5}{2}+m,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)-$$

$$\Bigg(2(3+2m)\,\text{AppellF1}\left[\frac{1}{2}+m,-n,1+m+n,\frac{3}{2}+m,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\left(\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{1+n}$$

$$\left(\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Sin}[e+f x]\right)^n\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\left(\frac{\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}{\sqrt{\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}}\right)^{2m}$$

$$\Bigg(-2\left(n\,\text{AppellF1}\left[\frac{3}{2}+m,1-n,1+m+n,\frac{5}{2}+m,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+(1+m+n)\,\text{AppellF1}\left[\frac{3}{2}+m,-n,\right.\right.$$

$$\left.\left.2+m+n,\frac{5}{2}+m,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]+$$

$$(3+2m)\left(-\frac{1}{\frac{3}{2}+m}\left(\frac{1}{2}+m\right)n\,\text{AppellF1}\left[\frac{3}{2}+m,1-n,1+m+n,\frac{5}{2}+m,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right.$$

$$\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{1}{\frac{3}{2}+m}\left(\frac{1}{2}+m\right)(1+m+n)\,\text{AppellF1}\left[\frac{3}{2}+m,-n,2+m+n,\right.$$

$$\left.\left.\frac{5}{2}+m,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)-$$

$$2\,\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,\Bigg(n\,\Bigg(-\frac{1}{\frac{5}{2}+m}\left(\frac{3}{2}+m\right)(1+m+n)\,\mathrm{AppellF1}\left[\frac{5}{2}+m,\,1-n,\,2+m+n,\,\frac{7}{2}+m,\,\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\right.$$

$$\left.-\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\,\mathrm{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]+\frac{1}{\frac{5}{2}+m}\left(\frac{3}{2}+m\right)(1-n)\,\mathrm{AppellF1}\left[\frac{5}{2}+m,\,2-n,\right.$$

$$\left.1+m+n,\,\frac{7}{2}+m,\,\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\,\mathrm{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\Bigg)+$$

$$(1+m+n)\,\Bigg(-\frac{1}{\frac{5}{2}+m}\left(\frac{3}{2}+m\right)n\,\mathrm{AppellF1}\left[\frac{5}{2}+m,\,1-n,\,2+m+n,\,\frac{7}{2}+m,\,\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]$$

$$\mathrm{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-\frac{1}{\frac{5}{2}+m}\left(\frac{3}{2}+m\right)(2+m+n)\,\mathrm{AppellF1}\left[\frac{5}{2}+m,\,-n,\,3+m+n,\,\frac{7}{2}+m,\right.$$

$$\left.\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\,\mathrm{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\Bigg)\Bigg)\Bigg)\Bigg)\Bigg/$$

$$\Bigg((1+2\,m)\,\Bigg((3+2\,m)\,\mathrm{AppellF1}\left[\frac{1}{2}+m,\,-n,\,1+m+n,\,\frac{3}{2}+m,\,\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]-$$

$$2\,\Bigg(n\,\mathrm{AppellF1}\left[\frac{3}{2}+m,\,1-n,\,1+m+n,\,\frac{5}{2}+m,\,\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+(1+m+n)$$

$$\mathrm{AppellF1}\left[\frac{3}{2}+m,\,-n,\,2+m+n,\,\frac{5}{2}+m,\,\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\Bigg)\,\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Bigg)^2\Bigg)\Bigg)\Bigg)$$

- **Problem 138: Result more than twice size of optimal antiderivative.**

$$\int (d\,\mathrm{Sin}[e+f\,x])^n\,(a+a\,\mathrm{Sin}[e+f\,x])^m\,dx$$

Optimal (type 6, 107 leaves, 4 steps):

$$-\frac{1}{f}2^{\frac{1}{2}+m}\,\mathrm{AppellF1}\left[\frac{1}{2},\,-n,\,\frac{1}{2}-m,\,\frac{3}{2},\,1-\mathrm{Sin}[e+f\,x],\,\frac{1}{2}(1-\mathrm{Sin}[e+f\,x])\right]$$

$$\mathrm{Cos}[e+f\,x]\,\mathrm{Sin}[e+f\,x]^{-n}\,(d\,\mathrm{Sin}[e+f\,x])^n\,(1+\mathrm{Sin}[e+f\,x])^{-\frac{1}{2}-m}\,(a+a\,\mathrm{Sin}[e+f\,x])^m$$

Result (type 6, 2815 leaves):

$$-\left(\left(3\,\text{AppellF1}\left[\frac{1}{2},-n,1+m+n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\text{Cos}[e+f\,x]\left(\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{-m}\text{Sin}[e+f\,x]^n\right.\right.$$
$$(d\,\text{Sin}[e+f\,x])^n\,(a+a\,\text{Sin}[e+f\,x])^m\Big)\Big/\left(f\left(3\,\text{AppellF1}\left[\frac{1}{2},-n,1+m+n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]-\right.\right.$$
$$2\left(n\,\text{AppellF1}\left[\frac{3}{2},1-n,1+m+n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.$$
$$(1+m+n)\,\text{AppellF1}\left[\frac{3}{2},-n,2+m+n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\Big)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big)$$
$$\left(-\left(\left(3\,n\,\text{AppellF1}\left[\frac{1}{2},-n,1+m+n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\text{Cos}[e+f\,x]^2\left(\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{-m}\right.\right.\right.$$
$$\text{Sin}[e+f\,x]^{-1+n}\Big)\Big/\left(3\,\text{AppellF1}\left[\frac{1}{2},-n,1+m+n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]-\right.$$
$$2\left(n\,\text{AppellF1}\left[\frac{3}{2},1-n,1+m+n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+(1+m+n)\right.$$
$$\text{AppellF1}\left[\frac{3}{2},-n,2+m+n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\Big)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big)\Big)+$$
$$\left(3\,\text{AppellF1}\left[\frac{1}{2},-n,1+m+n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\left(\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{-m}\text{Sin}[e+f\,x]^{1+n}\right)\Big/$$
$$\left(3\,\text{AppellF1}\left[\frac{1}{2},-n,1+m+n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]-\right.$$
$$2\left(n\,\text{AppellF1}\left[\frac{3}{2},1-n,1+m+n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.$$
$$(1+m+n)\,\text{AppellF1}\left[\frac{3}{2},-n,2+m+n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\Big)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big)-$$
$$\left(3\,m\,\text{AppellF1}\left[\frac{1}{2},-n,1+m+n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\text{Cos}[e+f\,x]\left(\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{-m}\right.$$
$$\text{Sin}[e+f\,x]^n\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\Big)\Big/\left(3\,\text{AppellF1}\left[\frac{1}{2},-n,1+m+n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]-\right.$$
$$2\left(n\,\text{AppellF1}\left[\frac{3}{2},1-n,1+m+n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.$$
$$(1+m+n)\,\text{AppellF1}\left[\frac{3}{2},-n,2+m+n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\Big)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big)+$$
$$\left(3\,\text{Cos}[e+f\,x]\left(\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{-m}\text{Sin}[e+f\,x]^n\left(-\frac{1}{3}\,n\,\text{AppellF1}\left[\frac{3}{2},1-n,1+m+n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\right.\right.\right.$$
$$-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-\frac{1}{3}\,(1+m+n)$$

$$\text{AppellF1}\Big[\frac{3}{2}, -n, 2+m+n, \frac{5}{2}, \text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2, -\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big] \text{Sec}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2 \text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]\Big)\Big)\Big) \Big/$$

$$\Big(3\,\text{AppellF1}\Big[\frac{1}{2}, -n, 1+m+n, \frac{3}{2}, \text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2, -\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big] -$$

$$2\Big(n\,\text{AppellF1}\Big[\frac{3}{2}, 1-n, 1+m+n, \frac{5}{2}, \text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2, -\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big] +$$

$$(1+m+n)\,\text{AppellF1}\Big[\frac{3}{2}, -n, 2+m+n, \frac{5}{2}, \text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2, -\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\Big) \text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big) -$$

$$\Big(3\,\text{AppellF1}\Big[\frac{1}{2}, -n, 1+m+n, \frac{3}{2}, \text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2, -\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big] \text{Cos}[e+f x] \Big(\text{Sec}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big)^{-m}$$

$$\text{Sin}[e+f x]^n \Big(-2\Big(n\,\text{AppellF1}\Big[\frac{3}{2}, 1-n, 1+m+n, \frac{5}{2}, \text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2, -\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big] + (1+m+n)\,\text{AppellF1}\Big[\frac{3}{2},$$

$$-n, 2+m+n, \frac{5}{2}, \text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2, -\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\Big) \text{Sec}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2 \text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big] +$$

$$3\Big(-\frac{1}{3} n\,\text{AppellF1}\Big[\frac{3}{2}, 1-n, 1+m+n, \frac{5}{2}, \text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2, -\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big] \text{Sec}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2$$

$$\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big] - \frac{1}{3}(1+m+n)\,\text{AppellF1}\Big[\frac{3}{2}, -n, 2+m+n, \frac{5}{2}, \text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2, -\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]$$

$$\text{Sec}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2 \text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]\Big) - 2\,\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2$$

$$\Big(n\Big(-\frac{3}{5}(1+m+n)\,\text{AppellF1}\Big[\frac{5}{2}, 1-n, 2+m+n, \frac{7}{2}, \text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2, -\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big] \text{Sec}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2$$

$$\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big] + \frac{3}{5}(1-n)\,\text{AppellF1}\Big[\frac{5}{2}, 2-n, 1+m+n, \frac{7}{2}, \text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2, -\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]$$

$$\text{Sec}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2 \text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]\Big) + (1+m+n)\Big(-\frac{3}{5} n\,\text{AppellF1}\Big[\frac{5}{2}, 1-n, 2+m+n, \frac{7}{2}, \text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,$$

$$-\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big] \text{Sec}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2 \text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big] - \frac{3}{5}(2+m+n)\,\text{AppellF1}\Big[\frac{5}{2}, -n, 3+m+n,$$

$$\frac{7}{2}, \text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2, -\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big] \text{Sec}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2 \text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]\Big)\Big)\Big)\Big)\Big) \Big/$$

$$\Big(3\,\text{AppellF1}\Big[\frac{1}{2}, -n, 1+m+n, \frac{3}{2}, \text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2, -\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big] - 2\Big(n\,\text{AppellF1}\Big[\frac{3}{2}, 1-n,$$

$$1+m+n, \frac{5}{2}, \text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2, -\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big] + (1+m+n)$$

$$\text{AppellF1}\Big[\frac{3}{2}, -n, 2+m+n, \frac{5}{2}, \text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2, -\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\Big) \text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big)^2\Big)\Big)\Big)$$

Problem 139: Result more than twice size of optimal antiderivative.

$$\int (d \operatorname{Sin}[e+f x])^n (a-a \operatorname{Sin}[e+f x])^m \, dx$$

Optimal (type 6, 107 leaves, 4 steps):

$$\frac{1}{f} 2^{\frac{1}{2}+m} \operatorname{AppellF1}\left[\frac{1}{2}, -n, \frac{1}{2}-m, \frac{3}{2}, 1+\operatorname{Sin}[e+f x], \frac{1}{2}(1+\operatorname{Sin}[e+f x])\right] \operatorname{Cos}[e+f x] (1-\operatorname{Sin}[e+f x])^{-\frac{1}{2}-m} (-\operatorname{Sin}[e+f x])^{-n} (d \operatorname{Sin}[e+f x])^n (a-a \operatorname{Sin}[e+f x])^m$$

Result (type 6, 4139 leaves):

$$-\Bigg(\Bigg(2 (3+2 m) \operatorname{AppellF1}\left[\frac{1}{2}+m, -n, 1+m+n, \frac{3}{2}+m, \operatorname{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\operatorname{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right] \left(\operatorname{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{1+n} (d \operatorname{Sin}[e+f x])^n$$

$$\left(\operatorname{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \operatorname{Sin}[e+f x]\right)^n (a-a \operatorname{Sin}[e+f x])^m \operatorname{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right] \left(\frac{\operatorname{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}{\sqrt{\operatorname{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}}\right)^{2 m}\Bigg) \Bigg/$$

$$\Bigg(f (1+2 m) \Bigg((3+2 m) \operatorname{AppellF1}\left[\frac{1}{2}+m, -n, 1+m+n, \frac{3}{2}+m, \operatorname{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\operatorname{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right] -$$

$$2 \Bigg(n \operatorname{AppellF1}\left[\frac{3}{2}+m, 1-n, 1+m+n, \frac{5}{2}+m, \operatorname{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\operatorname{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right] +$$

$$(1+m+n) \operatorname{AppellF1}\left[\frac{3}{2}+m, -n, 2+m+n, \frac{5}{2}+m, \operatorname{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\operatorname{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\Bigg) \operatorname{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)$$

$$\Bigg(\Bigg((3+2 m) \operatorname{AppellF1}\left[\frac{1}{2}+m, -n, 1+m+n, \frac{3}{2}+m, \operatorname{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\operatorname{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right] \left(\operatorname{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^n$$

$$\left(\operatorname{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \operatorname{Sin}[e+f x]\right)^n \left(\frac{\operatorname{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}{\sqrt{\operatorname{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}}\right)^{2 m}\Bigg) \Bigg/$$

$$\Bigg((1+2 m) \Bigg((3+2 m) \operatorname{AppellF1}\left[\frac{1}{2}+m,-n,1+m+n,\frac{3}{2}+m,\operatorname{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\operatorname{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]-$$

$$2\Bigg(n \operatorname{AppellF1}\left[\frac{3}{2}+m,1-n,1+m+n,\frac{5}{2}+m,\operatorname{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\operatorname{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+(1+m+n)$$

$$\operatorname{AppellF1}\left[\frac{3}{2}+m,-n,2+m+n,\frac{5}{2}+m,\operatorname{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\operatorname{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\Bigg) \operatorname{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)\Bigg)-$$

$$\Bigg(2(3+2 m)(1+n) \operatorname{AppellF1}\left[\frac{1}{2}+m,-n,1+m+n,\frac{3}{2}+m,\operatorname{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\operatorname{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]$$

$$\left(\operatorname{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^n \operatorname{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\left(\operatorname{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \operatorname{Sin}[e+f x]\right)^n\left(\frac{\operatorname{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}{\sqrt{\operatorname{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}}\right)^{2 m}\Bigg) \Bigg/$$

$$\Bigg((1+2 m) \Bigg((3+2 m) \operatorname{AppellF1}\left[\frac{1}{2}+m,-n,1+m+n,\frac{3}{2}+m,\operatorname{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\operatorname{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]-$$

$$2\Bigg(n \operatorname{AppellF1}\left[\frac{3}{2}+m,1-n,1+m+n,\frac{5}{2}+m,\operatorname{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\operatorname{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+(1+m+n)$$

$$\operatorname{AppellF1}\left[\frac{3}{2}+m,-n,2+m+n,\frac{5}{2}+m,\operatorname{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\operatorname{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\Bigg) \operatorname{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)\Bigg)+$$

$$\Bigg(2(3+2 m)\left(\operatorname{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{1+n}\left(\operatorname{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \operatorname{Sin}[e+f x]\right)^n \operatorname{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\left(\frac{\operatorname{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}{\sqrt{\operatorname{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}}\right)^{2 m}$$

$$\Bigg(-\frac{1}{\frac{3}{2}+m}\left(\frac{1}{2}+m\right) n \operatorname{AppellF1}\left[\frac{3}{2}+m,1-n,1+m+n,\frac{5}{2}+m,\operatorname{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\operatorname{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\Big]-\frac{1}{\frac{3}{2}+m}\left(\frac{1}{2}+m\right)\,(1+m+n)\,\text{AppellF1}\Big[\frac{3}{2}+m,\,-n,\,2+m+n,$$

$$\frac{5}{2}+m,\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]\,\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\Big)\Bigg)\Bigg/$$

$$\Bigg((1+2\,m)\,\Bigg((3+2\,m)\,\text{AppellF1}\Big[\frac{1}{2}+m,\,-n,\,1+m+n,\,\frac{3}{2}+m,\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]-$$

$$2\,\Big(n\,\text{AppellF1}\Big[\frac{3}{2}+m,\,1-n,\,1+m+n,\,\frac{5}{2}+m,\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]+(1+m+n)$$

$$\text{AppellF1}\Big[\frac{3}{2}+m,\,-n,\,2+m+n,\,\frac{5}{2}+m,\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]\Big)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Bigg)\Bigg)+$$

$$\Bigg(2\,(3+2\,m)\,n\,\text{AppellF1}\Big[\frac{1}{2}+m,\,-n,\,1+m+n,\,\frac{3}{2}+m,\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]\,\left(\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{1+n}$$

$$\left(\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,\text{Sin}[e+f\,x]\right)^{-1+n}\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\,\left(\frac{\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]}{\sqrt{\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}}\right)^{2\,m}$$

$$\left(-\text{Cos}[e+f\,x]\,\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2+\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,\text{Sin}[e+f\,x]\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\right)\Bigg)\Bigg/$$

$$\Bigg((1+2\,m)\,\Bigg((3+2\,m)\,\text{AppellF1}\Big[\frac{1}{2}+m,\,-n,\,1+m+n,\,\frac{3}{2}+m,\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]-$$

$$2\,\Big(n\,\text{AppellF1}\Big[\frac{3}{2}+m,\,1-n,\,1+m+n,\,\frac{5}{2}+m,\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]+(1+m+n)$$

$$\text{AppellF1}\Big[\frac{3}{2}+m,\,-n,\,2+m+n,\,\frac{5}{2}+m,\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]\Big)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Bigg)\Bigg)+$$

$$\left(4\,m\,(3+2\,m)\,\text{AppellF1}\left[\frac{1}{2}+m,\,-n,\,1+m+n,\,\frac{3}{2}+m,\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right.$$

$$\left(\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{1+n}\left(\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Sin}[e+f\,x]\right)^n\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]$$

$$\left.\left(\frac{\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]}{\sqrt{\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}}\right)^{-1+2\,m}\left(\frac{1}{2}\sqrt{\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}-\frac{\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{2\sqrt{\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}}\right)\right)\Big/$$

$$\left((1+2\,m)\left((3+2\,m)\,\text{AppellF1}\left[\frac{1}{2}+m,\,-n,\,1+m+n,\,\frac{3}{2}+m,\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]-\right.\right.$$

$$2\left(n\,\text{AppellF1}\left[\frac{3}{2}+m,\,1-n,\,1+m+n,\,\frac{5}{2}+m,\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+(1+m+n)\right.$$

$$\left.\left.\text{AppellF1}\left[\frac{3}{2}+m,\,-n,\,2+m+n,\,\frac{5}{2}+m,\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\right)-$$

$$\left(2\,(3+2\,m)\,\text{AppellF1}\left[\frac{1}{2}+m,\,-n,\,1+m+n,\,\frac{3}{2}+m,\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\left(\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{1+n}\right.$$

$$\left(\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Sin}[e+f\,x]\right)^n\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\left(\frac{\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]}{\sqrt{\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}}\right)^{2\,m}$$

$$\left(-2\left(n\,\text{AppellF1}\left[\frac{3}{2}+m,\,1-n,\,1+m+n,\,\frac{5}{2}+m,\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+(1+m+n)\,\text{AppellF1}\left[\frac{3}{2}+m,\,-n,\right.\right.\right.$$

$$\left.2+m+n,\,\frac{5}{2}+m,\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]+$$

$$(3+2\,m)\left(-\frac{1}{\frac{3}{2}+m}\left(\frac{1}{2}+m\right)n\,\text{AppellF1}\left[\frac{3}{2}+m,\,1-n,\,1+m+n,\,\frac{5}{2}+m,\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right.$$

$$\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{1}{\frac{3}{2}+m}\left(\frac{1}{2}+m\right)(1+m+n)\,\text{AppellF1}\left[\frac{3}{2}+m,-n,2+m+n,\right.$$

$$\left.\frac{5}{2}+m,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\Bigg)-$$

$$2\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg(n\Bigg(-\frac{1}{\frac{5}{2}+m}\left(\frac{3}{2}+m\right)(1+m+n)\,\text{AppellF1}\left[\frac{5}{2}+m,1-n,2+m+n,\frac{7}{2}+m,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\right.$$

$$\left.-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]+\frac{1}{\frac{5}{2}+m}\left(\frac{3}{2}+m\right)(1-n)\,\text{AppellF1}\left[\frac{5}{2}+m,2-n,\right.$$

$$\left.1+m+n,\frac{7}{2}+m,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\Bigg)+$$

$$(1+m+n)\Bigg(-\frac{1}{\frac{5}{2}+m}\left(\frac{3}{2}+m\right)n\,\text{AppellF1}\left[\frac{5}{2}+m,1-n,2+m+n,\frac{7}{2}+m,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{1}{\frac{5}{2}+m}\left(\frac{3}{2}+m\right)(2+m+n)\,\text{AppellF1}\left[\frac{5}{2}+m,-n,3+m+n,\frac{7}{2}+m,\right.$$

$$\left.\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\Bigg)\Bigg)\Bigg)\Bigg)\Bigg/$$

$$\Bigg((1+2m)\Bigg((3+2m)\,\text{AppellF1}\left[\frac{1}{2}+m,-n,1+m+n,\frac{3}{2}+m,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]-$$

$$2\Bigg(n\,\text{AppellF1}\left[\frac{3}{2}+m,1-n,1+m+n,\frac{5}{2}+m,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+(1+m+n)$$

$$\left.\text{AppellF1}\left[\frac{3}{2}+m,-n,2+m+n,\frac{5}{2}+m,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)^2\Bigg)\Bigg)\Bigg)\Bigg)$$

- **Problem 141: Result unnecessarily involves imaginary or complex numbers.**

$$\int \text{Sin}[c+d x]^3\,(a+a\,\text{Sin}[c+d x])^n\,dx$$

Optimal (type 5, 215 leaves, 6 steps) :

$$-\frac{(4+n)\,\text{Cos}[c+d x]\,(a+a\,\text{Sin}[c+d x])^n}{d\,(1+n)\,(2+n)\,(3+n)}-\frac{\text{Cos}[c+d x]\,\text{Sin}[c+d x]^2\,(a+a\,\text{Sin}[c+d x])^n}{d\,(3+n)}-\frac{1}{d\,(1+n)\,(2+n)\,(3+n)}$$

$$2^{\frac{1}{2}+n}\,n\,\left(5+3\,n+n^2\right)\text{Cos}[c+d x]\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{1}{2}-n,\frac{3}{2},\frac{1}{2}(1-\text{Sin}[c+d x])\right](1+\text{Sin}[c+d x])^{-\frac{1}{2}-n}(a+a\,\text{Sin}[c+d x])^n-$$

$$\frac{n\,\text{Cos}[c+d x]\,(a+a\,\text{Sin}[c+d x])^{1+n}}{a\,d\,\left(6+5\,n+n^2\right)}$$

Result (type 5, 316 leaves) :

$$\frac{1}{d\left(9-10\,n^2+n^4\right)}$$

$$2^{-3-2n}\,e^{3\,i\,(c+d x)}\left(1+i\,e^{-i\,(c+d x)}\right)^{-2n}\left(e^{-\frac{1}{4}i\,(2c+\pi+2 d x)}\left(i+e^{i\,(c+d x)}\right)\right)^{2n}\Big(\left(3-n-3\,n^2+n^3\right)\text{Hypergeometric2F1}\left[-3-n,-2n,-2-n,-i\,e^{-i\,(c+d x)}\right]-$$
$$e^{-2\,i\,(c+d x)}\,(3+n)\left(3\left(3-4\,n+n^2\right)\text{Hypergeometric2F1}\left[-1-n,-2n,-n,-i\,e^{-i\,(c+d x)}\right]-\right.$$
$$e^{-4\,i\,(c+d x)}\,(1+n)\Big(3\,e^{2\,i\,(c+d x)}\,(-3+n)\,\text{Hypergeometric2F1}\left[1-n,-2n,2-n,-i\,e^{-i\,(c+d x)}\right]-$$
$$\left.(-1+n)\,\text{Hypergeometric2F1}\left[3-n,-2n,4-n,-i\,e^{-i\,(c+d x)}\right]\Big)\right)\Big)\,(a\,(1+\text{Sin}[c+d x]))^n\,\text{Sin}\left[\frac{1}{4}(2c+\pi+2 d x)\right]^{-2n}$$

- **Problem 142: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int \text{Sin}[c+d x]^2\,(a+a\,\text{Sin}[c+d x])^n\,dx$$

Optimal (type 5, 156 leaves, 4 steps) :

$$\frac{\text{Cos}[c+d x]\,(a+a\,\text{Sin}[c+d x])^n}{d\left(2+3\,n+n^2\right)}-\frac{1}{d\,(1+n)\,(2+n)}$$

$$2^{\frac{1}{2}+n}\left(1+n+n^2\right)\text{Cos}[c+d x]\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{1}{2}-n,\frac{3}{2},\frac{1}{2}(1-\text{Sin}[c+d x])\right](1+\text{Sin}[c+d x])^{-\frac{1}{2}-n}(a+a\,\text{Sin}[c+d x])^n-$$

$$\frac{\text{Cos}[c+d x]\,(a+a\,\text{Sin}[c+d x])^{1+n}}{a\,d\,(2+n)}$$

Result (type 6, 29 340 leaves) : Display of huge result suppressed !

- **Problem 143: Result unnecessarily involves imaginary or complex numbers.**

$$\int \text{Sin}[c+d x]\,(a+a\,\text{Sin}[c+d x])^n\,dx$$

Optimal (type 5, 109 leaves, 3 steps) :

$$-\frac{\text{Cos}[c+d x]\,(a+a\,\text{Sin}[c+d x])^n}{d\,(1+n)}-\frac{1}{d\,(1+n)}$$

$$2^{\frac{1}{2}+n}\,n\,\text{Cos}[c+d x]\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{1}{2}-n,\frac{3}{2},\frac{1}{2}(1-\text{Sin}[c+d x])\right](1+\text{Sin}[c+d x])^{-\frac{1}{2}-n}(a+a\,\text{Sin}[c+d x])^n$$

Result (type 5, 197 leaves):

$$\frac{1}{d\,(-1+n)\,(1+n)}2^{-1-2n}\,e^{-i\,(c+d\,x)}\,\left(1+i\,e^{-i\,(c+d\,x)}\right)^{-2n}\left(e^{-\frac{1}{4}\,i\,(2\,c+\pi+2\,d\,x)}\,\left(i+e^{i\,(c+d\,x)}\right)\right)^{2n}\left(-e^{2\,i\,(c+d\,x)}\,(-1+n)\,\text{Hypergeometric2F1}\left[-1-n,\,-2n,\,-n,\,-i\,e^{-i\,(c+d\,x)}\right]+(1+n)\,\text{Hypergeometric2F1}\left[1-n,\,-2n,\,2-n,\,-i\,e^{-i\,(c+d\,x)}\right]\right)(a\,(1+\text{Sin}[c+d\,x]))^n\,\text{Sin}\left[\frac{1}{4}\,(2\,c+\pi+2\,d\,x)\right]^{-2n}$$

- **Problem 145: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int \text{Csc}[c+d\,x]\,(a+a\,\text{Sin}[c+d\,x])^n\,dx$$

Optimal (type 6, 85 leaves, 4 steps):

$$-\frac{1}{d}2^{\frac{1}{2}+n}\,\text{AppellF1}\left[\frac{1}{2},\,1,\,\frac{1}{2}-n,\,\frac{3}{2},\,1-\text{Sin}[c+d\,x],\,\frac{1}{2}\,(1-\text{Sin}[c+d\,x])\right]\text{Cos}[c+d\,x]\,(1+\text{Sin}[c+d\,x])^{-\frac{1}{2}-n}\,(a+a\,\text{Sin}[c+d\,x])^n$$

Result (type 6, 2560 leaves):

$$-\left(\left(\text{Csc}[c+d\,x]\left(\text{Sec}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)^{-n}(a+a\,\text{Sin}[c+d\,x])^n\right.\right.$$
$$\left(\text{AppellF1}\left[2n,\,n,\,n,\,1+2n,\,-\frac{1+i}{-1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]},\,-\frac{1-i}{-1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}\right]\left(\frac{-i+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}{-1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}\right)^n\right.$$
$$\left(\frac{i+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}{-1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}\right)^n-\text{AppellF1}\left[2n,\,n,\,n,\,1+2n,\,\frac{1-i}{1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]},\,\frac{1+i}{1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}\right]$$
$$\left.\left.\left(\frac{-i+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}{1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}\right)^n\left(\frac{i+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}{1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}\right)^n\right)\right)\Big/$$
$$\left(2\,d\,n\left(-\frac{1}{2}\left(\text{Sec}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)^{-n}\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\left(\text{AppellF1}\left[2n,\,n,\,n,\,1+2n,\,-\frac{1+i}{-1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]},\right.\right.\right.\right.$$
$$\left.-\frac{1-i}{-1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}\right]\left(\frac{-i+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}{-1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}\right)^n\left(\frac{i+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}{-1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}\right)^n-\text{AppellF1}\left[2n,\,n,\,n,\,1+2n,\right.$$
$$\left.\left.\frac{1-i}{1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]},\,\frac{1+i}{1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}\right]\left(\frac{-i+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}{1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}\right)^n\left(\frac{i+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}{1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}\right)^n\right)+$$
$$\frac{1}{2n}\left(\text{Sec}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)^{-n}\left(\left(\left((1-i)\,n^2\,\text{AppellF1}\left[1+2n,\,n,\,1+n,\,2+2n,\,-\frac{1+i}{-1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]},\right.\right.\right.\right.$$

$$-\frac{1-i}{-1+\tan[\frac{1}{2}(-c+\frac{\pi}{2}-d x)]}] \sec[\frac{1}{2}(-c+\frac{\pi}{2}-d x)]^2) / ((1+2 n)(-1+\tan[\frac{1}{2}(-c+\frac{\pi}{2}-d x)])^2) + ((1+i) n^2$$

$$\text{AppellF1}[1+2 n, 1+n, n, 2+2 n, -\frac{1+i}{-1+\tan[\frac{1}{2}(-c+\frac{\pi}{2}-d x)]}, -\frac{1-i}{-1+\tan[\frac{1}{2}(-c+\frac{\pi}{2}-d x)]}] \sec[\frac{1}{2}(-c+\frac{\pi}{2}-d x)]^2 /$$

$$((1+2 n)(-1+\tan[\frac{1}{2}(-c+\frac{\pi}{2}-d x)])^2)) \left(\frac{-i+\tan[\frac{1}{2}(-c+\frac{\pi}{2}-d x)]}{-1+\tan[\frac{1}{2}(-c+\frac{\pi}{2}-d x)]}\right)^n \left(\frac{i+\tan[\frac{1}{2}(-c+\frac{\pi}{2}-d x)]}{-1+\tan[\frac{1}{2}(-c+\frac{\pi}{2}-d x)]}\right)^n +$$

$$n\,\text{AppellF1}[2 n, n, n, 1+2 n, -\frac{1+i}{-1+\tan[\frac{1}{2}(-c+\frac{\pi}{2}-d x)]}, -\frac{1-i}{-1+\tan[\frac{1}{2}(-c+\frac{\pi}{2}-d x)]}] \left(\frac{-i+\tan[\frac{1}{2}(-c+\frac{\pi}{2}-d x)]}{-1+\tan[\frac{1}{2}(-c+\frac{\pi}{2}-d x)]}\right)^{-1+n}$$

$$\left(\frac{i+\tan[\frac{1}{2}(-c+\frac{\pi}{2}-d x)]}{-1+\tan[\frac{1}{2}(-c+\frac{\pi}{2}-d x)]}\right)^n \left(\frac{\sec[\frac{1}{2}(-c+\frac{\pi}{2}-d x)]^2}{2(-1+\tan[\frac{1}{2}(-c+\frac{\pi}{2}-d x)])} - \frac{\sec[\frac{1}{2}(-c+\frac{\pi}{2}-d x)]^2(-i+\tan[\frac{1}{2}(-c+\frac{\pi}{2}-d x)])}{2(-1+\tan[\frac{1}{2}(-c+\frac{\pi}{2}-d x)])^2}\right) +$$

$$n\,\text{AppellF1}[2 n, n, n, 1+2 n, -\frac{1+i}{-1+\tan[\frac{1}{2}(-c+\frac{\pi}{2}-d x)]}, -\frac{1-i}{-1+\tan[\frac{1}{2}(-c+\frac{\pi}{2}-d x)]}] \left(\frac{-i+\tan[\frac{1}{2}(-c+\frac{\pi}{2}-d x)]}{-1+\tan[\frac{1}{2}(-c+\frac{\pi}{2}-d x)]}\right)^n$$

$$\left(\frac{i+\tan[\frac{1}{2}(-c+\frac{\pi}{2}-d x)]}{-1+\tan[\frac{1}{2}(-c+\frac{\pi}{2}-d x)]}\right)^{-1+n} \left(\frac{\sec[\frac{1}{2}(-c+\frac{\pi}{2}-d x)]^2}{2(-1+\tan[\frac{1}{2}(-c+\frac{\pi}{2}-d x)])} - \frac{\sec[\frac{1}{2}(-c+\frac{\pi}{2}-d x)]^2(i+\tan[\frac{1}{2}(-c+\frac{\pi}{2}-d x)])}{2(-1+\tan[\frac{1}{2}(-c+\frac{\pi}{2}-d x)])^2}\right) -$$

$$\left(\frac{-i+\tan[\frac{1}{2}(-c+\frac{\pi}{2}-d x)]}{1+\tan[\frac{1}{2}(-c+\frac{\pi}{2}-d x)]}\right)^n \left(\frac{i+\tan[\frac{1}{2}(-c+\frac{\pi}{2}-d x)]}{1+\tan[\frac{1}{2}(-c+\frac{\pi}{2}-d x)]}\right)^n$$

$$(-((1+i) n^2\,\text{AppellF1}[1+2 n, n, 1+n, 2+2 n, \frac{1-i}{1+\tan[\frac{1}{2}(-c+\frac{\pi}{2}-d x)]}, \frac{1+i}{1+\tan[\frac{1}{2}(-c+\frac{\pi}{2}-d x)]}] \sec[\frac{1}{2}(-c+\frac{\pi}{2}-d x)]^2) /$$

$$((1+2 n)(1+\tan[\frac{1}{2}(-c+\frac{\pi}{2}-d x)])^2) - ((1-i) n^2\,\text{AppellF1}[1+2 n, 1+n, n, 2+2 n, \frac{1-i}{1+\tan[\frac{1}{2}(-c+\frac{\pi}{2}-d x)]},$$

$$\frac{1+i}{1+\tan[\frac{1}{2}(-c+\frac{\pi}{2}-d x)]}] \sec[\frac{1}{2}(-c+\frac{\pi}{2}-d x)]^2) / ((1+2 n)(1+\tan[\frac{1}{2}(-c+\frac{\pi}{2}-d x)])^2)) -$$

$$n\,\text{AppellF1}[2 n, n, n, 1+2 n, \frac{1-i}{1+\tan[\frac{1}{2}(-c+\frac{\pi}{2}-d x)]}, \frac{1+i}{1+\tan[\frac{1}{2}(-c+\frac{\pi}{2}-d x)]}] \left(\frac{-i+\tan[\frac{1}{2}(-c+\frac{\pi}{2}-d x)]}{1+\tan[\frac{1}{2}(-c+\frac{\pi}{2}-d x)]}\right)^{-1+n}$$

$$\left(\frac{i+\tan[\frac{1}{2}(-c+\frac{\pi}{2}-d x)]}{1+\tan[\frac{1}{2}(-c+\frac{\pi}{2}-d x)]}\right)^n \left(-\frac{\sec[\frac{1}{2}(-c+\frac{\pi}{2}-d x)]^2(-i+\tan[\frac{1}{2}(-c+\frac{\pi}{2}-d x)])}{2(1+\tan[\frac{1}{2}(-c+\frac{\pi}{2}-d x)])^2} + \frac{\sec[\frac{1}{2}(-c+\frac{\pi}{2}-d x)]^2}{2(1+\tan[\frac{1}{2}(-c+\frac{\pi}{2}-d x)])}\right) -$$

$$n\,\text{AppellF1}\left[2n,n,n,1+2n,\frac{1-i}{1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]},\frac{1+i}{1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}\right]\left(\frac{-i+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}{1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}\right)^n$$
$$\left(\frac{i+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}{1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}\right)^{-1+n}\left(-\frac{\text{Sec}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\left(i+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\right)}{2\left(1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\right)^2}+\frac{\text{Sec}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2}{2\left(1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\right)}\right)\Bigg)\Bigg)\Bigg)\Bigg)$$

- **Problem 146: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int \text{Csc}[c+d\,x]^2\,(a+a\,\text{Sin}[c+d\,x])^n\,dx$$

Optimal (type 6, 85 leaves, 4 steps):

$$-\frac{1}{d}2^{\frac{1}{2}+n}\,\text{AppellF1}\left[\frac{1}{2},2,\frac{1}{2}-n,\frac{3}{2},1-\text{Sin}[c+d\,x],\frac{1}{2}\,(1-\text{Sin}[c+d\,x])\right]\text{Cos}[c+d\,x]\,(1+\text{Sin}[c+d\,x])^{-\frac{1}{2}-n}\,(a+a\,\text{Sin}[c+d\,x])^n$$

Result (type 6, 4206 leaves):

$$-\left(\left(\text{Csc}[c+d\,x]^2\left(\text{Sec}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)^{-n}\right.\right.$$
$$(a+a\,\text{Sin}[c+d\,x])^n\left(-\text{AppellF1}\left[1+2n,n,n,2+2n,\frac{1-i}{1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]},\frac{1+i}{1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}\right]\right.$$
$$\left(-1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\right)\left(\frac{-i+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}{1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}\right)^n\left(\frac{i+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}{1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}\right)^n-$$
$$\text{AppellF1}\left[1+2n,n,n,2\,(1+n),-\frac{1+i}{-1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]},-\frac{1-i}{-1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}\right]\left(\frac{-i+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}{-1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}\right)^n$$
$$\left.\left.\left(\frac{i+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}{-1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}\right)^n\left(1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\right)\right)\right)\Bigg/\left(d\,(1+2n)\left(-1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\right)\right.$$
$$\left(1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\right)\left(-\frac{1}{2\,(1+2n)\left(-1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\right)\left(1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\right)^2}\left(\text{Sec}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)^{1-n}\right.$$
$$\left(-\text{AppellF1}\left[1+2n,n,n,2+2n,\frac{1-i}{1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]},\frac{1+i}{1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}\right]\left(-1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\right)\right.$$
$$\left(\frac{-i+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}{1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}\right)^n\left(\frac{i+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}{1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}\right)^n-\text{AppellF1}\left[1+2n,n,n,2\,(1+n),-\frac{1+i}{-1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]},\right.$$

$$-\frac{1-i}{-1+\tan\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}\Bigg]\left(\frac{-i+\tan\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}{-1+\tan\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}\right)^n\left(\frac{i+\tan\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}{-1+\tan\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}\right)^n\left(1+\tan\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]\right)\Bigg)-$$

$$\frac{1}{2(1+2n)\left(-1+\tan\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]\right)^2\left(1+\tan\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]\right)}\left(\sec\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right)^{1-n}$$

$$\Bigg(-\text{AppellF1}\left[1+2n,n,n,2+2n,\frac{1-i}{1+\tan\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]},\frac{1+i}{1+\tan\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}\right]\left(-1+\tan\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]\right)$$

$$\left(\frac{-i+\tan\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}{1+\tan\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}\right)^n\left(\frac{i+\tan\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}{1+\tan\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}\right)^n-\text{AppellF1}\Bigg[1+2n,n,n,2(1+n),-\frac{1+i}{-1+\tan\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]},$$

$$-\frac{1-i}{-1+\tan\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}\Bigg]\left(\frac{-i+\tan\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}{-1+\tan\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}\right)^n\left(\frac{i+\tan\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}{-1+\tan\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}\right)^n\left(1+\tan\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]\right)\Bigg)-$$

$$\frac{1}{(1+2n)\left(-1+\tan\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]\right)\left(1+\tan\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]\right)}n\left(\sec\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right)^{-n}\tan\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]$$

$$\Bigg(-\text{AppellF1}\left[1+2n,n,n,2+2n,\frac{1-i}{1+\tan\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]},\frac{1+i}{1+\tan\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}\right]\left(-1+\tan\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]\right)$$

$$\left(\frac{-i+\tan\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}{1+\tan\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}\right)^n\left(\frac{i+\tan\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}{1+\tan\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}\right)^n-\text{AppellF1}\Bigg[1+2n,n,n,2(1+n),-\frac{1+i}{-1+\tan\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]},$$

$$-\frac{1-i}{-1+\tan\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}\Bigg]\left(\frac{-i+\tan\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}{-1+\tan\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}\right)^n\left(\frac{i+\tan\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}{-1+\tan\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}\right)^n\left(1+\tan\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]\right)\Bigg)+$$

$$\frac{1}{(1+2n)\left(-1+\tan\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]\right)\left(1+\tan\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]\right)}\left(\sec\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right)^{-n}$$

$$\Bigg(-\frac{1}{2}\text{AppellF1}\left[1+2n,n,n,2(1+n),-\frac{1+i}{-1+\tan\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]},-\frac{1-i}{-1+\tan\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}\right]\sec\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]^2$$

$$\left(\frac{-i+\tan\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}{-1+\tan\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}\right)^n\left(\frac{i+\tan\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}{-1+\tan\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}\right)^n-\frac{1}{2}\text{AppellF1}\Bigg[1+2n,n,n,2+2n,\frac{1-i}{1+\tan\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]},$$

$$\frac{1+i}{1+\tan\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}\Bigg]\sec\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\left(\frac{-i+\tan\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}{1+\tan\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}\right)^n\left(\frac{i+\tan\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}{1+\tan\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}\right)^n-$$

$$\left(\left(\left(\left(\frac{1}{4}-\frac{i}{4}\right) n\,(1+2 n)\,\text{AppellF1}\left[2+2 n, n, 1+n, 1+2\,(1+n), -\frac{1+i}{-1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}, -\frac{1-i}{-1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}\right]\right.\right.\right.$$

$$\left.\text{Sec}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right) \Big/ \left((1+n)\left(-1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]\right)^2\right)+\left(\left(\frac{1}{4}+\frac{i}{4}\right) n\,(1+2 n)\right.$$

$$\left.\text{AppellF1}\left[2+2 n, 1+n, n, 1+2\,(1+n), -\frac{1+i}{-1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}, -\frac{1-i}{-1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}\right]\text{Sec}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right) \Big/$$

$$\left.\left((1+n)\left(-1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]\right)^2\right)\right)\left(\frac{-i+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}{-1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}\right)^n\left(\frac{i+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}{-1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}\right)^n$$

$$\left(1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]\right)-n\,\text{AppellF1}\left[1+2 n, n, n, 2\,(1+n), -\frac{1+i}{-1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}, -\frac{1-i}{-1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}\right]$$

$$\left(\frac{-i+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}{-1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}\right)^{-1+n}\left(\frac{i+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}{-1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}\right)^n\left(1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]\right)$$

$$\left(\frac{\text{Sec}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]^2}{2\left(-1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]\right)}-\frac{\text{Sec}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\left(-i+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]\right)}{2\left(-1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]\right)^2}\right)-n\,\text{AppellF1}\left[1+2 n, n, n, 2\,(1+n),\right.$$

$$\left.-\frac{1+i}{-1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}, -\frac{1-i}{-1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}\right]\left(\frac{-i+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}{-1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}\right)^n\left(\frac{i+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}{-1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}\right)^{-1+n}$$

$$\left(1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]\right)\left(\frac{\text{Sec}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]^2}{2\left(-1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]\right)}-\frac{\text{Sec}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\left(i+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]\right)}{2\left(-1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]\right)^2}\right)-$$

$$\left(-1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]\right)\left(\frac{-i+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}{1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}\right)^n\left(\frac{i+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}{1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}\right)^n$$

$$\left(-\left(\left(\frac{1}{2}+\frac{i}{2}\right) n\,(1+2 n)\,\text{AppellF1}\left[2+2 n, n, 1+n, 3+2 n, \frac{1-i}{1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}, \frac{1+i}{1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}\right]\right.\right.$$

$$\left.\text{Sec}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right) \Big/ \left((2+2 n)\left(1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]\right)^2\right)-\left(\left(\frac{1}{2}-\frac{i}{2}\right) n\,(1+2 n)\,\text{AppellF1}\left[2+2 n, 1+n, n, 3+2 n,\right.\right.$$

$$\left.\left.\frac{1-i}{1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}, \frac{1+i}{1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}\right]\text{Sec}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right) \Big/ \left((2+2 n)\left(1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]\right)^2\right)-$$

$$n\,\text{AppellF1}\left[1+2n,n,n,2+2n,\frac{1-i}{1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]},\frac{1+i}{1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}\right]\left(-1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]\right)$$

$$\left(\frac{-i+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}{1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}\right)^{-1+n}\left(\frac{i+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}{1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}\right)^{n}$$

$$\left(-\frac{\text{Sec}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\left(-i+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]\right)}{2\left(1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]\right)^2}+\frac{\text{Sec}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]^2}{2\left(1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]\right)}\right)-n\,\text{AppellF1}\left[1+2n,n,n,2+2n,\right.$$

$$\left.\frac{1-i}{1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]},\frac{1+i}{1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}\right]\left(-1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]\right)\left(\frac{-i+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}{1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}\right)^{n}$$

$$\left(\frac{i+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}{1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}\right)^{-1+n}\left(-\frac{\text{Sec}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\left(i+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]\right)}{2\left(1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]\right)^2}+\frac{\text{Sec}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]^2}{2\left(1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]\right)}\right)\Bigg)\Bigg)\Bigg)\Bigg)\Bigg)$$

- **Problem 153: Result more than twice size of optimal antiderivative.**

$$\int \text{Csc}[e+f x]\,(a+b\,\text{Sin}[e+f x])\,dx$$

Optimal (type 3, 17 leaves, 2 steps) :

$$b x-\frac{a\,\text{ArcTanh}[\text{Cos}[e+f x]]}{f}$$

Result (type 3, 43 leaves) :

$$b x-\frac{a\,\text{Log}\left[\text{Cos}\left[\frac{e}{2}+\frac{f x}{2}\right]\right]}{f}+\frac{a\,\text{Log}\left[\text{Sin}\left[\frac{e}{2}+\frac{f x}{2}\right]\right]}{f}$$

- **Problem 161: Result more than twice size of optimal antiderivative.**

$$\int \text{Csc}[e+f x]\,(a+b\,\text{Sin}[e+f x])^2\,dx$$

Optimal (type 3, 35 leaves, 3 steps) :

$$2 a b x-\frac{a^2\,\text{ArcTanh}[\text{Cos}[e+f x]]}{f}-\frac{b^2\,\text{Cos}[e+f x]}{f}$$

Result (type 3, 76 leaves) :

$$2 a b x-\frac{b^2\,\text{Cos}[e]\,\text{Cos}[f x]}{f}-\frac{a^2\,\text{Log}\left[\text{Cos}\left[\frac{e}{2}+\frac{f x}{2}\right]\right]}{f}+\frac{a^2\,\text{Log}\left[\text{Sin}\left[\frac{e}{2}+\frac{f x}{2}\right]\right]}{f}+\frac{b^2\,\text{Sin}[e]\,\text{Sin}[f x]}{f}$$

Problem 162: Result more than twice size of optimal antiderivative.

$$\int \text{Csc}[e+f x]^2 (a+b \text{Sin}[e+f x])^2 \, dx$$

Optimal (type 3, 34 leaves, 4 steps):

$$b^2 x-\frac{2 a b \text{ArcTanh}[\text{Cos}[e+f x]]}{f}-\frac{a^2 \text{Cot}[e+f x]}{f}$$

Result (type 3, 76 leaves):

$$\frac{1}{2 f}\left(-a^2 \text{Cot}\left[\frac{1}{2} (e+f x)\right]+2 b \left(b e+b f x-2 a \text{Log}\left[\text{Cos}\left[\frac{1}{2} (e+f x)\right]\right]+2 a \text{Log}\left[\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right]\right)+a^2 \text{Tan}\left[\frac{1}{2} (e+f x)\right]\right)$$

Problem 163: Result more than twice size of optimal antiderivative.

$$\int \text{Csc}[e+f x]^3 (a+b \text{Sin}[e+f x])^2 \, dx$$

Optimal (type 3, 59 leaves, 5 steps):

$$-\frac{\left(a^2+2 b^2\right) \text{ArcTanh}[\text{Cos}[e+f x]]}{2 f}-\frac{2 a b \text{Cot}[e+f x]}{f}-\frac{a^2 \text{Cot}[e+f x] \text{Csc}[e+f x]}{2 f}$$

Result (type 3, 133 leaves):

$$\frac{1}{8 f}\left(-8 a b \text{Cot}\left[\frac{1}{2} (e+f x)\right]-a^2 \text{Csc}\left[\frac{1}{2} (e+f x)\right]^2-4 a^2 \text{Log}\left[\text{Cos}\left[\frac{1}{2} (e+f x)\right]\right]-8 b^2 \text{Log}\left[\text{Cos}\left[\frac{1}{2} (e+f x)\right]\right]+\right.$$
$$\left.4 a^2 \text{Log}\left[\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right]+8 b^2 \text{Log}\left[\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right]+a^2 \text{Sec}\left[\frac{1}{2} (e+f x)\right]^2+8 a b \text{Tan}\left[\frac{1}{2} (e+f x)\right]\right)$$

Problem 165: Result more than twice size of optimal antiderivative.

$$\int \text{Csc}[e+f x]^5 (a+b \text{Sin}[e+f x])^2 \, dx$$

Optimal (type 3, 110 leaves, 6 steps):

$$-\frac{\left(3 a^2+4 b^2\right) \text{ArcTanh}[\text{Cos}[e+f x]]}{8 f}-\frac{2 a b \text{Cot}[e+f x]}{f}-\frac{2 a b \text{Cot}[e+f x]^3}{3 f}-\frac{\left(3 a^2+4 b^2\right) \text{Cot}[e+f x] \text{Csc}[e+f x]}{8 f}-\frac{a^2 \text{Cot}[e+f x] \text{Csc}[e+f x]^3}{4 f}$$

Result (type 3, 255 leaves):

$$-\frac{4 a b \text{Cot}[e+f x]}{3 f}-\frac{3 a^2 \text{Csc}\left[\frac{1}{2} (e+f x)\right]^2}{32 f}-\frac{b^2 \text{Csc}\left[\frac{1}{2} (e+f x)\right]^2}{8 f}-\frac{a^2 \text{Csc}\left[\frac{1}{2} (e+f x)\right]^4}{64 f}-$$
$$\frac{2 a b \text{Cot}[e+f x] \text{Csc}[e+f x]^2}{3 f}-\frac{3 a^2 \text{Log}\left[\text{Cos}\left[\frac{1}{2} (e+f x)\right]\right]}{8 f}-\frac{b^2 \text{Log}\left[\text{Cos}\left[\frac{1}{2} (e+f x)\right]\right]}{2 f}+\frac{3 a^2 \text{Log}\left[\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right]}{8 f}+$$
$$\frac{b^2 \text{Log}\left[\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right]}{2 f}+\frac{3 a^2 \text{Sec}\left[\frac{1}{2} (e+f x)\right]^2}{32 f}+\frac{b^2 \text{Sec}\left[\frac{1}{2} (e+f x)\right]^2}{8 f}+\frac{a^2 \text{Sec}\left[\frac{1}{2} (e+f x)\right]^4}{64 f}$$

Problem 173: Result more than twice size of optimal antiderivative.

$$\int \text{Csc}[e+f x]^4 (a+b \text{Sin}[e+f x])^3 \, dx$$

Optimal (type 3, 109 leaves, 6 steps):

$$-\frac{b (3 a^2+2 b^2) \text{ArcTanh}[\text{Cos}[e+f x]]}{2 f}-\frac{a (2 a^2+9 b^2) \text{Cot}[e+f x]}{3 f}-\frac{7 a^2 b \text{Cot}[e+f x] \text{Csc}[e+f x]}{6 f}-\frac{a^2 \text{Cot}[e+f x] \text{Csc}[e+f x]^2 (a+b \text{Sin}[e+f x])}{3 f}$$

Result (type 3, 525 leaves):

$$\frac{\left(-2 a^3 \text{Cos}\left[\frac{1}{2} (e+f x)\right]-9 a b^2 \text{Cos}\left[\frac{1}{2} (e+f x)\right]\right) \text{Csc}\left[\frac{1}{2} (e+f x)\right] (b+a \text{Csc}[e+f x])^3 \text{Sin}[e+f x]^3}{6 f (a+b \text{Sin}[e+f x])^3}-\frac{3 a^2 b \text{Csc}\left[\frac{1}{2} (e+f x)\right]^2 (b+a \text{Csc}[e+f x])^3 \text{Sin}[e+f x]^3}{8 f (a+b \text{Sin}[e+f x])^3}-\frac{a^3 \text{Cot}\left[\frac{1}{2} (e+f x)\right] \text{Csc}\left[\frac{1}{2} (e+f x)\right]^2 (b+a \text{Csc}[e+f x])^3 \text{Sin}[e+f x]^3}{24 f (a+b \text{Sin}[e+f x])^3}+\frac{\left(-3 a^2 b-2 b^3\right) (b+a \text{Csc}[e+f x])^3 \text{Log}\left[\text{Cos}\left[\frac{1}{2} (e+f x)\right]\right] \text{Sin}[e+f x]^3}{2 f (a+b \text{Sin}[e+f x])^3}+\frac{\left(3 a^2 b+2 b^3\right) (b+a \text{Csc}[e+f x])^3 \text{Log}\left[\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right] \text{Sin}[e+f x]^3}{2 f (a+b \text{Sin}[e+f x])^3}+\frac{3 a^2 b (b+a \text{Csc}[e+f x])^3 \text{Sec}\left[\frac{1}{2} (e+f x)\right]^2 \text{Sin}[e+f x]^3}{8 f (a+b \text{Sin}[e+f x])^3}+\frac{(b+a \text{Csc}[e+f x])^3 \text{Sec}\left[\frac{1}{2} (e+f x)\right] \left(2 a^3 \text{Sin}\left[\frac{1}{2} (e+f x)\right]+9 a b^2 \text{Sin}\left[\frac{1}{2} (e+f x)\right]\right) \text{Sin}[e+f x]^3}{6 f (a+b \text{Sin}[e+f x])^3}+\frac{a^3 (b+a \text{Csc}[e+f x])^3 \text{Sec}\left[\frac{1}{2} (e+f x)\right]^2 \text{Sin}[e+f x]^3 \text{Tan}\left[\frac{1}{2} (e+f x)\right]}{24 f (a+b \text{Sin}[e+f x])^3}$$

Problem 174: Result more than twice size of optimal antiderivative.

$$\int \text{Csc}[e+f x]^5 (a+b \text{Sin}[e+f x])^3 \, dx$$

Optimal (type 3, 134 leaves, 7 steps):

$$-\frac{3 a (a^2+4 b^2) \text{ArcTanh}[\text{Cos}[e+f x]]}{8 f}-\frac{b (2 a^2+b^2) \text{Cot}[e+f x]}{f}-\frac{3 a (a^2+4 b^2) \text{Cot}[e+f x] \text{Csc}[e+f x]}{8 f}-\frac{3 a^2 b \text{Cot}[e+f x] \text{Csc}[e+f x]^2}{4 f}-\frac{a^2 \text{Cot}[e+f x] \text{Csc}[e+f x]^3 (a+b \text{Sin}[e+f x])}{4 f}$$

Result (type 3, 322 leaves):

$$\frac{\left(-2 a^2 b \operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]-b^3 \operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]\right) \operatorname{Csc}\left[\frac{1}{2}(e+f x)\right]}{2 f}-\frac{3\left(a^3+4 a b^2\right) \operatorname{Csc}\left[\frac{1}{2}(e+f x)\right]^2}{32 f}-\frac{a^2 b \operatorname{Cot}\left[\frac{1}{2}(e+f x)\right] \operatorname{Csc}\left[\frac{1}{2}(e+f x)\right]^2}{8 f}-$$
$$\frac{a^3 \operatorname{Csc}\left[\frac{1}{2}(e+f x)\right]^4}{64 f}-\frac{3\left(a^3+4 a b^2\right) \operatorname{Log}\left[\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]\right]}{8 f}+\frac{3\left(a^3+4 a b^2\right) \operatorname{Log}\left[\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right]}{8 f}+\frac{3\left(a^3+4 a b^2\right) \operatorname{Sec}\left[\frac{1}{2}(e+f x)\right]^2}{32 f}+$$
$$\frac{a^3 \operatorname{Sec}\left[\frac{1}{2}(e+f x)\right]^4}{64 f}+\frac{\operatorname{Sec}\left[\frac{1}{2}(e+f x)\right]\left(2 a^2 b \operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]+b^3 \operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right)}{2 f}+\frac{a^2 b \operatorname{Sec}\left[\frac{1}{2}(e+f x)\right]^2 \operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]}{8 f}$$

- **Problem 206: Result unnecessarily involves imaginary or complex numbers.**

$$\int \operatorname{Csc}[e+f x]^2 \sqrt{a+b \operatorname{Sin}[e+f x]}\, dx$$

Optimal (type 4, 213 leaves, 9 steps):

$$-\frac{\operatorname{Cot}[e+f x] \sqrt{a+b \operatorname{Sin}[e+f x]}}{f}-\frac{\operatorname{EllipticE}\left[\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right), \frac{2 b}{a+b}\right] \sqrt{a+b \operatorname{Sin}[e+f x]}}{f \sqrt{\frac{a+b \operatorname{Sin}[e+f x]}{a+b}}}+$$
$$\frac{a \operatorname{EllipticF}\left[\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right), \frac{2 b}{a+b}\right] \sqrt{\frac{a+b \operatorname{Sin}[e+f x]}{a+b}}}{f \sqrt{a+b \operatorname{Sin}[e+f x]}}+\frac{b \operatorname{EllipticPi}\left[2, \frac{1}{2}\left(e-\frac{\pi}{2}+f x\right), \frac{2 b}{a+b}\right] \sqrt{\frac{a+b \operatorname{Sin}[e+f x]}{a+b}}}{f \sqrt{a+b \operatorname{Sin}[e+f x]}}$$

Result (type 4, 425 leaves):

$$-\frac{\text{Cot}[e+f x]\sqrt{a+b\,\text{Sin}[e+f x]}}{f}+\frac{1}{4 f}b\left(-\frac{2\,\text{EllipticPi}\left[2,\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right),\frac{2 b}{a+b}\right]\sqrt{\frac{a+b\,\text{Sin}[e+f x]}{a+b}}}{\sqrt{a+b\,\text{Sin}[e+f x]}}-\left(2\,i\,\text{Cos}[e+f x]\,\text{Cos}[2(e+f x)]\left(2 a(a-b)\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[\sqrt{-\frac{1}{a+b}}\sqrt{a+b\,\text{Sin}[e+f x]}\right],\frac{a+b}{a-b}\right]+b\left(2 a\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[\sqrt{-\frac{1}{a+b}}\sqrt{a+b\,\text{Sin}[e+f x]}\right],\frac{a+b}{a-b}\right]-b\,\text{EllipticPi}\left[\frac{a+b}{a},i\,\text{ArcSinh}\left[\sqrt{-\frac{1}{a+b}}\sqrt{a+b\,\text{Sin}[e+f x]}\right],\frac{a+b}{a-b}\right]\right)\right)\sqrt{\frac{b-b\,\text{Sin}[e+f x]}{a+b}}\sqrt{-\frac{b+b\,\text{Sin}[e+f x]}{a-b}}\right)\Bigg/\left(a\sqrt{-\frac{1}{a+b}}\sqrt{1-\text{Sin}[e+f x]^2}\left(-2a^2+b^2+4a(a+b\,\text{Sin}[e+f x])-2(a+b\,\text{Sin}[e+f x])^2\right)\sqrt{-\frac{a^2-b^2-2a(a+b\,\text{Sin}[e+f x])+(a+b\,\text{Sin}[e+f x])^2}{b^2}}\right)\right)$$

- **Problem 210: Result unnecessarily involves imaginary or complex numbers.**

$$\int\frac{\text{Csc}[e+f x]^2}{\sqrt{a+b\,\text{Sin}[e+f x]}}\,dx$$

Optimal (type 4, 222 leaves, 9 steps):

$$-\frac{\text{Cot}[e+f x]\sqrt{a+b\,\text{Sin}[e+f x]}}{a f}-\frac{\text{EllipticE}\left[\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right),\frac{2 b}{a+b}\right]\sqrt{a+b\,\text{Sin}[e+f x]}}{a f\sqrt{\frac{a+b\,\text{Sin}[e+f x]}{a+b}}}+\frac{\text{EllipticF}\left[\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right),\frac{2 b}{a+b}\right]\sqrt{\frac{a+b\,\text{Sin}[e+f x]}{a+b}}}{f\sqrt{a+b\,\text{Sin}[e+f x]}}-\frac{b\,\text{EllipticPi}\left[2,\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right),\frac{2 b}{a+b}\right]\sqrt{\frac{a+b\,\text{Sin}[e+f x]}{a+b}}}{a f\sqrt{a+b\,\text{Sin}[e+f x]}}$$

Result (type 4, 431 leaves):

$$-\frac{\text{Cot}[e+f x]\sqrt{a+b\,\text{Sin}[e+f x]}}{a f}+\frac{1}{4 a f}$$

$$b\left(\frac{6\,\text{EllipticPi}\left[2,\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right),\frac{2b}{a+b}\right]\sqrt{\frac{a+b\,\text{Sin}[e+f x]}{a+b}}}{\sqrt{a+b\,\text{Sin}[e+f x]}}-\left(2\,i\,\text{Cos}[e+f x]\,\text{Cos}[2(e+f x)]\left(2a(a-b)\,\text{EllipticE}\left[\right.\right.\right.$$

$$i\,\text{ArcSinh}\left[\sqrt{-\frac{1}{a+b}}\sqrt{a+b\,\text{Sin}[e+f x]}\right],\frac{a+b}{a-b}\right]+b\left(2a\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[\sqrt{-\frac{1}{a+b}}\sqrt{a+b\,\text{Sin}[e+f x]}\right],\frac{a+b}{a-b}\right]-$$

$$b\,\text{EllipticPi}\left[\frac{a+b}{a},i\,\text{ArcSinh}\left[\sqrt{-\frac{1}{a+b}}\sqrt{a+b\,\text{Sin}[e+f x]}\right],\frac{a+b}{a-b}\right]\right)\right)\sqrt{\frac{b-b\,\text{Sin}[e+f x]}{a+b}}\sqrt{-\frac{b+b\,\text{Sin}[e+f x]}{a-b}}\right)\Big/$$

$$\left(a\sqrt{-\frac{1}{a+b}}\sqrt{1-\text{Sin}[e+f x]^2}\left(-2a^2+b^2+4a(a+b\,\text{Sin}[e+f x])-2(a+b\,\text{Sin}[e+f x])^2\right)\right.$$

$$\left.\left.\sqrt{-\frac{a^2-b^2-2a(a+b\,\text{Sin}[e+f x])+(a+b\,\text{Sin}[e+f x])^2}{b^2}}\right)\right)$$

- **Problem 211: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int\sqrt{\text{Sin}[c+d x]}\sqrt{a+b\,\text{Sin}[c+d x]}\,dx$$

Optimal (type 4, 371 leaves, 7 steps):

$$-\frac{\text{Cos}[c+d x]\sqrt{a+b\,\text{Sin}[c+d x]}}{d\sqrt{\text{Sin}[c+d x]}}+\frac{(a-b)\sqrt{a+b}\sqrt{\frac{a(1-\text{Csc}[c+d x])}{a+b}}\sqrt{\frac{a(1+\text{Csc}[c+d x])}{a-b}}\,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sin}[c+d x]}}{\sqrt{a+b}\sqrt{\text{Sin}[c+d x]}}\right],-\frac{a+b}{a-b}\right]\text{Tan}[c+d x]}{a d}-$$

$$\frac{\sqrt{a+b}\sqrt{\frac{a(1-\text{Csc}[c+d x])}{a+b}}\sqrt{\frac{a(1+\text{Csc}[c+d x])}{a-b}}\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sin}[c+d x]}}{\sqrt{a+b}\sqrt{\text{Sin}[c+d x]}}\right],-\frac{a+b}{a-b}\right]\text{Tan}[c+d x]}{d}+\frac{1}{b d}$$

$$a\sqrt{a+b}\sqrt{\frac{a(1-\text{Csc}[c+d x])}{a+b}}\sqrt{\frac{a(1+\text{Csc}[c+d x])}{a-b}}\,\text{EllipticPi}\left[\frac{a+b}{b},\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sin}[c+d x]}}{\sqrt{a+b}\sqrt{\text{Sin}[c+d x]}}\right],-\frac{a+b}{a-b}\right]\text{Tan}[c+d x]$$

Result (type 4, 1001 leaves) :

$$\frac{\sqrt{2}\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\sqrt{\frac{\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}}\sqrt{\frac{a+2\,b\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+a\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}}}{d}-$$

$$\frac{1}{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}\,d\,\sqrt{\frac{a+2\,b\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+a\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}}}\sqrt{2}\,\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\sqrt{\frac{\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}}$$

$$\left(\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}\left(a+2\,b\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+a\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)+i\left(b-\sqrt{-a^2+b^2}\right)\sqrt{\frac{b+\sqrt{-a^2+b^2}+a\,\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]}{b+\sqrt{-a^2+b^2}}}\right.$$

$$\left(\text{EllipticE}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}}\right],\frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\right]-\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}}\right],\frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\right]\right)$$

$$\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^{3/2}\sqrt{1+\frac{a}{b\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]-\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}}-$$

$$a\sqrt{\frac{b+\sqrt{-a^2+b^2}+a\,\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]}{b+\sqrt{-a^2+b^2}}}\,\text{EllipticPi}\left[-\frac{i\left(b+\sqrt{-a^2+b^2}\right)}{a},\,i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}}\right],\frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\right]$$

$$\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^{3/2}\sqrt{1+\frac{a}{b\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]-\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}}+$$

$$a\sqrt{\frac{b+\sqrt{-a^2+b^2}+a\,\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]}{b+\sqrt{-a^2+b^2}}}\,\text{EllipticPi}\left[\frac{i\left(b+\sqrt{-a^2+b^2}\right)}{a},\,i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}}\right],\frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\right]$$

$$\text{Tan}\left[\frac{1}{2}(c+d x)\right]^{3/2} \sqrt{1+\frac{a}{b \,\text{Tan}\left[\frac{1}{2}(c+d x)\right]-\sqrt{-a^2+b^2}\, \text{Tan}\left[\frac{1}{2}(c+d x)\right]}}\Bigg)$$

Problem 216: Result more than twice size of optimal antiderivative.

$$\int \frac{(d \,\text{Sin}[e+f x])^m}{a+b \,\text{Sin}[e+f x]}\, dx$$

Optimal (type 6, 195 leaves, 5 steps):

$$-\frac{1}{\left(a^2-b^2\right) f} a\, d\, \text{AppellF1}\left[\frac{1}{2}, \frac{1-m}{2}, 1, \frac{3}{2}, \text{Cos}[e+f x]^2, -\frac{b^2 \text{Cos}[e+f x]^2}{a^2-b^2}\right] \text{Cos}[e+f x]\, (d \,\text{Sin}[e+f x])^{-1+m} \left(\text{Sin}[e+f x]^2\right)^{\frac{1-m}{2}} + \frac{b\, \text{AppellF1}\left[\frac{1}{2}, -\frac{m}{2}, 1, \frac{3}{2}, \text{Cos}[e+f x]^2, -\frac{b^2 \text{Cos}[e+f x]^2}{a^2-b^2}\right] \text{Cos}[e+f x]\, (d \,\text{Sin}[e+f x])^m \left(\text{Sin}[e+f x]^2\right)^{-m/2}}{\left(a^2-b^2\right) f}$$

Result (type 6, 6755 leaves):

$$\left((d \,\text{Sin}[e+f x])^m \,\text{Tan}[e+f x] \left(\frac{\text{Tan}[e+f x]}{\sqrt{1+\text{Tan}[e+f x]^2}}\right)^m\right.$$

$$\left(-\left(\left(a^3 (3+m)\, \text{AppellF1}\left[\frac{1+m}{2}, \frac{m}{2}, 1, \frac{3+m}{2}, -\text{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\right]\right) \Big/ \left((1+m) \left(-a^2 (3+m)\right.\right.\right.\right.$$

$$\text{AppellF1}\left[\frac{1+m}{2}, \frac{m}{2}, 1, \frac{3+m}{2}, -\text{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\right] + \left(2 \left(a^2-b^2\right) \text{AppellF1}\left[\frac{3+m}{2}, \frac{m}{2}, 2, \frac{5+m}{2}, -\text{Tan}[e+f x]^2,\right.\right.$$

$$\left.\left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\right] + a^2 m\, \text{AppellF1}\left[\frac{3+m}{2}, \frac{2+m}{2}, 1, \frac{5+m}{2}, -\text{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\right]\right) \text{Tan}[e+f x]^2$$

$$\left.\left.\left.\left(-b^2 \,\text{Tan}[e+f x]^2+a^2 \left(1+\text{Tan}[e+f x]^2\right)\right)\right)\right) + \frac{1}{b\, (2+m) \left(b^2 \,\text{Tan}[e+f x]^2-a^2 \left(1+\text{Tan}[e+f x]^2\right)\right)}$$

$$\text{Tan}[e+f x] \left(\left(a^2 \left(a^2-b^2\right) (4+m)\, \text{AppellF1}\left[\frac{2+m}{2}, \frac{1}{2} (-1+m), 1, \frac{4+m}{2}, -\text{Tan}[e+f x]^2, \frac{\left(-a^2+b^2\right) \text{Tan}[e+f x]^2}{a^2}\right] \sqrt{1+\text{Tan}[e+f x]^2}\right) \Big/\right.$$

$$\left(-a^2 (4+m)\, \text{AppellF1}\left[\frac{2+m}{2}, \frac{1}{2} (-1+m), 1, \frac{4+m}{2}, -\text{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\right] + \right.$$

$$\left(2 \left(a^2-b^2\right) \text{AppellF1}\left[\frac{4+m}{2}, \frac{1}{2} (-1+m), 2, \frac{6+m}{2}, -\text{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\right] + a^2\right.$$

$$\left.\left.(-1+m)\, \text{AppellF1}\left[\frac{4+m}{2}, \frac{1+m}{2}, 1, \frac{6+m}{2}, -\text{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\right]\right) \text{Tan}[e+f x]^2\right) +$$

$$\text{Hypergeometric2F1}\left[\frac{1+m}{2},\frac{2+m}{2},\frac{4+m}{2},-\text{Tan}[e+f x]^2\right]\left(1+\text{Tan}[e+f x]^2\right)^{m/2}\left(-b^2\,\text{Tan}[e+f x]^2+a^2\left(1+\text{Tan}[e+f x]^2\right)\right)\Bigg)\Bigg)\Bigg)\Bigg/$$

$$\left(f\,(a+b\,\text{Sin}[e+f x])\,\left(\text{Sec}[e+f x]^2\left(\frac{\text{Tan}[e+f x]}{\sqrt{1+\text{Tan}[e+f x]^2}}\right)^m\right.\right.$$

$$\left(-\left(\left(a^3\,(3+m)\,\text{AppellF1}\left[\frac{1+m}{2},\frac{m}{2},1,\frac{3+m}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]\right)\Bigg/\left((1+m)\left(-a^2\,(3+m)\,\text{AppellF1}\left[\frac{1+m}{2},\frac{m}{2},1,\frac{3+m}{2},\right.\right.\right.\right.$$

$$-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\Big]+\left(2\left(a^2-b^2\right)\text{AppellF1}\left[\frac{3+m}{2},\frac{m}{2},2,\frac{5+m}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+\right.$$

$$a^2\,m\,\text{AppellF1}\left[\frac{3+m}{2},\frac{2+m}{2},1,\frac{5+m}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]\Bigg)\text{Tan}[e+f x]^2\Bigg)$$

$$\left(-b^2\,\text{Tan}[e+f x]^2+a^2\left(1+\text{Tan}[e+f x]^2\right)\right)\Bigg)\Bigg)+\frac{1}{b\,(2+m)\left(b^2\,\text{Tan}[e+f x]^2-a^2\left(1+\text{Tan}[e+f x]^2\right)\right)}$$

$$\text{Tan}[e+f x]\left(\left(a^2\left(a^2-b^2\right)(4+m)\,\text{AppellF1}\left[\frac{2+m}{2},\frac{1}{2}(-1+m),1,\frac{4+m}{2},-\text{Tan}[e+f x]^2,\frac{\left(-a^2+b^2\right)\text{Tan}[e+f x]^2}{a^2}\right]\sqrt{1+\text{Tan}[e+f x]^2}\right)\Bigg/\right.$$

$$\left(-a^2\,(4+m)\,\text{AppellF1}\left[\frac{2+m}{2},\frac{1}{2}(-1+m),1,\frac{4+m}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+\right.$$

$$\left(2\left(a^2-b^2\right)\text{AppellF1}\left[\frac{4+m}{2},\frac{1}{2}(-1+m),2,\frac{6+m}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+\right.$$

$$a^2\,(-1+m)\,\text{AppellF1}\left[\frac{4+m}{2},\frac{1+m}{2},1,\frac{6+m}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]\Bigg)\text{Tan}[e+f x]^2\Bigg)+$$

$$\text{Hypergeometric2F1}\left[\frac{1+m}{2},\frac{2+m}{2},\frac{4+m}{2},-\text{Tan}[e+f x]^2\right]\left(1+\text{Tan}[e+f x]^2\right)^{m/2}\left(-b^2\,\text{Tan}[e+f x]^2+a^2\left(1+\text{Tan}[e+f x]^2\right)\right)\Bigg)\Bigg)+$$

$$m\,\text{Tan}[e+f x]\left(\frac{\text{Tan}[e+f x]}{\sqrt{1+\text{Tan}[e+f x]^2}}\right)^{-1+m}\left(-\frac{\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]^2}{\left(1+\text{Tan}[e+f x]^2\right)^{3/2}}+\frac{\text{Sec}[e+f x]^2}{\sqrt{1+\text{Tan}[e+f x]^2}}\right)$$

$$\left(-\left(\left(a^3\,(3+m)\,\text{AppellF1}\left[\frac{1+m}{2},\frac{m}{2},1,\frac{3+m}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]\right)\Bigg/\right.\right.$$

$$\left((1+m)\left(-a^2\,(3+m)\,\text{AppellF1}\left[\frac{1+m}{2},\frac{m}{2},1,\frac{3+m}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+\right.\right.$$

$$\left(2\left(a^2-b^2\right)\text{AppellF1}\left[\frac{3+m}{2},\frac{m}{2},2,\frac{5+m}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+a^2\,m\,\text{AppellF1}\left[\frac{3+m}{2},\frac{2+m}{2},1,\right.\right.$$

$$\frac{5+m}{2},\ -\text{Tan}[e+f x]^2,\ \left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\Big]\Big)\ \text{Tan}[e+f x]^2\Big)\ \left(-b^2\,\text{Tan}[e+f x]^2+a^2\left(1+\text{Tan}[e+f x]^2\right)\right)\Big)\Big)+$$

$$\frac{1}{b\,(2+m)\left(b^2\,\text{Tan}[e+f x]^2-a^2\left(1+\text{Tan}[e+f x]^2\right)\right)}\ \text{Tan}[e+f x]\ \Bigg(\Bigg(a^2\left(a^2-b^2\right)(4+m)\ \text{AppellF1}\Big[\frac{2+m}{2},\ \frac{1}{2}\,(-1+m),\ 1,$$

$$\frac{4+m}{2},\ -\text{Tan}[e+f x]^2,\ \frac{\left(-a^2+b^2\right)\text{Tan}[e+f x]^2}{a^2}\Big]\ \sqrt{1+\text{Tan}[e+f x]^2}\Bigg)\Big/\ \Bigg(-a^2\,(4+m)\ \text{AppellF1}\Big[\frac{2+m}{2},\ \frac{1}{2}\,(-1+m),\ 1,\ \frac{4+m}{2},$$

$$-\text{Tan}[e+f x]^2,\ \left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\Big]+\Big(2\left(a^2-b^2\right)\text{AppellF1}\Big[\frac{4+m}{2},\ \frac{1}{2}\,(-1+m),\ 2,\ \frac{6+m}{2},\ -\text{Tan}[e+f x]^2,\ \left(-1+\frac{b^2}{a^2}\right)$$

$$\text{Tan}[e+f x]^2\Big]+a^2\,(-1+m)\ \text{AppellF1}\Big[\frac{4+m}{2},\ \frac{1+m}{2},\ 1,\ \frac{6+m}{2},\ -\text{Tan}[e+f x]^2,\ \left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\Big]\Big)\ \text{Tan}[e+f x]^2\Big)+$$

$$\text{Hypergeometric2F1}\Big[\frac{1+m}{2},\ \frac{2+m}{2},\ \frac{4+m}{2},\ -\text{Tan}[e+f x]^2\Big]\ \left(1+\text{Tan}[e+f x]^2\right)^{m/2}\left(-b^2\,\text{Tan}[e+f x]^2+a^2\left(1+\text{Tan}[e+f x]^2\right)\right)\Bigg)\Bigg)+$$

$$\text{Tan}[e+f x]\left(\frac{\text{Tan}[e+f x]}{\sqrt{1+\text{Tan}[e+f x]^2}}\right)^m\ \Bigg(\Bigg(a^3\,(3+m)\ \text{AppellF1}\Big[\frac{1+m}{2},\ \frac{m}{2},\ 1,\ \frac{3+m}{2},\ -\text{Tan}[e+f x]^2,\ \left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\Big]$$

$$\left(2\,a^2\,\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]-2\,b^2\,\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]\right)\Bigg)\Big/$$

$$\Bigg((1+m)\ \Bigg(-a^2\,(3+m)\ \text{AppellF1}\Big[\frac{1+m}{2},\ \frac{m}{2},\ 1,\ \frac{3+m}{2},\ -\text{Tan}[e+f x]^2,\ \left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\Big]+$$

$$\Big(2\left(a^2-b^2\right)\text{AppellF1}\Big[\frac{3+m}{2},\ \frac{m}{2},\ 2,\ \frac{5+m}{2},\ -\text{Tan}[e+f x]^2,\ \left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\Big]+a^2\,m\ \text{AppellF1}\Big[\frac{3+m}{2},\ \frac{2+m}{2},\ 1,$$

$$\frac{5+m}{2},\ -\text{Tan}[e+f x]^2,\ \left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\Big]\Big)\ \text{Tan}[e+f x]^2\Bigg)\ \left(-b^2\,\text{Tan}[e+f x]^2+a^2\left(1+\text{Tan}[e+f x]^2\right)\right)^2\Bigg)-$$

$$\Bigg(a^3\,(3+m)\ \Bigg(-\frac{1}{3+m}m\,(1+m)\ \text{AppellF1}\Big[1+\frac{1+m}{2},\ 1+\frac{m}{2},\ 1,\ 1+\frac{3+m}{2},\ -\text{Tan}[e+f x]^2,\ \left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\Big]\ \text{Sec}[e+f x]^2\,\text{Tan}[e+f x]+$$

$$\frac{1}{3+m}2\left(-1+\frac{b^2}{a^2}\right)(1+m)\ \text{AppellF1}\Big[1+\frac{1+m}{2},\ \frac{m}{2},\ 2,\ 1+\frac{3+m}{2},\ -\text{Tan}[e+f x]^2,\ \left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\Big]\ \text{Sec}[e+f x]^2\,\text{Tan}[e+f x]\Bigg)\Bigg)\Big/$$

$$\Bigg((1+m)\ \Bigg(-a^2\,(3+m)\ \text{AppellF1}\Big[\frac{1+m}{2},\ \frac{m}{2},\ 1,\ \frac{3+m}{2},\ -\text{Tan}[e+f x]^2,\ \left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\Big]+$$

$$\Big(2\left(a^2-b^2\right)\text{AppellF1}\Big[\frac{3+m}{2},\ \frac{m}{2},\ 2,\ \frac{5+m}{2},\ -\text{Tan}[e+f x]^2,\ \left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\Big]+$$

$$a^2\,m\ \text{AppellF1}\Big[\frac{3+m}{2},\ \frac{2+m}{2},\ 1,\ \frac{5+m}{2},\ -\text{Tan}[e+f x]^2,\ \left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\Big]\Big)\ \text{Tan}[e+f x]^2\Bigg)$$

$$\left(-b^2\,\mathrm{Tan}[e+f\,x]^2+a^2\left(1+\mathrm{Tan}[e+f\,x]^2\right)\right)\Bigg)+\Bigg(a^3\,(3+m)\,\mathrm{AppellF1}\left[\frac{1+m}{2},\frac{m}{2},1,\frac{3+m}{2},-\mathrm{Tan}[e+f\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\mathrm{Tan}[e+f\,x]^2\right]$$

$$\Bigg(2\,\Bigg(2\left(a^2-b^2\right)\mathrm{AppellF1}\left[\frac{3+m}{2},\frac{m}{2},2,\frac{5+m}{2},-\mathrm{Tan}[e+f\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\mathrm{Tan}[e+f\,x]^2\right]+$$

$$a^2\,m\,\mathrm{AppellF1}\left[\frac{3+m}{2},\frac{2+m}{2},1,\frac{5+m}{2},-\mathrm{Tan}[e+f\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\mathrm{Tan}[e+f\,x]^2\right]\Bigg)\,\mathrm{Sec}[e+f\,x]^2\,\mathrm{Tan}[e+f\,x]-a^2\,(3+m)$$

$$\Bigg(-\frac{1}{3+m}m\,(1+m)\,\mathrm{AppellF1}\left[1+\frac{1+m}{2},1+\frac{m}{2},1,1+\frac{3+m}{2},-\mathrm{Tan}[e+f\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\mathrm{Tan}[e+f\,x]^2\right]\mathrm{Sec}[e+f\,x]^2\,\mathrm{Tan}[e+f\,x]+\frac{1}{3+m}$$

$$2\left(-1+\frac{b^2}{a^2}\right)(1+m)\,\mathrm{AppellF1}\left[1+\frac{1+m}{2},\frac{m}{2},2,1+\frac{3+m}{2},-\mathrm{Tan}[e+f\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\mathrm{Tan}[e+f\,x]^2\right]\mathrm{Sec}[e+f\,x]^2\,\mathrm{Tan}[e+f\,x]\Bigg)+$$

$$\mathrm{Tan}[e+f\,x]^2\,\Bigg(2\left(a^2-b^2\right)\Bigg(-\frac{1}{5+m}m\,(3+m)\,\mathrm{AppellF1}\left[1+\frac{3+m}{2},1+\frac{m}{2},2,1+\frac{5+m}{2},-\mathrm{Tan}[e+f\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\mathrm{Tan}[e+f\,x]^2\right]$$

$$\mathrm{Sec}[e+f\,x]^2\,\mathrm{Tan}[e+f\,x]+\frac{1}{5+m}4\left(-1+\frac{b^2}{a^2}\right)(3+m)\,\mathrm{AppellF1}\left[1+\frac{3+m}{2},\frac{m}{2},3,1+\frac{5+m}{2},-\mathrm{Tan}[e+f\,x]^2,\right.$$

$$\left.\left(-1+\frac{b^2}{a^2}\right)\mathrm{Tan}[e+f\,x]^2\right]\mathrm{Sec}[e+f\,x]^2\,\mathrm{Tan}[e+f\,x]\Bigg)+a^2\,m\,\Bigg(\frac{1}{5+m}2\left(-1+\frac{b^2}{a^2}\right)(3+m)\,\mathrm{AppellF1}\left[1+\frac{3+m}{2},\right.$$

$$\left.\frac{2+m}{2},2,1+\frac{5+m}{2},-\mathrm{Tan}[e+f\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\mathrm{Tan}[e+f\,x]^2\right]\mathrm{Sec}[e+f\,x]^2\,\mathrm{Tan}[e+f\,x]-\frac{1}{5+m}(2+m)\,(3+m)$$

$$\mathrm{AppellF1}\left[1+\frac{3+m}{2},1+\frac{2+m}{2},1,1+\frac{5+m}{2},-\mathrm{Tan}[e+f\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\mathrm{Tan}[e+f\,x]^2\right]\mathrm{Sec}[e+f\,x]^2\,\mathrm{Tan}[e+f\,x]\Bigg)\Bigg)\Bigg)\Bigg)\Bigg/$$

$$\Bigg((1+m)\,\Bigg(-a^2\,(3+m)\,\mathrm{AppellF1}\left[\frac{1+m}{2},\frac{m}{2},1,\frac{3+m}{2},-\mathrm{Tan}[e+f\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\mathrm{Tan}[e+f\,x]^2\right]+\Bigg(2\left(a^2-b^2\right)$$

$$\mathrm{AppellF1}\left[\frac{3+m}{2},\frac{m}{2},2,\frac{5+m}{2},-\mathrm{Tan}[e+f\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\mathrm{Tan}[e+f\,x]^2\right]+a^2\,m\,\mathrm{AppellF1}\left[\frac{3+m}{2},\frac{2+m}{2},1,\right.$$

$$\left.\frac{5+m}{2},-\mathrm{Tan}[e+f\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\mathrm{Tan}[e+f\,x]^2\right]\Bigg)\mathrm{Tan}[e+f\,x]^2\Bigg)^2\left(-b^2\,\mathrm{Tan}[e+f\,x]^2+a^2\left(1+\mathrm{Tan}[e+f\,x]^2\right)\right)\Bigg)-$$

$$\frac{1}{b\,(2+m)\left(b^2\,\mathrm{Tan}[e+f\,x]^2-a^2\left(1+\mathrm{Tan}[e+f\,x]^2\right)\right)^2}\mathrm{Tan}[e+f\,x]\left(-2\,a^2\,\mathrm{Sec}[e+f\,x]^2\,\mathrm{Tan}[e+f\,x]+2\,b^2\,\mathrm{Sec}[e+f\,x]^2\,\mathrm{Tan}[e+f\,x]\right)$$

$$\Bigg(\Bigg(a^2\left(a^2-b^2\right)(4+m)\,\mathrm{AppellF1}\left[\frac{2+m}{2},\frac{1}{2}(-1+m),1,\frac{4+m}{2},-\mathrm{Tan}[e+f\,x]^2,\frac{\left(-a^2+b^2\right)\mathrm{Tan}[e+f\,x]^2}{a^2}\right]\sqrt{1+\mathrm{Tan}[e+f\,x]^2}\Bigg)\Bigg/$$

$$\Bigg(-a^2\,(4+m)\,\mathrm{AppellF1}\left[\frac{2+m}{2},\frac{1}{2}(-1+m),1,\frac{4+m}{2},-\mathrm{Tan}[e+f\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\mathrm{Tan}[e+f\,x]^2\right]+$$

$$\left(2\left(a^2-b^2\right)\text{AppellF1}\left[\frac{4+m}{2},\frac{1}{2}(-1+m),2,\frac{6+m}{2},-\text{Tan}[e+fx]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+fx]^2\right]+\right.$$

$$\left.a^2(-1+m)\text{AppellF1}\left[\frac{4+m}{2},\frac{1+m}{2},1,\frac{6+m}{2},-\text{Tan}[e+fx]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+fx]^2\right]\right)\text{Tan}[e+fx]^2\Big)+$$

$$\text{Hypergeometric2F1}\left[\frac{1+m}{2},\frac{2+m}{2},\frac{4+m}{2},-\text{Tan}[e+fx]^2\right]\left(1+\text{Tan}[e+fx]^2\right)^{m/2}\left(-b^2\text{Tan}[e+fx]^2+a^2\left(1+\text{Tan}[e+fx]^2\right)\right)\Big)+$$

$$\frac{1}{b(2+m)\left(b^2\text{Tan}[e+fx]^2-a^2\left(1+\text{Tan}[e+fx]^2\right)\right)}\text{Sec}[e+fx]^2$$

$$\left(\left(a^2\left(a^2-b^2\right)(4+m)\text{AppellF1}\left[\frac{2+m}{2},\frac{1}{2}(-1+m),1,\frac{4+m}{2},-\text{Tan}[e+fx]^2,\frac{\left(-a^2+b^2\right)\text{Tan}[e+fx]^2}{a^2}\right]\sqrt{1+\text{Tan}[e+fx]^2}\right)\Big/\right.$$

$$\left(-a^2(4+m)\text{AppellF1}\left[\frac{2+m}{2},\frac{1}{2}(-1+m),1,\frac{4+m}{2},-\text{Tan}[e+fx]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+fx]^2\right]+\right.$$

$$\left(2\left(a^2-b^2\right)\text{AppellF1}\left[\frac{4+m}{2},\frac{1}{2}(-1+m),2,\frac{6+m}{2},-\text{Tan}[e+fx]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+fx]^2\right]+\right.$$

$$\left.a^2(-1+m)\text{AppellF1}\left[\frac{4+m}{2},\frac{1+m}{2},1,\frac{6+m}{2},-\text{Tan}[e+fx]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+fx]^2\right]\right)\text{Tan}[e+fx]^2\Big)+$$

$$\text{Hypergeometric2F1}\left[\frac{1+m}{2},\frac{2+m}{2},\frac{4+m}{2},-\text{Tan}[e+fx]^2\right]\left(1+\text{Tan}[e+fx]^2\right)^{m/2}\left(-b^2\text{Tan}[e+fx]^2+a^2\left(1+\text{Tan}[e+fx]^2\right)\right)\Big)+$$

$$\frac{1}{b(2+m)\left(b^2\text{Tan}[e+fx]^2-a^2\left(1+\text{Tan}[e+fx]^2\right)\right)}\text{Tan}[e+fx]\left(\text{Hypergeometric2F1}\left[\frac{1+m}{2},\frac{2+m}{2},\frac{4+m}{2},-\text{Tan}[e+fx]^2\right]\right.$$

$$\left(2a^2\text{Sec}[e+fx]^2\text{Tan}[e+fx]-2b^2\text{Sec}[e+fx]^2\text{Tan}[e+fx]\right)\left(1+\text{Tan}[e+fx]^2\right)^{m/2}+$$

$$\left(a^2\left(a^2-b^2\right)(4+m)\text{AppellF1}\left[\frac{2+m}{2},\frac{1}{2}(-1+m),1,\frac{4+m}{2},-\text{Tan}[e+fx]^2,\frac{\left(-a^2+b^2\right)\text{Tan}[e+fx]^2}{a^2}\right]\text{Sec}[e+fx]^2\text{Tan}[e+fx]\right)\Big/$$

$$\left(\sqrt{1+\text{Tan}[e+fx]^2}\left(-a^2(4+m)\text{AppellF1}\left[\frac{2+m}{2},\frac{1}{2}(-1+m),1,\frac{4+m}{2},-\text{Tan}[e+fx]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+fx]^2\right]+\right.\right.$$

$$\left(2\left(a^2-b^2\right)\text{AppellF1}\left[\frac{4+m}{2},\frac{1}{2}(-1+m),2,\frac{6+m}{2},-\text{Tan}[e+fx]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+fx]^2\right]+\right.$$

$$\left.\left.\left.a^2(-1+m)\text{AppellF1}\left[\frac{4+m}{2},\frac{1+m}{2},1,\frac{6+m}{2},-\text{Tan}[e+fx]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+fx]^2\right]\right)\text{Tan}[e+fx]^2\right)\right)+$$

$$\left(a^2\left(a^2-b^2\right)(4+m)\left(-\frac{1}{4+m}(-1+m)(2+m)\text{AppellF1}\left[1+\frac{2+m}{2},1+\frac{1}{2}(-1+m),1,1+\frac{4+m}{2},-\text{Tan}[e+fx]^2,\right.\right.\right.$$

$$\left.\frac{\left(-a^2+b^2\right)\text{Tan}[e+fx]^2}{a^2}\right]\text{Sec}[e+fx]^2\text{Tan}[e+fx]+\frac{1}{a^2(4+m)}2\left(-a^2+b^2\right)(2+m)\text{AppellF1}\left[1+\frac{2+m}{2},\frac{1}{2}(-1+m),\right.$$

$$2,\,1+\frac{4+m}{2},\,-\text{Tan}[e+f\,x]^2,\,\frac{\left(-a^2+b^2\right)\text{Tan}[e+f\,x]^2}{a^2}\Big]\,\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]\Big)\,\sqrt{1+\text{Tan}[e+f\,x]^2}\Big)\Big/$$

$$\Big(-a^2\,(4+m)\,\text{AppellF1}\Big[\frac{2+m}{2},\,\frac{1}{2}\,(-1+m),\,1,\,\frac{4+m}{2},\,-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\Big]+$$

$$\Big(2\left(a^2-b^2\right)\text{AppellF1}\Big[\frac{4+m}{2},\,\frac{1}{2}\,(-1+m),\,2,\,\frac{6+m}{2},\,-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\Big]+$$

$$a^2\,(-1+m)\,\text{AppellF1}\Big[\frac{4+m}{2},\,\frac{1+m}{2},\,1,\,\frac{6+m}{2},\,-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\Big]\Big)\,\text{Tan}[e+f\,x]^2\Big)+$$

$$m\,\text{Hypergeometric2F1}\Big[\frac{1+m}{2},\,\frac{2+m}{2},\,\frac{4+m}{2},\,-\text{Tan}[e+f\,x]^2\Big]\,\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]\,\left(1+\text{Tan}[e+f\,x]^2\right)^{-1+\frac{m}{2}}$$

$$\left(-b^2\,\text{Tan}[e+f\,x]^2+a^2\left(1+\text{Tan}[e+f\,x]^2\right)\right)+(2+m)\,\text{Csc}[e+f\,x]\,\text{Sec}[e+f\,x]\,\left(1+\text{Tan}[e+f\,x]^2\right)^{m/2}$$

$$\left(-b^2\,\text{Tan}[e+f\,x]^2+a^2\left(1+\text{Tan}[e+f\,x]^2\right)\right)\,\Big(-\text{Hypergeometric2F1}\Big[\frac{1+m}{2},\,\frac{2+m}{2},\,\frac{4+m}{2},\,-\text{Tan}[e+f\,x]^2\Big]+\left(1+\text{Tan}[e+f\,x]^2\right)^{\frac{1}{2}(-1-m)}\Big)-$$

$$\Big(a^2\left(a^2-b^2\right)(4+m)\,\text{AppellF1}\Big[\frac{2+m}{2},\,\frac{1}{2}\,(-1+m),\,1,\,\frac{4+m}{2},\,-\text{Tan}[e+f\,x]^2,\,\frac{\left(-a^2+b^2\right)\text{Tan}[e+f\,x]^2}{a^2}\Big]$$

$$\sqrt{1+\text{Tan}[e+f\,x]^2}\,\Big(2\,\Big(2\left(a^2-b^2\right)\text{AppellF1}\Big[\frac{4+m}{2},\,\frac{1}{2}\,(-1+m),\,2,\,\frac{6+m}{2},\,-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\Big]+$$

$$a^2\,(-1+m)\,\text{AppellF1}\Big[\frac{4+m}{2},\,\frac{1+m}{2},\,1,\,\frac{6+m}{2},\,-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\Big]\Big)\,\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]-$$

$$a^2\,(4+m)\,\Big(-\frac{1}{4+m}(-1+m)\,(2+m)\,\text{AppellF1}\Big[1+\frac{2+m}{2},\,1+\frac{1}{2}\,(-1+m),\,1,\,1+\frac{4+m}{2},\,-\text{Tan}[e+f\,x]^2,$$

$$\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\Big]\,\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]+\frac{1}{4+m}2\left(-1+\frac{b^2}{a^2}\right)(2+m)\,\text{AppellF1}\Big[1+\frac{2+m}{2},\,\frac{1}{2}\,(-1+m),$$

$$2,\,1+\frac{4+m}{2},\,-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\Big]\,\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]\Big)+\text{Tan}[e+f\,x]^2$$

$$\Big(2\left(a^2-b^2\right)\Big(-\frac{1}{6+m}(-1+m)\,(4+m)\,\text{AppellF1}\Big[1+\frac{4+m}{2},\,1+\frac{1}{2}\,(-1+m),\,2,\,1+\frac{6+m}{2},\,-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\Big]$$

$$\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]+\frac{1}{6+m}4\left(-1+\frac{b^2}{a^2}\right)(4+m)\,\text{AppellF1}\Big[1+\frac{4+m}{2},\,\frac{1}{2}\,(-1+m),\,3,\,1+\frac{6+m}{2},\,-\text{Tan}[e+f\,x]^2,$$

$$\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\Big]\,\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]\Big)+a^2\,(-1+m)\,\Big(\frac{1}{6+m}2\left(-1+\frac{b^2}{a^2}\right)(4+m)\,\text{AppellF1}\Big[1+\frac{4+m}{2},$$

$$\frac{1+m}{2},\,2,\,1+\frac{6+m}{2},\,-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\Big]\,\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]-\frac{1}{6+m}(1+m)\,(4+m)$$

$$\text{AppellF1}\left[1+\frac{4+m}{2},\,1+\frac{1+m}{2},\,1,\,1+\frac{6+m}{2},\,-\text{Tan}[e+f x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]\Bigg)\Bigg)\Bigg)\Bigg)\Bigg/$$

$$\Bigg(-a^2\,(4+m)\,\text{AppellF1}\left[\frac{2+m}{2},\,\frac{1}{2}\,(-1+m),\,1,\,\frac{4+m}{2},\,-\text{Tan}[e+f x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+$$

$$\Bigg(2\,\left(a^2-b^2\right)\text{AppellF1}\left[\frac{4+m}{2},\,\frac{1}{2}\,(-1+m),\,2,\,\frac{6+m}{2},\,-\text{Tan}[e+f x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+$$

$$a^2\,(-1+m)\,\text{AppellF1}\left[\frac{4+m}{2},\,\frac{1+m}{2},\,1,\,\frac{6+m}{2},\,-\text{Tan}[e+f x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]\Bigg)\,\text{Tan}[e+f x]^2\Bigg)^2\Bigg)\Bigg)\Bigg)\Bigg)$$

Problem 217: Result more than twice size of optimal antiderivative.

$$\int \frac{(d\,\text{Sin}[e+f x])^m}{(a+b\,\text{Sin}[e+f x])^2}\,dx$$

Optimal (type 6, 306 leaves, 10 steps):

$$-\frac{1}{\left(a^2-b^2\right)^2 d f}b^2\,\text{AppellF1}\left[\frac{1}{2},\,\frac{1}{2}\,(-1-m),\,2,\,\frac{3}{2},\,\text{Cos}[e+f x]^2,\,-\frac{b^2\,\text{Cos}[e+f x]^2}{a^2-b^2}\right]\text{Cos}[e+f x]\,(d\,\text{Sin}[e+f x])^{1+m}\left(\text{Sin}[e+f x]^2\right)^{\frac{1}{2}(-1-m)}-$$

$$\frac{1}{\left(a^2-b^2\right)^2 f}a^2\,d\,\text{AppellF1}\left[\frac{1}{2},\,\frac{1-m}{2},\,2,\,\frac{3}{2},\,\text{Cos}[e+f x]^2,\,-\frac{b^2\,\text{Cos}[e+f x]^2}{a^2-b^2}\right]\text{Cos}[e+f x]\,(d\,\text{Sin}[e+f x])^{-1+m}\left(\text{Sin}[e+f x]^2\right)^{\frac{1-m}{2}}+$$

$$\frac{1}{\left(a^2-b^2\right)^2 f}2\,a\,b\,\text{AppellF1}\left[\frac{1}{2},\,-\frac{m}{2},\,2,\,\frac{3}{2},\,\text{Cos}[e+f x]^2,\,-\frac{b^2\,\text{Cos}[e+f x]^2}{a^2-b^2}\right]\text{Cos}[e+f x]\,(d\,\text{Sin}[e+f x])^m\left(\text{Sin}[e+f x]^2\right)^{-m/2}$$

Result (type 6, 8428 leaves):

$$\left(a^2\,(d\,\text{Sin}[e+f x])^m\,\text{Tan}[e+f x]\left(\frac{\text{Tan}[e+f x]}{\sqrt{1+\text{Tan}[e+f x]^2}}\right)^m\right.$$

$$\Bigg(\Bigg(\left(a^2+b^2\right)(3+m)\,\text{AppellF1}\left[\frac{1+m}{2},\,\frac{m}{2},\,1,\,\frac{3+m}{2},\,-\text{Tan}[e+f x]^2,\,\frac{\left(-a^2+b^2\right)\text{Tan}[e+f x]^2}{a^2}\right]\Bigg)\Bigg/$$

$$\Bigg((1+m)\,\Bigg(-a^2\,(3+m)\,\text{AppellF1}\left[\frac{1+m}{2},\,\frac{m}{2},\,1,\,\frac{3+m}{2},\,-\text{Tan}[e+f x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+$$

$$\Bigg(2\,\left(a^2-b^2\right)\text{AppellF1}\left[\frac{3+m}{2},\,\frac{m}{2},\,2,\,\frac{5+m}{2},\,-\text{Tan}[e+f x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+$$

$$a^2\,m\,\text{AppellF1}\left[\frac{3+m}{2},\,\frac{2+m}{2},\,1,\,\frac{5+m}{2},\,-\text{Tan}[e+f x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]\Bigg)\,\text{Tan}[e+f x]^2\Bigg)$$

$$\left(-b^2 \operatorname{Tan}[e+f x]^2+a^2 \left(1+\operatorname{Tan}[e+f x]^2\right)\right)\Bigg)+\frac{1}{\left(b^2 \operatorname{Tan}[e+f x]^2-a^2 \left(1+\operatorname{Tan}[e+f x]^2\right)\right)^2}\, 2 a b$$

$$\Bigg(\Bigg(a b (3+m) \operatorname{AppellF1}\left[\frac{1+m}{2}, \frac{m}{2}, 2, \frac{3+m}{2}, -\operatorname{Tan}[e+f x]^2, \frac{\left(-a^2+b^2\right) \operatorname{Tan}[e+f x]^2}{a^2}\right]\Bigg)\Big/\Bigg((1+m) \Bigg(a^2 (3+m) \operatorname{AppellF1}\left[\frac{1+m}{2}, \frac{m}{2}, 2, \frac{3+m}{2},\right.$$

$$\left.-\operatorname{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \operatorname{Tan}[e+f x]^2\right]-\Bigg(4 \left(a^2-b^2\right) \operatorname{AppellF1}\left[\frac{3+m}{2}, \frac{m}{2}, 3, \frac{5+m}{2}, -\operatorname{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \operatorname{Tan}[e+f x]^2\right]+$$

$$a^2 m \operatorname{AppellF1}\left[\frac{3+m}{2}, \frac{2+m}{2}, 2, \frac{5+m}{2}, -\operatorname{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \operatorname{Tan}[e+f x]^2\right]\Bigg) \operatorname{Tan}[e+f x]^2\Bigg)\Bigg)+$$

$$\Bigg(\left(a^2-b^2\right) (4+m) \operatorname{AppellF1}\left[\frac{2+m}{2}, \frac{1}{2} (-1+m), 2, \frac{4+m}{2}, -\operatorname{Tan}[e+f x]^2, \frac{\left(-a^2+b^2\right) \operatorname{Tan}[e+f x]^2}{a^2}\right] \operatorname{Tan}[e+f x] \sqrt{1+\operatorname{Tan}[e+f x]^2}\Bigg)\Big/$$

$$\Bigg((2+m) \Bigg(a^2 (4+m) \operatorname{AppellF1}\left[\frac{2+m}{2}, \frac{1}{2} (-1+m), 2, \frac{4+m}{2}, -\operatorname{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \operatorname{Tan}[e+f x]^2\right]+$$

$$\Bigg(-4 \left(a^2-b^2\right) \operatorname{AppellF1}\left[\frac{4+m}{2}, \frac{1}{2} (-1+m), 3, \frac{6+m}{2}, -\operatorname{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \operatorname{Tan}[e+f x]^2\right]-$$

$$a^2 (-1+m) \operatorname{AppellF1}\left[\frac{4+m}{2}, \frac{1+m}{2}, 2, \frac{6+m}{2}, -\operatorname{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \operatorname{Tan}[e+f x]^2\right]\Bigg) \operatorname{Tan}[e+f x]^2\Bigg)\Bigg)\Bigg)\Bigg)\Bigg)\Big/$$

$$\Bigg(\left(-a^2+b^2\right) f (a+b \operatorname{Sin}[e+f x])^2 \left(\frac{1}{-a^2+b^2} a^2 \operatorname{Sec}[e+f x]^2 \left(\frac{\operatorname{Tan}[e+f x]}{\sqrt{1+\operatorname{Tan}[e+f x]^2}}\right)^m\right.$$

$$\Bigg(\Bigg(\left(a^2+b^2\right) (3+m) \operatorname{AppellF1}\left[\frac{1+m}{2}, \frac{m}{2}, 1, \frac{3+m}{2}, -\operatorname{Tan}[e+f x]^2, \frac{\left(-a^2+b^2\right) \operatorname{Tan}[e+f x]^2}{a^2}\right]\Bigg)\Big/$$

$$\Bigg((1+m) \Bigg(-a^2 (3+m) \operatorname{AppellF1}\left[\frac{1+m}{2}, \frac{m}{2}, 1, \frac{3+m}{2}, -\operatorname{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \operatorname{Tan}[e+f x]^2\right]+\Bigg(2 \left(a^2-b^2\right) \operatorname{AppellF1}\left[\frac{3+m}{2}, \frac{m}{2}, 2, \frac{5+m}{2},\right.$$

$$\left.-\operatorname{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \operatorname{Tan}[e+f x]^2\right]+a^2 m \operatorname{AppellF1}\left[\frac{3+m}{2}, \frac{2+m}{2}, 1, \frac{5+m}{2}, -\operatorname{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \operatorname{Tan}[e+f x]^2\right]\Bigg)$$

$$\operatorname{Tan}[e+f x]^2\Bigg) \left(-b^2 \operatorname{Tan}[e+f x]^2+a^2 \left(1+\operatorname{Tan}[e+f x]^2\right)\right)\Bigg)+\frac{1}{\left(b^2 \operatorname{Tan}[e+f x]^2-a^2 \left(1+\operatorname{Tan}[e+f x]^2\right)\right)^2}$$

$$2 a b \Bigg(\Bigg(a b (3+m) \operatorname{AppellF1}\left[\frac{1+m}{2}, \frac{m}{2}, 2, \frac{3+m}{2}, -\operatorname{Tan}[e+f x]^2, \frac{\left(-a^2+b^2\right) \operatorname{Tan}[e+f x]^2}{a^2}\right]\Bigg)\Big/\Bigg((1+m) \Bigg(a^2 (3+m) \operatorname{AppellF1}\left[\frac{1+m}{2}, \frac{m}{2},\right.$$

$$\left.2, \frac{3+m}{2}, -\operatorname{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \operatorname{Tan}[e+f x]^2\right]-\Bigg(4 \left(a^2-b^2\right) \operatorname{AppellF1}\left[\frac{3+m}{2}, \frac{m}{2}, 3, \frac{5+m}{2}, -\operatorname{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right)\right.$$

$$\text{Tan}[e+f x]^2\Big]+a^2 m\,\text{AppellF1}\Big[\frac{3+m}{2},\frac{2+m}{2},2,\frac{5+m}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\Big]\Big)\,\text{Tan}[e+f x]^2\Big)\Big)+$$

$$\Big(\left(a^2-b^2\right)(4+m)\,\text{AppellF1}\Big[\frac{2+m}{2},\frac{1}{2}(-1+m),2,\frac{4+m}{2},-\text{Tan}[e+f x]^2,\frac{\left(-a^2+b^2\right)\text{Tan}[e+f x]^2}{a^2}\Big]\,\text{Tan}[e+f x]$$

$$\sqrt{1+\text{Tan}[e+f x]^2}\Big)\Big/\Big((2+m)\Big(a^2(4+m)\,\text{AppellF1}\Big[\frac{2+m}{2},\frac{1}{2}(-1+m),2,\frac{4+m}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\Big]+$$

$$\Big(-4\left(a^2-b^2\right)\text{AppellF1}\Big[\frac{4+m}{2},\frac{1}{2}(-1+m),3,\frac{6+m}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\Big]-$$

$$a^2(-1+m)\,\text{AppellF1}\Big[\frac{4+m}{2},\frac{1+m}{2},2,\frac{6+m}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\Big]\Big)\,\text{Tan}[e+f x]^2\Big)\Big)\Big)+$$

$$\frac{1}{-a^2+b^2}a^2 m\,\text{Tan}[e+f x]\left(\frac{\text{Tan}[e+f x]}{\sqrt{1+\text{Tan}[e+f x]^2}}\right)^{-1+m}\left(-\frac{\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]^2}{\left(1+\text{Tan}[e+f x]^2\right)^{3/2}}+\frac{\text{Sec}[e+f x]^2}{\sqrt{1+\text{Tan}[e+f x]^2}}\right)$$

$$\Big(\Big(\left(a^2+b^2\right)(3+m)\,\text{AppellF1}\Big[\frac{1+m}{2},\frac{m}{2},1,\frac{3+m}{2},-\text{Tan}[e+f x]^2,\frac{\left(-a^2+b^2\right)\text{Tan}[e+f x]^2}{a^2}\Big]\Big)\Big/$$

$$\Big((1+m)\Big(-a^2(3+m)\,\text{AppellF1}\Big[\frac{1+m}{2},\frac{m}{2},1,\frac{3+m}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\Big]+$$

$$\Big(2\left(a^2-b^2\right)\text{AppellF1}\Big[\frac{3+m}{2},\frac{m}{2},2,\frac{5+m}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\Big]+a^2 m\,\text{AppellF1}\Big[\frac{3+m}{2},\frac{2+m}{2},1,$$

$$\frac{5+m}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\Big]\Big)\,\text{Tan}[e+f x]^2\Big)\left(-b^2\,\text{Tan}[e+f x]^2+a^2\left(1+\text{Tan}[e+f x]^2\right)\right)\Big)+$$

$$\frac{1}{\left(b^2\,\text{Tan}[e+f x]^2-a^2\left(1+\text{Tan}[e+f x]^2\right)\right)^2}2 a b\Big(\Big(a b(3+m)\,\text{AppellF1}\Big[\frac{1+m}{2},\frac{m}{2},2,\frac{3+m}{2},-\text{Tan}[e+f x]^2,$$

$$\frac{\left(-a^2+b^2\right)\text{Tan}[e+f x]^2}{a^2}\Big]\Big)\Big/\Big((1+m)\Big(a^2(3+m)\,\text{AppellF1}\Big[\frac{1+m}{2},\frac{m}{2},2,\frac{3+m}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\Big]-$$

$$\Big(4\left(a^2-b^2\right)\text{AppellF1}\Big[\frac{3+m}{2},\frac{m}{2},3,\frac{5+m}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\Big]+$$

$$a^2 m\,\text{AppellF1}\Big[\frac{3+m}{2},\frac{2+m}{2},2,\frac{5+m}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\Big]\Big)\,\text{Tan}[e+f x]^2\Big)\Big)+$$

$$\Big(\left(a^2-b^2\right)(4+m)\,\text{AppellF1}\Big[\frac{2+m}{2},\frac{1}{2}(-1+m),2,\frac{4+m}{2},-\text{Tan}[e+f x]^2,\frac{\left(-a^2+b^2\right)\text{Tan}[e+f x]^2}{a^2}\Big]\,\text{Tan}[e+f x]$$

$$\sqrt{1+\text{Tan}[e+f x]^2}\Bigg) \Bigg/ \Bigg((2+m)\Bigg(a^2 (4+m)\,\text{AppellF1}\Big[\frac{2+m}{2},\ \frac{1}{2}(-1+m),\ 2,\ \frac{4+m}{2},\ -\text{Tan}[e+f x]^2,\ \Big(-1+\frac{b^2}{a^2}\Big)\text{Tan}[e+f x]^2\Big]+$$

$$\Bigg(-4\,(a^2-b^2)\,\text{AppellF1}\Big[\frac{4+m}{2},\ \frac{1}{2}(-1+m),\ 3,\ \frac{6+m}{2},\ -\text{Tan}[e+f x]^2,\ \Big(-1+\frac{b^2}{a^2}\Big)\text{Tan}[e+f x]^2\Big]-$$

$$a^2(-1+m)\,\text{AppellF1}\Big[\frac{4+m}{2},\ \frac{1+m}{2},\ 2,\ \frac{6+m}{2},\ -\text{Tan}[e+f x]^2,\ \Big(-1+\frac{b^2}{a^2}\Big)\text{Tan}[e+f x]^2\Big]\Bigg)\text{Tan}[e+f x]^2\Bigg)\Bigg)\Bigg)+$$

$$\frac{1}{-a^2+b^2}\,a^2\,\text{Tan}[e+f x]\left(\frac{\text{Tan}[e+f x]}{\sqrt{1+\text{Tan}[e+f x]^2}}\right)^m\Bigg(-\Bigg(\Bigg(\Bigg((a^2+b^2)(3+m)\,\text{AppellF1}\Big[\frac{1+m}{2},\ \frac{m}{2},\ 1,\ \frac{3+m}{2},\ -\text{Tan}[e+f x]^2,$$

$$\frac{(-a^2+b^2)\,\text{Tan}[e+f x]^2}{a^2}\Big]\left(2a^2\,\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]-2b^2\,\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]\right)\Bigg)\Bigg/$$

$$\Bigg((1+m)\Bigg(-a^2(3+m)\,\text{AppellF1}\Big[\frac{1+m}{2},\ \frac{m}{2},\ 1,\ \frac{3+m}{2},\ -\text{Tan}[e+f x]^2,\ \Big(-1+\frac{b^2}{a^2}\Big)\text{Tan}[e+f x]^2\Big]+$$

$$\Bigg(2(a^2-b^2)\,\text{AppellF1}\Big[\frac{3+m}{2},\ \frac{m}{2},\ 2,\ \frac{5+m}{2},\ -\text{Tan}[e+f x]^2,\ \Big(-1+\frac{b^2}{a^2}\Big)\text{Tan}[e+f x]^2\Big]+a^2 m\,\text{AppellF1}\Big[\frac{3+m}{2},\ \frac{2+m}{2},\ 1,$$

$$\frac{5+m}{2},\ -\text{Tan}[e+f x]^2,\ \Big(-1+\frac{b^2}{a^2}\Big)\text{Tan}[e+f x]^2\Big]\Bigg)\text{Tan}[e+f x]^2\Bigg)\left(-b^2\,\text{Tan}[e+f x]^2+a^2\left(1+\text{Tan}[e+f x]^2\right)\right)^2\Bigg)\Bigg)+$$

$$\Bigg((a^2+b^2)(3+m)\Bigg(-\frac{1}{3+m}m(1+m)\,\text{AppellF1}\Big[1+\frac{1+m}{2},\ 1+\frac{m}{2},\ 1,\ 1+\frac{3+m}{2},\ -\text{Tan}[e+f x]^2,\ \frac{(-a^2+b^2)\,\text{Tan}[e+f x]^2}{a^2}\Big]$$

$$\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]+\frac{1}{a^2(3+m)}2(-a^2+b^2)(1+m)\,\text{AppellF1}\Big[1+\frac{1+m}{2},\ \frac{m}{2},\ 2,$$

$$1+\frac{3+m}{2},\ -\text{Tan}[e+f x]^2,\ \frac{(-a^2+b^2)\,\text{Tan}[e+f x]^2}{a^2}\Big]\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]\Bigg)\Bigg)\Bigg/$$

$$\Bigg((1+m)\Bigg(-a^2(3+m)\,\text{AppellF1}\Big[\frac{1+m}{2},\ \frac{m}{2},\ 1,\ \frac{3+m}{2},\ -\text{Tan}[e+f x]^2,\ \Big(-1+\frac{b^2}{a^2}\Big)\text{Tan}[e+f x]^2\Big]+$$

$$\Bigg(2(a^2-b^2)\,\text{AppellF1}\Big[\frac{3+m}{2},\ \frac{m}{2},\ 2,\ \frac{5+m}{2},\ -\text{Tan}[e+f x]^2,\ \Big(-1+\frac{b^2}{a^2}\Big)\text{Tan}[e+f x]^2\Big]+a^2 m\,\text{AppellF1}\Big[\frac{3+m}{2},\ \frac{2+m}{2},\ 1,$$

$$\frac{5+m}{2},\ -\text{Tan}[e+f x]^2,\ \Big(-1+\frac{b^2}{a^2}\Big)\text{Tan}[e+f x]^2\Big]\Bigg)\text{Tan}[e+f x]^2\Bigg)\left(-b^2\,\text{Tan}[e+f x]^2+a^2\left(1+\text{Tan}[e+f x]^2\right)\right)\Bigg)-$$

$$\frac{1}{\left(b^2\,\text{Tan}[e+f x]^2-a^2\left(1+\text{Tan}[e+f x]^2\right)\right)^3}\,4ab\left(-2a^2\,\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]+2b^2\,\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]\right)$$

$$\Bigg(\Bigg(a\,b\,(3+m)\,\text{AppellF1}\Big[\frac{1+m}{2},\,\frac{m}{2},\,2,\,\frac{3+m}{2},\,-\text{Tan}[e+f\,x]^2,\,\frac{\left(-a^2+b^2\right)\,\text{Tan}[e+f\,x]^2}{a^2}\Big]\Bigg)\Big/\Bigg((1+m)\,\Big(a^2\,(3+m)\,\text{AppellF1}\Big[\frac{1+m}{2},\,\frac{m}{2},\,2,$$

$$\frac{3+m}{2},\,-\text{Tan}[e+f\,x]^2,\,\Big(-1+\frac{b^2}{a^2}\Big)\,\text{Tan}[e+f\,x]^2\Big]-\Big(4\,\left(a^2-b^2\right)\,\text{AppellF1}\Big[\frac{3+m}{2},\,\frac{m}{2},\,3,\,\frac{5+m}{2},\,-\text{Tan}[e+f\,x]^2,\,\Big(-1+\frac{b^2}{a^2}\Big)$$

$$\text{Tan}[e+f\,x]^2\Big]+a^2\,m\,\text{AppellF1}\Big[\frac{3+m}{2},\,\frac{2+m}{2},\,2,\,\frac{5+m}{2},\,-\text{Tan}[e+f\,x]^2,\,\Big(-1+\frac{b^2}{a^2}\Big)\,\text{Tan}[e+f\,x]^2\Big]\Big)\,\text{Tan}[e+f\,x]^2\Big)\Bigg)+$$

$$\Bigg(\left(a^2-b^2\right)\,(4+m)\,\text{AppellF1}\Big[\frac{2+m}{2},\,\frac{1}{2}\,(-1+m),\,2,\,\frac{4+m}{2},\,-\text{Tan}[e+f\,x]^2,\,\frac{\left(-a^2+b^2\right)\,\text{Tan}[e+f\,x]^2}{a^2}\Big]\,\text{Tan}[e+f\,x]$$

$$\sqrt{1+\text{Tan}[e+f\,x]^2}\Bigg)\Big/\Bigg((2+m)\,\Big(a^2\,(4+m)\,\text{AppellF1}\Big[\frac{2+m}{2},\,\frac{1}{2}\,(-1+m),\,2,\,\frac{4+m}{2},\,-\text{Tan}[e+f\,x]^2,\,\Big(-1+\frac{b^2}{a^2}\Big)\,\text{Tan}[e+f\,x]^2\Big]+$$

$$\Big(-4\,\left(a^2-b^2\right)\,\text{AppellF1}\Big[\frac{4+m}{2},\,\frac{1}{2}\,(-1+m),\,3,\,\frac{6+m}{2},\,-\text{Tan}[e+f\,x]^2,\,\Big(-1+\frac{b^2}{a^2}\Big)\,\text{Tan}[e+f\,x]^2\Big]-$$

$$a^2\,(-1+m)\,\text{AppellF1}\Big[\frac{4+m}{2},\,\frac{1+m}{2},\,2,\,\frac{6+m}{2},\,-\text{Tan}[e+f\,x]^2,\,\Big(-1+\frac{b^2}{a^2}\Big)\,\text{Tan}[e+f\,x]^2\Big]\Big)\,\text{Tan}[e+f\,x]^2\Big)\Bigg)\Bigg)-$$

$$\Bigg(\left(a^2+b^2\right)\,(3+m)\,\text{AppellF1}\Big[\frac{1+m}{2},\,\frac{m}{2},\,1,\,\frac{3+m}{2},\,-\text{Tan}[e+f\,x]^2,\,\frac{\left(-a^2+b^2\right)\,\text{Tan}[e+f\,x]^2}{a^2}\Big]$$

$$\Big(2\,\Big(2\,\left(a^2-b^2\right)\,\text{AppellF1}\Big[\frac{3+m}{2},\,\frac{m}{2},\,2,\,\frac{5+m}{2},\,-\text{Tan}[e+f\,x]^2,\,\Big(-1+\frac{b^2}{a^2}\Big)\,\text{Tan}[e+f\,x]^2\Big]+$$

$$a^2\,m\,\text{AppellF1}\Big[\frac{3+m}{2},\,\frac{2+m}{2},\,1,\,\frac{5+m}{2},\,-\text{Tan}[e+f\,x]^2,\,\Big(-1+\frac{b^2}{a^2}\Big)\,\text{Tan}[e+f\,x]^2\Big]\Big)\,\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]-a^2\,(3+m)\,\Big(-\frac{1}{3+m}$$

$$m\,(1+m)\,\text{AppellF1}\Big[1+\frac{1+m}{2},\,1+\frac{m}{2},\,1,\,1+\frac{3+m}{2},\,-\text{Tan}[e+f\,x]^2,\,\Big(-1+\frac{b^2}{a^2}\Big)\,\text{Tan}[e+f\,x]^2\Big]\,\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]+\frac{1}{3+m}$$

$$2\,\Big(-1+\frac{b^2}{a^2}\Big)\,(1+m)\,\text{AppellF1}\Big[1+\frac{1+m}{2},\,\frac{m}{2},\,2,\,1+\frac{3+m}{2},\,-\text{Tan}[e+f\,x]^2,\,\Big(-1+\frac{b^2}{a^2}\Big)\,\text{Tan}[e+f\,x]^2\Big]\,\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]\Big)+$$

$$\text{Tan}[e+f\,x]^2\,\Big(2\,\left(a^2-b^2\right)\,\Big(-\frac{1}{5+m}m\,(3+m)\,\text{AppellF1}\Big[1+\frac{3+m}{2},\,1+\frac{m}{2},\,2,\,1+\frac{5+m}{2},\,-\text{Tan}[e+f\,x]^2,\,\Big(-1+\frac{b^2}{a^2}\Big)\,\text{Tan}[e+f\,x]^2\Big]$$

$$\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]+\frac{1}{5+m}4\,\Big(-1+\frac{b^2}{a^2}\Big)\,(3+m)\,\text{AppellF1}\Big[1+\frac{3+m}{2},\,\frac{m}{2},\,3,\,1+\frac{5+m}{2},\,-\text{Tan}[e+f\,x]^2,$$

$$\Big(-1+\frac{b^2}{a^2}\Big)\,\text{Tan}[e+f\,x]^2\Big]\,\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]\Big)+a^2\,m\,\Big(\frac{1}{5+m}2\,\Big(-1+\frac{b^2}{a^2}\Big)\,(3+m)\,\text{AppellF1}\Big[1+\frac{3+m}{2},$$

$$\frac{2+m}{2},\,2,\,1+\frac{5+m}{2},\,-\text{Tan}[e+f\,x]^2,\,\Big(-1+\frac{b^2}{a^2}\Big)\,\text{Tan}[e+f\,x]^2\Big]\,\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]-\frac{1}{5+m}(2+m)\,(3+m)$$

$$\text{AppellF1}\left[1+\frac{3+m}{2},1+\frac{2+m}{2},1,1+\frac{5+m}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]\Big)\Big)\Big)\Big)\Big/$$

$$\Big((1+m)\Big(-a^2(3+m)\,\text{AppellF1}\left[\frac{1+m}{2},\frac{m}{2},1,\frac{3+m}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+$$

$$\Big(2\left(a^2-b^2\right)\text{AppellF1}\left[\frac{3+m}{2},\frac{m}{2},2,\frac{5+m}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+a^2 m\,\text{AppellF1}\left[\frac{3+m}{2},\frac{2+m}{2},1,\right.$$

$$\left.\frac{5+m}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]\Big)\text{Tan}[e+f x]^2\Big)^2\left(-b^2\,\text{Tan}[e+f x]^2+a^2\left(1+\text{Tan}[e+f x]^2\right)\right)\Big)+$$

$$\frac{1}{\left(b^2\,\text{Tan}[e+f x]^2-a^2\left(1+\text{Tan}[e+f x]^2\right)\right)^2}\,2\,a\,b\,\Big(\Big(a\,b\,(3+m)\Big(-1/(3+m)\,m\,(1+m)\,\text{AppellF1}\left[1+\frac{1+m}{2},1+\frac{m}{2},2,\right.$$

$$\left.1+\frac{3+m}{2},-\text{Tan}[e+f x]^2,\frac{\left(-a^2+b^2\right)\text{Tan}[e+f x]^2}{a^2}\right]\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]+1\Big/\left(a^2(3+m)\right)4\left(-a^2+b^2\right)(1+m)$$

$$\text{AppellF1}\left[1+\frac{1+m}{2},\frac{m}{2},3,1+\frac{3+m}{2},-\text{Tan}[e+f x]^2,\frac{\left(-a^2+b^2\right)\text{Tan}[e+f x]^2}{a^2}\right]\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]\Big)\Big)\Big/$$

$$\Big((1+m)\Big(a^2(3+m)\,\text{AppellF1}\left[\frac{1+m}{2},\frac{m}{2},2,\frac{3+m}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]-$$

$$\Big(4\left(a^2-b^2\right)\text{AppellF1}\left[\frac{3+m}{2},\frac{m}{2},3,\frac{5+m}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+$$

$$a^2 m\,\text{AppellF1}\left[\frac{3+m}{2},\frac{2+m}{2},2,\frac{5+m}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]\Big)\text{Tan}[e+f x]^2\Big)\Big)+$$

$$\Big(\left(a^2-b^2\right)(4+m)\,\text{AppellF1}\left[\frac{2+m}{2},\frac{1}{2}(-1+m),2,\frac{4+m}{2},-\text{Tan}[e+f x]^2,\frac{\left(-a^2+b^2\right)\text{Tan}[e+f x]^2}{a^2}\right]\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]^2\Big)\Big/$$

$$\Big((2+m)\sqrt{1+\text{Tan}[e+f x]^2}\,\Big(a^2(4+m)\,\text{AppellF1}\left[\frac{2+m}{2},\frac{1}{2}(-1+m),2,\frac{4+m}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+$$

$$\Big(-4\left(a^2-b^2\right)\text{AppellF1}\left[\frac{4+m}{2},\frac{1}{2}(-1+m),3,\frac{6+m}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]-$$

$$a^2(-1+m)\,\text{AppellF1}\left[\frac{4+m}{2},\frac{1+m}{2},2,\frac{6+m}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]\Big)\text{Tan}[e+f x]^2\Big)\Big)+$$

$$\Big(\left(a^2-b^2\right)(4+m)\,\text{AppellF1}\left[\frac{2+m}{2},\frac{1}{2}(-1+m),2,\frac{4+m}{2},-\text{Tan}[e+f x]^2,\frac{\left(-a^2+b^2\right)\text{Tan}[e+f x]^2}{a^2}\right]\text{Sec}[e+f x]^2$$

$$\sqrt{1+\text{Tan}[e+f x]^2}\Big)\Big/\Big((2+m)\Big(a^2(4+m)\,\text{AppellF1}\left[\frac{2+m}{2},\frac{1}{2}(-1+m),2,\frac{4+m}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+$$

$$\left(-4\left(a^2-b^2\right)\text{AppellF1}\left[\frac{4+m}{2},\frac{1}{2}(-1+m),3,\frac{6+m}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]-\right.$$
$$\left.\left.a^2(-1+m)\text{AppellF1}\left[\frac{4+m}{2},\frac{1+m}{2},2,\frac{6+m}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]\right)\text{Tan}[e+f x]^2\right)\right)+$$
$$\left(\left(a^2-b^2\right)(4+m)\text{Tan}[e+f x]\left(-\frac{1}{4+m}(-1+m)(2+m)\text{AppellF1}\left[1+\frac{2+m}{2},1+\frac{1}{2}(-1+m),2,1+\frac{4+m}{2},-\text{Tan}[e+f x]^2,\right.\right.\right.$$
$$\left.\frac{\left(-a^2+b^2\right)\text{Tan}[e+f x]^2}{a^2}\right]\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]+\frac{1}{a^2(4+m)}4\left(-a^2+b^2\right)(2+m)\text{AppellF1}\left[1+\frac{2+m}{2},\frac{1}{2}(-1+m),\right.$$
$$\left.\left.\left.3,1+\frac{4+m}{2},-\text{Tan}[e+f x]^2,\frac{\left(-a^2+b^2\right)\text{Tan}[e+f x]^2}{a^2}\right]\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]\right)\sqrt{1+\text{Tan}[e+f x]^2}\right)\Big/$$
$$\left((2+m)\left(a^2(4+m)\text{AppellF1}\left[\frac{2+m}{2},\frac{1}{2}(-1+m),2,\frac{4+m}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+\right.\right.$$
$$\left(-4\left(a^2-b^2\right)\text{AppellF1}\left[\frac{4+m}{2},\frac{1}{2}(-1+m),3,\frac{6+m}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]-\right.$$
$$\left.\left.\left.a^2(-1+m)\text{AppellF1}\left[\frac{4+m}{2},\frac{1+m}{2},2,\frac{6+m}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]\right)\text{Tan}[e+f x]^2\right)\right)-$$
$$\left(a\,b\,(3+m)\text{AppellF1}\left[\frac{1+m}{2},\frac{m}{2},2,\frac{3+m}{2},-\text{Tan}[e+f x]^2,\frac{\left(-a^2+b^2\right)\text{Tan}[e+f x]^2}{a^2}\right]\right.$$
$$\left(-2\left(4\left(a^2-b^2\right)\text{AppellF1}\left[\frac{3+m}{2},\frac{m}{2},3,\frac{5+m}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+\right.\right.$$
$$\left.a^2 m\,\text{AppellF1}\left[\frac{3+m}{2},\frac{2+m}{2},2,\frac{5+m}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]\right)\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]+a^2(3+m)$$
$$\left(-\frac{1}{3+m}m(1+m)\text{AppellF1}\left[1+\frac{1+m}{2},1+\frac{m}{2},2,1+\frac{3+m}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]+\right.$$
$$\frac{1}{3+m}4\left(-1+\frac{b^2}{a^2}\right)(1+m)\text{AppellF1}\left[1+\frac{1+m}{2},\frac{m}{2},3,1+\frac{3+m}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]\text{Sec}[e+f x]^2$$
$$\left.\text{Tan}[e+f x]\right)-\text{Tan}[e+f x]^2\left(4\left(a^2-b^2\right)\left(-\frac{1}{5+m}m(3+m)\text{AppellF1}\left[1+\frac{3+m}{2},1+\frac{m}{2},3,1+\frac{5+m}{2},-\text{Tan}[e+f x]^2,\right.\right.\right.$$
$$\left.\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]+\frac{1}{5+m}6\left(-1+\frac{b^2}{a^2}\right)(3+m)\text{AppellF1}\left[1+\frac{3+m}{2},\frac{m}{2},4,1+\frac{5+m}{2},\right.$$
$$\left.\left.-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]\right)+a^2 m\left(\frac{1}{5+m}4\left(-1+\frac{b^2}{a^2}\right)(3+m)\text{AppellF1}\left[1+\right.\right.$$

$$\frac{3+m}{2}, \frac{2+m}{2}, 3, 1+\frac{5+m}{2}, -\text{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\Big] \text{Sec}[e+f x]^2 \text{Tan}[e+f x] - \frac{1}{5+m}(2+m)(3+m)$$

$$\text{AppellF1}\Big[1+\frac{3+m}{2}, 1+\frac{2+m}{2}, 2, 1+\frac{5+m}{2}, -\text{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\Big] \text{Sec}[e+f x]^2 \text{Tan}[e+f x]\Big)\Big)\Big)\Big) \Big/$$

$$\Big((1+m) \Big(a^2 (3+m) \text{AppellF1}\Big[\frac{1+m}{2}, \frac{m}{2}, 2, \frac{3+m}{2}, -\text{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\Big] -$$

$$\Big(4 \left(a^2-b^2\right) \text{AppellF1}\Big[\frac{3+m}{2}, \frac{m}{2}, 3, \frac{5+m}{2}, -\text{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\Big] +$$

$$a^2 m \text{AppellF1}\Big[\frac{3+m}{2}, \frac{2+m}{2}, 2, \frac{5+m}{2}, -\text{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\Big]\Big) \text{Tan}[e+f x]^2\Big)^2\Big) -$$

$$\Big(\left(a^2-b^2\right) (4+m) \text{AppellF1}\Big[\frac{2+m}{2}, \frac{1}{2}(-1+m), 2, \frac{4+m}{2}, -\text{Tan}[e+f x]^2, \frac{\left(-a^2+b^2\right) \text{Tan}[e+f x]^2}{a^2}\Big] \text{Tan}[e+f x]$$

$$\sqrt{1+\text{Tan}[e+f x]^2} \Big(2 \Big(-4 \left(a^2-b^2\right) \text{AppellF1}\Big[\frac{4+m}{2}, \frac{1}{2}(-1+m), 3, \frac{6+m}{2}, -\text{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\Big] -$$

$$a^2 (-1+m) \text{AppellF1}\Big[\frac{4+m}{2}, \frac{1+m}{2}, 2, \frac{6+m}{2}, -\text{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\Big]\Big) \text{Sec}[e+f x]^2 \text{Tan}[e+f x] +$$

$$a^2 (4+m) \Big(-\frac{1}{4+m}(-1+m)(2+m) \text{AppellF1}\Big[1+\frac{2+m}{2}, 1+\frac{1}{2}(-1+m), 2, 1+\frac{4+m}{2}, -\text{Tan}[e+f x]^2,$$

$$\left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\Big] \text{Sec}[e+f x]^2 \text{Tan}[e+f x] + \frac{1}{4+m} 4 \left(-1+\frac{b^2}{a^2}\right) (2+m) \text{AppellF1}\Big[1+\frac{2+m}{2}, \frac{1}{2}(-1+m), 3,$$

$$1+\frac{4+m}{2}, -\text{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\Big] \text{Sec}[e+f x]^2 \text{Tan}[e+f x]\Big) + \text{Tan}[e+f x]^2 \Big(-4 \left(a^2-b^2\right)$$

$$\Big(-\frac{1}{6+m}(-1+m)(4+m) \text{AppellF1}\Big[1+\frac{4+m}{2}, 1+\frac{1}{2}(-1+m), 3, 1+\frac{6+m}{2}, -\text{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\Big]$$

$$\text{Sec}[e+f x]^2 \text{Tan}[e+f x] + \frac{1}{6+m} 6 \left(-1+\frac{b^2}{a^2}\right) (4+m) \text{AppellF1}\Big[1+\frac{4+m}{2}, \frac{1}{2}(-1+m), 4, 1+\frac{6+m}{2}, -\text{Tan}[e+f x]^2,$$

$$\left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\Big] \text{Sec}[e+f x]^2 \text{Tan}[e+f x]\Big) - a^2 (-1+m) \Big(\frac{1}{6+m} 4 \left(-1+\frac{b^2}{a^2}\right) (4+m) \text{AppellF1}\Big[1+\frac{4+m}{2},$$

$$\frac{1+m}{2}, 3, 1+\frac{6+m}{2}, -\text{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\Big] \text{Sec}[e+f x]^2 \text{Tan}[e+f x] - \frac{1}{6+m}(1+m)(4+m)$$

$$\text{AppellF1}\Big[1+\frac{4+m}{2}, 1+\frac{1+m}{2}, 2, 1+\frac{6+m}{2}, -\text{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\Big] \text{Sec}[e+f x]^2 \text{Tan}[e+f x]\Big)\Big)\Big)\Big) \Big/$$

$$\left((2+m)\left(a^2 (4+m)\,\text{AppellF1}\left[\frac{2+m}{2},\frac{1}{2}(-1+m),2,\frac{4+m}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+\left(-4\left(a^2-b^2\right)\text{AppellF1}\left[\frac{4+m}{2},\frac{1}{2}(-1+m),3,\frac{6+m}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]-a^2(-1+m)\,\text{AppellF1}\left[\frac{4+m}{2},\frac{1+m}{2},2,\frac{6+m}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]\right)\text{Tan}[e+f x]^2\right)^2\right)\right)\right)\right)$$

- **Problem 218: Result more than twice size of optimal antiderivative.**

$$\int \frac{(d\,\text{Sin}[e+f x])^m}{(a+b\,\text{Sin}[e+f x])^3}\,dx$$

Optimal (type 6, 406 leaves, 13 steps):

$$-\frac{1}{\left(a^2-b^2\right)^3 d f}3 a b^2\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2}(-1-m),3,\frac{3}{2},\text{Cos}[e+f x]^2,-\frac{b^2\,\text{Cos}[e+f x]^2}{a^2-b^2}\right]\text{Cos}[e+f x]\,(d\,\text{Sin}[e+f x])^{1+m}\left(\text{Sin}[e+f x]^2\right)^{\frac{1}{2}(-1-m)}-\frac{1}{\left(a^2-b^2\right)^3 f}a^3 d\,\text{AppellF1}\left[\frac{1}{2},\frac{1-m}{2},3,\frac{3}{2},\text{Cos}[e+f x]^2,-\frac{b^2\,\text{Cos}[e+f x]^2}{a^2-b^2}\right]\text{Cos}[e+f x]\,(d\,\text{Sin}[e+f x])^{-1+m}\left(\text{Sin}[e+f x]^2\right)^{\frac{1-m}{2}}+\frac{1}{\left(a^2-b^2\right)^3 f}b^3\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2}(-2-m),3,\frac{3}{2},\text{Cos}[e+f x]^2,-\frac{b^2\,\text{Cos}[e+f x]^2}{a^2-b^2}\right]\text{Cos}[e+f x]\,(d\,\text{Sin}[e+f x])^m\left(\text{Sin}[e+f x]^2\right)^{-m/2}+\frac{1}{\left(a^2-b^2\right)^3 f}3 a^2 b\,\text{AppellF1}\left[\frac{1}{2},-\frac{m}{2},3,\frac{3}{2},\text{Cos}[e+f x]^2,-\frac{b^2\,\text{Cos}[e+f x]^2}{a^2-b^2}\right]\text{Cos}[e+f x]\,(d\,\text{Sin}[e+f x])^m\left(\text{Sin}[e+f x]^2\right)^{-m/2}$$

Result (type 6, 20 820 leaves): Display of huge result suppressed!

- **Problem 222: Unable to integrate problem.**

$$\int \text{Sin}[c+d x]^3\,(a+b\,\text{Sin}[c+d x])^n\,dx$$

Optimal (type 6, 351 leaves, 9 steps):

$$\frac{2 a \cos[c+d x] (a+b \sin[c+d x])^{1+n}}{b^2 d (2+n) (3+n)} - \frac{\cos[c+d x] \sin[c+d x] (a+b \sin[c+d x])^{1+n}}{b d (3+n)} - \left(\sqrt{2} (a+b) \left(2 a^2+b^2 (2+n)^2\right) \text{AppellF1}\left[\frac{1}{2}, \frac{1}{2}, -1-n, \frac{3}{2}, \frac{1}{2} (1-\sin[c+d x]), \frac{b (1-\sin[c+d x])}{a+b}\right] \cos[c+d x] (a+b \sin[c+d x])^n \left(\frac{a+b \sin[c+d x]}{a+b}\right)^{-n}\right) \Big/ \left(b^3 d (2+n) (3+n) \sqrt{1+\sin[c+d x]}\right) + \left(\sqrt{2} a \left(2 a^2+b^2 \left(4+5 n+n^2\right)\right) \text{AppellF1}\left[\frac{1}{2}, \frac{1}{2}, -n, \frac{3}{2}, \frac{1}{2} (1-\sin[c+d x]), \frac{b (1-\sin[c+d x])}{a+b}\right] \cos[c+d x] (a+b \sin[c+d x])^n \left(\frac{a+b \sin[c+d x]}{a+b}\right)^{-n}\right) \Big/ \left(b^3 d (2+n) (3+n) \sqrt{1+\sin[c+d x]}\right)$$

Result (type 8, 23 leaves):

$$\int \sin[c+d x]^3 (a+b \sin[c+d x])^n \, dx$$

- **Problem 223: Unable to integrate problem.**

$$\int \sin[c+d x]^2 (a+b \sin[c+d x])^n \, dx$$

Optimal (type 6, 274 leaves, 8 steps):

$$-\frac{\cos[c+d x] (a+b \sin[c+d x])^{1+n}}{b d (2+n)} + \left(\sqrt{2} a (a+b) \text{AppellF1}\left[\frac{1}{2}, \frac{1}{2}, -1-n, \frac{3}{2}, \frac{1}{2} (1-\sin[c+d x]), \frac{b (1-\sin[c+d x])}{a+b}\right] \cos[c+d x] (a+b \sin[c+d x])^n \left(\frac{a+b \sin[c+d x]}{a+b}\right)^{-n}\right) \Big/ \left(b^2 d (2+n) \sqrt{1+\sin[c+d x]}\right) - \left(\sqrt{2} \left(a^2+b^2 (1+n)\right) \text{AppellF1}\left[\frac{1}{2}, \frac{1}{2}, -n, \frac{3}{2}, \frac{1}{2} (1-\sin[c+d x]), \frac{b (1-\sin[c+d x])}{a+b}\right] \cos[c+d x] (a+b \sin[c+d x])^n \left(\frac{a+b \sin[c+d x]}{a+b}\right)^{-n}\right) \Big/ \left(b^2 d (2+n) \sqrt{1+\sin[c+d x]}\right)$$

Result (type 8, 23 leaves):

$$\int \sin[c+d x]^2 (a+b \sin[c+d x])^n \, dx$$

- **Problem 231: Result more than twice size of optimal antiderivative.**

$$\int \frac{a+a \sin[e+f x]}{c-c \sin[e+f x]} \, dx$$

Optimal (type 3, 33 leaves, 2 steps):

$$-\frac{a x}{c} + \frac{2 a \cos[e+f x]}{f (c-c \sin[e+f x])}$$

Result (type 3, 83 leaves):

$$\frac{a\left(-f x \operatorname{Cos}\left[\frac{f x}{2}\right]+4 \operatorname{Sin}\left[\frac{f x}{2}\right]+f x \operatorname{Sin}\left[e+\frac{f x}{2}\right]\right)}{c f\left(\operatorname{Cos}\left[\frac{e}{2}\right]-\operatorname{Sin}\left[\frac{e}{2}\right]\right)\left(\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]-\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right)}$$

- **Problem 232: Result more than twice size of optimal antiderivative.**

$$\int \frac{a+a \operatorname{Sin}[e+f x]}{(c-c \operatorname{Sin}[e+f x])^2} \, dx$$

Optimal (type 3, 30 leaves, 2 steps):

$$\frac{a c \operatorname{Cos}[e+f x]^3}{3 f (c-c \operatorname{Sin}[e+f x])^3}$$

Result (type 3, 74 leaves):

$$-\frac{a\left(-3 \operatorname{Cos}\left[e+\frac{f x}{2}\right]+\operatorname{Cos}\left[e+\frac{3 f x}{2}\right]\right)}{3 c^2 f\left(\operatorname{Cos}\left[\frac{e}{2}\right]-\operatorname{Sin}\left[\frac{e}{2}\right]\right)\left(\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]-\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^3}$$

- **Problem 241: Result more than twice size of optimal antiderivative.**

$$\int \frac{(a+a \operatorname{Sin}[e+f x])^2}{c-c \operatorname{Sin}[e+f x]} \, dx$$

Optimal (type 3, 57 leaves, 4 steps):

$$-\frac{3 a^2 x}{c}+\frac{3 a^2 \operatorname{Cos}[e+f x]}{c f}+\frac{2 a^2 c \operatorname{Cos}[e+f x]^3}{f (c-c \operatorname{Sin}[e+f x])^2}$$

Result (type 3, 130 leaves):

$$\left(a^2\left(\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]-\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right)\left(\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right](3(e+f x)-\operatorname{Cos}[e+f x])+(-8-3 e-3 f x+\operatorname{Cos}[e+f x]) \operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right)(1+\operatorname{Sin}[e+f x])^2\right) \Big/ \left(c f\left(\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]+\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^4(-1+\operatorname{Sin}[e+f x])\right)$$

- **Problem 243: Result more than twice size of optimal antiderivative.**

$$\int \frac{(a+a \operatorname{Sin}[e+f x])^2}{(c-c \operatorname{Sin}[e+f x])^3} \, dx$$

Optimal (type 3, 34 leaves, 2 steps):

$$\frac{a^2 c^2 \operatorname{Cos}[e+f x]^5}{5 f (c-c \operatorname{Sin}[e+f x])^5}$$

Result (type 3, 81 leaves):

$$\frac{a^2 \left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)\left(-10\,\text{Sin}\left[\frac{1}{2}(e+f x)\right]-5\,\text{Sin}\left[\frac{3}{2}(e+f x)\right]+\text{Sin}\left[\frac{5}{2}(e+f x)\right]\right)}{10\,c^3 f\,(-1+\text{Sin}[e+f x])^3}$$

- **Problem 255: Result more than twice size of optimal antiderivative.**

$$\int \frac{(a+a\,\text{Sin}[e+f x])^3}{(c-c\,\text{Sin}[e+f x])^3}\,dx$$

Optimal (type 3, 106 leaves, 5 steps):

$$-\frac{a^3 x}{c^3}+\frac{2\,a^3 c^2\,\text{Cos}[e+f x]^5}{5\,f\,(c-c\,\text{Sin}[e+f x])^5}-\frac{2\,a^3\,\text{Cos}[e+f x]^3}{3\,f\,(c-c\,\text{Sin}[e+f x])^3}+\frac{2\,a^3\,\text{Cos}[e+f x]}{f\left(c^3-c^3\,\text{Sin}[e+f x]\right)}$$

Result (type 3, 249 leaves):

$$\frac{1}{15\,f\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^6 (c-c\,\text{Sin}[e+f x])^3}$$
$$\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)\left(24\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)-44\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^3-\right.$$
$$15\,(e+f x)\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^5+48\,\text{Sin}\left[\frac{1}{2}(e+f x)\right]-88\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^2\text{Sin}\left[\frac{1}{2}(e+f x)\right]+$$
$$\left.92\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^4\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)(a+a\,\text{Sin}[e+f x])^3$$

- **Problem 256: Result more than twice size of optimal antiderivative.**

$$\int \frac{(a+a\,\text{Sin}[e+f x])^3}{(c-c\,\text{Sin}[e+f x])^4}\,dx$$

Optimal (type 3, 34 leaves, 2 steps):

$$\frac{a^3 c^3\,\text{Cos}[e+f x]^7}{7\,f\,(c-c\,\text{Sin}[e+f x])^7}$$

Result (type 3, 93 leaves):

$$\left(a^3\left(35\,\text{Cos}\left[\frac{1}{2}(e+f x)\right]-21\,\text{Cos}\left[\frac{3}{2}(e+f x)\right]-7\,\text{Cos}\left[\frac{5}{2}(e+f x)\right]+\text{Cos}\left[\frac{7}{2}(e+f x)\right]\right)\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)\right)\Big/$$
$$\left(28\,c^4 f\,(-1+\text{Sin}[e+f x])^4\right)$$

- **Problem 263: Result more than twice size of optimal antiderivative.**

$$\int \frac{(c-c\,\text{Sin}[e+f x])^2}{a+a\,\text{Sin}[e+f x]}\,dx$$

Optimal (type 3, 56 leaves, 4 steps):

$$-\frac{3c^2x}{a}-\frac{3c^2\cos[e+fx]}{af}-\frac{2ac^2\cos[e+fx]^3}{f(a+a\sin[e+fx])^2}$$

Result (type 3, 129 leaves):

$$-\left(c^2\left(\cos\left[\frac{1}{2}(e+fx)\right]+\sin\left[\frac{1}{2}(e+fx)\right]\right)\left(\cos\left[\frac{1}{2}(e+fx)\right](3(e+fx)+\cos[e+fx])+(-8+3e+3fx+\cos[e+fx])\sin\left[\frac{1}{2}(e+fx)\right]\right)(-1+\sin[e+fx])^2\right)\Big/\left(af\left(\cos\left[\frac{1}{2}(e+fx)\right]-\sin\left[\frac{1}{2}(e+fx)\right]\right)^4(1+\sin[e+fx])\right)$$

Problem 264: Result more than twice size of optimal antiderivative.

$$\int\frac{c-c\sin[e+fx]}{a+a\sin[e+fx]}\,dx$$

Optimal (type 3, 32 leaves, 2 steps):

$$-\frac{cx}{a}-\frac{2c\cos[e+fx]}{f(a+a\sin[e+fx])}$$

Result (type 3, 79 leaves):

$$-\frac{c\left(fx\cos\left[\frac{fx}{2}\right]-4\sin\left[\frac{fx}{2}\right]+fx\sin\left[e+\frac{fx}{2}\right]\right)}{af\left(\cos\left[\frac{e}{2}\right]+\sin\left[\frac{e}{2}\right]\right)\left(\cos\left[\frac{1}{2}(e+fx)\right]+\sin\left[\frac{1}{2}(e+fx)\right]\right)}$$

Problem 271: Result more than twice size of optimal antiderivative.

$$\int\frac{(c-c\sin[e+fx])^3}{(a+a\sin[e+fx])^2}\,dx$$

Optimal (type 3, 90 leaves, 5 steps):

$$\frac{5c^3x}{a^2}+\frac{5c^3\cos[e+fx]}{a^2f}-\frac{2a^2c^3\cos[e+fx]^5}{3f(a+a\sin[e+fx])^4}+\frac{10c^3\cos[e+fx]^3}{3f(a+a\sin[e+fx])^2}$$

Result (type 3, 210 leaves):

$$\frac{1}{3f\left(\cos\left[\frac{1}{2}(e+fx)\right]-\sin\left[\frac{1}{2}(e+fx)\right]\right)^6(a+a\sin[e+fx])^2}\left(\cos\left[\frac{1}{2}(e+fx)\right]+\sin\left[\frac{1}{2}(e+fx)\right]\right)\left(16\sin\left[\frac{1}{2}(e+fx)\right]-8\left(\cos\left[\frac{1}{2}(e+fx)\right]+\sin\left[\frac{1}{2}(e+fx)\right]\right)-56\sin\left[\frac{1}{2}(e+fx)\right]\left(\cos\left[\frac{1}{2}(e+fx)\right]+\sin\left[\frac{1}{2}(e+fx)\right]\right)^2+15(e+fx)\left(\cos\left[\frac{1}{2}(e+fx)\right]+\sin\left[\frac{1}{2}(e+fx)\right]\right)^3+3\cos[e+fx]\left(\cos\left[\frac{1}{2}(e+fx)\right]+\sin\left[\frac{1}{2}(e+fx)\right]\right)^3\right)(c-c\sin[e+fx])^3$$

Problem 273: Result more than twice size of optimal antiderivative.

$$\int \frac{c - c \operatorname{Sin}[e + f x]}{(a + a \operatorname{Sin}[e + f x])^2} \, dx$$

Optimal (type 3, 29 leaves, 2 steps):

$$-\frac{a c \operatorname{Cos}[e + f x]^3}{3 f (a + a \operatorname{Sin}[e + f x])^3}$$

Result (type 3, 70 leaves):

$$\frac{c \left(-3 \operatorname{Cos}\left[e + \frac{f x}{2}\right] + \operatorname{Cos}\left[e + \frac{3 f x}{2}\right]\right)}{3 a^2 f \left(\operatorname{Cos}\left[\frac{e}{2}\right] + \operatorname{Sin}\left[\frac{e}{2}\right]\right) \left(\operatorname{Cos}\left[\frac{1}{2} (e + f x)\right] + \operatorname{Sin}\left[\frac{1}{2} (e + f x)\right]\right)^3}$$

Problem 280: Result more than twice size of optimal antiderivative.

$$\int \frac{(c - c \operatorname{Sin}[e + f x])^4}{(a + a \operatorname{Sin}[e + f x])^3} \, dx$$

Optimal (type 3, 124 leaves, 6 steps):

$$-\frac{7 c^4 x}{a^3} - \frac{7 c^4 \operatorname{Cos}[e + f x]}{a^3 f} - \frac{2 a^3 c^4 \operatorname{Cos}[e + f x]^7}{5 f (a + a \operatorname{Sin}[e + f x])^6} + \frac{14 a c^4 \operatorname{Cos}[e + f x]^5}{15 f (a + a \operatorname{Sin}[e + f x])^4} - \frac{14 c^4 \operatorname{Cos}[e + f x]^3}{3 a f (a + a \operatorname{Sin}[e + f x])^2}$$

Result (type 3, 270 leaves):

$$\frac{1}{15 f \left(\operatorname{Cos}\left[\frac{1}{2} (e + f x)\right] - \operatorname{Sin}\left[\frac{1}{2} (e + f x)\right]\right)^8 (a + a \operatorname{Sin}[e + f x])^3} \left(\operatorname{Cos}\left[\frac{1}{2} (e + f x)\right] + \operatorname{Sin}\left[\frac{1}{2} (e + f x)\right]\right)$$
$$\left(96 \operatorname{Sin}\left[\frac{1}{2} (e + f x)\right] - 48 \left(\operatorname{Cos}\left[\frac{1}{2} (e + f x)\right] + \operatorname{Sin}\left[\frac{1}{2} (e + f x)\right]\right) - 256 \operatorname{Sin}\left[\frac{1}{2} (e + f x)\right] \left(\operatorname{Cos}\left[\frac{1}{2} (e + f x)\right] + \operatorname{Sin}\left[\frac{1}{2} (e + f x)\right]\right)^2 +\right.$$
$$128 \left(\operatorname{Cos}\left[\frac{1}{2} (e + f x)\right] + \operatorname{Sin}\left[\frac{1}{2} (e + f x)\right]\right)^3 + 464 \operatorname{Sin}\left[\frac{1}{2} (e + f x)\right] \left(\operatorname{Cos}\left[\frac{1}{2} (e + f x)\right] + \operatorname{Sin}\left[\frac{1}{2} (e + f x)\right]\right)^4 -$$
$$\left.105 (e + f x) \left(\operatorname{Cos}\left[\frac{1}{2} (e + f x)\right] + \operatorname{Sin}\left[\frac{1}{2} (e + f x)\right]\right)^5 - 15 \operatorname{Cos}[e + f x] \left(\operatorname{Cos}\left[\frac{1}{2} (e + f x)\right] + \operatorname{Sin}\left[\frac{1}{2} (e + f x)\right]\right)^5\right) (c - c \operatorname{Sin}[e + f x])^4$$

Problem 281: Result more than twice size of optimal antiderivative.

$$\int \frac{(c - c \operatorname{Sin}[e + f x])^3}{(a + a \operatorname{Sin}[e + f x])^3} \, dx$$

Optimal (type 3, 103 leaves, 5 steps):

$$-\frac{c^3 x}{a^3} - \frac{2 a^2 c^3 \operatorname{Cos}[e + f x]^5}{5 f (a + a \operatorname{Sin}[e + f x])^5} + \frac{2 c^3 \operatorname{Cos}[e + f x]^3}{3 f (a + a \operatorname{Sin}[e + f x])^3} - \frac{2 c^3 \operatorname{Cos}[e + f x]}{f \left(a^3 + a^3 \operatorname{Sin}[e + f x]\right)}$$

Result (type 3, 239 leaves):

$$\frac{1}{15 f \left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^6 (a+a \text{Sin}[e+f x])^3}$$
$$\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)\left(48 \text{Sin}\left[\frac{1}{2}(e+f x)\right]-24\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)-\right.$$
$$88 \text{Sin}\left[\frac{1}{2}(e+f x)\right]\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^2+44\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^3+$$
$$\left.92 \text{Sin}\left[\frac{1}{2}(e+f x)\right]\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^4-15(e+f x)\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^5\right)(c-c \text{Sin}[e+f x])^3$$

- **Problem 282: Result more than twice size of optimal antiderivative.**

$$\int \frac{(c-c \text{Sin}[e+f x])^2}{(a+a \text{Sin}[e+f x])^3} \, dx$$

Optimal (type 3, 33 leaves, 2 steps):

$$-\frac{a^2 c^2 \text{Cos}[e+f x]^5}{5 f (a+a \text{Sin}[e+f x])^5}$$

Result (type 3, 81 leaves):

$$\frac{c^2\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)\left(10 \text{Sin}\left[\frac{1}{2}(e+f x)\right]+5 \text{Sin}\left[\frac{3}{2}(e+f x)\right]-\text{Sin}\left[\frac{5}{2}(e+f x)\right]\right)}{10 a^3 f (1+\text{Sin}[e+f x])^3}$$

- **Problem 293: Result more than twice size of optimal antiderivative.**

$$\int (a+a \text{Sin}[e+f x]) \sqrt{c-c \text{Sin}[e+f x]} \, dx$$

Optimal (type 3, 34 leaves, 2 steps):

$$\frac{2 a c^2 \text{Cos}[e+f x]^3}{3 f (c-c \text{Sin}[e+f x])^{3/2}}$$

Result (type 3, 71 leaves):

$$\frac{2 a \left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^3 \sqrt{c-c \text{Sin}[e+f x]}}{3 f \left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)}$$

- **Problem 294: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int \frac{a+a \text{Sin}[e+f x]}{\sqrt{c-c \text{Sin}[e+f x]}} \, dx$$

Optimal (type 3, 77 leaves, 4 steps):

$$\frac{2\sqrt{2}\,a\,\text{ArcTanh}\left[\frac{\sqrt{c}\,\text{Cos}[e+f\,x]}{\sqrt{2}\,\sqrt{c-c\,\text{Sin}[e+f\,x]}}\right]}{\sqrt{c}\,f}-\frac{2\,a\,\text{Cos}[e+f\,x]}{f\,\sqrt{c-c\,\text{Sin}[e+f\,x]}}$$

Result (type 3, 162 leaves):

$$-\left(2\,a\left(\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]-\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)\left(\sqrt{c}+\sqrt{c}\,\text{Sin}[e+f\,x]-i\sqrt{2}\,\text{Log}\left[\frac{2\left(-i\sqrt{2}\,\sqrt{c}+\sqrt{-c\,(1+\text{Sin}[e+f\,x])}\right)}{\sqrt{c-c\,\text{Sin}[e+f\,x]}}\right]\sqrt{-c\,(1+\text{Sin}[e+f\,x])}\right)\right)\Big/\left(\sqrt{c}\,f\left(\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)\sqrt{c-c\,\text{Sin}[e+f\,x]}\right)$$

- **Problem 295: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int\frac{a+a\,\text{Sin}[e+f\,x]}{(c-c\,\text{Sin}[e+f\,x])^{3/2}}\,dx$$

Optimal (type 3, 76 leaves, 4 steps):

$$-\frac{a\,\text{ArcTanh}\left[\frac{\sqrt{c}\,\text{Cos}[e+f\,x]}{\sqrt{2}\,\sqrt{c-c\,\text{Sin}[e+f\,x]}}\right]}{\sqrt{2}\,c^{3/2}\,f}+\frac{a\,\text{Cos}[e+f\,x]}{f\,(c-c\,\text{Sin}[e+f\,x])^{3/2}}$$

Result (type 3, 201 leaves):

$$\left(a\,\text{Sec}[e+f\,x]\left(2\sqrt{c}-i\sqrt{2}\,\text{Log}\left[\frac{2\left(-i\sqrt{2}\,\sqrt{c}+\sqrt{-c\,(1+\text{Sin}[e+f\,x])}\right)}{\sqrt{c-c\,\text{Sin}[e+f\,x]}}\right]\sqrt{-c\,(1+\text{Sin}[e+f\,x])}+\text{Sin}[e+f\,x]\left(2\sqrt{c}+i\sqrt{2}\,\text{Log}\left[\frac{2\left(-i\sqrt{2}\,\sqrt{c}+\sqrt{-c\,(1+\text{Sin}[e+f\,x])}\right)}{\sqrt{c-c\,\text{Sin}[e+f\,x]}}\right]\sqrt{-c\,(1+\text{Sin}[e+f\,x])}\right)\right)\right)\Big/\left(2\,c^{3/2}\,f\,\sqrt{c-c\,\text{Sin}[e+f\,x]}\right)$$

- **Problem 296: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int\frac{a+a\,\text{Sin}[e+f\,x]}{(c-c\,\text{Sin}[e+f\,x])^{5/2}}\,dx$$

Optimal (type 3, 113 leaves, 5 steps):

$$-\frac{a\,\text{ArcTanh}\left[\frac{\sqrt{c}\,\text{Cos}[e+f\,x]}{\sqrt{2}\,\sqrt{c-c\,\text{Sin}[e+f\,x]}}\right]}{8\sqrt{2}\,c^{5/2}\,f}+\frac{a\,\text{Cos}[e+f\,x]}{2\,f\,(c-c\,\text{Sin}[e+f\,x])^{5/2}}-\frac{a\,\text{Cos}[e+f\,x]}{8\,c\,f\,(c-c\,\text{Sin}[e+f\,x])^{3/2}}$$

Result (type 3, 334 leaves):

$$\left(a\left(14\sqrt{c}-3\,i\sqrt{2}\,\text{Log}\left[\frac{2\left(-i\sqrt{2}\sqrt{c}+\sqrt{-c\,(1+\text{Sin}[e+f\,x])}\right)}{\sqrt{c-c\,\text{Sin}[e+f\,x]}}\right]\sqrt{-c\,(1+\text{Sin}[e+f\,x])}-\text{Cos}[2\,(e+f\,x)]\left(2\sqrt{c}-i\sqrt{2}\,\text{Log}\left[\frac{2\left(-i\sqrt{2}\sqrt{c}+\sqrt{-c\,(1+\text{Sin}[e+f\,x])}\right)}{\sqrt{c-c\,\text{Sin}[e+f\,x]}}\right]\sqrt{-c\,(1+\text{Sin}[e+f\,x])}\right)+4\,\text{Sin}[e+f\,x]\left(4\sqrt{c}+i\sqrt{2}\,\text{Log}\left[\frac{2\left(-i\sqrt{2}\sqrt{c}+\sqrt{-c\,(1+\text{Sin}[e+f\,x])}\right)}{\sqrt{c-c\,\text{Sin}[e+f\,x]}}\right]\sqrt{-c\,(1+\text{Sin}[e+f\,x])}\right)\right)\right)\Big/\left(32\,c^{5/2}\,f\left(\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]-\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)^3\left(\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)\sqrt{c-c\,\text{Sin}[e+f\,x]}\right)$$

- **Problem 297: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int\frac{a+a\,\text{Sin}[e+f\,x]}{(c-c\,\text{Sin}[e+f\,x])^{7/2}}\,dx$$

Optimal (type 3, 145 leaves, 6 steps):

$$-\frac{a\,\text{ArcTanh}\left[\frac{\sqrt{c}\,\text{Cos}[e+f\,x]}{\sqrt{2}\sqrt{c-c\,\text{Sin}[e+f\,x]}}\right]}{32\sqrt{2}\,c^{7/2}\,f}+\frac{a\,\text{Cos}[e+f\,x]}{3\,f\,(c-c\,\text{Sin}[e+f\,x])^{7/2}}-\frac{a\,\text{Cos}[e+f\,x]}{24\,c\,f\,(c-c\,\text{Sin}[e+f\,x])^{5/2}}-\frac{a\,\text{Cos}[e+f\,x]}{32\,c^2\,f\,(c-c\,\text{Sin}[e+f\,x])^{3/2}}$$

Result (type 3, 426 leaves):

$$\left(a\left(6\left(38\sqrt{c}-5\,i\sqrt{2}\,\text{Log}\left[\frac{2\left(-i\sqrt{2}\sqrt{c}+\sqrt{-c\,(1+\text{Sin}[e+f\,x])}\right)}{\sqrt{c-c\,\text{Sin}[e+f\,x]}}\right]\sqrt{-c\,(1+\text{Sin}[e+f\,x])}\right)-2\,\text{Cos}[2\,(e+f\,x)]\left(14\sqrt{c}-9\,i\sqrt{2}\,\text{Log}\left[\frac{2\left(-i\sqrt{2}\sqrt{c}+\sqrt{-c\,(1+\text{Sin}[e+f\,x])}\right)}{\sqrt{c-c\,\text{Sin}[e+f\,x]}}\right]\sqrt{-c\,(1+\text{Sin}[e+f\,x])}\right)+\text{Sin}[e+f\,x]\left(262\sqrt{c}+45\,i\sqrt{2}\,\text{Log}\left[\frac{2\left(-i\sqrt{2}\sqrt{c}+\sqrt{-c\,(1+\text{Sin}[e+f\,x])}\right)}{\sqrt{c-c\,\text{Sin}[e+f\,x]}}\right]\sqrt{-c\,(1+\text{Sin}[e+f\,x])}\right)+3\left(2\sqrt{c}-i\sqrt{2}\,\text{Log}\left[\frac{2\left(-i\sqrt{2}\sqrt{c}+\sqrt{-c\,(1+\text{Sin}[e+f\,x])}\right)}{\sqrt{c-c\,\text{Sin}[e+f\,x]}}\right]\sqrt{-c\,(1+\text{Sin}[e+f\,x])}\right)\text{Sin}[3\,(e+f\,x)]\right)\right)\Big/\left(768\,c^{7/2}\,f\left(\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]-\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)^5\left(\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)\sqrt{c-c\,\text{Sin}[e+f\,x]}\right)$$

Problem 298: Result more than twice size of optimal antiderivative.

$$\int (a + a \, \text{Sin}[e + f x])^2 \, (c - c \, \text{Sin}[e + f x])^{7/2} \, dx$$

Optimal (type 3, 145 leaves, 5 steps):

$$\frac{256 a^2 c^6 \text{Cos}[e + f x]^5}{1155 f (c - c \, \text{Sin}[e + f x])^{5/2}} + \frac{64 a^2 c^5 \text{Cos}[e + f x]^5}{231 f (c - c \, \text{Sin}[e + f x])^{3/2}} + \frac{8 a^2 c^4 \text{Cos}[e + f x]^5}{33 f \sqrt{c - c \, \text{Sin}[e + f x]}} + \frac{2 a^2 c^3 \text{Cos}[e + f x]^5 \sqrt{c - c \, \text{Sin}[e + f x]}}{11 f}$$

Result (type 3, 1105 leaves):

$$\frac{7\,\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]\,(a+a\,\text{Sin}[e+f\,x])^2\,(c-c\,\text{Sin}[e+f\,x])^{7/2}}{8\,f\,\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^7\,\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^4}-$$

$$\frac{\text{Cos}\left[\frac{3}{2}\,(e+f\,x)\right]\,(a+a\,\text{Sin}[e+f\,x])^2\,(c-c\,\text{Sin}[e+f\,x])^{7/2}}{8\,f\,\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^7\,\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^4}+$$

$$\frac{11\,\text{Cos}\left[\frac{5}{2}\,(e+f\,x)\right]\,(a+a\,\text{Sin}[e+f\,x])^2\,(c-c\,\text{Sin}[e+f\,x])^{7/2}}{80\,f\,\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^7\,\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^4}+$$

$$\frac{\text{Cos}\left[\frac{7}{2}\,(e+f\,x)\right]\,(a+a\,\text{Sin}[e+f\,x])^2\,(c-c\,\text{Sin}[e+f\,x])^{7/2}}{112\,f\,\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^7\,\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^4}+$$

$$\frac{\text{Cos}\left[\frac{9}{2}\,(e+f\,x)\right]\,(a+a\,\text{Sin}[e+f\,x])^2\,(c-c\,\text{Sin}[e+f\,x])^{7/2}}{48\,f\,\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^7\,\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^4}+$$

$$\frac{\text{Cos}\left[\frac{11}{2}\,(e+f\,x)\right]\,(a+a\,\text{Sin}[e+f\,x])^2\,(c-c\,\text{Sin}[e+f\,x])^{7/2}}{176\,f\,\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^7\,\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^4}+$$

$$\frac{7\,\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\,(a+a\,\text{Sin}[e+f\,x])^2\,(c-c\,\text{Sin}[e+f\,x])^{7/2}}{8\,f\,\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^7\,\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^4}+$$

$$\frac{(a+a\,\text{Sin}[e+f\,x])^2\,(c-c\,\text{Sin}[e+f\,x])^{7/2}\,\text{Sin}\left[\frac{3}{2}\,(e+f\,x)\right]}{8\,f\,\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^7\,\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^4}+$$

$$\frac{11\,(a+a\,\text{Sin}[e+f\,x])^2\,(c-c\,\text{Sin}[e+f\,x])^{7/2}\,\text{Sin}\left[\frac{5}{2}\,(e+f\,x)\right]}{80\,f\,\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^7\,\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^4}-$$

$$\frac{(a+a\,\text{Sin}[e+f\,x])^2\,(c-c\,\text{Sin}[e+f\,x])^{7/2}\,\text{Sin}\left[\frac{7}{2}\,(e+f\,x)\right]}{112\,f\,\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^7\,\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^4}+$$

$$\frac{(a+a\,\text{Sin}[e+f\,x])^2\,(c-c\,\text{Sin}[e+f\,x])^{7/2}\,\text{Sin}\left[\frac{9}{2}\,(e+f\,x)\right]}{48\,f\,\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^7\,\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^4}-$$

$$\frac{(a+a\,\text{Sin}[e+f\,x])^2\,(c-c\,\text{Sin}[e+f\,x])^{7/2}\,\text{Sin}\left[\frac{11}{2}\,(e+f\,x)\right]}{176\,f\,\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^7\,\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^4}$$

Problem 299: Result more than twice size of optimal antiderivative.

$$\int (a + a \operatorname{Sin}[e + f x])^2 (c - c \operatorname{Sin}[e + f x])^{5/2} \, dx$$

Optimal (type 3, 109 leaves, 4 steps):

$$\frac{64 a^2 c^5 \operatorname{Cos}[e + f x]^5}{315 f (c - c \operatorname{Sin}[e + f x])^{5/2}} + \frac{16 a^2 c^4 \operatorname{Cos}[e + f x]^5}{63 f (c - c \operatorname{Sin}[e + f x])^{3/2}} + \frac{2 a^2 c^3 \operatorname{Cos}[e + f x]^5}{9 f \sqrt{c - c \operatorname{Sin}[e + f x]}}$$

Result (type 3, 921 leaves):

$$\frac{3 \operatorname{Cos}\left[\frac{1}{2} (e + f x)\right] (a + a \operatorname{Sin}[e + f x])^2 (c - c \operatorname{Sin}[e + f x])^{5/2}}{4 f \left(\operatorname{Cos}\left[\frac{1}{2} (e + f x)\right] - \operatorname{Sin}\left[\frac{1}{2} (e + f x)\right]\right)^5 \left(\operatorname{Cos}\left[\frac{1}{2} (e + f x)\right] + \operatorname{Sin}\left[\frac{1}{2} (e + f x)\right]\right)^4} -$$
$$\frac{\operatorname{Cos}\left[\frac{3}{2} (e + f x)\right] (a + a \operatorname{Sin}[e + f x])^2 (c - c \operatorname{Sin}[e + f x])^{5/2}}{6 f \left(\operatorname{Cos}\left[\frac{1}{2} (e + f x)\right] - \operatorname{Sin}\left[\frac{1}{2} (e + f x)\right]\right)^5 \left(\operatorname{Cos}\left[\frac{1}{2} (e + f x)\right] + \operatorname{Sin}\left[\frac{1}{2} (e + f x)\right]\right)^4} +$$
$$\frac{\operatorname{Cos}\left[\frac{5}{2} (e + f x)\right] (a + a \operatorname{Sin}[e + f x])^2 (c - c \operatorname{Sin}[e + f x])^{5/2}}{10 f \left(\operatorname{Cos}\left[\frac{1}{2} (e + f x)\right] - \operatorname{Sin}\left[\frac{1}{2} (e + f x)\right]\right)^5 \left(\operatorname{Cos}\left[\frac{1}{2} (e + f x)\right] + \operatorname{Sin}\left[\frac{1}{2} (e + f x)\right]\right)^4} -$$
$$\frac{\operatorname{Cos}\left[\frac{7}{2} (e + f x)\right] (a + a \operatorname{Sin}[e + f x])^2 (c - c \operatorname{Sin}[e + f x])^{5/2}}{56 f \left(\operatorname{Cos}\left[\frac{1}{2} (e + f x)\right] - \operatorname{Sin}\left[\frac{1}{2} (e + f x)\right]\right)^5 \left(\operatorname{Cos}\left[\frac{1}{2} (e + f x)\right] + \operatorname{Sin}\left[\frac{1}{2} (e + f x)\right]\right)^4} +$$
$$\frac{\operatorname{Cos}\left[\frac{9}{2} (e + f x)\right] (a + a \operatorname{Sin}[e + f x])^2 (c - c \operatorname{Sin}[e + f x])^{5/2}}{72 f \left(\operatorname{Cos}\left[\frac{1}{2} (e + f x)\right] - \operatorname{Sin}\left[\frac{1}{2} (e + f x)\right]\right)^5 \left(\operatorname{Cos}\left[\frac{1}{2} (e + f x)\right] + \operatorname{Sin}\left[\frac{1}{2} (e + f x)\right]\right)^4} +$$
$$\frac{3 \operatorname{Sin}\left[\frac{1}{2} (e + f x)\right] (a + a \operatorname{Sin}[e + f x])^2 (c - c \operatorname{Sin}[e + f x])^{5/2}}{4 f \left(\operatorname{Cos}\left[\frac{1}{2} (e + f x)\right] - \operatorname{Sin}\left[\frac{1}{2} (e + f x)\right]\right)^5 \left(\operatorname{Cos}\left[\frac{1}{2} (e + f x)\right] + \operatorname{Sin}\left[\frac{1}{2} (e + f x)\right]\right)^4} +$$
$$\frac{(a + a \operatorname{Sin}[e + f x])^2 (c - c \operatorname{Sin}[e + f x])^{5/2} \operatorname{Sin}\left[\frac{3}{2} (e + f x)\right]}{6 f \left(\operatorname{Cos}\left[\frac{1}{2} (e + f x)\right] - \operatorname{Sin}\left[\frac{1}{2} (e + f x)\right]\right)^5 \left(\operatorname{Cos}\left[\frac{1}{2} (e + f x)\right] + \operatorname{Sin}\left[\frac{1}{2} (e + f x)\right]\right)^4} +$$
$$\frac{(a + a \operatorname{Sin}[e + f x])^2 (c - c \operatorname{Sin}[e + f x])^{5/2} \operatorname{Sin}\left[\frac{5}{2} (e + f x)\right]}{10 f \left(\operatorname{Cos}\left[\frac{1}{2} (e + f x)\right] - \operatorname{Sin}\left[\frac{1}{2} (e + f x)\right]\right)^5 \left(\operatorname{Cos}\left[\frac{1}{2} (e + f x)\right] + \operatorname{Sin}\left[\frac{1}{2} (e + f x)\right]\right)^4} +$$
$$\frac{(a + a \operatorname{Sin}[e + f x])^2 (c - c \operatorname{Sin}[e + f x])^{5/2} \operatorname{Sin}\left[\frac{7}{2} (e + f x)\right]}{56 f \left(\operatorname{Cos}\left[\frac{1}{2} (e + f x)\right] - \operatorname{Sin}\left[\frac{1}{2} (e + f x)\right]\right)^5 \left(\operatorname{Cos}\left[\frac{1}{2} (e + f x)\right] + \operatorname{Sin}\left[\frac{1}{2} (e + f x)\right]\right)^4} +$$
$$\frac{(a + a \operatorname{Sin}[e + f x])^2 (c - c \operatorname{Sin}[e + f x])^{5/2} \operatorname{Sin}\left[\frac{9}{2} (e + f x)\right]}{72 f \left(\operatorname{Cos}\left[\frac{1}{2} (e + f x)\right] - \operatorname{Sin}\left[\frac{1}{2} (e + f x)\right]\right)^5 \left(\operatorname{Cos}\left[\frac{1}{2} (e + f x)\right] + \operatorname{Sin}\left[\frac{1}{2} (e + f x)\right]\right)^4}$$

Problem 301: Result more than twice size of optimal antiderivative.

$$\int (a+a\,\text{Sin}[e+f\,x])^2\,\sqrt{c-c\,\text{Sin}[e+f\,x]}\,dx$$

Optimal (type 3, 36 leaves, 2 steps):

$$\frac{2\,a^2\,c^3\,\text{Cos}[e+f\,x]^5}{5\,f\,(c-c\,\text{Sin}[e+f\,x])^{5/2}}$$

Result (type 3, 73 leaves):

$$\frac{2\,a^2\,\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^5\,\sqrt{c-c\,\text{Sin}[e+f\,x]}}{5\,f\,\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)}$$

Problem 302: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{(a+a\,\text{Sin}[e+f\,x])^2}{\sqrt{c-c\,\text{Sin}[e+f\,x]}}\,dx$$

Optimal (type 3, 115 leaves, 5 steps):

$$\frac{4\,\sqrt{2}\,a^2\,\text{ArcTanh}\left[\frac{\sqrt{c}\,\text{Cos}[e+f\,x]}{\sqrt{2}\,\sqrt{c-c\,\text{Sin}[e+f\,x]}}\right]}{\sqrt{c}\,f}-\frac{2\,a^2\,c\,\text{Cos}[e+f\,x]^3}{3\,f\,(c-c\,\text{Sin}[e+f\,x])^{3/2}}-\frac{4\,a^2\,\text{Cos}[e+f\,x]}{f\,\sqrt{c-c\,\text{Sin}[e+f\,x]}}$$

Result (type 3, 130 leaves):

$$-\frac{1}{3\,f\,\sqrt{c-c\,\text{Sin}[e+f\,x]}}\,a^2\,\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)\,\left((24+24\,i)\,(-1)^{1/4}\,\text{ArcTan}\left[\left(\frac{1}{2}+\frac{i}{2}\right)\,(-1)^{1/4}\,\left(1+\text{Tan}\left[\frac{1}{4}\,(e+f\,x)\right]\right)\right]+15\,\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]-\text{Cos}\left[\frac{3}{2}\,(e+f\,x)\right]+15\,\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{3}{2}\,(e+f\,x)\right]\right)$$

Problem 303: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{(a+a\,\text{Sin}[e+f\,x])^2}{(c-c\,\text{Sin}[e+f\,x])^{3/2}}\,dx$$

Optimal (type 3, 115 leaves, 5 steps):

$$-\frac{3\,\sqrt{2}\,a^2\,\text{ArcTanh}\left[\frac{\sqrt{c}\,\text{Cos}[e+f\,x]}{\sqrt{2}\,\sqrt{c-c\,\text{Sin}[e+f\,x]}}\right]}{c^{3/2}\,f}+\frac{a^2\,c\,\text{Cos}[e+f\,x]^3}{f\,(c-c\,\text{Sin}[e+f\,x])^{5/2}}+\frac{3\,a^2\,\text{Cos}[e+f\,x]}{c\,f\,\sqrt{c-c\,\text{Sin}[e+f\,x]}}$$

Result (type 3, 149 leaves):

$$-\left(a^2\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)\left(3\,\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Cos}\left[\frac{3}{2}(e+f x)\right]+3\,\text{Sin}\left[\frac{1}{2}(e+f x)\right]-(6+6\,i)\,(-1)^{1/4}\,\text{ArcTan}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{1/4}\left(1+\text{Tan}\left[\frac{1}{4}(e+f x)\right]\right)\right](-1+\text{Sin}[e+f x])-\text{Sin}\left[\frac{3}{2}(e+f x)\right]\right)\right)\Big/\left(c\,f\,(-1+\text{Sin}[e+f x])\sqrt{c-c\,\text{Sin}[e+f x]}\right)$$

Problem 304: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{(a+a\,\text{Sin}[e+f x])^2}{(c-c\,\text{Sin}[e+f x])^{5/2}}\,dx$$

Optimal (type 3, 122 leaves, 5 steps):

$$\frac{3\,a^2\,\text{ArcTanh}\left[\frac{\sqrt{c}\,\text{Cos}[e+f x]}{\sqrt{2}\,\sqrt{c-c\,\text{Sin}[e+f x]}}\right]}{4\,\sqrt{2}\,c^{5/2}\,f}+\frac{a^2\,c\,\text{Cos}[e+f x]^3}{2\,f\,(c-c\,\text{Sin}[e+f x])^{7/2}}-\frac{3\,a^2\,\text{Cos}[e+f x]}{4\,c\,f\,(c-c\,\text{Sin}[e+f x])^{3/2}}$$

Result (type 3, 163 leaves):

$$\left(a^2\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)\left(3\,\text{Cos}\left[\frac{1}{2}(e+f x)\right]-5\,\text{Cos}\left[\frac{3}{2}(e+f x)\right]+3\,\text{Sin}\left[\frac{1}{2}(e+f x)\right]+(3+3\,i)\,(-1)^{1/4}\,\text{ArcTan}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{1/4}\left(1+\text{Tan}\left[\frac{1}{4}(e+f x)\right]\right)\right](-3+\text{Cos}[2(e+f x)]+4\,\text{Sin}[e+f x])+5\,\text{Sin}\left[\frac{3}{2}(e+f x)\right]\right)\right)\Big/\left(8\,c^2\,f\,(-1+\text{Sin}[e+f x])^2\sqrt{c-c\,\text{Sin}[e+f x]}\right)$$

Problem 305: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{(a+a\,\text{Sin}[e+f x])^2}{(c-c\,\text{Sin}[e+f x])^{7/2}}\,dx$$

Optimal (type 3, 156 leaves, 6 steps):

$$\frac{a^2\,\text{ArcTanh}\left[\frac{\sqrt{c}\,\text{Cos}[e+f x]}{\sqrt{2}\,\sqrt{c-c\,\text{Sin}[e+f x]}}\right]}{16\,\sqrt{2}\,c^{7/2}\,f}+\frac{a^2\,c\,\text{Cos}[e+f x]^3}{3\,f\,(c-c\,\text{Sin}[e+f x])^{9/2}}-\frac{a^2\,\text{Cos}[e+f x]}{4\,c\,f\,(c-c\,\text{Sin}[e+f x])^{5/2}}+\frac{a^2\,\text{Cos}[e+f x]}{16\,c^2\,f\,(c-c\,\text{Sin}[e+f x])^{3/2}}$$

Result (type 3, 307 leaves):

$$\frac{1}{48 f \left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^4 (c-c\,\text{Sin}[e+f x])^{7/2}} a^2 \left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right) \left(32 \left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)-28 \left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^3+3 \left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^5 - (3+3 i) (-1)^{1/4} \text{ArcTan}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{1/4}\left(1+\text{Tan}\left[\frac{1}{4}(e+f x)\right]\right)\right] \left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^6+64\,\text{Sin}\left[\frac{1}{2}(e+f x)\right] - 56 \left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^2 \text{Sin}\left[\frac{1}{2}(e+f x)\right]+6 \left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^4 \text{Sin}\left[\frac{1}{2}(e+f x)\right]\right) (1+\text{Sin}[e+f x])^2$$

- **Problem 306: Result unnecessarily involves imaginary or complex numbers.**

$$\int \frac{(a+a\,\text{Sin}[e+f x])^2}{(c-c\,\text{Sin}[e+f x])^{9/2}}\, dx$$

Optimal (type 3, 190 leaves, 7 steps):

$$\frac{3 a^2 \text{ArcTanh}\left[\frac{\sqrt{c}\,\text{Cos}[e+f x]}{\sqrt{2}\sqrt{c-c\,\text{Sin}[e+f x]}}\right]}{256 \sqrt{2}\, c^{9/2} f}+\frac{a^2 c\,\text{Cos}[e+f x]^3}{4 f (c-c\,\text{Sin}[e+f x])^{11/2}}-\frac{a^2 \text{Cos}[e+f x]}{8 c f (c-c\,\text{Sin}[e+f x])^{7/2}}+\frac{a^2 \text{Cos}[e+f x]}{64 c^2 f (c-c\,\text{Sin}[e+f x])^{5/2}}+\frac{3 a^2 \text{Cos}[e+f x]}{256 c^3 f (c-c\,\text{Sin}[e+f x])^{3/2}}$$

Result (type 3, 371 leaves):

$$\frac{1}{256 f \left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^4 (c-c\,\text{Sin}[e+f x])^{9/2}} a^2 \left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right) \left(128 \left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right) - 96 \left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^3+4 \left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^5+3 \left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^7 - (3+3 i) (-1)^{1/4} \text{ArcTan}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{1/4}\left(1+\text{Tan}\left[\frac{1}{4}(e+f x)\right]\right)\right] \left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^8 + 256\,\text{Sin}\left[\frac{1}{2}(e+f x)\right]-192 \left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^2 \text{Sin}\left[\frac{1}{2}(e+f x)\right] + 8 \left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^4 \text{Sin}\left[\frac{1}{2}(e+f x)\right]+6 \left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^6 \text{Sin}\left[\frac{1}{2}(e+f x)\right]\right) (1+\text{Sin}[e+f x])^2$$

- **Problem 307: Result more than twice size of optimal antiderivative.**

$$\int (a+a\,\text{Sin}[e+f x])^3 (c-c\,\text{Sin}[e+f x])^{7/2}\, dx$$

Optimal (type 3, 145 leaves, 5 steps):

$$\frac{256 a^3 c^7 \text{Cos}[e+f x]^7}{3003 f (c-c \text{Sin}[e+f x])^{7/2}}+\frac{64 a^3 c^6 \text{Cos}[e+f x]^7}{429 f (c-c \text{Sin}[e+f x])^{5/2}}+\frac{24 a^3 c^5 \text{Cos}[e+f x]^7}{143 f (c-c \text{Sin}[e+f x])^{3/2}}+\frac{2 a^3 c^4 \text{Cos}[e+f x]^7}{13 f \sqrt{c-c \text{Sin}[e+f x]}}$$

Result (type 3, 1289 leaves):

$$\frac{5 \text{Cos}\left[\frac{1}{2} (e+f x)\right] (a+a \text{Sin}[e+f x])^3 (c-c \text{Sin}[e+f x])^{7/2}}{8 f \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]-\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^7 \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]+\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^6}-$$
$$\frac{5 \text{Cos}\left[\frac{3}{2} (e+f x)\right] (a+a \text{Sin}[e+f x])^3 (c-c \text{Sin}[e+f x])^{7/2}}{32 f \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]-\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^7 \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]+\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^6}+$$
$$\frac{3 \text{Cos}\left[\frac{5}{2} (e+f x)\right] (a+a \text{Sin}[e+f x])^3 (c-c \text{Sin}[e+f x])^{7/2}}{32 f \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]-\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^7 \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]+\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^6}-$$
$$\frac{3 \text{Cos}\left[\frac{7}{2} (e+f x)\right] (a+a \text{Sin}[e+f x])^3 (c-c \text{Sin}[e+f x])^{7/2}}{112 f \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]-\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^7 \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]+\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^6}+$$
$$\frac{\text{Cos}\left[\frac{9}{2} (e+f x)\right] (a+a \text{Sin}[e+f x])^3 (c-c \text{Sin}[e+f x])^{7/2}}{48 f \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]-\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^7 \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]+\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^6}-$$
$$\frac{\text{Cos}\left[\frac{11}{2} (e+f x)\right] (a+a \text{Sin}[e+f x])^3 (c-c \text{Sin}[e+f x])^{7/2}}{352 f \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]-\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^7 \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]+\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^6}+$$
$$\frac{\text{Cos}\left[\frac{13}{2} (e+f x)\right] (a+a \text{Sin}[e+f x])^3 (c-c \text{Sin}[e+f x])^{7/2}}{416 f \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]-\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^7 \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]+\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^6}+$$
$$\frac{5 \text{Sin}\left[\frac{1}{2} (e+f x)\right] (a+a \text{Sin}[e+f x])^3 (c-c \text{Sin}[e+f x])^{7/2}}{8 f \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]-\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^7 \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]+\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^6}+$$
$$\frac{5 (a+a \text{Sin}[e+f x])^3 (c-c \text{Sin}[e+f x])^{7/2} \text{Sin}\left[\frac{3}{2} (e+f x)\right]}{32 f \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]-\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^7 \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]+\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^6}+$$
$$\frac{3 (a+a \text{Sin}[e+f x])^3 (c-c \text{Sin}[e+f x])^{7/2} \text{Sin}\left[\frac{5}{2} (e+f x)\right]}{32 f \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]-\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^7 \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]+\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^6}+$$
$$\frac{3 (a+a \text{Sin}[e+f x])^3 (c-c \text{Sin}[e+f x])^{7/2} \text{Sin}\left[\frac{7}{2} (e+f x)\right]}{112 f \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]-\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^7 \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]+\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^6}+$$

$$\frac{(a+a\,\mathrm{Sin}[e+f\,x])^3\,(c-c\,\mathrm{Sin}[e+f\,x])^{7/2}\,\mathrm{Sin}\left[\frac{9}{2}\,(e+f\,x)\right]}{48\,f\,\left(\mathrm{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^7\,\left(\mathrm{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^6}+$$

$$\frac{(a+a\,\mathrm{Sin}[e+f\,x])^3\,(c-c\,\mathrm{Sin}[e+f\,x])^{7/2}\,\mathrm{Sin}\left[\frac{11}{2}\,(e+f\,x)\right]}{352\,f\,\left(\mathrm{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^7\,\left(\mathrm{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^6}+$$

$$\frac{(a+a\,\mathrm{Sin}[e+f\,x])^3\,(c-c\,\mathrm{Sin}[e+f\,x])^{7/2}\,\mathrm{Sin}\left[\frac{13}{2}\,(e+f\,x)\right]}{416\,f\,\left(\mathrm{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^7\,\left(\mathrm{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^6}$$

- **Problem 308: Result more than twice size of optimal antiderivative.**

$$\int (a+a\,\mathrm{Sin}[e+f\,x])^3\,(c-c\,\mathrm{Sin}[e+f\,x])^{5/2}\,dx$$

Optimal (type 3, 109 leaves, 4 steps) :

$$\frac{64\,a^3\,c^6\,\mathrm{Cos}[e+f\,x]^7}{693\,f\,(c-c\,\mathrm{Sin}[e+f\,x])^{7/2}}+\frac{16\,a^3\,c^5\,\mathrm{Cos}[e+f\,x]^7}{99\,f\,(c-c\,\mathrm{Sin}[e+f\,x])^{5/2}}+\frac{2\,a^3\,c^4\,\mathrm{Cos}[e+f\,x]^7}{11\,f\,(c-c\,\mathrm{Sin}[e+f\,x])^{3/2}}$$

Result (type 3, 1105 leaves) :

$$\frac{5\,\text{Cos}\left[\frac{1}{2}(e+f x)\right](a+a\,\text{Sin}[e+f x])^3(c-c\,\text{Sin}[e+f x])^{5/2}}{8 f\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^5\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^6}-$$

$$\frac{5\,\text{Cos}\left[\frac{3}{2}(e+f x)\right](a+a\,\text{Sin}[e+f x])^3(c-c\,\text{Sin}[e+f x])^{5/2}}{24 f\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^5\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^6}+$$

$$\frac{\text{Cos}\left[\frac{5}{2}(e+f x)\right](a+a\,\text{Sin}[e+f x])^3(c-c\,\text{Sin}[e+f x])^{5/2}}{16 f\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^5\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^6}-$$

$$\frac{5\,\text{Cos}\left[\frac{7}{2}(e+f x)\right](a+a\,\text{Sin}[e+f x])^3(c-c\,\text{Sin}[e+f x])^{5/2}}{112 f\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^5\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^6}+$$

$$\frac{\text{Cos}\left[\frac{9}{2}(e+f x)\right](a+a\,\text{Sin}[e+f x])^3(c-c\,\text{Sin}[e+f x])^{5/2}}{144 f\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^5\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^6}-$$

$$\frac{\text{Cos}\left[\frac{11}{2}(e+f x)\right](a+a\,\text{Sin}[e+f x])^3(c-c\,\text{Sin}[e+f x])^{5/2}}{176 f\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^5\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^6}+$$

$$\frac{5\,\text{Sin}\left[\frac{1}{2}(e+f x)\right](a+a\,\text{Sin}[e+f x])^3(c-c\,\text{Sin}[e+f x])^{5/2}}{8 f\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^5\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^6}+$$

$$\frac{5(a+a\,\text{Sin}[e+f x])^3(c-c\,\text{Sin}[e+f x])^{5/2}\,\text{Sin}\left[\frac{3}{2}(e+f x)\right]}{24 f\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^5\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^6}+$$

$$\frac{(a+a\,\text{Sin}[e+f x])^3(c-c\,\text{Sin}[e+f x])^{5/2}\,\text{Sin}\left[\frac{5}{2}(e+f x)\right]}{16 f\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^5\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^6}+$$

$$\frac{5(a+a\,\text{Sin}[e+f x])^3(c-c\,\text{Sin}[e+f x])^{5/2}\,\text{Sin}\left[\frac{7}{2}(e+f x)\right]}{112 f\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^5\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^6}+$$

$$\frac{(a+a\,\text{Sin}[e+f x])^3(c-c\,\text{Sin}[e+f x])^{5/2}\,\text{Sin}\left[\frac{9}{2}(e+f x)\right]}{144 f\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^5\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^6}+$$

$$\frac{(a+a\,\text{Sin}[e+f x])^3(c-c\,\text{Sin}[e+f x])^{5/2}\,\text{Sin}\left[\frac{11}{2}(e+f x)\right]}{176 f\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^5\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^6}$$

Problem 310: Result more than twice size of optimal antiderivative.

$$\int (a+a\,\text{Sin}[e+f\,x])^3\,\sqrt{c-c\,\text{Sin}[e+f\,x]}\,dx$$

Optimal (type 3, 36 leaves, 2 steps):

$$\frac{2\,a^3\,c^4\,\text{Cos}[e+f\,x]^7}{7\,f\,(c-c\,\text{Sin}[e+f\,x])^{7/2}}$$

Result (type 3, 73 leaves):

$$\frac{2\,a^3\,\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^7\,\sqrt{c-c\,\text{Sin}[e+f\,x]}}{7\,f\,\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)}$$

Problem 311: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{(a+a\,\text{Sin}[e+f\,x])^3}{\sqrt{c-c\,\text{Sin}[e+f\,x]}}\,dx$$

Optimal (type 3, 151 leaves, 6 steps):

$$\frac{8\,\sqrt{2}\,a^3\,\text{ArcTanh}\left[\frac{\sqrt{c}\,\text{Cos}[e+f\,x]}{\sqrt{2}\,\sqrt{c-c\,\text{Sin}[e+f\,x]}}\right]}{\sqrt{c}\,f}-\frac{2\,a^3\,c^2\,\text{Cos}[e+f\,x]^5}{5\,f\,(c-c\,\text{Sin}[e+f\,x])^{5/2}}-\frac{4\,a^3\,c\,\text{Cos}[e+f\,x]^3}{3\,f\,(c-c\,\text{Sin}[e+f\,x])^{3/2}}-\frac{8\,a^3\,\text{Cos}[e+f\,x]}{f\,\sqrt{c-c\,\text{Sin}[e+f\,x]}}$$

Result (type 3, 156 leaves):

$$-\frac{1}{30\,f\,\sqrt{c-c\,\text{Sin}[e+f\,x]}}$$
$$a^3\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)\left((480+480\,i)\,(-1)^{1/4}\,\text{ArcTan}\left[\left(\frac{1}{2}+\frac{i}{2}\right)\,(-1)^{1/4}\,\left(1+\text{Tan}\left[\frac{1}{4}\,(e+f\,x)\right]\right)\right]+330\,\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]-\right.$$
$$\left.35\,\text{Cos}\left[\frac{3}{2}\,(e+f\,x)\right]-3\,\text{Cos}\left[\frac{5}{2}\,(e+f\,x)\right]+330\,\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]+35\,\text{Sin}\left[\frac{3}{2}\,(e+f\,x)\right]-3\,\text{Sin}\left[\frac{5}{2}\,(e+f\,x)\right]\right)$$

Problem 312: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{(a+a\,\text{Sin}[e+f\,x])^3}{(c-c\,\text{Sin}[e+f\,x])^{3/2}}\,dx$$

Optimal (type 3, 150 leaves, 6 steps):

$$-\frac{10\,\sqrt{2}\,a^3\,\text{ArcTanh}\left[\frac{\sqrt{c}\,\text{Cos}[e+f\,x]}{\sqrt{2}\,\sqrt{c-c\,\text{Sin}[e+f\,x]}}\right]}{c^{3/2}\,f}+\frac{a^3\,c^2\,\text{Cos}[e+f\,x]^5}{f\,(c-c\,\text{Sin}[e+f\,x])^{7/2}}+\frac{5\,a^3\,\text{Cos}[e+f\,x]^3}{3\,f\,(c-c\,\text{Sin}[e+f\,x])^{3/2}}+\frac{10\,a^3\,\text{Cos}[e+f\,x]}{c\,f\,\sqrt{c-c\,\text{Sin}[e+f\,x]}}$$

Result (type 3, 173 leaves):

$$-\left(a^3 \left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right) \left(50 \text{Cos}\left[\frac{1}{2}(e+f x)\right]+25 \text{Cos}\left[\frac{3}{2}(e+f x)\right]+\text{Cos}\left[\frac{5}{2}(e+f x)\right]+50 \text{Sin}\left[\frac{1}{2}(e+f x)\right]-(120+120 i)(-1)^{1/4} \text{ArcTan}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{1/4}\left(1+\text{Tan}\left[\frac{1}{4}(e+f x)\right]\right)\right](-1+\text{Sin}[e+f x])-25 \text{Sin}\left[\frac{3}{2}(e+f x)\right]+\text{Sin}\left[\frac{5}{2}(e+f x)\right]\right)\right) \Big/ \left(6 c f (-1+\text{Sin}[e+f x]) \sqrt{c-c \text{Sin}[e+f x]}\right)$$

Problem 313: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{(a+a \text{Sin}[e+f x])^3}{(c-c \text{Sin}[e+f x])^{5/2}} \, dx$$

Optimal (type 3, 157 leaves, 6 steps):

$$\frac{15 a^3 \text{ArcTanh}\left[\frac{\sqrt{c} \text{Cos}[e+f x]}{\sqrt{2} \sqrt{c-c \text{Sin}[e+f x]}}\right]}{2 \sqrt{2} c^{5/2} f}+\frac{a^3 c^2 \text{Cos}[e+f x]^5}{2 f (c-c \text{Sin}[e+f x])^{9/2}}-\frac{5 a^3 \text{Cos}[e+f x]^3}{4 f (c-c \text{Sin}[e+f x])^{5/2}}-\frac{15 a^3 \text{Cos}[e+f x]}{4 c^2 f \sqrt{c-c \text{Sin}[e+f x]}}$$

Result (type 3, 187 leaves):

$$\left(a^3 \left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right) \left(-5 \text{Cos}\left[\frac{1}{2}(e+f x)\right]-15 \text{Cos}\left[\frac{3}{2}(e+f x)\right]+2 \text{Cos}\left[\frac{5}{2}(e+f x)\right]-5 \text{Sin}\left[\frac{1}{2}(e+f x)\right]+(15+15 i)(-1)^{1/4} \text{ArcTan}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{1/4}\left(1+\text{Tan}\left[\frac{1}{4}(e+f x)\right]\right)\right](-3+\text{Cos}[2(e+f x)]+4 \text{Sin}[e+f x])+15 \text{Sin}\left[\frac{3}{2}(e+f x)\right]+2 \text{Sin}\left[\frac{5}{2}(e+f x)\right]\right)\right) \Big/ \left(4 c^2 f (-1+\text{Sin}[e+f x])^2 \sqrt{c-c \text{Sin}[e+f x]}\right)$$

Problem 314: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{(a+a \text{Sin}[e+f x])^3}{(c-c \text{Sin}[e+f x])^{7/2}} \, dx$$

Optimal (type 3, 157 leaves, 6 steps):

$$-\frac{5 a^3 \text{ArcTanh}\left[\frac{\sqrt{c} \text{Cos}[e+f x]}{\sqrt{2} \sqrt{c-c \text{Sin}[e+f x]}}\right]}{8 \sqrt{2} c^{7/2} f}+\frac{a^3 c^2 \text{Cos}[e+f x]^5}{3 f (c-c \text{Sin}[e+f x])^{11/2}}-\frac{5 a^3 \text{Cos}[e+f x]^3}{12 f (c-c \text{Sin}[e+f x])^{7/2}}+\frac{5 a^3 \text{Cos}[e+f x]}{8 c^2 f (c-c \text{Sin}[e+f x])^{3/2}}$$

Result (type 3, 307 leaves):

$$\frac{1}{24 f \left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^6 (c-c \,\text{Sin}[e+f x])^{7/2}} a^3 \left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right) \left(32 \left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)-52 \left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^3+33 \left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^5+(15+15 i)(-1)^{1/4} \text{ArcTan}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{1/4}\left(1+\text{Tan}\left[\frac{1}{4}(e+f x)\right]\right)\right] \left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^6+64 \,\text{Sin}\left[\frac{1}{2}(e+f x)\right]-104 \left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^2 \text{Sin}\left[\frac{1}{2}(e+f x)\right]+66 \left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^4 \text{Sin}\left[\frac{1}{2}(e+f x)\right]\right) (1+\text{Sin}[e+f x])^3$$

- **Problem 315: Result unnecessarily involves imaginary or complex numbers.**

$$\int \frac{(a+a \,\text{Sin}[e+f x])^3}{(c-c \,\text{Sin}[e+f x])^{9/2}} \, dx$$

Optimal (type 3, 191 leaves, 7 steps):

$$-\frac{5 a^3 \text{ArcTanh}\left[\frac{\sqrt{c} \,\text{Cos}[e+f x]}{\sqrt{2} \sqrt{c-c \,\text{Sin}[e+f x]}}\right]}{128 \sqrt{2} \, c^{9/2} f}+\frac{a^3 c^2 \text{Cos}[e+f x]^5}{4 f (c-c \,\text{Sin}[e+f x])^{13/2}}-\frac{5 a^3 \text{Cos}[e+f x]^3}{24 f (c-c \,\text{Sin}[e+f x])^{9/2}}+\frac{5 a^3 \text{Cos}[e+f x]}{32 c^2 f (c-c \,\text{Sin}[e+f x])^{5/2}}-\frac{5 a^3 \text{Cos}[e+f x]}{128 c^3 f (c-c \,\text{Sin}[e+f x])^{3/2}}$$

Result (type 3, 371 leaves):

$$\frac{1}{384 f \left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^6 (c-c \,\text{Sin}[e+f x])^{9/2}} a^3 \left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right) \left(384 \left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)-544 \left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^3+236 \left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^5-15 \left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^7+(15+15 i)(-1)^{1/4} \text{ArcTan}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{1/4}\left(1+\text{Tan}\left[\frac{1}{4}(e+f x)\right]\right)\right] \left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^8+768 \,\text{Sin}\left[\frac{1}{2}(e+f x)\right]-1088 \left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^2 \text{Sin}\left[\frac{1}{2}(e+f x)\right]+472 \left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^4 \text{Sin}\left[\frac{1}{2}(e+f x)\right]-30 \left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^6 \text{Sin}\left[\frac{1}{2}(e+f x)\right]\right) (1+\text{Sin}[e+f x])^3$$

- **Problem 316: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int \frac{(a+a \,\text{Sin}[e+f x])^3}{(c-c \,\text{Sin}[e+f x])^{11/2}} \, dx$$

Optimal (type 3, 225 leaves, 8 steps):

$$-\frac{3 a^3 \text{ArcTanh}\left[\frac{\sqrt{c} \cos[e+f x]}{\sqrt{2} \sqrt{c-c \sin[e+f x]}}\right]}{512 \sqrt{2} c^{11/2} f}+\frac{a^3 c^2 \cos[e+f x]^5}{5 f (c-c \sin[e+f x])^{15/2}}-\frac{a^3 \cos[e+f x]^3}{8 f (c-c \sin[e+f x])^{11/2}}+\frac{a^3 \cos[e+f x]}{16 c^2 f (c-c \sin[e+f x])^{7/2}}-\frac{a^3 \cos[e+f x]}{128 c^3 f (c-c \sin[e+f x])^{5/2}}-\frac{3 a^3 \cos[e+f x]}{512 c^4 f (c-c \sin[e+f x])^{3/2}}$$

Result (type 3, 1005 leaves):

$$\frac{4 \left(\cos\left[\frac{1}{2} (e+f x)\right]-\sin\left[\frac{1}{2} (e+f x)\right]\right)^2 (a+a \sin[e+f x])^3}{5 f \left(\cos\left[\frac{1}{2} (e+f x)\right]+\sin\left[\frac{1}{2} (e+f x)\right]\right)^6 (c-c \sin[e+f x])^{11/2}}-$$

$$\frac{21 \left(\cos\left[\frac{1}{2} (e+f x)\right]-\sin\left[\frac{1}{2} (e+f x)\right]\right)^4 (a+a \sin[e+f x])^3}{20 f \left(\cos\left[\frac{1}{2} (e+f x)\right]+\sin\left[\frac{1}{2} (e+f x)\right]\right)^6 (c-c \sin[e+f x])^{11/2}}+\frac{31 \left(\cos\left[\frac{1}{2} (e+f x)\right]-\sin\left[\frac{1}{2} (e+f x)\right]\right)^6 (a+a \sin[e+f x])^3}{80 f \left(\cos\left[\frac{1}{2} (e+f x)\right]+\sin\left[\frac{1}{2} (e+f x)\right]\right)^6 (c-c \sin[e+f x])^{11/2}}-$$

$$\frac{\left(\cos\left[\frac{1}{2} (e+f x)\right]-\sin\left[\frac{1}{2} (e+f x)\right]\right)^8 (a+a \sin[e+f x])^3}{128 f \left(\cos\left[\frac{1}{2} (e+f x)\right]+\sin\left[\frac{1}{2} (e+f x)\right]\right)^6 (c-c \sin[e+f x])^{11/2}}-\frac{3 \left(\cos\left[\frac{1}{2} (e+f x)\right]-\sin\left[\frac{1}{2} (e+f x)\right]\right)^{10} (a+a \sin[e+f x])^3}{512 f \left(\cos\left[\frac{1}{2} (e+f x)\right]+\sin\left[\frac{1}{2} (e+f x)\right]\right)^6 (c-c \sin[e+f x])^{11/2}}+$$

$$\left(\left(\frac{3}{512}+\frac{3 i}{512}\right) (-1)^{1/4} \text{ArcTan}\left[\left(\frac{1}{2}+\frac{i}{2}\right) (-1)^{1/4} \sec\left[\frac{1}{4} (e+f x)\right] \left(\cos\left[\frac{1}{4} (e+f x)\right]+\sin\left[\frac{1}{4} (e+f x)\right]\right)\right]\right.$$
$$\left.\left(\cos\left[\frac{1}{2} (e+f x)\right]-\sin\left[\frac{1}{2} (e+f x)\right]\right)^{11} (a+a \sin[e+f x])^3\right) \Big/ \left(f \left(\cos\left[\frac{1}{2} (e+f x)\right]+\sin\left[\frac{1}{2} (e+f x)\right]\right)^6 (c-c \sin[e+f x])^{11/2}\right)+$$

$$\frac{8 \left(\cos\left[\frac{1}{2} (e+f x)\right]-\sin\left[\frac{1}{2} (e+f x)\right]\right) \sin\left[\frac{1}{2} (e+f x)\right] (a+a \sin[e+f x])^3}{5 f \left(\cos\left[\frac{1}{2} (e+f x)\right]+\sin\left[\frac{1}{2} (e+f x)\right]\right)^6 (c-c \sin[e+f x])^{11/2}}-$$

$$\frac{21 \left(\cos\left[\frac{1}{2} (e+f x)\right]-\sin\left[\frac{1}{2} (e+f x)\right]\right)^3 \sin\left[\frac{1}{2} (e+f x)\right] (a+a \sin[e+f x])^3}{10 f \left(\cos\left[\frac{1}{2} (e+f x)\right]+\sin\left[\frac{1}{2} (e+f x)\right]\right)^6 (c-c \sin[e+f x])^{11/2}}+$$

$$\frac{31 \left(\cos\left[\frac{1}{2} (e+f x)\right]-\sin\left[\frac{1}{2} (e+f x)\right]\right)^5 \sin\left[\frac{1}{2} (e+f x)\right] (a+a \sin[e+f x])^3}{40 f \left(\cos\left[\frac{1}{2} (e+f x)\right]+\sin\left[\frac{1}{2} (e+f x)\right]\right)^6 (c-c \sin[e+f x])^{11/2}}-$$

$$\frac{\left(\cos\left[\frac{1}{2} (e+f x)\right]-\sin\left[\frac{1}{2} (e+f x)\right]\right)^7 \sin\left[\frac{1}{2} (e+f x)\right] (a+a \sin[e+f x])^3}{64 f \left(\cos\left[\frac{1}{2} (e+f x)\right]+\sin\left[\frac{1}{2} (e+f x)\right]\right)^6 (c-c \sin[e+f x])^{11/2}}-$$

$$\frac{3 \left(\cos\left[\frac{1}{2} (e+f x)\right]-\sin\left[\frac{1}{2} (e+f x)\right]\right)^9 \sin\left[\frac{1}{2} (e+f x)\right] (a+a \sin[e+f x])^3}{256 f \left(\cos\left[\frac{1}{2} (e+f x)\right]+\sin\left[\frac{1}{2} (e+f x)\right]\right)^6 (c-c \sin[e+f x])^{11/2}}$$

Problem 321: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{1}{(a+a\,\text{Sin}[e+f\,x])\,\sqrt{c-c\,\text{Sin}[e+f\,x]}}\,dx$$

Optimal (type 3, 83 leaves, 4 steps):

$$\frac{\text{ArcTanh}\left[\frac{\sqrt{c}\,\text{Cos}[e+f\,x]}{\sqrt{2}\,\sqrt{c-c\,\text{Sin}[e+f\,x]}}\right]}{\sqrt{2}\,a\,\sqrt{c}\,f}-\frac{\text{Sec}[e+f\,x]\,\sqrt{c-c\,\text{Sin}[e+f\,x]}}{a\,c\,f}$$

Result (type 3, 97 leaves):

$$-\left(\text{Cos}[e+f\,x]\left(1+(1+i)\,(-1)^{1/4}\,\text{ArcTan}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{1/4}\left(1+\text{Tan}\left[\frac{1}{4}\,(e+f\,x)\right]\right)\right]\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)\right)\right)\Big/\left(a\,f\,(1+\text{Sin}[e+f\,x])\,\sqrt{c-c\,\text{Sin}[e+f\,x]}\right)$$

Problem 322: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{1}{(a+a\,\text{Sin}[e+f\,x])\,(c-c\,\text{Sin}[e+f\,x])^{3/2}}\,dx$$

Optimal (type 3, 117 leaves, 5 steps):

$$\frac{3\,\text{ArcTanh}\left[\frac{\sqrt{c}\,\text{Cos}[e+f\,x]}{\sqrt{2}\,\sqrt{c-c\,\text{Sin}[e+f\,x]}}\right]}{4\,\sqrt{2}\,a\,c^{3/2}\,f}+\frac{3\,\text{Cos}[e+f\,x]}{4\,a\,f\,(c-c\,\text{Sin}[e+f\,x])^{3/2}}-\frac{\text{Sec}[e+f\,x]}{a\,c\,f\,\sqrt{c-c\,\text{Sin}[e+f\,x]}}$$

Result (type 3, 125 leaves):

$$-\left(\text{Sec}[e+f\,x]\left(1+(3+3\,i)\,(-1)^{1/4}\,\text{ArcTan}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{1/4}\left(1+\text{Tan}\left[\frac{1}{4}\,(e+f\,x)\right]\right)\right]\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^2\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)-3\,\text{Sin}[e+f\,x]\right)\right)\Big/\left(4\,a\,c\,f\,\sqrt{c-c\,\text{Sin}[e+f\,x]}\right)$$

Problem 323: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{1}{(a+a\,\text{Sin}[e+f\,x])\,(c-c\,\text{Sin}[e+f\,x])^{5/2}}\,dx$$

Optimal (type 3, 156 leaves, 6 steps):

$$\frac{15\,\text{ArcTanh}\left[\frac{\sqrt{c}\,\text{Cos}[e+f\,x]}{\sqrt{2}\,\sqrt{c-c\,\text{Sin}[e+f\,x]}}\right]}{32\,\sqrt{2}\,a\,c^{5/2}\,f}+\frac{15\,\text{Cos}[e+f\,x]}{32\,a\,c\,f\,(c-c\,\text{Sin}[e+f\,x])^{3/2}}+\frac{\text{Sec}[e+f\,x]}{4\,a\,c\,f\,(c-c\,\text{Sin}[e+f\,x])^{3/2}}-\frac{5\,\text{Sec}[e+f\,x]}{8\,a\,c^2\,f\,\sqrt{c-c\,\text{Sin}[e+f\,x]}}$$

Result (type 3, 162 leaves):

$$\left(\left(\frac{1}{128}+\frac{i}{128}\right)\text{Cos}[e+f x]\left(-60(-1)^{1/4}\text{ArcTan}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{1/4}\left(1+\text{Tan}\left[\frac{1}{4}(e+f x)\right]\right)\right]\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^4\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)+(1-i)(-9+15\text{Cos}[2(e+f x)]+40\text{Sin}[e+f x])\right)\right)\Big/\left(a c^2 f(-1+\text{Sin}[e+f x])^2(1+\text{Sin}[e+f x])\sqrt{c-c\,\text{Sin}[e+f x]}\right)$$

- **Problem 328: Result more than twice size of optimal antiderivative.**

$$\int\frac{\sqrt{c-c\,\text{Sin}[e+f x]}}{(a+a\,\text{Sin}[e+f x])^2}\,dx$$

Optimal (type 3, 36 leaves, 2 steps):

$$-\frac{2\,\text{Sec}[e+f x]^3\,(c-c\,\text{Sin}[e+f x])^{3/2}}{3a^2 c f}$$

Result (type 3, 73 leaves):

$$-\frac{2\sqrt{c-c\,\text{Sin}[e+f x]}}{3a^2 f\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^3}$$

- **Problem 329: Result unnecessarily involves imaginary or complex numbers.**

$$\int\frac{1}{(a+a\,\text{Sin}[e+f x])^2\sqrt{c-c\,\text{Sin}[e+f x]}}\,dx$$

Optimal (type 3, 124 leaves, 5 steps):

$$\frac{\text{ArcTanh}\left[\frac{\sqrt{c}\,\text{Cos}[e+f x]}{\sqrt{2}\sqrt{c-c\,\text{Sin}[e+f x]}}\right]}{2\sqrt{2}\,a^2\sqrt{c}\,f}-\frac{\text{Sec}[e+f x]\sqrt{c-c\,\text{Sin}[e+f x]}}{2a^2 c f}-\frac{\text{Sec}[e+f x]^3\,(c-c\,\text{Sin}[e+f x])^{3/2}}{3a^2c^2 f}$$

Result (type 3, 109 leaves):

$$\left(\text{Cos}[e+f x]\left(-5-(3+3i)(-1)^{1/4}\text{ArcTan}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{1/4}\left(1+\text{Tan}\left[\frac{1}{4}(e+f x)\right]\right)\right]\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^3-3\,\text{Sin}[e+f x]\right)\right)\Big/\left(6a^2 f(1+\text{Sin}[e+f x])^2\sqrt{c-c\,\text{Sin}[e+f x]}\right)$$

- **Problem 330: Result unnecessarily involves imaginary or complex numbers.**

$$\int\frac{1}{(a+a\,\text{Sin}[e+f x])^2(c-c\,\text{Sin}[e+f x])^{3/2}}\,dx$$

Optimal (type 3, 155 leaves, 6 steps):

$$\frac{5\,\text{ArcTanh}\left[\frac{\sqrt{c}\,\text{Cos}[e+f\,x]}{\sqrt{2}\,\sqrt{c-c\,\text{Sin}[e+f\,x]}}\right]}{8\,\sqrt{2}\,a^2\,c^{3/2}\,f}+\frac{5\,\text{Cos}[e+f\,x]}{8\,a^2\,f\,(c-c\,\text{Sin}[e+f\,x])^{3/2}}-\frac{5\,\text{Sec}[e+f\,x]}{6\,a^2\,c\,f\,\sqrt{c-c\,\text{Sin}[e+f\,x]}}-\frac{\text{Sec}[e+f\,x]^3\,\sqrt{c-c\,\text{Sin}[e+f\,x]}}{3\,a^2\,c^2\,f}$$

Result (type 3, 164 leaves):

$$\left(\left(\frac{1}{96}+\frac{i}{96}\right)\text{Cos}[e+f\,x]\left(60\,(-1)^{1/4}\,\text{ArcTan}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{1/4}\left(1+\text{Tan}\left[\frac{1}{4}\,(e+f\,x)\right]\right)\right]\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^2\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^3+(1-i)\,(11+15\,\text{Cos}[2\,(e+f\,x)]-20\,\text{Sin}[e+f\,x])\right)\right)\Big/\left(a^2\,c\,f\,(-1+\text{Sin}[e+f\,x])\,(1+\text{Sin}[e+f\,x])^2\,\sqrt{c-c\,\text{Sin}[e+f\,x]}\right)$$

- **Problem 331: Result unnecessarily involves imaginary or complex numbers.**

$$\int\frac{1}{(a+a\,\text{Sin}[e+f\,x])^2\,(c-c\,\text{Sin}[e+f\,x])^{5/2}}\,dx$$

Optimal (type 3, 192 leaves, 7 steps):

$$\frac{35\,\text{ArcTanh}\left[\frac{\sqrt{c}\,\text{Cos}[e+f\,x]}{\sqrt{2}\,\sqrt{c-c\,\text{Sin}[e+f\,x]}}\right]}{64\,\sqrt{2}\,a^2\,c^{5/2}\,f}+\frac{35\,\text{Cos}[e+f\,x]}{64\,a^2\,c\,f\,(c-c\,\text{Sin}[e+f\,x])^{3/2}}+\frac{7\,\text{Sec}[e+f\,x]}{24\,a^2\,c\,f\,(c-c\,\text{Sin}[e+f\,x])^{3/2}}-\frac{35\,\text{Sec}[e+f\,x]}{48\,a^2\,c^2\,f\,\sqrt{c-c\,\text{Sin}[e+f\,x]}}-\frac{\text{Sec}[e+f\,x]^3}{3\,a^2\,c^2\,f\,\sqrt{c-c\,\text{Sin}[e+f\,x]}}$$

Result (type 3, 156 leaves):

$$-\left(\left(\left(\frac{1}{1536}+\frac{i}{1536}\right)\text{Sec}[e+f\,x]^3\left(840\,(-1)^{1/4}\,\text{ArcTan}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{1/4}\left(1+\text{Tan}\left[\frac{1}{4}\,(e+f\,x)\right]\right)\right]\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^4\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^3+(1-i)\,(102+70\,\text{Cos}[2\,(e+f\,x)]-329\,\text{Sin}[e+f\,x]-105\,\text{Sin}[3\,(e+f\,x)])\right)\right)\Big/\left(a^2\,c^2\,f\,\sqrt{c-c\,\text{Sin}[e+f\,x]}\right)\right)$$

- **Problem 336: Result more than twice size of optimal antiderivative.**

$$\int\frac{\sqrt{c-c\,\text{Sin}[e+f\,x]}}{(a+a\,\text{Sin}[e+f\,x])^3}\,dx$$

Optimal (type 3, 36 leaves, 2 steps):

$$-\frac{2\,\text{Sec}[e+f\,x]^5\,(c-c\,\text{Sin}[e+f\,x])^{5/2}}{5\,a^3\,c^2\,f}$$

Result (type 3, 73 leaves):

$$-\frac{2\sqrt{c-c\,\text{Sin}[e+f\,x]}}{5\,a^3\,f\left(\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]-\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)\left(\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)^5}$$

Problem 337: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{1}{(a+a\,\text{Sin}[e+f\,x])^3\sqrt{c-c\,\text{Sin}[e+f\,x]}}\,dx$$

Optimal (type 3, 160 leaves, 6 steps):

$$\frac{\text{ArcTanh}\left[\frac{\sqrt{c}\,\text{Cos}[e+f\,x]}{\sqrt{2}\,\sqrt{c-c\,\text{Sin}[e+f\,x]}}\right]}{4\sqrt{2}\,a^3\sqrt{c}\,f}-\frac{\text{Sec}[e+f\,x]\sqrt{c-c\,\text{Sin}[e+f\,x]}}{4\,a^3\,c\,f}-\frac{\text{Sec}[e+f\,x]^3\,(c-c\,\text{Sin}[e+f\,x])^{3/2}}{6\,a^3\,c^2\,f}-\frac{\text{Sec}[e+f\,x]^5\,(c-c\,\text{Sin}[e+f\,x])^{5/2}}{5\,a^3\,c^3\,f}$$

Result (type 3, 189 leaves):

$$\left(\left(\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]-\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)\left(\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)\right.$$
$$\left(-12-10\left(\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)^2-15\left(\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)^4-(15+15\,i)\,(-1)^{1/4}\right.$$
$$\left.\left.\text{ArcTan}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{1/4}\left(1+\text{Tan}\left[\frac{1}{4}(e+f\,x)\right]\right)\right]\left(\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)^5\right)\right)\Big/\left(60\,a^3\,f\,(1+\text{Sin}[e+f\,x])^3\sqrt{c-c\,\text{Sin}[e+f\,x]}\right)$$

Problem 338: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{1}{(a+a\,\text{Sin}[e+f\,x])^3\,(c-c\,\text{Sin}[e+f\,x])^{3/2}}\,dx$$

Optimal (type 3, 191 leaves, 7 steps):

$$\frac{7\,\text{ArcTanh}\left[\frac{\sqrt{c}\,\text{Cos}[e+f\,x]}{\sqrt{2}\,\sqrt{c-c\,\text{Sin}[e+f\,x]}}\right]}{16\sqrt{2}\,a^3\,c^{3/2}\,f}+\frac{7\,\text{Cos}[e+f\,x]}{16\,a^3\,f\,(c-c\,\text{Sin}[e+f\,x])^{3/2}}-$$
$$\frac{7\,\text{Sec}[e+f\,x]}{12\,a^3\,c\,f\sqrt{c-c\,\text{Sin}[e+f\,x]}}-\frac{7\,\text{Sec}[e+f\,x]^3\sqrt{c-c\,\text{Sin}[e+f\,x]}}{30\,a^3\,c^2\,f}-\frac{\text{Sec}[e+f\,x]^5\,(c-c\,\text{Sin}[e+f\,x])^{3/2}}{5\,a^3\,c^3\,f}$$

Result (type 3, 174 leaves):

$$\Bigg(\left(\left(\frac{1}{1920}+\frac{i}{1920}\right)\mathrm{Cos}[e+f x]\left(840\,(-1)^{1/4}\,\mathrm{ArcTan}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{1/4}\left(1+\mathrm{Tan}\left[\frac{1}{4}(e+f x)\right]\right)\right]\left(\mathrm{Cos}\left[\frac{1}{2}(e+f x)\right]-\mathrm{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^2\left(\mathrm{Cos}\left[\frac{1}{2}(e+f x)\right]+\mathrm{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^5+(1-i)\,(206+350\,\mathrm{Cos}[2(e+f x)]-231\,\mathrm{Sin}[e+f x]+105\,\mathrm{Sin}[3(e+f x)])\right)\right)\Bigg/\left(a^3 c f(-1+\mathrm{Sin}[e+f x])(1+\mathrm{Sin}[e+f x])^3\sqrt{c-c\,\mathrm{Sin}[e+f x]}\right)$$

Problem 339: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{1}{(a+a\,\mathrm{Sin}[e+f x])^3\,(c-c\,\mathrm{Sin}[e+f x])^{5/2}}\,dx$$

Optimal (type 3, 228 leaves, 8 steps):

$$\frac{63\,\mathrm{ArcTanh}\left[\frac{\sqrt{c}\,\mathrm{Cos}[e+f x]}{\sqrt{2}\,\sqrt{c-c\,\mathrm{Sin}[e+f x]}}\right]}{128\sqrt{2}\,a^3 c^{5/2} f}+\frac{63\,\mathrm{Cos}[e+f x]}{128\,a^3 c f\,(c-c\,\mathrm{Sin}[e+f x])^{3/2}}+\frac{21\,\mathrm{Sec}[e+f x]}{80\,a^3 c f\,(c-c\,\mathrm{Sin}[e+f x])^{3/2}}-\frac{21\,\mathrm{Sec}[e+f x]}{32\,a^3 c^2 f\sqrt{c-c\,\mathrm{Sin}[e+f x]}}-\frac{3\,\mathrm{Sec}[e+f x]^3}{10\,a^3 c^2 f\sqrt{c-c\,\mathrm{Sin}[e+f x]}}-\frac{\mathrm{Sec}[e+f x]^5\sqrt{c-c\,\mathrm{Sin}[e+f x]}}{5\,a^3 c^3 f}$$

Result (type 3, 443 leaves):

$$\frac{1}{640\,a^3 f\,(1+\mathrm{Sin}[e+f x])^3\,(c-c\,\mathrm{Sin}[e+f x])^{5/2}}\left(\mathrm{Cos}\left[\frac{1}{2}(e+f x)\right]-\mathrm{Sin}\left[\frac{1}{2}(e+f x)\right]\right)\left(\mathrm{Cos}\left[\frac{1}{2}(e+f x)\right]+\mathrm{Sin}\left[\frac{1}{2}(e+f x)\right]\right)\Bigg(-240\,\mathrm{Cos}[e+f x]^4-32\left(\mathrm{Cos}\left[\frac{1}{2}(e+f x)\right]-\mathrm{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^4-80\left(\mathrm{Cos}\left[\frac{1}{2}(e+f x)\right]-\mathrm{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^4\left(\mathrm{Cos}\left[\frac{1}{2}(e+f x)\right]+\mathrm{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^2+20\left(\mathrm{Cos}\left[\frac{1}{2}(e+f x)\right]-\mathrm{Sin}\left[\frac{1}{2}(e+f x)\right]\right)\left(\mathrm{Cos}\left[\frac{1}{2}(e+f x)\right]+\mathrm{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^5+75\left(\mathrm{Cos}\left[\frac{1}{2}(e+f x)\right]-\mathrm{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^3\left(\mathrm{Cos}\left[\frac{1}{2}(e+f x)\right]+\mathrm{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^5-(315+315\,i)\,(-1)^{1/4}\,\mathrm{ArcTan}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{1/4}\left(1+\mathrm{Tan}\left[\frac{1}{4}(e+f x)\right]\right)\right]\left(\mathrm{Cos}\left[\frac{1}{2}(e+f x)\right]-\mathrm{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^4\left(\mathrm{Cos}\left[\frac{1}{2}(e+f x)\right]+\mathrm{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^5+40\,\mathrm{Sin}\left[\frac{1}{2}(e+f x)\right]\left(\mathrm{Cos}\left[\frac{1}{2}(e+f x)\right]+\mathrm{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^5+150\left(\mathrm{Cos}\left[\frac{1}{2}(e+f x)\right]-\mathrm{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^2\mathrm{Sin}\left[\frac{1}{2}(e+f x)\right]\left(\mathrm{Cos}\left[\frac{1}{2}(e+f x)\right]+\mathrm{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^5\Bigg)$$

- **Problem 344: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int \frac{\sqrt{a+a \sin[e+f x]}}{\sqrt{c-c \sin[e+f x]}} \, dx$$

Optimal (type 3, 52 leaves, 3 steps):

$$-\frac{a \cos[e+f x] \log[1-\sin[e+f x]]}{f \sqrt{a+a \sin[e+f x]} \sqrt{c-c \sin[e+f x]}}$$

Result (type 3, 129 leaves):

$$-\frac{\sqrt{2} \left(-i+e^{i (e+f x)}\right) \left(f x-2 \operatorname{ArcTan}\left[e^{i (e+f x)}\right]+i \log\left[1+e^{2 i (e+f x)}\right]\right) \sqrt{a (1+\sin[e+f x])}}{\sqrt{i c e^{-i (e+f x)} \left(-i+e^{i (e+f x)}\right)^2} \left(i+e^{i (e+f x)}\right) f}$$

- **Problem 345: Result more than twice size of optimal antiderivative.**

$$\int \frac{\sqrt{a+a \sin[e+f x]}}{(c-c \sin[e+f x])^{3/2}} \, dx$$

Optimal (type 3, 40 leaves, 1 step):

$$\frac{a \cos[e+f x]}{f \sqrt{a+a \sin[e+f x]} (c-c \sin[e+f x])^{3/2}}$$

Result (type 3, 84 leaves):

$$\frac{\sqrt{a (1+\sin[e+f x])} \sqrt{c-c \sin[e+f x]}}{c^2 f \left(\cos\left[\frac{1}{2} (e+f x)\right]-\sin\left[\frac{1}{2} (e+f x)\right]\right)^3 \left(\cos\left[\frac{1}{2} (e+f x)\right]+\sin\left[\frac{1}{2} (e+f x)\right]\right)}$$

- **Problem 346: Result more than twice size of optimal antiderivative.**

$$\int \frac{\sqrt{a+a \sin[e+f x]}}{(c-c \sin[e+f x])^{5/2}} \, dx$$

Optimal (type 3, 43 leaves, 1 step):

$$\frac{a \cos[e+f x]}{2 f \sqrt{a+a \sin[e+f x]} (c-c \sin[e+f x])^{5/2}}$$

Result (type 3, 87 leaves):

$$\frac{\sqrt{a (1+\sin[e+f x])} \sqrt{c-c \sin[e+f x]}}{2 c^3 f \left(\cos\left[\frac{1}{2} (e+f x)\right]-\sin\left[\frac{1}{2} (e+f x)\right]\right)^5 \left(\cos\left[\frac{1}{2} (e+f x)\right]+\sin\left[\frac{1}{2} (e+f x)\right]\right)}$$

Problem 347: Result more than twice size of optimal antiderivative.

$$\int \frac{\sqrt{a+a\,\mathrm{Sin}[e+f\,x]}}{(c-c\,\mathrm{Sin}[e+f\,x])^{7/2}}\,dx$$

Optimal (type 3, 43 leaves, 1 step):

$$\frac{a\,\mathrm{Cos}[e+f\,x]}{3\,f\,\sqrt{a+a\,\mathrm{Sin}[e+f\,x]}\,(c-c\,\mathrm{Sin}[e+f\,x])^{7/2}}$$

Result (type 3, 87 leaves):

$$\frac{\sqrt{a\,(1+\mathrm{Sin}[e+f\,x])}\,\sqrt{c-c\,\mathrm{Sin}[e+f\,x]}}{3\,c^4\,f\,\left(\mathrm{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^7\,\left(\mathrm{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)}$$

Problem 354: Result more than twice size of optimal antiderivative.

$$\int \frac{(a+a\,\mathrm{Sin}[e+f\,x])^{3/2}}{(c-c\,\mathrm{Sin}[e+f\,x])^{5/2}}\,dx$$

Optimal (type 3, 42 leaves, 1 step):

$$\frac{\mathrm{Cos}[e+f\,x]\,(a+a\,\mathrm{Sin}[e+f\,x])^{3/2}}{4\,f\,(c-c\,\mathrm{Sin}[e+f\,x])^{5/2}}$$

Result (type 3, 99 leaves):

$$\frac{a\,\left(\mathrm{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)\,\mathrm{Sin}[e+f\,x]\,\sqrt{a\,(1+\mathrm{Sin}[e+f\,x])}}{c^2\,f\,\left(\mathrm{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)\,(-1+\mathrm{Sin}[e+f\,x])^2\,\sqrt{c-c\,\mathrm{Sin}[e+f\,x]}}$$

Problem 365: Result more than twice size of optimal antiderivative.

$$\int \frac{(a+a\,\mathrm{Sin}[e+f\,x])^{5/2}}{(c-c\,\mathrm{Sin}[e+f\,x])^{7/2}}\,dx$$

Optimal (type 3, 42 leaves, 1 step):

$$\frac{\mathrm{Cos}[e+f\,x]\,(a+a\,\mathrm{Sin}[e+f\,x])^{5/2}}{6\,f\,(c-c\,\mathrm{Sin}[e+f\,x])^{7/2}}$$

Result (type 3, 110 leaves):

$$\frac{a^2\,(-5+3\,\mathrm{Cos}[2\,(e+f\,x)])\,\left(\mathrm{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)\,\sqrt{a\,(1+\mathrm{Sin}[e+f\,x])}}{6\,c^3\,f\,\left(\mathrm{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)\,(-1+\mathrm{Sin}[e+f\,x])^3\,\sqrt{c-c\,\mathrm{Sin}[e+f\,x]}}$$

Problem 369: Result more than twice size of optimal antiderivative.

$$\int (a+a\,\mathrm{Sin}[e+f\,x])^{7/2}\,(c-c\,\mathrm{Sin}[e+f\,x])^{9/2}\,dx$$

Optimal (type 3, 179 leaves, 4 steps):

$$-\frac{a^4 \text{Cos}[e+f x] (c-c \text{Sin}[e+f x])^{9/2}}{35 f \sqrt{a+a \text{Sin}[e+f x]}}-\frac{a^3 \text{Cos}[e+f x] \sqrt{a+a \text{Sin}[e+f x]} (c-c \text{Sin}[e+f x])^{9/2}}{14 f}-\frac{3 a^2 \text{Cos}[e+f x] (a+a \text{Sin}[e+f x])^{3/2} (c-c \text{Sin}[e+f x])^{9/2}}{28 f}-\frac{a \text{Cos}[e+f x] (a+a \text{Sin}[e+f x])^{5/2} (c-c \text{Sin}[e+f x])^{9/2}}{8 f}$$

Result (type 3, 735 leaves):

$$\frac{7 \text{Cos}[2 (e+f x)] (a (1+\text{Sin}[e+f x]))^{7/2} (c-c \text{Sin}[e+f x])^{9/2}}{128 f \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]-\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^9 \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]+\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^7}+$$
$$\frac{7 \text{Cos}[4 (e+f x)] (a (1+\text{Sin}[e+f x]))^{7/2} (c-c \text{Sin}[e+f x])^{9/2}}{256 f \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]-\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^9 \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]+\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^7}+$$
$$\frac{\text{Cos}[6 (e+f x)] (a (1+\text{Sin}[e+f x]))^{7/2} (c-c \text{Sin}[e+f x])^{9/2}}{128 f \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]-\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^9 \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]+\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^7}+$$
$$\frac{\text{Cos}[8 (e+f x)] (a (1+\text{Sin}[e+f x]))^{7/2} (c-c \text{Sin}[e+f x])^{9/2}}{1024 f \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]-\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^9 \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]+\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^7}+$$
$$\frac{35 \text{Sin}[e+f x] (a (1+\text{Sin}[e+f x]))^{7/2} (c-c \text{Sin}[e+f x])^{9/2}}{64 f \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]-\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^9 \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]+\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^7}+$$
$$\frac{7 (a (1+\text{Sin}[e+f x]))^{7/2} (c-c \text{Sin}[e+f x])^{9/2} \text{Sin}[3 (e+f x)]}{64 f \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]-\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^9 \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]+\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^7}+$$
$$\frac{7 (a (1+\text{Sin}[e+f x]))^{7/2} (c-c \text{Sin}[e+f x])^{9/2} \text{Sin}[5 (e+f x)]}{320 f \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]-\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^9 \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]+\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^7}+$$
$$\frac{(a (1+\text{Sin}[e+f x]))^{7/2} (c-c \text{Sin}[e+f x])^{9/2} \text{Sin}[7 (e+f x)]}{448 f \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]-\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^9 \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]+\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^7}$$

■ Problem 378: Result more than twice size of optimal antiderivative.

$$\int \frac{(a+a \text{Sin}[e+f x])^{7/2}}{(c-c \text{Sin}[e+f x])^{9/2}} \, dx$$

Optimal (type 3, 42 leaves, 1 step):

$$\frac{\text{Cos}[e+f x] (a+a \text{Sin}[e+f x])^{7/2}}{8 f (c-c \text{Sin}[e+f x])^{9/2}}$$

Result (type 3, 327 leaves):

$$\frac{2\left(\mathrm{Cos}\left[\frac{1}{2}(e+f x)\right]-\mathrm{Sin}\left[\frac{1}{2}(e+f x)\right]\right)(a(1+\mathrm{Sin}[e+f x]))^{7/2}}{f\left(\mathrm{Cos}\left[\frac{1}{2}(e+f x)\right]+\mathrm{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^7(c-c\,\mathrm{Sin}[e+f x])^{9/2}}-\frac{4\left(\mathrm{Cos}\left[\frac{1}{2}(e+f x)\right]-\mathrm{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^3(a(1+\mathrm{Sin}[e+f x]))^{7/2}}{f\left(\mathrm{Cos}\left[\frac{1}{2}(e+f x)\right]+\mathrm{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^7(c-c\,\mathrm{Sin}[e+f x])^{9/2}}+\frac{3\left(\mathrm{Cos}\left[\frac{1}{2}(e+f x)\right]-\mathrm{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^5(a(1+\mathrm{Sin}[e+f x]))^{7/2}}{f\left(\mathrm{Cos}\left[\frac{1}{2}(e+f x)\right]+\mathrm{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^7(c-c\,\mathrm{Sin}[e+f x])^{9/2}}-\frac{\left(\mathrm{Cos}\left[\frac{1}{2}(e+f x)\right]-\mathrm{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^7(a(1+\mathrm{Sin}[e+f x]))^{7/2}}{f\left(\mathrm{Cos}\left[\frac{1}{2}(e+f x)\right]+\mathrm{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^7(c-c\,\mathrm{Sin}[e+f x])^{9/2}}$$

Problem 379: Result more than twice size of optimal antiderivative.

$$\int \frac{(a+a\,\mathrm{Sin}[e+f x])^{7/2}}{(c-c\,\mathrm{Sin}[e+f x])^{11/2}}\,dx$$

Optimal (type 3, 88 leaves, 2 steps):

$$\frac{\mathrm{Cos}[e+f x]\,(a+a\,\mathrm{Sin}[e+f x])^{7/2}}{10 f\,(c-c\,\mathrm{Sin}[e+f x])^{11/2}}+\frac{\mathrm{Cos}[e+f x]\,(a+a\,\mathrm{Sin}[e+f x])^{7/2}}{80 c f\,(c-c\,\mathrm{Sin}[e+f x])^{9/2}}$$

Result (type 3, 331 leaves):

$$\frac{8\left(\mathrm{Cos}\left[\frac{1}{2}(e+f x)\right]-\mathrm{Sin}\left[\frac{1}{2}(e+f x)\right]\right)(a(1+\mathrm{Sin}[e+f x]))^{7/2}}{5 f\left(\mathrm{Cos}\left[\frac{1}{2}(e+f x)\right]+\mathrm{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^7(c-c\,\mathrm{Sin}[e+f x])^{11/2}}-\frac{3\left(\mathrm{Cos}\left[\frac{1}{2}(e+f x)\right]-\mathrm{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^3(a(1+\mathrm{Sin}[e+f x]))^{7/2}}{f\left(\mathrm{Cos}\left[\frac{1}{2}(e+f x)\right]+\mathrm{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^7(c-c\,\mathrm{Sin}[e+f x])^{11/2}}+\frac{2\left(\mathrm{Cos}\left[\frac{1}{2}(e+f x)\right]-\mathrm{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^5(a(1+\mathrm{Sin}[e+f x]))^{7/2}}{f\left(\mathrm{Cos}\left[\frac{1}{2}(e+f x)\right]+\mathrm{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^7(c-c\,\mathrm{Sin}[e+f x])^{11/2}}-\frac{\left(\mathrm{Cos}\left[\frac{1}{2}(e+f x)\right]-\mathrm{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^7(a(1+\mathrm{Sin}[e+f x]))^{7/2}}{2 f\left(\mathrm{Cos}\left[\frac{1}{2}(e+f x)\right]+\mathrm{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^7(c-c\,\mathrm{Sin}[e+f x])^{11/2}}$$

Problem 380: Result more than twice size of optimal antiderivative.

$$\int \frac{(a+a\,\mathrm{Sin}[e+f x])^{7/2}}{(c-c\,\mathrm{Sin}[e+f x])^{13/2}}\,dx$$

Optimal (type 3, 133 leaves, 3 steps):

$$\frac{\mathrm{Cos}[e+f x]\,(a+a\,\mathrm{Sin}[e+f x])^{7/2}}{12 f\,(c-c\,\mathrm{Sin}[e+f x])^{13/2}}+\frac{\mathrm{Cos}[e+f x]\,(a+a\,\mathrm{Sin}[e+f x])^{7/2}}{60 c f\,(c-c\,\mathrm{Sin}[e+f x])^{11/2}}+\frac{\mathrm{Cos}[e+f x]\,(a+a\,\mathrm{Sin}[e+f x])^{7/2}}{480 c^2 f\,(c-c\,\mathrm{Sin}[e+f x])^{9/2}}$$

Result (type 3, 335 leaves):

$$\frac{4\left(\mathrm{Cos}\left[\frac{1}{2}(e+f x)\right]-\mathrm{Sin}\left[\frac{1}{2}(e+f x)\right]\right)(a(1+\mathrm{Sin}[e+f x]))^{7/2}}{3 f\left(\mathrm{Cos}\left[\frac{1}{2}(e+f x)\right]+\mathrm{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^7(c-c\,\mathrm{Sin}[e+f x])^{13/2}}-\frac{12\left(\mathrm{Cos}\left[\frac{1}{2}(e+f x)\right]-\mathrm{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^3(a(1+\mathrm{Sin}[e+f x]))^{7/2}}{5 f\left(\mathrm{Cos}\left[\frac{1}{2}(e+f x)\right]+\mathrm{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^7(c-c\,\mathrm{Sin}[e+f x])^{13/2}}+\frac{3\left(\mathrm{Cos}\left[\frac{1}{2}(e+f x)\right]-\mathrm{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^5(a(1+\mathrm{Sin}[e+f x]))^{7/2}}{2 f\left(\mathrm{Cos}\left[\frac{1}{2}(e+f x)\right]+\mathrm{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^7(c-c\,\mathrm{Sin}[e+f x])^{13/2}}-\frac{\left(\mathrm{Cos}\left[\frac{1}{2}(e+f x)\right]-\mathrm{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^7(a(1+\mathrm{Sin}[e+f x]))^{7/2}}{3 f\left(\mathrm{Cos}\left[\frac{1}{2}(e+f x)\right]+\mathrm{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^7(c-c\,\mathrm{Sin}[e+f x])^{13/2}}$$

Problem 385: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{\sqrt{c - c\,\text{Sin}[e + f\,x]}}{\sqrt{a + a\,\text{Sin}[e + f\,x]}}\,dx$$

Optimal (type 3, 49 leaves, 3 steps):

$$\frac{c\,\text{Cos}[e + f\,x]\,\text{Log}[1 + \text{Sin}[e + f\,x]]}{f\,\sqrt{a + a\,\text{Sin}[e + f\,x]}\,\sqrt{c - c\,\text{Sin}[e + f\,x]}}$$

Result (type 3, 130 leaves):

$$-\frac{\sqrt{2}\,\left(i + e^{i\,(e+f\,x)}\right)\,\left(f\,x + 2\,\text{ArcTan}\left[e^{i\,(e+f\,x)}\right] + i\,\text{Log}\left[1 + e^{2\,i\,(e+f\,x)}\right]\right)\,\sqrt{c - c\,\text{Sin}[e + f\,x]}}{\left(-i + e^{i\,(e+f\,x)}\right)\,\sqrt{-i\,a\,e^{-i\,(e+f\,x)}\,\left(i + e^{i\,(e+f\,x)}\right)^2}\,f}$$

Problem 392: Result more than twice size of optimal antiderivative.

$$\int \frac{\sqrt{c - c\,\text{Sin}[e + f\,x]}}{(a + a\,\text{Sin}[e + f\,x])^{3/2}}\,dx$$

Optimal (type 3, 41 leaves, 1 step):

$$-\frac{c\,\text{Cos}[e + f\,x]}{f\,(a + a\,\text{Sin}[e + f\,x])^{3/2}\,\sqrt{c - c\,\text{Sin}[e + f\,x]}}$$

Result (type 3, 85 leaves):

$$-\frac{\sqrt{a\,(1 + \text{Sin}[e + f\,x])}\,\sqrt{c - c\,\text{Sin}[e + f\,x]}}{a^2\,f\,\left(\text{Cos}\left[\frac{1}{2}\,(e + f\,x)\right] - \text{Sin}\left[\frac{1}{2}\,(e + f\,x)\right]\right)\,\left(\text{Cos}\left[\frac{1}{2}\,(e + f\,x)\right] + \text{Sin}\left[\frac{1}{2}\,(e + f\,x)\right]\right)^3}$$

Problem 399: Result more than twice size of optimal antiderivative.

$$\int \frac{(c - c\,\text{Sin}[e + f\,x])^{3/2}}{(a + a\,\text{Sin}[e + f\,x])^{5/2}}\,dx$$

Optimal (type 3, 42 leaves, 1 step):

$$-\frac{\text{Cos}[e + f\,x]\,(c - c\,\text{Sin}[e + f\,x])^{3/2}}{4\,f\,(a + a\,\text{Sin}[e + f\,x])^{5/2}}$$

Result (type 3, 86 leaves):

$$\frac{c\,\left(\text{Cos}\left[\frac{1}{2}\,(e + f\,x)\right] + \text{Sin}\left[\frac{1}{2}\,(e + f\,x)\right]\right)\,\text{Sin}[e + f\,x]\,\sqrt{c - c\,\text{Sin}[e + f\,x]}}{f\,\left(\text{Cos}\left[\frac{1}{2}\,(e + f\,x)\right] - \text{Sin}\left[\frac{1}{2}\,(e + f\,x)\right]\right)\,(a\,(1 + \text{Sin}[e + f\,x]))^{5/2}}$$

Problem 400: Result more than twice size of optimal antiderivative.

$$\int \frac{\sqrt{c-c\,\mathrm{Sin}[e+f\,x]}}{(a+a\,\mathrm{Sin}[e+f\,x])^{5/2}}\,dx$$

Optimal (type 3, 43 leaves, 1 step):

$$-\frac{c\,\mathrm{Cos}[e+f\,x]}{2\,f\,(a+a\,\mathrm{Sin}[e+f\,x])^{5/2}\,\sqrt{c-c\,\mathrm{Sin}[e+f\,x]}}$$

Result (type 3, 87 leaves):

$$-\frac{\sqrt{a\,(1+\mathrm{Sin}[e+f\,x])}\,\sqrt{c-c\,\mathrm{Sin}[e+f\,x]}}{2\,a^3\,f\,\left(\mathrm{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)\,\left(\mathrm{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^5}$$

Problem 404: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int (a+a\,\mathrm{Sin}[e+f\,x])^m\,(c-c\,\mathrm{Sin}[e+f\,x])^n\,dx$$

Optimal (type 5, 110 leaves, 4 steps):

$$\frac{1}{f\,(1+2\,m)}2^{\frac{1}{2}+n}\,c\,\mathrm{Cos}[e+f\,x]\,\mathrm{Hypergeometric2F1}\left[\frac{1}{2}\,(1+2\,m),\,\frac{1}{2}\,(1-2\,n),\,\frac{1}{2}\,(3+2\,m),\,\frac{1}{2}\,(1+\mathrm{Sin}[e+f\,x])\right]$$
$$(1-\mathrm{Sin}[e+f\,x])^{\frac{1}{2}-n}\,(a+a\,\mathrm{Sin}[e+f\,x])^m\,(c-c\,\mathrm{Sin}[e+f\,x])^{-1+n}$$

Result (type 6, 4008 leaves):

$$-\left(\left(4\,(3+2\,n)\,\mathrm{AppellF1}\left[\frac{1}{2}+n,\,-2\,m,\,1+2\,(m+n),\,\frac{3}{2}+n,\,\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\left(\mathrm{Cos}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{1+2\,m}\right.\right.$$
$$\mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2\,n}\,(a+a\,\mathrm{Sin}[e+f\,x])^m\,(c-c\,\mathrm{Sin}[e+f\,x])^n\,\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\left(1-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{2\,m}\Bigg)\Bigg/$$
$$\left(f\,(1+2\,n)\left((3+2\,n)\,\mathrm{AppellF1}\left[\frac{1}{2}+n,\,-2\,m,\,1+2\,(m+n),\,\frac{3}{2}+n,\,\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]-\right.\right.$$
$$2\left(2\,m\,\mathrm{AppellF1}\left[\frac{3}{2}+n,\,1-2\,m,\,1+2\,(m+n),\,\frac{5}{2}+n,\,\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.$$
$$\left.(1+2\,m+2\,n)\,\mathrm{AppellF1}\left[\frac{3}{2}+n,\,-2\,m,\,2\,(1+m+n),\,\frac{5}{2}+n,\,\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Bigg)$$
$$\left(\left((3+2\,n)\,\mathrm{AppellF1}\left[\frac{1}{2}+n,\,-2\,m,\,1+2\,(m+n),\,\frac{3}{2}+n,\,\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right.\right.$$
$$\left(\mathrm{Cos}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{2\,m}\,\mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2\,n}\left(1-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{2\,m}\Bigg)\Bigg/$$

$$\Big((1+2n)\,\Big((3+2n)\,\text{AppellF1}\Big[\frac{1}{2}+n,\,-2m,\,1+2(m+n),\,\frac{3}{2}+n,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]-$$

$$2\,\Big(2m\,\text{AppellF1}\Big[\frac{3}{2}+n,\,1-2m,\,1+2(m+n),\,\frac{5}{2}+n,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]+(1+2m+2n)$$

$$\text{AppellF1}\Big[\frac{3}{2}+n,\,-2m,\,2(1+m+n),\,\frac{5}{2}+n,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big)\Big)-$$

$$\Big(2(1+2m)(3+2n)\,\text{AppellF1}\Big[\frac{1}{2}+n,\,-2m,\,1+2(m+n),\,\frac{3}{2}+n,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]$$

$$\Big(\text{Cos}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big)^{2m}\,\text{Sin}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\,\text{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^{2n}\,\Big(1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big)^{2m}\Big)\Big/$$

$$\Big((1+2n)\,\Big((3+2n)\,\text{AppellF1}\Big[\frac{1}{2}+n,\,-2m,\,1+2(m+n),\,\frac{3}{2}+n,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]-$$

$$2\,\Big(2m\,\text{AppellF1}\Big[\frac{3}{2}+n,\,1-2m,\,1+2(m+n),\,\frac{5}{2}+n,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]+(1+2m+2n)$$

$$\text{AppellF1}\Big[\frac{3}{2}+n,\,-2m,\,2(1+m+n),\,\frac{5}{2}+n,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big)\Big)+$$

$$\Big(4n(3+2n)\,\text{AppellF1}\Big[\frac{1}{2}+n,\,-2m,\,1+2(m+n),\,\frac{3}{2}+n,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]$$

$$\Big(\text{Cos}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big)^{1+2m}\,\text{Cos}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]\,\text{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^{-1+2n}\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]\,\Big(1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big)^{2m}\Big)\Big/$$

$$\Big((1+2n)\,\Big((3+2n)\,\text{AppellF1}\Big[\frac{1}{2}+n,\,-2m,\,1+2(m+n),\,\frac{3}{2}+n,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]-$$

$$2\,\Big(2m\,\text{AppellF1}\Big[\frac{3}{2}+n,\,1-2m,\,1+2(m+n),\,\frac{5}{2}+n,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]+(1+2m+2n)$$

$$\text{AppellF1}\Big[\frac{3}{2}+n,\,-2m,\,2(1+m+n),\,\frac{5}{2}+n,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big)\Big)+$$

$$\Big(4(3+2n)\,\Big(\text{Cos}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big)^{1+2m}\,\text{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^{2n}\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]\,\Big(-\frac{1}{\frac{3}{2}+n}m\Big(\frac{1}{2}+n\Big)\,\text{AppellF1}\Big[\frac{3}{2}+$$

$$n,\,1-2m,\,1+2(m+n),\,\frac{5}{2}+n,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]-$$

$$\frac{1}{2\left(\frac{3}{2}+n\right)}\Big(\frac{1}{2}+n\Big)(1+2(m+n))\,\text{AppellF1}\Big[\frac{3}{2}+n,\,-2m,\,2+2(m+n),\,\frac{5}{2}+n,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]$$

$$\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]\Big)\,\Big(1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big)^{2m}\Big)\Big/$$

$$\Big((1+2n)\,\Big((3+2n)\,\text{AppellF1}\Big[\frac{1}{2}+n,\,-2m,\,1+2(m+n),\,\frac{3}{2}+n,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]-$$

$$2\,\Big(2m\,\text{AppellF1}\Big[\frac{3}{2}+n,\,1-2m,\,1+2(m+n),\,\frac{5}{2}+n,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]+(1+2m+2n)$$

$$\text{AppellF1}\Big[\frac{3}{2}+n,\,-2m,\,2(1+m+n),\,\frac{5}{2}+n,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big)\Big)-$$

$$\Big(4m\,(3+2n)\,\text{AppellF1}\Big[\frac{1}{2}+n,\,-2m,\,1+2(m+n),\,\frac{3}{2}+n,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]$$

$$\Big(\text{Cos}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big)^{2m}\,\text{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^{2n}\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\,\Big(1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big)^{-1+2m}\Big)\Big/$$

$$\Big((1+2n)\,\Big((3+2n)\,\text{AppellF1}\Big[\frac{1}{2}+n,\,-2m,\,1+2(m+n),\,\frac{3}{2}+n,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]-$$

$$2\,\Big(2m\,\text{AppellF1}\Big[\frac{3}{2}+n,\,1-2m,\,1+2(m+n),\,\frac{5}{2}+n,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]+(1+2m+2n)$$

$$\text{AppellF1}\Big[\frac{3}{2}+n,\,-2m,\,2(1+m+n),\,\frac{5}{2}+n,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big)\Big)-$$

$$\Big(4\,(3+2n)\,\text{AppellF1}\Big[\frac{1}{2}+n,\,-2m,\,1+2(m+n),\,\frac{3}{2}+n,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]$$

$$\Big(\text{Cos}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big)^{1+2m}\,\text{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^{2n}\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]\,\Big(1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big)^{2m}$$

$$\Big(-\Big(2m\,\text{AppellF1}\Big[\frac{3}{2}+n,\,1-2m,\,1+2(m+n),\,\frac{5}{2}+n,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]+(1+2m+2n)\,\text{AppellF1}\Big[\frac{3}{2}+n,$$

$$-2m,\,2(1+m+n),\,\frac{5}{2}+n,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\Big)\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]+$$

$$(3+2n)\,\Big(-\frac{1}{\frac{3}{2}+n}m\,\Big(\frac{1}{2}+n\Big)\,\text{AppellF1}\Big[\frac{3}{2}+n,\,1-2m,\,1+2(m+n),\,\frac{5}{2}+n,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]$$

$$\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]-\frac{1}{2\left(\frac{3}{2}+n\right)}\Big(\frac{1}{2}+n\Big)\,(1+2(m+n))\,\text{AppellF1}\Big[\frac{3}{2}+n,\,-2m,\,2+2(m+n),\,\frac{5}{2}+n,$$

$$\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]\Big)-2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2$$

$$\Big(2m\,\Big(-\frac{1}{2\left(\frac{5}{2}+n\right)}\Big(\frac{3}{2}+n\Big)\,(1+2(m+n))\,\text{AppellF1}\Big[\frac{5}{2}+n,\,1-2m,\,2+2(m+n),\,\frac{7}{2}+n,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}$$

$$\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big]\ \text{Sec}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\ \text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]+\frac{1}{2\left(\frac{5}{2}+n\right)}(1-2m)\left(\frac{3}{2}+n\right)\ \text{AppellF1}\Big[\frac{5}{2}+n,\ 2-2m,$$

$$1+2(m+n),\ \frac{7}{2}+n,\ \text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big]\ \text{Sec}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\ \text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]\Bigg)+$$

$$(1+2m+2n)\left(-\frac{1}{\frac{5}{2}+n}m\left(\frac{3}{2}+n\right)\ \text{AppellF1}\Big[\frac{5}{2}+n,\ 1-2m,\ 2(1+m+n),\ \frac{7}{2}+n,\ \text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big]\right.$$

$$\text{Sec}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\ \text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]-\frac{1}{\frac{5}{2}+n}\left(\frac{3}{2}+n\right)(1+m+n)\ \text{AppellF1}\Big[\frac{5}{2}+n,\ -2m,\ 1+2(1+m+n),$$

$$\left.\frac{7}{2}+n,\ \text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big]\ \text{Sec}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\ \text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]\right)\Bigg)\Bigg)\Bigg)\Bigg/$$

$$\Bigg((1+2n)\Bigg((3+2n)\ \text{AppellF1}\Big[\frac{1}{2}+n,\ -2m,\ 1+2(m+n),\ \frac{3}{2}+n,\ \text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big]-$$

$$2\Bigg(2m\ \text{AppellF1}\Big[\frac{3}{2}+n,\ 1-2m,\ 1+2(m+n),\ \frac{5}{2}+n,\ \text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big]+(1+2m+2n)$$

$$\text{AppellF1}\Big[\frac{3}{2}+n,\ -2m,\ 2(1+m+n),\ \frac{5}{2}+n,\ \text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big]\Bigg)\ \text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Bigg)^2\Bigg)\Bigg)\Bigg)$$

■ **Problem 405: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int(a+a\,\text{Sin}[e+f x])^m\,(c-c\,\text{Sin}[e+f x])^3\,dx$$

Optimal (type 5, 86 leaves, 4 steps):

$$-\frac{1}{7f}2^{\frac{1}{2}+m}a^4c^3\,\text{Cos}[e+f x]^7\ \text{Hypergeometric2F1}\Big[\frac{7}{2},\ \frac{1}{2}-m,\ \frac{9}{2},\ \frac{1}{2}(1-\text{Sin}[e+f x])\Big]\,(1+\text{Sin}[e+f x])^{\frac{1}{2}-m}\,(a+a\,\text{Sin}[e+f x])^{-4+m}$$

Result (type 6, 12 670 leaves):

$$-\Bigg(\Bigg(\Bigg(2048\,\text{Cos}\Big[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\Big]^{-2m}(a+a\,\text{Sin}[e+f x])^m\,(c-c\,\text{Sin}[e+f x])^3$$

$$\Bigg(\text{Cos}\Big[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\Big]^{2m}\text{Cos}\Big[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\Big]^6-6\,\text{Cos}\Big[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\Big]^{2m}\text{Cos}\Big[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\Big]^5\text{Sin}\Big[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\Big]+$$

$$15\,\text{Cos}\Big[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\Big]^{2m}\text{Cos}\Big[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\Big]^4\text{Sin}\Big[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\Big]^2-20\,\text{Cos}\Big[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\Big]^{2m}\text{Cos}\Big[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\Big]^3$$

$$\text{Sin}\Big[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\Big]^3+15\,\text{Cos}\Big[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\Big]^{2m}\text{Cos}\Big[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\Big]^2\text{Sin}\Big[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\Big]^4-$$

$$6\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2m}\text{Cos}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]\text{Sin}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]^5+\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2m}\text{Sin}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]^6\Bigg)$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{2m}\left(\frac{1}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}\right)^{7+2m}$$

$$\Bigg(\Bigg(3\,\text{AppellF1}\left[\frac{1}{2},-2m,4+2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^3\Bigg)\Bigg/$$

$$\Bigg(3\,\text{AppellF1}\left[\frac{1}{2},-2m,4+2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]-$$

$$4\Bigg(m\,\text{AppellF1}\left[\frac{3}{2},1-2m,4+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$(2+m)\,\text{AppellF1}\left[\frac{3}{2},-2m,5+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\Bigg)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)+$$

$$\Bigg(9\,\text{AppellF1}\left[\frac{1}{2},-2m,5+2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^2\Bigg)\Bigg/$$

$$\Bigg(-3\,\text{AppellF1}\left[\frac{1}{2},-2m,5+2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$2\Bigg(2m\,\text{AppellF1}\left[\frac{3}{2},1-2m,5+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$(5+2m)\,\text{AppellF1}\left[\frac{3}{2},-2m,6+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\Bigg)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)+$$

$$\Bigg(9\,\text{AppellF1}\left[\frac{1}{2},-2m,6+2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\Bigg)\Bigg/$$

$$\Bigg(3\,\text{AppellF1}\left[\frac{1}{2},-2m,6+2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]-$$

$$4\Bigg(m\,\text{AppellF1}\left[\frac{3}{2},1-2m,6+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$(3+m)\,\text{AppellF1}\left[\frac{3}{2},-2m,7+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\Bigg)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)-$$

$$\text{AppellF1}\left[\frac{1}{2},-2m,7+2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\Bigg/$$

$$\Bigg(\text{AppellF1}\left[\frac{1}{2},-2m,7+2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]-$$

$$\frac{2}{3}\Bigg(2m\,\text{AppellF1}\left[\frac{3}{2},1-2m,7+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$(7+2m)\,\text{AppellF1}\left[\frac{3}{2},-2m,8+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\Bigg)\Bigg)\Bigg)\Bigg/$$

$$\left(f\left(\text{Cos}\left[\frac{1}{2}(e+fx)\right]-\text{Sin}\left[\frac{1}{2}(e+fx)\right]\right)^6\left(512\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)^{2m}\left(\frac{1}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2}\right)^{7+2m}\right.\right.$$

$$\left(\left(3\,\text{AppellF1}\left[\frac{1}{2},-2m,4+2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)^3\right)\Bigg/\right.$$

$$\left(3\,\text{AppellF1}\left[\frac{1}{2},-2m,4+2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]-\right.$$

$$4\left(m\,\text{AppellF1}\left[\frac{3}{2},1-2m,4+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+\right.$$

$$\left.\left.(2+m)\,\text{AppellF1}\left[\frac{3}{2},-2m,5+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)+$$

$$\left(9\,\text{AppellF1}\left[\frac{1}{2},-2m,5+2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)^2\right)\Bigg/$$

$$\left(-3\,\text{AppellF1}\left[\frac{1}{2},-2m,5+2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+\right.$$

$$2\left(2m\,\text{AppellF1}\left[\frac{3}{2},1-2m,5+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+\right.$$

$$\left.\left.(5+2m)\,\text{AppellF1}\left[\frac{3}{2},-2m,6+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)+$$

$$\left(9\,\text{AppellF1}\left[\frac{1}{2},-2m,6+2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)\right)\Bigg/$$

$$\left(3\,\text{AppellF1}\left[\frac{1}{2},-2m,6+2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]-\right.$$

$$4\left(m\,\text{AppellF1}\left[\frac{3}{2},1-2m,6+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+\right.$$

$$\left.\left.(3+m)\,\text{AppellF1}\left[\frac{3}{2},-2m,7+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)-\text{AppellF1}\Big[$$

$$\frac{1}{2},-2m,7+2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\Big]\Bigg/\left(\text{AppellF1}\left[\frac{1}{2},-2m,7+2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,\right.\right.$$

$$-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\Big]-\frac{2}{3}\left(2m\,\text{AppellF1}\left[\frac{3}{2},1-2m,7+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+\right.$$

$$\left.\left.(7+2m)\,\text{AppellF1}\left[\frac{3}{2},-2m,8+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)\right)-$$

$$2048\, m\, \text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\, \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\, \Big(1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)^{-1+2\,m}\, \left(\frac{1}{1+\text{Tan}\big[\frac{1}{4}\big(-e+\frac{\pi}{2}-f\,x\big)\big]^2}\right)^{7+2\,m}$$

$$\Bigg(\Big(3\, \text{AppellF1}\Big[\frac{1}{2},\, -2\,m,\, 4+2\,m,\, \frac{3}{2},\, \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\, -\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\, \Big(1+\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)^3\Big)\Big/$$

$$\Big(3\, \text{AppellF1}\Big[\frac{1}{2},\, -2\,m,\, 4+2\,m,\, \frac{3}{2},\, \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\, -\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\, -$$

$$4\,\Big(m\, \text{AppellF1}\Big[\frac{3}{2},\, 1-2\,m,\, 4+2\,m,\, \frac{5}{2},\, \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\, -\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\, +$$

$$(2+m)\, \text{AppellF1}\Big[\frac{3}{2},\, -2\,m,\, 5+2\,m,\, \frac{5}{2},\, \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\, -\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\Big)\, \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)\, +$$

$$\Big(9\, \text{AppellF1}\Big[\frac{1}{2},\, -2\,m,\, 5+2\,m,\, \frac{3}{2},\, \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\, -\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\, \Big(1+\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)^2\Big)\Big/$$

$$\Big(-3\, \text{AppellF1}\Big[\frac{1}{2},\, -2\,m,\, 5+2\,m,\, \frac{3}{2},\, \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\, -\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\, +$$

$$2\,\Big(2\,m\, \text{AppellF1}\Big[\frac{3}{2},\, 1-2\,m,\, 5+2\,m,\, \frac{5}{2},\, \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\, -\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\, +$$

$$(5+2\,m)\, \text{AppellF1}\Big[\frac{3}{2},\, -2\,m,\, 6+2\,m,\, \frac{5}{2},\, \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\, -\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\Big)\, \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)\, +$$

$$\Big(9\, \text{AppellF1}\Big[\frac{1}{2},\, -2\,m,\, 6+2\,m,\, \frac{3}{2},\, \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\, -\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\, \Big(1+\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)\Big)\Big/$$

$$\Big(3\, \text{AppellF1}\Big[\frac{1}{2},\, -2\,m,\, 6+2\,m,\, \frac{3}{2},\, \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\, -\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\, -$$

$$4\,\Big(m\, \text{AppellF1}\Big[\frac{3}{2},\, 1-2\,m,\, 6+2\,m,\, \frac{5}{2},\, \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\, -\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\, +$$

$$(3+m)\, \text{AppellF1}\Big[\frac{3}{2},\, -2\,m,\, 7+2\,m,\, \frac{5}{2},\, \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\, -\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\Big)\, \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)\, -$$

$$\text{AppellF1}\Big[\frac{1}{2},\, -2\,m,\, 7+2\,m,\, \frac{3}{2},\, \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\, -\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\Big/$$

$$\Big(\text{AppellF1}\Big[\frac{1}{2},\, -2\,m,\, 7+2\,m,\, \frac{3}{2},\, \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\, -\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\, -$$

$$\frac{2}{3}\Big(2\,m\, \text{AppellF1}\Big[\frac{3}{2},\, 1-2\,m,\, 7+2\,m,\, \frac{5}{2},\, \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\, -\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\, +$$

$$(7+2\,m)\, \text{AppellF1}\Big[\frac{3}{2},\, -2\,m,\, 8+2\,m,\, \frac{5}{2},\, \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\, -\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\Big)\, \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)\, -$$

$$1024\,(7+2\,m)\,\mathrm{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\left(1-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{2\,m}\left(\frac{1}{1+\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}\right)^{8+2\,m}$$

$$\Bigg(\Bigg(3\,\mathrm{AppellF1}\left[\frac{1}{2},-2\,m,4+2\,m,\frac{3}{2},\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\left(1+\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^3\Bigg)\Big/$$

$$\Bigg(3\,\mathrm{AppellF1}\left[\frac{1}{2},-2\,m,4+2\,m,\frac{3}{2},\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]-$$

$$4\Bigg(m\,\mathrm{AppellF1}\left[\frac{3}{2},1-2\,m,4+2\,m,\frac{5}{2},\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+$$

$$(2+m)\,\mathrm{AppellF1}\left[\frac{3}{2},-2\,m,5+2\,m,\frac{5}{2},\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\Bigg)\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Bigg)+$$

$$\Bigg(9\,\mathrm{AppellF1}\left[\frac{1}{2},-2\,m,5+2\,m,\frac{3}{2},\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\left(1+\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^2\Bigg)\Big/$$

$$\Bigg(-3\,\mathrm{AppellF1}\left[\frac{1}{2},-2\,m,5+2\,m,\frac{3}{2},\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+$$

$$2\Bigg(2\,m\,\mathrm{AppellF1}\left[\frac{3}{2},1-2\,m,5+2\,m,\frac{5}{2},\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+$$

$$(5+2\,m)\,\mathrm{AppellF1}\left[\frac{3}{2},-2\,m,6+2\,m,\frac{5}{2},\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\Bigg)\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Bigg)+$$

$$\Bigg(9\,\mathrm{AppellF1}\left[\frac{1}{2},-2\,m,6+2\,m,\frac{3}{2},\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\left(1+\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\Bigg)\Big/$$

$$\Bigg(3\,\mathrm{AppellF1}\left[\frac{1}{2},-2\,m,6+2\,m,\frac{3}{2},\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]-$$

$$4\Bigg(m\,\mathrm{AppellF1}\left[\frac{3}{2},1-2\,m,6+2\,m,\frac{5}{2},\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+$$

$$(3+m)\,\mathrm{AppellF1}\left[\frac{3}{2},-2\,m,7+2\,m,\frac{5}{2},\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\Bigg)\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Bigg)-$$

$$\mathrm{AppellF1}\left[\frac{1}{2},-2\,m,7+2\,m,\frac{3}{2},\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\Big/$$

$$\Bigg(\mathrm{AppellF1}\left[\frac{1}{2},-2\,m,7+2\,m,\frac{3}{2},\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]-$$

$$\frac{2}{3}\Bigg(2\,m\,\mathrm{AppellF1}\left[\frac{3}{2},1-2\,m,7+2\,m,\frac{5}{2},\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+$$

$$(7+2\,m)\,\mathrm{AppellF1}\left[\frac{3}{2},-2\,m,8+2\,m,\frac{5}{2},\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\Bigg)\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Bigg)+$$

$$2048\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\,\Big(1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)^{2\,m}\,\left(\frac{1}{1+\text{Tan}\big[\frac{1}{4}\big(-e+\frac{\pi}{2}-f\,x\big)\big]^2}\right)^{7+2\,m}$$

$$\Big(\Big(9\,\text{AppellF1}\Big[\frac{1}{2},-2\,m,4+2\,m,\frac{3}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]$$

$$\Big(1+\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)^2\Big)\Big/\Big(2\,\Big(3\,\text{AppellF1}\Big[\frac{1}{2},-2\,m,4+2\,m,\frac{3}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]-4$$

$$\Big(m\,\text{AppellF1}\Big[\frac{3}{2},1-2\,m,4+2\,m,\frac{5}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+$$

$$(2+m)\,\text{AppellF1}\Big[\frac{3}{2},-2\,m,5+2\,m,\frac{5}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)\Big)+$$

$$\Big(3\,\Big(-\frac{1}{3}\,m\,\text{AppellF1}\Big[\frac{3}{2},1-2\,m,4+2\,m,\frac{5}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2$$

$$\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]-\frac{1}{6}\,(4+2\,m)\,\text{AppellF1}\Big[\frac{3}{2},-2\,m,5+2\,m,\frac{5}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]$$

$$\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\Big)\,\Big(1+\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)^3\Big)\Big/$$

$$\Big(3\,\text{AppellF1}\Big[\frac{1}{2},-2\,m,4+2\,m,\frac{3}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]-$$

$$4\,\Big(m\,\text{AppellF1}\Big[\frac{3}{2},1-2\,m,4+2\,m,\frac{5}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+$$

$$(2+m)\,\text{AppellF1}\Big[\frac{3}{2},-2\,m,5+2\,m,\frac{5}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)+$$

$$\Big(9\,\text{AppellF1}\Big[\frac{1}{2},-2\,m,5+2\,m,\frac{3}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]$$

$$\Big(1+\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)\Big)\Big/\Big(-3\,\text{AppellF1}\Big[\frac{1}{2},-2\,m,5+2\,m,\frac{3}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+$$

$$2\,\Big(2\,m\,\text{AppellF1}\Big[\frac{3}{2},1-2\,m,5+2\,m,\frac{5}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+$$

$$(5+2\,m)\,\text{AppellF1}\Big[\frac{3}{2},-2\,m,6+2\,m,\frac{5}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)+$$

$$\Big(9\,\Big(-\frac{1}{3}\,m\,\text{AppellF1}\Big[\frac{3}{2},1-2\,m,5+2\,m,\frac{5}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2$$

$$\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]-\frac{1}{6}\,(5+2\,m)\,\text{AppellF1}\Big[\frac{3}{2},-2\,m,6+2\,m,\frac{5}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]$$

$$\mathrm{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\Bigg)\left(1+\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^2\Bigg)\Big/$$

$$\Bigg(-3\,\mathrm{AppellF1}\left[\frac{1}{2},-2m,5+2m,\frac{3}{2},\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$2\Bigg(2m\,\mathrm{AppellF1}\left[\frac{3}{2},1-2m,5+2m,\frac{5}{2},\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$(5+2m)\,\mathrm{AppellF1}\left[\frac{3}{2},-2m,6+2m,\frac{5}{2},\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\Bigg)\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)+$$

$$\Bigg(9\,\mathrm{AppellF1}\left[\frac{1}{2},-2m,6+2m,\frac{3}{2},\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\mathrm{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\Bigg)\Big/$$

$$\Bigg(2\Bigg(3\,\mathrm{AppellF1}\left[\frac{1}{2},-2m,6+2m,\frac{3}{2},\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]-4$$

$$\Bigg(m\,\mathrm{AppellF1}\left[\frac{3}{2},1-2m,6+2m,\frac{5}{2},\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$(3+m)\,\mathrm{AppellF1}\left[\frac{3}{2},-2m,7+2m,\frac{5}{2},\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\Bigg)\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)\Bigg)+$$

$$\Bigg(9\left(-\frac{1}{3}m\,\mathrm{AppellF1}\left[\frac{3}{2},1-2m,6+2m,\frac{5}{2},\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\mathrm{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right.$$

$$\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{1}{6}(6+2m)\,\mathrm{AppellF1}\left[\frac{3}{2},-2m,7+2m,\frac{5}{2},\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]$$

$$\left.\mathrm{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)\left(1+\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\Bigg)\Big/$$

$$\Bigg(3\,\mathrm{AppellF1}\left[\frac{1}{2},-2m,6+2m,\frac{3}{2},\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]-$$

$$4\Bigg(m\,\mathrm{AppellF1}\left[\frac{3}{2},1-2m,6+2m,\frac{5}{2},\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$(3+m)\,\mathrm{AppellF1}\left[\frac{3}{2},-2m,7+2m,\frac{5}{2},\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\Bigg)\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)-$$

$$\left(-\frac{1}{3}m\,\mathrm{AppellF1}\left[\frac{3}{2},1-2m,7+2m,\frac{5}{2},\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\mathrm{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right.$$

$$\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{1}{6}(7+2m)\,\mathrm{AppellF1}\left[\frac{3}{2},-2m,8+2m,\frac{5}{2},\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]$$

$$\left.\mathrm{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)\Big/\Bigg(\mathrm{AppellF1}\left[\frac{1}{2},-2m,7+2m,\frac{3}{2},\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\right.$$

$$\left.-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]-\frac{2}{3}\Bigg(2m\,\mathrm{AppellF1}\left[\frac{3}{2},1-2m,7+2m,\frac{5}{2},\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$(7+2m)\,\text{AppellF1}\left[\frac{3}{2},-2m,8+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\Bigg)-$$
$$\Bigg(3\,\text{AppellF1}\left[\frac{1}{2},-2m,4+2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)^3$$
$$\Bigg(-2\Bigg(m\,\text{AppellF1}\left[\frac{3}{2},1-2m,4+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+$$
$$(2+m)\,\text{AppellF1}\left[\frac{3}{2},-2m,5+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\Bigg)\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2$$
$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]+3\Bigg(-\frac{1}{3}m\,\text{AppellF1}\left[\frac{3}{2},1-2m,4+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]$$
$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]-\frac{1}{6}(4+2m)\,\text{AppellF1}\left[\frac{3}{2},-2m,5+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,\right.$$
$$\left.-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]\Bigg)-4\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2$$
$$\Bigg(m\Bigg(-\frac{3}{10}(4+2m)\,\text{AppellF1}\left[\frac{5}{2},1-2m,5+2m,\frac{7}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2$$
$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]+\frac{3}{10}(1-2m)\,\text{AppellF1}\left[\frac{5}{2},2-2m,4+2m,\frac{7}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]$$
$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]\Bigg)+(2+m)\Bigg(-\frac{3}{5}m\,\text{AppellF1}\left[\frac{5}{2},1-2m,5+2m,\frac{7}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,\right.$$
$$\left.-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]-\frac{3}{10}(5+2m)\,\text{AppellF1}\left[\frac{5}{2},-2m,6+2m,\right.$$
$$\left.\frac{7}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]\Bigg)\Bigg)\Bigg)\Bigg)\Bigg/$$
$$\Bigg(3\,\text{AppellF1}\left[\frac{1}{2},-2m,4+2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]-4\Bigg(m\,\text{AppellF1}\left[\frac{3}{2},1-2m,\right.$$
$$\left.4+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+$$
$$(2+m)\,\text{AppellF1}\left[\frac{3}{2},-2m,5+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\Bigg)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\Bigg)^2-$$
$$\Bigg(9\,\text{AppellF1}\left[\frac{1}{2},-2m,5+2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)^2$$
$$\Bigg(\Bigg(2m\,\text{AppellF1}\left[\frac{3}{2},1-2m,5+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+(5+2m)\,\text{AppellF1}\left[\frac{3}{2},-2m,\right.$$
$$\left.6+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\Bigg)\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]-3$$

$$\Bigg(-\frac{1}{3} m\,\text{AppellF1}\left[\frac{3}{2},1-2m,5+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{1}{6}(5+2m)\,\text{AppellF1}\left[\frac{3}{2},-2m,6+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\Bigg)\Bigg)+2\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg(2m\Bigg(-\frac{3}{10}(5+2m)\,\text{AppellF1}\Big[\frac{5}{2},1-2m,$$

$$6+2m,\frac{7}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]+$$

$$\frac{3}{10}(1-2m)\,\text{AppellF1}\left[\frac{5}{2},2-2m,5+2m,\frac{7}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\Bigg)+(5+2m)\Bigg(-\frac{3}{5} m\,\text{AppellF1}\Big[\frac{5}{2},1-2m,6+2m,\frac{7}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,$$

$$-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{3}{10}(6+2m)\,\text{AppellF1}\Big[\frac{5}{2},-2m,7+2m,$$

$$\frac{7}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\Bigg)\Bigg)\Bigg)\Bigg)\Bigg/$$

$$\Bigg(-3\,\text{AppellF1}\left[\frac{1}{2},-2m,5+2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+2\Bigg(2m\,\text{AppellF1}\Big[\frac{3}{2},$$

$$1-2m,5+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]+$$

$$(5+2m)\,\text{AppellF1}\left[\frac{3}{2},-2m,6+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\Bigg)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)^2-$$

$$\Bigg(9\,\text{AppellF1}\left[\frac{1}{2},-2m,6+2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)$$

$$\Bigg(-2\Bigg(m\,\text{AppellF1}\left[\frac{3}{2},1-2m,6+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$(3+m)\,\text{AppellF1}\left[\frac{3}{2},-2m,7+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\Bigg)\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]+3\Bigg(-\frac{1}{3} m\,\text{AppellF1}\left[\frac{3}{2},1-2m,6+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{1}{6}(6+2m)\,\text{AppellF1}\Big[\frac{3}{2},-2m,7+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,$$

$$-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\Bigg)-4\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2$$

$$\Bigg(m\Bigg(-\frac{3}{10}(6+2m)\,\text{AppellF1}\left[\frac{5}{2},1-2m,7+2m,\frac{7}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]+\frac{3}{10}(1-2 m)\,\text{AppellF1}\left[\frac{5}{2},2-2 m,6+2 m,\frac{7}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\Big)+(3+m)\left(-\frac{3}{5}m\,\text{AppellF1}\left[\frac{5}{2},1-2 m,7+2 m,\frac{7}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\right.\right.$$

$$-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{3}{10}(7+2 m)\,\text{AppellF1}\left[\frac{5}{2},-2 m,8+2 m,\right.$$

$$\left.\left.\left.\left.\frac{7}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)\right)\right)\right)\Big/$$

$$\Bigg(3\,\text{AppellF1}\left[\frac{1}{2},-2 m,6+2 m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]-4\Bigg(m\,\text{AppellF1}\left[\frac{3}{2},1-2 m,\right.$$

$$\left.6+2 m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$(3+m)\,\text{AppellF1}\left[\frac{3}{2},-2 m,7+2 m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\Bigg)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)^2+$$

$$\Bigg(\text{AppellF1}\left[\frac{1}{2},-2 m,7+2 m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\left(-\frac{1}{3}m\,\text{AppellF1}\left[\frac{3}{2},1-2 m,\right.\right.$$

$$\left.7+2 m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{1}{6}$$

$$(7+2 m)\,\text{AppellF1}\left[\frac{3}{2},-2 m,8+2 m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{1}{3}\left(2 m\,\text{AppellF1}\left[\frac{3}{2},1-2 m,7+2 m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$\left.(7+2 m)\,\text{AppellF1}\left[\frac{3}{2},-2 m,8+2 m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{2}{3}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\left(2 m\left(-\frac{3}{10}(7+2 m)\,\text{AppellF1}\left[\frac{5}{2},1-2 m,8+2 m,\frac{7}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\right.\right.\right.$$

$$-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]+\frac{3}{10}(1-2 m)\,\text{AppellF1}\left[\frac{5}{2},2-2 m,\right.$$

$$\left.\left.7+2 m,\frac{7}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)+$$

$$(7+2 m)\left(-\frac{3}{5}m\,\text{AppellF1}\left[\frac{5}{2},1-2 m,8+2 m,\frac{7}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right.$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{3}{10}(8+2 m)\,\text{AppellF1}\left[\frac{5}{2},-2 m,9+2 m,\frac{7}{2},\right.$$

$$\left.\left.\left.\left.\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)\right)\right)\right)\Big/$$

$$\left(\text{AppellF1}\left[\frac{1}{2},-2m,7+2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]-\frac{2}{3}\left(2m\,\text{AppellF1}\left[\frac{3}{2},1-2m,7+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+(7+2m)\,\text{AppellF1}\left[\frac{3}{2},-2m,8+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)\right)\right)\right)$$

Problem 406: Attempted integration timed out after 120 seconds.

$$\int (a+a\,\text{Sin}[e+fx])^m\,(c-c\,\text{Sin}[e+fx])^2\,dx$$

Optimal (type 5, 86 leaves, 4 steps):

$$-\frac{1}{5f}2^{\frac{1}{2}+m}a^3c^2\,\text{Cos}[e+fx]^5\,\text{Hypergeometric2F1}\left[\frac{5}{2},\frac{1}{2}-m,\frac{7}{2},\frac{1}{2}(1-\text{Sin}[e+fx])\right](1+\text{Sin}[e+fx])^{\frac{1}{2}-m}(a+a\,\text{Sin}[e+fx])^{-3+m}$$

Result (type 1, 1 leaves):

???

Problem 407: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int (a+a\,\text{Sin}[e+fx])^m\,(c-c\,\text{Sin}[e+fx])\,dx$$

Optimal (type 5, 84 leaves, 4 steps):

$$-\frac{1}{3f}2^{\frac{1}{2}+m}a^2c\,\text{Cos}[e+fx]^3\,\text{Hypergeometric2F1}\left[\frac{3}{2},\frac{1}{2}-m,\frac{5}{2},\frac{1}{2}(1-\text{Sin}[e+fx])\right](1+\text{Sin}[e+fx])^{\frac{1}{2}-m}(a+a\,\text{Sin}[e+fx])^{-2+m}$$

Result (type 5, 283 leaves):

$$-\frac{1}{f(-1+m)\,m\,(1+m)\left(\text{Cos}\left[\frac{1}{2}(e+fx)\right]-\text{Sin}\left[\frac{1}{2}(e+fx)\right]\right)^2}\,i\,2^{-1-2m}c\,e^{-i(e+fx)}\left(1+i\,e^{-i(e+fx)}\right)^{-2m}\left(e^{-\frac{1}{4}i(2e+\pi+2fx)}\left(i+e^{i(e+fx)}\right)\right)^{2m}\left(e^{2i(e+fx)}(-1+m)\,m\,\text{Hypergeometric2F1}\left[-1-m,-2m,-m,-i\,e^{-i(e+fx)}\right]+(1+m)\left(m\,\text{Hypergeometric2F1}\left[1-m,-2m,2-m,-i\,e^{-i(e+fx)}\right]-2\,e^{i(e+fx)}(-1+m)\,\text{Hypergeometric2F1}\left[-2m,-m,1-m,-i\,e^{-i(e+fx)}\right]\right)\right)(-1+\text{Sin}[e+fx])\,(a\,(1+\text{Sin}[e+fx]))^m\,\text{Sin}\left[\frac{1}{4}(2e+\pi+2fx)\right]^{-2m}$$

Problem 408: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{(a+a\,\text{Sin}[e+fx])^m}{c-c\,\text{Sin}[e+fx]}\,dx$$

Optimal (type 5, 76 leaves, 4 steps):

$$\frac{1}{c\,f}2^{\frac{1}{2}+m}\,\text{Hypergeometric2F1}\left[-\frac{1}{2},\frac{1}{2}-m,\frac{1}{2},\frac{1}{2}(1-\text{Sin}[e+f x])\right]\text{Sec}[e+f x]\,(1+\text{Sin}[e+f x])^{\frac{1}{2}-m}\,(a+a\,\text{Sin}[e+f x])^m$$

Result (type 6, 4905 leaves) :

$$-\left(\left(\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2m}\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^2(a+a\,\text{Sin}[e+f x])^m\right.\right.$$
$$\left(-\text{AppellF1}\left[-\frac{1}{2},-2m,2m,\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\Big/\left(\text{AppellF1}\left[-\frac{1}{2},-2m,2m,\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\right.\right.\right.$$
$$-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]-4m\left(\text{AppellF1}\left[\frac{1}{2},1-2m,2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$
$$\left.\left.\text{AppellF1}\left[\frac{1}{2},-2m,1+2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)+$$
$$\left(3\,\text{AppellF1}\left[\frac{1}{2},-2m,2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\Big/$$
$$\left(3\,\text{AppellF1}\left[\frac{1}{2},-2m,2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]-\right.$$
$$4m\left(\text{AppellF1}\left[\frac{3}{2},1-2m,2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$
$$\left.\left.\left.\left.\text{AppellF1}\left[\frac{3}{2},-2m,1+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\right)\right)\Big/$$
$$\left(2f(c-c\,\text{Sin}[e+f x])\left(\text{Cos}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]-\text{Sin}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]\right)^2\left(-\frac{1}{8}\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2m}\right.\right.$$
$$\text{Csc}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\left(-\left(\text{AppellF1}\left[-\frac{1}{2},-2m,2m,\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\Big/\right.\right.$$
$$\left(\text{AppellF1}\left[-\frac{1}{2},-2m,2m,\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]-4m\right.$$
$$\left(\text{AppellF1}\left[\frac{1}{2},1-2m,2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$
$$\left.\left.\left.\text{AppellF1}\left[\frac{1}{2},-2m,1+2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\right)+$$
$$\left(3\,\text{AppellF1}\left[\frac{1}{2},-2m,2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\Big/$$
$$\left(3\,\text{AppellF1}\left[\frac{1}{2},-2m,2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]-\right.$$
$$4m\left(\text{AppellF1}\left[\frac{3}{2},1-2m,2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$\text{AppellF1}\left[\frac{3}{2}, -2m, 1+2m, \frac{5}{2}, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\Bigg)\Bigg) -$$

$$\frac{1}{2} m \,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-fx\right)\right]^{-1+2m}\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-fx\right)\right]\Bigg(-\Bigg(\text{AppellF1}\left[-\frac{1}{2}, -2m, 2m, \frac{1}{2},\right.$$

$$\left.\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\Big/\Bigg(\text{AppellF1}\left[-\frac{1}{2}, -2m, 2m, \frac{1}{2}, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,\right.$$

$$\left.-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right] - 4m\Bigg(\text{AppellF1}\left[\frac{1}{2}, 1-2m, 2m, \frac{3}{2}, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right] +$$

$$\text{AppellF1}\left[\frac{1}{2}, -2m, 1+2m, \frac{3}{2}, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\Bigg)\Bigg) +$$

$$\Bigg(3\,\text{AppellF1}\left[\frac{1}{2}, -2m, 2m, \frac{3}{2}, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\Bigg)\Big/$$

$$\Bigg(3\,\text{AppellF1}\left[\frac{1}{2}, -2m, 2m, \frac{3}{2}, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right] -$$

$$4m\Bigg(\text{AppellF1}\left[\frac{3}{2}, 1-2m, 2m, \frac{5}{2}, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right] + \text{AppellF1}\left[\frac{3}{2}, -2m, 1+2m,\right.$$

$$\left.\frac{5}{2}, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\Bigg)\Bigg) + \frac{1}{2}\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-fx\right)\right]^{2m}$$

$$\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]\Bigg(-\Bigg(\Bigg(m\,\text{AppellF1}\left[\frac{1}{2}, 1-2m, 2m, \frac{3}{2}, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right] + m\,\text{AppellF1}\left[\frac{1}{2}, -2m, 1+2m, \frac{3}{2}, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]\Bigg)\Big/\Bigg(\text{AppellF1}\left[-\frac{1}{2}, -2m, 2m, \frac{1}{2}, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,\right.$$

$$\left.-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right] - 4m\Bigg(\text{AppellF1}\left[\frac{1}{2}, 1-2m, 2m, \frac{3}{2}, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right] +$$

$$\text{AppellF1}\left[\frac{1}{2}, -2m, 1+2m, \frac{3}{2}, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\Bigg)\Bigg) +$$

$$\Bigg(3\,\text{AppellF1}\left[\frac{1}{2}, -2m, 2m, \frac{3}{2}, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]\Bigg)\Big/$$

$$\Bigg(2\Bigg(3\,\text{AppellF1}\left[\frac{1}{2}, -2m, 2m, \frac{3}{2}, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right] - 4$$

$$m\Bigg(\text{AppellF1}\left[\frac{3}{2}, 1-2m, 2m, \frac{5}{2}, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right] +$$

$$\text{AppellF1}\left[\frac{3}{2}, -2m, 1+2m, \frac{5}{2}, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\Bigg)\Bigg) +$$

$$\left(3\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\left(-\frac{1}{3}\,m\,\text{AppellF1}\left[\frac{3}{2},\,1-2\,m,\,2\,m,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right.\right.$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-\frac{1}{3}\,m\,\text{AppellF1}\left[\frac{3}{2},\,-2\,m,\,1+2\,m,\,\frac{5}{2},\right.$$

$$\left.\left.\left.\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\right)\right)\right)\Big/$$

$$\left(3\,\text{AppellF1}\left[\frac{1}{2},\,-2\,m,\,2\,m,\,\frac{3}{2},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]-\right.$$

$$4\,m\left(\text{AppellF1}\left[\frac{3}{2},\,1-2\,m,\,2\,m,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.$$

$$\left.\left.\text{AppellF1}\left[\frac{3}{2},\,-2\,m,\,1+2\,m,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)+$$

$$\left(\text{AppellF1}\left[-\frac{1}{2},\,-2\,m,\,2\,m,\,\frac{1}{2},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\left(m\,\text{AppellF1}\left[\frac{1}{2},\,1-2\,m,\,2\,m,\,\frac{3}{2},\right.\right.\right.$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]+m$$

$$\text{AppellF1}\left[\frac{1}{2},\,-2\,m,\,1+2\,m,\,\frac{3}{2},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-2\,m\left(\text{AppellF1}\left[\frac{1}{2},\,1-2\,m,\,2\,m,\,\frac{3}{2},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\text{AppellF1}\left[\frac{1}{2},\right.\right.$$

$$\left.\left.-2\,m,\,1+2\,m,\,\frac{3}{2},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-4\,m$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\left(-\frac{2}{3}\,m\,\text{AppellF1}\left[\frac{3}{2},\,1-2\,m,\,1+2\,m,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right.$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]+\frac{1}{6}\,(1-2\,m)\,\text{AppellF1}\left[\frac{3}{2},\,2-2\,m,\,2\,m,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\right.$$

$$\left.-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-\frac{1}{6}\,(1+2\,m)\,\text{AppellF1}\left[\frac{3}{2},\,-2\,m,\,2+2\,m,\right.$$

$$\left.\left.\left.\left.\frac{5}{2},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\right)\right)\right)\right)\Big/$$

$$\left(\text{AppellF1}\left[-\frac{1}{2},\,-2\,m,\,2\,m,\,\frac{1}{2},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]-4\,m\left(\text{AppellF1}\left[\frac{1}{2},\,1-2\,m,\right.\right.\right.$$

$$2\,m,\,\frac{3}{2},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]+\text{AppellF1}\left[\frac{1}{2},\,-2\,m,\,1+2\,m,\right.$$

$$\left.\left.\left.\frac{3}{2},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^2-$$

$$\left(3\,\text{AppellF1}\left[\frac{1}{2},-2m,2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right.$$
$$\left(-2m\left(\text{AppellF1}\left[\frac{3}{2},1-2m,2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+\text{AppellF1}\left[\frac{3}{2},-2m,1+2m,\frac{5}{2},\right.\right.\right.$$
$$\left.\left.\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right)\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]+3\left(-\frac{1}{3}m\,\text{AppellF1}\left[\frac{3}{2},\right.\right.$$
$$1-2m,2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]-$$
$$\frac{1}{3}m\,\text{AppellF1}\left[\frac{3}{2},-2m,1+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2$$
$$\left.\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]\right)-4m\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\left(-\frac{6}{5}m\,\text{AppellF1}\left[\frac{5}{2},1-2m,1+2m,\frac{7}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,\right.\right.$$
$$-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]+\frac{3}{10}(1-2m)\,\text{AppellF1}\left[\frac{5}{2},2-2m,2m,\frac{7}{2},\right.$$
$$\left.\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]-\frac{3}{10}(1+2m)\,\text{AppellF1}\Big[$$
$$\left.\left.\left.\left.\frac{5}{2},-2m,2+2m,\frac{7}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]\right)\right)\right)\right)\Big/$$
$$\left(3\,\text{AppellF1}\left[\frac{1}{2},-2m,2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]-4m\left(\text{AppellF1}\left[\frac{3}{2},1-2m,\right.\right.\right.$$
$$2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+\text{AppellF1}\left[\frac{3}{2},-2m,1+2m,\right.$$
$$\left.\left.\left.\left.\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)^2\right)\right)\right)$$

- **Problem 409: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int\frac{(a+a\,\text{Sin}[e+fx])^m}{(c-c\,\text{Sin}[e+fx])^2}\,dx$$

Optimal (type 5, 86 leaves, 4 steps):

$$\frac{1}{3ac^2f}2^{\frac{1}{2}+m}\,\text{Hypergeometric2F1}\left[-\frac{3}{2},\frac{1}{2}-m,-\frac{1}{2},\frac{1}{2}(1-\text{Sin}[e+fx])\right]\text{Sec}[e+fx]^3(1+\text{Sin}[e+fx])^{\frac{1}{2}-m}(a+a\,\text{Sin}[e+fx])^{1+m}$$

Result (type 6, 10 191 leaves):

$$-\left(\left(\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^3\left(\text{Cos}\left[\frac{1}{2}(e+fx)\right]-\text{Sin}\left[\frac{1}{2}(e+fx)\right]\right)^4(a+a\,\text{Sin}[e+fx])^m\right.\right.$$

$$\left(\frac{1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}\right)^{2m}\left(-\left(\text{AppellF1}\left[-\frac{3}{2},-2m,2m,-\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right/\right.$$

$$\left(\text{AppellF1}\left[-\frac{3}{2},-2m,2m,-\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$4m\left(\text{AppellF1}\left[-\frac{1}{2},1-2m,2m,\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\text{AppellF1}\left[-\frac{1}{2},\right.\right.$$

$$\left.\left.\left.-2m,1+2m,\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\right)-$$

$$\left(9\,\text{AppellF1}\left[-\frac{1}{2},-2m,2m,\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\Big/$$

$$\left(\text{AppellF1}\left[-\frac{1}{2},-2m,2m,\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]-\right.$$

$$4m\left(\text{AppellF1}\left[\frac{1}{2},1-2m,2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$\left.\left.\text{AppellF1}\left[\frac{1}{2},-2m,1+2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)+$$

$$\left(27\,\text{AppellF1}\left[\frac{1}{2},-2m,2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^4\right)\Big/$$

$$\left(3\,\text{AppellF1}\left[\frac{1}{2},-2m,2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]-\right.$$

$$4m\left(\text{AppellF1}\left[\frac{3}{2},1-2m,2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$\left.\left.\text{AppellF1}\left[\frac{3}{2},-2m,1+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)+$$

$$\left(5\,\text{AppellF1}\left[\frac{3}{2},-2m,2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^6\right)\Big/$$

$$\left(5\,\text{AppellF1}\left[\frac{3}{2},-2m,2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]-\right.$$

$$4m\left(\text{AppellF1}\left[\frac{5}{2},1-2m,2m,\frac{7}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$\left.\left.\left.\text{AppellF1}\left[\frac{5}{2},-2m,1+2m,\frac{7}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\right)\Big/$$

$$\left(48\,f\,(c-c\,\text{Sin}[e+f\,x])^2\left(\text{Cos}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f\,x\right)\right]-\text{Sin}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f\,x\right)\right]\right)^4\right.$$

$$\left(-\frac{1}{64}\,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Csc}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\left(\frac{1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}\right)^{2m}\right.$$

$$\left(-\left(\text{AppellF1}\left[-\frac{3}{2},-2m,2m,-\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right/\right.$$

$$\left(\text{AppellF1}\left[-\frac{3}{2},-2m,2m,-\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+4m\right.$$

$$\left(\text{AppellF1}\left[-\frac{1}{2},1-2m,2m,\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.$$

$$\left.\left.\left.\text{AppellF1}\left[-\frac{1}{2},-2m,1+2m,\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\right)-$$

$$\left(9\,\text{AppellF1}\left[-\frac{1}{2},-2m,2m,\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\Big/$$

$$\left(\text{AppellF1}\left[-\frac{1}{2},-2m,2m,\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]-\right.$$

$$4m\left(\text{AppellF1}\left[\frac{1}{2},1-2m,2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.$$

$$\left.\left.\text{AppellF1}\left[\frac{1}{2},-2m,1+2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)+$$

$$\left(27\,\text{AppellF1}\left[\frac{1}{2},-2m,2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\right)\Big/$$

$$\left(3\,\text{AppellF1}\left[\frac{1}{2},-2m,2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]-\right.$$

$$4m\left(\text{AppellF1}\left[\frac{3}{2},1-2m,2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.$$

$$\left.\left.\text{AppellF1}\left[\frac{3}{2},-2m,1+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)+$$

$$\left(5\,\text{AppellF1}\left[\frac{3}{2},-2m,2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^6\right)\Big/$$

$$\left(5\,\text{AppellF1}\left[\frac{3}{2},-2m,2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]-\right.$$

$$4m\left(\text{AppellF1}\left[\frac{5}{2},1-2m,2m,\frac{7}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.$$

$$\text{AppellF1}\left[\frac{5}{2},-2m,1+2m,\frac{7}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)\Bigg)+$$

$$\frac{1}{24}m\,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^3\left(\frac{1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}\right)^{-1+2m}\left(-\frac{\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)}{2\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^2}-\right.$$

$$\left.\frac{\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]}{2\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)}\right)\left(-\left(\text{AppellF1}\left[-\frac{3}{2},-2m,2m,-\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right/\right.$$

$$\left(\text{AppellF1}\left[-\frac{3}{2},-2m,2m,-\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+4m\right.$$

$$\left(\text{AppellF1}\left[-\frac{1}{2},1-2m,2m,\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$\left.\left.\text{AppellF1}\left[-\frac{1}{2},-2m,1+2m,\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\right)-$$

$$\left(9\,\text{AppellF1}\left[-\frac{1}{2},-2m,2m,\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\Big/$$

$$\left(\text{AppellF1}\left[-\frac{1}{2},-2m,2m,\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]-\right.$$

$$4m\left(\text{AppellF1}\left[\frac{1}{2},1-2m,2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$\left.\left.\text{AppellF1}\left[\frac{1}{2},-2m,1+2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)+$$

$$\left(27\,\text{AppellF1}\left[\frac{1}{2},-2m,2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^4\right)\Big/$$

$$\left(3\,\text{AppellF1}\left[\frac{1}{2},-2m,2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]-\right.$$

$$4m\left(\text{AppellF1}\left[\frac{3}{2},1-2m,2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$\left.\left.\text{AppellF1}\left[\frac{3}{2},-2m,1+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)+$$

$$\left(5\,\text{AppellF1}\left[\frac{3}{2},-2m,2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^6\right)\Big/$$

$$\left(5\,\text{AppellF1}\left[\frac{3}{2},-2m,2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]-4m\left(\text{AppellF1}\left[\frac{5}{2},1-2m,2m,\frac{7}{2},\right.\right.\right.$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\text{AppellF1}\left[\frac{5}{2},-2m,1+2m,\frac{7}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,$$

$$-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big)\Big)+\frac{1}{48}\,\text{Cot}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^3\left(\frac{1-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2}{1+\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2}\right)^{2m}$$

$$\Big(-\Big(\Big(-3\,m\,\text{AppellF1}\Big[-\frac{1}{2},\,1-2m,\,2m,\,\frac{1}{2},\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2$$

$$\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]-3\,m\,\text{AppellF1}\Big[-\frac{1}{2},\,-2m,\,1+2m,\,\frac{1}{2},\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big]$$

$$\text{Sec}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]\Big)\Big)\Big/\Big(\text{AppellF1}\Big[-\frac{3}{2},\,-2m,\,2m,\,-\frac{1}{2},\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2,$$

$$-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big]+4\,m\,\Big(\text{AppellF1}\Big[-\frac{1}{2},\,1-2m,\,2m,\,\frac{1}{2},\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big]+$$

$$\text{AppellF1}\Big[-\frac{1}{2},\,-2m,\,1+2m,\,\frac{1}{2},\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big)\Big)-$$

$$\Big(9\,\text{AppellF1}\Big[-\frac{1}{2},\,-2m,\,2m,\,\frac{1}{2},\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]\Big)\Big/$$

$$\Big(2\,\Big(\text{AppellF1}\Big[-\frac{1}{2},\,-2m,\,2m,\,\frac{1}{2},\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big]-4$$

$$m\,\Big(\text{AppellF1}\Big[\frac{1}{2},\,1-2m,\,2m,\,\frac{3}{2},\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big]+$$

$$\text{AppellF1}\Big[\frac{1}{2},\,-2m,\,1+2m,\,\frac{3}{2},\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big)\Big)-$$

$$\Big(9\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\,\Big(m\,\text{AppellF1}\Big[\frac{1}{2},\,1-2m,\,2m,\,\frac{3}{2},\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2$$

$$\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]+m\,\text{AppellF1}\Big[\frac{1}{2},\,-2m,\,1+2m,\,\frac{3}{2},\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big]$$

$$\text{Sec}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]\Big)\Big)\Big/\Big(\text{AppellF1}\Big[-\frac{1}{2},\,-2m,\,2m,\,\frac{1}{2},\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2,$$

$$-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big]-4\,m\,\Big(\text{AppellF1}\Big[\frac{1}{2},\,1-2m,\,2m,\,\frac{3}{2},\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big]+$$

$$\text{AppellF1}\Big[\frac{1}{2},\,-2m,\,1+2m,\,\frac{3}{2},\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big)+$$

$$\Big(27\,\text{AppellF1}\Big[\frac{1}{2},\,-2m,\,2m,\,\frac{3}{2},\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^3\Big)\Big/$$

$$\Big(3\,\text{AppellF1}\Big[\frac{1}{2},\,-2m,\,2m,\,\frac{3}{2},\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big]-$$

$$4\,m\,\Big(\text{AppellF1}\Big[\frac{3}{2},\,1-2\,m,\,2\,m,\,\frac{5}{2},\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]+$$

$$\text{AppellF1}\Big[\frac{3}{2},\,-2\,m,\,1+2\,m,\,\frac{5}{2},\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big)+$$

$$\Big(27\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^4\,\Big(-\frac{1}{3}\,m\,\text{AppellF1}\Big[\frac{3}{2},\,1-2\,m,\,2\,m,\,\frac{5}{2},\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]$$

$$\text{Sec}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]-\frac{1}{3}\,m\,\text{AppellF1}\Big[\frac{3}{2},\,-2\,m,\,1+2\,m,\,\frac{5}{2},$$

$$\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]\Big)\Big)\Big/$$

$$\Big(3\,\text{AppellF1}\Big[\frac{1}{2},\,-2\,m,\,2\,m,\,\frac{3}{2},\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]-$$

$$4\,m\,\Big(\text{AppellF1}\Big[\frac{3}{2},\,1-2\,m,\,2\,m,\,\frac{5}{2},\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]+$$

$$\text{AppellF1}\Big[\frac{3}{2},\,-2\,m,\,1+2\,m,\,\frac{5}{2},\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big)+$$

$$\Big(15\,\text{AppellF1}\Big[\frac{3}{2},\,-2\,m,\,2\,m,\,\frac{5}{2},\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^5\Big)\Big/$$

$$\Big(2\,\Big(5\,\text{AppellF1}\Big[\frac{3}{2},\,-2\,m,\,2\,m,\,\frac{5}{2},\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]-4$$

$$m\,\Big(\text{AppellF1}\Big[\frac{5}{2},\,1-2\,m,\,2\,m,\,\frac{7}{2},\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]+$$

$$\text{AppellF1}\Big[\frac{5}{2},\,-2\,m,\,1+2\,m,\,\frac{7}{2},\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big)\Big)+$$

$$\Big(5\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^6\,\Big(-\frac{3}{5}\,m\,\text{AppellF1}\Big[\frac{5}{2},\,1-2\,m,\,2\,m,\,\frac{7}{2},\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]$$

$$\text{Sec}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]-\frac{3}{5}\,m\,\text{AppellF1}\Big[\frac{5}{2},\,-2\,m,\,1+2\,m,\,\frac{7}{2},$$

$$\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]\Big)\Big)\Big/$$

$$\Big(5\,\text{AppellF1}\Big[\frac{3}{2},\,-2\,m,\,2\,m,\,\frac{5}{2},\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]-$$

$$4\,m\,\Big(\text{AppellF1}\Big[\frac{5}{2},\,1-2\,m,\,2\,m,\,\frac{7}{2},\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]+$$

$$\text{AppellF1}\Big[\frac{5}{2},\,-2\,m,\,1+2\,m,\,\frac{7}{2},\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big)+$$

$$\Big(\text{AppellF1}\Big[-\frac{3}{2},\,-2\,m,\,2\,m,\,-\frac{1}{2},\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]\,\Big(-3\,m\,\text{AppellF1}\Big[-\frac{1}{2},\,1-2\,m,\,2\,m,$$

$$\frac{1}{2},\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]-3\,m$$

$$\text{AppellF1}\Big[-\frac{1}{2},\,-2\,m,\,1+2\,m,\,\frac{1}{2},\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2$$

$$\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]+2\,m\,\Big(\text{AppellF1}\Big[-\frac{1}{2},\,1-2\,m,\,2\,m,\,\frac{1}{2},\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]+$$

$$\text{AppellF1}\Big[-\frac{1}{2},\,-2\,m,\,1+2\,m,\,\frac{1}{2},\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]\Big)\,\text{Sec}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2$$

$$\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]+4\,m\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\,\Big(2\,m\,\text{AppellF1}\Big[\frac{1}{2},\,1-2\,m,\,1+2\,m,\,\frac{3}{2},\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,$$

$$-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]-\frac{1}{2}\,(1-2\,m)\,\text{AppellF1}\Big[\frac{1}{2},\,2-2\,m,\,2\,m,\,\frac{3}{2},$$

$$\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]+\frac{1}{2}\,(1+2\,m)\,\text{AppellF1}\Big[\frac{1}{2},$$

$$-2\,m,\,2+2\,m,\,\frac{3}{2},\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]\Big]\Big)\Big)\Big)\Big/$$

$$\Big(\text{AppellF1}\Big[-\frac{3}{2},\,-2\,m,\,2\,m,\,-\frac{1}{2},\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]+4\,m\,\Big(\text{AppellF1}\Big[-\frac{1}{2},\,1-2\,m,$$

$$2\,m,\,\frac{1}{2},\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]+\text{AppellF1}\Big[-\frac{1}{2},\,-2\,m,\,1+2\,m,$$

$$\frac{1}{2},\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big)^2+$$

$$\Big(9\,\text{AppellF1}\Big[-\frac{1}{2},\,-2\,m,\,2\,m,\,\frac{1}{2},\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2$$

$$\Big(m\,\text{AppellF1}\Big[\frac{1}{2},\,1-2\,m,\,2\,m,\,\frac{3}{2},\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]+$$

$$m\,\text{AppellF1}\Big[\frac{1}{2},\,-2\,m,\,1+2\,m,\,\frac{3}{2},\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2$$

$$\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]-2\,m\,\Big(\text{AppellF1}\Big[\frac{1}{2},\,1-2\,m,\,2\,m,\,\frac{3}{2},\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]+\text{AppellF1}\Big[\frac{1}{2},$$

$$-2\,m,\,1+2\,m,\,\frac{3}{2},\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]\Big)\,\text{Sec}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]-4\,m$$

$$\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\,\Big(-\frac{2}{3}\,m\,\text{AppellF1}\Big[\frac{3}{2},\,1-2\,m,\,1+2\,m,\,\frac{5}{2},\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]+\frac{1}{6}(1-2 m)\,\text{AppellF1}\Big[\frac{3}{2},2-2 m,2 m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,$$

$$-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big] \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{1}{6}(1+2 m)\,\text{AppellF1}\Big[\frac{3}{2},-2 m,2+2 m,$$

$$\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big] \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\Big)\Big)\Big)\Big)\Big/$$

$$\Big(\text{AppellF1}\Big[-\frac{1}{2},-2 m,2 m,\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]-4 m\,\Big(\text{AppellF1}\Big[\frac{1}{2},1-2 m,$$

$$2 m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]+\text{AppellF1}\Big[\frac{1}{2},-2 m,1+2 m,$$

$$\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\Big) \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big)^2-$$

$$\Big(27\,\text{AppellF1}\Big[\frac{1}{2},-2 m,2 m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big] \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^4$$

$$\Big(-2 m\,\Big(\text{AppellF1}\Big[\frac{3}{2},1-2 m,2 m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]+\text{AppellF1}\Big[\frac{3}{2},-2 m,1+2 m,\frac{5}{2},$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\Big) \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]+3\,\Big(-\frac{1}{3} m\,\text{AppellF1}\Big[\frac{3}{2},$$

$$1-2 m,2 m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big] \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-$$

$$\frac{1}{3} m\,\text{AppellF1}\Big[\frac{3}{2},-2 m,1+2 m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big] \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\Big)-4 m\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \Big(-\frac{6}{5} m\,\text{AppellF1}\Big[\frac{5}{2},1-2 m,1+2 m,\frac{7}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,$$

$$-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big] \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]+\frac{3}{10}(1-2 m)\,\text{AppellF1}\Big[\frac{5}{2},2-2 m,2 m,\frac{7}{2},$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big] \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{3}{10}(1+2 m)\,\text{AppellF1}\Big[$$

$$\frac{5}{2},-2 m,2+2 m,\frac{7}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big] \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\Big)\Big)\Big)\Big)\Big/$$

$$\Big(3\,\text{AppellF1}\Big[\frac{1}{2},-2 m,2 m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]-4 m\,\Big(\text{AppellF1}\Big[\frac{3}{2},1-2 m,$$

$$2 m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]+\text{AppellF1}\Big[\frac{3}{2},-2 m,1+2 m,$$

$$\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\Big) \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big)^2-$$

$$\left(5\,\text{AppellF1}\left[\frac{3}{2},\,-2\,m,\,2\,m,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^6\right.$$

$$\left(-2\,m\left(\text{AppellF1}\left[\frac{5}{2},\,1-2\,m,\,2\,m,\,\frac{7}{2},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.\right.$$

$$\left.\text{AppellF1}\left[\frac{5}{2},\,-2\,m,\,1+2\,m,\,\frac{7}{2},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]+5\left(-\frac{3}{5}\,m\,\text{AppellF1}\left[\frac{5}{2},\,1-2\,m,\,2\,m,\,\frac{7}{2},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right.$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-\frac{3}{5}\,m\,\text{AppellF1}\left[\frac{5}{2},\,-2\,m,\,1+2\,m,\,\frac{7}{2},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\right.$$

$$\left.\left.-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\right)-4\,m\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2$$

$$\left(-\frac{10}{7}\,m\,\text{AppellF1}\left[\frac{7}{2},\,1-2\,m,\,1+2\,m,\,\frac{9}{2},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right.$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]+\frac{5}{14}\,(1-2\,m)\,\text{AppellF1}\left[\frac{7}{2},\,2-2\,m,\,2\,m,\,\frac{9}{2},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-\frac{5}{14}\,(1+2\,m)\,\text{AppellF1}\left[\frac{7}{2},\,-2\,m,\,2+2\,m,\,\frac{9}{2},\right.$$

$$\left.\left.\left.\left.\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\right)\right)\right)\right)\Big/$$

$$\left(5\,\text{AppellF1}\left[\frac{3}{2},\,-2\,m,\,2\,m,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]-4\,m\left(\text{AppellF1}\left[\frac{5}{2},\,1-2\,m,\right.\right.\right.$$

$$2\,m,\,\frac{7}{2},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\text{AppellF1}\left[\frac{5}{2},\,-2\,m,\,1+2\,m,$$

$$\left.\left.\left.\left.\left.\frac{7}{2},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^2\right)\right)\right)\right)$$

- **Problem 410: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int\frac{(a+a\,\text{Sin}[e+f\,x])^m}{(c-c\,\text{Sin}[e+f\,x])^3}\,dx$$

Optimal (type 5, 86 leaves, 4 steps):

$$\frac{1}{5\,a^2\,c^3\,f}2^{\frac{1}{2}+m}\,\text{Hypergeometric2F1}\left[-\frac{5}{2},\,\frac{1}{2}-m,\,-\frac{3}{2},\,\frac{1}{2}\,(1-\text{Sin}[e+f\,x])\right]\text{Sec}[e+f\,x]^5\,(1+\text{Sin}[e+f\,x])^{\frac{1}{2}-m}\,(a+a\,\text{Sin}[e+f\,x])^{2+m}$$

Result (type 6, 15 208 leaves):

$$-\Bigg(\Bigg(\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^5\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^6 (a+a\,\text{Sin}[e+f x])^m$$

$$\left(\frac{1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}\right)^{2m}\Bigg(-\Bigg(\Bigg(9\,\text{AppellF1}\left[-\frac{5}{2},-2m,2m,-\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\Bigg)\Big/$$

$$\Bigg(3\,\text{AppellF1}\left[-\frac{5}{2},-2m,2m,-\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$4m\Bigg(\text{AppellF1}\left[-\frac{3}{2},1-2m,2m,-\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\text{AppellF1}\Big[-\frac{3}{2},$$

$$-2m,1+2m,-\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\Bigg)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)\Bigg)-$$

$$\Bigg(25\,\text{AppellF1}\left[-\frac{3}{2},-2m,2m,-\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)\Big/$$

$$\Bigg(\text{AppellF1}\left[-\frac{3}{2},-2m,2m,-\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$4m\Bigg(\text{AppellF1}\left[-\frac{1}{2},1-2m,2m,\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$\text{AppellF1}\left[-\frac{1}{2},-2m,1+2m,\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\Bigg)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)-$$

$$\Bigg(150\,\text{AppellF1}\left[-\frac{1}{2},-2m,2m,\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^4\Bigg)\Big/$$

$$\Bigg(\text{AppellF1}\left[-\frac{1}{2},-2m,2m,\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]-$$

$$4m\Bigg(\text{AppellF1}\left[\frac{1}{2},1-2m,2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$\text{AppellF1}\left[\frac{1}{2},-2m,1+2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\Bigg)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)+$$

$$\Bigg(450\,\text{AppellF1}\left[\frac{1}{2},-2m,2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^6\Bigg)\Big/$$

$$\Bigg(3\,\text{AppellF1}\left[\frac{1}{2},-2m,2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]-$$

$$4m\Bigg(\text{AppellF1}\left[\frac{3}{2},1-2m,2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$\text{AppellF1}\left[\frac{3}{2},-2m,1+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\Bigg)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)+$$

$$\left(125\,\text{AppellF1}\left[\frac{3}{2},-2m,2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^8\right)\Big/$$

$$\Big(5\,\text{AppellF1}\left[\frac{3}{2},-2m,2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]-$$

$$4m\,\Big(\text{AppellF1}\left[\frac{5}{2},1-2m,2m,\frac{7}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+$$

$$\text{AppellF1}\left[\frac{5}{2},-2m,1+2m,\frac{7}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\Big)\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\Big)+$$

$$\left(21\,\text{AppellF1}\left[\frac{5}{2},-2m,2m,\frac{7}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^{10}\right)\Big/$$

$$\Big(7\,\text{AppellF1}\left[\frac{5}{2},-2m,2m,\frac{7}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]-$$

$$4m\,\Big(\text{AppellF1}\left[\frac{7}{2},1-2m,2m,\frac{9}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+$$

$$\text{AppellF1}\left[\frac{7}{2},-2m,1+2m,\frac{9}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\Big)\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\Big)\Big)\Big)\Big/$$

$$\Big(1920\,f\,(c-c\,\text{Sin}[e+fx])^3\left(\text{Cos}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+fx\right)\right]-\text{Sin}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+fx\right)\right]\right)^6$$

$$\Big(-\frac{1}{1536}\,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^4\text{Csc}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\left(\frac{1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2}\right)^{2m}$$

$$\Big(-\Big(\Big(9\,\text{AppellF1}\left[-\frac{5}{2},-2m,2m,-\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\Big)\Big/$$

$$\Big(3\,\text{AppellF1}\left[-\frac{5}{2},-2m,2m,-\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+$$

$$4m\,\Big(\text{AppellF1}\left[-\frac{3}{2},1-2m,2m,-\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+$$

$$\text{AppellF1}\left[-\frac{3}{2},-2m,1+2m,-\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\Big)\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\Big)\Big)-$$

$$\left(25\,\text{AppellF1}\left[-\frac{3}{2},-2m,2m,-\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)\Big/$$

$$\Big(\text{AppellF1}\left[-\frac{3}{2},-2m,2m,-\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+4m$$

$$\left(\text{AppellF1}\left[-\frac{1}{2}, 1-2m, 2m, \frac{1}{2}, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+\right.$$

$$\left.\text{AppellF1}\left[-\frac{1}{2}, -2m, 1+2m, \frac{1}{2}, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\Big) -$$

$$\left(150\,\text{AppellF1}\left[-\frac{1}{2}, -2m, 2m, \frac{1}{2}, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^4\right)\Big/$$

$$\Big(\text{AppellF1}\left[-\frac{1}{2}, -2m, 2m, \frac{1}{2}, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]-4m$$

$$\left(\text{AppellF1}\left[\frac{1}{2}, 1-2m, 2m, \frac{3}{2}, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+\right.$$

$$\left.\text{AppellF1}\left[\frac{1}{2}, -2m, 1+2m, \frac{3}{2}, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\Big) +$$

$$\left(450\,\text{AppellF1}\left[\frac{1}{2}, -2m, 2m, \frac{3}{2}, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^6\right)\Big/$$

$$\Big(3\,\text{AppellF1}\left[\frac{1}{2}, -2m, 2m, \frac{3}{2}, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]-4m$$

$$\left(\text{AppellF1}\left[\frac{3}{2}, 1-2m, 2m, \frac{5}{2}, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+\right.$$

$$\left.\text{AppellF1}\left[\frac{3}{2}, -2m, 1+2m, \frac{5}{2}, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\Big) +$$

$$\left(125\,\text{AppellF1}\left[\frac{3}{2}, -2m, 2m, \frac{5}{2}, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^8\right)\Big/$$

$$\Big(5\,\text{AppellF1}\left[\frac{3}{2}, -2m, 2m, \frac{5}{2}, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]-4m$$

$$\left(\text{AppellF1}\left[\frac{5}{2}, 1-2m, 2m, \frac{7}{2}, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+\right.$$

$$\left.\text{AppellF1}\left[\frac{5}{2}, -2m, 1+2m, \frac{7}{2}, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\Big) +$$

$$\left(21\,\text{AppellF1}\left[\frac{5}{2}, -2m, 2m, \frac{7}{2}, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^{10}\right)\Big/$$

$$\Big(7\,\text{AppellF1}\left[\frac{5}{2}, -2m, 2m, \frac{7}{2}, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]-4m$$

$$\left(\text{AppellF1}\left[\frac{7}{2}, 1-2m, 2m, \frac{9}{2}, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+\text{AppellF1}\left[\frac{7}{2}, -2m, 1+2m, \frac{9}{2},\right.\right.$$

$$\left.\left.\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\Big)\Big) + \frac{1}{960}\,m\,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^5$$

$$\left(\frac{1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}\right)^{-1+2 m}\left(-\frac{\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)}{2\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^2}-\right.$$

$$\left.\frac{\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]}{2\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)}\right)$$

$$\left(-\left(\left(9\,\text{AppellF1}\left[-\frac{5}{2},-2 m,2 m,-\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\right/\right.$$

$$\left(3\,\text{AppellF1}\left[-\frac{5}{2},-2 m,2 m,-\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+4 m\right.$$

$$\left(\text{AppellF1}\left[-\frac{3}{2},1-2 m,2 m,-\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$\left.\left.\text{AppellF1}\left[-\frac{3}{2},-2 m,1+2 m,-\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\right)-$$

$$\left(25\,\text{AppellF1}\left[-\frac{3}{2},-2 m,2 m,-\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\Big/$$

$$\left(\text{AppellF1}\left[-\frac{3}{2},-2 m,2 m,-\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$4 m\left(\text{AppellF1}\left[-\frac{1}{2},1-2 m,2 m,\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$\left.\left.\text{AppellF1}\left[-\frac{1}{2},-2 m,1+2 m,\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)-$$

$$\left(150\,\text{AppellF1}\left[-\frac{1}{2},-2 m,2 m,\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^4\right)\Big/$$

$$\left(\text{AppellF1}\left[-\frac{1}{2},-2 m,2 m,\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]-\right.$$

$$4 m\left(\text{AppellF1}\left[\frac{1}{2},1-2 m,2 m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$\left.\left.\text{AppellF1}\left[\frac{1}{2},-2 m,1+2 m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)+$$

$$\left(450\,\text{AppellF1}\left[\frac{1}{2},-2 m,2 m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^6\right)\Big/$$

$$\left(3\,\text{AppellF1}\left[\frac{1}{2},-2 m,2 m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]-\right.$$

$$4 m\left(\text{AppellF1}\left[\frac{3}{2},1-2 m,2 m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$\text{AppellF1}\left[\frac{3}{2},-2m,1+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\Bigg)\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)+$$

$$\Bigg(125\,\text{AppellF1}\left[\frac{3}{2},-2m,2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^8\Bigg)\Big/$$

$$\Bigg(5\,\text{AppellF1}\left[\frac{3}{2},-2m,2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]-$$

$$4m\Bigg(\text{AppellF1}\left[\frac{5}{2},1-2m,2m,\frac{7}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$\text{AppellF1}\left[\frac{5}{2},-2m,1+2m,\frac{7}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\Bigg)\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)+$$

$$\Bigg(21\,\text{AppellF1}\left[\frac{5}{2},-2m,2m,\frac{7}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^{10}\Bigg)\Big/$$

$$\Bigg(7\,\text{AppellF1}\left[\frac{5}{2},-2m,2m,\frac{7}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]-$$

$$4m\Bigg(\text{AppellF1}\left[\frac{7}{2},1-2m,2m,\frac{9}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$\text{AppellF1}\left[\frac{7}{2},-2m,1+2m,\frac{9}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\Bigg)\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)\Bigg)+$$

$$\frac{1}{1920}\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^5\left(\frac{1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}\right)^{2m}\Bigg(-\Bigg(\Bigg(9\Bigg(-\frac{5}{3}m\,\text{AppellF1}\left[-\frac{3}{2},1-2m,2m,-\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\right.$$

$$\left.-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{5}{3}m\,\text{AppellF1}\left[-\frac{3}{2},-2m,1+2m,\right.$$

$$\left.-\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\Bigg)\Bigg)\Big/$$

$$\Bigg(3\,\text{AppellF1}\left[-\frac{5}{2},-2m,2m,-\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$4m\Bigg(\text{AppellF1}\left[-\frac{3}{2},1-2m,2m,-\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$\text{AppellF1}\left[-\frac{3}{2},-2m,1+2m,-\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\Bigg)\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)\Bigg)-$$

$$\Bigg(25\,\text{AppellF1}\left[-\frac{3}{2},-2m,2m,-\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\Bigg)\Big/$$

$$\Bigg(2\Bigg(\text{AppellF1}\left[-\frac{3}{2},-2m,2m,-\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$4\,m\,\Big(\text{AppellF1}\Big[-\frac{1}{2},\,1-2\,m,\,2\,m,\,\frac{1}{2},\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+$$

$$\text{AppellF1}\Big[-\frac{1}{2},\,-2\,m,\,1+2\,m,\,\frac{1}{2},\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)\Big)-$$

$$\Big(25\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\,\Big(-3\,m\,\text{AppellF1}\Big[-\frac{1}{2},\,1-2\,m,\,2\,m,\,\frac{1}{2},\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]$$

$$\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]-3\,m\,\text{AppellF1}\Big[-\frac{1}{2},\,-2\,m,\,1+2\,m,\,\frac{1}{2},$$

$$\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\Big]\Big)\Big)\Big/$$

$$\Big(\text{AppellF1}\Big[-\frac{3}{2},\,-2\,m,\,2\,m,\,-\frac{1}{2},\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+$$

$$4\,m\,\Big(\text{AppellF1}\Big[-\frac{1}{2},\,1-2\,m,\,2\,m,\,\frac{1}{2},\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+$$

$$\text{AppellF1}\Big[-\frac{1}{2},\,-2\,m,\,1+2\,m,\,\frac{1}{2},\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)-$$

$$\Big(150\,\text{AppellF1}\Big[-\frac{1}{2},\,-2\,m,\,2\,m,\,\frac{1}{2},\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2$$

$$\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^3\Big)\Big/\Big(\text{AppellF1}\Big[-\frac{1}{2},\,-2\,m,\,2\,m,\,\frac{1}{2},\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]-$$

$$4\,m\,\Big(\text{AppellF1}\Big[\frac{1}{2},\,1-2\,m,\,2\,m,\,\frac{3}{2},\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+$$

$$\text{AppellF1}\Big[\frac{1}{2},\,-2\,m,\,1+2\,m,\,\frac{3}{2},\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)-$$

$$\Big(150\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^4\,\Big(m\,\text{AppellF1}\Big[\frac{1}{2},\,1-2\,m,\,2\,m,\,\frac{3}{2},\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]$$

$$\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]+m\,\text{AppellF1}\Big[\frac{1}{2},\,-2\,m,\,1+2\,m,\,\frac{3}{2},$$

$$\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\Big]\Big)\Big)\Big/$$

$$\Big(\text{AppellF1}\Big[-\frac{1}{2},\,-2\,m,\,2\,m,\,\frac{1}{2},\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]-$$

$$4\,m\,\Big(\text{AppellF1}\Big[\frac{1}{2},\,1-2\,m,\,2\,m,\,\frac{3}{2},\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+$$

$$\text{AppellF1}\Big[\frac{1}{2},\,-2\,m,\,1+2\,m,\,\frac{3}{2},\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)+$$

$$\left(675\,\text{AppellF1}\left[\frac{1}{2},-2m,2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^5\right)\Big/$$

$$\left(3\,\text{AppellF1}\left[\frac{1}{2},-2m,2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]-\right.$$

$$4m\left(\text{AppellF1}\left[\frac{3}{2},1-2m,2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+\right.$$

$$\left.\left.\text{AppellF1}\left[\frac{3}{2},-2m,1+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)+$$

$$\left(450\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^6\left(-\frac{1}{3}m\,\text{AppellF1}\left[\frac{3}{2},1-2m,2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right.\right.$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]-\frac{1}{3}m\,\text{AppellF1}\left[\frac{3}{2},-2m,1+2m,\frac{5}{2},\right.$$

$$\left.\left.\left.\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]\right)\right)\Big/$$

$$\left(3\,\text{AppellF1}\left[\frac{1}{2},-2m,2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]-\right.$$

$$4m\left(\text{AppellF1}\left[\frac{3}{2},1-2m,2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+\right.$$

$$\left.\left.\text{AppellF1}\left[\frac{3}{2},-2m,1+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)+$$

$$\left(250\,\text{AppellF1}\left[\frac{3}{2},-2m,2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^7\right)\Big/$$

$$\left(5\,\text{AppellF1}\left[\frac{3}{2},-2m,2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]-\right.$$

$$4m\left(\text{AppellF1}\left[\frac{5}{2},1-2m,2m,\frac{7}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+\right.$$

$$\left.\left.\text{AppellF1}\left[\frac{5}{2},-2m,1+2m,\frac{7}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)+$$

$$\left(125\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^8\left(-\frac{3}{5}m\,\text{AppellF1}\left[\frac{5}{2},1-2m,2m,\frac{7}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right.\right.$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]-\frac{3}{5}m\,\text{AppellF1}\left[\frac{5}{2},-2m,1+2m,\frac{7}{2},\right.$$

$$\left.\left.\left.\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]\right)\right)\Big/$$

$$\left(5\,\text{AppellF1}\left[\frac{3}{2},-2m,2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]-\right.$$

$$4\,m\left(\text{AppellF1}\left[\frac{5}{2},1-2\,m,2\,m,\frac{7}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.$$

$$\left.\text{AppellF1}\left[\frac{5}{2},-2\,m,1+2\,m,\frac{7}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big)+$$

$$\left(105\,\text{AppellF1}\left[\frac{5}{2},-2\,m,2\,m,\frac{7}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^9\right)\Big/$$

$$\left(2\left(7\,\text{AppellF1}\left[\frac{5}{2},-2\,m,2\,m,\frac{7}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]-\right.\right.$$

$$4\,m\left(\text{AppellF1}\left[\frac{7}{2},1-2\,m,2\,m,\frac{9}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.$$

$$\left.\left.\left.\text{AppellF1}\left[\frac{7}{2},-2\,m,1+2\,m,\frac{9}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\right)+$$

$$\left(21\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{10}\left(-\frac{5}{7}\,m\,\text{AppellF1}\left[\frac{7}{2},1-2\,m,2\,m,\frac{9}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right.\right.$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-\frac{5}{7}\,m\,\text{AppellF1}\left[\frac{7}{2},-2\,m,1+2\,m,\frac{9}{2},\right.$$

$$\left.\left.\left.\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\right)\right)\Big/$$

$$\left(7\,\text{AppellF1}\left[\frac{5}{2},-2\,m,2\,m,\frac{7}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]-\right.$$

$$4\,m\left(\text{AppellF1}\left[\frac{7}{2},1-2\,m,2\,m,\frac{9}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.$$

$$\left.\left.\text{AppellF1}\left[\frac{7}{2},-2\,m,1+2\,m,\frac{9}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)+$$

$$\left(9\,\text{AppellF1}\left[-\frac{5}{2},-2\,m,2\,m,-\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\left(2\,m\left(\text{AppellF1}\left[-\frac{3}{2},1-2\,m,2\,m,\right.\right.\right.\right.$$

$$-\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]+\text{AppellF1}\left[-\frac{3}{2},-2\,m,1+2\,m,-\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\right.$$

$$\left.\left.-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]+3\left(-\frac{5}{3}\,m\,\text{AppellF1}\left[-\frac{3}{2},1-2\,m,2\,m,-\frac{1}{2},\right.\right.$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-\frac{5}{3}\,m\,\text{AppellF1}\left[-\frac{3}{2},\right.$$

$$\left.-2\,m,1+2\,m,-\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\Big)+$$

$$4\,m\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\left(-6\,m\,\text{AppellF1}\left[-\frac{1}{2},1-2\,m,1+2\,m,\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right.$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]+\frac{3}{2}(1-2 m)\,\text{AppellF1}\Big[-\frac{1}{2},2-2 m,2 m,\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,$$

$$-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{3}{2}(1+2 m)\,\text{AppellF1}\Big[-\frac{1}{2},-2 m,$$

$$2+2 m,\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\Big]\Big)\Big)\Big)\Big/$$

$$\Big(3\,\text{AppellF1}\Big[-\frac{5}{2},-2 m,2 m,-\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]+4 m\Big(\text{AppellF1}\Big[-\frac{3}{2},1-2 m,$$

$$2 m,-\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]+\text{AppellF1}\Big[-\frac{3}{2},-2 m,1+2 m,$$

$$-\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\Big)\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big)^2+$$

$$\Big(25\,\text{AppellF1}\Big[-\frac{3}{2},-2 m,2 m,-\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big(-3 m\,\text{AppellF1}\Big[$$

$$-\frac{1}{2},1-2 m,2 m,\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-$$

$$3 m\,\text{AppellF1}\Big[-\frac{1}{2},-2 m,1+2 m,\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]+2 m\Big(\text{AppellF1}\Big[-\frac{1}{2},1-2 m,2 m,\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]+\text{AppellF1}\Big[-\frac{1}{2},$$

$$-2 m,1+2 m,\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\Big)\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]+$$

$$4 m\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big(2 m\,\text{AppellF1}\Big[\frac{1}{2},1-2 m,1+2 m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{1}{2}(1-2 m)\,\text{AppellF1}\Big[\frac{1}{2},2-2 m,2 m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,$$

$$-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]+\frac{1}{2}(1+2 m)\,\text{AppellF1}\Big[\frac{1}{2},-2 m,2+2 m,$$

$$\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\Big]\Big)\Big)\Big)\Big/$$

$$\Big(\text{AppellF1}\Big[-\frac{3}{2},-2 m,2 m,-\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]+4 m\Big(\text{AppellF1}\Big[-\frac{1}{2},1-2 m,$$

$$2 m,\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]+\text{AppellF1}\Big[-\frac{1}{2},-2 m,1+2 m,$$

$$\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\Big)\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big)^2+$$

$$\left(150\,\text{AppellF1}\left[-\frac{1}{2},-2m,2m,\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^4\right.$$

$$\left(m\,\text{AppellF1}\left[\frac{1}{2},1-2m,2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]+\right.$$

$$m\,\text{AppellF1}\left[\frac{1}{2},-2m,1+2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]-2m\left(\text{AppellF1}\left[\frac{1}{2},1-2m,2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+\text{AppellF1}\left[\frac{1}{2},\right.\right.$$

$$\left.\left.-2m,1+2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right)\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]-$$

$$4m\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\left(-\frac{2}{3}m\,\text{AppellF1}\left[\frac{3}{2},1-2m,1+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right.$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]+\frac{1}{6}(1-2m)\,\text{AppellF1}\left[\frac{3}{2},2-2m,2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,\right.$$

$$\left.-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]-\frac{1}{6}(1+2m)\,\text{AppellF1}\left[\frac{3}{2},-2m,2+2m,\right.$$

$$\left.\left.\left.\left.\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]\right)\right)\right)\Big/$$

$$\left(\text{AppellF1}\left[-\frac{1}{2},-2m,2m,\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]-4m\left(\text{AppellF1}\left[\frac{1}{2},1-2m,\right.\right.\right.$$

$$2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+\text{AppellF1}\left[\frac{1}{2},-2m,1+2m,$$

$$\left.\left.\left.\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)^2-$$

$$\left(450\,\text{AppellF1}\left[\frac{1}{2},-2m,2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^6\right.$$

$$\left(-2m\left(\text{AppellF1}\left[\frac{3}{2},1-2m,2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+\text{AppellF1}\left[\frac{3}{2},-2m,1+2m,\right.\right.\right.$$

$$\left.\left.\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right)\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]+$$

$$3\left(-\frac{1}{3}m\,\text{AppellF1}\left[\frac{3}{2},1-2m,2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right.$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]-\frac{1}{3}m\,\text{AppellF1}\left[\frac{3}{2},-2m,1+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]$$

$$\left.\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]\right)-4m\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2$$

$$\left(-\frac{6}{5} m \,\text{AppellF1}\left[\frac{5}{2}, 1-2m, 1+2m, \frac{7}{2}, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right] \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right] + \frac{3}{10}(1-2m) \,\text{AppellF1}\left[\frac{5}{2}, 2-2m, 2m, \frac{7}{2}, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right] \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right] - \frac{3}{10}(1+2m) \,\text{AppellF1}\left[\frac{5}{2}, -2m, 2+2m, \frac{7}{2}, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right] \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)\Bigg)\Bigg)\Bigg) \Big/$$

$$\left(3 \,\text{AppellF1}\left[\frac{1}{2}, -2m, 2m, \frac{3}{2}, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right] - 4m \left(\text{AppellF1}\left[\frac{3}{2}, 1-2m, 2m, \frac{5}{2}, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right] + \text{AppellF1}\left[\frac{3}{2}, -2m, 1+2m, \frac{5}{2}, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right) \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^2 -$$

$$\left(125 \,\text{AppellF1}\left[\frac{3}{2}, -2m, 2m, \frac{5}{2}, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right] \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^8\right.$$

$$\left(-2m \left(\text{AppellF1}\left[\frac{5}{2}, 1-2m, 2m, \frac{7}{2}, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right] + \text{AppellF1}\left[\frac{5}{2}, -2m, 1+2m, \frac{7}{2}, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right) \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right] +$$

$$5 \left(-\frac{3}{5} m \,\text{AppellF1}\left[\frac{5}{2}, 1-2m, 2m, \frac{7}{2}, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right] \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right] - \frac{3}{5} m \,\text{AppellF1}\left[\frac{5}{2}, -2m, 1+2m, \frac{7}{2}, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right] \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\right) - 4m \,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2$$

$$\left(-\frac{10}{7} m \,\text{AppellF1}\left[\frac{7}{2}, 1-2m, 1+2m, \frac{9}{2}, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right] \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right] + \frac{5}{14}(1-2m) \,\text{AppellF1}\left[\frac{7}{2}, 2-2m, 2m, \frac{9}{2}, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right] \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right] - \frac{5}{14}(1+2m) \,\text{AppellF1}\left[\frac{7}{2}, -2m, 2+2m, \frac{9}{2}, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right] \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)\Bigg)\Bigg)\Bigg) \Big/$$

$$\left(5 \,\text{AppellF1}\left[\frac{3}{2}, -2m, 2m, \frac{5}{2}, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right] - 4m \left(\text{AppellF1}\left[\frac{5}{2}, 1-2m,\right.\right.$$

$$2\,m,\ \frac{7}{2},\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2] + \text{AppellF1}[\frac{5}{2},\ -2\,m,\ 1+2\,m,$$

$$\frac{7}{2},\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2])\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2)^2 -$$

$$(21\,\text{AppellF1}\left[\frac{5}{2},\ -2\,m,\ 2\,m,\ \frac{7}{2},\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{10}$$

$$(-2\,m\,(\text{AppellF1}\left[\frac{7}{2},\ 1-2\,m,\ 2\,m,\ \frac{9}{2},\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right] + \text{AppellF1}[\frac{7}{2},\ -2\,m,\ 1+2\,m,$$

$$\frac{9}{2},\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2])\ \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right] +$$

$$7\,(-\frac{5}{7}\,m\,\text{AppellF1}\left[\frac{7}{2},\ 1-2\,m,\ 2\,m,\ \frac{9}{2},\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\ \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right] - \frac{5}{7}\,m\,\text{AppellF1}\left[\frac{7}{2},\ -2\,m,\ 1+2\,m,\ \frac{9}{2},\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]) - 4\,m\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2$$

$$(-\frac{14}{9}\,m\,\text{AppellF1}\left[\frac{9}{2},\ 1-2\,m,\ 1+2\,m,\ \frac{11}{2},\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\ \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right] + \frac{7}{18}\,(1-2\,m)\ \text{AppellF1}\left[\frac{9}{2},\ 2-2\,m,\ 2\,m,\ \frac{11}{2},\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right] - \frac{7}{18}\,(1+2\,m)\ \text{AppellF1}[\frac{9}{2},\ -2\,m,\ 2+2\,m,\ \frac{11}{2},$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2]\ \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right])))) \Big/$$

$$(7\,\text{AppellF1}\left[\frac{5}{2},\ -2\,m,\ 2\,m,\ \frac{7}{2},\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right] - 4\,m\,(\text{AppellF1}[\frac{7}{2},\ 1-2\,m,$$

$$2\,m,\ \frac{9}{2},\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2] + \text{AppellF1}[\frac{7}{2},\ -2\,m,\ 1+2\,m,$$

$$\frac{9}{2},\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2])\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2)^2))))$$

- **Problem 414: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int \frac{(a + a\,\text{Sin}[e + f\,x])^m}{\sqrt{c - c\,\text{Sin}[e + f\,x]}}\,dx$$

Optimal (type 5, 68 leaves, 3 steps):

$$\frac{\text{Cos}[e+f x]\,\text{Hypergeometric2F1}\left[1,\frac{1}{2}+m,\frac{3}{2}+m,\frac{1}{2}(1+\text{Sin}[e+f x])\right](a+a\,\text{Sin}[e+f x])^m}{f(1+2m)\sqrt{c-c\,\text{Sin}[e+f x]}}$$

Result (type 6, 3268 leaves):

$$\left(\sqrt{2}\,(1+m)\,\text{AppellF1}\left[1+2m,2m,1,2+2m,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right),1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right.$$
$$\left.\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{1+2m}\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)(a+a\,\text{Sin}[e+f x])^m\right)\Big/$$
$$\left(f(1+2m)\left(2(1+m)\,\text{AppellF1}\left[1+2m,2m,1,2+2m,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right),1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Cos}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2+\right.\right.$$
$$\left(\text{AppellF1}\left[2+2m,2m,2,3+2m,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right),1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$
$$\left.\left.m\,\text{AppellF1}\left[2+2m,1+2m,1,3+2m,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right),1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)$$
$$\sqrt{c-c\,\text{Sin}[e+f x]}\left(\text{Cos}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]-\text{Sin}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]\right)\left(\left((1+m)\,\text{AppellF1}\left[1+2m,2m,1,2+2m,\right.\right.\right.$$
$$\left.\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right),1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{1+2m}\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\text{Csc}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big)\Big/$$
$$\left(\sqrt{2}\,(1+2m)\left(2(1+m)\,\text{AppellF1}\left[1+2m,2m,1,2+2m,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right),1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right.\right.$$
$$\text{Cos}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2+\left(\text{AppellF1}\left[2+2m,2m,2,3+2m,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right),1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$
$$\left.\left.\left.m\,\text{AppellF1}\left[2+2m,1+2m,1,3+2m,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right),1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)\right)+$$
$$\left((1+m)\,\text{AppellF1}\left[1+2m,2m,1,2+2m,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right),1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right.$$
$$\left.\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2m}\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)\Big/$$
$$\left(\sqrt{2}\left(2(1+m)\,\text{AppellF1}\left[1+2m,2m,1,2+2m,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right),1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Cos}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2+\right.\right.$$
$$\left(\text{AppellF1}\left[2+2m,2m,2,3+2m,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right),1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$
$$\left.\left.\left.m\,\text{AppellF1}\left[2+2m,1+2m,1,3+2m,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right),1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)\right)-$$
$$\left(\sqrt{2}\,(1+m)\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{1+2m}\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\left(-\frac{1}{2(2+2m)}(1+2m)\,\text{AppellF1}\left[2+2m,2m,2,3+2m,\right.\right.\right.$$

$$\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right),\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-$$

$$\frac{1}{2\,(2+2\,m)}m\,(1+2\,m)\,\text{AppellF1}\left[2+2\,m,\,1+2\,m,\,1,\,3+2\,m,\,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right),\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\Bigg)\Bigg)\Bigg)\Big/$$

$$\Bigg((1+2\,m)\,\Bigg(2\,(1+m)\,\text{AppellF1}\left[1+2\,m,\,2\,m,\,1,\,2+2\,m,\,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right),\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\,\text{Cos}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2+$$

$$\Bigg(\text{AppellF1}\left[2+2\,m,\,2\,m,\,2,\,3+2\,m,\,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right),\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+$$

$$m\,\text{AppellF1}\left[2+2\,m,\,1+2\,m,\,1,\,3+2\,m,\,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right),\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\Bigg)\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\Bigg)\Bigg)+$$

$$\Bigg(\sqrt{2}\,(1+m)\,\text{AppellF1}\left[1+2\,m,\,2\,m,\,1,\,2+2\,m,\,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right),\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]$$

$$\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{1+2\,m}\,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2$$

$$\Bigg(-(1+m)\,\text{AppellF1}\left[1+2\,m,\,2\,m,\,1,\,2+2\,m,\,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right),\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\,\text{Cos}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]$$

$$\text{Sin}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-\frac{1}{2}\Bigg(\text{AppellF1}\left[2+2\,m,\,2\,m,\,2,\,3+2\,m,\,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right),\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+$$

$$m\,\text{AppellF1}\left[2+2\,m,\,1+2\,m,\,1,\,3+2\,m,\,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right),\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\Bigg)\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]+$$

$$2\,(1+m)\,\text{Cos}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,\Bigg(-\frac{1}{2\,(2+2\,m)}(1+2\,m)\,\text{AppellF1}\left[2+2\,m,\,2\,m,\,2,\,3+2\,m,\,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right),\right.$$

$$\left.1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-\frac{1}{2\,(2+2\,m)}m\,(1+2\,m)\,\text{AppellF1}\left[2+2\,m,\,1+\right.$$

$$\left.2\,m,\,1,\,3+2\,m,\,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right),\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\Bigg)+$$

$$\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\,\Bigg(-\frac{1}{3+2\,m}(2+2\,m)\,\text{AppellF1}\left[3+2\,m,\,2\,m,\,3,\,4+2\,m,\,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right),\right.$$

$$\left.1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-\frac{1}{2\,(3+2\,m)}m\,(2+2\,m)\,\text{AppellF1}\left[3+2\,m,\,1+\right.$$

$$\left.2\,m,\,2,\,4+2\,m,\,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right),\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]+$$

$$m\,\Bigg(-\frac{1}{2\,(3+2\,m)}(2+2\,m)\,\text{AppellF1}\left[3+2\,m,\,1+2\,m,\,2,\,4+2\,m,\,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right),\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{1}{4(3+2m)}(1+2m)(2+2m)\,\text{AppellF1}\Big[3+2m,2+2m,1,4+2m,$$
$$\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right),1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\Bigg)\Bigg)\Bigg)\Bigg)\Bigg/$$
$$\Bigg((1+2m)\Bigg(2(1+m)\,\text{AppellF1}\Big[1+2m,2m,1,2+2m,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right),1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]$$
$$\text{Cos}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2+\Bigg(\text{AppellF1}\Big[2+2m,2m,2,3+2m,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right),1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]+m$$
$$\text{AppellF1}\Big[2+2m,1+2m,1,3+2m,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right),1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\Bigg)\text{Cos}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\Bigg)^2\Bigg)\Bigg)\Bigg)$$

- **Problem 415: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int \frac{(a+a\,\text{Sin}[e+f x])^m}{(c-c\,\text{Sin}[e+f x])^{3/2}}\,dx$$

Optimal (type 5, 74 leaves, 3 steps):

$$\frac{\text{Cos}[e+f x]\,\text{Hypergeometric2F1}\left[2,\frac{1}{2}+m,\frac{3}{2}+m,\frac{1}{2}(1+\text{Sin}[e+f x])\right](a+a\,\text{Sin}[e+f x])^m}{2 c f (1+2m)\sqrt{c-c\,\text{Sin}[e+f x]}}$$

Result (type 6, 7559 leaves):

$$-\Bigg(\Bigg(\Bigg(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\Bigg)^3(a+a\,\text{Sin}[e+f x])^m\left(\frac{1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}\right)^{2m}$$
$$\Bigg(-\text{AppellF1}\Big[1,-2m,2m,2,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\Bigg/\Bigg(-m\Bigg(\text{AppellF1}\Big[2,1-2m,2m,3,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,$$
$$-\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]+\text{AppellF1}\Big[2,-2m,1+2m,3,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\Bigg)+$$
$$\text{AppellF1}\Big[1,-2m,2m,2,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)+$$
$$\Bigg(\text{AppellF1}\Big[1,-2m,2m,2,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)\Bigg/$$
$$\Bigg(\text{AppellF1}\Big[1,-2m,2m,2,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]-$$
$$m\Bigg(\text{AppellF1}\Big[2,1-2m,2m,3,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]+$$
$$\text{AppellF1}\Big[2,-2m,1+2m,3,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\Bigg)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)-$$

$$\Big(4\,(1+m)\,\text{AppellF1}\left[1+2m,\,2m,\,1,\,2+2m,\,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]$$

$$\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\left(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\Big)\Big/$$

$$\Big((1+2m)\,\Big(-2\,(1+m)\,\text{AppellF1}\left[1+2m,\,2m,\,1,\,2+2m,\,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+$$

$$\Big(\text{AppellF1}\left[2+2m,\,2m,\,2,\,3+2m,\,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+m\,\text{AppellF1}\Big[2+2m,$$

$$1+2m,\,1,\,3+2m,\,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]\Big)\left(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\Big)\Big)\Big)\Big/$$

$$\Big(8\sqrt{2}\,f\,(c-c\,\text{Sin}[e+f\,x])^{3/2}\left(\text{Cos}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f\,x\right)\right]-\text{Sin}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f\,x\right)\right]\right)^3\Big(\frac{1}{4\sqrt{2}}\,m\left(\frac{1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}\right)^{-1+2m}$$

$$\left(-\frac{\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)}{2\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^2}-\frac{\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]}{2\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)}\right)$$

$$\Big(-\text{AppellF1}\left[1,\,-2m,\,2m,\,2,\,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\Big/\Big(-m\,\Big(\text{AppellF1}\Big[2,\,1-2m,\,2m,\,3,$$

$$\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]+\text{AppellF1}\Big[2,\,-2m,\,1+2m,\,3,\,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-$$

$$f\,x\Big)\Big]^2\Big]\Big)+\text{AppellF1}\left[1,\,-2m,\,2m,\,2,\,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big)+$$

$$\Big(\text{AppellF1}\left[1,\,-2m,\,2m,\,2,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big)\Big/$$

$$\Big(\text{AppellF1}\left[1,\,-2m,\,2m,\,2,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]-$$

$$m\,\Big(\text{AppellF1}\left[2,\,1-2m,\,2m,\,3,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\text{AppellF1}\Big[2,\,-2m,\,1+2m,\,3,$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]\Big)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big)-\Big(4\,(1+m)\,\text{AppellF1}\Big[1+2m,\,2m,\,1,\,2+2m,\,\frac{1}{2}-$$

$$\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]\,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\left(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\Big)\Big/$$

$$\Big((1+2m)\,\Big(-2\,(1+m)\,\text{AppellF1}\left[1+2m,\,2m,\,1,\,2+2m,\,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+$$

$$\Big(\text{AppellF1}\Big[2+2\,m,\,2\,m,\,2,\,3+2\,m,\,\frac{1}{2}-\frac{1}{2}\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,1-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]+m\,\text{AppellF1}\Big[2+2\,m,$$

$$1+2\,m,\,1,\,3+2\,m,\,\frac{1}{2}-\frac{1}{2}\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,1-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]\Big)\left(-1+\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\right)\Big)\Big)\Big)\Big)+$$

$$\frac{1}{8\sqrt{2}}\left(\frac{1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}\right)^{2\,m}\Big(-\Big(\frac{1}{2}\,m\,\text{AppellF1}\Big[2,\,1-2\,m,\,2\,m,\,3,\,\text{Cot}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,-\text{Cot}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]\,\text{Cot}\Big[\frac{1}{4}$$

$$\left(-e+\frac{\pi}{2}-f\,x\right)\Big]\,\text{Csc}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2+\frac{1}{2}\,m\,\text{AppellF1}\Big[2,\,-2\,m,\,1+2\,m,\,3,\,\text{Cot}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,-\text{Cot}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]$$

$$\text{Cot}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]\,\text{Csc}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big)\Big/\Big(-m\,\Big(\text{AppellF1}\Big[2,\,1-2\,m,\,2\,m,\,3,\,\text{Cot}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,$$

$$-\text{Cot}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]+\text{AppellF1}\Big[2,\,-2\,m,\,1+2\,m,\,3,\,\text{Cot}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,-\text{Cot}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]\Big)+$$

$$\text{AppellF1}\Big[1,\,-2\,m,\,2\,m,\,2,\,\text{Cot}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,-\text{Cot}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big)+$$

$$\Big(\text{AppellF1}\Big[1,\,-2\,m,\,2\,m,\,2,\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]\Big)\Big/$$

$$\Big(2\,\Big(\text{AppellF1}\Big[1,\,-2\,m,\,2\,m,\,2,\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]-$$

$$m\,\Big(\text{AppellF1}\Big[2,\,1-2\,m,\,2\,m,\,3,\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]+$$

$$\text{AppellF1}\Big[2,\,-2\,m,\,1+2\,m,\,3,\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big)\Big)+$$

$$\Big(\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\,\Big(-\frac{1}{2}\,m\,\text{AppellF1}\Big[2,\,1-2\,m,\,2\,m,\,3,\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2$$

$$\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]-\frac{1}{2}\,m\,\text{AppellF1}\Big[2,\,-2\,m,\,1+2\,m,\,3,\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]$$

$$\text{Sec}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]\Big)\Big)\Big/\Big(\text{AppellF1}\Big[1,\,-2\,m,\,2\,m,\,2,\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,$$

$$-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]-m\,\Big(\text{AppellF1}\Big[2,\,1-2\,m,\,2\,m,\,3,\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]+$$

$$\text{AppellF1}\Big[2,\,-2\,m,\,1+2\,m,\,3,\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big)+$$

$$\Big(\text{AppellF1}\Big[1,\,-2\,m,\,2\,m,\,2,\,\text{Cot}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,-\text{Cot}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]\,\Big(-m\,\Big(\frac{4}{3}\,m\,\text{AppellF1}\Big[3,\,1-2\,m,\,1+2\,m,\,4,$$

$$\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\text{Csc}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2-\frac{1}{3}(1-2m)\,\text{AppellF1}\Big[$$

$$3,2-2m,2m,4,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\text{Csc}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2+$$

$$\frac{1}{3}(1+2m)\,\text{AppellF1}\Big[3,-2m,2+2m,4,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]$$

$$\text{Csc}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big)+\frac{1}{2}\text{AppellF1}\Big[1,-2m,2m,2,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]+\Big(\frac{1}{2}m\,\text{AppellF1}\Big[2,1-2m,2m,3,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,$$

$$-\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\text{Csc}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2+\frac{1}{2}m\,\text{AppellF1}\Big[2,-2m,1+2m,3,\text{Cot}\Big[\frac{1}{4}\Big(-e+$$

$$\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\text{Csc}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big)\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big)\Big)\Big/$$

$$\Big(-m\Big(\text{AppellF1}\Big[2,1-2m,2m,3,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]+\text{AppellF1}\Big[2,-2m,$$

$$1+2m,3,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\Big)+$$

$$\text{AppellF1}\Big[1,-2m,2m,2,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big)^2-$$

$$\Big(\text{AppellF1}\Big[1,-2m,2m,2,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big(-\frac{1}{2}m$$

$$\text{AppellF1}\Big[2,1-2m,2m,3,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-$$

$$\frac{1}{2}m\,\text{AppellF1}\Big[2,-2m,1+2m,3,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{1}{2}m\Big(\text{AppellF1}\Big[2,1-2m,2m,3,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]+\text{AppellF1}\Big[2,$$

$$-2m,1+2m,3,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\Big)\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-$$

$$m\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big(-\frac{4}{3}m\,\text{AppellF1}\Big[3,1-2m,1+2m,4,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]+\frac{1}{3}(1-2m)\,\text{AppellF1}\Big[3,2-2m,2m,4,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,$$

$$-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{1}{3}(1+2m)\,\text{AppellF1}\Big[3,-2m,2+2m,$$

$$4,\ \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\ \text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\ \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\Big]\Big)\Big)\Big)\Big/$$

$$\Big(\text{AppellF1}\Big[1,\ -2\,m,\ 2\,m,\ 2,\ \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]-m\ \Big(\text{AppellF1}\Big[2,\ 1-2\,m,\ 2\,m,$$

$$3,\ \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+\text{AppellF1}\Big[2,\ -2\,m,\ 1+2\,m,$$

$$3,\ \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\Big)\ \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)^2-$$

$$\Big(2\,(1+m)\ \text{AppellF1}\Big[1+2\,m,\ 2\,m,\ 1,\ 2+2\,m,\ \frac{1}{2}-\frac{1}{2}\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\ 1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]$$

$$\text{Csc}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\ \text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\Big)\Big/$$

$$\Big((1+2\,m)\ \Big(-2\,(1+m)\ \text{AppellF1}\Big[1+2\,m,\ 2\,m,\ 1,\ 2+2\,m,\ \frac{1}{2}-\frac{1}{2}\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\ 1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+$$

$$\Big(\text{AppellF1}\Big[2+2\,m,\ 2\,m,\ 2,\ 3+2\,m,\ \frac{1}{2}-\frac{1}{2}\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\ 1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+m\,\text{AppellF1}\Big[2+2\,m,$$

$$1+2\,m,\ 1,\ 3+2\,m,\ \frac{1}{2}-\frac{1}{2}\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\ 1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\Big)\ \Big(-1+\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)\Big)\Big)+$$

$$\Big(2\,(1+m)\ \text{AppellF1}\Big[1+2\,m,\ 2\,m,\ 1,\ 2+2\,m,\ \frac{1}{2}-\frac{1}{2}\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\ 1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]$$

$$\text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\ \text{Csc}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\ \Big(-1+\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)\Big)\Big/$$

$$\Big((1+2\,m)\ \Big(-2\,(1+m)\ \text{AppellF1}\Big[1+2\,m,\ 2\,m,\ 1,\ 2+2\,m,\ \frac{1}{2}-\frac{1}{2}\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\ 1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+$$

$$\Big(\text{AppellF1}\Big[2+2\,m,\ 2\,m,\ 2,\ 3+2\,m,\ \frac{1}{2}-\frac{1}{2}\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\ 1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+m\,\text{AppellF1}\Big[2+2\,m,$$

$$1+2\,m,\ 1,\ 3+2\,m,\ \frac{1}{2}-\frac{1}{2}\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\ 1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\Big)\ \Big(-1+\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)\Big)\Big)-$$

$$\Big(4\,(1+m)\ \text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\ \Big(-\frac{1}{2\,(2+2\,m)}(1+2\,m)\ \text{AppellF1}\Big[2+2\,m,\ 2\,m,\ 2,\ 3+2\,m,\ \frac{1}{2}-\frac{1}{2}\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,$$

$$1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\ \text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\ \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]-\frac{1}{2\,(2+2\,m)}$$

$$m\,(1+2\,m)\ \text{AppellF1}\Big[2+2\,m,\ 1+2\,m,\ 1,\ 3+2\,m,\ \frac{1}{2}-\frac{1}{2}\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\ 1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]$$

$$\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\ \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\Big)\ \Big(-1+\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)\Big)\Big/$$

$$\left((1+2m)\left(-2(1+m)\,\text{AppellF1}\left[1+2m,2m,1,2+2m,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+\right.\right.$$

$$\left(\text{AppellF1}\left[2+2m,2m,2,3+2m,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+m\,\text{AppellF1}\left[2+2m,\right.\right.$$

$$\left.\left.\left.1+2m,1,3+2m,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right)\left(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)\right)\right)+$$

$$\left(4(1+m)\,\text{AppellF1}\left[1+2m,2m,1,2+2m,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right.$$

$$\left(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)\left(\frac{1}{2}\left(\text{AppellF1}\left[2+2m,2m,2,3+2m,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+\right.\right.$$

$$\left.m\,\text{AppellF1}\left[2+2m,1+2m,1,3+2m,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right)\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]-2(1+m)\left(-\frac{1}{2(2+2m)}(1+2m)\,\text{AppellF1}\left[2+2m,2m,2,3+2m,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,1-\right.\right.$$

$$\left.\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]-\frac{1}{2(2+2m)}m(1+2m)\,\text{AppellF1}\left[2+2m,1+2m,\right.$$

$$\left.\left.1,3+2m,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]\right)+$$

$$\left(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)\left(-\frac{1}{3+2m}(2+2m)\,\text{AppellF1}\left[3+2m,2m,3,4+2m,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,1-\right.\right.$$

$$\left.\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]-\frac{1}{2(3+2m)}m(2+2m)\,\text{AppellF1}\left[3+2m,1+2m,\right.$$

$$\left.2,4+2m,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]+$$

$$m\left(-\frac{1}{2(3+2m)}(2+2m)\,\text{AppellF1}\left[3+2m,1+2m,2,4+2m,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right.$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]-\frac{1}{4(3+2m)}(1+2m)(2+2m)\,\text{AppellF1}\left[3+2m,2+2m,1,4+2m,\right.$$

$$\left.\left.\left.\left.\left.\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]\right)\right)\right)\right)\right)\Big/$$

$$\left((1+2m)\left(-2(1+m)\,\text{AppellF1}\left[1+2m,2m,1,2+2m,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+\right.\right.$$

$$\left(\text{AppellF1}\left[2+2m,2m,2,3+2m,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+m\,\text{AppellF1}\left[2+2m,1+2m,\right.\right.$$

$$1,\ 3+2m,\ \frac{1}{2}-\frac{1}{2}\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ 1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]\Big)\left(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^2\Big)\Big)\Big)\Big)\Big)$$

- **Problem 416: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int \frac{(a+a\,\text{Sin}[e+f\,x])^m}{(c-c\,\text{Sin}[e+f\,x])^{5/2}}\,dx$$

Optimal (type 5, 74 leaves, 3 steps):

$$\frac{\text{Cos}[e+f\,x]\,\text{Hypergeometric2F1}\left[3,\frac{1}{2}+m,\frac{3}{2}+m,\frac{1}{2}\,(1+\text{Sin}[e+f\,x])\right](a+a\,\text{Sin}[e+f\,x])^m}{4\,c^2\,f\,(1+2\,m)\,\sqrt{c-c\,\text{Sin}[e+f\,x]}}$$

Result (type 6, 11 641 leaves):

$$-\Bigg(\Bigg(\left(\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]-\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)^5(a+a\,\text{Sin}[e+f\,x])^m$$

$$\left(\frac{1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}\right)^{2m}\left(-\left(8\,\text{AppellF1}\left[1,-2m,2m,2,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\right/$$

$$\Bigg(-m\,\Bigg(\text{AppellF1}\left[2,1-2m,2m,3,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+$$

$$\text{AppellF1}\left[2,-2m,1+2m,3,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\Bigg)+$$

$$\text{AppellF1}\left[1,-2m,2m,2,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Bigg)+$$

$$\left(8\,\text{AppellF1}\left[1,-2m,2m,2,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\Big/$$

$$\Bigg(\text{AppellF1}\left[1,-2m,2m,2,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]-$$

$$m\,\Bigg(\text{AppellF1}\left[2,1-2m,2m,3,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+$$

$$\text{AppellF1}\left[2,-2m,1+2m,3,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\Bigg)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Bigg)+$$

$$\left(3\,\text{AppellF1}\left[2,-2m,2m,3,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\right)\Big/$$

$$\Bigg(3\,\text{AppellF1}\left[2,-2m,2m,3,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]-$$

$$2 m \left(\text{AppellF1}\left[3, 1-2 m, 2 m, 4, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$\left.\text{AppellF1}\left[3, -2 m, 1+2 m, 4, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right) \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg) -$$

$$\left(3 \text{AppellF1}\left[2, -2 m, 2 m, 3, \text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\Big/$$

$$\left(-2 m \left(\text{AppellF1}\left[3, 1-2 m, 2 m, 4, \text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.\right.$$

$$\left.\text{AppellF1}\left[3, -2 m, 1+2 m, 4, \text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right) \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2+$$

$$\left.3 \text{AppellF1}\left[2, -2 m, 2 m, 3, \text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right] \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^4\right) -$$

$$\left(24 (1+m) \text{AppellF1}\left[1+2 m, 2 m, 1, 2+2 m, \frac{1}{2}-\frac{1}{2} \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, 1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right.$$

$$\left.\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \left(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\right)\Big/$$

$$\left((1+2 m) \left(-2 (1+m) \text{AppellF1}\left[1+2 m, 2 m, 1, 2+2 m, \frac{1}{2}-\frac{1}{2} \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, 1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.\right.$$

$$\left(\text{AppellF1}\left[2+2 m, 2 m, 2, 3+2 m, \frac{1}{2}-\frac{1}{2} \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, 1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+m \text{AppellF1}\left[2+2 m,\right.\right.$$

$$\left.\left.\left.\left.1+2 m, 1, 3+2 m, \frac{1}{2}-\frac{1}{2} \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, 1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right) \left(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\right)\right)\right)\Big/$$

$$\left(128 \sqrt{2} f (c-c \text{Sin}[e+f x])^{5/2} \left(\text{Cos}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]-\text{Sin}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]\right)^5 \left(\frac{1}{64 \sqrt{2}} m \left(\frac{1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}\right)^{-1+2 m}\right.\right.$$

$$\left(-\frac{\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right] \left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)}{2\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^2}-\frac{\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]}{2\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)}\right)$$

$$\left(-\left(8 \text{AppellF1}\left[1, -2 m, 2 m, 2, \text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\Big/\left(-m \left(\text{AppellF1}\left[2, 1-2 m, 2 m, 3,\right.\right.\right.\right.$$

$$\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\text{AppellF1}\left[2, -2 m, 1+2 m, 3, \text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-\right.\right.\right.$$

$$\left.\left.\left.\left.f x\right)\right]^2\right]\right)+\text{AppellF1}\left[1, -2 m, 2 m, 2, \text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right] \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)+$$

$$\left(8\,\text{AppellF1}\left[1,\,-2\,m,\,2\,m,\,2,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\Big/$$

$$\left(\text{AppellF1}\left[1,\,-2\,m,\,2\,m,\,2,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]-\right.$$

$$m\left(\text{AppellF1}\left[2,\,1-2\,m,\,2\,m,\,3,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.$$

$$\left.\left.\text{AppellF1}\left[2,\,-2\,m,\,1+2\,m,\,3,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)+$$

$$\left(3\,\text{AppellF1}\left[2,\,-2\,m,\,2\,m,\,3,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\right)\Big/$$

$$\left(3\,\text{AppellF1}\left[2,\,-2\,m,\,2\,m,\,3,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]-\right.$$

$$2\,m\left(\text{AppellF1}\left[3,\,1-2\,m,\,2\,m,\,4,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.$$

$$\left.\left.\text{AppellF1}\left[3,\,-2\,m,\,1+2\,m,\,4,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)-$$

$$\left(3\,\text{AppellF1}\left[2,\,-2\,m,\,2\,m,\,3,\,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\Big/$$

$$\left(-2\,m\left(\text{AppellF1}\left[3,\,1-2\,m,\,2\,m,\,4,\,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.\right.$$

$$\left.\text{AppellF1}\left[3,\,-2\,m,\,1+2\,m,\,4,\,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2+$$

$$\left.3\,\text{AppellF1}\left[2,\,-2\,m,\,2\,m,\,3,\,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\right)-$$

$$\left(24\,(1+m)\,\text{AppellF1}\left[1+2\,m,\,2\,m,\,1,\,2+2\,m,\,\frac{1}{2}-\frac{1}{2}\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right.$$

$$\left.\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\left(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\right)\Big/$$

$$\left((1+2\,m)\left(-2\,(1+m)\,\text{AppellF1}\left[1+2\,m,\,2\,m,\,1,\,2+2\,m,\,\frac{1}{2}-\frac{1}{2}\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.\right.$$

$$\left(\text{AppellF1}\left[2+2\,m,\,2\,m,\,2,\,3+2\,m,\,\frac{1}{2}-\frac{1}{2}\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+m\,\text{AppellF1}\left[2+2\,m,\right.\right.$$

$$\left.\left.\left.\left.1+2\,m,\,1,\,3+2\,m,\,\frac{1}{2}-\frac{1}{2}\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\left(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\right)\right)+$$

$$\frac{1}{128\sqrt{2}}\left(\frac{1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}\right)^{2 m} \Big(-\Big(8 \Big(\frac{1}{2} m\, \text{AppellF1}\Big[2,1-2 m,2 m,3,\text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]$$

$$\text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]\, \text{Csc}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2+\frac{1}{2} m\, \text{AppellF1}\Big[2,-2 m,1+2 m,3,$$

$$\text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\, \text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]\, \text{Csc}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big)\Big)\Big/$$

$$\Big(-m \Big(\text{AppellF1}\Big[2,1-2 m,2 m,3,\text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]+\text{AppellF1}\Big[2,-2 m,$$

$$1+2 m,3,\text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\Big)+$$

$$\text{AppellF1}\Big[1,-2 m,2 m,2,\text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\, \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big)+$$

$$\Big(4\, \text{AppellF1}\Big[1,-2 m,2 m,2,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\, \text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\, \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]\Big)\Big/$$

$$\Big(\text{AppellF1}\Big[1,-2 m,2 m,2,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]-$$

$$m \Big(\text{AppellF1}\Big[2,1-2 m,2 m,3,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]+$$

$$\text{AppellF1}\Big[2,-2 m,1+2 m,3,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\Big)\, \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big)+$$

$$\Big(8\, \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2 \Big(-\frac{1}{2} m\, \text{AppellF1}\Big[2,1-2 m,2 m,3,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]$$

$$\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\, \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]-\frac{1}{2} m\, \text{AppellF1}\Big[2,-2 m,1+2 m,3,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,$$

$$-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\, \text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\, \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]\Big)\Big)\Big/ \Big(\text{AppellF1}\Big[1,-2 m,2 m,2,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-$$

$$f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]-m \Big(\text{AppellF1}\Big[2,1-2 m,2 m,3,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]+$$

$$\text{AppellF1}\Big[2,-2 m,1+2 m,3,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\Big)\, \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big)+$$

$$\Big(3\, \text{AppellF1}\Big[2,-2 m,2 m,3,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\, \text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\, \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^3\Big)\Big/$$

$$\Big(3\, \text{AppellF1}\Big[2,-2 m,2 m,3,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]-$$

$$2\,m\,\Big(\text{AppellF1}\Big[3,\,1-2\,m,\,2\,m,\,4,\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]+$$

$$\text{AppellF1}\Big[3,\,-2\,m,\,1+2\,m,\,4,\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big)+$$

$$\Big(3\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^4\,\Big(-\frac{2}{3}\,m\,\text{AppellF1}\Big[3,\,1-2\,m,\,2\,m,\,4,\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]$$

$$\text{Sec}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]-\frac{2}{3}\,m\,\text{AppellF1}\Big[3,\,-2\,m,\,1+2\,m,\,4,$$

$$\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]\Big)\Big)\Big)\Big/$$

$$\Big(3\,\text{AppellF1}\Big[2,\,-2\,m,\,2\,m,\,3,\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]-2\,m\,\Big(\text{AppellF1}\Big[3,\,1-2\,m,\,2\,m,$$

$$4,\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]+\text{AppellF1}\Big[3,\,-2\,m,\,1+2\,m,\,4,\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,$$

$$-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big)+\Big(8\,\text{AppellF1}\Big[1,\,-2\,m,\,2\,m,\,2,\,\text{Cot}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,$$

$$-\text{Cot}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]\,\Big(-m\,\Big(\frac{4}{3}\,m\,\text{AppellF1}\Big[3,\,1-2\,m,\,1+2\,m,\,4,\,\text{Cot}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,-\text{Cot}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]$$

$$\text{Cot}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]\,\text{Csc}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2-\frac{1}{3}\,(1-2\,m)\,\text{AppellF1}\Big[3,\,2-2\,m,\,2\,m,\,4,\,\text{Cot}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,$$

$$-\text{Cot}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]\,\text{Cot}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]\,\text{Csc}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2+\frac{1}{3}\,(1+2\,m)\,\text{AppellF1}\Big[3,\,-2\,m,$$

$$2+2\,m,\,4,\,\text{Cot}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,-\text{Cot}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]\,\text{Cot}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]\,\text{Csc}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big)+$$

$$\frac{1}{2}\,\text{AppellF1}\Big[1,\,-2\,m,\,2\,m,\,2,\,\text{Cot}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,-\text{Cot}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2$$

$$\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]+\Big(\frac{1}{2}\,m\,\text{AppellF1}\Big[2,\,1-2\,m,\,2\,m,\,3,\,\text{Cot}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,-\text{Cot}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]$$

$$\text{Cot}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]\,\text{Csc}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2+\frac{1}{2}\,m\,\text{AppellF1}\Big[2,\,-2\,m,\,1+2\,m,\,3,\,\text{Cot}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,$$

$$-\text{Cot}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]\,\text{Cot}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]\,\text{Csc}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big)\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big)\Big)\Big/$$

$$\Big(-m\,\Big(\text{AppellF1}\Big[2,\,1-2\,m,\,2\,m,\,3,\,\text{Cot}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,-\text{Cot}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]+\text{AppellF1}\Big[2,\,-2\,m,$$

$$1+2\,m,\,3,\,\text{Cot}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,-\text{Cot}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]\Big)+$$

$$\text{AppellF1}\Big[1,-2m,2m,2,\text{Cot}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2,-\text{Cot}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big]\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big)^2-$$

$$\Big(3\,\Big(\frac{2}{3}\,m\,\text{AppellF1}\Big[3,1-2m,2m,4,\text{Cot}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2,-\text{Cot}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big]\,\text{Cot}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]\,\text{Csc}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2+$$

$$\frac{2}{3}\,m\,\text{AppellF1}\Big[3,-2m,1+2m,4,\text{Cot}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2,-\text{Cot}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big]\,\text{Cot}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]$$

$$\text{Csc}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big)\Big)\Big/\Big(-2m\,\Big(\text{AppellF1}\Big[3,1-2m,2m,4,\text{Cot}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2,-\text{Cot}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big]+$$

$$\text{AppellF1}\Big[3,-2m,1+2m,4,\text{Cot}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2,-\text{Cot}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2+$$

$$3\,\text{AppellF1}\Big[2,-2m,2m,3,\text{Cot}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2,-\text{Cot}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big]\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^4\Big)+$$

$$\Big(3\,\text{AppellF1}\Big[2,-2m,2m,3,\text{Cot}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2,-\text{Cot}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big]$$

$$\Big(-m\,\Big(\text{AppellF1}\Big[3,1-2m,2m,4,\text{Cot}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2,-\text{Cot}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big]+\text{AppellF1}\Big[3,-2m,1+2m,$$

$$4,\text{Cot}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2,-\text{Cot}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big]\Big)\,\text{Sec}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]-$$

$$2m\,\Big(\frac{3}{2}\,m\,\text{AppellF1}\Big[4,1-2m,1+2m,5,\text{Cot}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2,-\text{Cot}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big]\,\text{Cot}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]$$

$$\text{Csc}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2-\frac{3}{8}\,(1-2m)\,\text{AppellF1}\Big[4,2-2m,2m,5,\text{Cot}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2,-\text{Cot}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big]$$

$$\text{Cot}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]\,\text{Csc}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2+\frac{3}{8}\,(1+2m)\,\text{AppellF1}\Big[4,-2m,2+2m,5,\text{Cot}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2,$$

$$-\text{Cot}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big]\,\text{Cot}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]\,\text{Csc}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big)\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2+$$

$$3\,\text{AppellF1}\Big[2,-2m,2m,3,\text{Cot}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2,-\text{Cot}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2$$

$$\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^3+3\,\Big(\frac{2}{3}\,m\,\text{AppellF1}\Big[3,1-2m,2m,4,\text{Cot}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2,-\text{Cot}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big]$$

$$\text{Cot}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]\,\text{Csc}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2+\frac{2}{3}\,m\,\text{AppellF1}\Big[3,-2m,1+2m,4,\text{Cot}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2,$$

$$-\text{Cot}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big]\,\text{Cot}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]\,\text{Csc}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big)\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^4\Big)\Big)\Big/$$

$$\Big(-2m\,\Big(\text{AppellF1}\Big[3,1-2m,2m,4,\text{Cot}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2,-\text{Cot}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big]+\text{AppellF1}\Big[3,-2m,$$

$$1+2 m, 4, \text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2, -\text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\Big) \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2 +$$

$$3 \text{AppellF1}\Big[2, -2 m, 2 m, 3, \text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2, -\text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big] \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^4\Big)^2 -$$

$$\Big(8 \text{AppellF1}\Big[1, -2 m, 2 m, 2, \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2, -\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big] \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2 \Big(-\frac{1}{2} m$$

$$\text{AppellF1}\Big[2, 1-2 m, 2 m, 3, \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2, -\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big] \text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2 \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big] -$$

$$\frac{1}{2} m \text{AppellF1}\Big[2, -2 m, 1+2 m, 3, \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2, -\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big] \text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2$$

$$\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big] - \frac{1}{2} m \Big(\text{AppellF1}\Big[2, 1-2 m, 2 m, 3, \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2, -\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big] + \text{AppellF1}\Big[2,$$

$$-2 m, 1+2 m, 3, \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2, -\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\Big) \text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2 \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big] -$$

$$m \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2 \Big(-\frac{4}{3} m \text{AppellF1}\Big[3, 1-2 m, 1+2 m, 4, \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2, -\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]$$

$$\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2 \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big] + \frac{1}{3}(1-2 m) \text{AppellF1}\Big[3, 2-2 m, 2 m, 4, \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,$$

$$-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big] \text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2 \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big] - \frac{1}{3}(1+2 m) \text{AppellF1}\Big[3, -2 m, 2+2 m,$$

$$4, \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2, -\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big] \text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2 \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]\Big)\Big)\Big)\Big) \Big/$$

$$\Big(\text{AppellF1}\Big[1, -2 m, 2 m, 2, \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2, -\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big] - m \Big(\text{AppellF1}\Big[2, 1-2 m, 2 m,$$

$$3, \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2, -\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big] + \text{AppellF1}\Big[2, -2 m, 1+2 m,$$

$$3, \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2, -\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\Big) \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big)^2 -$$

$$\Big(3 \text{AppellF1}\Big[2, -2 m, 2 m, 3, \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2, -\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big] \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^4$$

$$\Big(-m \Big(\text{AppellF1}\Big[3, 1-2 m, 2 m, 4, \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2, -\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big] + \text{AppellF1}\Big[3, -2 m, 1+2 m,$$

$$4, \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2, -\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\Big) \text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2 \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big] +$$

$$3 \Big(-\frac{2}{3} m \text{AppellF1}\Big[3, 1-2 m, 2 m, 4, \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2, -\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big] \text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{2}{3} m \,\text{AppellF1}\left[3,-2 m, 1+2 m, 4, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]$$
$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\Bigg)-2 m \,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2$$
$$\Bigg(-\frac{3}{2} m \,\text{AppellF1}\left[4,1-2 m, 1+2 m, 5, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right] \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2$$
$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]+\frac{3}{8}(1-2 m) \,\text{AppellF1}\left[4,2-2 m, 2 m, 5, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]$$
$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{3}{8}(1+2 m) \,\text{AppellF1}\Big[4,-2 m, 2+2 m, 5,$$
$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big] \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\Bigg)\Bigg)\Bigg) \Bigg/$$
$$\Bigg(3 \,\text{AppellF1}\left[2,-2 m, 2 m, 3, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]-2 m \Bigg(\text{AppellF1}\Big[3,1-2 m,$$
$$2 m, 4, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]+\text{AppellF1}\Big[3,-2 m, 1+2 m,$$
$$4, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\Bigg) \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)^2-$$
$$\Bigg(12(1+m) \,\text{AppellF1}\left[1+2 m, 2 m, 1,2+2 m, \frac{1}{2}-\frac{1}{2} \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, 1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]$$
$$\text{Csc}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right] \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\Bigg) \Bigg/$$
$$\Bigg((1+2 m)\Bigg(-2(1+m) \,\text{AppellF1}\left[1+2 m, 2 m, 1,2+2 m, \frac{1}{2}-\frac{1}{2} \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, 1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$
$$\Bigg(\text{AppellF1}\left[2+2 m, 2 m, 2,3+2 m, \frac{1}{2}-\frac{1}{2} \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, 1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+m \,\text{AppellF1}\Big[2+2 m,$$
$$1+2 m, 1,3+2 m, \frac{1}{2}-\frac{1}{2} \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, 1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\Bigg)\left(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\Bigg)\Bigg)+$$
$$\Bigg(12(1+m) \,\text{AppellF1}\left[1+2 m, 2 m, 1,2+2 m, \frac{1}{2}-\frac{1}{2} \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, 1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]$$
$$\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right] \text{Csc}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\left(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\Bigg) \Bigg/$$
$$\Bigg((1+2 m)\Bigg(-2(1+m) \,\text{AppellF1}\left[1+2 m, 2 m, 1,2+2 m, \frac{1}{2}-\frac{1}{2} \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, 1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$
$$\Bigg(\text{AppellF1}\left[2+2 m, 2 m, 2,3+2 m, \frac{1}{2}-\frac{1}{2} \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, 1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+m \,\text{AppellF1}\Big[2+2 m,$$

$$1+2 m, 1, 3+2 m, \frac{1}{2}-\frac{1}{2} \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, 1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2]) \left(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)))) -$$

$$(24 (1+m) \text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 (-\frac{1}{2 (2+2 m)} (1+2 m) \text{AppellF1}[2+2 m, 2 m, 2, 3+2 m, \frac{1}{2}-\frac{1}{2} \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,$$

$$1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2] \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right] - \frac{1}{2 (2+2 m)}$$

$$m (1+2 m) \text{AppellF1}[2+2 m, 1+2 m, 1, 3+2 m, \frac{1}{2}-\frac{1}{2} \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, 1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2]$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]]) \left(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)) \Big/$$

$$((1+2 m) (-2 (1+m) \text{AppellF1}[1+2 m, 2 m, 1, 2+2 m, \frac{1}{2}-\frac{1}{2} \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, 1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2] +$$

$$(\text{AppellF1}[2+2 m, 2 m, 2, 3+2 m, \frac{1}{2}-\frac{1}{2} \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, 1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2] + m\, \text{AppellF1}[2+2 m,$$

$$1+2 m, 1, 3+2 m, \frac{1}{2}-\frac{1}{2} \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, 1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2]) \left(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right))) +$$

$$(24 (1+m) \text{AppellF1}[1+2 m, 2 m, 1, 2+2 m, \frac{1}{2}-\frac{1}{2} \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, 1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2] \text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2$$

$$\left(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right) (\frac{1}{2} (\text{AppellF1}[2+2 m, 2 m, 2, 3+2 m, \frac{1}{2}-\frac{1}{2} \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, 1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2] +$$

$$m\, \text{AppellF1}[2+2 m, 1+2 m, 1, 3+2 m, \frac{1}{2}-\frac{1}{2} \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, 1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2]) \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right] - 2 (1+m) (-\frac{1}{2 (2+2 m)} (1+2 m) \text{AppellF1}[2+2 m, 2 m, 2, 3+2 m, \frac{1}{2}-\frac{1}{2} \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, 1-$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2] \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right] - \frac{1}{2 (2+2 m)} m (1+2 m) \text{AppellF1}[2+2 m, 1+2 m,$$

$$1, 3+2 m, \frac{1}{2}-\frac{1}{2} \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, 1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2] \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]) +$$

$$\left(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right) (-\frac{1}{3+2 m} (2+2 m) \text{AppellF1}[3+2 m, 2 m, 3, 4+2 m, \frac{1}{2}-\frac{1}{2} \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, 1-$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2] \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right] - \frac{1}{2 (3+2 m)} m (2+2 m) \text{AppellF1}[3+2 m, 1+2 m,$$

$$2, 4+2 m, \frac{1}{2}-\frac{1}{2} \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, 1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2] \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right] +$$

$$m (-\frac{1}{2 (3+2 m)} (2+2 m) \text{AppellF1}[3+2 m, 1+2 m, 2, 4+2 m, \frac{1}{2}-\frac{1}{2} \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, 1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2]$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{1}{4(3+2m)}(1+2m)(2+2m)\,\text{AppellF1}\Big[3+2m,\,2+2m,\,1,\,4+2m,\,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\Bigg)\Bigg)\Bigg)\Bigg)\Bigg/ \Bigg((1+2m)\Bigg(-2(1+m)\,\text{AppellF1}\Big[1+2m,\,2m,\,1,\,2+2m,\,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]+\Bigg(\text{AppellF1}\Big[2+2m,\,2m,\,2,\,3+2m,\,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]+m\,\text{AppellF1}\Big[2+2m,\,1+2m,\,1,\,3+2m,\,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\Bigg)\left(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^2\Bigg)\Bigg)\Bigg)\Bigg)$$

- **Problem 417: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int \frac{(a+a\,\text{Sin}[e+f x])^m}{\sqrt{c-c\,\text{Sin}[e+f x]}}\,dx$$

Optimal (type 5, 68 leaves, 3 steps):

$$\frac{\text{Cos}[e+f x]\,\text{Hypergeometric2F1}\left[1,\,\frac{1}{2}+m,\,\frac{3}{2}+m,\,\frac{1}{2}(1+\text{Sin}[e+f x])\right](a+a\,\text{Sin}[e+f x])^m}{f(1+2m)\sqrt{c-c\,\text{Sin}[e+f x]}}$$

Result (type 6, 3268 leaves):

$$\Bigg(\sqrt{2}\,(1+m)\,\text{AppellF1}\Big[1+2m,\,2m,\,1,\,2+2m,\,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right),\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{1+2m}\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)(a+a\,\text{Sin}[e+f x])^m\Bigg)\Bigg/ \Bigg(f(1+2m)\Bigg(2(1+m)\,\text{AppellF1}\Big[1+2m,\,2m,\,1,\,2+2m,\,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right),\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\,\text{Cos}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2+\Bigg(\text{AppellF1}\Big[2+2m,\,2m,\,2,\,3+2m,\,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right),\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]+m\,\text{AppellF1}\Big[2+2m,\,1+2m,\,1,\,3+2m,\,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right),\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\Bigg)\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\Bigg)\sqrt{c-c\,\text{Sin}[e+f x]}\left(\text{Cos}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]-\text{Sin}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]\right)\Bigg(\Bigg((1+m)\,\text{AppellF1}\Big[1+2m,\,2m,\,1,\,2+2m,\,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right),\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{1+2m}\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\text{Csc}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg/ \Bigg(\sqrt{2}\,(1+2m)\Bigg(2(1+m)\,\text{AppellF1}\Big[1+2m,\,2m,\,1,\,2+2m,\,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right),\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]$$

$$\text{Cos}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2+(\text{AppellF1}[2+2 m,2 m,2,3+2 m,\tfrac{1}{2}(1-\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2),1-\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2]+$$

$$m\,\text{AppellF1}[2+2 m,1+2 m,1,3+2 m,\tfrac{1}{2}(1-\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2),1-\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2])\,\text{Cos}[\tfrac{1}{2}(-e+\tfrac{\pi}{2}-f x)]))+$$

$$((1+m)\,\text{AppellF1}[1+2 m,2 m,1,2+2 m,\tfrac{1}{2}(1-\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2),1-\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2]$$

$$\text{Cos}[\tfrac{1}{2}(-e+\tfrac{\pi}{2}-f x)]^{2 m}\,\text{Cot}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2\,\text{Sin}[\tfrac{1}{2}(-e+\tfrac{\pi}{2}-f x)]))/$$

$$(\sqrt{2}\,(2(1+m)\,\text{AppellF1}[1+2 m,2 m,1,2+2 m,\tfrac{1}{2}(1-\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2),1-\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2]\,\text{Cos}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2+$$

$$(\text{AppellF1}[2+2 m,2 m,2,3+2 m,\tfrac{1}{2}(1-\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2),1-\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2]+$$

$$m\,\text{AppellF1}[2+2 m,1+2 m,1,3+2 m,\tfrac{1}{2}(1-\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2),1-\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2])\,\text{Cos}[\tfrac{1}{2}(-e+\tfrac{\pi}{2}-f x)]))-$$

$$(\sqrt{2}\,(1+m)\,\text{Cos}[\tfrac{1}{2}(-e+\tfrac{\pi}{2}-f x)]^{1+2 m}\,\text{Cot}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2\,(-\frac{1}{2(2+2 m)}(1+2 m)\,\text{AppellF1}[2+2 m,2 m,2,3+2 m,$$

$$\tfrac{1}{2}(1-\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2),1-\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2]\,\text{Sec}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2\,\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]-$$

$$\frac{1}{2(2+2 m)}m(1+2 m)\,\text{AppellF1}[2+2 m,1+2 m,1,3+2 m,\tfrac{1}{2}(1-\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2),1-\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2]$$

$$\text{Sec}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2\,\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)])))/$$

$$((1+2 m)\,(2(1+m)\,\text{AppellF1}[1+2 m,2 m,1,2+2 m,\tfrac{1}{2}(1-\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2),1-\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2]\,\text{Cos}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2+$$

$$(\text{AppellF1}[2+2 m,2 m,2,3+2 m,\tfrac{1}{2}(1-\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2),1-\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2]+$$

$$m\,\text{AppellF1}[2+2 m,1+2 m,1,3+2 m,\tfrac{1}{2}(1-\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2),1-\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2])\,\text{Cos}[\tfrac{1}{2}(-e+\tfrac{\pi}{2}-f x)]))+$$

$$(\sqrt{2}\,(1+m)\,\text{AppellF1}[1+2 m,2 m,1,2+2 m,\tfrac{1}{2}(1-\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2),1-\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2]$$

$$\text{Cos}[\tfrac{1}{2}(-e+\tfrac{\pi}{2}-f x)]^{1+2 m}\,\text{Cot}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2$$

$$(-(1+m)\,\text{AppellF1}[1+2 m,2 m,1,2+2 m,\tfrac{1}{2}(1-\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2),1-\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2]\,\text{Cos}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]$$

$$\text{Sin}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]-\tfrac{1}{2}(\text{AppellF1}[2+2 m,2 m,2,3+2 m,\tfrac{1}{2}(1-\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2),1-\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2]+$$

$$m\,\text{AppellF1}\left[2+2m,1+2m,1,3+2m,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right),1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]+$$

$$2(1+m)\,\text{Cos}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\left(-\frac{1}{2(2+2m)}(1+2m)\,\text{AppellF1}\left[2+2m,2m,2,3+2m,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right),\right.\right.$$

$$\left.1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{1}{2(2+2m)}m(1+2m)\,\text{AppellF1}\left[2+2m,1+\right.$$

$$\left.\left.2m,1,3+2m,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right),1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)+$$

$$\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\left(-\frac{1}{3+2m}(2+2m)\,\text{AppellF1}\left[3+2m,2m,3,4+2m,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right),\right.\right.$$

$$\left.1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{1}{2(3+2m)}m(2+2m)\,\text{AppellF1}\left[3+2m,1+\right.$$

$$\left.2m,2,4+2m,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right),1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]+$$

$$m\left(-\frac{1}{2(3+2m)}(2+2m)\,\text{AppellF1}\left[3+2m,1+2m,2,4+2m,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right),1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right.$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{1}{4(3+2m)}(1+2m)(2+2m)\,\text{AppellF1}\left[3+2m,2+2m,1,4+2m,\right.$$

$$\left.\left.\left.\left.\left.\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right),1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)\right)\right)\right)\right)\Big/$$

$$\left((1+2m)\left(2(1+m)\,\text{AppellF1}\left[1+2m,2m,1,2+2m,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right),1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right.\right.$$

$$\text{Cos}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2+\left(\text{AppellF1}\left[2+2m,2m,2,3+2m,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right),1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+m\right.$$

$$\left.\left.\left.\text{AppellF1}\left[2+2m,1+2m,1,3+2m,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right),1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)^2\right)\right)$$

- **Problem 418: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int\frac{(c+c\,\text{Sin}[e+f x])^m}{\sqrt{a-a\,\text{Sin}[e+f x]}}\,dx$$

Optimal (type 5, 68 leaves, 3 steps):

$$\frac{\text{Cos}[e+f x]\,\text{Hypergeometric2F1}\left[1,\frac{1}{2}+m,\frac{3}{2}+m,\frac{1}{2}(1+\text{Sin}[e+f x])\right](c+c\,\text{Sin}[e+f x])^m}{f(1+2m)\sqrt{a-a\,\text{Sin}[e+f x]}}$$

Result (type 6, 3268 leaves):

$$\Big(\sqrt{2}\,(1+m)\,\text{AppellF1}\Big[1+2m,\,2m,\,1,\,2+2m,\,\frac{1}{2}\Big(1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big),\,1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]$$

$$\text{Cos}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^{1+2m}\,\text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big(\text{Cos}\Big[\frac{1}{2}(e+f x)\Big]-\text{Sin}\Big[\frac{1}{2}(e+f x)\Big]\Big)\,(c+c\,\text{Sin}[e+f x])^m\Big)\Big/$$

$$\Big(f\,(1+2m)\,\Big(2\,(1+m)\,\text{AppellF1}\Big[1+2m,\,2m,\,1,\,2+2m,\,\frac{1}{2}\Big(1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big),\,1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\,\text{Cos}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2+$$

$$\Big(\text{AppellF1}\Big[2+2m,\,2m,\,2,\,3+2m,\,\frac{1}{2}\Big(1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big),\,1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]+$$

$$m\,\text{AppellF1}\Big[2+2m,\,1+2m,\,1,\,3+2m,\,\frac{1}{2}\Big(1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big),\,1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\Big)\,\text{Cos}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]\Big]\Big)$$

$$\sqrt{a-a\,\text{Sin}[e+f x]}\,\Big(\text{Cos}\Big[\frac{\pi}{4}+\frac{1}{2}\Big(e-\frac{\pi}{2}+f x\Big)\Big]-\text{Sin}\Big[\frac{\pi}{4}+\frac{1}{2}\Big(e-\frac{\pi}{2}+f x\Big)\Big]\Big)\,\Big(\Big((1+m)\,\text{AppellF1}\Big[1+2m,\,2m,\,1,\,2+2m,$$

$$\frac{1}{2}\Big(1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big),\,1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\,\text{Cos}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^{1+2m}\,\text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]\,\text{Csc}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big)\Big/$$

$$\Big(\sqrt{2}\,(1+2m)\,\Big(2\,(1+m)\,\text{AppellF1}\Big[1+2m,\,2m,\,1,\,2+2m,\,\frac{1}{2}\Big(1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big),\,1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]$$

$$\text{Cos}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2+\Big(\text{AppellF1}\Big[2+2m,\,2m,\,2,\,3+2m,\,\frac{1}{2}\Big(1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big),\,1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]+$$

$$m\,\text{AppellF1}\Big[2+2m,\,1+2m,\,1,\,3+2m,\,\frac{1}{2}\Big(1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big),\,1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\Big)\,\text{Cos}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]\Big]\Big)\Big)+$$

$$\Big((1+m)\,\text{AppellF1}\Big[1+2m,\,2m,\,1,\,2+2m,\,\frac{1}{2}\Big(1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big),\,1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]$$

$$\text{Cos}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^{2m}\,\text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\,\text{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]\Big)\Big/$$

$$\Big(\sqrt{2}\,\Big(2\,(1+m)\,\text{AppellF1}\Big[1+2m,\,2m,\,1,\,2+2m,\,\frac{1}{2}\Big(1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big),\,1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\,\text{Cos}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2+$$

$$\Big(\text{AppellF1}\Big[2+2m,\,2m,\,2,\,3+2m,\,\frac{1}{2}\Big(1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big),\,1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]+$$

$$m\,\text{AppellF1}\Big[2+2m,\,1+2m,\,1,\,3+2m,\,\frac{1}{2}\Big(1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big),\,1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\Big)\,\text{Cos}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]\Big]\Big)\Big)-$$

$$\Big(\sqrt{2}\,(1+m)\,\text{Cos}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^{1+2m}\,\text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big(-\frac{1}{2\,(2+2m)}(1+2m)\,\text{AppellF1}\Big[2+2m,\,2m,\,2,\,3+2m,$$

$$\frac{1}{2}\Big(1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big),\,1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]-$$

$$\frac{1}{2\,(2+2m)}m\,(1+2m)\,\text{AppellF1}\Big[2+2m,\,1+2m,\,1,\,3+2m,\,\frac{1}{2}\Big(1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big),\,1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]$$

$$\mathrm{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\Bigg)\Bigg)\Bigg)\Bigg/$$

$$\Bigg((1+2\,m)\left(2\,(1+m)\,\mathrm{AppellF1}\left[1+2\,m,\,2\,m,\,1,\,2+2\,m,\,\frac{1}{2}\left(1-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right),\,1-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\mathrm{Cos}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2+\right.$$

$$\left(\mathrm{AppellF1}\left[2+2\,m,\,2\,m,\,2,\,3+2\,m,\,\frac{1}{2}\left(1-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right),\,1-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.$$

$$\left.\left.m\,\mathrm{AppellF1}\left[2+2\,m,\,1+2\,m,\,1,\,3+2\,m,\,\frac{1}{2}\left(1-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right),\,1-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\mathrm{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\right)\right)+$$

$$\Bigg(\sqrt{2}\,(1+m)\,\mathrm{AppellF1}\left[1+2\,m,\,2\,m,\,1,\,2+2\,m,\,\frac{1}{2}\left(1-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right),\,1-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]$$

$$\mathrm{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{1+2\,m}\mathrm{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2$$

$$\Bigg(-(1+m)\,\mathrm{AppellF1}\left[1+2\,m,\,2\,m,\,1,\,2+2\,m,\,\frac{1}{2}\left(1-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right),\,1-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\mathrm{Cos}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]$$

$$\mathrm{Sin}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-\frac{1}{2}\left(\mathrm{AppellF1}\left[2+2\,m,\,2\,m,\,2,\,3+2\,m,\,\frac{1}{2}\left(1-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right),\,1-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.$$

$$\left.m\,\mathrm{AppellF1}\left[2+2\,m,\,1+2\,m,\,1,\,3+2\,m,\,\frac{1}{2}\left(1-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right),\,1-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]+$$

$$2\,(1+m)\,\mathrm{Cos}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\left(-\frac{1}{2\,(2+2\,m)}(1+2\,m)\,\mathrm{AppellF1}\left[2+2\,m,\,2\,m,\,2,\,3+2\,m,\,\frac{1}{2}\left(1-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right),\right.\right.$$

$$1-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Bigg]\mathrm{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-\frac{1}{2\,(2+2\,m)}m\,(1+2\,m)\,\mathrm{AppellF1}\Bigg[2+2\,m,\,1+$$

$$2\,m,\,1,\,3+2\,m,\,\frac{1}{2}\left(1-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right),\,1-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Bigg]\mathrm{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\Bigg)+$$

$$\mathrm{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\left(-\frac{1}{3+2\,m}(2+2\,m)\,\mathrm{AppellF1}\left[3+2\,m,\,2\,m,\,3,\,4+2\,m,\,\frac{1}{2}\left(1-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right),\right.\right.$$

$$1-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Bigg]\mathrm{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-\frac{1}{2\,(3+2\,m)}m\,(2+2\,m)\,\mathrm{AppellF1}\Bigg[3+2\,m,\,1+$$

$$2\,m,\,2,\,4+2\,m,\,\frac{1}{2}\left(1-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right),\,1-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Bigg]\mathrm{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]+$$

$$m\left(-\frac{1}{2\,(3+2\,m)}(2+2\,m)\,\mathrm{AppellF1}\left[3+2\,m,\,1+2\,m,\,2,\,4+2\,m,\,\frac{1}{2}\left(1-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right),\,1-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right.$$

$$\mathrm{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-\frac{1}{4\,(3+2\,m)}(1+2\,m)\,(2+2\,m)\,\mathrm{AppellF1}\Bigg[3+2\,m,\,2+2\,m,\,1,\,4+2\,m,$$

$$\frac{1}{2}\left(1-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right),\,1-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Bigg]\mathrm{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\Bigg)\Bigg)\Bigg)\Bigg)\Bigg/$$

$$\left((1+2m)\left(2(1+m)\,\text{AppellF1}\left[1+2m,2m,1,2+2m,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right),1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right.\right.$$
$$\text{Cos}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2+\left(\text{AppellF1}\left[2+2m,2m,2,3+2m,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right),1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+m\right.$$
$$\left.\left.\left.\text{AppellF1}\left[2+2m,1+2m,1,3+2m,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right),1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right)\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)\right)\right)$$

- **Problem 421: Result more than twice size of optimal antiderivative.**

$$\int (a+a\,\text{Sin}[e+fx])^m\,(c-c\,\text{Sin}[e+fx])^{-1-m}\,dx$$

Optimal (type 3, 46 leaves, 1 step):

$$\frac{\text{Cos}[e+fx]\,(a+a\,\text{Sin}[e+fx])^m\,(c-c\,\text{Sin}[e+fx])^{-1-m}}{f\,(1+2m)}$$

Result (type 3, 107 leaves):

$$\frac{1}{c\,f\,(1+2m)}2^{-m}\,\text{Cos}\left[\frac{1}{4}(2e+\pi+2fx)\right]^{-1-2m}\left(\text{Cos}\left[\frac{1}{2}(e+fx)\right]-\text{Sin}\left[\frac{1}{2}(e+fx)\right]\right)^{2m}$$
$$(a\,(1+\text{Sin}[e+fx]))^m\,(c-c\,\text{Sin}[e+fx])^{-m}\,\text{Sin}\left[\frac{1}{4}(2e+\pi+2fx)\right]$$

- **Problem 422: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int (a+a\,\text{Sin}[e+fx])^m\,(c-c\,\text{Sin}[e+fx])^{-m}\,dx$$

Optimal (type 5, 112 leaves, 4 steps):

$$\frac{1}{f\,(1+2m)}2^{\frac{1}{2}-m}\,c\,\text{Cos}[e+fx]\,\text{Hypergeometric2F1}\left[\frac{1}{2}(1+2m),\frac{1}{2}(1+2m),\frac{1}{2}(3+2m),\frac{1}{2}(1+\text{Sin}[e+fx])\right]$$
$$(1-\text{Sin}[e+fx])^{\frac{1}{2}+m}\,(a+a\,\text{Sin}[e+fx])^m\,(c-c\,\text{Sin}[e+fx])^{-1-m}$$

Result (type 6, 3987 leaves):

$$\left(2^{2-m}(-3+2m)\,\text{AppellF1}\left[\frac{1}{2}-m,-2m,1,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\left(\text{Cos}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)^{1+2m}\right.$$
$$\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-fx\right)\right]^{-2m}\left(\text{Cos}\left[\frac{1}{2}(e+fx)\right]-\text{Sin}\left[\frac{1}{2}(e+fx)\right]\right)^{2m}(a+a\,\text{Sin}[e+fx])^m\,(c-c\,\text{Sin}[e+fx])^{-m}$$
$$\left.\left(\text{Cos}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+fx\right)\right]-\text{Sin}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+fx\right)\right]\right)^{-2m}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)^{2m}\right)\Big/$$
$$\left(f\,(-1+2m)\left((-3+2m)\,\text{AppellF1}\left[\frac{1}{2}-m,-2m,1,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+\right.\right.$$

$$2\left(2\,m\,\text{AppellF1}\left[\frac{3}{2}-m,1-2m,1,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$\left.\text{AppellF1}\left[\frac{3}{2}-m,-2m,2,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)$$

$$\Bigg(-\Bigg(\Bigg(2^{-m}(-3+2m)\,\text{AppellF1}\left[\frac{1}{2}-m,-2m,1,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]$$

$$\left(\text{Cos}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{2m}\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{-2m}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{2m}\Bigg)\Big/$$

$$\Bigg((-1+2m)\Bigg((-3+2m)\,\text{AppellF1}\left[\frac{1}{2}-m,-2m,1,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$2\Bigg(2\,m\,\text{AppellF1}\left[\frac{3}{2}-m,1-2m,1,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\text{AppellF1}\Big[$$

$$\frac{3}{2}-m,-2m,2,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\Bigg)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)\Bigg)+$$

$$\Bigg(2^{1-m}(-3+2m)(1+2m)\,\text{AppellF1}\left[\frac{1}{2}-m,-2m,1,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]$$

$$\left(\text{Cos}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{2m}\text{Sin}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{-2m}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{2m}\Bigg)\Big/$$

$$\Bigg((-1+2m)\Bigg((-3+2m)\,\text{AppellF1}\left[\frac{1}{2}-m,-2m,1,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$2\Bigg(2\,m\,\text{AppellF1}\left[\frac{3}{2}-m,1-2m,1,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$\text{AppellF1}\left[\frac{3}{2}-m,-2m,2,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\Bigg)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)\Bigg)+$$

$$\Bigg(2^{2-m}m(-3+2m)\,\text{AppellF1}\left[\frac{1}{2}-m,-2m,1,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\left(\text{Cos}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{1+2m}$$

$$\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{-1-2m}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{2m}\Bigg)\Big/$$

$$\Bigg((-1+2m)\Bigg((-3+2m)\,\text{AppellF1}\left[\frac{1}{2}-m,-2m,1,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$2\Bigg(2\,m\,\text{AppellF1}\left[\frac{3}{2}-m,1-2m,1,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$\text{AppellF1}\left[\frac{3}{2}-m,-2m,2,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\Bigg)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)\Bigg)-$$

$$\left(2^{2-m}\,(-3+2\,m)\,\left(\text{Cos}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{1+2\,m}\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{-2\,m}\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\right.$$

$$\left(-\frac{1}{\frac{3}{2}-m}\left(\frac{1}{2}-m\right)\,m\,\text{AppellF1}\left[\frac{3}{2}-m,\,1-2\,m,\,1,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right.$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-\frac{1}{2\,\left(\frac{3}{2}-m\right)}\left(\frac{1}{2}-m\right)\,\text{AppellF1}\left[\frac{3}{2}-m,\,-2\,m,\,2,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]$$

$$\left.\left.\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\right)\,\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{2\,m}\right)\Big/$$

$$\left((-1+2\,m)\,\left((-3+2\,m)\,\text{AppellF1}\left[\frac{1}{2}-m,\,-2\,m,\,1,\,\frac{3}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.\right.$$

$$2\,\left(2\,m\,\text{AppellF1}\left[\frac{3}{2}-m,\,1-2\,m,\,1,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.$$

$$\left.\left.\left.\text{AppellF1}\left[\frac{3}{2}-m,\,-2\,m,\,2,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\right)+$$

$$\left(2^{2-m}\,m\,(-3+2\,m)\,\text{AppellF1}\left[\frac{1}{2}-m,\,-2\,m,\,1,\,\frac{3}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\,\left(\text{Cos}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{2\,m}\right.$$

$$\left.\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{-2\,m}\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{-1+2\,m}\right)\Big/$$

$$\left((-1+2\,m)\,\left((-3+2\,m)\,\text{AppellF1}\left[\frac{1}{2}-m,\,-2\,m,\,1,\,\frac{3}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.\right.$$

$$2\,\left(2\,m\,\text{AppellF1}\left[\frac{3}{2}-m,\,1-2\,m,\,1,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.$$

$$\left.\left.\left.\text{AppellF1}\left[\frac{3}{2}-m,\,-2\,m,\,2,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\right)+$$

$$\left(2^{2-m}\,(-3+2\,m)\,\text{AppellF1}\left[\frac{1}{2}-m,\,-2\,m,\,1,\,\frac{3}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\,\left(\text{Cos}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{1+2\,m}\right.$$

$$\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{-2\,m}\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\,\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{2\,m}$$

$$\left(\left(2\,m\,\text{AppellF1}\left[\frac{3}{2}-m,\,1-2\,m,\,1,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.\right.$$

$$\left.\text{AppellF1}\left[\frac{3}{2}-m,\,-2\,m,\,2,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]+$$

$$(-3+2m)\Bigg(-\frac{1}{\frac{3}{2}-m}\left(\frac{1}{2}-m\right)m\,\text{AppellF1}\left[\frac{3}{2}-m,1-2m,1,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{1}{2\left(\frac{3}{2}-m\right)}\left(\frac{1}{2}-m\right)\text{AppellF1}\left[\frac{3}{2}-m,-2m,2,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\right.$$

$$\left.-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\Bigg)+2\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2$$

$$\Bigg(-\frac{1}{\frac{5}{2}-m}\left(\frac{3}{2}-m\right)m\,\text{AppellF1}\left[\frac{5}{2}-m,1-2m,2,\frac{7}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{1}{\frac{5}{2}-m}\left(\frac{3}{2}-m\right)\text{AppellF1}\left[\frac{5}{2}-m,-2m,3,\frac{7}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]+2m\Bigg(-\frac{1}{2\left(\frac{5}{2}-m\right)}\left(\frac{3}{2}-m\right)\text{AppellF1}\left[\frac{5}{2}-m,1-2m,2,\frac{7}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\right.$$

$$\left.-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]+\frac{1}{2\left(\frac{5}{2}-m\right)}(1-2m)\left(\frac{3}{2}-m\right)\text{AppellF1}\left[\frac{5}{2}-m,2-2m,\right.$$

$$\left.1,\frac{7}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\Bigg)\Bigg)\Bigg)\Bigg)\Bigg)\Bigg/$$

$$\Bigg((-1+2m)\Bigg((-3+2m)\,\text{AppellF1}\left[\frac{1}{2}-m,-2m,1,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$2\Bigg(2m\,\text{AppellF1}\left[\frac{3}{2}-m,1-2m,1,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\text{AppellF1}\Bigg[$$

$$\frac{3}{2}-m,-2m,2,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg]\Bigg)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)^2\Bigg)\Bigg)$$

- **Problem 423: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int(a+a\,\text{Sin}[e+f x])^m\,(c-c\,\text{Sin}[e+f x])^{1-m}\,dx$$

Optimal (type 5, 114 leaves, 4 steps):

$$\frac{1}{f(1+2m)}2^{\frac{3}{2}-m}c^2\,\text{Cos}[e+f x]\,\text{Hypergeometric2F1}\left[\frac{1}{2}(-1+2m),\frac{1}{2}(1+2m),\frac{1}{2}(3+2m),\frac{1}{2}(1+\text{Sin}[e+f x])\right]$$

$$(1-\text{Sin}[e+f x])^{\frac{1}{2}+m}\,(a+a\,\text{Sin}[e+f x])^m\,(c-c\,\text{Sin}[e+f x])^{-1-m}$$

Result (type 6, 7365 leaves):

$$-\Bigg(\Bigg(2^{5-m}\,(-3+2\,m)\,\text{Cos}\Big[\frac{1}{4}\,\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^5\,\text{Cos}\Big[\frac{1}{2}\,\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^{2\,m}$$

$$\text{Sin}\Big[\frac{1}{4}\,\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\,\text{Sin}\Big[\frac{1}{2}\,\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^{-2\,m}\,\Big(\text{Cos}\Big[\frac{1}{2}\,(e+f\,x)\Big]-\text{Sin}\Big[\frac{1}{2}\,(e+f\,x)\Big]\Big)^{-2\,(1-m)}$$

$$(a+a\,\text{Sin}[e+f\,x])^m\,(c-c\,\text{Sin}[e+f\,x])^{1-m}\,\Big(\text{Cos}\Big[\frac{\pi}{4}+\frac{1}{2}\,\Big(e-\frac{\pi}{2}+f\,x\Big)\Big]-\text{Sin}\Big[\frac{\pi}{4}+\frac{1}{2}\,\Big(e-\frac{\pi}{2}+f\,x\Big)\Big]\Big)^{2-2\,m}$$

$$\Bigg(-\Bigg(\Bigg(\text{AppellF1}\Big[\frac{1}{2}-m,\,-2\,m,\,2,\,\frac{3}{2}-m,\,\text{Tan}\Big[\frac{1}{4}\,\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\,\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\,\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Bigg)\Big/$$

$$\Bigg((-3+2\,m)\,\text{AppellF1}\Big[\frac{1}{2}-m,\,-2\,m,\,2,\,\frac{3}{2}-m,\,\text{Tan}\Big[\frac{1}{4}\,\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\,\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+$$

$$4\,\Bigg(m\,\text{AppellF1}\Big[\frac{3}{2}-m,\,1-2\,m,\,2,\,\frac{5}{2}-m,\,\text{Tan}\Big[\frac{1}{4}\,\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\,\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+\text{AppellF1}\Big[$$

$$\frac{3}{2}-m,\,-2\,m,\,3,\,\frac{5}{2}-m,\,\text{Tan}\Big[\frac{1}{4}\,\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\,\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\Bigg)\,\text{Tan}\Big[\frac{1}{4}\,\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Bigg)\Bigg)+$$

$$\text{AppellF1}\Big[\frac{1}{2}-m,\,-2\,m,\,3,\,\frac{3}{2}-m,\,\text{Tan}\Big[\frac{1}{4}\,\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\,\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\Big/$$

$$\Bigg((-3+2\,m)\,\text{AppellF1}\Big[\frac{1}{2}-m,\,-2\,m,\,3,\,\frac{3}{2}-m,\,\text{Tan}\Big[\frac{1}{4}\,\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\,\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+$$

$$2\,\Bigg(2\,m\,\text{AppellF1}\Big[\frac{3}{2}-m,\,1-2\,m,\,3,\,\frac{5}{2}-m,\,\text{Tan}\Big[\frac{1}{4}\,\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\,\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+$$

$$3\,\text{AppellF1}\Big[\frac{3}{2}-m,\,-2\,m,\,4,\,\frac{5}{2}-m,\,\text{Tan}\Big[\frac{1}{4}\,\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\,\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\Bigg)\,\text{Tan}\Big[\frac{1}{4}\,\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Bigg)\Bigg)\Bigg)\Bigg)\Big/$$

$$\Bigg(f\,(-1+2\,m)\,\Bigg(-\frac{1}{-1+2\,m}\,2^{5-m}\,m\,(-3+2\,m)\,\text{Cos}\Big[\frac{1}{4}\,\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^5\,\text{Cos}\Big[\frac{1}{2}\,\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^{1+2\,m}\,\text{Sin}\Big[\frac{1}{4}\,\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\,\text{Sin}\Big[\frac{1}{2}\,\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^{-1-2\,m}$$

$$\Bigg(-\Bigg(\Bigg(\text{AppellF1}\Big[\frac{1}{2}-m,\,-2\,m,\,2,\,\frac{3}{2}-m,\,\text{Tan}\Big[\frac{1}{4}\,\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\,\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\,\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Bigg)\Big/$$

$$\Bigg((-3+2\,m)\,\text{AppellF1}\Big[\frac{1}{2}-m,\,-2\,m,\,2,\,\frac{3}{2}-m,\,\text{Tan}\Big[\frac{1}{4}\,\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\,\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+$$

$$4\,\Bigg(m\,\text{AppellF1}\Big[\frac{3}{2}-m,\,1-2\,m,\,2,\,\frac{5}{2}-m,\,\text{Tan}\Big[\frac{1}{4}\,\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\,\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+\text{AppellF1}\Big[\frac{3}{2}-m,\,-2\,m,\,3,$$

$$\frac{5}{2}-m,\,\text{Tan}\Big[\frac{1}{4}\,\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\,\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\Bigg)\,\text{Tan}\Big[\frac{1}{4}\,\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Bigg)\Bigg)+\text{AppellF1}\Big[\frac{1}{2}-m,\,-2\,m,\,3,\,\frac{3}{2}-m,$$

$$\text{Tan}\Big[\frac{1}{4}\,\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\,\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\Big/\Bigg((-3+2\,m)\,\text{AppellF1}\Big[\frac{1}{2}-m,\,-2\,m,\,3,\,\frac{3}{2}-m,\,\text{Tan}\Big[\frac{1}{4}\,\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,$$

$$-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+2\,\Big(2\,m\,\text{AppellF1}\Big[\frac{3}{2}-m,\,1-2\,m,\,3,\,\frac{5}{2}-m,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+$$

$$3\,\text{AppellF1}\Big[\frac{3}{2}-m,\,-2\,m,\,4,\,\frac{5}{2}-m,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)\Big)-$$

$$\frac{1}{-1+2\,m}\,2^{5-m}\,m\,(-3+2\,m)\,\text{Cos}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^5\,\text{Cos}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^{-1+2\,m}\,\text{Sin}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\,\text{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^{1-2\,m}$$

$$\Big(-\Big(\Big(\text{AppellF1}\Big[\frac{1}{2}-m,\,-2\,m,\,2,\,\frac{3}{2}-m,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)\Big/$$

$$\Big((-3+2\,m)\,\text{AppellF1}\Big[\frac{1}{2}-m,\,-2\,m,\,2,\,\frac{3}{2}-m,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+$$

$$4\,\Big(m\,\text{AppellF1}\Big[\frac{3}{2}-m,\,1-2\,m,\,2,\,\frac{5}{2}-m,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+\text{AppellF1}\Big[\frac{3}{2}-m,\,-2\,m,\,3,$$

$$\frac{5}{2}-m,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)\Big)+\text{AppellF1}\Big[\frac{1}{2}-m,\,-2\,m,\,3,\,\frac{3}{2}-m,$$

$$\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\Big/\Big((-3+2\,m)\,\text{AppellF1}\Big[\frac{1}{2}-m,\,-2\,m,\,3,\,\frac{3}{2}-m,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,$$

$$-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+2\,\Big(2\,m\,\text{AppellF1}\Big[\frac{3}{2}-m,\,1-2\,m,\,3,\,\frac{5}{2}-m,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+$$

$$3\,\text{AppellF1}\Big[\frac{3}{2}-m,\,-2\,m,\,4,\,\frac{5}{2}-m,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)\Big)+$$

$$\frac{1}{-1+2\,m}\,2^{3-m}\,(-3+2\,m)\,\text{Cos}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^6\,\text{Cos}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^{2\,m}\,\text{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^{-2\,m}$$

$$\Big(-\Big(\Big(\text{AppellF1}\Big[\frac{1}{2}-m,\,-2\,m,\,2,\,\frac{3}{2}-m,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)\Big/$$

$$\Big((-3+2\,m)\,\text{AppellF1}\Big[\frac{1}{2}-m,\,-2\,m,\,2,\,\frac{3}{2}-m,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+$$

$$4\,\Big(m\,\text{AppellF1}\Big[\frac{3}{2}-m,\,1-2\,m,\,2,\,\frac{5}{2}-m,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+\text{AppellF1}\Big[\frac{3}{2}-m,\,-2\,m,\,3,$$

$$\frac{5}{2}-m,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)\Big)+\text{AppellF1}\Big[\frac{1}{2}-m,\,-2\,m,\,3,\,\frac{3}{2}-m,$$

$$\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\Big/\Big((-3+2\,m)\,\text{AppellF1}\Big[\frac{1}{2}-m,\,-2\,m,\,3,\,\frac{3}{2}-m,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,$$

$$-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+2\,\Big(2\,m\,\text{AppellF1}\Big[\frac{3}{2}-m,\,1-2\,m,\,3,\,\frac{5}{2}-m,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+$$

$$3\,\text{AppellF1}\Big[\frac{3}{2}-m,\,-2\,m,\,4,\,\frac{5}{2}-m,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)\Big)-$$

$$\frac{1}{-1+2m}\,5\times 2^{3-m}\,(-3+2m)\,\mathrm{Cos}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^4\,\mathrm{Cos}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^{2m}\,\mathrm{Sin}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\,\mathrm{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^{-2m}$$

$$\Big(-\Big(\Big(\mathrm{AppellF1}\Big[\frac{1}{2}-m,\,-2m,\,2,\,\frac{3}{2}-m,\,\mathrm{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\mathrm{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\,\mathrm{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)\Big/$$

$$\Big((-3+2m)\,\mathrm{AppellF1}\Big[\frac{1}{2}-m,\,-2m,\,2,\,\frac{3}{2}-m,\,\mathrm{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\mathrm{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+$$

$$4\Big(m\,\mathrm{AppellF1}\Big[\frac{3}{2}-m,\,1-2m,\,2,\,\frac{5}{2}-m,\,\mathrm{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\mathrm{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+$$

$$\mathrm{AppellF1}\Big[\frac{3}{2}-m,\,-2m,\,3,\,\frac{5}{2}-m,\,\mathrm{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\mathrm{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\Big)\,\mathrm{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)\Big)+$$

$$\mathrm{AppellF1}\Big[\frac{1}{2}-m,\,-2m,\,3,\,\frac{3}{2}-m,\,\mathrm{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\mathrm{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\Big/$$

$$\Big((-3+2m)\,\mathrm{AppellF1}\Big[\frac{1}{2}-m,\,-2m,\,3,\,\frac{3}{2}-m,\,\mathrm{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\mathrm{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+$$

$$2\Big(2m\,\mathrm{AppellF1}\Big[\frac{3}{2}-m,\,1-2m,\,3,\,\frac{5}{2}-m,\,\mathrm{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\mathrm{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+$$

$$3\,\mathrm{AppellF1}\Big[\frac{3}{2}-m,\,-2m,\,4,\,\frac{5}{2}-m,\,\mathrm{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\mathrm{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\Big)\,\mathrm{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)\Big)+$$

$$\frac{1}{-1+2m}\,2^{5-m}\,(-3+2m)\,\mathrm{Cos}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^5\,\mathrm{Cos}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^{2m}\,\mathrm{Sin}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\,\mathrm{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^{-2m}$$

$$\Big(-\Big(\Big(\mathrm{AppellF1}\Big[\frac{1}{2}-m,\,-2m,\,2,\,\frac{3}{2}-m,\,\mathrm{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\mathrm{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\,\mathrm{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\,\mathrm{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\Big)\Big/$$

$$\Big(2\Big((-3+2m)\,\mathrm{AppellF1}\Big[\frac{1}{2}-m,\,-2m,\,2,\,\frac{3}{2}-m,\,\mathrm{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\mathrm{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+$$

$$4\Big(m\,\mathrm{AppellF1}\Big[\frac{3}{2}-m,\,1-2m,\,2,\,\frac{5}{2}-m,\,\mathrm{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\mathrm{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+$$

$$\mathrm{AppellF1}\Big[\frac{3}{2}-m,\,-2m,\,3,\,\frac{5}{2}-m,\,\mathrm{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\mathrm{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\Big)\,\mathrm{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)\Big)\Big)-$$

$$\Big(\mathrm{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big(-\frac{1}{\frac{3}{2}-m}\Big(\frac{1}{2}-m\Big)\,m\,\mathrm{AppellF1}\Big[\frac{3}{2}-m,\,1-2m,\,2,\,\frac{5}{2}-m,\,\mathrm{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\mathrm{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]$$

$$\mathrm{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\,\mathrm{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]-\frac{1}{\frac{3}{2}-m}\Big(\frac{1}{2}-m\Big)\,\mathrm{AppellF1}\Big[\frac{3}{2}-m,\,-2m,\,3,\,\frac{5}{2}-m,$$

$$\mathrm{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\mathrm{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\,\mathrm{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\,\mathrm{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\Big)\Big)\Big/$$

$$\left((-3+2m)\,\text{AppellF1}\left[\frac{1}{2}-m,-2m,2,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+\right.$$

$$4\left(m\,\text{AppellF1}\left[\frac{3}{2}-m,1-2m,2,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+\right.$$

$$\left.\left.\text{AppellF1}\left[\frac{3}{2}-m,-2m,3,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)+$$

$$\left(-\frac{1}{\frac{3}{2}-m}\left(\frac{1}{2}-m\right)m\,\text{AppellF1}\left[\frac{3}{2}-m,1-2m,3,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right.$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]-\frac{1}{2\left(\frac{3}{2}-m\right)}3\left(\frac{1}{2}-m\right)\text{AppellF1}\left[\frac{3}{2}-m,-2m,4,\frac{5}{2}-m,\right.$$

$$\left.\left.\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]\right)\Big/$$

$$\left((-3+2m)\,\text{AppellF1}\left[\frac{1}{2}-m,-2m,3,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+\right.$$

$$2\left(2m\,\text{AppellF1}\left[\frac{3}{2}-m,1-2m,3,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+\right.$$

$$\left.\left.3\,\text{AppellF1}\left[\frac{3}{2}-m,-2m,4,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)+$$

$$\left(\text{AppellF1}\left[\frac{1}{2}-m,-2m,2,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right.$$

$$\left(2\left(m\,\text{AppellF1}\left[\frac{3}{2}-m,1-2m,2,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+\text{AppellF1}\left[\frac{3}{2}-m,-2m,3,\right.\right.\right.$$

$$\left.\left.\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right)\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]+(-3+2m)$$

$$\left(-\frac{1}{\frac{3}{2}-m}\left(\frac{1}{2}-m\right)m\,\text{AppellF1}\left[\frac{3}{2}-m,1-2m,2,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right.$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]-\frac{1}{\frac{3}{2}-m}\left(\frac{1}{2}-m\right)\text{AppellF1}\left[\frac{3}{2}-m,-2m,3,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]$$

$$\left.\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]\right)+4\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\left(-\frac{1}{\frac{5}{2}-m}\left(\frac{3}{2}-m\right)m\,\text{AppellF1}\left[\frac{5}{2}-m,1-2m,\right.\right.$$

$$3,\ \frac{7}{2}-m,\ \mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]\ \mathrm{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-\frac{1}{2\left(\frac{5}{2}-m\right)}$$

$$3\left(\frac{3}{2}-m\right)\mathrm{AppellF1}\left[\frac{5}{2}-m,\ -2\,m,\ 4,\ \frac{7}{2}-m,\ \mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\mathrm{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\mathrm{Tan}\Big[\frac{1}{4}$$

$$\left(-e+\frac{\pi}{2}-f\,x\right)\Big]+m\Bigg(-\frac{1}{\frac{5}{2}-m}\left(\frac{3}{2}-m\right)\mathrm{AppellF1}\left[\frac{5}{2}-m,\ 1-2\,m,\ 3,\ \frac{7}{2}-m,\ \mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]$$

$$\mathrm{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]+\frac{1}{2\left(\frac{5}{2}-m\right)}(1-2\,m)\left(\frac{3}{2}-m\right)\mathrm{AppellF1}\Big[\frac{5}{2}-m,\ 2-2\,m,\ 2,\ \frac{7}{2}-m,$$

$$\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]\ \mathrm{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\Bigg)\Bigg)\Bigg)\Bigg)\Bigg/$$

$$\Bigg((-3+2\,m)\,\mathrm{AppellF1}\left[\frac{1}{2}-m,\ -2\,m,\ 2,\ \frac{3}{2}-m,\ \mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+$$

$$4\Bigg(m\,\mathrm{AppellF1}\left[\frac{3}{2}-m,\ 1-2\,m,\ 2,\ \frac{5}{2}-m,\ \mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+$$

$$\mathrm{AppellF1}\left[\frac{3}{2}-m,\ -2\,m,\ 3,\ \frac{5}{2}-m,\ \mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\Bigg)\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Bigg)^2-$$

$$\Bigg(\mathrm{AppellF1}\left[\frac{1}{2}-m,\ -2\,m,\ 3,\ \frac{3}{2}-m,\ \mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]$$

$$\Bigg(\Bigg(2\,m\,\mathrm{AppellF1}\left[\frac{3}{2}-m,\ 1-2\,m,\ 3,\ \frac{5}{2}-m,\ \mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+3\,\mathrm{AppellF1}\Big[\frac{3}{2}-m,\ -2\,m,$$

$$4,\ \frac{5}{2}-m,\ \mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]\Bigg)\mathrm{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]+$$

$$(-3+2\,m)\Bigg(-\frac{1}{\frac{3}{2}-m}\left(\frac{1}{2}-m\right)m\,\mathrm{AppellF1}\left[\frac{3}{2}-m,\ 1-2\,m,\ 3,\ \frac{5}{2}-m,\ \mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]$$

$$\mathrm{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-\frac{1}{2\left(\frac{3}{2}-m\right)}3\left(\frac{1}{2}-m\right)\mathrm{AppellF1}\Big[\frac{3}{2}-m,\ -2\,m,\ 4,\ \frac{5}{2}-m,$$

$$\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]\ \mathrm{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\Bigg)+$$

$$2\,\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Bigg(2\,m\Bigg(-\frac{1}{2\left(\frac{5}{2}-m\right)}3\left(\frac{3}{2}-m\right)\mathrm{AppellF1}\Big[\frac{5}{2}-m,\ 1-2\,m,\ 4,\ \frac{7}{2}-m,\ \mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,$$

$$-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]+\frac{1}{2\left(\frac{5}{2}-m\right)}(1-2m)\left(\frac{3}{2}-m\right)\text{AppellF1}\left[\frac{5}{2}-m,\right.$$

$$\left.2-2m,3,\frac{7}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)+$$

$$3\left(-\frac{1}{\frac{5}{2}-m}\left(\frac{3}{2}-m\right)m\,\text{AppellF1}\left[\frac{5}{2}-m,1-2m,4,\frac{7}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right.$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{1}{\frac{5}{2}-m}2\left(\frac{3}{2}-m\right)\text{AppellF1}\left[\frac{5}{2}-m,-2m,5,\frac{7}{2}-m,\right.$$

$$\left.\left.\left.\left.\left.\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)\right)\right)\right)\Big/$$

$$\left((-3+2m)\,\text{AppellF1}\left[\frac{1}{2}-m,-2m,3,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$2\left(2m\,\text{AppellF1}\left[\frac{3}{2}-m,1-2m,3,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$\left.\left.\left.\left.\left.3\,\text{AppellF1}\left[\frac{3}{2}-m,-2m,4,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^2\right)\right)\right)\right)$$

Problem 424: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int(a+a\,\text{Sin}[e+f x])^m\,(c-c\,\text{Sin}[e+f x])^{2-m}\,dx$$

Optimal (type 5, 114 leaves, 4 steps):

$$\frac{1}{f(1+2m)}2^{\frac{5}{2}-m}c^3\,\text{Cos}[e+f x]\,\text{Hypergeometric2F1}\left[\frac{1}{2}(-3+2m),\frac{1}{2}(1+2m),\frac{1}{2}(3+2m),\frac{1}{2}(1+\text{Sin}[e+f x])\right]$$

$$(1-\text{Sin}[e+f x])^{\frac{1}{2}+m}\,(a+a\,\text{Sin}[e+f x])^m\,(c-c\,\text{Sin}[e+f x])^{-1-m}$$

Result (type 6, 11 688 leaves):

$$-\left(\left(\left(2^{8-3m}(-3+2m)\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^{-2(2-m)}\right.\right.\right.$$

$$(a+a\,\text{Sin}[e+f x])^m\,(c-c\,\text{Sin}[e+f x])^{2-m}\left(\text{Cos}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]-\text{Sin}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]\right)^{4-2m}$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\left(\frac{\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}\right)^{-2m}\left(\frac{1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}\right)^{2m}$$

$$\left(-\left(\left(\text{AppellF1}\left[\frac{1}{2}-m,-2m,3,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^2\right)\right/\right.\right.$$

$$\left((-3+2m)\,\text{AppellF1}\left[\frac{1}{2}-m,-2m,3,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$2\left(2m\,\text{AppellF1}\left[\frac{3}{2}-m,1-2m,3,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+3\right.$$

$$\left.\left.\left.\text{AppellF1}\left[\frac{3}{2}-m,-2m,4,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\right)+$$

$$\left(2\,\text{AppellF1}\left[\frac{1}{2}-m,-2m,4,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\right)\Big/$$

$$\left((-3+2m)\,\text{AppellF1}\left[\frac{1}{2}-m,-2m,4,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$4\left(m\,\text{AppellF1}\left[\frac{3}{2}-m,1-2m,4,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$\left.\left.2\,\text{AppellF1}\left[\frac{3}{2}-m,-2m,5,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)-$$

$$\text{AppellF1}\left[\frac{1}{2}-m,-2m,5,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\Big/$$

$$\left((-3+2m)\,\text{AppellF1}\left[\frac{1}{2}-m,-2m,5,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$2\left(2m\,\text{AppellF1}\left[\frac{3}{2}-m,1-2m,5,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$\left.\left.\left.5\,\text{AppellF1}\left[\frac{3}{2}-m,-2m,6,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\right)\right)\Big/$$

$$\left(f(-1+2m)\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^5\left(-\frac{1}{(-1+2m)\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^6}5\times 2^{7-3m}(-3+2m)\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right.\right.$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\left(\frac{\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}\right)^{-2m}\left(\frac{1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}\right)^{2m}$$

$$\left(-\left(\left(\text{AppellF1}\left[\frac{1}{2}-m,-2m,3,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^2\right)\right/\right.\right.$$

$$\left((-3+2m)\,\text{AppellF1}\left[\frac{1}{2}-m,-2m,3,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$2\left(2\,m\,\text{AppellF1}\left[\frac{3}{2}-m,\,1-2\,m,\,3,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.$$

$$\left.\left.3\,\text{AppellF1}\left[\frac{3}{2}-m,\,-2\,m,\,4,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)+$$

$$\left(2\,\text{AppellF1}\left[\frac{1}{2}-m,\,-2\,m,\,4,\,\frac{3}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\right)\Big/$$

$$\left((-3+2\,m)\,\text{AppellF1}\left[\frac{1}{2}-m,\,-2\,m,\,4,\,\frac{3}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+4\right.$$

$$\left(m\,\text{AppellF1}\left[\frac{3}{2}-m,\,1-2\,m,\,4,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+2\,\text{AppellF1}\left[\frac{3}{2}-m,\,-2\,m,\,5,\right.\right.$$

$$\left.\left.\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)-\text{AppellF1}\left[\frac{1}{2}-m,\,-2\,m,\,5,\,\frac{3}{2}-m,\right.$$

$$\left.\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\Big/\left((-3+2\,m)\,\text{AppellF1}\left[\frac{1}{2}-m,\,-2\,m,\,5,\,\frac{3}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\right.\right.$$

$$\left.-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+2\left(2\,m\,\text{AppellF1}\left[\frac{3}{2}-m,\,1-2\,m,\,5,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.$$

$$\left.\left.5\,\text{AppellF1}\left[\frac{3}{2}-m,\,-2\,m,\,6,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\right)+$$

$$\frac{1}{(-1+2\,m)\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^5}\,2^{6-3\,m}\,(-3+2\,m)\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\left(\frac{\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}\right)^{-2\,m}$$

$$\left(\frac{1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}\right)^{2\,m}$$

$$\left(-\left(\left(\text{AppellF1}\left[\frac{1}{2}-m,\,-2\,m,\,3,\,\frac{3}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^2\right)\Big/\right.\right.$$

$$\left((-3+2\,m)\,\text{AppellF1}\left[\frac{1}{2}-m,\,-2\,m,\,3,\,\frac{3}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.$$

$$2\left(2\,m\,\text{AppellF1}\left[\frac{3}{2}-m,\,1-2\,m,\,3,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.$$

$$\left.\left.\left.3\,\text{AppellF1}\left[\frac{3}{2}-m,\,-2\,m,\,4,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\right)+$$

$$\left(2\,\text{AppellF1}\left[\frac{1}{2}-m,\,-2\,m,\,4,\,\frac{3}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\right)\Big/$$

$$\left((-3+2\,m)\,\text{AppellF1}\left[\frac{1}{2}-m,\,-2\,m,\,4,\,\frac{3}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.$$

$$4\left(m\,\text{AppellF1}\left[\frac{3}{2}-m,1-2m,4,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$\left.2\,\text{AppellF1}\left[\frac{3}{2}-m,-2m,5,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)-$$

$$\text{AppellF1}\left[\frac{1}{2}-m,-2m,5,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\Big/$$

$$\Bigg((-3+2m)\,\text{AppellF1}\left[\frac{1}{2}-m,-2m,5,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$2\left(2m\,\text{AppellF1}\left[\frac{3}{2}-m,1-2m,5,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$\left.5\,\text{AppellF1}\left[\frac{3}{2}-m,-2m,6,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)\Bigg)-$$

$$\frac{1}{(-1+2m)\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^5}\,2^{9-3m}\,m\,(-3+2m)\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\left(\frac{\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}\right)^{-1-2m}$$

$$\left(\frac{1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}\right)^{2m}\left(-\frac{\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{2\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^2}+\frac{\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{4\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)}\right)$$

$$\Bigg(-\Bigg(\Bigg(\text{AppellF1}\left[\frac{1}{2}-m,-2m,3,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^2\Bigg)\Big/$$

$$\Bigg((-3+2m)\,\text{AppellF1}\left[\frac{1}{2}-m,-2m,3,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$2\left(2m\,\text{AppellF1}\left[\frac{3}{2}-m,1-2m,3,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$\left.3\,\text{AppellF1}\left[\frac{3}{2}-m,-2m,4,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)\Bigg)+$$

$$\Bigg(2\,\text{AppellF1}\left[\frac{1}{2}-m,-2m,4,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^2\Bigg)\Big/$$

$$\Bigg((-3+2m)\,\text{AppellF1}\left[\frac{1}{2}-m,-2m,4,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$4\left(m\,\text{AppellF1}\left[\frac{3}{2}-m,1-2m,4,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$\left.2\,\text{AppellF1}\left[\frac{3}{2}-m,-2m,5,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)-$$

$$\text{AppellF1}\left[\frac{1}{2}-m,-2m,5,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\Big/$$

$$\left((-3+2m)\,\text{AppellF1}\left[\frac{1}{2}-m,-2m,5,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+\right.$$

$$2\left(2m\,\text{AppellF1}\left[\frac{3}{2}-m,1-2m,5,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+\right.$$

$$\left.\left.5\,\text{AppellF1}\left[\frac{3}{2}-m,-2m,6,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)\right)+$$

$$\frac{1}{(-1+2m)\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)^5}\,2^{9-3m}\,m\,(-3+2m)\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]\left(\frac{\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2}\right)^{-2m}$$

$$\left(\frac{1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2}\right)^{-1+2m}$$

$$\left(-\frac{\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)}{2\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)^2}-\frac{\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]}{2\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)}\right)$$

$$\left(-\left(\left(\text{AppellF1}\left[\frac{1}{2}-m,-2m,3,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)^2\right)\right/\right.$$

$$\left((-3+2m)\,\text{AppellF1}\left[\frac{1}{2}-m,-2m,3,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+\right.$$

$$2\left(2m\,\text{AppellF1}\left[\frac{3}{2}-m,1-2m,3,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+\right.$$

$$\left.\left.\left.3\,\text{AppellF1}\left[\frac{3}{2}-m,-2m,4,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)\right)+$$

$$\left(2\,\text{AppellF1}\left[\frac{1}{2}-m,-2m,4,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)\right)\Big/$$

$$\left((-3+2m)\,\text{AppellF1}\left[\frac{1}{2}-m,-2m,4,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+\right.$$

$$4\left(m\,\text{AppellF1}\left[\frac{3}{2}-m,1-2m,4,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+\right.$$

$$\left.\left.2\,\text{AppellF1}\left[\frac{3}{2}-m,-2m,5,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)-$$

$$\text{AppellF1}\left[\frac{1}{2}-m,-2m,5,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\Big/$$

$$\left((-3+2m)\,\text{AppellF1}\left[\frac{1}{2}-m,-2m,5,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+\right.$$

$$2\Big(2\,m\,\text{AppellF1}\left[\frac{3}{2}-m,\,1-2\,m,\,5,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+$$

$$5\,\text{AppellF1}\left[\frac{3}{2}-m,\,-2\,m,\,6,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\Big)\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big)\Big)+$$

$$\frac{1}{(-1+2\,m)\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^5}\,2^{8-3\,m}\,(-3+2\,m)\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\left(\frac{\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}\right)^{-2\,m}$$

$$\left(\frac{1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}\right)^{2\,m}$$

$$\Big(-\Big(\Big(\text{AppellF1}\left[\frac{1}{2}-m,\,-2\,m,\,3,\,\frac{3}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\Big)\Big/\Big((-3+2\,m)\,\text{AppellF1}\left[\frac{1}{2}-m,\,-2\,m,\,3,\,\frac{3}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\right.$$

$$\left.-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+2\Big(2\,m\,\text{AppellF1}\left[\frac{3}{2}-m,\,1-2\,m,\,3,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+$$

$$3\,\text{AppellF1}\left[\frac{3}{2}-m,\,-2\,m,\,4,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\Big)\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big)\Big)-$$

$$\Big(\Big(-\frac{1}{\frac{3}{2}-m}\left(\frac{1}{2}-m\right)m\,\text{AppellF1}\left[\frac{3}{2}-m,\,1-2\,m,\,3,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-\frac{1}{2\left(\frac{3}{2}-m\right)}3\left(\frac{1}{2}-m\right)\text{AppellF1}\left[\frac{3}{2}-m,\,-2\,m,\,4,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\right.$$

$$\left.-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\Big)\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^2\Big)\Big/$$

$$\Big((-3+2\,m)\,\text{AppellF1}\left[\frac{1}{2}-m,\,-2\,m,\,3,\,\frac{3}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+$$

$$2\Big(2\,m\,\text{AppellF1}\left[\frac{3}{2}-m,\,1-2\,m,\,3,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+$$

$$3\,\text{AppellF1}\left[\frac{3}{2}-m,\,-2\,m,\,4,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\Big)\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big)+$$

$$\Big(\text{AppellF1}\left[\frac{1}{2}-m,\,-2\,m,\,4,\,\frac{3}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\Big)\Big/$$

$$\left((-3+2\,m)\,\text{AppellF1}\left[\frac{1}{2}-m,\,-2\,m,\,4,\,\frac{3}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.$$

$$4\left(m\,\text{AppellF1}\left[\frac{3}{2}-m,\,1-2\,m,\,4,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.$$

$$\left.\left.2\,\text{AppellF1}\left[\frac{3}{2}-m,\,-2\,m,\,5,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)+$$

$$\left(2\left(-\frac{1}{\frac{3}{2}-m}\left(\frac{1}{2}-m\right)m\,\text{AppellF1}\left[\frac{3}{2}-m,\,1-2\,m,\,4,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right.\right.$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-\frac{1}{\frac{3}{2}-m}2\left(\frac{1}{2}-m\right)\text{AppellF1}\left[\frac{3}{2}-m,\,-2\,m,\,5,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\right.$$

$$\left.\left.\left.-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\right)\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\right)\Big/$$

$$\left((-3+2\,m)\,\text{AppellF1}\left[\frac{1}{2}-m,\,-2\,m,\,4,\,\frac{3}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.$$

$$4\left(m\,\text{AppellF1}\left[\frac{3}{2}-m,\,1-2\,m,\,4,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.$$

$$\left.\left.2\,\text{AppellF1}\left[\frac{3}{2}-m,\,-2\,m,\,5,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)-$$

$$\left(-\frac{1}{\frac{3}{2}-m}\left(\frac{1}{2}-m\right)m\,\text{AppellF1}\left[\frac{3}{2}-m,\,1-2\,m,\,5,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right.$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-\frac{1}{2\left(\frac{3}{2}-m\right)}5\left(\frac{1}{2}-m\right)\text{AppellF1}\left[\frac{3}{2}-m,\,-2\,m,\,6,\,\frac{5}{2}-m,\right.$$

$$\left.\left.\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\right)\Big/$$

$$\left((-3+2\,m)\,\text{AppellF1}\left[\frac{1}{2}-m,\,-2\,m,\,5,\,\frac{3}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.$$

$$2\left(2\,m\,\text{AppellF1}\left[\frac{3}{2}-m,\,1-2\,m,\,5,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.$$

$$\left.\left.5\,\text{AppellF1}\left[\frac{3}{2}-m,\,-2\,m,\,6,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)+$$

$$\left(\text{AppellF1}\left[\frac{1}{2}-m,\,-2\,m,\,3,\,\frac{3}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^2\right.$$

$$\Bigg(\bigg(2\,m\,\text{AppellF1}\Big[\frac{3}{2}-m,\,1-2m,\,3,\,\frac{5}{2}-m,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+3\,\text{AppellF1}\Big[\frac{3}{2}-m,\,-2m,$$

$$4,\,\frac{5}{2}-m,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\bigg)\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]+$$

$$(-3+2m)\bigg(-\frac{1}{\frac{3}{2}-m}\Big(\frac{1}{2}-m\Big)\,m\,\text{AppellF1}\Big[\frac{3}{2}-m,\,1-2m,\,3,\,\frac{5}{2}-m,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]$$

$$\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]-\frac{1}{2\left(\frac{3}{2}-m\right)}3\Big(\frac{1}{2}-m\Big)\,\text{AppellF1}\Big[\frac{3}{2}-m,\,-2m,\,4,\,\frac{5}{2}-m,$$

$$\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\bigg)+$$

$$2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\,\bigg(2\,m\,\bigg(-\frac{1}{2\left(\frac{5}{2}-m\right)}3\Big(\frac{3}{2}-m\Big)\,\text{AppellF1}\Big[\frac{5}{2}-m,\,1-2m,\,4,\,\frac{7}{2}-m,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,$$

$$-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]+\frac{1}{2\left(\frac{5}{2}-m\right)}(1-2m)\Big(\frac{3}{2}-m\Big)\,\text{AppellF1}\Big[\frac{5}{2}-m,$$

$$2-2m,\,3,\,\frac{7}{2}-m,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\bigg)+$$

$$3\,\bigg(-\frac{1}{\frac{5}{2}-m}\Big(\frac{3}{2}-m\Big)\,m\,\text{AppellF1}\Big[\frac{5}{2}-m,\,1-2m,\,4,\,\frac{7}{2}-m,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]$$

$$\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]-\frac{1}{\frac{5}{2}-m}2\Big(\frac{3}{2}-m\Big)\,\text{AppellF1}\Big[\frac{5}{2}-m,\,-2m,\,5,\,\frac{7}{2}-m,$$

$$\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\bigg)\bigg)\Bigg)\Bigg)\Bigg)\Bigg/$$

$$\bigg((-3+2m)\,\text{AppellF1}\Big[\frac{1}{2}-m,\,-2m,\,3,\,\frac{3}{2}-m,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+$$

$$2\,\Big(2\,m\,\text{AppellF1}\Big[\frac{3}{2}-m,\,1-2m,\,3,\,\frac{5}{2}-m,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+$$

$$3\,\text{AppellF1}\Big[\frac{3}{2}-m,\,-2m,\,4,\,\frac{5}{2}-m,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\bigg)^2-$$

$$\left(2\,\text{AppellF1}\left[\frac{1}{2}-m,-2m,4,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\right.$$

$$\left(2\left(m\,\text{AppellF1}\left[\frac{3}{2}-m,1-2m,4,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+2\,\text{AppellF1}\left[\frac{3}{2}-m,-2m,\right.\right.\right.$$

$$\left.\left.5,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]+$$

$$(-3+2m)\left(-\frac{1}{\frac{3}{2}-m}\left(\frac{1}{2}-m\right)m\,\text{AppellF1}\left[\frac{3}{2}-m,1-2m,4,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right.$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{1}{\frac{3}{2}-m}2\left(\frac{1}{2}-m\right)\text{AppellF1}\left[\frac{3}{2}-m,-2m,5,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\right.$$

$$\left.\left.-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)+4\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2$$

$$\left(m\left(-\frac{1}{\frac{5}{2}-m}2\left(\frac{3}{2}-m\right)\text{AppellF1}\left[\frac{5}{2}-m,1-2m,5,\frac{7}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right.\right.$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]+\frac{1}{2\left(\frac{5}{2}-m\right)}(1-2m)\left(\frac{3}{2}-m\right)\text{AppellF1}\left[\frac{5}{2}-m,2-2m,4,\right.$$

$$\left.\left.\frac{7}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)+$$

$$2\left(-\frac{1}{\frac{5}{2}-m}\left(\frac{3}{2}-m\right)m\,\text{AppellF1}\left[\frac{5}{2}-m,1-2m,5,\frac{7}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right.$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{1}{2\left(\frac{5}{2}-m\right)}5\left(\frac{3}{2}-m\right)\text{AppellF1}\left[\frac{5}{2}-m,-2m,6,\frac{7}{2}-m,\right.$$

$$\left.\left.\left.\left.\left.\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)\right)\right)\right)\Big/$$

$$\left((-3+2m)\,\text{AppellF1}\left[\frac{1}{2}-m,-2m,4,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$4\left(m\,\text{AppellF1}\left[\frac{3}{2}-m,1-2m,4,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$2\,\text{AppellF1}\left[\frac{3}{2}-m,\,-2\,m,\,5,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\Big)\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big)^2+$$

$$\Big(\text{AppellF1}\left[\frac{1}{2}-m,\,-2\,m,\,5,\,\frac{3}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]$$

$$\Big(\Big(2\,m\,\text{AppellF1}\left[\frac{3}{2}-m,\,1-2\,m,\,5,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+5\,\text{AppellF1}\Big[\frac{3}{2}-m,\,-2\,m,$$

$$6,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]\Big)\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]+$$

$$(-3+2\,m)\,\Big(-\frac{1}{\frac{3}{2}-m}\left(\frac{1}{2}-m\right)m\,\text{AppellF1}\left[\frac{3}{2}-m,\,1-2\,m,\,5,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-\frac{1}{2\left(\frac{3}{2}-m\right)}5\left(\frac{1}{2}-m\right)\text{AppellF1}\Big[\frac{3}{2}-m,\,-2\,m,\,6,\,\frac{5}{2}-m,$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\Big)+$$

$$2\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,\Big(2\,m\,\Big(-\frac{1}{2\left(\frac{5}{2}-m\right)}5\left(\frac{3}{2}-m\right)\text{AppellF1}\Big[\frac{5}{2}-m,\,1-2\,m,\,6,\,\frac{7}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,$$

$$-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]+\frac{1}{2\left(\frac{5}{2}-m\right)}(1-2\,m)\left(\frac{3}{2}-m\right)\text{AppellF1}\Big[\frac{5}{2}-m,$$

$$2-2\,m,\,5,\,\frac{7}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\Big)+$$

$$5\,\Big(-\frac{1}{\frac{5}{2}-m}\left(\frac{3}{2}-m\right)m\,\text{AppellF1}\left[\frac{5}{2}-m,\,1-2\,m,\,6,\,\frac{7}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-\frac{1}{\frac{5}{2}-m}3\left(\frac{3}{2}-m\right)\text{AppellF1}\Big[\frac{5}{2}-m,\,-2\,m,\,7,\,\frac{7}{2}-m,$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\Big)\Big)\Big)\Big)\Big)\Big/$$

$$\Big((-3+2\,m)\,\text{AppellF1}\left[\frac{1}{2}-m,\,-2\,m,\,5,\,\frac{3}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+$$

$$2\left(2\,m\,\text{AppellF1}\left[\frac{3}{2}-m,\,1-2\,m,\,5,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.$$
$$\left.\left.\left.\left. 5\,\text{AppellF1}\left[\frac{3}{2}-m,\,-2\,m,\,6,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^2\right)\right)\right)$$

- **Problem 430: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int\frac{a+a\,\text{Sin}[e+f\,x]}{c+d\,\text{Sin}[e+f\,x]}\,dx$$

Optimal (type 3, 63 leaves, 4 steps):

$$\frac{a\,x}{d}-\frac{2\,a\,(c-d)\,\text{ArcTan}\left[\frac{d+c\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]}{\sqrt{c^2-d^2}}\right]}{d\,\sqrt{c^2-d^2}\,f}$$

Result (type 3, 182 leaves):

$$\left(a\left(-2\,(c-d)\,\text{ArcTan}\left[\frac{\text{Sec}\left[\frac{f\,x}{2}\right]\,(\text{Cos}[e]-i\,\text{Sin}[e])\,\left(d\,\text{Cos}\left[e+\frac{f\,x}{2}\right]+c\,\text{Sin}\left[\frac{f\,x}{2}\right]\right)}{\sqrt{c^2-d^2}\,\sqrt{(\text{Cos}[e]-i\,\text{Sin}[e])^2}}\right]\,(\text{Cos}[e]-i\,\text{Sin}[e])+\sqrt{c^2-d^2}\,f\,x\,\sqrt{(\text{Cos}[e]-i\,\text{Sin}[e])^2}\right)\right.$$
$$\left.(1+\text{Sin}[e+f\,x])\right)\Big/\left(d\,\sqrt{c^2-d^2}\,f\,\sqrt{(\text{Cos}[e]-i\,\text{Sin}[e])^2}\,\left(\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)^2\right)$$

- **Problem 431: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int\frac{a+a\,\text{Sin}[e+f\,x]}{(c+d\,\text{Sin}[e+f\,x])^2}\,dx$$

Optimal (type 3, 83 leaves, 5 steps):

$$\frac{2\,a\,\text{ArcTan}\left[\frac{d+c\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]}{\sqrt{c^2-d^2}}\right]}{(c+d)\,\sqrt{c^2-d^2}\,f}-\frac{a\,\text{Cos}[e+f\,x]}{(c+d)\,f\,(c+d\,\text{Sin}[e+f\,x])}$$

Result (type 3, 220 leaves):

$$\left(a\,(1+\text{Sin}[e+f\,x])\left(2\sqrt{c^2-d^2}\,\text{Csc}[e]\sqrt{(\text{Cos}[e]-\mathrm{i}\,\text{Sin}[e])^2}\,(c\,\text{Cos}[e]+d\,\text{Sin}[f\,x])+\right.\right.$$

$$\left.\left.4\,d\,\text{ArcTan}\left[\frac{\text{Sec}\left[\frac{f\,x}{2}\right](\text{Cos}[e]-\mathrm{i}\,\text{Sin}[e])\left(d\,\text{Cos}\left[e+\frac{f\,x}{2}\right]+c\,\text{Sin}\left[\frac{f\,x}{2}\right]\right)}{\sqrt{c^2-d^2}\sqrt{(\text{Cos}[e]-\mathrm{i}\,\text{Sin}[e])^2}}\right](\text{Cos}[e]-\mathrm{i}\,\text{Sin}[e])\,(c+d\,\text{Sin}[e+f\,x])\right)\right)\Big/$$

$$\left(2\,d\,(c+d)\sqrt{c^2-d^2}\,f\sqrt{(\text{Cos}[e]-\mathrm{i}\,\text{Sin}[e])^2}\left(\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)^2(c+d\,\text{Sin}[e+f\,x])\right)$$

- **Problem 432: Result unnecessarily involves imaginary or complex numbers.**

$$\int\frac{a+a\,\text{Sin}[e+f\,x]}{(c+d\,\text{Sin}[e+f\,x])^3}\,dx$$

Optimal (type 3, 134 leaves, 6 steps) :

$$\frac{a\,(2\,c-d)\,\text{ArcTan}\left[\frac{d+c\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]}{\sqrt{c^2-d^2}}\right]}{(c+d)\left(c^2-d^2\right)^{3/2}f}-\frac{a\,\text{Cos}[e+f\,x]}{2\,(c+d)\,f\,(c+d\,\text{Sin}[e+f\,x])^2}-\frac{a\,(c-2\,d)\,\text{Cos}[e+f\,x]}{2\,(c-d)\,(c+d)^2\,f\,(c+d\,\text{Sin}[e+f\,x])}$$

Result (type 3, 242 leaves) :

$$\left(a\,(1+\text{Sin}[e+f\,x])\left(\frac{4\,(2\,c-d)\,\text{ArcTan}\left[\frac{\text{Sec}\left[\frac{f\,x}{2}\right](\text{Cos}[e]-\mathrm{i}\,\text{Sin}[e])\left(d\,\text{Cos}\left[e+\frac{f\,x}{2}\right]+c\,\text{Sin}\left[\frac{f\,x}{2}\right]\right)}{\sqrt{c^2-d^2}\sqrt{(\text{Cos}[e]-\mathrm{i}\,\text{Sin}[e])^2}}\right](\text{Cos}[e]-\mathrm{i}\,\text{Sin}[e])}{(c-d)\sqrt{c^2-d^2}\sqrt{(\text{Cos}[e]-\mathrm{i}\,\text{Sin}[e])^2}}+\frac{2\,(c+d)\,\text{Csc}[e]\,(c\,\text{Cos}[e]+d\,\text{Sin}[f\,x])}{d\,(c+d\,\text{Sin}[e+f\,x])^2}+\right.\right.$$

$$\left.\left.\frac{(-4\,c+2\,d)\,\text{Cot}[e]+2\,(c-2\,d)\,\text{Csc}[e]\,\text{Sin}[f\,x]}{(c-d)\,(c+d\,\text{Sin}[e+f\,x])}\right)\right)\Big/\left(4\,(c+d)^2\,f\left(\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)^2\right)$$

- **Problem 433: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int\frac{a+a\,\text{Sin}[e+f\,x]}{(c+d\,\text{Sin}[e+f\,x])^4}\,dx$$

Optimal (type 3, 192 leaves, 7 steps) :

$$\frac{a\left(2c^2-2cd+d^2\right)\text{ArcTan}\left[\frac{d+c\,\text{Tan}\left[\frac{1}{2}(e+fx)\right]}{\sqrt{c^2-d^2}}\right]}{(c+d)\left(c^2-d^2\right)^{5/2}f}-\frac{a\,\text{Cos}[e+fx]}{3(c+d)f(c+d\,\text{Sin}[e+fx])^3}-\frac{a(2c-3d)\,\text{Cos}[e+fx]}{6(c-d)(c+d)^2f(c+d\,\text{Sin}[e+fx])^2}-\frac{a(c-4d)(2c-d)\,\text{Cos}[e+fx]}{6(c-d)^2(c+d)^3f(c+d\,\text{Sin}[e+fx])}$$

Result (type 3, 428 leaves) :

$$\frac{1}{24(c-d)^2(c+d)^3f\left(\text{Cos}\left[\frac{1}{2}(e+fx)\right]+\text{Sin}\left[\frac{1}{2}(e+fx)\right]\right)^2}a(1+\text{Sin}[e+fx])\left(\frac{24\left(2c^2-2cd+d^2\right)\text{ArcTan}\left[\frac{\text{Sec}\left[\frac{fx}{2}\right](\text{Cos}[e]-i\,\text{Sin}[e])\left(d\,\text{Cos}\left[e+\frac{fx}{2}\right]+c\,\text{Sin}\left[\frac{fx}{2}\right]\right)}{\sqrt{c^2-d^2}\sqrt{(\text{Cos}[e]-i\,\text{Sin}[e])^2}}\right](\text{Cos}[e]-i\,\text{Sin}[e])}{\sqrt{c^2-d^2}\sqrt{(\text{Cos}[e]-i\,\text{Sin}[e])^2}}+\frac{1}{d(c+d\,\text{Sin}[e+fx])^3}\left(2c\left(4c^4-18c^3d+14c^2d^2-27cd^3+12d^4\right)\text{Cot}[e]-d\,\text{Csc}[e]\left(3d\left(4c^3-16c^2d+6cd^2+d^3\right)\text{Cos}[e+2fx]-3d^2\left(2c^2-2cd+d^2\right)\text{Cos}[3e+2fx]-24c^4\,\text{Sin}[fx]+78c^3d\,\text{Sin}[fx]-24c^2d^2\,\text{Sin}[fx]+12cd^3\,\text{Sin}[fx]-12d^4\,\text{Sin}[fx]+30c^3d\,\text{Sin}[2e+fx]-30c^2d^2\,\text{Sin}[2e+fx]+15cd^3\,\text{Sin}[2e+fx]+2c^2d^2\,\text{Sin}[2e+3fx]-9cd^3\,\text{Sin}[2e+3fx]+4d^4\,\text{Sin}[2e+3fx]\right)\right)\right)$$

- **Problem 456: Result more than twice size of optimal antiderivative.**

$$\int\frac{c+d\,\text{Sin}[e+fx]}{a+a\,\text{Sin}[e+fx]}\,dx$$

Optimal (type 3, 35 leaves, 2 steps) :

$$\frac{dx}{a}-\frac{(c-d)\,\text{Cos}[e+fx]}{f(a+a\,\text{Sin}[e+fx])}$$

Result (type 3, 79 leaves) :

$$\frac{1}{af(1+\text{Sin}[e+fx])}\left(\text{Cos}\left[\frac{1}{2}(e+fx)\right]+\text{Sin}\left[\frac{1}{2}(e+fx)\right]\right)\left(d(e+fx)\,\text{Cos}\left[\frac{1}{2}(e+fx)\right]+(2c+d(-2+e+fx))\,\text{Sin}\left[\frac{1}{2}(e+fx)\right]\right)$$

- **Problem 457: Result more than twice size of optimal antiderivative.**

$$\int\frac{1}{a+a\,\text{Sin}[e+fx]}\,dx$$

Optimal (type 3, 23 leaves, 1 step) :

$$-\frac{\text{Cos}[e+f x]}{f\,(a+a\,\text{Sin}[e+f x])}$$

Result (type 3, 48 leaves):

$$\frac{2\,\text{Sin}\left[\frac{1}{2}\,(e+f x)\right]\,\left(\text{Cos}\left[\frac{1}{2}\,(e+f x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f x)\right]\right)}{f\,(a+a\,\text{Sin}[e+f x])}$$

- **Problem 461: Result more than twice size of optimal antiderivative.**

$$\int \frac{(c+d\,\text{Sin}[e+f x])^5}{(a+a\,\text{Sin}[e+f x])^2}\,dx$$

Optimal (type 3, 260 leaves, 4 steps):

$$\frac{5\,(2\,c-d)\,d^2\,\left(2\,c^2-3\,c\,d+2\,d^2\right)\,x}{2\,a^2}+\frac{2\,d\,\left(c^4+10\,c^3\,d-44\,c^2\,d^2+40\,c\,d^3-12\,d^4\right)\,\text{Cos}[e+f x]}{3\,a^2\,f}+$$
$$\frac{d^2\,\left(2\,c^3+20\,c^2\,d-57\,c\,d^2+30\,d^3\right)\,\text{Cos}[e+f x]\,\text{Sin}[e+f x]}{6\,a^2\,f}+\frac{d\,\left(c^2+10\,c\,d-12\,d^2\right)\,\text{Cos}[e+f x]\,(c+d\,\text{Sin}[e+f x])^2}{3\,a^2\,f}-$$
$$\frac{(c-d)\,(c+10\,d)\,\text{Cos}[e+f x]\,(c+d\,\text{Sin}[e+f x])^3}{3\,a^2\,f\,(1+\text{Sin}[e+f x])}-\frac{(c-d)\,\text{Cos}[e+f x]\,(c+d\,\text{Sin}[e+f x])^4}{3\,f\,(a+a\,\text{Sin}[e+f x])^2}$$

Result (type 3, 837 leaves):

$$\frac{1}{48\,a^2\,f\,(1+\text{Sin}[e+f\,x])^2}\left(\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)$$
$$\Big(3\,d\,\big(80\,c^4+80\,c^3\,d\,(-4+3\,e+3\,f\,x)-80\,c^2\,d^2\,(-5+6\,e+6\,f\,x)+35\,c\,d^3\,(-7+12\,e+12\,f\,x)-4\,d^4\,(-13+30\,e+30\,f\,x)\big)\,\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]-$$
$$\big(16\,c^5+160\,c^4\,d+80\,c^3\,d^2\,(-10+3\,e+3\,f\,x)-40\,c^2\,d^3\,(-41+12\,e+12\,f\,x)-6\,d^5\,(-57+20\,e+20\,f\,x)+5\,c\,d^4\,(-239+84\,e+84\,f\,x)\big)$$
$$\text{Cos}\left[\frac{3}{2}(e+f\,x)\right]+120\,c^2\,d^3\,\text{Cos}\left[\frac{5}{2}(e+f\,x)\right]-75\,c\,d^4\,\text{Cos}\left[\frac{5}{2}(e+f\,x)\right]+30\,d^5\,\text{Cos}\left[\frac{5}{2}(e+f\,x)\right]+$$
$$15\,c\,d^4\,\text{Cos}\left[\frac{7}{2}(e+f\,x)\right]-3\,d^5\,\text{Cos}\left[\frac{7}{2}(e+f\,x)\right]-d^5\,\text{Cos}\left[\frac{9}{2}(e+f\,x)\right]+48\,c^5\,\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]+240\,c^4\,d\,\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]-$$
$$1440\,c^3\,d^2\,\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]+2640\,c^2\,d^3\,\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]-1905\,c\,d^4\,\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]+516\,d^5\,\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]+$$
$$720\,c^3\,d^2\,e\,\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]-1440\,c^2\,d^3\,e\,\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]+1260\,c\,d^4\,e\,\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]-360\,d^5\,e\,\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]+$$
$$720\,c^3\,d^2\,f\,x\,\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]-1440\,c^2\,d^3\,f\,x\,\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]+1260\,c\,d^4\,f\,x\,\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]-360\,d^5\,f\,x\,\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]-$$
$$360\,c^2\,d^3\,\text{Sin}\left[\frac{3}{2}(e+f\,x)\right]+315\,c\,d^4\,\text{Sin}\left[\frac{3}{2}(e+f\,x)\right]-118\,d^5\,\text{Sin}\left[\frac{3}{2}(e+f\,x)\right]+240\,c^3\,d^2\,e\,\text{Sin}\left[\frac{3}{2}(e+f\,x)\right]-$$
$$480\,c^2\,d^3\,e\,\text{Sin}\left[\frac{3}{2}(e+f\,x)\right]+420\,c\,d^4\,e\,\text{Sin}\left[\frac{3}{2}(e+f\,x)\right]-120\,d^5\,e\,\text{Sin}\left[\frac{3}{2}(e+f\,x)\right]+240\,c^3\,d^2\,f\,x\,\text{Sin}\left[\frac{3}{2}(e+f\,x)\right]-$$
$$480\,c^2\,d^3\,f\,x\,\text{Sin}\left[\frac{3}{2}(e+f\,x)\right]+420\,c\,d^4\,f\,x\,\text{Sin}\left[\frac{3}{2}(e+f\,x)\right]-120\,d^5\,f\,x\,\text{Sin}\left[\frac{3}{2}(e+f\,x)\right]-120\,c^2\,d^3\,\text{Sin}\left[\frac{5}{2}(e+f\,x)\right]+$$
$$75\,c\,d^4\,\text{Sin}\left[\frac{5}{2}(e+f\,x)\right]-30\,d^5\,\text{Sin}\left[\frac{5}{2}(e+f\,x)\right]+15\,c\,d^4\,\text{Sin}\left[\frac{7}{2}(e+f\,x)\right]-3\,d^5\,\text{Sin}\left[\frac{7}{2}(e+f\,x)\right]+d^5\,\text{Sin}\left[\frac{9}{2}(e+f\,x)\right]\Big)$$

- **Problem 464: Result more than twice size of optimal antiderivative.**

$$\int\frac{(c+d\,\text{Sin}[e+f\,x])^2}{(a+a\,\text{Sin}[e+f\,x])^2}\,dx$$

Optimal (type 3, 85 leaves, 3 steps):

$$\frac{d^2\,x}{a^2}-\frac{(c-d)\,(c+4\,d)\,\text{Cos}[e+f\,x]}{3\,a^2\,f\,(1+\text{Sin}[e+f\,x])}-\frac{(c-d)\,\text{Cos}[e+f\,x]\,(c+d\,\text{Sin}[e+f\,x])}{3\,f\,(a+a\,\text{Sin}[e+f\,x])^2}$$

Result (type 3, 172 leaves):

$$\frac{1}{3\,a^2\,f\,(1+\text{Sin}[e+f\,x])^2}\left(\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)\left(2\,(c-d)^2\,\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]-(c-d)^2\left(\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)+\right.$$
$$\left.2\,(c^2+4\,c\,d-5\,d^2)\,\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]\left(\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)^2+3\,d^2\,(e+f\,x)\left(\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)^3\right)$$

Problem 470: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{(c+d\,\text{Sin}[e+f\,x])^6}{(a+a\,\text{Sin}[e+f\,x])^3}\,dx$$

Optimal (type 3, 354 leaves, 5 steps):

$$\frac{d^3\left(40\,c^3-90\,c^2\,d+78\,c\,d^2-23\,d^3\right)x}{2\,a^3}+\frac{2\,d\left(2\,c^5+18\,c^4\,d+107\,c^3\,d^2-472\,c^2\,d^3+456\,c\,d^4-136\,d^5\right)\text{Cos}[e+f\,x]}{15\,a^3\,f}+\frac{d^2\left(4\,c^4+36\,c^3\,d+216\,c^2\,d^2-626\,c\,d^3+345\,d^4\right)\text{Cos}[e+f\,x]\,\text{Sin}[e+f\,x]}{30\,a^3\,f}+\frac{d\left(2\,c^3+18\,c^2\,d+111\,c\,d^2-136\,d^3\right)\text{Cos}[e+f\,x]\,(c+d\,\text{Sin}[e+f\,x])^2}{15\,a^3\,f}-\frac{(c-d)\left(2\,c^2+18\,c\,d+115\,d^2\right)\text{Cos}[e+f\,x]\,(c+d\,\text{Sin}[e+f\,x])^3}{15\,f\left(a^3+a^3\,\text{Sin}[e+f\,x]\right)}-\frac{(c-d)\,(2\,c+13\,d)\,\text{Cos}[e+f\,x]\,(c+d\,\text{Sin}[e+f\,x])^4}{15\,a\,f\,(a+a\,\text{Sin}[e+f\,x])^2}-\frac{(c-d)\,\text{Cos}[e+f\,x]\,(c+d\,\text{Sin}[e+f\,x])^5}{5\,f\,(a+a\,\text{Sin}[e+f\,x])^3}$$

Result (type 3, 560 leaves):

$$\frac{1}{120\,a^3\,f\,(1+\text{Sin}[e+f\,x])^3}\left(\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)\left(48\,(c-d)^6\,\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]-24\,(c-d)^6\left(\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)+32\,(c-d)^5\,(c+14\,d)\,\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]\left(\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)^2-16\,(c-d)^5\,(c+14\,d)\left(\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)^3+16\,(c-d)^4\left(2\,c^2+26\,c\,d+197\,d^2\right)\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]\left(\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)^4-60\,d^3\left(-40\,c^3+90\,c^2\,d-78\,c\,d^2+23\,d^3\right)(e+f\,x)\left(\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)^5+10\,d^6\,\text{Cos}[3\,(e+f\,x)]\left(\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)^5-45\,d^4\left(20\,c^2-24\,c\,d+9\,d^2\right)\left(\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)^5(\text{Cos}[e+f\,x]-i\,\text{Sin}[e+f\,x])-45\,d^4\left(20\,c^2-24\,c\,d+9\,d^2\right)\left(\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)^5(\text{Cos}[e+f\,x]+i\,\text{Sin}[e+f\,x])-45\,i\,(2\,c-d)\,d^5\left(\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)^5(\text{Cos}[2\,(e+f\,x)]-i\,\text{Sin}[2\,(e+f\,x)])+45\,i\,(2\,c-d)\,d^5\left(\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)^5(\text{Cos}[2\,(e+f\,x)]+i\,\text{Sin}[2\,(e+f\,x)])\right)$$

Problem 471: Result more than twice size of optimal antiderivative.

$$\int \frac{(c+d\,\text{Sin}[e+f\,x])^5}{(a+a\,\text{Sin}[e+f\,x])^3}\,dx$$

Optimal (type 3, 278 leaves, 4 steps):

$$\frac{d^3\left(20c^2-30cd+13d^2\right)x}{2a^3}+\frac{2d\left(2c^4+15c^3d+72c^2d^2-180cd^3+76d^4\right)\text{Cos}[e+fx]}{15a^3f}+\frac{d^2\left(4c^3+30c^2d+146cd^2-195d^3\right)\text{Cos}[e+fx]\,\text{Sin}[e+fx]}{30a^3f}-\frac{(c-d)\left(2c^2+15cd+76d^2\right)\text{Cos}[e+fx]\,(c+d\,\text{Sin}[e+fx])^2}{15f\left(a^3+a^3\,\text{Sin}[e+fx]\right)}-\frac{(c-d)\,(2c+11d)\,\text{Cos}[e+fx]\,(c+d\,\text{Sin}[e+fx])^3}{15af\,(a+a\,\text{Sin}[e+fx])^2}-\frac{(c-d)\,\text{Cos}[e+fx]\,(c+d\,\text{Sin}[e+fx])^4}{5f\,(a+a\,\text{Sin}[e+fx])^3}$$

Result (type 3, 992 leaves) :

$$\frac{1}{480f\,(a+a\,\text{Sin}[e+fx])^3}\left(\text{Cos}\left[\frac{1}{2}(e+fx)\right]+\text{Sin}\left[\frac{1}{2}(e+fx)\right]\right)\Big(1200c^4d\,\text{Cos}\left[\frac{1}{2}(e+fx)\right]+4800c^3d^2\,\text{Cos}\left[\frac{1}{2}(e+fx)\right]-21600c^2d^3\,\text{Cos}\left[\frac{1}{2}(e+fx)\right]+$$
$$22500cd^4\,\text{Cos}\left[\frac{1}{2}(e+fx)\right]-7560d^5\,\text{Cos}\left[\frac{1}{2}(e+fx)\right]+12000c^2d^3(e+fx)\,\text{Cos}\left[\frac{1}{2}(e+fx)\right]-18000cd^4(e+fx)\,\text{Cos}\left[\frac{1}{2}(e+fx)\right]+$$
$$7800d^5(e+fx)\,\text{Cos}\left[\frac{1}{2}(e+fx)\right]-160c^5\,\text{Cos}\left[\frac{3}{2}(e+fx)\right]-1200c^4d\,\text{Cos}\left[\frac{3}{2}(e+fx)\right]-3200c^3d^2\,\text{Cos}\left[\frac{3}{2}(e+fx)\right]+$$
$$18400c^2d^3\,\text{Cos}\left[\frac{3}{2}(e+fx)\right]-24300cd^4\,\text{Cos}\left[\frac{3}{2}(e+fx)\right]+9230d^5\,\text{Cos}\left[\frac{3}{2}(e+fx)\right]-6000c^2d^3(e+fx)\,\text{Cos}\left[\frac{3}{2}(e+fx)\right]+$$
$$9000cd^4(e+fx)\,\text{Cos}\left[\frac{3}{2}(e+fx)\right]-3900d^5(e+fx)\,\text{Cos}\left[\frac{3}{2}(e+fx)\right]+1500cd^4\,\text{Cos}\left[\frac{5}{2}(e+fx)\right]-750d^5\,\text{Cos}\left[\frac{5}{2}(e+fx)\right]-$$
$$1200c^2d^3(e+fx)\,\text{Cos}\left[\frac{5}{2}(e+fx)\right]+1800cd^4(e+fx)\,\text{Cos}\left[\frac{5}{2}(e+fx)\right]-780d^5(e+fx)\,\text{Cos}\left[\frac{5}{2}(e+fx)\right]+300cd^4\,\text{Cos}\left[\frac{7}{2}(e+fx)\right]-$$
$$105d^5\,\text{Cos}\left[\frac{7}{2}(e+fx)\right]-15d^5\,\text{Cos}\left[\frac{9}{2}(e+fx)\right]+320c^5\,\text{Sin}\left[\frac{1}{2}(e+fx)\right]+1200c^4d\,\text{Sin}\left[\frac{1}{2}(e+fx)\right]+6400c^3d^2\,\text{Sin}\left[\frac{1}{2}(e+fx)\right]-$$
$$29600c^2d^3\,\text{Sin}\left[\frac{1}{2}(e+fx)\right]+35100cd^4\,\text{Sin}\left[\frac{1}{2}(e+fx)\right]-12760d^5\,\text{Sin}\left[\frac{1}{2}(e+fx)\right]+12000c^2d^3(e+fx)\,\text{Sin}\left[\frac{1}{2}(e+fx)\right]-$$
$$18000cd^4(e+fx)\,\text{Sin}\left[\frac{1}{2}(e+fx)\right]+7800d^5(e+fx)\,\text{Sin}\left[\frac{1}{2}(e+fx)\right]+2400c^3d^2\,\text{Sin}\left[\frac{3}{2}(e+fx)\right]-7200c^2d^3\,\text{Sin}\left[\frac{3}{2}(e+fx)\right]+$$
$$4500cd^4\,\text{Sin}\left[\frac{3}{2}(e+fx)\right]-930d^5\,\text{Sin}\left[\frac{3}{2}(e+fx)\right]+6000c^2d^3(e+fx)\,\text{Sin}\left[\frac{3}{2}(e+fx)\right]-9000cd^4(e+fx)\,\text{Sin}\left[\frac{3}{2}(e+fx)\right]+$$
$$3900d^5(e+fx)\,\text{Sin}\left[\frac{3}{2}(e+fx)\right]-32c^5\,\text{Sin}\left[\frac{5}{2}(e+fx)\right]-240c^4d\,\text{Sin}\left[\frac{5}{2}(e+fx)\right]-1120c^3d^2\,\text{Sin}\left[\frac{5}{2}(e+fx)\right]+5120c^2d^3\,\text{Sin}\left[\frac{5}{2}(e+fx)\right]-$$
$$7260cd^4\,\text{Sin}\left[\frac{5}{2}(e+fx)\right]+2782d^5\,\text{Sin}\left[\frac{5}{2}(e+fx)\right]-1200c^2d^3(e+fx)\,\text{Sin}\left[\frac{5}{2}(e+fx)\right]+1800cd^4(e+fx)\,\text{Sin}\left[\frac{5}{2}(e+fx)\right]-$$
$$780d^5(e+fx)\,\text{Sin}\left[\frac{5}{2}(e+fx)\right]+300cd^4\,\text{Sin}\left[\frac{7}{2}(e+fx)\right]-105d^5\,\text{Sin}\left[\frac{7}{2}(e+fx)\right]+15d^5\,\text{Sin}\left[\frac{9}{2}(e+fx)\right]\Big)$$

Problem 472: Result more than twice size of optimal antiderivative.

$$\int \frac{(c+d\,\text{Sin}[e+f\,x])^4}{(a+a\,\text{Sin}[e+f\,x])^3}\,dx$$

Optimal (type 3, 195 leaves, 6 steps):

$$\frac{(4\,c-3\,d)\,d^3\,x}{a^3}+\frac{d^2\,\left(2\,c^2+10\,c\,d-27\,d^2\right)\,\text{Cos}[e+f\,x]}{15\,a^3\,f}-\frac{(c-d)^2\,\left(2\,c^2+12\,c\,d+45\,d^2\right)\,\text{Cos}[e+f\,x]}{15\,f\,\left(a^3+a^3\,\text{Sin}[e+f\,x]\right)}-\frac{(c-d)\,(2\,c+9\,d)\,\text{Cos}[e+f\,x]\,(c+d\,\text{Sin}[e+f\,x])^2}{15\,a\,f\,(a+a\,\text{Sin}[e+f\,x])^2}-\frac{(c-d)\,\text{Cos}[e+f\,x]\,(c+d\,\text{Sin}[e+f\,x])^3}{5\,f\,(a+a\,\text{Sin}[e+f\,x])^3}$$

Result (type 3, 683 leaves):

$$\frac{1}{120\,a^3\,f\,(1+\text{Sin}[e+f\,x])^3}\left(\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)\left(15\,d\,\left(16\,c^3+48\,c^2\,d-15\,d^3\,(-5+4\,e+4\,f\,x)+16\,c\,d^2\,(-9+5\,e+5\,f\,x)\right)\,\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]-\right.$$
$$5\,\left(8\,c^4+48\,c^3\,d+96\,c^2\,d^2-9\,d^4\,(-27+10\,e+10\,f\,x)+8\,c\,d^3\,(-46+15\,e+15\,f\,x)\right)\,\text{Cos}\left[\frac{3}{2}(e+f\,x)\right]+75\,d^4\,\text{Cos}\left[\frac{5}{2}(e+f\,x)\right]-$$
$$120\,c\,d^3\,e\,\text{Cos}\left[\frac{5}{2}(e+f\,x)\right]+90\,d^4\,e\,\text{Cos}\left[\frac{5}{2}(e+f\,x)\right]-120\,c\,d^3\,f\,x\,\text{Cos}\left[\frac{5}{2}(e+f\,x)\right]+90\,d^4\,f\,x\,\text{Cos}\left[\frac{5}{2}(e+f\,x)\right]+$$
$$15\,d^4\,\text{Cos}\left[\frac{7}{2}(e+f\,x)\right]+80\,c^4\,\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]+240\,c^3\,d\,\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]+960\,c^2\,d^2\,\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]-2960\,c\,d^3\,\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]+$$
$$1755\,d^4\,\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]+1200\,c\,d^3\,e\,\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]-900\,d^4\,e\,\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]+1200\,c\,d^3\,f\,x\,\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]-$$
$$900\,d^4\,f\,x\,\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]+360\,c^2\,d^2\,\text{Sin}\left[\frac{3}{2}(e+f\,x)\right]-720\,c\,d^3\,\text{Sin}\left[\frac{3}{2}(e+f\,x)\right]+225\,d^4\,\text{Sin}\left[\frac{3}{2}(e+f\,x)\right]+$$
$$600\,c\,d^3\,e\,\text{Sin}\left[\frac{3}{2}(e+f\,x)\right]-450\,d^4\,e\,\text{Sin}\left[\frac{3}{2}(e+f\,x)\right]+600\,c\,d^3\,f\,x\,\text{Sin}\left[\frac{3}{2}(e+f\,x)\right]-450\,d^4\,f\,x\,\text{Sin}\left[\frac{3}{2}(e+f\,x)\right]-$$
$$8\,c^4\,\text{Sin}\left[\frac{5}{2}(e+f\,x)\right]-48\,c^3\,d\,\text{Sin}\left[\frac{5}{2}(e+f\,x)\right]-168\,c^2\,d^2\,\text{Sin}\left[\frac{5}{2}(e+f\,x)\right]+512\,c\,d^3\,\text{Sin}\left[\frac{5}{2}(e+f\,x)\right]-363\,d^4\,\text{Sin}\left[\frac{5}{2}(e+f\,x)\right]-$$
$$\left.120\,c\,d^3\,e\,\text{Sin}\left[\frac{5}{2}(e+f\,x)\right]+90\,d^4\,e\,\text{Sin}\left[\frac{5}{2}(e+f\,x)\right]-120\,c\,d^3\,f\,x\,\text{Sin}\left[\frac{5}{2}(e+f\,x)\right]+90\,d^4\,f\,x\,\text{Sin}\left[\frac{5}{2}(e+f\,x)\right]+15\,d^4\,\text{Sin}\left[\frac{7}{2}(e+f\,x)\right]\right)$$

Problem 473: Result more than twice size of optimal antiderivative.

$$\int \frac{(c+d\,\text{Sin}[e+f\,x])^3}{(a+a\,\text{Sin}[e+f\,x])^3}\,dx$$

Optimal (type 3, 142 leaves, 5 steps):

$$\frac{d^3 x}{a^3}-\frac{(c-d)^2 (2 c+7 d) \operatorname{Cos}[e+f x]}{15 a f (a+a \operatorname{Sin}[e+f x])^2}-\frac{(c-d) \left(2 c^2+11 c d+29 d^2\right) \operatorname{Cos}[e+f x]}{15 f \left(a^3+a^3 \operatorname{Sin}[e+f x]\right)}-\frac{(c-d) \operatorname{Cos}[e+f x] (c+d \operatorname{Sin}[e+f x])^2}{5 f (a+a \operatorname{Sin}[e+f x])^3}$$

Result (type 3, 408 leaves):

$$\frac{1}{60 a^3 f (1+\operatorname{Sin}[e+f x])^3}\left(\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]+\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right)$$
$$\left(30 d \left(3 c^2+6 c d+d^2 (-9+5 e+5 f x)\right) \operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]-5 \left(4 c^3+18 c^2 d+24 c d^2+d^3 (-46+15 e+15 f x)\right) \operatorname{Cos}\left[\frac{3}{2}(e+f x)\right]-\right.$$
$$15 d^3 e \operatorname{Cos}\left[\frac{5}{2}(e+f x)\right]-15 d^3 f x \operatorname{Cos}\left[\frac{5}{2}(e+f x)\right]+40 c^3 \operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]+90 c^2 d \operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]+$$
$$240 c d^2 \operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]-370 d^3 \operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]+150 d^3 e \operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]+150 d^3 f x \operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]+$$
$$90 c d^2 \operatorname{Sin}\left[\frac{3}{2}(e+f x)\right]-90 d^3 \operatorname{Sin}\left[\frac{3}{2}(e+f x)\right]+75 d^3 e \operatorname{Sin}\left[\frac{3}{2}(e+f x)\right]+75 d^3 f x \operatorname{Sin}\left[\frac{3}{2}(e+f x)\right]-4 c^3 \operatorname{Sin}\left[\frac{5}{2}(e+f x)\right]-$$
$$\left.18 c^2 d \operatorname{Sin}\left[\frac{5}{2}(e+f x)\right]-42 c d^2 \operatorname{Sin}\left[\frac{5}{2}(e+f x)\right]+64 d^3 \operatorname{Sin}\left[\frac{5}{2}(e+f x)\right]-15 d^3 e \operatorname{Sin}\left[\frac{5}{2}(e+f x)\right]-15 d^3 f x \operatorname{Sin}\left[\frac{5}{2}(e+f x)\right]\right)$$

Problem 479: Result more than twice size of optimal antiderivative.

$$\int \frac{1}{(a+a \operatorname{Sin}[e+f x])^3 (c+d \operatorname{Sin}[e+f x])^3} \, dx$$

Optimal (type 3, 378 leaves, 9 steps):

$$-\frac{d^3 \left(20 c^2+30 c d+13 d^2\right) \operatorname{ArcTan}\left[\frac{d+c \operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]}{\sqrt{c^2-d^2}}\right]}{a^3 (c-d)^5 (c+d)^2 \sqrt{c^2-d^2}\, f}-\frac{d \left(4 c^3-30 c^2 d+146 c d^2+195 d^3\right) \operatorname{Cos}[e+f x]}{30 a^3 (c-d)^4 (c+d) f (c+d \operatorname{Sin}[e+f x])^2}-$$
$$\frac{\operatorname{Cos}[e+f x]}{5 (c-d) f (a+a \operatorname{Sin}[e+f x])^3 (c+d \operatorname{Sin}[e+f x])^2}-\frac{(2 c-11 d) \operatorname{Cos}[e+f x]}{15 a (c-d)^2 f (a+a \operatorname{Sin}[e+f x])^2 (c+d \operatorname{Sin}[e+f x])^2}-$$
$$\frac{\left(2 c^2-15 c d+76 d^2\right) \operatorname{Cos}[e+f x]}{15 (c-d)^3 f \left(a^3+a^3 \operatorname{Sin}[e+f x]\right) (c+d \operatorname{Sin}[e+f x])^2}-\frac{d \left(4 c^4-30 c^3 d+142 c^2 d^2+525 c d^3+304 d^4\right) \operatorname{Cos}[e+f x]}{30 a^3 (c-d)^5 (c+d)^2 f (c+d \operatorname{Sin}[e+f x])}$$

Result (type 3, 1066 leaves):

$$-\left(d^3\left(20c^2+30cd+13d^2\right)\text{ArcTan}\left[\frac{\text{Sec}\left[\frac{1}{2}(e+fx)\right]\left(d\,\text{Cos}\left[\frac{1}{2}(e+fx)\right]+c\,\text{Sin}\left[\frac{1}{2}(e+fx)\right]\right)}{\sqrt{c^2-d^2}}\right]\left(\text{Cos}\left[\frac{1}{2}(e+fx)\right]+\text{Sin}\left[\frac{1}{2}(e+fx)\right]\right)^6\right)\Big/$$
$$\left((c-d)^5(c+d)^2\sqrt{c^2-d^2}\,f\,(a+a\,\text{Sin}[e+fx])^3\right)+$$
$$\frac{1}{480(c-d)^5(c+d)^2 f(a+a\,\text{Sin}[e+fx])^3(c+d\,\text{Sin}[e+fx])^2}\left(\text{Cos}\left[\frac{1}{2}(e+fx)\right]+\text{Sin}\left[\frac{1}{2}(e+fx)\right]\right)$$
$$\left(-400c^5d\,\text{Cos}\left[\frac{1}{2}(e+fx)\right]+3400c^4d^2\,\text{Cos}\left[\frac{1}{2}(e+fx)\right]+19340c^3d^3\,\text{Cos}\left[\frac{1}{2}(e+fx)\right]+30400c^2d^4\,\text{Cos}\left[\frac{1}{2}(e+fx)\right]+\right.$$
$$19940cd^5\,\text{Cos}\left[\frac{1}{2}(e+fx)\right]+4810d^6\,\text{Cos}\left[\frac{1}{2}(e+fx)\right]-160c^6\,\text{Cos}\left[\frac{3}{2}(e+fx)\right]+848c^5d\,\text{Cos}\left[\frac{3}{2}(e+fx)\right]-2400c^4d^2\,\text{Cos}\left[\frac{3}{2}(e+fx)\right]-$$
$$19396c^3d^3\,\text{Cos}\left[\frac{3}{2}(e+fx)\right]-35280c^2d^4\,\text{Cos}\left[\frac{3}{2}(e+fx)\right]-24742cd^5\,\text{Cos}\left[\frac{3}{2}(e+fx)\right]-5810d^6\,\text{Cos}\left[\frac{3}{2}(e+fx)\right]-$$
$$1260c^3d^3\,\text{Cos}\left[\frac{5}{2}(e+fx)\right]-2640c^2d^4\,\text{Cos}\left[\frac{5}{2}(e+fx)\right]-2250cd^5\,\text{Cos}\left[\frac{5}{2}(e+fx)\right]-870d^6\,\text{Cos}\left[\frac{5}{2}(e+fx)\right]+32c^5d\,\text{Cos}\left[\frac{7}{2}(e+fx)\right]-$$
$$200c^4d^2\,\text{Cos}\left[\frac{7}{2}(e+fx)\right]+836c^3d^3\,\text{Cos}\left[\frac{7}{2}(e+fx)\right]+4480c^2d^4\,\text{Cos}\left[\frac{7}{2}(e+fx)\right]+5747cd^5\,\text{Cos}\left[\frac{7}{2}(e+fx)\right]+2200d^6\,\text{Cos}\left[\frac{7}{2}(e+fx)\right]-$$
$$135cd^5\,\text{Cos}\left[\frac{9}{2}(e+fx)\right]-90d^6\,\text{Cos}\left[\frac{9}{2}(e+fx)\right]+320c^6\,\text{Sin}\left[\frac{1}{2}(e+fx)\right]-1520c^5d\,\text{Sin}\left[\frac{1}{2}(e+fx)\right]+4568c^4d^2\,\text{Sin}\left[\frac{1}{2}(e+fx)\right]+$$
$$27340c^3d^3\,\text{Sin}\left[\frac{1}{2}(e+fx)\right]+40904c^2d^4\,\text{Sin}\left[\frac{1}{2}(e+fx)\right]+26020cd^5\,\text{Sin}\left[\frac{1}{2}(e+fx)\right]+6318d^6\,\text{Sin}\left[\frac{1}{2}(e+fx)\right]+$$
$$800c^4d^2\,\text{Sin}\left[\frac{3}{2}(e+fx)\right]+7500c^3d^3\,\text{Sin}\left[\frac{3}{2}(e+fx)\right]+13280c^2d^4\,\text{Sin}\left[\frac{3}{2}(e+fx)\right]+9690cd^5\,\text{Sin}\left[\frac{3}{2}(e+fx)\right]+2750d^6\,\text{Sin}\left[\frac{3}{2}(e+fx)\right]-$$
$$32c^6\,\text{Sin}\left[\frac{5}{2}(e+fx)\right]+80c^5d\,\text{Sin}\left[\frac{5}{2}(e+fx)\right]-32c^4d^2\,\text{Sin}\left[\frac{5}{2}(e+fx)\right]-6820c^3d^3\,\text{Sin}\left[\frac{5}{2}(e+fx)\right]-18080c^2d^4\,\text{Sin}\left[\frac{5}{2}(e+fx)\right]-$$
$$15670cd^5\,\text{Sin}\left[\frac{5}{2}(e+fx)\right]-4266d^6\,\text{Sin}\left[\frac{5}{2}(e+fx)\right]-60c^2d^4\,\text{Sin}\left[\frac{7}{2}(e+fx)\right]+135cd^5\,\text{Sin}\left[\frac{7}{2}(e+fx)\right]+60d^6\,\text{Sin}\left[\frac{7}{2}(e+fx)\right]+$$
$$\left.8c^4d^2\,\text{Sin}\left[\frac{9}{2}(e+fx)\right]-60c^3d^3\,\text{Sin}\left[\frac{9}{2}(e+fx)\right]+284c^2d^4\,\text{Sin}\left[\frac{9}{2}(e+fx)\right]+915cd^5\,\text{Sin}\left[\frac{9}{2}(e+fx)\right]+518d^6\,\text{Sin}\left[\frac{9}{2}(e+fx)\right]\right)$$

- **Problem 482: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int(a+a\,\text{Sin}[e+fx])\,(c+d\,\text{Sin}[e+fx])^{5/2}\,dx$$

Optimal (type 4, 290 leaves, 8 steps) :

$$-\frac{2a\left(15c^2+56cd+25d^2\right)\operatorname{Cos}[e+fx]\sqrt{c+d\operatorname{Sin}[e+fx]}}{105f}-\frac{2a(5c+7d)\operatorname{Cos}[e+fx](c+d\operatorname{Sin}[e+fx])^{3/2}}{35f}-\frac{2a\operatorname{Cos}[e+fx](c+d\operatorname{Sin}[e+fx])^{5/2}}{7f}+\frac{2a\left(15c^3+161c^2d+145cd^2+63d^3\right)\operatorname{EllipticE}\left[\frac{1}{2}\left(e-\frac{\pi}{2}+fx\right),\frac{2d}{c+d}\right]\sqrt{c+d\operatorname{Sin}[e+fx]}}{105df\sqrt{\frac{c+d\operatorname{Sin}[e+fx]}{c+d}}}-\frac{2a\left(c^2-d^2\right)\left(15c^2+56cd+25d^2\right)\operatorname{EllipticF}\left[\frac{1}{2}\left(e-\frac{\pi}{2}+fx\right),\frac{2d}{c+d}\right]\sqrt{\frac{c+d\operatorname{Sin}[e+fx]}{c+d}}}{105df\sqrt{c+d\operatorname{Sin}[e+fx]}}$$

Result (type 6, 3531 leaves) :

$$a\left(\left(c^3\operatorname{Sec}[e](1+\operatorname{Sin}[e+fx])\left(-\left(\operatorname{AppellF1}\left[-\frac{1}{2},-\frac{1}{2},-\frac{1}{2},\frac{1}{2},-\frac{\operatorname{Csc}[e]\left(c+d\operatorname{Cos}[fx-\operatorname{ArcTan}[\operatorname{Cot}[e]]]\sqrt{1+\operatorname{Cot}[e]^2}\operatorname{Sin}[e]\right)}{d\sqrt{1+\operatorname{Cot}[e]^2}\left(1-\frac{c\operatorname{Csc}[e]}{d\sqrt{1+\operatorname{Cot}[e]^2}}\right)},\right.\right.\right.\right.$$

$$\left.\left.-\frac{\operatorname{Csc}[e]\left(c+d\operatorname{Cos}[fx-\operatorname{ArcTan}[\operatorname{Cot}[e]]]\sqrt{1+\operatorname{Cot}[e]^2}\operatorname{Sin}[e]\right)}{d\sqrt{1+\operatorname{Cot}[e]^2}\left(-1-\frac{c\operatorname{Csc}[e]}{d\sqrt{1+\operatorname{Cot}[e]^2}}\right)}\right]\operatorname{Cot}[e]\operatorname{Sin}[fx-\operatorname{ArcTan}[\operatorname{Cot}[e]]]\right)\Big/$$

$$\left(\sqrt{1+\operatorname{Cot}[e]^2}\sqrt{\frac{d\sqrt{1+\operatorname{Cot}[e]^2}+d\operatorname{Cos}[fx-\operatorname{ArcTan}[\operatorname{Cot}[e]]]\sqrt{1+\operatorname{Cot}[e]^2}}{d\sqrt{1+\operatorname{Cot}[e]^2}-c\operatorname{Csc}[e]}}\right.$$

$$\left.\sqrt{\frac{d\sqrt{1+\operatorname{Cot}[e]^2}-d\operatorname{Cos}[fx-\operatorname{ArcTan}[\operatorname{Cot}[e]]]\sqrt{1+\operatorname{Cot}[e]^2}}{d\sqrt{1+\operatorname{Cot}[e]^2}+c\operatorname{Csc}[e]}}\sqrt{c+d\operatorname{Cos}[fx-\operatorname{ArcTan}[\operatorname{Cot}[e]]]\sqrt{1+\operatorname{Cot}[e]^2}\operatorname{Sin}[e]}\right)-$$

$$\left.\left.\frac{\frac{2d\operatorname{Sin}[e]\left(c+d\operatorname{Cos}[fx-\operatorname{ArcTan}[\operatorname{Cot}[e]]]\sqrt{1+\operatorname{Cot}[e]^2}\operatorname{Sin}[e]\right)}{d^2\operatorname{Cos}[e]^2+d^2\operatorname{Sin}[e]^2}-\frac{\operatorname{Cot}[e]\operatorname{Sin}[fx-\operatorname{ArcTan}[\operatorname{Cot}[e]]]}{\sqrt{1+\operatorname{Cot}[e]^2}}}{\sqrt{c+d\operatorname{Cos}[fx-\operatorname{ArcTan}[\operatorname{Cot}[e]]]\sqrt{1+\operatorname{Cot}[e]^2}\operatorname{Sin}[e]}}\right)\right)\Big/\left(7f\left(\operatorname{Cos}\left[\frac{e}{2}+\frac{fx}{2}\right]+\operatorname{Sin}\left[\frac{e}{2}+\frac{fx}{2}\right]\right)^2\right)+$$

$$\left(23\,c^2\,d\,\text{Sec}[e]\,(1+\text{Sin}[e+f\,x])\left(-\left(\text{AppellF1}\left[-\frac{1}{2},-\frac{1}{2},-\frac{1}{2},\frac{1}{2},-\frac{\text{Csc}[e]\left(c+d\,\text{Cos}[f\,x-\text{ArcTan}[\text{Cot}[e]]]\sqrt{1+\text{Cot}[e]^2}\,\text{Sin}[e]\right)}{d\sqrt{1+\text{Cot}[e]^2}\left(1-\frac{c\,\text{Csc}[e]}{d\sqrt{1+\text{Cot}[e]^2}}\right)},\right.\right.\right.\right.$$

$$\left.\left.-\frac{\text{Csc}[e]\left(c+d\,\text{Cos}[f\,x-\text{ArcTan}[\text{Cot}[e]]]\sqrt{1+\text{Cot}[e]^2}\,\text{Sin}[e]\right)}{d\sqrt{1+\text{Cot}[e]^2}\left(-1-\frac{c\,\text{Csc}[e]}{d\sqrt{1+\text{Cot}[e]^2}}\right)}\right]\text{Cot}[e]\,\text{Sin}[f\,x-\text{ArcTan}[\text{Cot}[e]]]\right)\Big/$$

$$\left(\sqrt{1+\text{Cot}[e]^2}\sqrt{\frac{d\sqrt{1+\text{Cot}[e]^2}+d\,\text{Cos}[f\,x-\text{ArcTan}[\text{Cot}[e]]]\sqrt{1+\text{Cot}[e]^2}}{d\sqrt{1+\text{Cot}[e]^2}-c\,\text{Csc}[e]}}\right.$$

$$\left.\sqrt{\frac{d\sqrt{1+\text{Cot}[e]^2}-d\,\text{Cos}[f\,x-\text{ArcTan}[\text{Cot}[e]]]\sqrt{1+\text{Cot}[e]^2}}{d\sqrt{1+\text{Cot}[e]^2}+c\,\text{Csc}[e]}}\sqrt{c+d\,\text{Cos}[f\,x-\text{ArcTan}[\text{Cot}[e]]]\sqrt{1+\text{Cot}[e]^2}\,\text{Sin}[e]}\right)-$$

$$\left.\left.\frac{\frac{2\,d\,\text{Sin}[e]\left(c+d\,\text{Cos}[f\,x-\text{ArcTan}[\text{Cot}[e]]]\sqrt{1+\text{Cot}[e]^2}\,\text{Sin}[e]\right)}{d^2\,\text{Cos}[e]^2+d^2\,\text{Sin}[e]^2}-\frac{\text{Cot}[e]\,\text{Sin}[f\,x-\text{ArcTan}[\text{Cot}[e]]]}{\sqrt{1+\text{Cot}[e]^2}}}{\sqrt{c+d\,\text{Cos}[f\,x-\text{ArcTan}[\text{Cot}[e]]]\sqrt{1+\text{Cot}[e]^2}\,\text{Sin}[e]}}\right)\right)\Big/\left(15\,f\left(\text{Cos}\left[\frac{e}{2}+\frac{f\,x}{2}\right]+\text{Sin}\left[\frac{e}{2}+\frac{f\,x}{2}\right]\right)^2\right)+$$

$$\left(29\,c\,d^2\,\text{Sec}[e]\,(1+\text{Sin}[e+f\,x])\left(-\left(\text{AppellF1}\left[-\frac{1}{2},-\frac{1}{2},-\frac{1}{2},\frac{1}{2},-\frac{\text{Csc}[e]\left(c+d\,\text{Cos}[f\,x-\text{ArcTan}[\text{Cot}[e]]]\sqrt{1+\text{Cot}[e]^2}\,\text{Sin}[e]\right)}{d\sqrt{1+\text{Cot}[e]^2}\left(1-\frac{c\,\text{Csc}[e]}{d\sqrt{1+\text{Cot}[e]^2}}\right)},\right.\right.\right.\right.$$

$$\left.\left.-\frac{\text{Csc}[e]\left(c+d\,\text{Cos}[f\,x-\text{ArcTan}[\text{Cot}[e]]]\sqrt{1+\text{Cot}[e]^2}\,\text{Sin}[e]\right)}{d\sqrt{1+\text{Cot}[e]^2}\left(-1-\frac{c\,\text{Csc}[e]}{d\sqrt{1+\text{Cot}[e]^2}}\right)}\right]\text{Cot}[e]\,\text{Sin}[f\,x-\text{ArcTan}[\text{Cot}[e]]]\right)\Big/$$

$$\left(\sqrt{1+\text{Cot}[e]^2}\,\sqrt{\frac{d\sqrt{1+\text{Cot}[e]^2}+d\,\text{Cos}[f\,x-\text{ArcTan}[\text{Cot}[e]]]\,\sqrt{1+\text{Cot}[e]^2}}{d\sqrt{1+\text{Cot}[e]^2}-c\,\text{Csc}[e]}}\right.$$

$$\left.\sqrt{\frac{d\sqrt{1+\text{Cot}[e]^2}-d\,\text{Cos}[f\,x-\text{ArcTan}[\text{Cot}[e]]]\,\sqrt{1+\text{Cot}[e]^2}}{d\sqrt{1+\text{Cot}[e]^2}+c\,\text{Csc}[e]}}\,\sqrt{c+d\,\text{Cos}[f\,x-\text{ArcTan}[\text{Cot}[e]]]\,\sqrt{1+\text{Cot}[e]^2}\,\text{Sin}[e]}\right)-$$

$$\left.\left.\frac{\frac{2\,d\,\text{Sin}[e]\,\left(c+d\,\text{Cos}[f\,x-\text{ArcTan}[\text{Cot}[e]]]\,\sqrt{1+\text{Cot}[e]^2}\,\text{Sin}[e]\right)}{d^2\,\text{Cos}[e]^2+d^2\,\text{Sin}[e]^2}-\frac{\text{Cot}[e]\,\text{Sin}[f\,x-\text{ArcTan}[\text{Cot}[e]]]}{\sqrt{1+\text{Cot}[e]^2}}}{\sqrt{c+d\,\text{Cos}[f\,x-\text{ArcTan}[\text{Cot}[e]]]\,\sqrt{1+\text{Cot}[e]^2}\,\text{Sin}[e]}}\right)\right)\Big/\left(21\,f\left(\text{Cos}\left[\frac{e}{2}+\frac{f\,x}{2}\right]+\text{Sin}\left[\frac{e}{2}+\frac{f\,x}{2}\right]\right)^2\right)+$$

$$\left(3\,d^3\,\text{Sec}[e]\,(1+\text{Sin}[e+f\,x])\right)\left(-\left(\text{AppellF1}\left[-\frac{1}{2},-\frac{1}{2},-\frac{1}{2},\frac{1}{2},-\frac{\text{Csc}[e]\,\left(c+d\,\text{Cos}[f\,x-\text{ArcTan}[\text{Cot}[e]]]\,\sqrt{1+\text{Cot}[e]^2}\,\text{Sin}[e]\right)}{d\sqrt{1+\text{Cot}[e]^2}\,\left(1-\frac{c\,\text{Csc}[e]}{d\sqrt{1+\text{Cot}[e]^2}}\right)},\right.\right.\right.$$

$$\left.\left.-\frac{\text{Csc}[e]\,\left(c+d\,\text{Cos}[f\,x-\text{ArcTan}[\text{Cot}[e]]]\,\sqrt{1+\text{Cot}[e]^2}\,\text{Sin}[e]\right)}{d\sqrt{1+\text{Cot}[e]^2}\,\left(-1-\frac{c\,\text{Csc}[e]}{d\sqrt{1+\text{Cot}[e]^2}}\right)}\right]\text{Cot}[e]\,\text{Sin}[f\,x-\text{ArcTan}[\text{Cot}[e]]]\right)\Big/$$

$$\left(\sqrt{1+\text{Cot}[e]^2}\,\sqrt{\frac{d\sqrt{1+\text{Cot}[e]^2}+d\,\text{Cos}[f\,x-\text{ArcTan}[\text{Cot}[e]]]\,\sqrt{1+\text{Cot}[e]^2}}{d\sqrt{1+\text{Cot}[e]^2}-c\,\text{Csc}[e]}}\right.$$

$$\left.\sqrt{\frac{d\sqrt{1+\text{Cot}[e]^2}-d\,\text{Cos}[f\,x-\text{ArcTan}[\text{Cot}[e]]]\,\sqrt{1+\text{Cot}[e]^2}}{d\sqrt{1+\text{Cot}[e]^2}+c\,\text{Csc}[e]}}\,\sqrt{c+d\,\text{Cos}[f\,x-\text{ArcTan}[\text{Cot}[e]]]\,\sqrt{1+\text{Cot}[e]^2}\,\text{Sin}[e]}\right)-$$

$$\left.\left.\frac{\frac{2\,d\,\text{Sin}[e]\,\left(c+d\,\text{Cos}[f\,x-\text{ArcTan}[\text{Cot}[e]]]\,\sqrt{1+\text{Cot}[e]^2}\,\text{Sin}[e]\right)}{d^2\,\text{Cos}[e]^2+d^2\,\text{Sin}[e]^2}-\frac{\text{Cot}[e]\,\text{Sin}[f\,x-\text{ArcTan}[\text{Cot}[e]]]}{\sqrt{1+\text{Cot}[e]^2}}}{\sqrt{c+d\,\text{Cos}[f\,x-\text{ArcTan}[\text{Cot}[e]]]\,\sqrt{1+\text{Cot}[e]^2}\,\text{Sin}[e]}}\right)\right)\Big/\left(5\,f\left(\text{Cos}\left[\frac{e}{2}+\frac{f\,x}{2}\right]+\text{Sin}\left[\frac{e}{2}+\frac{f\,x}{2}\right]\right)^2\right)+$$

$$\left((1+\text{Sin}[e+f x])\sqrt{c+d\,\text{Sin}[e+f x]}\left(-\frac{\left(180 c^2+308 c d+115 d^2\right)\text{Cos}[e]\,\text{Cos}[f x]}{210 f}+\frac{d^2\,\text{Cos}[3 e]\,\text{Cos}[3 f x]}{14 f}-\frac{d (15 c+7 d)\,\text{Cos}[2 f x]\,\text{Sin}[2 e]}{35 f}+\frac{\left(180 c^2+308 c d+115 d^2\right)\text{Sin}[e]\,\text{Sin}[f x]}{210 f}-\frac{d (15 c+7 d)\,\text{Cos}[2 e]\,\text{Sin}[2 f x]}{35 f}-\frac{d^2\,\text{Sin}[3 e]\,\text{Sin}[3 f x]}{14 f}+\frac{2\left(15 c^3+161 c^2 d+145 c d^2+63 d^3\right)\text{Tan}[e]}{105 d f}\right)\right)\Big/$$

$$\left(\text{Cos}\left[\frac{e}{2}+\frac{f x}{2}\right]+\text{Sin}\left[\frac{e}{2}+\frac{f x}{2}\right]\right)^2+\frac{1}{7 f\left(\text{Cos}\left[\frac{e}{2}+\frac{f x}{2}\right]+\text{Sin}\left[\frac{e}{2}+\frac{f x}{2}\right]\right)^2\sqrt{1+\text{Tan}[e]^2}}$$

18

c^2

$$\text{AppellF1}\left[\frac{1}{2},\frac{1}{2},\frac{1}{2},\frac{3}{2},-\frac{\text{Sec}[e]\left(c+d\,\text{Cos}[e]\,\text{Sin}[f x+\text{ArcTan}[\text{Tan}[e]]]\sqrt{1+\text{Tan}[e]^2}\right)}{d\sqrt{1+\text{Tan}[e]^2}\left(1-\frac{c\,\text{Sec}[e]}{d\sqrt{1+\text{Tan}[e]^2}}\right)},\right.$$

$$\left.-\frac{\text{Sec}[e]\left(c+d\,\text{Cos}[e]\,\text{Sin}[f x+\text{ArcTan}[\text{Tan}[e]]]\sqrt{1+\text{Tan}[e]^2}\right)}{d\sqrt{1+\text{Tan}[e]^2}\left(-1-\frac{c\,\text{Sec}[e]}{d\sqrt{1+\text{Tan}[e]^2}}\right)}\right]$$

$$\text{Sec}[e]\,\text{Sec}[f x+\text{ArcTan}[\text{Tan}[e]]]\,(1+\text{Sin}[e+f x])$$

$$\sqrt{\frac{d\sqrt{1+\text{Tan}[e]^2}-d\,\text{Sin}[f x+\text{ArcTan}[\text{Tan}[e]]]\sqrt{1+\text{Tan}[e]^2}}{c\,\text{Sec}[e]+d\sqrt{1+\text{Tan}[e]^2}}}$$

$$\sqrt{\frac{d\sqrt{1+\text{Tan}[e]^2}+d\,\text{Sin}[f x+\text{ArcTan}[\text{Tan}[e]]]\sqrt{1+\text{Tan}[e]^2}}{-c\,\text{Sec}[e]+d\sqrt{1+\text{Tan}[e]^2}}}$$

$$\sqrt{c+d\,\text{Cos}[e]\,\text{Sin}[f x+\text{ArcTan}[\text{Tan}[e]]]\sqrt{1+\text{Tan}[e]^2}}\;+$$

$$\frac{1}{d f\left(\text{Cos}\left[\frac{e}{2}+\frac{f x}{2}\right]+\text{Sin}\left[\frac{e}{2}+\frac{f x}{2}\right]\right)^2\sqrt{1+\text{Tan}[e]^2}}$$

$$2\,c^3\,\text{AppellF1}\Big[\frac{1}{2},\frac{1}{2},\frac{1}{2},\frac{3}{2},-\frac{\text{Sec}[e]\left(c+d\,\text{Cos}[e]\,\text{Sin}[f\,x+\text{ArcTan}[\text{Tan}[e]]]\sqrt{1+\text{Tan}[e]^2}\right)}{d\sqrt{1+\text{Tan}[e]^2}\left(1-\frac{c\,\text{Sec}[e]}{d\sqrt{1+\text{Tan}[e]^2}}\right)},$$

$$-\frac{\text{Sec}[e]\left(c+d\,\text{Cos}[e]\,\text{Sin}[f\,x+\text{ArcTan}[\text{Tan}[e]]]\sqrt{1+\text{Tan}[e]^2}\right)}{d\sqrt{1+\text{Tan}[e]^2}\left(-1-\frac{c\,\text{Sec}[e]}{d\sqrt{1+\text{Tan}[e]^2}}\right)}\Big]\,\text{Sec}[e]$$

$$\text{Sec}[f\,x+\text{ArcTan}[\text{Tan}[e]]]\,(1+\text{Sin}[e+f\,x])\sqrt{\frac{d\sqrt{1+\text{Tan}[e]^2}-d\,\text{Sin}[f\,x+\text{ArcTan}[\text{Tan}[e]]]\sqrt{1+\text{Tan}[e]^2}}{c\,\text{Sec}[e]+d\sqrt{1+\text{Tan}[e]^2}}}$$

$$\sqrt{\frac{d\sqrt{1+\text{Tan}[e]^2}+d\,\text{Sin}[f\,x+\text{ArcTan}[\text{Tan}[e]]]\sqrt{1+\text{Tan}[e]^2}}{-c\,\text{Sec}[e]+d\sqrt{1+\text{Tan}[e]^2}}}$$

$$\sqrt{c+d\,\text{Cos}[e]\,\text{Sin}[f\,x+\text{ArcTan}[\text{Tan}[e]]]\sqrt{1+\text{Tan}[e]^2}}\;+$$

$$\frac{1}{15\,f\left(\text{Cos}\left[\frac{e}{2}+\frac{f\,x}{2}\right]+\text{Sin}\left[\frac{e}{2}+\frac{f\,x}{2}\right]\right)^2\sqrt{1+\text{Tan}[e]^2}}$$

$$34\,c\,d\,\text{AppellF1}\Big[\frac{1}{2},\frac{1}{2},\frac{1}{2},\frac{3}{2},-\frac{\text{Sec}[e]\left(c+d\,\text{Cos}[e]\,\text{Sin}[f\,x+\text{ArcTan}[\text{Tan}[e]]]\sqrt{1+\text{Tan}[e]^2}\right)}{d\sqrt{1+\text{Tan}[e]^2}\left(1-\frac{c\,\text{Sec}[e]}{d\sqrt{1+\text{Tan}[e]^2}}\right)},$$

$$-\frac{\text{Sec}[e]\left(c+d\,\text{Cos}[e]\,\text{Sin}[f\,x+\text{ArcTan}[\text{Tan}[e]]]\sqrt{1+\text{Tan}[e]^2}\right)}{d\sqrt{1+\text{Tan}[e]^2}\left(-1-\frac{c\,\text{Sec}[e]}{d\sqrt{1+\text{Tan}[e]^2}}\right)}\Big]\,\text{Sec}[e]$$

$$\text{Sec}[f\,x+\text{ArcTan}[\text{Tan}[e]]]\,(1+\text{Sin}[e+f\,x])\sqrt{\frac{d\sqrt{1+\text{Tan}[e]^2}-d\,\text{Sin}[f\,x+\text{ArcTan}[\text{Tan}[e]]]\sqrt{1+\text{Tan}[e]^2}}{c\,\text{Sec}[e]+d\sqrt{1+\text{Tan}[e]^2}}}$$

$$\sqrt{\frac{d\sqrt{1+\text{Tan}[e]^2}+d\,\text{Sin}[f\,x+\text{ArcTan}[\text{Tan}[e]]]\sqrt{1+\text{Tan}[e]^2}}{-c\,\text{Sec}[e]+d\sqrt{1+\text{Tan}[e]^2}}}$$

$$\sqrt{c+d\,\text{Cos}[e]\,\text{Sin}[f\,x+\text{ArcTan}[\text{Tan}[e]]]\sqrt{1+\text{Tan}[e]^2}}\;+$$

$$\frac{1}{21\,f\left(\text{Cos}\left[\frac{e}{2}+\frac{f\,x}{2}\right]+\text{Sin}\left[\frac{e}{2}+\frac{f\,x}{2}\right]\right)^2\sqrt{1+\text{Tan}[e]^2}}$$

$$10\,d^2\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2},\frac{1}{2},\frac{3}{2},-\frac{\text{Sec}[e]\left(c+d\,\text{Cos}[e]\,\text{Sin}[f\,x+\text{ArcTan}[\text{Tan}[e]]]\sqrt{1+\text{Tan}[e]^2}\right)}{d\sqrt{1+\text{Tan}[e]^2}\left(1-\frac{c\,\text{Sec}[e]}{d\sqrt{1+\text{Tan}[e]^2}}\right)},\right.$$

$$\left.-\frac{\text{Sec}[e]\left(c+d\,\text{Cos}[e]\,\text{Sin}[f\,x+\text{ArcTan}[\text{Tan}[e]]]\sqrt{1+\text{Tan}[e]^2}\right)}{d\sqrt{1+\text{Tan}[e]^2}\left(-1-\frac{c\,\text{Sec}[e]}{d\sqrt{1+\text{Tan}[e]^2}}\right)}\right]\text{Sec}[e]$$

$$\text{Sec}[f\,x+\text{ArcTan}[\text{Tan}[e]]]\,(1+\text{Sin}[e+f\,x])\sqrt{\frac{d\sqrt{1+\text{Tan}[e]^2}-d\,\text{Sin}[f\,x+\text{ArcTan}[\text{Tan}[e]]]\sqrt{1+\text{Tan}[e]^2}}{c\,\text{Sec}[e]+d\sqrt{1+\text{Tan}[e]^2}}}$$

$$\sqrt{\frac{d\sqrt{1+\text{Tan}[e]^2}+d\,\text{Sin}[f\,x+\text{ArcTan}[\text{Tan}[e]]]\sqrt{1+\text{Tan}[e]^2}}{-c\,\text{Sec}[e]+d\sqrt{1+\text{Tan}[e]^2}}}$$

$$\left.\sqrt{c+d\,\text{Cos}[e]\,\text{Sin}[f\,x+\text{ArcTan}[\text{Tan}[e]]]\sqrt{1+\text{Tan}[e]^2}}\right)$$

- **Problem 483: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int(a+a\,\text{Sin}[e+f\,x])\,(c+d\,\text{Sin}[e+f\,x])^{3/2}\,dx$$

Optimal (type 4, 231 leaves, 7 steps) :

$$-\frac{2 a (3 c+5 d) \operatorname{Cos}[e+f x] \sqrt{c+d \operatorname{Sin}[e+f x]}}{15 f}-\frac{2 a \operatorname{Cos}[e+f x] (c+d \operatorname{Sin}[e+f x])^{3/2}}{5 f}+$$

$$\frac{2 a \left(3 c^2+20 c d+9 d^2\right) \operatorname{EllipticE}\left[\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right), \frac{2 d}{c+d}\right] \sqrt{c+d \operatorname{Sin}[e+f x]}}{15 d f \sqrt{\frac{c+d \operatorname{Sin}[e+f x]}{c+d}}}-$$

$$\frac{2 a (3 c+5 d)\left(c^2-d^2\right) \operatorname{EllipticF}\left[\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right), \frac{2 d}{c+d}\right] \sqrt{\frac{c+d \operatorname{Sin}[e+f x]}{c+d}}}{15 d f \sqrt{c+d \operatorname{Sin}[e+f x]}}$$

Result (type 6, 2625 leaves) :

$$a \left(\left(c^2 \operatorname{Sec}[e] (1+\operatorname{Sin}[e+f x])\right)\left(-\left(\operatorname{AppellF1}\left[-\frac{1}{2}, -\frac{1}{2}, -\frac{1}{2}, \frac{1}{2}, -\frac{\operatorname{Csc}[e]\left(c+d \operatorname{Cos}[f x-\operatorname{ArcTan}[\operatorname{Cot}[e]]] \sqrt{1+\operatorname{Cot}[e]^2} \operatorname{Sin}[e]\right)}{d \sqrt{1+\operatorname{Cot}[e]^2}\left(1-\frac{c \operatorname{Csc}[e]}{d \sqrt{1+\operatorname{Cot}[e]^2}}\right)},\right.\right.\right.\right.$$

$$\left.-\frac{\operatorname{Csc}[e]\left(c+d \operatorname{Cos}[f x-\operatorname{ArcTan}[\operatorname{Cot}[e]]] \sqrt{1+\operatorname{Cot}[e]^2} \operatorname{Sin}[e]\right)}{d \sqrt{1+\operatorname{Cot}[e]^2}\left(-1-\frac{c \operatorname{Csc}[e]}{d \sqrt{1+\operatorname{Cot}[e]^2}}\right)}\right] \operatorname{Cot}[e] \operatorname{Sin}[f x-\operatorname{ArcTan}[\operatorname{Cot}[e]]]\Bigg) \Big/$$

$$\left(\sqrt{1+\operatorname{Cot}[e]^2} \sqrt{\frac{d \sqrt{1+\operatorname{Cot}[e]^2}+d \operatorname{Cos}[f x-\operatorname{ArcTan}[\operatorname{Cot}[e]]] \sqrt{1+\operatorname{Cot}[e]^2}}{d \sqrt{1+\operatorname{Cot}[e]^2}-c \operatorname{Csc}[e]}}\right.$$

$$\left.\sqrt{\frac{d \sqrt{1+\operatorname{Cot}[e]^2}-d \operatorname{Cos}[f x-\operatorname{ArcTan}[\operatorname{Cot}[e]]] \sqrt{1+\operatorname{Cot}[e]^2}}{d \sqrt{1+\operatorname{Cot}[e]^2}+c \operatorname{Csc}[e]}} \sqrt{c+d \operatorname{Cos}[f x-\operatorname{ArcTan}[\operatorname{Cot}[e]]] \sqrt{1+\operatorname{Cot}[e]^2} \operatorname{Sin}[e]}\right)-$$

$$\left.\left.\frac{\frac{2 d \operatorname{Sin}[e]\left(c+d \operatorname{Cos}[f x-\operatorname{ArcTan}[\operatorname{Cot}[e]]] \sqrt{1+\operatorname{Cot}[e]^2} \operatorname{Sin}[e]\right)}{d^2 \operatorname{Cos}[e]^2+d^2 \operatorname{Sin}[e]^2}-\frac{\operatorname{Cot}[e] \operatorname{Sin}[f x-\operatorname{ArcTan}[\operatorname{Cot}[e]]]}{\sqrt{1+\operatorname{Cot}[e]^2}}}{\sqrt{c+d \operatorname{Cos}[f x-\operatorname{ArcTan}[\operatorname{Cot}[e]]] \sqrt{1+\operatorname{Cot}[e]^2} \operatorname{Sin}[e]}}\right)\right) \Big/ \left(5 f\left(\operatorname{Cos}\left[\frac{e}{2}+\frac{f x}{2}\right]+\operatorname{Sin}\left[\frac{e}{2}+\frac{f x}{2}\right]\right)^2\right)+$$

$$\left(4\,c\,d\,\mathrm{Sec}[e]\,(1+\mathrm{Sin}[e+f\,x])\left(-\left(\mathrm{AppellF1}\left[-\frac{1}{2},-\frac{1}{2},-\frac{1}{2},\frac{1}{2},-\frac{\mathrm{Csc}[e]\left(c+d\,\mathrm{Cos}[f\,x-\mathrm{ArcTan}[\mathrm{Cot}[e]]]\sqrt{1+\mathrm{Cot}[e]^2}\,\mathrm{Sin}[e]\right)}{d\sqrt{1+\mathrm{Cot}[e]^2}\left(1-\frac{c\,\mathrm{Csc}[e]}{d\sqrt{1+\mathrm{Cot}[e]^2}}\right)},\right.\right.\right.\right.$$

$$\left.-\frac{\mathrm{Csc}[e]\left(c+d\,\mathrm{Cos}[f\,x-\mathrm{ArcTan}[\mathrm{Cot}[e]]]\sqrt{1+\mathrm{Cot}[e]^2}\,\mathrm{Sin}[e]\right)}{d\sqrt{1+\mathrm{Cot}[e]^2}\left(-1-\frac{c\,\mathrm{Csc}[e]}{d\sqrt{1+\mathrm{Cot}[e]^2}}\right)}\right]\mathrm{Cot}[e]\,\mathrm{Sin}[f\,x-\mathrm{ArcTan}[\mathrm{Cot}[e]]]\Bigg)\Bigg/$$

$$\left(\sqrt{1+\mathrm{Cot}[e]^2}\sqrt{\frac{d\sqrt{1+\mathrm{Cot}[e]^2}+d\,\mathrm{Cos}[f\,x-\mathrm{ArcTan}[\mathrm{Cot}[e]]]\sqrt{1+\mathrm{Cot}[e]^2}}{d\sqrt{1+\mathrm{Cot}[e]^2}-c\,\mathrm{Csc}[e]}}\right.$$

$$\left.\sqrt{\frac{d\sqrt{1+\mathrm{Cot}[e]^2}-d\,\mathrm{Cos}[f\,x-\mathrm{ArcTan}[\mathrm{Cot}[e]]]\sqrt{1+\mathrm{Cot}[e]^2}}{d\sqrt{1+\mathrm{Cot}[e]^2}+c\,\mathrm{Csc}[e]}}\sqrt{c+d\,\mathrm{Cos}[f\,x-\mathrm{ArcTan}[\mathrm{Cot}[e]]]\sqrt{1+\mathrm{Cot}[e]^2}\,\mathrm{Sin}[e]}\right)-$$

$$\left.\left.\frac{\frac{2\,d\,\mathrm{Sin}[e]\left(c+d\,\mathrm{Cos}[f\,x-\mathrm{ArcTan}[\mathrm{Cot}[e]]]\sqrt{1+\mathrm{Cot}[e]^2}\,\mathrm{Sin}[e]\right)}{d^2\,\mathrm{Cos}[e]^2+d^2\,\mathrm{Sin}[e]^2}-\frac{\mathrm{Cot}[e]\,\mathrm{Sin}[f\,x-\mathrm{ArcTan}[\mathrm{Cot}[e]]]}{\sqrt{1+\mathrm{Cot}[e]^2}}}{\sqrt{c+d\,\mathrm{Cos}[f\,x-\mathrm{ArcTan}[\mathrm{Cot}[e]]]\sqrt{1+\mathrm{Cot}[e]^2}\,\mathrm{Sin}[e]}}\right)\right)\Bigg/\left(3\,f\left(\mathrm{Cos}\left[\frac{e}{2}+\frac{f\,x}{2}\right]+\mathrm{Sin}\left[\frac{e}{2}+\frac{f\,x}{2}\right]\right)^2\right)+$$

$$\left(3\,d^2\,\mathrm{Sec}[e]\,(1+\mathrm{Sin}[e+f\,x])\left(-\left(\mathrm{AppellF1}\left[-\frac{1}{2},-\frac{1}{2},-\frac{1}{2},\frac{1}{2},-\frac{\mathrm{Csc}[e]\left(c+d\,\mathrm{Cos}[f\,x-\mathrm{ArcTan}[\mathrm{Cot}[e]]]\sqrt{1+\mathrm{Cot}[e]^2}\,\mathrm{Sin}[e]\right)}{d\sqrt{1+\mathrm{Cot}[e]^2}\left(1-\frac{c\,\mathrm{Csc}[e]}{d\sqrt{1+\mathrm{Cot}[e]^2}}\right)},\right.\right.\right.\right.$$

$$\left.-\frac{\mathrm{Csc}[e]\left(c+d\,\mathrm{Cos}[f\,x-\mathrm{ArcTan}[\mathrm{Cot}[e]]]\sqrt{1+\mathrm{Cot}[e]^2}\,\mathrm{Sin}[e]\right)}{d\sqrt{1+\mathrm{Cot}[e]^2}\left(-1-\frac{c\,\mathrm{Csc}[e]}{d\sqrt{1+\mathrm{Cot}[e]^2}}\right)}\right]\mathrm{Cot}[e]\,\mathrm{Sin}[f\,x-\mathrm{ArcTan}[\mathrm{Cot}[e]]]\Bigg)\Bigg/$$

$$\left(\sqrt{1+\text{Cot}[e]^2}\ \sqrt{\frac{d\sqrt{1+\text{Cot}[e]^2}+d\,\text{Cos}[f\,x-\text{ArcTan}[\text{Cot}[e]]]\sqrt{1+\text{Cot}[e]^2}}{d\sqrt{1+\text{Cot}[e]^2}-c\,\text{Csc}[e]}}\right.$$

$$\left.\sqrt{\frac{d\sqrt{1+\text{Cot}[e]^2}-d\,\text{Cos}[f\,x-\text{ArcTan}[\text{Cot}[e]]]\sqrt{1+\text{Cot}[e]^2}}{d\sqrt{1+\text{Cot}[e]^2}+c\,\text{Csc}[e]}}\ \sqrt{c+d\,\text{Cos}[f\,x-\text{ArcTan}[\text{Cot}[e]]]\sqrt{1+\text{Cot}[e]^2}\ \text{Sin}[e]}\right)-$$

$$\left.\left.\frac{\frac{2\,d\,\text{Sin}[e]\left(c+d\,\text{Cos}[f\,x-\text{ArcTan}[\text{Cot}[e]]]\sqrt{1+\text{Cot}[e]^2}\ \text{Sin}[e]\right)}{d^2\,\text{Cos}[e]^2+d^2\,\text{Sin}[e]^2}-\frac{\text{Cot}[e]\,\text{Sin}[f\,x-\text{ArcTan}[\text{Cot}[e]]]}{\sqrt{1+\text{Cot}[e]^2}}}{\sqrt{c+d\,\text{Cos}[f\,x-\text{ArcTan}[\text{Cot}[e]]]\sqrt{1+\text{Cot}[e]^2}\ \text{Sin}[e]}}\right)\right)\Bigg/\left(5\,f\left(\text{Cos}\left[\frac{e}{2}+\frac{f\,x}{2}\right]+\text{Sin}\left[\frac{e}{2}+\frac{f\,x}{2}\right]\right)^2\right)+$$

$$\left((1+\text{Sin}[e+f\,x])\sqrt{c+d\,\text{Sin}[e+f\,x]}\left(-\frac{2\,(6\,c+5\,d)\,\text{Cos}[e]\,\text{Cos}[f\,x]}{15\,f}-\frac{d\,\text{Cos}[2\,f\,x]\,\text{Sin}[2\,e]}{5\,f}+\right.\right.$$

$$\left.\left.\frac{2\,(6\,c+5\,d)\,\text{Sin}[e]\,\text{Sin}[f\,x]}{15\,f}-\frac{d\,\text{Cos}[2\,e]\,\text{Sin}[2\,f\,x]}{5\,f}+\frac{2\left(3\,c^2+20\,c\,d+9\,d^2\right)\text{Tan}[e]}{15\,d\,f}\right)\right)\Bigg/$$

$$\left(\text{Cos}\left[\frac{e}{2}+\frac{f\,x}{2}\right]+\text{Sin}\left[\frac{e}{2}+\frac{f\,x}{2}\right]\right)^2+\frac{1}{5\,f\left(\text{Cos}\left[\frac{e}{2}+\frac{f\,x}{2}\right]+\text{Sin}\left[\frac{e}{2}+\frac{f\,x}{2}\right]\right)^2\sqrt{1+\text{Tan}[e]^2}}$$

8

c

$$\text{AppellF1}\left[\frac{1}{2},\frac{1}{2},\frac{1}{2},\frac{3}{2},-\frac{\text{Sec}[e]\left(c+d\,\text{Cos}[e]\,\text{Sin}[f\,x+\text{ArcTan}[\text{Tan}[e]]]\sqrt{1+\text{Tan}[e]^2}\right)}{d\sqrt{1+\text{Tan}[e]^2}\left(1-\frac{c\,\text{Sec}[e]}{d\sqrt{1+\text{Tan}[e]^2}}\right)},\right.$$

$$\left.-\frac{\text{Sec}[e]\left(c+d\,\text{Cos}[e]\,\text{Sin}[f\,x+\text{ArcTan}[\text{Tan}[e]]]\sqrt{1+\text{Tan}[e]^2}\right)}{d\sqrt{1+\text{Tan}[e]^2}\left(-1-\frac{c\,\text{Sec}[e]}{d\sqrt{1+\text{Tan}[e]^2}}\right)}\right]$$

$$\text{Sec}[e]\,\text{Sec}[f\,x+\text{ArcTan}[\text{Tan}[e]]]\,(1+\text{Sin}[e+f\,x])$$

$$\sqrt{\frac{d\sqrt{1+\text{Tan}[e]^2}-d\,\text{Sin}[f\,x+\text{ArcTan}[\text{Tan}[e]]]\sqrt{1+\text{Tan}[e]^2}}{c\,\text{Sec}[e]+d\sqrt{1+\text{Tan}[e]^2}}}$$

$$\sqrt{\frac{d\sqrt{1+\text{Tan}[e]^2}+d\,\text{Sin}[f\,x+\text{ArcTan}[\text{Tan}[e]]]\sqrt{1+\text{Tan}[e]^2}}{-c\,\text{Sec}[e]+d\sqrt{1+\text{Tan}[e]^2}}}$$

$$\sqrt{c+d\,\text{Cos}[e]\,\text{Sin}[f\,x+\text{ArcTan}[\text{Tan}[e]]]\sqrt{1+\text{Tan}[e]^2}}\;+$$

$$\frac{1}{d\,f\left(\text{Cos}\left[\frac{e}{2}+\frac{f\,x}{2}\right]+\text{Sin}\left[\frac{e}{2}+\frac{f\,x}{2}\right]\right)^2\sqrt{1+\text{Tan}[e]^2}}$$

$$2\,c^2\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2},\frac{1}{2},\frac{3}{2},-\frac{\text{Sec}[e]\left(c+d\,\text{Cos}[e]\,\text{Sin}[f\,x+\text{ArcTan}[\text{Tan}[e]]]\sqrt{1+\text{Tan}[e]^2}\right)}{d\sqrt{1+\text{Tan}[e]^2}\left(1-\frac{c\,\text{Sec}[e]}{d\sqrt{1+\text{Tan}[e]^2}}\right)},\right.$$

$$\left.-\frac{\text{Sec}[e]\left(c+d\,\text{Cos}[e]\,\text{Sin}[f\,x+\text{ArcTan}[\text{Tan}[e]]]\sqrt{1+\text{Tan}[e]^2}\right)}{d\sqrt{1+\text{Tan}[e]^2}\left(-1-\frac{c\,\text{Sec}[e]}{d\sqrt{1+\text{Tan}[e]^2}}\right)}\right]\text{Sec}[e]$$

$$\text{Sec}[f\,x+\text{ArcTan}[\text{Tan}[e]]]\,(1+\text{Sin}[e+f\,x])\sqrt{\frac{d\sqrt{1+\text{Tan}[e]^2}-d\,\text{Sin}[f\,x+\text{ArcTan}[\text{Tan}[e]]]\sqrt{1+\text{Tan}[e]^2}}{c\,\text{Sec}[e]+d\sqrt{1+\text{Tan}[e]^2}}}$$

$$\sqrt{\frac{d\sqrt{1+\text{Tan}[e]^2}+d\,\text{Sin}[f\,x+\text{ArcTan}[\text{Tan}[e]]]\sqrt{1+\text{Tan}[e]^2}}{-c\,\text{Sec}[e]+d\sqrt{1+\text{Tan}[e]^2}}}$$

$$\sqrt{c+d\,\text{Cos}[e]\,\text{Sin}[f\,x+\text{ArcTan}[\text{Tan}[e]]]\sqrt{1+\text{Tan}[e]^2}}\;+$$

$$\frac{1}{3\,f\left(\text{Cos}\left[\frac{e}{2}+\frac{f\,x}{2}\right]+\text{Sin}\left[\frac{e}{2}+\frac{f\,x}{2}\right]\right)^2\sqrt{1+\text{Tan}[e]^2}}$$

$$2\,d\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2},\frac{1}{2},\frac{3}{2},-\frac{\text{Sec}[e]\left(c+d\,\text{Cos}[e]\,\text{Sin}[f\,x+\text{ArcTan}[\text{Tan}[e]]]\sqrt{1+\text{Tan}[e]^2}\right)}{d\sqrt{1+\text{Tan}[e]^2}\left(1-\frac{c\,\text{Sec}[e]}{d\sqrt{1+\text{Tan}[e]^2}}\right)},\right.$$

$$-\frac{\text{Sec}[e]\left(c+d\,\text{Cos}[e]\,\text{Sin}[f\,x+\text{ArcTan}[\text{Tan}[e]]]\sqrt{1+\text{Tan}[e]^2}\right)}{d\sqrt{1+\text{Tan}[e]^2}\left(-1-\frac{c\,\text{Sec}[e]}{d\sqrt{1+\text{Tan}[e]^2}}\right)}\Bigg]\ \text{Sec}[e]$$

$$\text{Sec}[f\,x+\text{ArcTan}[\text{Tan}[e]]]\ (1+\text{Sin}[e+f\,x])\ \sqrt{\frac{d\sqrt{1+\text{Tan}[e]^2}-d\,\text{Sin}[f\,x+\text{ArcTan}[\text{Tan}[e]]]\sqrt{1+\text{Tan}[e]^2}}{c\,\text{Sec}[e]+d\sqrt{1+\text{Tan}[e]^2}}}$$

$$\sqrt{\frac{d\sqrt{1+\text{Tan}[e]^2}+d\,\text{Sin}[f\,x+\text{ArcTan}[\text{Tan}[e]]]\sqrt{1+\text{Tan}[e]^2}}{-c\,\text{Sec}[e]+d\sqrt{1+\text{Tan}[e]^2}}}$$

$$\left.\sqrt{c+d\,\text{Cos}[e]\,\text{Sin}[f\,x+\text{ArcTan}[\text{Tan}[e]]]\sqrt{1+\text{Tan}[e]^2}}\ \right)$$

- **Problem 484: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int (a+a\,\text{Sin}[e+f\,x])\ \sqrt{c+d\,\text{Sin}[e+f\,x]}\ dx$$

Optimal (type 4, 179 leaves, 6 steps):

$$-\frac{2\,a\,\text{Cos}[e+f\,x]\sqrt{c+d\,\text{Sin}[e+f\,x]}}{3\,f}+\frac{2\,a\,(c+3\,d)\ \text{EllipticE}\left[\frac{1}{2}\left(e-\frac{\pi}{2}+f\,x\right),\ \frac{2\,d}{c+d}\right]\sqrt{c+d\,\text{Sin}[e+f\,x]}}{3\,d\,f\sqrt{\frac{c+d\,\text{Sin}[e+f\,x]}{c+d}}}-$$

$$\frac{2\,a\left(c^2-d^2\right)\ \text{EllipticF}\left[\frac{1}{2}\left(e-\frac{\pi}{2}+f\,x\right),\ \frac{2\,d}{c+d}\right]\sqrt{\frac{c+d\,\text{Sin}[e+f\,x]}{c+d}}}{3\,d\,f\sqrt{c+d\,\text{Sin}[e+f\,x]}}$$

Result (type 6, 1736 leaves):

$$a\left(\left(c\,\text{Sec}[e]\ (1+\text{Sin}[e+f\,x])\ \left(-\left(\text{AppellF1}\left[-\frac{1}{2},\ -\frac{1}{2},\ -\frac{1}{2},\ \frac{1}{2},\ -\frac{\text{Csc}[e]\left(c+d\,\text{Cos}[f\,x-\text{ArcTan}[\text{Cot}[e]]]\sqrt{1+\text{Cot}[e]^2}\ \text{Sin}[e]\right)}{d\sqrt{1+\text{Cot}[e]^2}\left(1-\frac{c\,\text{Csc}[e]}{d\sqrt{1+\text{Cot}[e]^2}}\right)},\right.\right.\right.\right.\right.$$

$$-\frac{\mathrm{Csc}[e]\left(c+d\,\mathrm{Cos}[f\,x-\mathrm{ArcTan}[\mathrm{Cot}[e]]]\sqrt{1+\mathrm{Cot}[e]^2}\,\mathrm{Sin}[e]\right)}{d\sqrt{1+\mathrm{Cot}[e]^2}\left(-1-\frac{c\,\mathrm{Csc}[e]}{d\sqrt{1+\mathrm{Cot}[e]^2}}\right)}\Bigg]\,\mathrm{Cot}[e]\,\mathrm{Sin}[f\,x-\mathrm{ArcTan}[\mathrm{Cot}[e]]]\Bigg)\Bigg/$$

$$\left(\sqrt{1+\mathrm{Cot}[e]^2}\,\sqrt{\frac{d\sqrt{1+\mathrm{Cot}[e]^2}+d\,\mathrm{Cos}[f\,x-\mathrm{ArcTan}[\mathrm{Cot}[e]]]\sqrt{1+\mathrm{Cot}[e]^2}}{d\sqrt{1+\mathrm{Cot}[e]^2}-c\,\mathrm{Csc}[e]}}\right.$$

$$\left.\sqrt{\frac{d\sqrt{1+\mathrm{Cot}[e]^2}-d\,\mathrm{Cos}[f\,x-\mathrm{ArcTan}[\mathrm{Cot}[e]]]\sqrt{1+\mathrm{Cot}[e]^2}}{d\sqrt{1+\mathrm{Cot}[e]^2}+c\,\mathrm{Csc}[e]}}\,\sqrt{c+d\,\mathrm{Cos}[f\,x-\mathrm{ArcTan}[\mathrm{Cot}[e]]]\sqrt{1+\mathrm{Cot}[e]^2}\,\mathrm{Sin}[e]}\right)-$$

$$\frac{\frac{2\,d\,\mathrm{Sin}[e]\left(c+d\,\mathrm{Cos}[f\,x-\mathrm{ArcTan}[\mathrm{Cot}[e]]]\sqrt{1+\mathrm{Cot}[e]^2}\,\mathrm{Sin}[e]\right)}{d^2\,\mathrm{Cos}[e]^2+d^2\,\mathrm{Sin}[e]^2}-\frac{\mathrm{Cot}[e]\,\mathrm{Sin}[f\,x-\mathrm{ArcTan}[\mathrm{Cot}[e]]]}{\sqrt{1+\mathrm{Cot}[e]^2}}}{\sqrt{c+d\,\mathrm{Cos}[f\,x-\mathrm{ArcTan}[\mathrm{Cot}[e]]]\sqrt{1+\mathrm{Cot}[e]^2}\,\mathrm{Sin}[e]}}\Bigg)\Bigg)\Bigg/\left(3\,f\left(\mathrm{Cos}\left[\frac{e}{2}+\frac{f\,x}{2}\right]+\mathrm{Sin}\left[\frac{e}{2}+\frac{f\,x}{2}\right]\right)^2\right)+$$

$$\left(d\,\mathrm{Sec}[e]\,(1+\mathrm{Sin}[e+f\,x])\right)\left(-\left(\mathrm{AppellF1}\left[-\frac{1}{2},-\frac{1}{2},-\frac{1}{2},\frac{1}{2},-\frac{\mathrm{Csc}[e]\left(c+d\,\mathrm{Cos}[f\,x-\mathrm{ArcTan}[\mathrm{Cot}[e]]]\sqrt{1+\mathrm{Cot}[e]^2}\,\mathrm{Sin}[e]\right)}{d\sqrt{1+\mathrm{Cot}[e]^2}\left(1-\frac{c\,\mathrm{Csc}[e]}{d\sqrt{1+\mathrm{Cot}[e]^2}}\right)},\right.\right.\right.$$

$$-\frac{\mathrm{Csc}[e]\left(c+d\,\mathrm{Cos}[f\,x-\mathrm{ArcTan}[\mathrm{Cot}[e]]]\sqrt{1+\mathrm{Cot}[e]^2}\,\mathrm{Sin}[e]\right)}{d\sqrt{1+\mathrm{Cot}[e]^2}\left(-1-\frac{c\,\mathrm{Csc}[e]}{d\sqrt{1+\mathrm{Cot}[e]^2}}\right)}\Bigg]\,\mathrm{Cot}[e]\,\mathrm{Sin}[f\,x-\mathrm{ArcTan}[\mathrm{Cot}[e]]]\Bigg)\Bigg/$$

$$\left(\sqrt{1+\mathrm{Cot}[e]^2}\,\sqrt{\frac{d\sqrt{1+\mathrm{Cot}[e]^2}+d\,\mathrm{Cos}[f\,x-\mathrm{ArcTan}[\mathrm{Cot}[e]]]\sqrt{1+\mathrm{Cot}[e]^2}}{d\sqrt{1+\mathrm{Cot}[e]^2}-c\,\mathrm{Csc}[e]}}\right.$$

$$\left.\sqrt{\frac{d\sqrt{1+\mathrm{Cot}[e]^2}-d\,\mathrm{Cos}[f\,x-\mathrm{ArcTan}[\mathrm{Cot}[e]]]\sqrt{1+\mathrm{Cot}[e]^2}}{d\sqrt{1+\mathrm{Cot}[e]^2}+c\,\mathrm{Csc}[e]}}\,\sqrt{c+d\,\mathrm{Cos}[f\,x-\mathrm{ArcTan}[\mathrm{Cot}[e]]]\sqrt{1+\mathrm{Cot}[e]^2}\,\mathrm{Sin}[e]}\right)-$$

$$\left.\left.\frac{\frac{2\,d\,\mathrm{Sin}[e]\left(c+d\,\mathrm{Cos}[f\,x-\mathrm{ArcTan}[\mathrm{Cot}[e]]]\sqrt{1+\mathrm{Cot}[e]^2}\,\mathrm{Sin}[e]\right)}{d^2\,\mathrm{Cos}[e]^2+d^2\,\mathrm{Sin}[e]^2}-\frac{\mathrm{Cot}[e]\,\mathrm{Sin}[f\,x-\mathrm{ArcTan}[\mathrm{Cot}[e]]]}{\sqrt{1+\mathrm{Cot}[e]^2}}}{\sqrt{c+d\,\mathrm{Cos}[f\,x-\mathrm{ArcTan}[\mathrm{Cot}[e]]]\sqrt{1+\mathrm{Cot}[e]^2}\,\mathrm{Sin}[e]}}\right)\right)\Big/\left(f\left(\mathrm{Cos}\left[\frac{e}{2}+\frac{f\,x}{2}\right]+\mathrm{Sin}\left[\frac{e}{2}+\frac{f\,x}{2}\right]\right)^2\right)+$$

$$\frac{(1+\mathrm{Sin}[e+f\,x])\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}\left(-\frac{2\,\mathrm{Cos}[e]\,\mathrm{Cos}[f\,x]}{3\,f}+\frac{2\,\mathrm{Sin}[e]\,\mathrm{Sin}[f\,x]}{3\,f}+\frac{2\,(c+3\,d)\,\mathrm{Tan}[e]}{3\,d\,f}\right)}{\left(\mathrm{Cos}\left[\frac{e}{2}+\frac{f\,x}{2}\right]+\mathrm{Sin}\left[\frac{e}{2}+\frac{f\,x}{2}\right]\right)^2}+$$

$$\frac{1}{3\,f\left(\mathrm{Cos}\left[\frac{e}{2}+\frac{f\,x}{2}\right]+\mathrm{Sin}\left[\frac{e}{2}+\frac{f\,x}{2}\right]\right)^2\sqrt{1+\mathrm{Tan}[e]^2}}$$

$$2$$

$$\mathrm{AppellF1}\left[\frac{1}{2},\frac{1}{2},\frac{1}{2},\frac{3}{2},-\frac{\mathrm{Sec}[e]\left(c+d\,\mathrm{Cos}[e]\,\mathrm{Sin}[f\,x+\mathrm{ArcTan}[\mathrm{Tan}[e]]]\sqrt{1+\mathrm{Tan}[e]^2}\right)}{d\sqrt{1+\mathrm{Tan}[e]^2}\left(1-\frac{c\,\mathrm{Sec}[e]}{d\sqrt{1+\mathrm{Tan}[e]^2}}\right)},\right.$$

$$\left.-\frac{\mathrm{Sec}[e]\left(c+d\,\mathrm{Cos}[e]\,\mathrm{Sin}[f\,x+\mathrm{ArcTan}[\mathrm{Tan}[e]]]\sqrt{1+\mathrm{Tan}[e]^2}\right)}{d\sqrt{1+\mathrm{Tan}[e]^2}\left(-1-\frac{c\,\mathrm{Sec}[e]}{d\sqrt{1+\mathrm{Tan}[e]^2}}\right)}\right]\mathrm{Sec}[e]$$

$$\mathrm{Sec}[f\,x+\mathrm{ArcTan}[\mathrm{Tan}[e]]]\,(1+\mathrm{Sin}[e+f\,x])\sqrt{\frac{d\sqrt{1+\mathrm{Tan}[e]^2}-d\,\mathrm{Sin}[f\,x+\mathrm{ArcTan}[\mathrm{Tan}[e]]]\sqrt{1+\mathrm{Tan}[e]^2}}{c\,\mathrm{Sec}[e]+d\sqrt{1+\mathrm{Tan}[e]^2}}}$$

$$\sqrt{\frac{d\sqrt{1+\mathrm{Tan}[e]^2}+d\,\mathrm{Sin}[f\,x+\mathrm{ArcTan}[\mathrm{Tan}[e]]]\sqrt{1+\mathrm{Tan}[e]^2}}{-c\,\mathrm{Sec}[e]+d\sqrt{1+\mathrm{Tan}[e]^2}}}$$

$$\sqrt{c+d\,\mathrm{Cos}[e]\,\mathrm{Sin}[f\,x+\mathrm{ArcTan}[\mathrm{Tan}[e]]]\sqrt{1+\mathrm{Tan}[e]^2}}+$$

$$\frac{1}{d\,f\left(\mathrm{Cos}\left[\frac{e}{2}+\frac{f\,x}{2}\right]+\mathrm{Sin}\left[\frac{e}{2}+\frac{f\,x}{2}\right]\right)^2\sqrt{1+\mathrm{Tan}[e]^2}}$$

$$2\,c\,\text{AppellF1}\Big[\frac{1}{2},\frac{1}{2},\frac{1}{2},\frac{3}{2},-\frac{\text{Sec}[e]\left(c+d\,\text{Cos}[e]\,\text{Sin}[f\,x+\text{ArcTan}[\text{Tan}[e]]]\sqrt{1+\text{Tan}[e]^2}\right)}{d\sqrt{1+\text{Tan}[e]^2}\left(1-\frac{c\,\text{Sec}[e]}{d\sqrt{1+\text{Tan}[e]^2}}\right)},$$

$$-\frac{\text{Sec}[e]\left(c+d\,\text{Cos}[e]\,\text{Sin}[f\,x+\text{ArcTan}[\text{Tan}[e]]]\sqrt{1+\text{Tan}[e]^2}\right)}{d\sqrt{1+\text{Tan}[e]^2}\left(-1-\frac{c\,\text{Sec}[e]}{d\sqrt{1+\text{Tan}[e]^2}}\right)}\Big]\,\text{Sec}[e]$$

$$\text{Sec}[f\,x+\text{ArcTan}[\text{Tan}[e]]]\,(1+\text{Sin}[e+f\,x])\sqrt{\frac{d\sqrt{1+\text{Tan}[e]^2}-d\,\text{Sin}[f\,x+\text{ArcTan}[\text{Tan}[e]]]\sqrt{1+\text{Tan}[e]^2}}{c\,\text{Sec}[e]+d\sqrt{1+\text{Tan}[e]^2}}}$$

$$\sqrt{\frac{d\sqrt{1+\text{Tan}[e]^2}+d\,\text{Sin}[f\,x+\text{ArcTan}[\text{Tan}[e]]]\sqrt{1+\text{Tan}[e]^2}}{-c\,\text{Sec}[e]+d\sqrt{1+\text{Tan}[e]^2}}}$$

$$\left.\sqrt{c+d\,\text{Cos}[e]\,\text{Sin}[f\,x+\text{ArcTan}[\text{Tan}[e]]]\sqrt{1+\text{Tan}[e]^2}}\right)$$

- **Problem 485: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int\frac{a+a\,\text{Sin}[e+f\,x]}{\sqrt{c+d\,\text{Sin}[e+f\,x]}}\,dx$$

Optimal (type 4, 138 leaves, 5 steps):

$$\frac{2\,a\,\text{EllipticE}\left[\frac{1}{2}\left(e-\frac{\pi}{2}+f\,x\right),\frac{2\,d}{c+d}\right]\sqrt{c+d\,\text{Sin}[e+f\,x]}}{d\,f\sqrt{\frac{c+d\,\text{Sin}[e+f\,x]}{c+d}}}-\frac{2\,a\,(c-d)\,\text{EllipticF}\left[\frac{1}{2}\left(e-\frac{\pi}{2}+f\,x\right),\frac{2\,d}{c+d}\right]\sqrt{\frac{c+d\,\text{Sin}[e+f\,x]}{c+d}}}{d\,f\sqrt{c+d\,\text{Sin}[e+f\,x]}}$$

Result (type 6, 880 leaves):

$$a\left(\left(\text{Sec}[e]\,(1+\text{Sin}[e+f\,x])\left(-\left(\text{AppellF1}\Big[-\frac{1}{2},-\frac{1}{2},-\frac{1}{2},\frac{1}{2},-\frac{\text{Csc}[e]\left(c+d\,\text{Cos}[f\,x-\text{ArcTan}[\text{Cot}[e]]]\sqrt{1+\text{Cot}[e]^2}\,\text{Sin}[e]\right)}{d\sqrt{1+\text{Cot}[e]^2}\left(1-\frac{c\,\text{Csc}[e]}{d\sqrt{1+\text{Cot}[e]^2}}\right)},\right.\right.\right.\right.$$

$$-\frac{\mathrm{Csc}[e]\,\left(c+d\,\mathrm{Cos}[f\,x-\mathrm{ArcTan}[\mathrm{Cot}[e]]]\,\sqrt{1+\mathrm{Cot}[e]^2}\,\mathrm{Sin}[e]\right)}{d\,\sqrt{1+\mathrm{Cot}[e]^2}\,\left(-1-\frac{c\,\mathrm{Csc}[e]}{d\,\sqrt{1+\mathrm{Cot}[e]^2}}\right)}\Big]\,\mathrm{Cot}[e]\,\mathrm{Sin}[f\,x-\mathrm{ArcTan}[\mathrm{Cot}[e]]]\Bigg)\Big/$$

$$\left(\sqrt{1+\mathrm{Cot}[e]^2}\,\sqrt{\frac{d\,\sqrt{1+\mathrm{Cot}[e]^2}+d\,\mathrm{Cos}[f\,x-\mathrm{ArcTan}[\mathrm{Cot}[e]]]\,\sqrt{1+\mathrm{Cot}[e]^2}}{d\,\sqrt{1+\mathrm{Cot}[e]^2}-c\,\mathrm{Csc}[e]}}\right.$$

$$\left.\sqrt{\frac{d\,\sqrt{1+\mathrm{Cot}[e]^2}-d\,\mathrm{Cos}[f\,x-\mathrm{ArcTan}[\mathrm{Cot}[e]]]\,\sqrt{1+\mathrm{Cot}[e]^2}}{d\,\sqrt{1+\mathrm{Cot}[e]^2}+c\,\mathrm{Csc}[e]}}\,\sqrt{c+d\,\mathrm{Cos}[f\,x-\mathrm{ArcTan}[\mathrm{Cot}[e]]]\,\sqrt{1+\mathrm{Cot}[e]^2}\,\mathrm{Sin}[e]}\right)-$$

$$\frac{\frac{2\,d\,\mathrm{Sin}[e]\,\left(c+d\,\mathrm{Cos}[f\,x-\mathrm{ArcTan}[\mathrm{Cot}[e]]]\,\sqrt{1+\mathrm{Cot}[e]^2}\,\mathrm{Sin}[e]\right)}{d^2\,\mathrm{Cos}[e]^2+d^2\,\mathrm{Sin}[e]^2}-\frac{\mathrm{Cot}[e]\,\mathrm{Sin}[f\,x-\mathrm{ArcTan}[\mathrm{Cot}[e]]]}{\sqrt{1+\mathrm{Cot}[e]^2}}}{\sqrt{c+d\,\mathrm{Cos}[f\,x-\mathrm{ArcTan}[\mathrm{Cot}[e]]]\,\sqrt{1+\mathrm{Cot}[e]^2}\,\mathrm{Sin}[e]}}\Bigg)\Bigg)\Big/$$

$$\left(f\left(\mathrm{Cos}\left[\frac{e}{2}+\frac{f\,x}{2}\right]+\mathrm{Sin}\left[\frac{e}{2}+\frac{f\,x}{2}\right]\right)^2\right)+\frac{2\,(1+\mathrm{Sin}[e+f\,x])\,\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}\,\mathrm{Tan}[e]}{d\,f\,\left(\mathrm{Cos}\left[\frac{e}{2}+\frac{f\,x}{2}\right]+\mathrm{Sin}\left[\frac{e}{2}+\frac{f\,x}{2}\right]\right)^2}+$$

$$\frac{1}{d\,f\,\left(\mathrm{Cos}\left[\frac{e}{2}+\frac{f\,x}{2}\right]+\mathrm{Sin}\left[\frac{e}{2}+\frac{f\,x}{2}\right]\right)^2\,\sqrt{1+\mathrm{Tan}[e]^2}}$$

$$2\,\mathrm{AppellF1}\left[\frac{1}{2},\frac{1}{2},\frac{1}{2},\frac{3}{2},-\frac{\mathrm{Sec}[e]\,\left(c+d\,\mathrm{Cos}[e]\,\mathrm{Sin}[f\,x+\mathrm{ArcTan}[\mathrm{Tan}[e]]]\,\sqrt{1+\mathrm{Tan}[e]^2}\right)}{d\,\sqrt{1+\mathrm{Tan}[e]^2}\,\left(1-\frac{c\,\mathrm{Sec}[e]}{d\,\sqrt{1+\mathrm{Tan}[e]^2}}\right)},\right.$$

$$\left.-\frac{\mathrm{Sec}[e]\,\left(c+d\,\mathrm{Cos}[e]\,\mathrm{Sin}[f\,x+\mathrm{ArcTan}[\mathrm{Tan}[e]]]\,\sqrt{1+\mathrm{Tan}[e]^2}\right)}{d\,\sqrt{1+\mathrm{Tan}[e]^2}\,\left(-1-\frac{c\,\mathrm{Sec}[e]}{d\,\sqrt{1+\mathrm{Tan}[e]^2}}\right)}\right]\,\mathrm{Sec}[e]$$

$$\mathrm{Sec}[f\,x+\mathrm{ArcTan}[\mathrm{Tan}[e]]]\,(1+\mathrm{Sin}[e+f\,x])\,\sqrt{\frac{d\,\sqrt{1+\mathrm{Tan}[e]^2}-d\,\mathrm{Sin}[f\,x+\mathrm{ArcTan}[\mathrm{Tan}[e]]]\,\sqrt{1+\mathrm{Tan}[e]^2}}{c\,\mathrm{Sec}[e]+d\,\sqrt{1+\mathrm{Tan}[e]^2}}}$$

$$\sqrt{\frac{d\sqrt{1+\text{Tan}[e]^2}+d\,\text{Sin}[f\,x+\text{ArcTan}[\text{Tan}[e]]]\sqrt{1+\text{Tan}[e]^2}}{-c\,\text{Sec}[e]+d\sqrt{1+\text{Tan}[e]^2}}}$$

$$\left.\sqrt{c+d\,\text{Cos}[e]\,\text{Sin}[f\,x+\text{ArcTan}[\text{Tan}[e]]]\sqrt{1+\text{Tan}[e]^2}}\right)$$

- **Problem 486: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int\frac{a+a\,\text{Sin}[e+f\,x]}{(c+d\,\text{Sin}[e+f\,x])^{3/2}}\,dx$$

Optimal (type 4, 169 leaves, 6 steps):

$$-\frac{2\,a\,\text{Cos}[e+f\,x]}{(c+d)\,f\sqrt{c+d\,\text{Sin}[e+f\,x]}}-\frac{2\,a\,\text{EllipticE}\left[\frac{1}{2}\left(e-\frac{\pi}{2}+f\,x\right),\frac{2\,d}{c+d}\right]\sqrt{c+d\,\text{Sin}[e+f\,x]}}{d\,(c+d)\,f\sqrt{\frac{c+d\,\text{Sin}[e+f\,x]}{c+d}}}+\frac{2\,a\,\text{EllipticF}\left[\frac{1}{2}\left(e-\frac{\pi}{2}+f\,x\right),\frac{2\,d}{c+d}\right]\sqrt{\frac{c+d\,\text{Sin}[e+f\,x]}{c+d}}}{d\,f\sqrt{c+d\,\text{Sin}[e+f\,x]}}$$

Result (type 6, 938 leaves):

$$a\left(\frac{(1+\text{Sin}[e+f\,x])\sqrt{c+d\,\text{Sin}[e+f\,x]}\left(-\frac{2\,\text{Csc}[e]\,\text{Sec}[e]}{d\,(c+d)\,f}+\frac{2\,\text{Csc}[e]\,(c\,\text{Cos}[e]+d\,\text{Sin}[f\,x])}{d\,(c+d)\,f\,(c+d\,\text{Sin}[e+f\,x])}\right)}{\left(\text{Cos}\left[\frac{e}{2}+\frac{f\,x}{2}\right]+\text{Sin}\left[\frac{e}{2}+\frac{f\,x}{2}\right]\right)^2}-\right.$$

$$\left(\text{Sec}[e]\,(1+\text{Sin}[e+f\,x])\left(-\left(\text{AppellF1}\left[-\frac{1}{2},-\frac{1}{2},-\frac{1}{2},\frac{1}{2},-\frac{\text{Csc}[e]\left(c+d\,\text{Cos}[f\,x-\text{ArcTan}[\text{Cot}[e]]]\sqrt{1+\text{Cot}[e]^2}\,\text{Sin}[e]\right)}{d\sqrt{1+\text{Cot}[e]^2}\left(1-\frac{c\,\text{Csc}[e]}{d\sqrt{1+\text{Cot}[e]^2}}\right)},\right.\right.\right.\right.$$

$$\left.\left.-\frac{\text{Csc}[e]\left(c+d\,\text{Cos}[f\,x-\text{ArcTan}[\text{Cot}[e]]]\sqrt{1+\text{Cot}[e]^2}\,\text{Sin}[e]\right)}{d\sqrt{1+\text{Cot}[e]^2}\left(-1-\frac{c\,\text{Csc}[e]}{d\sqrt{1+\text{Cot}[e]^2}}\right)}\right]\text{Cot}[e]\,\text{Sin}[f\,x-\text{ArcTan}[\text{Cot}[e]]]\right)\Big/$$

$$\left(\sqrt{1+\mathrm{Cot}[e]^2}\,\sqrt{\frac{d\sqrt{1+\mathrm{Cot}[e]^2}+d\,\mathrm{Cos}[f\,x-\mathrm{ArcTan}[\mathrm{Cot}[e]]]\,\sqrt{1+\mathrm{Cot}[e]^2}}{d\sqrt{1+\mathrm{Cot}[e]^2}-c\,\mathrm{Csc}[e]}}\right.$$

$$\left.\sqrt{\frac{d\sqrt{1+\mathrm{Cot}[e]^2}-d\,\mathrm{Cos}[f\,x-\mathrm{ArcTan}[\mathrm{Cot}[e]]]\,\sqrt{1+\mathrm{Cot}[e]^2}}{d\sqrt{1+\mathrm{Cot}[e]^2}+c\,\mathrm{Csc}[e]}}\,\sqrt{c+d\,\mathrm{Cos}[f\,x-\mathrm{ArcTan}[\mathrm{Cot}[e]]]\,\sqrt{1+\mathrm{Cot}[e]^2}\,\mathrm{Sin}[e]}\right)-$$

$$\left.\left.\frac{\frac{2\,d\,\mathrm{Sin}[e]\left(c+d\,\mathrm{Cos}[f\,x-\mathrm{ArcTan}[\mathrm{Cot}[e]]]\,\sqrt{1+\mathrm{Cot}[e]^2}\,\mathrm{Sin}[e]\right)}{d^2\,\mathrm{Cos}[e]^2+d^2\,\mathrm{Sin}[e]^2}-\frac{\mathrm{Cot}[e]\,\mathrm{Sin}[f\,x-\mathrm{ArcTan}[\mathrm{Cot}[e]]]}{\sqrt{1+\mathrm{Cot}[e]^2}}}{\sqrt{c+d\,\mathrm{Cos}[f\,x-\mathrm{ArcTan}[\mathrm{Cot}[e]]]\,\sqrt{1+\mathrm{Cot}[e]^2}\,\mathrm{Sin}[e]}}\right)\right)\Big/$$

$$\left((c+d)\,f\left(\mathrm{Cos}\left[\frac{e}{2}+\frac{f\,x}{2}\right]+\mathrm{Sin}\left[\frac{e}{2}+\frac{f\,x}{2}\right]\right)^2\right)+\frac{1}{d\,(c+d)\,f\left(\mathrm{Cos}\left[\frac{e}{2}+\frac{f\,x}{2}\right]+\mathrm{Sin}\left[\frac{e}{2}+\frac{f\,x}{2}\right]\right)^2\sqrt{1+\mathrm{Tan}[e]^2}}$$

$$2\,\mathrm{AppellF1}\left[\frac{1}{2},\frac{1}{2},\frac{1}{2},\frac{3}{2},-\frac{\mathrm{Sec}[e]\left(c+d\,\mathrm{Cos}[e]\,\mathrm{Sin}[f\,x+\mathrm{ArcTan}[\mathrm{Tan}[e]]]\,\sqrt{1+\mathrm{Tan}[e]^2}\right)}{d\sqrt{1+\mathrm{Tan}[e]^2}\left(1-\frac{c\,\mathrm{Sec}[e]}{d\sqrt{1+\mathrm{Tan}[e]^2}}\right)},\right.$$

$$\left.-\frac{\mathrm{Sec}[e]\left(c+d\,\mathrm{Cos}[e]\,\mathrm{Sin}[f\,x+\mathrm{ArcTan}[\mathrm{Tan}[e]]]\,\sqrt{1+\mathrm{Tan}[e]^2}\right)}{d\sqrt{1+\mathrm{Tan}[e]^2}\left(-1-\frac{c\,\mathrm{Sec}[e]}{d\sqrt{1+\mathrm{Tan}[e]^2}}\right)}\right]\mathrm{Sec}[e]$$

$$\mathrm{Sec}[f\,x+\mathrm{ArcTan}[\mathrm{Tan}[e]]]\,(1+\mathrm{Sin}[e+f\,x])\,\sqrt{\frac{d\sqrt{1+\mathrm{Tan}[e]^2}-d\,\mathrm{Sin}[f\,x+\mathrm{ArcTan}[\mathrm{Tan}[e]]]\,\sqrt{1+\mathrm{Tan}[e]^2}}{c\,\mathrm{Sec}[e]+d\sqrt{1+\mathrm{Tan}[e]^2}}}$$

$$\sqrt{\frac{d\sqrt{1+\mathrm{Tan}[e]^2}+d\,\mathrm{Sin}[f\,x+\mathrm{ArcTan}[\mathrm{Tan}[e]]]\,\sqrt{1+\mathrm{Tan}[e]^2}}{-c\,\mathrm{Sec}[e]+d\sqrt{1+\mathrm{Tan}[e]^2}}}$$

$$\left.\sqrt{c+d\,\text{Cos}[e]\,\text{Sin}[f\,x+\text{ArcTan}[\text{Tan}[e]]]\,\sqrt{1+\text{Tan}[e]^2}}\right)$$

- **Problem 487: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int \frac{a+a\,\text{Sin}[e+f\,x]}{(c+d\,\text{Sin}[e+f\,x])^{5/2}}\,dx$$

Optimal (type 4, 237 leaves, 7 steps):

$$-\frac{2\,a\,\text{Cos}[e+f\,x]}{3\,(c+d)\,f\,(c+d\,\text{Sin}[e+f\,x])^{3/2}}-\frac{2\,a\,(c-3\,d)\,\text{Cos}[e+f\,x]}{3\,(c-d)\,(c+d)^2\,f\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}-$$

$$\frac{2\,a\,(c-3\,d)\,\text{EllipticE}\left[\frac{1}{2}\left(e-\frac{\pi}{2}+f\,x\right),\frac{2\,d}{c+d}\right]\sqrt{c+d\,\text{Sin}[e+f\,x]}}{3\,(c-d)\,d\,(c+d)^2\,f\,\sqrt{\frac{c+d\,\text{Sin}[e+f\,x]}{c+d}}}+\frac{2\,a\,\text{EllipticF}\left[\frac{1}{2}\left(e-\frac{\pi}{2}+f\,x\right),\frac{2\,d}{c+d}\right]\sqrt{\frac{c+d\,\text{Sin}[e+f\,x]}{c+d}}}{3\,d\,(c+d)\,f\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}$$

Result (type 6, 1870 leaves):

$$a\left(\left((1+\text{Sin}[e+f\,x])\,\sqrt{c+d\,\text{Sin}[e+f\,x]}\,\left(-\frac{2\,(c-3\,d)\,\text{Csc}[e]\,\text{Sec}[e]}{3\,(c-d)\,d\,(c+d)^2\,f}+\frac{2\,\text{Csc}[e]\,(c\,\text{Cos}[e]+d\,\text{Sin}[f\,x])}{3\,d\,(c+d)\,f\,(c+d\,\text{Sin}[e+f\,x])^2}-\right.\right.\right.$$

$$\left.\left.\frac{2\,\text{Csc}[e]\,(3\,c\,\text{Cos}[e]-d\,\text{Cos}[e]-c\,\text{Sin}[f\,x]+3\,d\,\text{Sin}[f\,x])}{3\,(c-d)\,(c+d)^2\,f\,(c+d\,\text{Sin}[e+f\,x])}\right)\right)\Big/\left(\text{Cos}\left[\frac{e}{2}+\frac{f\,x}{2}\right]+\text{Sin}\left[\frac{e}{2}+\frac{f\,x}{2}\right]\right)^2-$$

$$\left(c\,\text{Sec}[e]\,(1+\text{Sin}[e+f\,x])\left(-\left(\text{AppellF1}\left[-\frac{1}{2},-\frac{1}{2},-\frac{1}{2},\frac{1}{2},-\frac{\text{Csc}[e]\left(c+d\,\text{Cos}[f\,x-\text{ArcTan}[\text{Cot}[e]]]\,\sqrt{1+\text{Cot}[e]^2}\,\text{Sin}[e]\right)}{d\,\sqrt{1+\text{Cot}[e]^2}\left(1-\frac{c\,\text{Csc}[e]}{d\,\sqrt{1+\text{Cot}[e]^2}}\right)},\right.\right.\right.\right.$$

$$\left.\left.-\frac{\text{Csc}[e]\left(c+d\,\text{Cos}[f\,x-\text{ArcTan}[\text{Cot}[e]]]\,\sqrt{1+\text{Cot}[e]^2}\,\text{Sin}[e]\right)}{d\,\sqrt{1+\text{Cot}[e]^2}\left(-1-\frac{c\,\text{Csc}[e]}{d\,\sqrt{1+\text{Cot}[e]^2}}\right)}\right]\text{Cot}[e]\,\text{Sin}[f\,x-\text{ArcTan}[\text{Cot}[e]]]\right)\Big/$$

$$\left(\sqrt{1+\text{Cot}[e]^2}\,\sqrt{\frac{d\sqrt{1+\text{Cot}[e]^2}+d\,\text{Cos}[f\,x-\text{ArcTan}[\text{Cot}[e]]]\,\sqrt{1+\text{Cot}[e]^2}}{d\sqrt{1+\text{Cot}[e]^2}-c\,\text{Csc}[e]}}\right.$$

$$\left.\sqrt{\frac{d\sqrt{1+\text{Cot}[e]^2}-d\,\text{Cos}[f\,x-\text{ArcTan}[\text{Cot}[e]]]\,\sqrt{1+\text{Cot}[e]^2}}{d\sqrt{1+\text{Cot}[e]^2}+c\,\text{Csc}[e]}}\,\sqrt{c+d\,\text{Cos}[f\,x-\text{ArcTan}[\text{Cot}[e]]]\,\sqrt{1+\text{Cot}[e]^2}\,\text{Sin}[e]}\right)-$$

$$\left.\left.\frac{\frac{2\,d\,\text{Sin}[e]\left(c+d\,\text{Cos}[f\,x-\text{ArcTan}[\text{Cot}[e]]]\,\sqrt{1+\text{Cot}[e]^2}\,\text{Sin}[e]\right)}{d^2\,\text{Cos}[e]^2+d^2\,\text{Sin}[e]^2}-\frac{\text{Cot}[e]\,\text{Sin}[f\,x-\text{ArcTan}[\text{Cot}[e]]]}{\sqrt{1+\text{Cot}[e]^2}}}{\sqrt{c+d\,\text{Cos}[f\,x-\text{ArcTan}[\text{Cot}[e]]]\,\sqrt{1+\text{Cot}[e]^2}\,\text{Sin}[e]}}\right)\right)\Big/\left(3\,(c-d)\,(c+d)^2\,f\left(\text{Cos}\left[\frac{e}{2}+\frac{f\,x}{2}\right]+\text{Sin}\left[\frac{e}{2}+\frac{f\,x}{2}\right]\right)^2\right)+$$

$$\left(d\,\text{Sec}[e]\,(1+\text{Sin}[e+f\,x])\right)\left(-\left(\text{AppellF1}\left[-\frac{1}{2},-\frac{1}{2},-\frac{1}{2},\frac{1}{2},-\frac{\text{Csc}[e]\left(c+d\,\text{Cos}[f\,x-\text{ArcTan}[\text{Cot}[e]]]\,\sqrt{1+\text{Cot}[e]^2}\,\text{Sin}[e]\right)}{d\sqrt{1+\text{Cot}[e]^2}\left(1-\frac{c\,\text{Csc}[e]}{d\sqrt{1+\text{Cot}[e]^2}}\right)},\right.\right.\right.$$

$$\left.\left.\left.-\frac{\text{Csc}[e]\left(c+d\,\text{Cos}[f\,x-\text{ArcTan}[\text{Cot}[e]]]\,\sqrt{1+\text{Cot}[e]^2}\,\text{Sin}[e]\right)}{d\sqrt{1+\text{Cot}[e]^2}\left(-1-\frac{c\,\text{Csc}[e]}{d\sqrt{1+\text{Cot}[e]^2}}\right)}\right]\text{Cot}[e]\,\text{Sin}[f\,x-\text{ArcTan}[\text{Cot}[e]]]\right)\Big/\right.$$

$$\left(\sqrt{1+\text{Cot}[e]^2}\,\sqrt{\frac{d\sqrt{1+\text{Cot}[e]^2}+d\,\text{Cos}[f\,x-\text{ArcTan}[\text{Cot}[e]]]\,\sqrt{1+\text{Cot}[e]^2}}{d\sqrt{1+\text{Cot}[e]^2}-c\,\text{Csc}[e]}}\right.$$

$$\left.\sqrt{\frac{d\sqrt{1+\text{Cot}[e]^2}-d\,\text{Cos}[f\,x-\text{ArcTan}[\text{Cot}[e]]]\,\sqrt{1+\text{Cot}[e]^2}}{d\sqrt{1+\text{Cot}[e]^2}+c\,\text{Csc}[e]}}\,\sqrt{c+d\,\text{Cos}[f\,x-\text{ArcTan}[\text{Cot}[e]]]\,\sqrt{1+\text{Cot}[e]^2}\,\text{Sin}[e]}\right)-$$

$$\left.\left.\frac{\frac{2\,d\,\text{Sin}[e]\left(c+d\,\text{Cos}[f\,x-\text{ArcTan}[\text{Cot}[e]]]\,\sqrt{1+\text{Cot}[e]^2}\,\text{Sin}[e]\right)}{d^2\,\text{Cos}[e]^2+d^2\,\text{Sin}[e]^2}-\frac{\text{Cot}[e]\,\text{Sin}[f\,x-\text{ArcTan}[\text{Cot}[e]]]}{\sqrt{1+\text{Cot}[e]^2}}}{\sqrt{c+d\,\text{Cos}[f\,x-\text{ArcTan}[\text{Cot}[e]]]\,\sqrt{1+\text{Cot}[e]^2}\,\text{Sin}[e]}}\right)\right)\Big/$$

$$\left((c-d)\,(c+d)^2 f\left(\mathrm{Cos}\left[\frac{e}{2}+\frac{f x}{2}\right]+\mathrm{Sin}\left[\frac{e}{2}+\frac{f x}{2}\right]\right)^2\right)-\frac{1}{3\,(c-d)\,(c+d)^2 f\left(\mathrm{Cos}\left[\frac{e}{2}+\frac{f x}{2}\right]+\mathrm{Sin}\left[\frac{e}{2}+\frac{f x}{2}\right]\right)^2\sqrt{1+\mathrm{Tan}[e]^2}}$$

$$2$$

$$\mathrm{AppellF1}\left[\frac{1}{2},\frac{1}{2},\frac{1}{2},\frac{3}{2},-\frac{\mathrm{Sec}[e]\left(c+d\,\mathrm{Cos}[e]\,\mathrm{Sin}[f x+\mathrm{ArcTan}[\mathrm{Tan}[e]]]\sqrt{1+\mathrm{Tan}[e]^2}\right)}{d\sqrt{1+\mathrm{Tan}[e]^2}\left(1-\frac{c\,\mathrm{Sec}[e]}{d\sqrt{1+\mathrm{Tan}[e]^2}}\right)},\right.$$

$$\left.-\frac{\mathrm{Sec}[e]\left(c+d\,\mathrm{Cos}[e]\,\mathrm{Sin}[f x+\mathrm{ArcTan}[\mathrm{Tan}[e]]]\sqrt{1+\mathrm{Tan}[e]^2}\right)}{d\sqrt{1+\mathrm{Tan}[e]^2}\left(-1-\frac{c\,\mathrm{Sec}[e]}{d\sqrt{1+\mathrm{Tan}[e]^2}}\right)}\right]$$

$$\mathrm{Sec}[e]\,\mathrm{Sec}[f x+\mathrm{ArcTan}[\mathrm{Tan}[e]]]\,(1+\mathrm{Sin}[e+f x])$$

$$\sqrt{\frac{d\sqrt{1+\mathrm{Tan}[e]^2}-d\,\mathrm{Sin}[f x+\mathrm{ArcTan}[\mathrm{Tan}[e]]]\sqrt{1+\mathrm{Tan}[e]^2}}{c\,\mathrm{Sec}[e]+d\sqrt{1+\mathrm{Tan}[e]^2}}}$$

$$\sqrt{\frac{d\sqrt{1+\mathrm{Tan}[e]^2}+d\,\mathrm{Sin}[f x+\mathrm{ArcTan}[\mathrm{Tan}[e]]]\sqrt{1+\mathrm{Tan}[e]^2}}{-c\,\mathrm{Sec}[e]+d\sqrt{1+\mathrm{Tan}[e]^2}}}$$

$$\sqrt{c+d\,\mathrm{Cos}[e]\,\mathrm{Sin}[f x+\mathrm{ArcTan}[\mathrm{Tan}[e]]]\sqrt{1+\mathrm{Tan}[e]^2}}\;+$$

$$\frac{1}{(c-d)\,d\,(c+d)^2 f\left(\mathrm{Cos}\left[\frac{e}{2}+\frac{f x}{2}\right]+\mathrm{Sin}\left[\frac{e}{2}+\frac{f x}{2}\right]\right)^2\sqrt{1+\mathrm{Tan}[e]^2}}$$

$$2\,c\,\mathrm{AppellF1}\left[\frac{1}{2},\frac{1}{2},\frac{1}{2},\frac{3}{2},-\frac{\mathrm{Sec}[e]\left(c+d\,\mathrm{Cos}[e]\,\mathrm{Sin}[f x+\mathrm{ArcTan}[\mathrm{Tan}[e]]]\sqrt{1+\mathrm{Tan}[e]^2}\right)}{d\sqrt{1+\mathrm{Tan}[e]^2}\left(1-\frac{c\,\mathrm{Sec}[e]}{d\sqrt{1+\mathrm{Tan}[e]^2}}\right)},\right.$$

$$\left.-\frac{\mathrm{Sec}[e]\left(c+d\,\mathrm{Cos}[e]\,\mathrm{Sin}[f x+\mathrm{ArcTan}[\mathrm{Tan}[e]]]\sqrt{1+\mathrm{Tan}[e]^2}\right)}{d\sqrt{1+\mathrm{Tan}[e]^2}\left(-1-\frac{c\,\mathrm{Sec}[e]}{d\sqrt{1+\mathrm{Tan}[e]^2}}\right)}\right]\mathrm{Sec}[e]$$

$$\text{Sec}[f x+\text{ArcTan}[\text{Tan}[e]]]\,(1+\text{Sin}[e+f x])\sqrt{\frac{d\sqrt{1+\text{Tan}[e]^2}-d\,\text{Sin}[f x+\text{ArcTan}[\text{Tan}[e]]]\sqrt{1+\text{Tan}[e]^2}}{c\,\text{Sec}[e]+d\sqrt{1+\text{Tan}[e]^2}}}$$

$$\sqrt{\frac{d\sqrt{1+\text{Tan}[e]^2}+d\,\text{Sin}[f x+\text{ArcTan}[\text{Tan}[e]]]\sqrt{1+\text{Tan}[e]^2}}{-c\,\text{Sec}[e]+d\sqrt{1+\text{Tan}[e]^2}}}$$

$$\left.\sqrt{c+d\,\text{Cos}[e]\,\text{Sin}[f x+\text{ArcTan}[\text{Tan}[e]]]\sqrt{1+\text{Tan}[e]^2}}\right)$$

- **Problem 488: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int\frac{a+a\,\text{Sin}[e+f x]}{(c+d\,\text{Sin}[e+f x])^{7/2}}\,dx$$

Optimal (type 4, 318 leaves, 8 steps):

$$-\frac{2 a\,\text{Cos}[e+f x]}{5 (c+d) f (c+d\,\text{Sin}[e+f x])^{5/2}}-\frac{2 a (3 c-5 d)\,\text{Cos}[e+f x]}{15 (c-d) (c+d)^2 f (c+d\,\text{Sin}[e+f x])^{3/2}}-\frac{2 a\left(3 c^2-20 c d+9 d^2\right)\text{Cos}[e+f x]}{15 (c-d)^2 (c+d)^3 f\sqrt{c+d\,\text{Sin}[e+f x]}}-$$

$$\frac{2 a\left(3 c^2-20 c d+9 d^2\right)\text{EllipticE}\left[\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right),\frac{2 d}{c+d}\right]\sqrt{c+d\,\text{Sin}[e+f x]}}{15 (c-d)^2 d (c+d)^3 f\sqrt{\frac{c+d\,\text{Sin}[e+f x]}{c+d}}}+\frac{2 a (3 c-5 d)\,\text{EllipticF}\left[\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right),\frac{2 d}{c+d}\right]\sqrt{\frac{c+d\,\text{Sin}[e+f x]}{c+d}}}{15 (c-d) d (c+d)^2 f\sqrt{c+d\,\text{Sin}[e+f x]}}$$

Result (type 6, 2815 leaves):

$$a\left(\left((1+\text{Sin}[e+f x])\sqrt{c+d\,\text{Sin}[e+f x]}\left(-\frac{2\left(3 c^2-20 c d+9 d^2\right)\text{Csc}[e]\,\text{Sec}[e]}{15 (c-d)^2 d (c+d)^3 f}+\right.\right.\right.$$

$$\frac{2\,\text{Csc}[e]\,(c\,\text{Cos}[e]+d\,\text{Sin}[f x])}{5 d (c+d) f (c+d\,\text{Sin}[e+f x])^3}-\frac{2\,\text{Csc}[e]\,(5 c\,\text{Cos}[e]-3 d\,\text{Cos}[e]-3 c\,\text{Sin}[f x]+5 d\,\text{Sin}[f x])}{15 (c-d) (c+d)^2 f (c+d\,\text{Sin}[e+f x])^2}-$$

$$\left(2\,\text{Csc}[e]\left(15 c^2\,\text{Cos}[e]-12 c d\,\text{Cos}[e]+5 d^2\,\text{Cos}[e]-3 c^2\,\text{Sin}[f x]+20 c d\,\text{Sin}[f x]-9 d^2\,\text{Sin}[f x]\right)\right)\Big/$$

$$\left.\left.\left(15 (c-d)^2 (c+d)^3 f (c+d\,\text{Sin}[e+f x])\right)\right)\right)\Big/\left(\text{Cos}\left[\frac{e}{2}+\frac{f x}{2}\right]+\text{Sin}\left[\frac{e}{2}+\frac{f x}{2}\right]\right)^2-$$

$$\left(c^2 \operatorname{Sec}[e]\,(1+\operatorname{Sin}[e+f x])\left(-\left(\operatorname{AppellF1}\left[-\frac{1}{2},-\frac{1}{2},-\frac{1}{2},\frac{1}{2},-\frac{\operatorname{Csc}[e]\left(c+d \operatorname{Cos}[f x-\operatorname{ArcTan}[\operatorname{Cot}[e]]]\sqrt{1+\operatorname{Cot}[e]^2}\,\operatorname{Sin}[e]\right)}{d\sqrt{1+\operatorname{Cot}[e]^2}\left(1-\frac{c \operatorname{Csc}[e]}{d\sqrt{1+\operatorname{Cot}[e]^2}}\right)},\right.\right.\right.\right.$$

$$\left.-\frac{\operatorname{Csc}[e]\left(c+d \operatorname{Cos}[f x-\operatorname{ArcTan}[\operatorname{Cot}[e]]]\sqrt{1+\operatorname{Cot}[e]^2}\,\operatorname{Sin}[e]\right)}{d\sqrt{1+\operatorname{Cot}[e]^2}\left(-1-\frac{c \operatorname{Csc}[e]}{d\sqrt{1+\operatorname{Cot}[e]^2}}\right)}\right] \operatorname{Cot}[e] \operatorname{Sin}[f x-\operatorname{ArcTan}[\operatorname{Cot}[e]]]\Bigg)\Bigg/$$

$$\left(\sqrt{1+\operatorname{Cot}[e]^2}\sqrt{\frac{d\sqrt{1+\operatorname{Cot}[e]^2}+d \operatorname{Cos}[f x-\operatorname{ArcTan}[\operatorname{Cot}[e]]]\sqrt{1+\operatorname{Cot}[e]^2}}{d\sqrt{1+\operatorname{Cot}[e]^2}-c \operatorname{Csc}[e]}}\right.$$

$$\left.\sqrt{\frac{d\sqrt{1+\operatorname{Cot}[e]^2}-d \operatorname{Cos}[f x-\operatorname{ArcTan}[\operatorname{Cot}[e]]]\sqrt{1+\operatorname{Cot}[e]^2}}{d\sqrt{1+\operatorname{Cot}[e]^2}+c \operatorname{Csc}[e]}}\sqrt{c+d \operatorname{Cos}[f x-\operatorname{ArcTan}[\operatorname{Cot}[e]]]\sqrt{1+\operatorname{Cot}[e]^2}\,\operatorname{Sin}[e]}\right)-$$

$$\left.\left.\frac{\frac{2 d \operatorname{Sin}[e]\left(c+d \operatorname{Cos}[f x-\operatorname{ArcTan}[\operatorname{Cot}[e]]]\sqrt{1+\operatorname{Cot}[e]^2}\,\operatorname{Sin}[e]\right)}{d^2 \operatorname{Cos}[e]^2+d^2 \operatorname{Sin}[e]^2}-\frac{\operatorname{Cot}[e] \operatorname{Sin}[f x-\operatorname{ArcTan}[\operatorname{Cot}[e]]]}{\sqrt{1+\operatorname{Cot}[e]^2}}}{\sqrt{c+d \operatorname{Cos}[f x-\operatorname{ArcTan}[\operatorname{Cot}[e]]]\sqrt{1+\operatorname{Cot}[e]^2}\,\operatorname{Sin}[e]}}\right)\right)\Bigg/\left(5\,(c-d)^2\,(c+d)^3 f\left(\operatorname{Cos}\left[\frac{e}{2}+\frac{f x}{2}\right]+\operatorname{Sin}\left[\frac{e}{2}+\frac{f x}{2}\right]\right)^2\right)+$$

$$\left(4 c d \operatorname{Sec}[e]\,(1+\operatorname{Sin}[e+f x])\left(-\left(\operatorname{AppellF1}\left[-\frac{1}{2},-\frac{1}{2},-\frac{1}{2},\frac{1}{2},-\frac{\operatorname{Csc}[e]\left(c+d \operatorname{Cos}[f x-\operatorname{ArcTan}[\operatorname{Cot}[e]]]\sqrt{1+\operatorname{Cot}[e]^2}\,\operatorname{Sin}[e]\right)}{d\sqrt{1+\operatorname{Cot}[e]^2}\left(1-\frac{c \operatorname{Csc}[e]}{d\sqrt{1+\operatorname{Cot}[e]^2}}\right)},\right.\right.\right.\right.$$

$$\left.-\frac{\operatorname{Csc}[e]\left(c+d \operatorname{Cos}[f x-\operatorname{ArcTan}[\operatorname{Cot}[e]]]\sqrt{1+\operatorname{Cot}[e]^2}\,\operatorname{Sin}[e]\right)}{d\sqrt{1+\operatorname{Cot}[e]^2}\left(-1-\frac{c \operatorname{Csc}[e]}{d\sqrt{1+\operatorname{Cot}[e]^2}}\right)}\right] \operatorname{Cot}[e] \operatorname{Sin}[f x-\operatorname{ArcTan}[\operatorname{Cot}[e]]]\Bigg)\Bigg/$$

$$\left(\sqrt{1+\operatorname{Cot}[e]^2}\sqrt{\frac{d\sqrt{1+\operatorname{Cot}[e]^2}+d \operatorname{Cos}[f x-\operatorname{ArcTan}[\operatorname{Cot}[e]]]\sqrt{1+\operatorname{Cot}[e]^2}}{d\sqrt{1+\operatorname{Cot}[e]^2}-c \operatorname{Csc}[e]}}\right.$$

$$\sqrt{\frac{d\sqrt{1+\text{Cot}[e]^2}-d\,\text{Cos}[f\,x-\text{ArcTan}[\text{Cot}[e]]]\sqrt{1+\text{Cot}[e]^2}}{d\sqrt{1+\text{Cot}[e]^2}+c\,\text{Csc}[e]}}\,\sqrt{c+d\,\text{Cos}[f\,x-\text{ArcTan}[\text{Cot}[e]]]\sqrt{1+\text{Cot}[e]^2}\,\text{Sin}[e]}\Bigg)-$$

$$\left(\frac{\frac{2\,d\,\text{Sin}[e]\left(c+d\,\text{Cos}[f\,x-\text{ArcTan}[\text{Cot}[e]]]\sqrt{1+\text{Cot}[e]^2}\,\text{Sin}[e]\right)}{d^2\,\text{Cos}[e]^2+d^2\,\text{Sin}[e]^2}-\frac{\text{Cot}[e]\,\text{Sin}[f\,x-\text{ArcTan}[\text{Cot}[e]]]}{\sqrt{1+\text{Cot}[e]^2}}}{\sqrt{c+d\,\text{Cos}[f\,x-\text{ArcTan}[\text{Cot}[e]]]\sqrt{1+\text{Cot}[e]^2}\,\text{Sin}[e]}}\right)\Bigg)\Bigg/\left(3\,(c-d)^2\,(c+d)^3\,f\left(\text{Cos}\left[\frac{e}{2}+\frac{f\,x}{2}\right]+\text{Sin}\left[\frac{e}{2}+\frac{f\,x}{2}\right]\right)^2\right)-$$

$$\Bigg(3\,d^2\,\text{Sec}[e]\,(1+\text{Sin}[e+f\,x])\Bigg)\Bigg(-\Bigg(\text{AppellF1}\Bigg[-\frac{1}{2},-\frac{1}{2},-\frac{1}{2},\frac{1}{2},-\frac{\text{Csc}[e]\left(c+d\,\text{Cos}[f\,x-\text{ArcTan}[\text{Cot}[e]]]\sqrt{1+\text{Cot}[e]^2}\,\text{Sin}[e]\right)}{d\sqrt{1+\text{Cot}[e]^2}\left(1-\frac{c\,\text{Csc}[e]}{d\sqrt{1+\text{Cot}[e]^2}}\right)},$$

$$-\frac{\text{Csc}[e]\left(c+d\,\text{Cos}[f\,x-\text{ArcTan}[\text{Cot}[e]]]\sqrt{1+\text{Cot}[e]^2}\,\text{Sin}[e]\right)}{d\sqrt{1+\text{Cot}[e]^2}\left(-1-\frac{c\,\text{Csc}[e]}{d\sqrt{1+\text{Cot}[e]^2}}\right)}\Bigg]\,\text{Cot}[e]\,\text{Sin}[f\,x-\text{ArcTan}[\text{Cot}[e]]]\Bigg)\Bigg/$$

$$\left(\sqrt{1+\text{Cot}[e]^2}\,\sqrt{\frac{d\sqrt{1+\text{Cot}[e]^2}+d\,\text{Cos}[f\,x-\text{ArcTan}[\text{Cot}[e]]]\sqrt{1+\text{Cot}[e]^2}}{d\sqrt{1+\text{Cot}[e]^2}-c\,\text{Csc}[e]}}\right.$$

$$\sqrt{\frac{d\sqrt{1+\text{Cot}[e]^2}-d\,\text{Cos}[f\,x-\text{ArcTan}[\text{Cot}[e]]]\sqrt{1+\text{Cot}[e]^2}}{d\sqrt{1+\text{Cot}[e]^2}+c\,\text{Csc}[e]}}\,\sqrt{c+d\,\text{Cos}[f\,x-\text{ArcTan}[\text{Cot}[e]]]\sqrt{1+\text{Cot}[e]^2}\,\text{Sin}[e]}\Bigg)-$$

$$\left(\frac{\frac{2\,d\,\text{Sin}[e]\left(c+d\,\text{Cos}[f\,x-\text{ArcTan}[\text{Cot}[e]]]\sqrt{1+\text{Cot}[e]^2}\,\text{Sin}[e]\right)}{d^2\,\text{Cos}[e]^2+d^2\,\text{Sin}[e]^2}-\frac{\text{Cot}[e]\,\text{Sin}[f\,x-\text{ArcTan}[\text{Cot}[e]]]}{\sqrt{1+\text{Cot}[e]^2}}}{\sqrt{c+d\,\text{Cos}[f\,x-\text{ArcTan}[\text{Cot}[e]]]\sqrt{1+\text{Cot}[e]^2}\,\text{Sin}[e]}}\right)\Bigg)\Bigg/$$

$$\left(5\,(c-d)^2\,(c+d)^3\,f\left(\text{Cos}\left[\frac{e}{2}+\frac{f\,x}{2}\right]+\text{Sin}\left[\frac{e}{2}+\frac{f\,x}{2}\right]\right)^2\right)-\frac{1}{5\,(c-d)^2\,(c+d)^3\,f\left(\text{Cos}\left[\frac{e}{2}+\frac{f\,x}{2}\right]+\text{Sin}\left[\frac{e}{2}+\frac{f\,x}{2}\right]\right)^2\sqrt{1+\text{Tan}[e]^2}}$$

8

$$c$$

$$\text{AppellF1}\Big[\frac{1}{2},\frac{1}{2},\frac{1}{2},\frac{3}{2},-\frac{\text{Sec}[e]\left(c+d\,\text{Cos}[e]\,\text{Sin}[f\,x+\text{ArcTan}[\text{Tan}[e]]]\sqrt{1+\text{Tan}[e]^2}\right)}{d\sqrt{1+\text{Tan}[e]^2}\left(1-\frac{c\,\text{Sec}[e]}{d\sqrt{1+\text{Tan}[e]^2}}\right)},$$

$$-\frac{\text{Sec}[e]\left(c+d\,\text{Cos}[e]\,\text{Sin}[f\,x+\text{ArcTan}[\text{Tan}[e]]]\sqrt{1+\text{Tan}[e]^2}\right)}{d\sqrt{1+\text{Tan}[e]^2}\left(-1-\frac{c\,\text{Sec}[e]}{d\sqrt{1+\text{Tan}[e]^2}}\right)}\Big]$$

$$\text{Sec}[e]\,\text{Sec}[f\,x+\text{ArcTan}[\text{Tan}[e]]]\,(1+\text{Sin}[e+f\,x])$$

$$\sqrt{\frac{d\sqrt{1+\text{Tan}[e]^2}-d\,\text{Sin}[f\,x+\text{ArcTan}[\text{Tan}[e]]]\sqrt{1+\text{Tan}[e]^2}}{c\,\text{Sec}[e]+d\sqrt{1+\text{Tan}[e]^2}}}$$

$$\sqrt{\frac{d\sqrt{1+\text{Tan}[e]^2}+d\,\text{Sin}[f\,x+\text{ArcTan}[\text{Tan}[e]]]\sqrt{1+\text{Tan}[e]^2}}{-c\,\text{Sec}[e]+d\sqrt{1+\text{Tan}[e]^2}}}$$

$$\sqrt{c+d\,\text{Cos}[e]\,\text{Sin}[f\,x+\text{ArcTan}[\text{Tan}[e]]]\sqrt{1+\text{Tan}[e]^2}}\;+$$

$$\frac{1}{(c-d)^2\,d\,(c+d)^3\,f\left(\text{Cos}\left[\frac{e}{2}+\frac{f\,x}{2}\right]+\text{Sin}\left[\frac{e}{2}+\frac{f\,x}{2}\right]\right)^2\sqrt{1+\text{Tan}[e]^2}}$$

$$2\,c^2\,\text{AppellF1}\Big[\frac{1}{2},\frac{1}{2},\frac{1}{2},\frac{3}{2},-\frac{\text{Sec}[e]\left(c+d\,\text{Cos}[e]\,\text{Sin}[f\,x+\text{ArcTan}[\text{Tan}[e]]]\sqrt{1+\text{Tan}[e]^2}\right)}{d\sqrt{1+\text{Tan}[e]^2}\left(1-\frac{c\,\text{Sec}[e]}{d\sqrt{1+\text{Tan}[e]^2}}\right)},$$

$$-\frac{\text{Sec}[e]\left(c+d\,\text{Cos}[e]\,\text{Sin}[f\,x+\text{ArcTan}[\text{Tan}[e]]]\sqrt{1+\text{Tan}[e]^2}\right)}{d\sqrt{1+\text{Tan}[e]^2}\left(-1-\frac{c\,\text{Sec}[e]}{d\sqrt{1+\text{Tan}[e]^2}}\right)}\Big]\,\text{Sec}[e]$$

$$\text{Sec}[f\,x+\text{ArcTan}[\text{Tan}[e]]]\,(1+\text{Sin}[e+f\,x])\sqrt{\frac{d\sqrt{1+\text{Tan}[e]^2}-d\,\text{Sin}[f\,x+\text{ArcTan}[\text{Tan}[e]]]\sqrt{1+\text{Tan}[e]^2}}{c\,\text{Sec}[e]+d\sqrt{1+\text{Tan}[e]^2}}}$$

$$\sqrt{\frac{d\sqrt{1+\text{Tan}[e]^2}+d\,\text{Sin}[f\,x+\text{ArcTan}[\text{Tan}[e]]]\sqrt{1+\text{Tan}[e]^2}}{-c\,\text{Sec}[e]+d\sqrt{1+\text{Tan}[e]^2}}}$$

$$\sqrt{c+d\,\text{Cos}[e]\,\text{Sin}[f\,x+\text{ArcTan}[\text{Tan}[e]]]\sqrt{1+\text{Tan}[e]^2}}\;+$$

$$\frac{1}{3\,(c-d)^2\,(c+d)^3\,f\left(\text{Cos}\left[\frac{e}{2}+\frac{f\,x}{2}\right]+\text{Sin}\left[\frac{e}{2}+\frac{f\,x}{2}\right]\right)^2\sqrt{1+\text{Tan}[e]^2}}$$

$$2\,d\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2},\frac{1}{2},\frac{3}{2},-\frac{\text{Sec}[e]\left(c+d\,\text{Cos}[e]\,\text{Sin}[f\,x+\text{ArcTan}[\text{Tan}[e]]]\sqrt{1+\text{Tan}[e]^2}\right)}{d\sqrt{1+\text{Tan}[e]^2}\left(1-\frac{c\,\text{Sec}[e]}{d\sqrt{1+\text{Tan}[e]^2}}\right)},\right.$$

$$\left.-\frac{\text{Sec}[e]\left(c+d\,\text{Cos}[e]\,\text{Sin}[f\,x+\text{ArcTan}[\text{Tan}[e]]]\sqrt{1+\text{Tan}[e]^2}\right)}{d\sqrt{1+\text{Tan}[e]^2}\left(-1-\frac{c\,\text{Sec}[e]}{d\sqrt{1+\text{Tan}[e]^2}}\right)}\right]\text{Sec}[e]$$

$$\text{Sec}[f\,x+\text{ArcTan}[\text{Tan}[e]]]\,(1+\text{Sin}[e+f\,x])\sqrt{\frac{d\sqrt{1+\text{Tan}[e]^2}-d\,\text{Sin}[f\,x+\text{ArcTan}[\text{Tan}[e]]]\sqrt{1+\text{Tan}[e]^2}}{c\,\text{Sec}[e]+d\sqrt{1+\text{Tan}[e]^2}}}$$

$$\sqrt{\frac{d\sqrt{1+\text{Tan}[e]^2}+d\,\text{Sin}[f\,x+\text{ArcTan}[\text{Tan}[e]]]\sqrt{1+\text{Tan}[e]^2}}{-c\,\text{Sec}[e]+d\sqrt{1+\text{Tan}[e]^2}}}$$

$$\left.\sqrt{c+d\,\text{Cos}[e]\,\text{Sin}[f\,x+\text{ArcTan}[\text{Tan}[e]]]\sqrt{1+\text{Tan}[e]^2}}\right)$$

- **Problem 516: Result more than twice size of optimal antiderivative.**

$$\int\frac{(c+d\,\text{Sin}[e+f\,x])^{5/2}}{(a+a\,\text{Sin}[e+f\,x])^3}\,dx$$

Optimal (type 4, 322 leaves, 8 steps):

$$-\frac{2\,(c-d)\,(c+3\,d)\,\mathrm{Cos}[e+f\,x]\,\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}}{15\,a\,f\,(a+a\,\mathrm{Sin}[e+f\,x])^2}-\frac{\left(4\,c^2+15\,c\,d+27\,d^2\right)\,\mathrm{Cos}[e+f\,x]\,\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}}{30\,f\,\left(a^3+a^3\,\mathrm{Sin}[e+f\,x]\right)}-$$

$$\frac{(c-d)\,\mathrm{Cos}[e+f\,x]\,(c+d\,\mathrm{Sin}[e+f\,x])^{3/2}}{5\,f\,(a+a\,\mathrm{Sin}[e+f\,x])^3}-\frac{\left(4\,c^2+15\,c\,d+27\,d^2\right)\,\mathrm{EllipticE}\left[\frac{1}{2}\,\left(e-\frac{\pi}{2}+f\,x\right),\,\frac{2\,d}{c+d}\right]\,\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}}{30\,a^3\,f\,\sqrt{\frac{c+d\,\mathrm{Sin}[e+f\,x]}{c+d}}}+$$

$$\frac{(c+d)\,\left(4\,c^2+11\,c\,d+15\,d^2\right)\,\mathrm{EllipticF}\left[\frac{1}{2}\,\left(e-\frac{\pi}{2}+f\,x\right),\,\frac{2\,d}{c+d}\right]\,\sqrt{\frac{c+d\,\mathrm{Sin}[e+f\,x]}{c+d}}}{30\,a^3\,f\,\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}}$$

Result (type 4, 662 leaves) :

$$\frac{1}{f\,(a+a\,\mathrm{Sin}[e+f\,x])^3}$$

$$\left(\mathrm{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^6\,\left(-\frac{(c-d)^2}{5\,\left(\mathrm{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^4}-\frac{(c-d)\,(2\,c+9\,d)}{15\,\left(\mathrm{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^2}+\right.$$

$$\frac{2\,\left(2\,c^2\,\mathrm{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]+7\,c\,d\,\mathrm{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]-9\,d^2\,\mathrm{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)}{15\,\left(\mathrm{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^3}+$$

$$\left.\frac{2\,\left(c^2\,\mathrm{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]-2\,c\,d\,\mathrm{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]+d^2\,\mathrm{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)}{5\,\left(\mathrm{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^5}+\frac{4\,c^2\,\mathrm{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]+15\,c\,d\,\mathrm{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]+27\,d^2\,\mathrm{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]}{15\,\left(\mathrm{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)}\right)$$

$$\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}-\frac{1}{60\,f\,(a+a\,\mathrm{Sin}[e+f\,x])^3}d\,\left(\mathrm{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^6$$

$$\left(-\frac{2\,\left(c\,d-15\,d^2\right)\,\mathrm{EllipticF}\left[\frac{1}{2}\,\left(-e+\frac{\pi}{2}-f\,x\right),\,\frac{2\,d}{c+d}\right]\,\sqrt{\frac{c+d\,\mathrm{Sin}[e+f\,x]}{c+d}}}{\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}}+\frac{2\,\left(4\,c^2+15\,c\,d+27\,d^2\right)\,\mathrm{Cos}[e+f\,x]^2\,\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}}{d\,\left(1-\mathrm{Sin}[e+f\,x]^2\right)}-\right.$$

$$\left.1/d\,\left(4\,c^2+15\,c\,d+27\,d^2\right)\,\left(\frac{2\,(c+d)\,\mathrm{EllipticE}\left[\frac{1}{2}\,\left(-e+\frac{\pi}{2}-f\,x\right),\,\frac{2\,d}{c+d}\right]\,\sqrt{\frac{c+d\,\mathrm{Sin}[e+f\,x]}{c+d}}}{\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}}-\frac{2\,c\,\mathrm{EllipticF}\left[\frac{1}{2}\,\left(-e+\frac{\pi}{2}-f\,x\right),\,\frac{2\,d}{c+d}\right]\,\sqrt{\frac{c+d\,\mathrm{Sin}[e+f\,x]}{c+d}}}{\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}}\right)\right)$$

Problem 525: Result more than twice size of optimal antiderivative.

$$\int \sqrt{a + a \operatorname{Sin}[e + f x]}\, dx$$

Optimal (type 3, 26 leaves, 1 step):

$$-\frac{2 a \operatorname{Cos}[e + f x]}{f \sqrt{a + a \operatorname{Sin}[e + f x]}}$$

Result (type 3, 65 leaves):

$$\frac{2 \left(-\operatorname{Cos}\left[\frac{1}{2} (e + f x)\right] + \operatorname{Sin}\left[\frac{1}{2} (e + f x)\right]\right) \sqrt{a (1 + \operatorname{Sin}[e + f x])}}{f \left(\operatorname{Cos}\left[\frac{1}{2} (e + f x)\right] + \operatorname{Sin}\left[\frac{1}{2} (e + f x)\right]\right)}$$

Problem 526: Result is not expressed in closed-form.

$$\int \frac{\sqrt{a + a \operatorname{Sin}[e + f x]}}{c + d \operatorname{Sin}[e + f x]}\, dx$$

Optimal (type 3, 61 leaves, 2 steps):

$$-\frac{2 \sqrt{a}\, \operatorname{ArcTanh}\left[\frac{\sqrt{a} \sqrt{d} \operatorname{Cos}[e+f x]}{\sqrt{c+d} \sqrt{a+a \operatorname{Sin}[e+f x]}}\right]}{\sqrt{d} \sqrt{c + d}\, f}$$

Result (type 7, 657 leaves):

$$\frac{1}{\sqrt{d}\,\sqrt{c+d}\,f\,\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)}\left(\frac{1}{8}+\frac{i}{8}\right)\left(\text{RootSum}\left[-d+2\,i\,c\,e^{i\,e}\,\#1^2+d\,e^{2\,i\,e}\,\#1^4\,\&,\right.\right.$$

$$\frac{1}{d-i\,c\,e^{i\,e}\,\#1^2}\left((1+i)\,d\,\sqrt{e^{-i\,e}}\,f\,x-(2-2\,i)\,d\,\sqrt{e^{-i\,e}}\,\text{Log}\left[e^{\frac{i\,f\,x}{2}}-\#1\right]-i\,\sqrt{d}\,\sqrt{c+d}\,f\,x\,\#1+2\,\sqrt{d}\,\sqrt{c+d}\,\text{Log}\left[e^{\frac{i\,f\,x}{2}}-\#1\right]\#1+\right.$$

$$\left.\frac{(1-i)\,c\,f\,x\,\#1^2}{\sqrt{e^{-i\,e}}}+\frac{(2+2\,i)\,c\,\text{Log}\left[e^{\frac{i\,f\,x}{2}}-\#1\right]\#1^2}{\sqrt{e^{-i\,e}}}-\sqrt{d}\,\sqrt{c+d}\,e^{i\,e}\,f\,x\,\#1^3-2\,i\,\sqrt{d}\,\sqrt{c+d}\,e^{i\,e}\,\text{Log}\left[e^{\frac{i\,f\,x}{2}}-\#1\right]\#1^3\right)\&\Big]-$$

$$i\,\text{RootSum}\left[-d+2\,i\,c\,e^{i\,e}\,\#1^2+d\,e^{2\,i\,e}\,\#1^4\,\&,\,\frac{1}{d-i\,c\,e^{i\,e}\,\#1^2}\left((1-i)\,d\,\sqrt{e^{-i\,e}}\,f\,x+(2+2\,i)\,d\,\sqrt{e^{-i\,e}}\,\text{Log}\left[e^{\frac{i\,f\,x}{2}}-\#1\right]+\right.\right.$$

$$\sqrt{d}\,\sqrt{c+d}\,f\,x\,\#1+2\,i\,\sqrt{d}\,\sqrt{c+d}\,\text{Log}\left[e^{\frac{i\,f\,x}{2}}-\#1\right]\#1-\frac{(1+i)\,c\,f\,x\,\#1^2}{\sqrt{e^{-i\,e}}}+\frac{(2-2\,i)\,c\,\text{Log}\left[e^{\frac{i\,f\,x}{2}}-\#1\right]\#1^2}{\sqrt{e^{-i\,e}}}-$$

$$\left.\left.\left.i\,\sqrt{d}\,\sqrt{c+d}\,e^{i\,e}\,f\,x\,\#1^3+2\,\sqrt{d}\,\sqrt{c+d}\,e^{i\,e}\,\text{Log}\left[e^{\frac{i\,f\,x}{2}}-\#1\right]\#1^3\right)\&\right]\right)\left(\text{Cos}\left[\frac{e}{2}\right]+i\,\text{Sin}\left[\frac{e}{2}\right]\right)\sqrt{a\,(1+\text{Sin}[e+f\,x])}$$

- **Problem 527: Result is not expressed in closed-form.**

$$\int\frac{\sqrt{a+a\,\text{Sin}[e+f\,x]}}{(c+d\,\text{Sin}[e+f\,x])^2}\,dx$$

Optimal (type 3, 105 leaves, 3 steps):

$$-\frac{\sqrt{a}\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\sqrt{d}\,\text{Cos}[e+f\,x]}{\sqrt{c+d}\,\sqrt{a+a\,\text{Sin}[e+f\,x]}}\right]}{\sqrt{d}\,(c+d)^{3/2}\,f}-\frac{a\,\text{Cos}[e+f\,x]}{(c+d)\,f\,\sqrt{a+a\,\text{Sin}[e+f\,x]}\,(c+d\,\text{Sin}[e+f\,x])}$$

Result (type 7, 871 leaves):

$$\frac{1}{\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]}\left(\frac{1}{4}+\frac{i}{4}\right)\sqrt{a(1+\text{Sin}[e+f x])}\left(\left(\left(\text{Cos}\left[\frac{e}{2}\right]+i\,\text{Sin}\left[\frac{e}{2}\right]\right)\left((-1+i)\,x\,\text{Cos}[e]+1/(4f)\,\text{RootSum}\left[-d+2 i c e^{i e}\#1^2+d e^{2 i e}\#1^4\&,\right.\right.\right.\right.$$

$$1/\left(d-i c e^{i e}\#1^2\right)\left((1+i)\,d\sqrt{e^{-i e}}\,f x-(2-2 i)\,d\sqrt{e^{-i e}}\,\text{Log}\left[e^{\frac{i f x}{2}}-\#1\right]-i\sqrt{d}\sqrt{c+d}\,f x\,\#1+2\sqrt{d}\sqrt{c+d}\,\text{Log}\left[e^{\frac{i f x}{2}}-\#1\right]\#1+\right.$$

$$\left.\left.\frac{(1-i)\,c f x\,\#1^2}{\sqrt{e^{-i e}}}+\frac{(2+2 i)\,c\,\text{Log}\left[e^{\frac{i f x}{2}}-\#1\right]\#1^2}{\sqrt{e^{-i e}}}-\sqrt{d}\sqrt{c+d}\,e^{i e} f x\,\#1^3-2 i\sqrt{d}\sqrt{c+d}\,e^{i e}\,\text{Log}\left[e^{\frac{i f x}{2}}-\#1\right]\#1^3\right)\&\right]$$

$$\left.\left.(\text{Cos}[e]+i(-1+\text{Sin}[e]))\sqrt{\text{Cos}[e]-i\,\text{Sin}[e]}+(1+i)\,x\,\text{Sin}[e]\right)\right)\Big/$$

$$\left(\sqrt{d}\,(c+d)^{3/2}(\text{Cos}[e]+i(-1+\text{Sin}[e]))\sqrt{\text{Cos}[e]-i\,\text{Sin}[e]}\right)+\left(\left(\text{Cos}\left[\frac{e}{2}\right]+i\,\text{Sin}\left[\frac{e}{2}\right]\right)\right.$$

$$\left((1-i)\,x\,\text{Cos}[e]-(1+i)\,x\,\text{Sin}[e]+1/(4f)\,\text{RootSum}\left[-d+2 i c e^{i e}\#1^2+d e^{2 i e}\#1^4\&,1/\left(d-i c e^{i e}\#1^2\right)\left((1-i)\,d\sqrt{e^{-i e}}\,f x+(2+2 i)\,d\right.\right.\right.$$

$$\sqrt{e^{-i e}}\,\text{Log}\left[e^{\frac{i f x}{2}}-\#1\right]+\sqrt{d}\sqrt{c+d}\,f x\,\#1+2 i\sqrt{d}\sqrt{c+d}\,\text{Log}\left[e^{\frac{i f x}{2}}-\#1\right]\#1-\frac{(1+i)\,c f x\,\#1^2}{\sqrt{e^{-i e}}}+\frac{(2-2 i)\,c\,\text{Log}\left[e^{\frac{i f x}{2}}-\#1\right]\#1^2}{\sqrt{e^{-i e}}}-$$

$$\left.\left.\left.\left.i\sqrt{d}\sqrt{c+d}\,e^{i e} f x\,\#1^3+2\sqrt{d}\sqrt{c+d}\,e^{i e}\,\text{Log}\left[e^{\frac{i f x}{2}}-\#1\right]\#1^3\right)\&\right]\sqrt{\text{Cos}[e]-i\,\text{Sin}[e]}\,(-1-i\,\text{Cos}[e]+\text{Sin}[e])\right)\right)\Big/$$

$$\left.\left(\sqrt{d}\,(c+d)^{3/2}(\text{Cos}[e]+i(-1+\text{Sin}[e]))\sqrt{\text{Cos}[e]-i\,\text{Sin}[e]}\right)-\frac{(2-2 i)\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)}{(c+d)\,f\,(c+d\,\text{Sin}[e+f x])}\right)$$

- **Problem 528: Result is not expressed in closed-form.**

$$\int\frac{\sqrt{a+a\,\text{Sin}[e+f x]}}{(c+d\,\text{Sin}[e+f x])^3}\,dx$$

Optimal (type 3, 154 leaves, 4 steps) :

$$-\frac{3\sqrt{a}\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\sqrt{d}\,\text{Cos}[e+f x]}{\sqrt{c+d}\,\sqrt{a+a\,\text{Sin}[e+f x]}}\right]}{4\sqrt{d}\,(c+d)^{5/2} f}-\frac{a\,\text{Cos}[e+f x]}{2\,(c+d)\,f\sqrt{a+a\,\text{Sin}[e+f x]}\,(c+d\,\text{Sin}[e+f x])^2}-\frac{3\,a\,\text{Cos}[e+f x]}{4\,(c+d)^2 f\sqrt{a+a\,\text{Sin}[e+f x]}\,(c+d\,\text{Sin}[e+f x])}$$

Result (type 7, 920 leaves) :

$$\frac{1}{\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]}$$

$$\left(\frac{1}{16}+\frac{i}{16}\right)\sqrt{a\,(1+\text{Sin}[e+f x])}\,\left(\left(3\left(\text{Cos}\left[\frac{e}{2}\right]+i\,\text{Sin}\left[\frac{e}{2}\right]\right)\left((-1+i)\,x\,\text{Cos}[e]+1/(4 f)\,\text{RootSum}\left[-d+2\,i\,c\,e^{i e}\,\#1^2+d\,e^{2 i e}\,\#1^4\,\&,\right.\right.\right.\right.$$

$$1\Big/\left(d-i\,c\,e^{i e}\,\#1^2\right)\left((1+i)\,d\sqrt{e^{-i e}}\,f x-(2-2 i)\,d\sqrt{e^{-i e}}\,\text{Log}\left[e^{\frac{i f x}{2}}-\#1\right]-i\sqrt{d}\,\sqrt{c+d}\,f x\,\#1+2\sqrt{d}\,\sqrt{c+d}\,\text{Log}\left[e^{\frac{i f x}{2}}-\#1\right]\#1+\right.$$

$$\left.\left.\frac{(1-i)\,c\,f x\,\#1^2}{\sqrt{e^{-i e}}}+\frac{(2+2 i)\,c\,\text{Log}\left[e^{\frac{i f x}{2}}-\#1\right]\#1^2}{\sqrt{e^{-i e}}}-\sqrt{d}\,\sqrt{c+d}\,e^{i e} f x\,\#1^3-2\,i\sqrt{d}\,\sqrt{c+d}\,e^{i e}\,\text{Log}\left[e^{\frac{i f x}{2}}-\#1\right]\#1^3\right)\&\right]\,(\text{Cos}[e]+$$

$$\left.\left.i\,(-1+\text{Sin}[e]))\sqrt{\text{Cos}[e]-i\,\text{Sin}[e]}+(1+i)\,x\,\text{Sin}[e]\right)\right)\Big/\left(\sqrt{d}\,(c+d)^{5/2}\,(\text{Cos}[e]+i\,(-1+\text{Sin}[e]))\sqrt{\text{Cos}[e]-i\,\text{Sin}[e]}\right)+$$

$$\left(3\left(\text{Cos}\left[\frac{e}{2}\right]+i\,\text{Sin}\left[\frac{e}{2}\right]\right)\left((1-i)\,x\,\text{Cos}[e]-(1+i)\,x\,\text{Sin}[e]+1/(4 f)\,\text{RootSum}\left[-d+2\,i\,c\,e^{i e}\,\#1^2+d\,e^{2 i e}\,\#1^4\,\&,\right.\right.\right.$$

$$1\Big/\left(d-i\,c\,e^{i e}\,\#1^2\right)\left((1-i)\,d\sqrt{e^{-i e}}\,f x+(2+2 i)\,d\sqrt{e^{-i e}}\,\text{Log}\left[e^{\frac{i f x}{2}}-\#1\right]+\sqrt{d}\,\sqrt{c+d}\,f x\,\#1+2\,i\sqrt{d}\,\sqrt{c+d}\,\text{Log}\left[e^{\frac{i f x}{2}}-\#1\right]\#1-\right.$$

$$\left.\left.\frac{(1+i)\,c\,f x\,\#1^2}{\sqrt{e^{-i e}}}+\frac{(2-2 i)\,c\,\text{Log}\left[e^{\frac{i f x}{2}}-\#1\right]\#1^2}{\sqrt{e^{-i e}}}-i\sqrt{d}\,\sqrt{c+d}\,e^{i e} f x\,\#1^3+2\sqrt{d}\,\sqrt{c+d}\,e^{i e}\,\text{Log}\left[e^{\frac{i f x}{2}}-\#1\right]\#1^3\right)\&\right]$$

$$\left.\left.\sqrt{\text{Cos}[e]-i\,\text{Sin}[e]}\,(-1-i\,\text{Cos}[e]+\text{Sin}[e])\right)\right)\Big/\left(\sqrt{d}\,(c+d)^{5/2}\,(\text{Cos}[e]+i\,(-1+\text{Sin}[e]))\sqrt{\text{Cos}[e]-i\,\text{Sin}[e]}\right)-$$

$$\left.\frac{(4-4 i)\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)}{(c+d)\,f\,(c+d\,\text{Sin}[e+f x])^2}-\frac{(6-6 i)\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)}{(c+d)^2 f\,(c+d\,\text{Sin}[e+f x])}\right)$$

Problem 533: Result more than twice size of optimal antiderivative.

$$\int \frac{(a+a\,\text{Sin}[e+f\,x])^{3/2}}{c+d\,\text{Sin}[e+f\,x]}\,dx$$

Optimal (type 3, 98 leaves, 4 steps):

$$\frac{2\,a^{3/2}\,(c-d)\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\sqrt{d}\,\text{Cos}[e+f\,x]}{\sqrt{c+d}\,\sqrt{a+a\,\text{Sin}[e+f\,x]}}\right]}{d^{3/2}\,\sqrt{c+d}\,f}-\frac{2\,a^2\,\text{Cos}[e+f\,x]}{d\,f\,\sqrt{a+a\,\text{Sin}[e+f\,x]}}$$

Result (type 3, 233 leaves):

$$\frac{1}{d^{3/2}\,\sqrt{c+d}\,f\,\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^3}\left(-2\,\sqrt{d}\,\sqrt{c+d}\,\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+(c-d)\,\left(\text{Log}\left[-\text{Sec}\left[\frac{1}{4}\,(e+f\,x)\right]^2\,\left(c+d+\sqrt{d}\,\sqrt{c+d}\,\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]-\sqrt{d}\,\sqrt{c+d}\,\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)\right]-\text{Log}\left[(c+d)\,\text{Sec}\left[\frac{1}{4}\,(e+f\,x)\right]^2+\sqrt{d}\,\sqrt{c+d}\,\left(-1+2\,\text{Tan}\left[\frac{1}{4}\,(e+f\,x)\right]+\text{Tan}\left[\frac{1}{4}\,(e+f\,x)\right]^2\right)\right]\right)+2\,\sqrt{d}\,\sqrt{c+d}\,\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)\,(a\,(1+\text{Sin}[e+f\,x]))^{3/2}$$

Problem 534: Result more than twice size of optimal antiderivative.

$$\int \frac{(a+a\,\text{Sin}[e+f\,x])^{3/2}}{(c+d\,\text{Sin}[e+f\,x])^2}\,dx$$

Optimal (type 3, 119 leaves, 4 steps):

$$-\frac{a^{3/2}\,(c+3\,d)\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\sqrt{d}\,\text{Cos}[e+f\,x]}{\sqrt{c+d}\,\sqrt{a+a\,\text{Sin}[e+f\,x]}}\right]}{d^{3/2}\,(c+d)^{3/2}\,f}+\frac{a^2\,(c-d)\,\text{Cos}[e+f\,x]}{d\,(c+d)\,f\,\sqrt{a+a\,\text{Sin}[e+f\,x]}\,(c+d\,\text{Sin}[e+f\,x])}$$

Result (type 3, 268 leaves):

$$-\left(\left((a\,(1+\text{Sin}[e+f\,x]))^{3/2}\,\left(-2\,(c-d)\,\sqrt{d}\,\sqrt{c+d}\,\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+2\,(c-d)\,\sqrt{d}\,\sqrt{c+d}\,\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]+(c+3\,d)\,\left(\text{Log}\left[-\text{Sec}\left[\frac{1}{4}\,(e+f\,x)\right]^2\,\left(c+d+\sqrt{d}\,\sqrt{c+d}\,\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]-\sqrt{d}\,\sqrt{c+d}\,\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)\right]-\text{Log}\left[(c+d)\,\text{Sec}\left[\frac{1}{4}\,(e+f\,x)\right]^2+\sqrt{d}\,\sqrt{c+d}\,\left(-1+2\,\text{Tan}\left[\frac{1}{4}\,(e+f\,x)\right]+\text{Tan}\left[\frac{1}{4}\,(e+f\,x)\right]^2\right)\right]\right)\,(c+d\,\text{Sin}[e+f\,x])\right)\right)\Big/\left(2\,d^{3/2}\,(c+d)^{3/2}\,f\,\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^3\,(c+d\,\text{Sin}[e+f\,x])\right)\right)$$

Problem 536: Result more than twice size of optimal antiderivative.

$$\int (a + a \sin[e + f x])^{5/2} (c + d \sin[e + f x])^3 \, dx$$

Optimal (type 3, 328 leaves, 6 steps):

$$-\frac{4 a^3 (c+d) \left(15 c^2+10 c d+7 d^2\right) \left(3 c^2-38 c d+355 d^2\right) \cos[e+f x]}{3465 d^2 f \sqrt{a+a \sin[e+f x]}}-\frac{8 a^2 (5 c-d) (c+d) \left(3 c^2-38 c d+355 d^2\right) \cos[e+f x] \sqrt{a+a \sin[e+f x]}}{3465 d f}-\frac{4 a (c+d) \left(3 c^2-38 c d+355 d^2\right) \cos[e+f x] (a+a \sin[e+f x])^{3/2}}{1155 f}-\frac{2 a^3 \left(3 c^2-38 c d+355 d^2\right) \cos[e+f x] (c+d \sin[e+f x])^3}{693 d^2 f \sqrt{a+a \sin[e+f x]}}+\frac{2 a^3 (3 c-23 d) \cos[e+f x] (c+d \sin[e+f x])^4}{99 d^2 f \sqrt{a+a \sin[e+f x]}}-\frac{2 a^2 \cos[e+f x] \sqrt{a+a \sin[e+f x]} (c+d \sin[e+f x])^4}{11 d f}$$

Result (type 3, 845 leaves):

$$-\frac{\left(40 c^3+90 c^2 d+78 c d^2+23 d^3\right) \cos\left[\frac{1}{2} (e+f x)\right] (a (1+\sin[e+f x]))^{5/2}}{8 f \left(\cos\left[\frac{1}{2} (e+f x)\right]+\sin\left[\frac{1}{2} (e+f x)\right]\right)^5}-\frac{\left(20 c^3+66 c^2 d+60 c d^2+19 d^3\right) \cos\left[\frac{3}{2} (e+f x)\right] (a (1+\sin[e+f x]))^{5/2}}{24 f \left(\cos\left[\frac{1}{2} (e+f x)\right]+\sin\left[\frac{1}{2} (e+f x)\right]\right)^5}+\frac{\left(8 c^3+60 c^2 d+72 c d^2+25 d^3\right) \cos\left[\frac{5}{2} (e+f x)\right] (a (1+\sin[e+f x]))^{5/2}}{80 f \left(\cos\left[\frac{1}{2} (e+f x)\right]+\sin\left[\frac{1}{2} (e+f x)\right]\right)^5}+\frac{d \left(12 c^2+30 c d+13 d^2\right) \cos\left[\frac{7}{2} (e+f x)\right] (a (1+\sin[e+f x]))^{5/2}}{112 f \left(\cos\left[\frac{1}{2} (e+f x)\right]+\sin\left[\frac{1}{2} (e+f x)\right]\right)^5}-\frac{d^2 (6 c+5 d) \cos\left[\frac{9}{2} (e+f x)\right] (a (1+\sin[e+f x]))^{5/2}}{144 f \left(\cos\left[\frac{1}{2} (e+f x)\right]+\sin\left[\frac{1}{2} (e+f x)\right]\right)^5}-\frac{d^3 \cos\left[\frac{11}{2} (e+f x)\right] (a (1+\sin[e+f x]))^{5/2}}{176 f \left(\cos\left[\frac{1}{2} (e+f x)\right]+\sin\left[\frac{1}{2} (e+f x)\right]\right)^5}+\frac{\left(40 c^3+90 c^2 d+78 c d^2+23 d^3\right) \sin\left[\frac{1}{2} (e+f x)\right] (a (1+\sin[e+f x]))^{5/2}}{8 f \left(\cos\left[\frac{1}{2} (e+f x)\right]+\sin\left[\frac{1}{2} (e+f x)\right]\right)^5}-\frac{\left(20 c^3+66 c^2 d+60 c d^2+19 d^3\right) (a (1+\sin[e+f x]))^{5/2} \sin\left[\frac{3}{2} (e+f x)\right]}{24 f \left(\cos\left[\frac{1}{2} (e+f x)\right]+\sin\left[\frac{1}{2} (e+f x)\right]\right)^5}-\frac{\left(8 c^3+60 c^2 d+72 c d^2+25 d^3\right) (a (1+\sin[e+f x]))^{5/2} \sin\left[\frac{5}{2} (e+f x)\right]}{80 f \left(\cos\left[\frac{1}{2} (e+f x)\right]+\sin\left[\frac{1}{2} (e+f x)\right]\right)^5}+\frac{d \left(12 c^2+30 c d+13 d^2\right) (a (1+\sin[e+f x]))^{5/2} \sin\left[\frac{7}{2} (e+f x)\right]}{112 f \left(\cos\left[\frac{1}{2} (e+f x)\right]+\sin\left[\frac{1}{2} (e+f x)\right]\right)^5}+\frac{d^2 (6 c+5 d) (a (1+\sin[e+f x]))^{5/2} \sin\left[\frac{9}{2} (e+f x)\right]}{144 f \left(\cos\left[\frac{1}{2} (e+f x)\right]+\sin\left[\frac{1}{2} (e+f x)\right]\right)^5}-\frac{d^3 (a (1+\sin[e+f x]))^{5/2} \sin\left[\frac{11}{2} (e+f x)\right]}{176 f \left(\cos\left[\frac{1}{2} (e+f x)\right]+\sin\left[\frac{1}{2} (e+f x)\right]\right)^5}$$

Problem 540: Result more than twice size of optimal antiderivative.

$$\int \frac{(a+a\,\text{Sin}[e+f\,x])^{5/2}}{c+d\,\text{Sin}[e+f\,x]}\,dx$$

Optimal (type 3, 142 leaves, 4 steps):

$$-\frac{2\,a^{5/2}\,(c-d)^2\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\sqrt{d}\,\text{Cos}[e+f\,x]}{\sqrt{c+d}\,\sqrt{a+a\,\text{Sin}[e+f\,x]}}\right]}{d^{5/2}\,\sqrt{c+d}\,f}+\frac{2\,a^3\,(3\,c-7\,d)\,\text{Cos}[e+f\,x]}{3\,d^2\,f\,\sqrt{a+a\,\text{Sin}[e+f\,x]}}-\frac{2\,a^2\,\text{Cos}[e+f\,x]\,\sqrt{a+a\,\text{Sin}[e+f\,x]}}{3\,d\,f}$$

Result (type 3, 330 leaves):

$$\frac{1}{6\,d^{5/2}\,f\,\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^5}$$
$$(a\,(1+\text{Sin}[e+f\,x]))^{5/2}\left(6\,(2\,c-5\,d)\,\sqrt{d}\,\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]-2\,d^{3/2}\,\text{Cos}\left[\frac{3}{2}\,(e+f\,x)\right]-\frac{1}{\sqrt{c+d}}3\,(c-d)^2\right.$$
$$\left(e+f\,x-2\,\text{Log}\left[\text{Sec}\left[\frac{1}{4}\,(e+f\,x)\right]^2\right]+2\,\text{Log}\left[-\text{Sec}\left[\frac{1}{4}\,(e+f\,x)\right]^2\,\left(c+d+\sqrt{d}\,\sqrt{c+d}\,\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]-\sqrt{d}\,\sqrt{c+d}\,\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)\right]\right)+\frac{1}{\sqrt{c+d}}$$
$$3\,(c-d)^2\,\left(e+f\,x-2\,\text{Log}\left[\text{Sec}\left[\frac{1}{4}\,(e+f\,x)\right]^2\right]+2\,\text{Log}\left[(c+d)\,\text{Sec}\left[\frac{1}{4}\,(e+f\,x)\right]^2+\sqrt{d}\,\sqrt{c+d}\,\left(-1+2\,\text{Tan}\left[\frac{1}{4}\,(e+f\,x)\right]+\text{Tan}\left[\frac{1}{4}\,(e+f\,x)\right]^2\right)\right]\right)+$$
$$\left.6\,\sqrt{d}\,(-2\,c+5\,d)\,\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]-2\,d^{3/2}\,\text{Sin}\left[\frac{3}{2}\,(e+f\,x)\right]\right)$$

Problem 541: Result more than twice size of optimal antiderivative.

$$\int \frac{(a+a\,\text{Sin}[e+f\,x])^{5/2}}{(c+d\,\text{Sin}[e+f\,x])^2}\,dx$$

Optimal (type 3, 166 leaves, 4 steps):

$$\frac{a^{5/2}\,(c-d)\,(3\,c+5\,d)\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\sqrt{d}\,\text{Cos}[e+f\,x]}{\sqrt{c+d}\,\sqrt{a+a\,\text{Sin}[e+f\,x]}}\right]}{d^{5/2}\,(c+d)^{3/2}\,f}-\frac{a^3\,(3\,c+d)\,\text{Cos}[e+f\,x]}{d^2\,(c+d)\,f\,\sqrt{a+a\,\text{Sin}[e+f\,x]}}+\frac{a^2\,(c-d)\,\text{Cos}[e+f\,x]\,\sqrt{a+a\,\text{Sin}[e+f\,x]}}{d\,(c+d)\,f\,(c+d\,\text{Sin}[e+f\,x])}$$

Result (type 3, 350 leaves):

$$\frac{1}{4 d^{5/2} f \left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^5}$$
$$(a (1+\text{Sin}[e+f x]))^{5/2} \left(-8 \sqrt{d}\, \text{Cos}\left[\frac{1}{2}(e+f x)\right]+\frac{1}{(c+d)^{3/2}}\left(3 c^2+2 c d-5 d^2\right)\left(e+f x-2 \text{Log}\left[\text{Sec}\left[\frac{1}{4}(e+f x)\right]^2\right]+\right.\right.$$
$$\left.\left. 2 \text{Log}\left[-\text{Sec}\left[\frac{1}{4}(e+f x)\right]^2\left(c+d+\sqrt{d}\sqrt{c+d}\, \text{Cos}\left[\frac{1}{2}(e+f x)\right]-\sqrt{d}\sqrt{c+d}\, \text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)\right]\right)+\frac{1}{(c+d)^{3/2}}\left(-3 c^2-2 c d+5 d^2\right)$$
$$\left(e+f x-2 \text{Log}\left[\text{Sec}\left[\frac{1}{4}(e+f x)\right]^2\right]+2 \text{Log}\left[(c+d)\, \text{Sec}\left[\frac{1}{4}(e+f x)\right]^2+\sqrt{d}\sqrt{c+d}\left(-1+2 \text{Tan}\left[\frac{1}{4}(e+f x)\right]+\text{Tan}\left[\frac{1}{4}(e+f x)\right]^2\right)\right]\right)+$$
$$\left. 8 \sqrt{d}\, \text{Sin}\left[\frac{1}{2}(e+f x)\right]-\frac{4 (c-d)^2 \sqrt{d}\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)}{(c+d)(c+d\, \text{Sin}[e+f x])}\right)$$

- **Problem 543: Result unnecessarily involves imaginary or complex numbers.**

$$\int \frac{(c+d\, \text{Sin}[e+f x])^3}{\sqrt{a+a\, \text{Sin}[e+f x]}}\, dx$$

Optimal (type 3, 178 leaves, 6 steps):

$$-\frac{\sqrt{2}\,(c-d)^3\, \text{ArcTanh}\left[\frac{\sqrt{a}\, \text{Cos}[e+f x]}{\sqrt{2}\sqrt{a+a\, \text{Sin}[e+f x]}}\right]}{\sqrt{a}\, f}-\frac{4 d\left(21 c^2-12 c d+7 d^2\right) \text{Cos}[e+f x]}{15 f \sqrt{a+a\, \text{Sin}[e+f x]}}-$$
$$\frac{2 (9 c-d) d^2\, \text{Cos}[e+f x] \sqrt{a+a\, \text{Sin}[e+f x]}}{15 a f}-\frac{2 d\, \text{Cos}[e+f x] (c+d\, \text{Sin}[e+f x])^2}{5 f \sqrt{a+a\, \text{Sin}[e+f x]}}$$

Result (type 3, 155 leaves):

$$-\left(\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)\right.$$
$$\left((-60-60 i)(-1)^{3/4}(c-d)^3 \text{ArcTanh}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{3/4}\left(-1+\text{Tan}\left[\frac{1}{4}(e+f x)\right]\right)\right]-2 d\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)\right.$$
$$\left.\left.\left(-90 c^2+30 c d-29 d^2+3 d^2 \text{Cos}[2 (e+f x)]-2 (15 c-d)\, d\, \text{Sin}[e+f x]\right)\right)\right) \Big/ \left(30 f \sqrt{a (1+\text{Sin}[e+f x])}\right)$$

- **Problem 544: Result unnecessarily involves imaginary or complex numbers.**

$$\int \frac{(c+d\, \text{Sin}[e+f x])^2}{\sqrt{a+a\, \text{Sin}[e+f x]}}\, dx$$

Optimal (type 3, 123 leaves, 4 steps):

$$-\frac{\sqrt{2}\,(c-d)^2\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\text{Cos}[e+f x]}{\sqrt{2}\,\sqrt{a+a\,\text{Sin}[e+f x]}}\right]}{\sqrt{a}\,f}-\frac{4\,(3 c-d)\,d\,\text{Cos}[e+f x]}{3 f\sqrt{a+a\,\text{Sin}[e+f x]}}-\frac{2 d^2\,\text{Cos}[e+f x]\,\sqrt{a+a\,\text{Sin}[e+f x]}}{3 a f}$$

Result (type 3, 125 leaves):

$$-\frac{1}{3 f\sqrt{a\,(1+\text{Sin}[e+f x])}}2\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)$$
$$\left((-3-3\,i)\,(-1)^{3/4}\,(c-d)^2\,\text{ArcTanh}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{3/4}\left(-1+\text{Tan}\left[\frac{1}{4}(e+f x)\right]\right)\right]+d\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)(6 c-d+d\,\text{Sin}[e+f x])\right)$$

Problem 545: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{c+d\,\text{Sin}[e+f x]}{\sqrt{a+a\,\text{Sin}[e+f x]}}\,dx$$

Optimal (type 3, 79 leaves, 3 steps):

$$-\frac{\sqrt{2}\,(c-d)\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\text{Cos}[e+f x]}{\sqrt{2}\,\sqrt{a+a\,\text{Sin}[e+f x]}}\right]}{\sqrt{a}\,f}-\frac{2\,d\,\text{Cos}[e+f x]}{f\sqrt{a+a\,\text{Sin}[e+f x]}}$$

Result (type 3, 106 leaves):

$$\frac{1}{f\sqrt{a\,(1+\text{Sin}[e+f x])}}2\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)$$
$$\left((1+i)\,(-1)^{3/4}\,(c-d)\,\text{ArcTanh}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{3/4}\left(-1+\text{Tan}\left[\frac{1}{4}(e+f x)\right]\right)\right]+d\left(-\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)\right)$$

Problem 546: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{1}{\sqrt{a+a\,\text{Sin}[e+f x]}}\,dx$$

Optimal (type 3, 47 leaves, 2 steps):

$$-\frac{\sqrt{2}\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\text{Cos}[e+f x]}{\sqrt{2}\,\sqrt{a+a\,\text{Sin}[e+f x]}}\right]}{\sqrt{a}\,f}$$

Result (type 3, 73 leaves):

$$\frac{(2+2\,i)\,(-1)^{3/4}\,\text{ArcTanh}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{3/4}\left(-1+\text{Tan}\left[\frac{1}{4}(e+f x)\right]\right)\right]\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)}{f\sqrt{a\,(1+\text{Sin}[e+f x])}}$$

Problem 547: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{1}{\sqrt{a+a\,\text{Sin}[e+f\,x]}\,\left(c+d\,\text{Sin}[e+f\,x]\right)}\,dx$$

Optimal (type 3, 123 leaves, 5 steps):

$$-\frac{\sqrt{2}\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\text{Cos}[e+f\,x]}{\sqrt{2}\,\sqrt{a+a\,\text{Sin}[e+f\,x]}}\right]}{\sqrt{a}\,(c-d)\,f}+\frac{2\,\sqrt{d}\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\sqrt{d}\,\text{Cos}[e+f\,x]}{\sqrt{c+d}\,\sqrt{a+a\,\text{Sin}[e+f\,x]}}\right]}{\sqrt{a}\,(c-d)\,\sqrt{c+d}\,f}$$

Result (type 3, 215 leaves):

$$\frac{1}{(c-d)\,\sqrt{c+d}\,f\,\sqrt{a\,(1+\text{Sin}[e+f\,x])}}\left((2+2\,i)\,(-1)^{3/4}\,\sqrt{c+d}\,\text{ArcTanh}\left[\left(\frac{1}{2}+\frac{i}{2}\right)\,(-1)^{3/4}\left(-1+\text{Tan}\left[\frac{1}{4}\,(e+f\,x)\right]\right)\right]+\right.$$
$$\sqrt{d}\,\left(\text{Log}\left[\text{Sec}\left[\frac{1}{4}\,(e+f\,x)\right]^2\left(\sqrt{c+d}+\sqrt{d}\,\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]-\sqrt{d}\,\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)\right]-\right.$$
$$\left.\left.\text{Log}\left[\text{Sec}\left[\frac{1}{4}\,(e+f\,x)\right]^2\left(\sqrt{c+d}-\sqrt{d}\,\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\sqrt{d}\,\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)\right]\right)\right)\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)$$

Problem 548: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{1}{\sqrt{a+a\,\text{Sin}[e+f\,x]}\,\left(c+d\,\text{Sin}[e+f\,x]\right)^2}\,dx$$

Optimal (type 3, 175 leaves, 6 steps):

$$-\frac{\sqrt{2}\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\text{Cos}[e+f\,x]}{\sqrt{2}\,\sqrt{a+a\,\text{Sin}[e+f\,x]}}\right]}{\sqrt{a}\,(c-d)^2\,f}+\frac{\sqrt{d}\,(3\,c+d)\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\sqrt{d}\,\text{Cos}[e+f\,x]}{\sqrt{c+d}\,\sqrt{a+a\,\text{Sin}[e+f\,x]}}\right]}{\sqrt{a}\,(c-d)^2\,(c+d)^{3/2}\,f}+\frac{d\,\text{Cos}[e+f\,x]}{\left(c^2-d^2\right)\,f\,\sqrt{a+a\,\text{Sin}[e+f\,x]}\,\left(c+d\,\text{Sin}[e+f\,x]\right)}$$

Result (type 3, 324 leaves):

$$\frac{1}{4\,(c-d)^2\,f\,\sqrt{a\,(1+\text{Sin}[e+f\,x])}}$$
$$\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)\left((8+8\,i)\,(-1)^{3/4}\,\text{ArcTanh}\left[\left(\frac{1}{2}+\frac{i}{2}\right)\,(-1)^{3/4}\left(-1+\text{Tan}\left[\frac{1}{4}\,(e+f\,x)\right]\right)\right]+\frac{1}{(c+d)^{3/2}}\right.$$
$$\sqrt{d}\,(3\,c+d)\left(e+f\,x-2\,\text{Log}\left[\text{Sec}\left[\frac{1}{4}\,(e+f\,x)\right]^2\right]+2\,\text{Log}\left[\text{Sec}\left[\frac{1}{4}\,(e+f\,x)\right]^2\left(\sqrt{c+d}+\sqrt{d}\,\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]-\sqrt{d}\,\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)\right]\right)-$$
$$\frac{1}{(c+d)^{3/2}}\sqrt{d}\,(3\,c+d)\left(e+f\,x-2\,\text{Log}\left[\text{Sec}\left[\frac{1}{4}\,(e+f\,x)\right]^2\right]+2\,\text{Log}\left[\text{Sec}\left[\frac{1}{4}\,(e+f\,x)\right]^2\left(\sqrt{c+d}-\sqrt{d}\,\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\sqrt{d}\,\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)\right]\right)+$$
$$\left.\frac{4\,(c-d)\,d\,\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)}{(c+d)\,(c+d\,\text{Sin}[e+f\,x])}\right)$$

Problem 549: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{1}{\sqrt{a + a \sin[e + f x]}\ (c + d \sin[e + f x])^3}\, dx$$

Optimal (type 3, 247 leaves, 7 steps):

$$-\frac{\sqrt{2}\ \text{ArcTanh}\left[\frac{\sqrt{a}\ \cos[e+f x]}{\sqrt{2}\ \sqrt{a+a \sin[e+f x]}}\right]}{\sqrt{a}\ (c-d)^3 f} + \frac{\sqrt{d}\ \left(15 c^2 + 10 c d + 7 d^2\right) \text{ArcTanh}\left[\frac{\sqrt{a}\ \sqrt{d}\ \cos[e+f x]}{\sqrt{c+d}\ \sqrt{a+a \sin[e+f x]}}\right]}{4 \sqrt{a}\ (c-d)^3 (c+d)^{5/2} f} + \frac{d \cos[e+f x]}{2 \left(c^2-d^2\right) f \sqrt{a+a \sin[e+f x]}\ (c+d \sin[e+f x])^2} + \frac{d (7 c+d) \cos[e+f x]}{4 \left(c^2-d^2\right)^2 f \sqrt{a+a \sin[e+f x]}\ (c+d \sin[e+f x])}$$

Result (type 3, 414 leaves):

$$\frac{1}{16 f \sqrt{a (1+\sin[e+f x])}} \left(\cos\left[\frac{1}{2} (e+f x)\right]+\sin\left[\frac{1}{2} (e+f x)\right]\right) \left(\frac{(32+32 i) (-1)^{3/4} \text{ArcTanh}\left[\left(\frac{1}{2}+\frac{i}{2}\right) (-1)^{3/4} \left(-1+\tan\left[\frac{1}{4} (e+f x)\right]\right)\right]}{(c-d)^3} + \frac{1}{(c-d)^3 (c+d)^{5/2}} \sqrt{d} \left(15 c^2+10 c d+7 d^2\right) \left(e+f x-2 \text{Log}\left[\sec\left[\frac{1}{4} (e+f x)\right]^2\right]+2 \text{Log}\left[\sec\left[\frac{1}{4} (e+f x)\right]^2 \left(\sqrt{c+d}+\sqrt{d} \cos\left[\frac{1}{2} (e+f x)\right]-\sqrt{d} \sin\left[\frac{1}{2} (e+f x)\right]\right)\right]\right) + \frac{1}{(-c+d)^3 (c+d)^{5/2}} \sqrt{d} \left(15 c^2+10 c d+7 d^2\right) \left(e+f x-2 \text{Log}\left[\sec\left[\frac{1}{4} (e+f x)\right]^2\right]+2 \text{Log}\left[\sec\left[\frac{1}{4} (e+f x)\right]^2 \left(\sqrt{c+d}-\sqrt{d} \cos\left[\frac{1}{2} (e+f x)\right]+\sqrt{d} \sin\left[\frac{1}{2} (e+f x)\right]\right)\right]\right) + \frac{8 d \left(\cos\left[\frac{1}{2} (e+f x)\right]-\sin\left[\frac{1}{2} (e+f x)\right]\right)}{(c-d) (c+d) (c+d \sin[e+f x])^2} + \frac{4 d (7 c+d) \left(\cos\left[\frac{1}{2} (e+f x)\right]-\sin\left[\frac{1}{2} (e+f x)\right]\right)}{(c-d)^2 (c+d)^2 (c+d \sin[e+f x])}\right)$$

Problem 550: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{(c + d \sin[e + f x])^3}{(a + a \sin[e + f x])^{3/2}}\, dx$$

Optimal (type 3, 192 leaves, 6 steps):

$$-\frac{(c-d)^2 (c+11 d) \text{ArcTanh}\left[\frac{\sqrt{a}\ \cos[e+f x]}{\sqrt{2}\ \sqrt{a+a \sin[e+f x]}}\right]}{2 \sqrt{2}\ a^{3/2} f} + \frac{d \left(3 c^2-24 c d+13 d^2\right) \cos[e+f x]}{3 a f \sqrt{a+a \sin[e+f x]}} + \frac{(3 c-7 d) d^2 \cos[e+f x] \sqrt{a+a \sin[e+f x]}}{6 a^2 f} - \frac{(c-d) \cos[e+f x] (c+d \sin[e+f x])^2}{2 f (a+a \sin[e+f x])^{3/2}}$$

Result (type 3, 328 leaves):

$$\frac{1}{6 f (a (1+\text{Sin}[e+f x]))^{3/2}}\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)\left(6 (c-d)^3 \text{Sin}\left[\frac{1}{2}(e+f x)\right]-3 (c-d)^3\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)+\right.$$
$$(3+3 i)(-1)^{3/4}(c-d)^2 (c+11 d) \text{ArcTanh}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{3/4}\left(-1+\text{Tan}\left[\frac{1}{4}(e+f x)\right]\right)\right]\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^2-$$
$$18 (2 c-d) d^2 \text{Cos}\left[\frac{1}{2}(e+f x)\right]\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^2-2 d^3 \text{Cos}\left[\frac{3}{2}(e+f x)\right]\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^2+$$
$$\left.18 (2 c-d) d^2 \text{Sin}\left[\frac{1}{2}(e+f x)\right]\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^2-2 d^3\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^2 \text{Sin}\left[\frac{3}{2}(e+f x)\right]\right)$$

Problem 551: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{(c+d \text{Sin}[e+f x])^2}{(a+a \text{Sin}[e+f x])^{3/2}} \, dx$$

Optimal (type 3, 138 leaves, 4 steps):

$$-\frac{(c-d)(c+7 d) \text{ArcTanh}\left[\frac{\sqrt{a} \text{Cos}[e+f x]}{\sqrt{2} \sqrt{a+a \text{Sin}[e+f x]}}\right]}{2 \sqrt{2} a^{3/2} f}+\frac{(c-5 d) d \text{Cos}[e+f x]}{2 a f \sqrt{a+a \text{Sin}[e+f x]}}-\frac{(c-d) \text{Cos}[e+f x] (c+d \text{Sin}[e+f x])}{2 f (a+a \text{Sin}[e+f x])^{3/2}}$$

Result (type 3, 239 leaves):

$$\frac{1}{2 f (a (1+\text{Sin}[e+f x]))^{3/2}}\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)\left(2 (c-d)^2 \text{Sin}\left[\frac{1}{2}(e+f x)\right]-(c-d)^2\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)+\right.$$
$$(1+i)(-1)^{3/4}\left(c^2+6 c d-7 d^2\right) \text{ArcTanh}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{3/4}\left(-1+\text{Tan}\left[\frac{1}{4}(e+f x)\right]\right)\right]\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^2-$$
$$\left.4 d^2 \text{Cos}\left[\frac{1}{2}(e+f x)\right]\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^2+4 d^2 \text{Sin}\left[\frac{1}{2}(e+f x)\right]\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^2\right)$$

Problem 552: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{c+d \text{Sin}[e+f x]}{(a+a \text{Sin}[e+f x])^{3/2}} \, dx$$

Optimal (type 3, 87 leaves, 3 steps):

$$-\frac{(c+3 d) \text{ArcTanh}\left[\frac{\sqrt{a} \text{Cos}[e+f x]}{\sqrt{2} \sqrt{a+a \text{Sin}[e+f x]}}\right]}{2 \sqrt{2} a^{3/2} f}-\frac{(c-d) \text{Cos}[e+f x]}{2 f (a+a \text{Sin}[e+f x])^{3/2}}$$

Result (type 3, 150 leaves):

$$\left(\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)\left(2(c-d)\,\text{Sin}\left[\frac{1}{2}(e+f x)\right]+(-c+d)\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)+(1+i)(-1)^{3/4}(c+3 d)\,\text{ArcTanh}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{3/4}\left(-1+\text{Tan}\left[\frac{1}{4}(e+f x)\right]\right)\right]\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^2\right)\right)\Big/\left(2 f\,(a\,(1+\text{Sin}[e+f x]))^{3/2}\right)$$

- **Problem 553: Result unnecessarily involves imaginary or complex numbers.**

$$\int \frac{1}{(a+a\,\text{Sin}[e+f x])^{3/2}}\,dx$$

Optimal (type 3, 77 leaves, 3 steps):

$$-\frac{\text{ArcTanh}\left[\frac{\sqrt{a}\,\text{Cos}[e+f x]}{\sqrt{2}\,\sqrt{a+a\,\text{Sin}[e+f x]}}\right]}{2\sqrt{2}\,a^{3/2}\,f}-\frac{\text{Cos}[e+f x]}{2 f\,(a+a\,\text{Sin}[e+f x])^{3/2}}$$

Result (type 3, 108 leaves):

$$\left(\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)\left(-\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]+(1+i)(-1)^{3/4}\,\text{ArcTanh}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{3/4}\left(-1+\text{Tan}\left[\frac{1}{4}(e+f x)\right]\right)\right](1+\text{Sin}[e+f x])\right)\right)\Big/\left(2 f\,(a\,(1+\text{Sin}[e+f x]))^{3/2}\right)$$

- **Problem 554: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int \frac{1}{(a+a\,\text{Sin}[e+f x])^{3/2}\,(c+d\,\text{Sin}[e+f x])}\,dx$$

Optimal (type 3, 164 leaves, 6 steps):

$$-\frac{(c-5 d)\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\text{Cos}[e+f x]}{\sqrt{2}\,\sqrt{a+a\,\text{Sin}[e+f x]}}\right]}{2\sqrt{2}\,a^{3/2}\,(c-d)^2 f}-\frac{2 d^{3/2}\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\sqrt{d}\,\text{Cos}[e+f x]}{\sqrt{c+d}\,\sqrt{a+a\,\text{Sin}[e+f x]}}\right]}{a^{3/2}\,(c-d)^2\sqrt{c+d}\,f}-\frac{\text{Cos}[e+f x]}{2(c-d)\,f\,(a+a\,\text{Sin}[e+f x])^{3/2}}$$

Result (type 3, 385 leaves):

$$\frac{1}{2\,(c-d)^2\,f\,(a\,(1+\mathrm{Sin}[e+f\,x]))^{3/2}}\left(\mathrm{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)\left(2\,(c-d)\,\mathrm{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]-(c-d)\left(\mathrm{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)+\right.$$
$$(1+i)\,(-1)^{3/4}\,(c-5\,d)\,\mathrm{ArcTanh}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{3/4}\left(-1+\mathrm{Tan}\left[\frac{1}{4}\,(e+f\,x)\right]\right)\right]\left(\mathrm{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^2-\frac{1}{\sqrt{c+d}}$$
$$d^{3/2}\left(e+f\,x-2\,\mathrm{Log}\left[\mathrm{Sec}\left[\frac{1}{4}\,(e+f\,x)\right]^2\right]+2\,\mathrm{Log}\left[\mathrm{Sec}\left[\frac{1}{4}\,(e+f\,x)\right]^2\left(\sqrt{c+d}+\sqrt{d}\,\mathrm{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]-\sqrt{d}\,\mathrm{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)\right]\right)$$
$$\left(\mathrm{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^2+\frac{1}{\sqrt{c+d}}d^{3/2}\left(e+f\,x-2\,\mathrm{Log}\left[\mathrm{Sec}\left[\frac{1}{4}\,(e+f\,x)\right]^2\right]+\right.$$
$$\left.\left.2\,\mathrm{Log}\left[\mathrm{Sec}\left[\frac{1}{4}\,(e+f\,x)\right]^2\left(\sqrt{c+d}-\sqrt{d}\,\mathrm{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\sqrt{d}\,\mathrm{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)\right]\right)\left(\mathrm{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^2\right)$$

- **Problem 555: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int\frac{1}{(a+a\,\mathrm{Sin}[e+f\,x])^{3/2}\,(c+d\,\mathrm{Sin}[e+f\,x])^2}\,dx$$

Optimal (type 3, 243 leaves, 7 steps):

$$-\frac{(c-9\,d)\,\mathrm{ArcTanh}\left[\frac{\sqrt{a}\,\mathrm{Cos}[e+f\,x]}{\sqrt{2}\,\sqrt{a+a\,\mathrm{Sin}[e+f\,x]}}\right]}{2\,\sqrt{2}\,a^{3/2}\,(c-d)^3\,f}-\frac{d^{3/2}\,(5\,c+3\,d)\,\mathrm{ArcTanh}\left[\frac{\sqrt{a}\,\sqrt{d}\,\mathrm{Cos}[e+f\,x]}{\sqrt{c+d}\,\sqrt{a+a\,\mathrm{Sin}[e+f\,x]}}\right]}{a^{3/2}\,(c-d)^3\,(c+d)^{3/2}\,f}-$$
$$\frac{\mathrm{Cos}[e+f\,x]}{2\,(c-d)\,f\,(a+a\,\mathrm{Sin}[e+f\,x])^{3/2}\,(c+d\,\mathrm{Sin}[e+f\,x])}-\frac{d\,(c+3\,d)\,\mathrm{Cos}[e+f\,x]}{2\,a\,(c-d)^2\,(c+d)\,f\,\sqrt{a+a\,\mathrm{Sin}[e+f\,x]}\,(c+d\,\mathrm{Sin}[e+f\,x])}$$

Result (type 3, 491 leaves):

$$\frac{1}{4 f (a (1+\text{Sin}[e+f x]))^{3/2}}\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)\left(\frac{4\,\text{Sin}\left[\frac{1}{2}(e+f x)\right]}{(c-d)^2}-\frac{2\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)}{(c-d)^2}+\frac{1}{(c-d)^3}\right.$$

$$(2+2\,i)(-1)^{3/4}(c-9 d)\,\text{ArcTanh}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{3/4}\left(-1+\text{Tan}\left[\frac{1}{4}(e+f x)\right]\right)\right]\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^2+\frac{1}{(-c+d)^3 (c+d)^{3/2}}$$

$$d^{3/2}(5 c+3 d)\left(e+f x-2\,\text{Log}\left[\text{Sec}\left[\frac{1}{4}(e+f x)\right]^2\right]+2\,\text{Log}\left[\text{Sec}\left[\frac{1}{4}(e+f x)\right]^2\left(\sqrt{c+d}+\sqrt{d}\,\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\sqrt{d}\,\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)\right]\right)$$

$$\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^2+\frac{1}{(c-d)^3 (c+d)^{3/2}}$$

$$d^{3/2}(5 c+3 d)\left(e+f x-2\,\text{Log}\left[\text{Sec}\left[\frac{1}{4}(e+f x)\right]^2\right]+2\,\text{Log}\left[\text{Sec}\left[\frac{1}{4}(e+f x)\right]^2\left(\sqrt{c+d}-\sqrt{d}\,\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\sqrt{d}\,\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)\right]\right)$$

$$\left.\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^2-\frac{4 d^2\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^2}{(c-d)^2 (c+d)(c+d\,\text{Sin}[e+f x])}\right)$$

- **Problem 556: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int \frac{1}{(a+a\,\text{Sin}[e+f x])^{3/2}(c+d\,\text{Sin}[e+f x])^3}\,dx$$

Optimal (type 3, 318 leaves, 8 steps):

$$-\frac{(c-13 d)\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\text{Cos}[e+f x]}{\sqrt{2}\sqrt{a+a\,\text{Sin}[e+f x]}}\right]}{2\sqrt{2}\,a^{3/2}(c-d)^4 f}-\frac{d^{3/2}\left(35 c^2+42 c d+19 d^2\right)\text{ArcTanh}\left[\frac{\sqrt{a}\sqrt{d}\,\text{Cos}[e+f x]}{\sqrt{c+d}\sqrt{a+a\,\text{Sin}[e+f x]}}\right]}{4 a^{3/2}(c-d)^4 (c+d)^{5/2} f}-$$

$$\frac{\text{Cos}[e+f x]}{2 (c-d) f (a+a\,\text{Sin}[e+f x])^{3/2}(c+d\,\text{Sin}[e+f x])^2}-\frac{d (c+2 d)\,\text{Cos}[e+f x]}{2 a (c-d)^2 (c+d) f\sqrt{a+a\,\text{Sin}[e+f x]}\,(c+d\,\text{Sin}[e+f x])^2}-$$

$$\frac{d (2 c+d)(c+7 d)\,\text{Cos}[e+f x]}{4 a (c-d)^3 (c+d)^2 f\sqrt{a+a\,\text{Sin}[e+f x]}\,(c+d\,\text{Sin}[e+f x])}$$

Result (type 3, 801 leaves):

$$\frac{\mathrm{Sin}\left[\frac{1}{2}(e+fx)\right]\left(\mathrm{Cos}\left[\frac{1}{2}(e+fx)\right]+\mathrm{Sin}\left[\frac{1}{2}(e+fx)\right]\right)}{(c-d)^3 f\,(a\,(1+\mathrm{Sin}[e+fx]))^{3/2}}-\frac{\left(\mathrm{Cos}\left[\frac{1}{2}(e+fx)\right]+\mathrm{Sin}\left[\frac{1}{2}(e+fx)\right]\right)^2}{2\,(c-d)^3 f\,(a\,(1+\mathrm{Sin}[e+fx]))^{3/2}}+$$

$$\left((1+i)\,(c-13\,d)\,\mathrm{ArcTanh}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{3/4}\,\mathrm{Sec}\left[\frac{1}{4}(e+fx)\right]\left(\mathrm{Cos}\left[\frac{1}{4}(e+fx)\right]-\mathrm{Sin}\left[\frac{1}{4}(e+fx)\right]\right)\right]\left(\mathrm{Cos}\left[\frac{1}{2}(e+fx)\right]+\mathrm{Sin}\left[\frac{1}{2}(e+fx)\right]\right)^3\right)\Big/$$
$$\left(\left(2\,(-1)^{1/4}c^4-8\,(-1)^{1/4}c^3 d+12\,(-1)^{1/4}c^2 d^2-8\,(-1)^{1/4}c\,d^3+2\,(-1)^{1/4}d^4\right) f\,(a\,(1+\mathrm{Sin}[e+fx]))^{3/2}\right)-$$

$$\left(d^{3/2}\left(35\,c^2+42\,c\,d+19\,d^2\right)\left(e+fx-2\,\mathrm{Log}\left[\mathrm{Sec}\left[\frac{1}{4}(e+fx)\right]^2\right]+2\,\mathrm{Log}\left[\mathrm{Sec}\left[\frac{1}{4}(e+fx)\right]^2\left(\sqrt{c+d}+\sqrt{d}\,\mathrm{Cos}\left[\frac{1}{2}(e+fx)\right]-\sqrt{d}\,\mathrm{Sin}\left[\frac{1}{2}(e+fx)\right]\right)\right]\right)\right.$$
$$\left.\left(\mathrm{Cos}\left[\frac{1}{2}(e+fx)\right]+\mathrm{Sin}\left[\frac{1}{2}(e+fx)\right]\right)^3\right)\Big/\left(16\,(c-d)^4\,(c+d)^{5/2} f\,(a\,(1+\mathrm{Sin}[e+fx]))^{3/2}\right)+$$

$$\left(d^{3/2}\left(35\,c^2+42\,c\,d+19\,d^2\right)\left(e+fx-2\,\mathrm{Log}\left[\mathrm{Sec}\left[\frac{1}{4}(e+fx)\right]^2\right]+2\,\mathrm{Log}\left[\mathrm{Sec}\left[\frac{1}{4}(e+fx)\right]^2\left(\sqrt{c+d}-\sqrt{d}\,\mathrm{Cos}\left[\frac{1}{2}(e+fx)\right]+\sqrt{d}\,\mathrm{Sin}\left[\frac{1}{2}(e+fx)\right]\right)\right]\right)\right.$$
$$\left.\left(\mathrm{Cos}\left[\frac{1}{2}(e+fx)\right]+\mathrm{Sin}\left[\frac{1}{2}(e+fx)\right]\right)^3\right)\Big/\left(16\,(c-d)^4\,(c+d)^{5/2} f\,(a\,(1+\mathrm{Sin}[e+fx]))^{3/2}\right)+$$

$$\frac{\left(\mathrm{Cos}\left[\frac{1}{2}(e+fx)\right]+\mathrm{Sin}\left[\frac{1}{2}(e+fx)\right]\right)^3\left(-d^2\,\mathrm{Cos}\left[\frac{1}{2}(e+fx)\right]+d^2\,\mathrm{Sin}\left[\frac{1}{2}(e+fx)\right]\right)}{2\,(c-d)^2\,(c+d)\,f\,(a\,(1+\mathrm{Sin}[e+fx]))^{3/2}\,(c+d\,\mathrm{Sin}[e+fx])^2}+$$

$$\left(\left(\mathrm{Cos}\left[\frac{1}{2}(e+fx)\right]+\mathrm{Sin}\left[\frac{1}{2}(e+fx)\right]\right)^3\left(-11\,c\,d^2\,\mathrm{Cos}\left[\frac{1}{2}(e+fx)\right]-5\,d^3\,\mathrm{Cos}\left[\frac{1}{2}(e+fx)\right]+11\,c\,d^2\,\mathrm{Sin}\left[\frac{1}{2}(e+fx)\right]+5\,d^3\,\mathrm{Sin}\left[\frac{1}{2}(e+fx)\right]\right)\right)\Big/$$
$$\left(4\,(c-d)^3\,(c+d)^2 f\,(a\,(1+\mathrm{Sin}[e+fx]))^{3/2}\,(c+d\,\mathrm{Sin}[e+fx])\right)$$

- **Problem 557: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int\frac{(c+d\,\mathrm{Sin}[e+fx])^3}{(a+a\,\mathrm{Sin}[e+fx])^{5/2}}\,dx$$

Optimal (type 3, 194 leaves, 6 steps):

$$-\frac{3\,(c-d)\left(c^2+6\,c\,d+25\,d^2\right)\mathrm{ArcTanh}\left[\frac{\sqrt{a}\,\mathrm{Cos}[e+fx]}{\sqrt{2}\,\sqrt{a+a\,\mathrm{Sin}[e+fx]}}\right]}{16\,\sqrt{2}\,a^{5/2} f}-$$
$$\frac{(c-d)^2\,(3\,c+13\,d)\,\mathrm{Cos}[e+fx]}{16\,a\,f\,(a+a\,\mathrm{Sin}[e+fx])^{3/2}}+\frac{(c-9\,d)\,d^2\,\mathrm{Cos}[e+fx]}{4\,a^2 f\,\sqrt{a+a\,\mathrm{Sin}[e+fx]}}-\frac{(c-d)\,\mathrm{Cos}[e+fx]\,(c+d\,\mathrm{Sin}[e+fx])^2}{4\,f\,(a+a\,\mathrm{Sin}[e+fx])^{5/2}}$$

Result (type 3, 400 leaves):

$$\frac{1}{32 f (a (1+\text{Sin}[e+f x]))^{5/2}} \left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right) \left(-11 c^3 \text{Cos}\left[\frac{1}{2}(e+f x)\right]+9 c^2 d \text{Cos}\left[\frac{1}{2}(e+f x)\right]+15 c d^2 \text{Cos}\left[\frac{1}{2}(e+f x)\right]-45 d^3 \text{Cos}\left[\frac{1}{2}(e+f x)\right]-3 c^3 \text{Cos}\left[\frac{3}{2}(e+f x)\right]-15 c^2 d \text{Cos}\left[\frac{3}{2}(e+f x)\right]+39 c d^2 \text{Cos}\left[\frac{3}{2}(e+f x)\right]-69 d^3 \text{Cos}\left[\frac{3}{2}(e+f x)\right]+16 d^3 \text{Cos}\left[\frac{5}{2}(e+f x)\right]+11 c^3 \text{Sin}\left[\frac{1}{2}(e+f x)\right]-9 c^2 d \text{Sin}\left[\frac{1}{2}(e+f x)\right]-15 c d^2 \text{Sin}\left[\frac{1}{2}(e+f x)\right]+45 d^3 \text{Sin}\left[\frac{1}{2}(e+f x)\right]+(6+6 i)(-1)^{3/4}\left(c^3+5 c^2 d+19 c d^2-25 d^3\right) \text{ArcTanh}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{3/4}\left(-1+\text{Tan}\left[\frac{1}{4}(e+f x)\right]\right)\right] \left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^4-3 c^3 \text{Sin}\left[\frac{3}{2}(e+f x)\right]-15 c^2 d \text{Sin}\left[\frac{3}{2}(e+f x)\right]+39 c d^2 \text{Sin}\left[\frac{3}{2}(e+f x)\right]-69 d^3 \text{Sin}\left[\frac{3}{2}(e+f x)\right]-16 d^3 \text{Sin}\left[\frac{5}{2}(e+f x)\right]\right)$$

Problem 558: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{(c+d \text{Sin}[e+f x])^2}{(a+a \text{Sin}[e+f x])^{5/2}} \, dx$$

Optimal (type 3, 147 leaves, 4 steps):

$$-\frac{\left(3 c^2+10 c d+19 d^2\right) \text{ArcTanh}\left[\frac{\sqrt{a} \text{Cos}[e+f x]}{\sqrt{2} \sqrt{a+a \text{Sin}[e+f x]}}\right]}{16 \sqrt{2} a^{5/2} f}-\frac{3 (c-d)(c+3 d) \text{Cos}[e+f x]}{16 a f (a+a \text{Sin}[e+f x])^{3/2}}-\frac{(c-d) \text{Cos}[e+f x] (c+d \text{Sin}[e+f x])}{4 f (a+a \text{Sin}[e+f x])^{5/2}}$$

Result (type 3, 252 leaves):

$$\frac{1}{16 f (a (1+\text{Sin}[e+f x]))^{5/2}} \left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right) \left(8 (c-d)^2 \text{Sin}\left[\frac{1}{2}(e+f x)\right]-4 (c-d)^2 \left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)+2\left(3 c^2+10 c d-13 d^2\right) \text{Sin}\left[\frac{1}{2}(e+f x)\right] \left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^2-(c-d)(3 c+13 d) \left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^3+(1+i)(-1)^{3/4}\left(3 c^2+10 c d+19 d^2\right) \text{ArcTanh}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{3/4}\left(-1+\text{Tan}\left[\frac{1}{4}(e+f x)\right]\right)\right] \left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^4\right)$$

Problem 559: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{c+d \text{Sin}[e+f x]}{(a+a \text{Sin}[e+f x])^{5/2}} \, dx$$

Optimal (type 3, 126 leaves, 4 steps):

$$-\frac{(3 c+5 d) \text{ArcTanh}\left[\frac{\sqrt{a} \text{Cos}[e+f x]}{\sqrt{2} \sqrt{a+a \text{Sin}[e+f x]}}\right]}{16 \sqrt{2} a^{5/2} f}-\frac{(c-d) \text{Cos}[e+f x]}{4 f (a+a \text{Sin}[e+f x])^{5/2}}-\frac{(3 c+5 d) \text{Cos}[e+f x]}{16 a f (a+a \text{Sin}[e+f x])^{3/2}}$$

Result (type 3, 227 leaves):

$$\frac{1}{16\,f\,(a\,(1+\mathrm{Sin}[e+f\,x]))^{5/2}}\left(\mathrm{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)\left(8\,(c-d)\,\mathrm{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]+4\,(-c+d)\left(\mathrm{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)+\right.$$
$$2\,(3\,c+5\,d)\,\mathrm{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\left(\mathrm{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^2-(3\,c+5\,d)\left(\mathrm{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^3+$$
$$\left.(1+i)\,(-1)^{3/4}\,(3\,c+5\,d)\,\mathrm{ArcTanh}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{3/4}\left(-1+\mathrm{Tan}\left[\frac{1}{4}\,(e+f\,x)\right]\right)\right]\left(\mathrm{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^4\right)$$

- **Problem 560: Result unnecessarily involves imaginary or complex numbers.**

$$\int\frac{1}{(a+a\,\mathrm{Sin}[e+f\,x])^{5/2}}\,dx$$

Optimal (type 3, 107 leaves, 4 steps):

$$-\frac{3\,\mathrm{ArcTanh}\left[\frac{\sqrt{a}\,\mathrm{Cos}[e+f\,x]}{\sqrt{2}\,\sqrt{a+a\,\mathrm{Sin}[e+f\,x]}}\right]}{16\,\sqrt{2}\,a^{5/2}\,f}-\frac{\mathrm{Cos}[e+f\,x]}{4\,f\,(a+a\,\mathrm{Sin}[e+f\,x])^{5/2}}-\frac{3\,\mathrm{Cos}[e+f\,x]}{16\,a\,f\,(a+a\,\mathrm{Sin}[e+f\,x])^{3/2}}$$

Result (type 3, 196 leaves):

$$\frac{1}{16\,f\,(a\,(1+\mathrm{Sin}[e+f\,x]))^{5/2}}\left(\mathrm{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)\left(8\,\mathrm{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]-4\left(\mathrm{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)+\right.$$
$$6\,\mathrm{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\left(\mathrm{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^2-3\left(\mathrm{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^3+$$
$$\left.(3+3\,i)\,(-1)^{3/4}\,\mathrm{ArcTanh}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{3/4}\left(-1+\mathrm{Tan}\left[\frac{1}{4}\,(e+f\,x)\right]\right)\right]\left(\mathrm{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^4\right)$$

- **Problem 561: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int\frac{1}{(a+a\,\mathrm{Sin}[e+f\,x])^{5/2}\,(c+d\,\mathrm{Sin}[e+f\,x])}\,dx$$

Optimal (type 3, 218 leaves, 7 steps):

$$-\frac{\left(3\,c^2-14\,c\,d+43\,d^2\right)\,\mathrm{ArcTanh}\left[\frac{\sqrt{a}\,\mathrm{Cos}[e+f\,x]}{\sqrt{2}\,\sqrt{a+a\,\mathrm{Sin}[e+f\,x]}}\right]}{16\,\sqrt{2}\,a^{5/2}\,(c-d)^3\,f}+$$
$$\frac{2\,d^{5/2}\,\mathrm{ArcTanh}\left[\frac{\sqrt{a}\,\sqrt{d}\,\mathrm{Cos}[e+f\,x]}{\sqrt{c+d}\,\sqrt{a+a\,\mathrm{Sin}[e+f\,x]}}\right]}{a^{5/2}\,(c-d)^3\,\sqrt{c+d}\,f}-\frac{\mathrm{Cos}[e+f\,x]}{4\,(c-d)\,f\,(a+a\,\mathrm{Sin}[e+f\,x])^{5/2}}-\frac{(3\,c-11\,d)\,\mathrm{Cos}[e+f\,x]}{16\,a\,(c-d)^2\,f\,(a+a\,\mathrm{Sin}[e+f\,x])^{3/2}}$$

Result (type 3, 501 leaves):

$$\frac{1}{16 f (a (1+\text{Sin}[e+f x]))^{5/2}}\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)\left(\frac{8\,\text{Sin}\left[\frac{1}{2}(e+f x)\right]}{c-d}-\frac{4\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)}{c-d}+\right.$$

$$\frac{2(3c-11d)\,\text{Sin}\left[\frac{1}{2}(e+f x)\right]\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^2}{(c-d)^2}+\frac{(-3c+11d)\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^3}{(c-d)^2}+\frac{1}{(c-d)^3}$$

$$(1+i)(-1)^{3/4}\left(3c^2-14cd+43d^2\right)\text{ArcTanh}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{3/4}\left(-1+\text{Tan}\left[\frac{1}{4}(e+f x)\right]\right)\right]\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^4+$$

$$\frac{1}{(c-d)^3\sqrt{c+d}}8d^{5/2}\left(e+f x-2\,\text{Log}\left[\text{Sec}\left[\frac{1}{4}(e+f x)\right]^2\right]+2\,\text{Log}\left[\text{Sec}\left[\frac{1}{4}(e+f x)\right]^2\left(\sqrt{c+d}+\sqrt{d}\,\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\sqrt{d}\,\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)\right]\right)$$

$$\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^4+\frac{1}{(-c+d)^3\sqrt{c+d}}$$

$$8d^{5/2}\left(e+f x-2\,\text{Log}\left[\text{Sec}\left[\frac{1}{4}(e+f x)\right]^2\right]+2\,\text{Log}\left[\text{Sec}\left[\frac{1}{4}(e+f x)\right]^2\left(\sqrt{c+d}-\sqrt{d}\,\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\sqrt{d}\,\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)\right]\right)$$

$$\left.\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^4\right)$$

- **Problem 562: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int\frac{1}{(a+a\,\text{Sin}[e+f x])^{5/2}(c+d\,\text{Sin}[e+f x])^2}\,dx$$

Optimal (type 3, 313 leaves, 8 steps):

$$-\frac{\left(3c^2-22cd+115d^2\right)\text{ArcTanh}\left[\frac{\sqrt{a}\,\text{Cos}[e+f x]}{\sqrt{2}\sqrt{a+a\,\text{Sin}[e+f x]}}\right]}{16\sqrt{2}\,a^{5/2}(c-d)^4 f}+$$

$$\frac{d^{5/2}(7c+5d)\,\text{ArcTanh}\left[\frac{\sqrt{a}\sqrt{d}\,\text{Cos}[e+f x]}{\sqrt{c+d}\sqrt{a+a\,\text{Sin}[e+f x]}}\right]}{a^{5/2}(c-d)^4(c+d)^{3/2}f}-\frac{\text{Cos}[e+f x]}{4(c-d)f(a+a\,\text{Sin}[e+f x])^{5/2}(c+d\,\text{Sin}[e+f x])}-$$

$$\frac{3(c-5d)\,\text{Cos}[e+f x]}{16a(c-d)^2 f(a+a\,\text{Sin}[e+f x])^{3/2}(c+d\,\text{Sin}[e+f x])}-\frac{(c-7d)d(3c+5d)\,\text{Cos}[e+f x]}{16a^2(c-d)^3(c+d)f\sqrt{a+a\,\text{Sin}[e+f x]}(c+d\,\text{Sin}[e+f x])}$$

Result (type 3, 800 leaves):

$$\frac{\text{Sin}\left[\frac{1}{2}(e+fx)\right]\left(\text{Cos}\left[\frac{1}{2}(e+fx)\right]+\text{Sin}\left[\frac{1}{2}(e+fx)\right]\right)}{2(c-d)^2 f(a(1+\text{Sin}[e+fx]))^{5/2}}-\frac{\left(\text{Cos}\left[\frac{1}{2}(e+fx)\right]+\text{Sin}\left[\frac{1}{2}(e+fx)\right]\right)^2}{4(c-d)^2 f(a(1+\text{Sin}[e+fx]))^{5/2}}+$$

$$\frac{(-3c+19d)\left(\text{Cos}\left[\frac{1}{2}(e+fx)\right]+\text{Sin}\left[\frac{1}{2}(e+fx)\right]\right)^4}{16(c-d)^3 f(a(1+\text{Sin}[e+fx]))^{5/2}}+\Bigg((1+i)\left(3c^2-22cd+115d^2\right)$$

$$\text{ArcTanh}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{3/4}\text{Sec}\left[\frac{1}{4}(e+fx)\right]\left(\text{Cos}\left[\frac{1}{4}(e+fx)\right]-\text{Sin}\left[\frac{1}{4}(e+fx)\right]\right)\right]\left(\text{Cos}\left[\frac{1}{2}(e+fx)\right]+\text{Sin}\left[\frac{1}{2}(e+fx)\right]\right)^5\Bigg)\Big/$$

$$\left(\left(16(-1)^{1/4}c^4-64(-1)^{1/4}c^3d+96(-1)^{1/4}c^2d^2-64(-1)^{1/4}cd^3+16(-1)^{1/4}d^4\right)f(a(1+\text{Sin}[e+fx]))^{5/2}\right)+$$

$$\left(d^{5/2}(7c+5d)\left(e+fx-2\,\text{Log}\left[\text{Sec}\left[\frac{1}{4}(e+fx)\right]^2\right]+2\,\text{Log}\left[\text{Sec}\left[\frac{1}{4}(e+fx)\right]^2\left(\sqrt{c+d}+\sqrt{d}\,\text{Cos}\left[\frac{1}{2}(e+fx)\right]-\sqrt{d}\,\text{Sin}\left[\frac{1}{2}(e+fx)\right]\right)\right]\right)\right.$$

$$\left.\left(\text{Cos}\left[\frac{1}{2}(e+fx)\right]+\text{Sin}\left[\frac{1}{2}(e+fx)\right]\right)^5\right)\Big/\left(4(c-d)^4(c+d)^{3/2}f(a(1+\text{Sin}[e+fx]))^{5/2}\right)-$$

$$\left(d^{5/2}(7c+5d)\left(e+fx-2\,\text{Log}\left[\text{Sec}\left[\frac{1}{4}(e+fx)\right]^2\right]+2\,\text{Log}\left[\text{Sec}\left[\frac{1}{4}(e+fx)\right]^2\left(\sqrt{c+d}-\sqrt{d}\,\text{Cos}\left[\frac{1}{2}(e+fx)\right]+\sqrt{d}\,\text{Sin}\left[\frac{1}{2}(e+fx)\right]\right)\right]\right)\right.$$

$$\left.\left(\text{Cos}\left[\frac{1}{2}(e+fx)\right]+\text{Sin}\left[\frac{1}{2}(e+fx)\right]\right)^5\right)\Big/\left(4(c-d)^4(c+d)^{3/2}f(a(1+\text{Sin}[e+fx]))^{5/2}\right)+$$

$$\frac{\left(\text{Cos}\left[\frac{1}{2}(e+fx)\right]+\text{Sin}\left[\frac{1}{2}(e+fx)\right]\right)^3\left(3c\,\text{Sin}\left[\frac{1}{2}(e+fx)\right]-19d\,\text{Sin}\left[\frac{1}{2}(e+fx)\right]\right)}{8(c-d)^3 f(a(1+\text{Sin}[e+fx]))^{5/2}}+$$

$$\frac{\left(\text{Cos}\left[\frac{1}{2}(e+fx)\right]+\text{Sin}\left[\frac{1}{2}(e+fx)\right]\right)^5\left(d^3\,\text{Cos}\left[\frac{1}{2}(e+fx)\right]-d^3\,\text{Sin}\left[\frac{1}{2}(e+fx)\right]\right)}{(c-d)^3(c+d)f(a(1+\text{Sin}[e+fx]))^{5/2}(c+d\,\text{Sin}[e+fx])}$$

- **Problem 563: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int\frac{1}{(a+a\,\text{Sin}[e+fx])^{5/2}(c+d\,\text{Sin}[e+fx])^3}\,dx$$

Optimal (type 3, 400 leaves, 9 steps):

$$-\frac{3\left(c^2-10cd+73d^2\right)\text{ArcTanh}\left[\frac{\sqrt{a}\,\text{Cos}[e+fx]}{\sqrt{2}\sqrt{a+a\,\text{Sin}[e+fx]}}\right]}{16\sqrt{2}\,a^{5/2}(c-d)^5 f}+\frac{3d^{5/2}\left(21c^2+30cd+13d^2\right)\text{ArcTanh}\left[\frac{\sqrt{a}\sqrt{d}\,\text{Cos}[e+fx]}{\sqrt{c+d}\sqrt{a+a\,\text{Sin}[e+fx]}}\right]}{4a^{5/2}(c-d)^5(c+d)^{5/2}f}-$$

$$\frac{\text{Cos}[e+fx]}{4(c-d)f(a+a\,\text{Sin}[e+fx])^{5/2}(c+d\,\text{Sin}[e+fx])^2}-\frac{(3c-19d)\text{Cos}[e+fx]}{16a(c-d)^2 f(a+a\,\text{Sin}[e+fx])^{3/2}(c+d\,\text{Sin}[e+fx])^2}-$$

$$\frac{d\left(3c^2-20cd-31d^2\right)\text{Cos}[e+fx]}{16a^2(c-d)^3(c+d)f\sqrt{a+a\,\text{Sin}[e+fx]}(c+d\,\text{Sin}[e+fx])^2}-\frac{3d(c+3d)\left(c^2-10cd-7d^2\right)\text{Cos}[e+fx]}{16a^2(c-d)^4(c+d)^2 f\sqrt{a+a\,\text{Sin}[e+fx]}(c+d\,\text{Sin}[e+fx])}$$

Result (type 3, 958 leaves):

$$\frac{\text{Sin}\left[\frac{1}{2}(e+f x)\right]\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)}{2(c-d)^3 f(a(1+\text{Sin}[e+f x]))^{5/2}}-\frac{\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^2}{4(c-d)^3 f(a(1+\text{Sin}[e+f x]))^{5/2}}-$$

$$\frac{3(c-9 d)\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^4}{16(c-d)^4 f(a(1+\text{Sin}[e+f x]))^{5/2}}+\Bigg((3+3 i)\left(c^2-10 c d+73 d^2\right)$$

$$\text{ArcTanh}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{3/4}\text{Sec}\left[\frac{1}{4}(e+f x)\right]\left(\text{Cos}\left[\frac{1}{4}(e+f x)\right]-\text{Sin}\left[\frac{1}{4}(e+f x)\right]\right)\right]\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^5\Bigg)\Big/$$

$$\left(\left(16(-1)^{1/4}c^5-80(-1)^{1/4}c^4 d+160(-1)^{1/4}c^3 d^2-160(-1)^{1/4}c^2 d^3+80(-1)^{1/4}c d^4-16(-1)^{1/4}d^5\right)f(a(1+\text{Sin}[e+f x]))^{5/2}\right)+\Bigg(3 d^{5/2}$$

$$\left(21 c^2+30 c d+13 d^2\right)\left(e+f x-2\,\text{Log}\left[\text{Sec}\left[\frac{1}{4}(e+f x)\right]^2\right]+2\,\text{Log}\left[\text{Sec}\left[\frac{1}{4}(e+f x)\right]^2\left(\sqrt{c+d}+\sqrt{d}\,\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\sqrt{d}\,\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)\right]\right)$$

$$\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^5\Bigg)\Big/\left(16(c-d)^5(c+d)^{5/2}f(a(1+\text{Sin}[e+f x]))^{5/2}\right)+\Bigg(3 d^{5/2}\left(21 c^2+30 c d+13 d^2\right)$$

$$\left(e+f x-2\,\text{Log}\left[\text{Sec}\left[\frac{1}{4}(e+f x)\right]^2\right]+2\,\text{Log}\left[\text{Sec}\left[\frac{1}{4}(e+f x)\right]^2\left(\sqrt{c+d}-\sqrt{d}\,\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\sqrt{d}\,\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)\right]\right)$$

$$\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^5\Bigg)\Big/\left(16(-c+d)^5(c+d)^{5/2}f(a(1+\text{Sin}[e+f x]))^{5/2}\right)+$$

$$\frac{3\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^3\left(c\,\text{Sin}\left[\frac{1}{2}(e+f x)\right]-9 d\,\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)}{8(c-d)^4 f(a(1+\text{Sin}[e+f x]))^{5/2}}+$$

$$\frac{\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^5\left(d^3\,\text{Cos}\left[\frac{1}{2}(e+f x)\right]-d^3\,\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)}{2(c-d)^3(c+d)f(a(1+\text{Sin}[e+f x]))^{5/2}(c+d\,\text{Sin}[e+f x])^2}+$$

$$\left(3\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^5\left(5 c d^3\,\text{Cos}\left[\frac{1}{2}(e+f x)\right]+3 d^4\,\text{Cos}\left[\frac{1}{2}(e+f x)\right]-5 c d^3\,\text{Sin}\left[\frac{1}{2}(e+f x)\right]-3 d^4\,\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)\right)\Big/$$

$$\left(4(c-d)^4(c+d)^2 f(a(1+\text{Sin}[e+f x]))^{5/2}(c+d\,\text{Sin}[e+f x])\right)$$

- **Problem 564: Result unnecessarily involves imaginary or complex numbers.**

$$\int\sqrt{a+a\,\text{Sin}[e+f x]}\,(c+d\,\text{Sin}[e+f x])^{5/2}\,dx$$

Optimal (type 3, 203 leaves, 5 steps):

$$-\frac{5\sqrt{a}\,(c+d)^3\,\text{ArcTan}\left[\frac{\sqrt{a}\,\sqrt{d}\,\text{Cos}[e+f x]}{\sqrt{a+a\,\text{Sin}[e+f x]}\,\sqrt{c+d\,\text{Sin}[e+f x]}}\right]}{8\sqrt{d}\,f}-\frac{5 a(c+d)^2\,\text{Cos}[e+f x]\sqrt{c+d\,\text{Sin}[e+f x]}}{8 f\sqrt{a+a\,\text{Sin}[e+f x]}}-$$

$$\frac{5 a(c+d)\,\text{Cos}[e+f x](c+d\,\text{Sin}[e+f x])^{3/2}}{12 f\sqrt{a+a\,\text{Sin}[e+f x]}}-\frac{a\,\text{Cos}[e+f x](c+d\,\text{Sin}[e+f x])^{5/2}}{3 f\sqrt{a+a\,\text{Sin}[e+f x]}}$$

Result (type 3, 391 leaves) :

$$-\frac{1}{48\,f\left(\mathrm{Cos}\left[\frac{1}{2}(e+f\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}}\sqrt{a\,(1+\mathrm{Sin}[e+f\,x])}\left(\frac{1}{\sqrt{d}}15\,(c+d)^3\left(\mathrm{Log}\left[\frac{e^{-i\,e}\left(2\,(-1)^{1/4}\,c-2\,(-1)^{3/4}\,d\,e^{i\,(e+f\,x)}+2\sqrt{d}\sqrt{2\,c\,e^{i\,(e+f\,x)}-i\,d\left(-1+e^{2\,i\,(e+f\,x)}\right)}\right)}{\sqrt{d}}\right]-\mathrm{Log}\left[\frac{2\,e^{\frac{1}{2}i\,(e-2\,f\,x)}\left((-1)^{3/4}\,d+(-1)^{1/4}\,c\,e^{i\,(e+f\,x)}+i\sqrt{d}\sqrt{2\,c\,e^{i\,(e+f\,x)}-i\,d\left(-1+e^{2\,i\,(e+f\,x)}\right)}\right)f}{\sqrt{d}}\right]\right)\left(i\,\mathrm{Cos}\left[\frac{1}{2}(e+f\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)\sqrt{(\mathrm{Cos}[e+f\,x]+i\,\mathrm{Sin}[e+f\,x])\,(c+d\,\mathrm{Sin}[e+f\,x])}+2\left(\mathrm{Cos}\left[\frac{1}{2}(e+f\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)(c+d\,\mathrm{Sin}[e+f\,x])\left(33\,c^2+40\,c\,d+19\,d^2-4\,d^2\,\mathrm{Cos}[2\,(e+f\,x)]+2\,d\,(13\,c+5\,d)\,\mathrm{Sin}[e+f\,x]\right)\right)$$

- **Problem 565: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int\sqrt{a+a\,\mathrm{Sin}[e+f\,x]}\,(c+d\,\mathrm{Sin}[e+f\,x])^{3/2}\,dx$$

Optimal (type 3, 156 leaves, 4 steps) :

$$-\frac{3\sqrt{a}\,(c+d)^2\,\mathrm{ArcTan}\left[\frac{\sqrt{a}\,\sqrt{d}\,\mathrm{Cos}[e+f\,x]}{\sqrt{a+a\,\mathrm{Sin}[e+f\,x]}\,\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}}\right]}{4\sqrt{d}\,f}-\frac{3\,a\,(c+d)\,\mathrm{Cos}[e+f\,x]\,\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}}{4\,f\sqrt{a+a\,\mathrm{Sin}[e+f\,x]}}-\frac{a\,\mathrm{Cos}[e+f\,x]\,(c+d\,\mathrm{Sin}[e+f\,x])^{3/2}}{2\,f\sqrt{a+a\,\mathrm{Sin}[e+f\,x]}}$$

Result (type 3, 365 leaves) :

$$\frac{1}{8 f \left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right) \sqrt{c+d\,\text{Sin}[e+f x]}}$$

$$\sqrt{a\,(1+\text{Sin}[e+f x])}\left(-\frac{1}{\sqrt{d}}3\,i\,(c+d)^2\left(\text{Log}\left[\frac{e^{-i e}\left(2\,(-1)^{1/4} c-2\,(-1)^{3/4} d\, e^{i (e+f x)}+2 \sqrt{d} \sqrt{2 c\, e^{i (e+f x)}-i d \left(-1+e^{2 i (e+f x)}\right)}\right)}{\sqrt{d}}\right]-\right.\right.$$

$$\left.\text{Log}\left[\frac{2\, e^{\frac{1}{2} i (e-2 f x)} \left((-1)^{3/4} d+(-1)^{1/4} c\, e^{i (e+f x)}+i \sqrt{d} \sqrt{2 c\, e^{i (e+f x)}-i d \left(-1+e^{2 i (e+f x)}\right)}\right) f}{\sqrt{d}}\right]\right)$$

$$\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-i\,\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)\sqrt{(\text{Cos}[e+f x]+i\,\text{Sin}[e+f x])\,(c+d\,\text{Sin}[e+f x])}\,-$$

$$\left.2\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)(c+d\,\text{Sin}[e+f x])\,(5 c+3 d+2 d\,\text{Sin}[e+f x])\right)$$

- **Problem 566: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int \sqrt{a+a\,\text{Sin}[e+f x]}\,\sqrt{c+d\,\text{Sin}[e+f x]}\,dx$$

Optimal (type 3, 105 leaves, 3 steps):

$$-\frac{\sqrt{a}\,(c+d)\,\text{ArcTan}\left[\frac{\sqrt{a}\,\sqrt{d}\,\text{Cos}[e+f x]}{\sqrt{a+a\,\text{Sin}[e+f x]}\,\sqrt{c+d\,\text{Sin}[e+f x]}}\right]}{\sqrt{d}\,f}-\frac{a\,\text{Cos}[e+f x]\,\sqrt{c+d\,\text{Sin}[e+f x]}}{f\,\sqrt{a+a\,\text{Sin}[e+f x]}}$$

Result (type 3, 350 leaves):

$$\left(\sqrt{a\,(1+\operatorname{Sin}[e+f\,x])}\left(-\frac{2\left(\operatorname{Cos}\left[\frac{1}{2}(e+f\,x)\right]-\operatorname{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)(c+d\operatorname{Sin}[e+f\,x])}{f}-\right.\right.$$

$$1\Big/\left(\sqrt{d}\;f\right)\,i\,(c+d)\left(\operatorname{Log}\left[\frac{e^{-i\,e}\left(2\,(-1)^{1/4}\,c-2\,(-1)^{3/4}\,d\,e^{i\,(e+f\,x)}+2\sqrt{d}\,\sqrt{2\,c\,e^{i\,(e+f\,x)}-i\,d\left(-1+e^{2\,i\,(e+f\,x)}\right)}\right)}{\sqrt{d}}\right]-\right.$$

$$\left.\operatorname{Log}\left[\frac{2\,e^{\frac{1}{2}\,i\,(e-2\,f\,x)}\left((-1)^{3/4}\,d+(-1)^{1/4}\,c\,e^{i\,(e+f\,x)}+i\sqrt{d}\,\sqrt{2\,c\,e^{i\,(e+f\,x)}-i\,d\left(-1+e^{2\,i\,(e+f\,x)}\right)}\right)f}{\sqrt{d}}\right]\right)$$

$$\left.\left.\left(\operatorname{Cos}\left[\frac{1}{2}(e+f\,x)\right]-i\operatorname{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)\sqrt{(\operatorname{Cos}[e+f\,x]+i\operatorname{Sin}[e+f\,x])\,(c+d\operatorname{Sin}[e+f\,x])}\right)\right)\Big/$$

$$\left(2\left(\operatorname{Cos}\left[\frac{1}{2}(e+f\,x)\right]+\operatorname{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)\sqrt{c+d\operatorname{Sin}[e+f\,x]}\right)$$

- **Problem 567: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int\frac{\sqrt{a+a\operatorname{Sin}[e+f\,x]}}{\sqrt{c+d\operatorname{Sin}[e+f\,x]}}\,dx$$

Optimal (type 3, 61 leaves, 2 steps) :

$$-\frac{2\sqrt{a}\;\operatorname{ArcTan}\left[\frac{\sqrt{a}\,\sqrt{d}\,\operatorname{Cos}[e+f\,x]}{\sqrt{a+a\operatorname{Sin}[e+f\,x]}\,\sqrt{c+d\operatorname{Sin}[e+f\,x]}}\right]}{\sqrt{d}\;f}$$

Result (type 3, 305 leaves) :

$$-\left(i\left(\text{Log}\left[\frac{e^{-i e}\left(2(-1)^{1/4}c-2(-1)^{3/4}d\,e^{i(e+fx)}+2\sqrt{d}\sqrt{2c\,e^{i(e+fx)}-i d\left(-1+e^{2i(e+fx)}\right)}\right)}{\sqrt{d}}\right]-\text{Log}\left[-\frac{(1+i)\,e^{\frac{1}{2}i(e-2fx)}\left(-(-1)^{1/4}d+(-1)^{3/4}c\,e^{i(e+fx)}-\sqrt{d}\sqrt{2c\,e^{i(e+fx)}-i d\left(-1+e^{2i(e+fx)}\right)}\right)f}{\sqrt{d}}\right]\right)\left(\text{Cos}\left[\frac{1}{2}(e+fx)\right]-i\,\text{Sin}\left[\frac{1}{2}(e+fx)\right]\right)\sqrt{a(1+\text{Sin}[e+fx])}\sqrt{(\text{Cos}[e+fx]+i\,\text{Sin}[e+fx])(c+d\,\text{Sin}[e+fx])}\right)\Big/\left(\sqrt{d}\,f\left(\text{Cos}\left[\frac{1}{2}(e+fx)\right]+\text{Sin}\left[\frac{1}{2}(e+fx)\right]\right)\sqrt{c+d\,\text{Sin}[e+fx]}\right)$$

Problem 574: Result more than twice size of optimal antiderivative.

$$\int\frac{(a+a\,\text{Sin}[e+fx])^{3/2}}{\sqrt{c+d\,\text{Sin}[e+fx]}}\,dx$$

Optimal (type 3, 111 leaves, 4 steps):

$$\frac{a^{3/2}(c-3d)\,\text{ArcTan}\left[\frac{\sqrt{a}\sqrt{d}\,\text{Cos}[e+fx]}{\sqrt{a+a\,\text{Sin}[e+fx]}\sqrt{c+d\,\text{Sin}[e+fx]}}\right]}{d^{3/2}f}-\frac{a^2\,\text{Cos}[e+fx]\sqrt{c+d\,\text{Sin}[e+fx]}}{d\,f\sqrt{a+a\,\text{Sin}[e+fx]}}$$

Result (type 3, 301 leaves):

$$\frac{1}{2d^{3/2}f\left(\text{Cos}\left[\frac{1}{2}(e+fx)\right]+\text{Sin}\left[\frac{1}{2}(e+fx)\right]\right)^3}(a(1+\text{Sin}[e+fx]))^{3/2}\left(-2(c-3d)\,\text{ArcTan}\left[\frac{\sqrt{2}\sqrt{d}\,\text{Sin}\left[\frac{1}{4}(2e-\pi+2fx)\right]}{\sqrt{c+d\,\text{Sin}[e+fx]}}\right]-(c-3d)\,\text{ArcTanh}\left[\frac{\sqrt{2}\sqrt{d}\,\text{Cos}\left[\frac{1}{4}(2e-\pi+2fx)\right]}{\sqrt{c+d\,\text{Sin}[e+fx]}}\right]+c\,\text{Log}\left[\sqrt{2}\sqrt{d}\,\text{Cos}\left[\frac{1}{4}(2e-\pi+2fx)\right]+\sqrt{c+d\,\text{Sin}[e+fx]}\right]-3d\,\text{Log}\left[\sqrt{2}\sqrt{d}\,\text{Cos}\left[\frac{1}{4}(2e-\pi+2fx)\right]+\sqrt{c+d\,\text{Sin}[e+fx]}\right]-2\sqrt{d}\,\text{Cos}\left[\frac{1}{2}(e+fx)\right]\sqrt{c+d\,\text{Sin}[e+fx]}+2\sqrt{d}\,\text{Sin}\left[\frac{1}{2}(e+fx)\right]\sqrt{c+d\,\text{Sin}[e+fx]}\right)$$

Problem 575: Result more than twice size of optimal antiderivative.

$$\int\frac{(a+a\,\text{Sin}[e+fx])^{3/2}}{(c+d\,\text{Sin}[e+fx])^{3/2}}\,dx$$

Optimal (type 3, 117 leaves, 4 steps):

$$-\frac{2\,a^{3/2}\,\text{ArcTan}\left[\frac{\sqrt{a}\,\sqrt{d}\,\text{Cos}[e+f\,x]}{\sqrt{a+a\,\text{Sin}[e+f\,x]}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}\right]}{d^{3/2}\,f}+\frac{2\,a^2\,(c-d)\,\text{Cos}[e+f\,x]}{d\,(c+d)\,f\,\sqrt{a+a\,\text{Sin}[e+f\,x]}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}$$

Result (type 3, 377 leaves):

$$\left((a\,(1+\text{Sin}[e+f\,x]))^{3/2}\left(2\,c\,\sqrt{d}\,\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]-2\,d^{3/2}\,\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]-2\,c\,\sqrt{d}\,\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]+2\,d^{3/2}\,\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]+2\,(c+d)\,\text{ArcTan}\left[\frac{\sqrt{2}\,\sqrt{d}\,\text{Sin}\left[\frac{1}{4}\,(2\,e-\pi+2\,f\,x)\right]}{\sqrt{c+d\,\text{Sin}[e+f\,x]}}\right]\sqrt{c+d\,\text{Sin}[e+f\,x]}+(c+d)\,\text{ArcTanh}\left[\frac{\sqrt{2}\,\sqrt{d}\,\text{Cos}\left[\frac{1}{4}\,(2\,e-\pi+2\,f\,x)\right]}{\sqrt{c+d\,\text{Sin}[e+f\,x]}}\right]\sqrt{c+d\,\text{Sin}[e+f\,x]}-c\,\text{Log}\left[\sqrt{2}\,\sqrt{d}\,\text{Cos}\left[\frac{1}{4}\,(2\,e-\pi+2\,f\,x)\right]+\sqrt{c+d\,\text{Sin}[e+f\,x]}\right]\sqrt{c+d\,\text{Sin}[e+f\,x]}-d\,\text{Log}\left[\sqrt{2}\,\sqrt{d}\,\text{Cos}\left[\frac{1}{4}\,(2\,e-\pi+2\,f\,x)\right]+\sqrt{c+d\,\text{Sin}[e+f\,x]}\right]\sqrt{c+d\,\text{Sin}[e+f\,x]}\right)\right)\Big/\left(d^{3/2}\,(c+d)\,f\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^3\sqrt{c+d\,\text{Sin}[e+f\,x]}\right)$$

- **Problem 588: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int\frac{(c+d\,\text{Sin}[e+f\,x])^{5/2}}{\sqrt{a+a\,\text{Sin}[e+f\,x]}}\,dx$$

Optimal (type 3, 249 leaves, 7 steps):

$$-\frac{\sqrt{d}\,\left(15\,c^2-10\,c\,d+7\,d^2\right)\,\text{ArcTan}\left[\frac{\sqrt{a}\,\sqrt{d}\,\text{Cos}[e+f\,x]}{\sqrt{a+a\,\text{Sin}[e+f\,x]}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}\right]}{4\,\sqrt{a}\,f}-\frac{\sqrt{2}\,(c-d)^{5/2}\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\sqrt{c-d}\,\text{Cos}[e+f\,x]}{\sqrt{2}\,\sqrt{a+a\,\text{Sin}[e+f\,x]}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}\right]}{\sqrt{a}\,f}-\frac{(7\,c-d)\,d\,\text{Cos}[e+f\,x]\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}{4\,f\,\sqrt{a+a\,\text{Sin}[e+f\,x]}}-\frac{d\,\text{Cos}[e+f\,x]\,(c+d\,\text{Sin}[e+f\,x])^{3/2}}{2\,f\,\sqrt{a+a\,\text{Sin}[e+f\,x]}}$$

Result (type 3, 1893 leaves):

$$\frac{1}{f\,\sqrt{a\,(1+\text{Sin}[e+f\,x])}}\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)\sqrt{c+d\,\text{Sin}[e+f\,x]}$$
$$\left(\frac{1}{4}\,d\,(-9\,c+2\,d)\,\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]-\frac{1}{4}\,d^2\,\text{Cos}\left[\frac{3}{2}\,(e+f\,x)\right]-\frac{1}{4}\,d\,(-9\,c+2\,d)\,\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]-\frac{1}{4}\,d^2\,\text{Sin}\left[\frac{3}{2}\,(e+f\,x)\right]\right)+$$

$$\Bigg(\Bigg(\sqrt{2}\,(c-d)^{5/2}\,\text{Log}\Big[1+\text{Tan}\Big[\frac{1}{2}\,(e+f\,x)\Big]\Big]-\sqrt{2}\,(c-d)^{5/2}\,\text{Log}\Big[c-d+2\,\sqrt{c-d}\,\sqrt{\frac{1}{1+\text{Cos}[e+f\,x]}}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}+(-c+d)\,\text{Tan}\Big[\frac{1}{2}\,(e+f\,x)\Big]\Big]-$$

$$\frac{1}{8}\,i\,\sqrt{d}\,\left(15\,c^2-10\,c\,d+7\,d^2\right)\,\text{Log}\Big[\frac{2\,\left(c-i\,\left(d+(1+i)\,\sqrt{2}\,\sqrt{d}\,\sqrt{\frac{1}{1+\text{Cos}[e+f\,x]}}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}\right)+(-i\,c+d)\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right)}{d^{3/2}\,\left(15\,c^2-10\,c\,d+7\,d^2\right)\,\left(i+\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right)}\Big]+$$

$$\frac{1}{8}\,i\,\sqrt{d}\,\left(15\,c^2-10\,c\,d+7\,d^2\right)\,\text{Log}\Big[\frac{2\,\left(c+i\,d+(1+i)\,\sqrt{2}\,\sqrt{d}\,\sqrt{\frac{1}{1+\text{Cos}[e+f\,x]}}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}+(i\,c+d)\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right)}{d^{3/2}\,\left(15\,c^2-10\,c\,d+7\,d^2\right)\,\left(-i+\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right)}\Big]\Bigg)$$

$$\left(\text{Cos}\Big[\frac{1}{2}\,(e+f\,x)\Big]+\text{Sin}\Big[\frac{1}{2}\,(e+f\,x)\Big]\right)\,\Bigg(\frac{c^3}{\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}-$$

$$\frac{9\,c^2\,d}{8\,\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}+\frac{7\,c\,d^2}{4\,\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}-$$

$$\frac{d^3}{8\,\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}+\frac{15\,c^2\,d\,\text{Sin}[e+f\,x]}{8\,\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}-$$

$$\frac{5\,c\,d^2\,\text{Sin}[e+f\,x]}{4\,\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}+\frac{7\,d^3\,\text{Sin}[e+f\,x]}{8\,\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}\Bigg)\Bigg)\Bigg/$$

$$\Bigg(f\,\sqrt{a\,(1+\text{Sin}[e+f\,x])}\,\Bigg(\frac{(c-d)^{5/2}\,\text{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]^2}{\sqrt{2}\,\left(1+\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right)}-\Bigg(\sqrt{2}\,(c-d)^{5/2}$$

$$\left(\frac{1}{2}(-c+d)\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2+\frac{\sqrt{c-d}\;d\,\text{Cos}[e+f x]\sqrt{\frac{1}{1+\text{Cos}[e+f x]}}}{\sqrt{c+d\,\text{Sin}[e+f x]}}+\sqrt{c-d}\left(\frac{1}{1+\text{Cos}[e+f x]}\right)^{3/2}\text{Sin}[e+f x]\sqrt{c+d\,\text{Sin}[e+f x]}\right)\right)\Bigg/$$

$$\left(c-d+2\sqrt{c-d}\sqrt{\frac{1}{1+\text{Cos}[e+f x]}}\sqrt{c+d\,\text{Sin}[e+f x]}+(-c+d)\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)-$$

$$\left(i\,d^2\left(15c^2-10c\,d+7d^2\right)^2\left(i+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\right)\left(\left(2\left(\frac{1}{2}(-i\,c+d)\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2-i\left(\frac{(1+i)\,d^{3/2}\,\text{Cos}[e+f x]\sqrt{\frac{1}{1+\text{Cos}[e+f x]}}}{\sqrt{2}\sqrt{c+d\,\text{Sin}[e+f x]}}+\right.\right.\right.\right.$$

$$\left.\left.\left.\left.\frac{(1+i)\sqrt{d}\left(\frac{1}{1+\text{Cos}[e+f x]}\right)^{3/2}\text{Sin}[e+f x]\sqrt{c+d\,\text{Sin}[e+f x]}}{\sqrt{2}}\right)\right)\right)\Bigg/\left(d^{3/2}\left(15c^2-10c\,d+7d^2\right)\left(i+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\right)-\right.$$

$$\left(\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\left(c-i\left(d+(1+i)\sqrt{2}\sqrt{d}\sqrt{\frac{1}{1+\text{Cos}[e+f x]}}\sqrt{c+d\,\text{Sin}[e+f x]}\right)+(-i\,c+d)\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\right)\Bigg/$$

$$\left.\left.\left(d^{3/2}\left(15c^2-10c\,d+7d^2\right)\left(i+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)^2\right)\right)\right)\Bigg/$$

$$\left(16\left(c-i\left(d+(1+i)\sqrt{2}\sqrt{d}\sqrt{\frac{1}{1+\text{Cos}[e+f x]}}\sqrt{c+d\,\text{Sin}[e+f x]}\right)+(-i\,c+d)\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\right)+$$

$$\left(i\,d^2\left(15c^2-10c\,d+7d^2\right)^2\left(-i+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\right)\left(\left(2\left(\frac{1}{2}(i\,c+d)\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2+\frac{(1+i)\,d^{3/2}\,\text{Cos}[e+f x]\sqrt{\frac{1}{1+\text{Cos}[e+f x]}}}{\sqrt{2}\sqrt{c+d\,\text{Sin}[e+f x]}}+\right.\right.\right.$$

$$\left.\left.\frac{(1+i)\sqrt{d}\left(\frac{1}{1+\text{Cos}[e+f x]}\right)^{3/2}\text{Sin}[e+f x]\sqrt{c+d\,\text{Sin}[e+f x]}}{\sqrt{2}}\right)\right)\Big/\left(d^{3/2}\left(15 c^2-10 c d+7 d^2\right)\left(-i+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\right)-$$

$$\left(\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\left(c+i d+(1+i)\sqrt{2}\sqrt{d}\sqrt{\frac{1}{1+\text{Cos}[e+f x]}}\sqrt{c+d\,\text{Sin}[e+f x]}+(i c+d)\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\right)\Big/$$

$$\left.\left.\left(d^{3/2}\left(15 c^2-10 c d+7 d^2\right)\left(-i+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)^2\right)\right)\right)\Big/$$

$$\left.\left.\left(16\left(c+i d+(1+i)\sqrt{2}\sqrt{d}\sqrt{\frac{1}{1+\text{Cos}[e+f x]}}\sqrt{c+d\,\text{Sin}[e+f x]}+(i c+d)\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\right)\right)\right)$$

- **Problem 589: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int\frac{(c+d\,\text{Sin}[e+f x])^{3/2}}{\sqrt{a+a\,\text{Sin}[e+f x]}}\,dx$$

Optimal (type 3, 188 leaves, 6 steps):

$$-\frac{(3 c-d)\sqrt{d}\,\text{ArcTan}\left[\frac{\sqrt{a}\sqrt{d}\,\text{Cos}[e+f x]}{\sqrt{a+a\,\text{Sin}[e+f x]}\sqrt{c+d\,\text{Sin}[e+f x]}}\right]}{\sqrt{a}\,f}-\frac{\sqrt{2}(c-d)^{3/2}\,\text{ArcTanh}\left[\frac{\sqrt{a}\sqrt{c-d}\,\text{Cos}[e+f x]}{\sqrt{2}\sqrt{a+a\,\text{Sin}[e+f x]}\sqrt{c+d\,\text{Sin}[e+f x]}}\right]}{\sqrt{a}\,f}-\frac{d\,\text{Cos}[e+f x]\sqrt{c+d\,\text{Sin}[e+f x]}}{f\sqrt{a+a\,\text{Sin}[e+f x]}}$$

Result (type 3, 1639 leaves):

$$\frac{\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)\left(-d\,\text{Cos}\left[\frac{1}{2}(e+f x)\right]+d\,\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)\sqrt{c+d\,\text{Sin}[e+f x]}}{f\sqrt{a(1+\text{Sin}[e+f x])}}+$$

$$\left(\left(\sqrt{2}(c-d)^{3/2}\,\text{Log}\left[1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]-\sqrt{2}(c-d)^{3/2}\,\text{Log}\left[c-d+2\sqrt{c-d}\sqrt{\frac{1}{1+\text{Cos}[e+f x]}}\sqrt{c+d\,\text{Sin}[e+f x]}+(-c+d)\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]+\right.\right.$$

$$\frac{1}{2}\,\mathrm{i}\,\sqrt{d}\,(-3c+d)\left(\mathrm{Log}\left[\frac{2\,\mathrm{i}\left(\mathrm{i}\,c+d+(1+\mathrm{i})\sqrt{2}\,\sqrt{d}\,\sqrt{\frac{1}{1+\mathrm{Cos}[e+f x]}}\,\sqrt{c+d\,\mathrm{Sin}[e+f x]}+(c+\mathrm{i}\,d)\,\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]\right)}{d^{3/2}(-3c+d)\left(\mathrm{i}+\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]\right)}\right]-\right.$$

$$\left.\left.\mathrm{Log}\left[-\frac{2\left(c+\mathrm{i}\,d+(1+\mathrm{i})\sqrt{2}\,\sqrt{d}\,\sqrt{\frac{1}{1+\mathrm{Cos}[e+f x]}}\,\sqrt{c+d\,\mathrm{Sin}[e+f x]}+(\mathrm{i}\,c+d)\,\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]\right)}{d^{3/2}(-3c+d)\left(-\mathrm{i}+\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]\right)}\right]\right)\right)$$

$$\left(\mathrm{Cos}\left[\frac{1}{2}(e+f x)\right]+\mathrm{Sin}\left[\frac{1}{2}(e+f x)\right]\right)\left(\frac{c^2}{\left(\mathrm{Cos}\left[\frac{1}{2}(e+f x)\right]+\mathrm{Sin}\left[\frac{1}{2}(e+f x)\right]\right)\sqrt{c+d\,\mathrm{Sin}[e+f x]}}-\right.$$

$$\frac{c\,d}{2\left(\mathrm{Cos}\left[\frac{1}{2}(e+f x)\right]+\mathrm{Sin}\left[\frac{1}{2}(e+f x)\right]\right)\sqrt{c+d\,\mathrm{Sin}[e+f x]}}+\frac{d^2}{2\left(\mathrm{Cos}\left[\frac{1}{2}(e+f x)\right]+\mathrm{Sin}\left[\frac{1}{2}(e+f x)\right]\right)\sqrt{c+d\,\mathrm{Sin}[e+f x]}}+$$

$$\left.\left.\frac{3\,c\,d\,\mathrm{Sin}[e+f x]}{2\left(\mathrm{Cos}\left[\frac{1}{2}(e+f x)\right]+\mathrm{Sin}\left[\frac{1}{2}(e+f x)\right]\right)\sqrt{c+d\,\mathrm{Sin}[e+f x]}}-\frac{d^2\,\mathrm{Sin}[e+f x]}{2\left(\mathrm{Cos}\left[\frac{1}{2}(e+f x)\right]+\mathrm{Sin}\left[\frac{1}{2}(e+f x)\right]\right)\sqrt{c+d\,\mathrm{Sin}[e+f x]}}\right)\right)\Big/$$

$$\left(f\,\sqrt{a\,(1+\mathrm{Sin}[e+f x])}\,\left(\frac{(c-d)^{3/2}\,\mathrm{Sec}\left[\frac{1}{2}(e+f x)\right]^2}{\sqrt{2}\left(1+\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]\right)}-\left(\sqrt{2}\,(c-d)^{3/2}\right.\right.\right.$$

$$\left.\left(\frac{1}{2}(-c+d)\,\mathrm{Sec}\left[\frac{1}{2}(e+f x)\right]^2+\frac{\sqrt{c-d}\,d\,\mathrm{Cos}[e+f x]\,\sqrt{\frac{1}{1+\mathrm{Cos}[e+f x]}}}{\sqrt{c+d\,\mathrm{Sin}[e+f x]}}+\sqrt{c-d}\left(\frac{1}{1+\mathrm{Cos}[e+f x]}\right)^{3/2}\mathrm{Sin}[e+f x]\,\sqrt{c+d\,\mathrm{Sin}[e+f x]}\right)\right)\Big/$$

$$\left(c-d+2\sqrt{c-d}\,\sqrt{\frac{1}{1+\mathrm{Cos}[e+f x]}}\,\sqrt{c+d\,\mathrm{Sin}[e+f x]}+(-c+d)\,\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]\right)+$$

$$\frac{1}{2}\, i\, \sqrt{d}\, (-3\,c+d) \Bigg(-\bigg(i\, d^{3/2}\, (-3\,c+d) \left(i+\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right)\bigg) \Bigg(\Bigg(2\, i \left(\frac{1}{2}\,(c+i\,d)\,\text{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]^2+\frac{(1+i)\, d^{3/2}\,\text{Cos}[e+f\,x]\,\sqrt{\frac{1}{1+\text{Cos}[e+f\,x]}}}{\sqrt{2}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}+\right.$$

$$\left.\frac{(1+i)\,\sqrt{d}\,\left(\frac{1}{1+\text{Cos}[e+f\,x]}\right)^{3/2}\,\text{Sin}[e+f\,x]\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}{\sqrt{2}}\right)\Bigg) \Big/ \left(d^{3/2}\,(-3\,c+d)\left(i+\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right)\right) -$$

$$\left(i\,\text{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]^2 \left(i\,c+d+(1+i)\,\sqrt{2}\,\sqrt{d}\,\sqrt{\frac{1}{1+\text{Cos}[e+f\,x]}}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}+(c+i\,d)\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right)\right) \Big/$$

$$\left(d^{3/2}\,(-3\,c+d)\left(i+\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^2\right)\Bigg)\Bigg) \Big/$$

$$\left(2\left(i\,c+d+(1+i)\,\sqrt{2}\,\sqrt{d}\,\sqrt{\frac{1}{1+\text{Cos}[e+f\,x]}}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}+(c+i\,d)\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right)\right)+$$

$$\Bigg(d^{3/2}\,(-3\,c+d)\left(-i+\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right)\Bigg(\Bigg(-2\left(\frac{1}{2}\,(i\,c+d)\,\text{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]^2+\frac{(1+i)\, d^{3/2}\,\text{Cos}[e+f\,x]\,\sqrt{\frac{1}{1+\text{Cos}[e+f\,x]}}}{\sqrt{2}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}+\right.$$

$$\left.\frac{(1+i)\,\sqrt{d}\,\left(\frac{1}{1+\text{Cos}[e+f\,x]}\right)^{3/2}\,\text{Sin}[e+f\,x]\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}{\sqrt{2}}\right)\Bigg) \Big/ \left(d^{3/2}\,(-3\,c+d)\left(-i+\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right)\right) +$$

$$\left(\text{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]^2 \left(c+i\,d+(1+i)\,\sqrt{2}\,\sqrt{d}\,\sqrt{\frac{1}{1+\text{Cos}[e+f\,x]}}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}+(i\,c+d)\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right)\right) \Big/$$

$$\left.\left.\left(d^{3/2}\,(-3\,c+d)\,\left(-i+\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^2\right)\right)\right)\Big/$$

$$\left.\left.\left.\left.\left(2\,\left(c+i\,d+(1+i)\,\sqrt{2}\,\sqrt{d}\,\sqrt{\frac{1}{1+\text{Cos}[e+f\,x]}}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}+(i\,c+d)\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right)\right)\right)\right)\right)$$

- **Problem 590: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int \frac{\sqrt{c+d\,\text{Sin}[e+f\,x]}}{\sqrt{a+a\,\text{Sin}[e+f\,x]}}\,dx$$

Optimal (type 3, 141 leaves, 5 steps):

$$-\frac{2\,\sqrt{d}\,\text{ArcTan}\left[\frac{\sqrt{a}\,\sqrt{d}\,\text{Cos}[e+f\,x]}{\sqrt{a+a\,\text{Sin}[e+f\,x]}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}\right]}{\sqrt{a}\,f}-\frac{\sqrt{2}\,\sqrt{c-d}\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\sqrt{c-d}\,\text{Cos}[e+f\,x]}{\sqrt{2}\,\sqrt{a+a\,\text{Sin}[e+f\,x]}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}\right]}{\sqrt{a}\,f}$$

Result (type 3, 1251 leaves):

$$\left(\left(\sqrt{2}\,\sqrt{c-d}\,\text{Log}\left[1+\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right]-\sqrt{2}\,\sqrt{c-d}\,\text{Log}\left[c-d+2\,\sqrt{c-d}\,\sqrt{\frac{1}{1+\text{Cos}[e+f\,x]}}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}+(-c+d)\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right]-\right.\right.$$

$$i\,\sqrt{d}\,\left(\text{Log}\left[\frac{2\,\left(c-i\,d+(1-i)\,\sqrt{2}\,\sqrt{d}\,\sqrt{\frac{1}{1+\text{Cos}[e+f\,x]}}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}+(-i\,c+d)\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right)}{d^{3/2}\,\left(i+\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right)}\right]-\right.$$

$$\left.\left.\left.\text{Log}\left[\frac{2\,\left(c+i\,d+(1+i)\,\sqrt{2}\,\sqrt{d}\,\sqrt{\frac{1}{1+\text{Cos}[e+f\,x]}}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}+(i\,c+d)\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right)}{d^{3/2}\,\left(-i+\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right)}\right]\right)\right)\sqrt{c+d\,\text{Sin}[e+f\,x]}\right)\Big/$$

$$\left(f\sqrt{a\,(1+\text{Sin}[e+f x])}\left(\frac{\sqrt{c-d}\ \text{Sec}\left[\frac{1}{2}(e+f x)\right]^2}{\sqrt{2}\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)}-\left(\sqrt{2}\ \sqrt{c-d}\left(\frac{1}{2}(-c+d)\ \text{Sec}\left[\frac{1}{2}(e+f x)\right]^2+\right.\right.\right.$$

$$\left.\left.\frac{\sqrt{c-d}\ d\,\text{Cos}[e+f x]\sqrt{\frac{1}{1+\text{Cos}[e+f x]}}}{\sqrt{c+d\,\text{Sin}[e+f x]}}+\sqrt{c-d}\left(\frac{1}{1+\text{Cos}[e+f x]}\right)^{3/2}\text{Sin}[e+f x]\sqrt{c+d\,\text{Sin}[e+f x]}\right)\right)\Big/$$

$$\left(c-d+2\sqrt{c-d}\sqrt{\frac{1}{1+\text{Cos}[e+f x]}}\ \sqrt{c+d\,\text{Sin}[e+f x]}+(-c+d)\ \text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)-$$

$$\text{i}\sqrt{d}\left(\left(\left(d^{3/2}\left(\text{i}+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\right)\left(\left(2\left(\frac{1}{2}(-\text{i}\,c+d)\ \text{Sec}\left[\frac{1}{2}(e+f x)\right]^2+\frac{(1-\text{i})\ d^{3/2}\,\text{Cos}[e+f x]\sqrt{\frac{1}{1+\text{Cos}[e+f x]}}}{\sqrt{2}\ \sqrt{c+d\,\text{Sin}[e+f x]}}+\right.\right.\right.\right.\right.$$

$$\left.\left.\frac{(1-\text{i})\sqrt{d}\left(\frac{1}{1+\text{Cos}[e+f x]}\right)^{3/2}\text{Sin}[e+f x]\sqrt{c+d\,\text{Sin}[e+f x]}}{\sqrt{2}}\right)\right)\Big/\left(d^{3/2}\left(\text{i}+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\right)-\left(\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\left(c-\text{i}\,d+\right.\right.$$

$$\left.\left.\left.(1-\text{i})\sqrt{2}\ \sqrt{d}\sqrt{\frac{1}{1+\text{Cos}[e+f x]}}\ \sqrt{c+d\,\text{Sin}[e+f x]}+(-\text{i}\,c+d)\ \text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\right)\Big/\left(d^{3/2}\left(\text{i}+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)^2\right)\right)\Big/$$

$$\left(2\left(c-\text{i}\,d+(1-\text{i})\sqrt{2}\ \sqrt{d}\sqrt{\frac{1}{1+\text{Cos}[e+f x]}}\ \sqrt{c+d\,\text{Sin}[e+f x]}+(-\text{i}\,c+d)\ \text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\right)-$$

$$\left(d^{3/2}\left(-\text{i}+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\right)\left(\left(2\left(\frac{1}{2}(\text{i}\,c+d)\ \text{Sec}\left[\frac{1}{2}(e+f x)\right]^2+\frac{(1+\text{i})\ d^{3/2}\,\text{Cos}[e+f x]\sqrt{\frac{1}{1+\text{Cos}[e+f x]}}}{\sqrt{2}\ \sqrt{c+d\,\text{Sin}[e+f x]}}+\right.\right.\right.$$

$$\left.\left.\frac{(1+i)\sqrt{d}\left(\frac{1}{1+\mathrm{Cos}[e+f x]}\right)^{3/2}\mathrm{Sin}[e+f x]\sqrt{c+d\,\mathrm{Sin}[e+f x]}}{\sqrt{2}}\right)\right)\Big/\left(d^{3/2}\left(-i+\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\right)-\left(\mathrm{Sec}\left[\frac{1}{2}(e+f x)\right]^{2}\left(c+i\,d+\right.\right.$$

$$\left.\left.\left.(1+i)\sqrt{2}\sqrt{d}\sqrt{\frac{1}{1+\mathrm{Cos}[e+f x]}}\sqrt{c+d\,\mathrm{Sin}[e+f x]}+(i\,c+d)\,\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\right)\Big/\left(d^{3/2}\left(-i+\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]\right)^{2}\right)\right)\Big/$$

$$\left(2\left(c+i\,d+(1+i)\sqrt{2}\sqrt{d}\sqrt{\frac{1}{1+\mathrm{Cos}[e+f x]}}\sqrt{c+d\,\mathrm{Sin}[e+f x]}+(i\,c+d)\,\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\right)\Bigg)\Bigg)\Bigg)$$

Problem 591: Result more than twice size of optimal antiderivative.

$$\int\frac{1}{\sqrt{a+a\,\mathrm{Sin}[e+f x]}\sqrt{c+d\,\mathrm{Sin}[e+f x]}}\,dx$$

Optimal (type 3, 79 leaves, 2 steps):

$$-\frac{\sqrt{2}\,\mathrm{ArcTanh}\left[\frac{\sqrt{a}\sqrt{c-d}\,\mathrm{Cos}[e+f x]}{\sqrt{2}\sqrt{a+a\,\mathrm{Sin}[e+f x]}\sqrt{c+d\,\mathrm{Sin}[e+f x]}}\right]}{\sqrt{a}\sqrt{c-d}\,f}$$

Result (type 3, 283 leaves):

$$\left(\mathrm{Log}\left[1+\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]\right]-\mathrm{Log}\left[c-d+2\sqrt{c-d}\sqrt{\frac{1}{1+\mathrm{Cos}[e+f x]}}\sqrt{c+d\,\mathrm{Sin}[e+f x]}+(-c+d)\,\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]\right]\right)\Big/$$

$$\left(f\sqrt{a\,(1+\mathrm{Sin}[e+f x])}\sqrt{c+d\,\mathrm{Sin}[e+f x]}\right.$$

$$\left.\left(\frac{\mathrm{Sec}\left[\frac{1}{2}(e+f x)\right]^{2}}{2+2\,\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]}-\frac{-\frac{1}{2}(c-d)\,\mathrm{Sec}\left[\frac{1}{2}(e+f x)\right]^{2}+\frac{\sqrt{c-d}\left(\frac{1}{1+\mathrm{Cos}[e+f x]}\right)^{3/2}(d+d\,\mathrm{Cos}[e+f x]+c\,\mathrm{Sin}[e+f x])}{\sqrt{c+d\,\mathrm{Sin}[e+f x]}}}{c-d+2\sqrt{c-d}\sqrt{\frac{1}{1+\mathrm{Cos}[e+f x]}}\sqrt{c+d\,\mathrm{Sin}[e+f x]}+(-c+d)\,\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]}\right)\right)$$

Problem 592: Result more than twice size of optimal antiderivative.

$$\int \frac{1}{\sqrt{a+a\,\text{Sin}[e+f\,x]}\;(c+d\,\text{Sin}[e+f\,x])^{3/2}}\,dx$$

Optimal (type 3, 131 leaves, 4 steps):

$$-\frac{\sqrt{2}\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\sqrt{c-d}\,\text{Cos}[e+f\,x]}{\sqrt{2}\,\sqrt{a+a\,\text{Sin}[e+f\,x]}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}\right]}{\sqrt{a}\,(c-d)^{3/2}\,f}+\frac{2\,d\,\text{Cos}[e+f\,x]}{\left(c^2-d^2\right)\,f\,\sqrt{a+a\,\text{Sin}[e+f\,x]}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}$$

Result (type 3, 306 leaves):

$$\frac{\frac{2\,d\,\text{Cos}[e+f\,x]}{c+d}+\frac{\text{Log}\left[1+\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right]-\text{Log}\left[c-d+2\,\sqrt{c-d}\,\sqrt{\frac{1}{1+\text{Cos}[e+f\,x]}}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}+(-c+d)\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right]}{\frac{\text{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]^2}{2+2\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]}-\frac{-\frac{1}{2}\,(c-d)\,\text{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]^2+\frac{\sqrt{c-d}\,\left(\frac{1}{1+\text{Cos}[e+f\,x]}\right)^{3/2}\,(d+d\,\text{Cos}[e+f\,x]+c\,\text{Sin}[e+f\,x])}{\sqrt{c+d\,\text{Sin}[e+f\,x]}}}{c-d+2\,\sqrt{c-d}\,\sqrt{\frac{1}{1+\text{Cos}[e+f\,x]}}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}+(-c+d)\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]}}}{(c-d)\,f\,\sqrt{a\,(1+\text{Sin}[e+f\,x])}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}$$

Problem 593: Result more than twice size of optimal antiderivative.

$$\int \frac{1}{\sqrt{a+a\,\text{Sin}[e+f\,x]}\;(c+d\,\text{Sin}[e+f\,x])^{5/2}}\,dx$$

Optimal (type 3, 191 leaves, 5 steps):

$$-\frac{\sqrt{2}\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\sqrt{c-d}\,\text{Cos}[e+f\,x]}{\sqrt{2}\,\sqrt{a+a\,\text{Sin}[e+f\,x]}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}\right]}{\sqrt{a}\,(c-d)^{5/2}\,f}+\frac{2\,d\,\text{Cos}[e+f\,x]}{3\,\left(c^2-d^2\right)\,f\,\sqrt{a+a\,\text{Sin}[e+f\,x]}\,(c+d\,\text{Sin}[e+f\,x])^{3/2}}+\frac{2\,d\,(5\,c+d)\,\text{Cos}[e+f\,x]}{3\,\left(c^2-d^2\right)^2\,f\,\sqrt{a+a\,\text{Sin}[e+f\,x]}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}$$

Result (type 3, 387 leaves):

$$\left(\left(2 d \left(\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]-\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right)\left(\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]+\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right)\left(6 c^2+c d-d^2+d (5 c+d) \operatorname{Sin}[e+f x]\right)\right)\Big/\right.$$

$$\left.\left((c+d)^2 (c+d \operatorname{Sin}[e+f x])\right)\right)+$$

$$\left(3\left(\operatorname{Log}\left[1+\operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]\right]-\operatorname{Log}\left[c-d+2\sqrt{c-d}\sqrt{\frac{1}{1+\operatorname{Cos}[e+f x]}}\sqrt{c+d \operatorname{Sin}[e+f x]}+(-c+d)\operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]\right]\right)\right)\Big/$$

$$\left(\frac{\operatorname{Sec}\left[\frac{1}{2}(e+f x)\right]^2}{2+2\operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]}-\frac{-\frac{1}{2}(c-d)\operatorname{Sec}\left[\frac{1}{2}(e+f x)\right]^2+\frac{\sqrt{c-d}\left(\frac{1}{1+\operatorname{Cos}[e+f x]}\right)^{3/2}(d+d\operatorname{Cos}[e+f x]+c\operatorname{Sin}[e+f x])}{\sqrt{c+d\operatorname{Sin}[e+f x]}}}{c-d+2\sqrt{c-d}\sqrt{\frac{1}{1+\operatorname{Cos}[e+f x]}}\sqrt{c+d\operatorname{Sin}[e+f x]}+(-c+d)\operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]}\right)\Big/$$

$$\left(3 (c-d)^2 f\sqrt{a (1+\operatorname{Sin}[e+f x])}\sqrt{c+d\operatorname{Sin}[e+f x]}\right)$$

- **Problem 594: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int \frac{(c+d \operatorname{Sin}[e+f x])^{5/2}}{(a+a \operatorname{Sin}[e+f x])^{3/2}}\,dx$$

Optimal (type 3, 251 leaves, 7 steps):

$$-\frac{(5 c-3 d) d^{3/2}\operatorname{ArcTan}\left[\frac{\sqrt{a}\sqrt{d}\operatorname{Cos}[e+f x]}{\sqrt{a+a\operatorname{Sin}[e+f x]}\sqrt{c+d\operatorname{Sin}[e+f x]}}\right]}{a^{3/2} f}-\frac{(c-d)^{3/2}(c+9 d)\operatorname{ArcTanh}\left[\frac{\sqrt{a}\sqrt{c-d}\operatorname{Cos}[e+f x]}{\sqrt{2}\sqrt{a+a\operatorname{Sin}[e+f x]}\sqrt{c+d\operatorname{Sin}[e+f x]}}\right]}{2\sqrt{2}\, a^{3/2} f}+$$

$$\frac{(c-3 d) d\operatorname{Cos}[e+f x]\sqrt{c+d\operatorname{Sin}[e+f x]}}{2 a f\sqrt{a+a\operatorname{Sin}[e+f x]}}-\frac{(c-d)\operatorname{Cos}[e+f x](c+d\operatorname{Sin}[e+f x])^{3/2}}{2 f (a+a\operatorname{Sin}[e+f x])^{3/2}}$$

Result (type 3, 1844 leaves):

$$\frac{1}{f (a (1+\operatorname{Sin}[e+f x]))^{3/2}}$$

$$\left(\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]+\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^3\left(-d^2\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]+d^2\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]-\frac{(c-d)^2}{2\left(\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]+\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right)}+\right.$$

$$\left.\frac{c^2\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]-2 c d\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]+d^2\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]}{\left(\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]+\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^2}\right)\sqrt{c+d\operatorname{Sin}[e+f x]}+\left(\left(\frac{(c-d)^{3/2}(c+9 d)\operatorname{Log}\left[1+\operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]\right]}{\sqrt{2}}+\right.\right.$$

$$\mathbb{i}\,(5c-3d)\,d^{3/2}\,\text{Log}\Big[-\frac{\mathbb{i}\left(-\mathbb{i}\,c+d+(1-\mathbb{i})\sqrt{2}\,\sqrt{d}\,\sqrt{\frac{1}{1+\text{Cos}[e+f x]}}\,\sqrt{c+d\,\text{Sin}[e+f x]}+(c-\mathbb{i}\,d)\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)}{d^{5/2}\,(-5c+3d)\left(-\mathbb{i}+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)}\Big]+$$

$$\mathbb{i}\,d^{3/2}\,(-5c+3d)\,\text{Log}\Big[\frac{\mathbb{i}\left(\mathbb{i}\,c+d+(1+\mathbb{i})\sqrt{2}\,\sqrt{d}\,\sqrt{\frac{1}{1+\text{Cos}[e+f x]}}\,\sqrt{c+d\,\text{Sin}[e+f x]}+(c+\mathbb{i}\,d)\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)}{d^{5/2}\,(-5c+3d)\left(\mathbb{i}+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)}\Big]-\frac{1}{\sqrt{2}}(c-d)^{3/2}(c+9d)$$

$$\left.\text{Log}\left[c-d+2\sqrt{c-d}\,\sqrt{\frac{1}{1+\text{Cos}[e+f x]}}\,\sqrt{c+d\,\text{Sin}[e+f x]}+(-c+d)\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]\right)\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^3$$

$$\left(\frac{c^3}{4\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)\sqrt{c+d\,\text{Sin}[e+f x]}}+\frac{7c^2 d}{4\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)\sqrt{c+d\,\text{Sin}[e+f x]}}-\right.$$

$$\frac{7c\,d^2}{4\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)\sqrt{c+d\,\text{Sin}[e+f x]}}+\frac{3d^3}{4\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)\sqrt{c+d\,\text{Sin}[e+f x]}}+$$

$$\left.\left.\frac{5c\,d^2\,\text{Sin}[e+f x]}{2\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)\sqrt{c+d\,\text{Sin}[e+f x]}}-\frac{3d^3\,\text{Sin}[e+f x]}{2\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)\sqrt{c+d\,\text{Sin}[e+f x]}}\right)\right)\Big/$$

$$\left(f\,(a\,(1+\text{Sin}[e+f x]))^{3/2}\left(\frac{(c-d)^{3/2}(c+9d)\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2}{2\sqrt{2}\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)}-\Big((c-d)^{3/2}(c+9d)\right.\right.$$

$$\left.\left.\left(\frac{1}{2}(-c+d)\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2+\frac{\sqrt{c-d}\,d\,\text{Cos}[e+f x]\sqrt{\frac{1}{1+\text{Cos}[e+f x]}}}{\sqrt{c+d\,\text{Sin}[e+f x]}}+\sqrt{c-d}\left(\frac{1}{1+\text{Cos}[e+f x]}\right)^{3/2}\text{Sin}[e+f x]\sqrt{c+d\,\text{Sin}[e+f x]}\right)\right)\Big/\right.$$

$$\left(\sqrt{2}\left(c-d+2\sqrt{c-d}\sqrt{\frac{1}{1+\text{Cos}[e+f x]}}\sqrt{c+d\,\text{Sin}[e+f x]}+(-c+d)\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\right)-$$

$$\left((5c-3d)\,d^4\,(-5c+3d)\left(-i+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\right)\left(-\left(i\left(\frac{1}{2}(c-i d)\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2+\frac{(1-i)\,d^{3/2}\,\text{Cos}[e+f x]\sqrt{\frac{1}{1+\text{Cos}[e+f x]}}}{\sqrt{2}\sqrt{c+d\,\text{Sin}[e+f x]}}+\right.\right.\right.$$

$$\left.\left.\frac{(1-i)\sqrt{d}\left(\frac{1}{1+\text{Cos}[e+f x]}\right)^{3/2}\text{Sin}[e+f x]\sqrt{c+d\,\text{Sin}[e+f x]}}{\sqrt{2}}\right)\right)\Big/\left(d^{5/2}(-5c+3d)\left(-i+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\right)+$$

$$\left(i\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\left(-i c+d+(1-i)\sqrt{2}\sqrt{d}\sqrt{\frac{1}{1+\text{Cos}[e+f x]}}\sqrt{c+d\,\text{Sin}[e+f x]}+(c-i d)\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\right)\Big/$$

$$\left.\left(2\,d^{5/2}(-5c+3d)\left(-i+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)^2\right)\right)\Big/$$

$$\left(-i c+d+(1-i)\sqrt{2}\sqrt{d}\sqrt{\frac{1}{1+\text{Cos}[e+f x]}}\sqrt{c+d\,\text{Sin}[e+f x]}+(c-i d)\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)+$$

$$\left(d^4\,(-5c+3d)^2\left(i+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\right)\left(\left(i\left(\frac{1}{2}(c+i d)\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2+\frac{(1+i)\,d^{3/2}\,\text{Cos}[e+f x]\sqrt{\frac{1}{1+\text{Cos}[e+f x]}}}{\sqrt{2}\sqrt{c+d\,\text{Sin}[e+f x]}}+\right.\right.\right.$$

$$\left.\left.\frac{(1+i)\sqrt{d}\left(\frac{1}{1+\text{Cos}[e+f x]}\right)^{3/2}\text{Sin}[e+f x]\sqrt{c+d\,\text{Sin}[e+f x]}}{\sqrt{2}}\right)\right)\Big/\left(d^{5/2}(-5c+3d)\left(i+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\right)-$$

$$\left(i \operatorname{Sec}\left[\frac{1}{2}(e+f x)\right]^2 \left(i c+d+(1+i) \sqrt{2} \sqrt{d} \sqrt{\frac{1}{1+\operatorname{Cos}[e+f x]}} \sqrt{c+d \operatorname{Sin}[e+f x]}+(c+i d) \operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\right) \Big/$$

$$\left(2 d^{5/2}(-5 c+3 d)\left(i+\operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]\right)^2\right)\Bigg)\Bigg) \Big/$$

$$\left(i c+d+(1+i) \sqrt{2} \sqrt{d} \sqrt{\frac{1}{1+\operatorname{Cos}[e+f x]}} \sqrt{c+d \operatorname{Sin}[e+f x]}+(c+i d) \operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\Bigg)\Bigg)$$

- **Problem 595: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int \frac{(c+d \operatorname{Sin}[e+f x])^{3/2}}{(a+a \operatorname{Sin}[e+f x])^{3/2}} \, dx$$

Optimal (type 3, 194 leaves, 6 steps):

$$-\frac{2 d^{3/2} \operatorname{ArcTan}\left[\frac{\sqrt{a} \sqrt{d} \operatorname{Cos}[e+f x]}{\sqrt{a+a \operatorname{Sin}[e+f x]} \sqrt{c+d \operatorname{Sin}[e+f x]}}\right]}{a^{3/2} f}-\frac{\sqrt{c-d}\,(c+5 d) \operatorname{ArcTanh}\left[\frac{\sqrt{a} \sqrt{c-d} \operatorname{Cos}[e+f x]}{\sqrt{2} \sqrt{a+a \operatorname{Sin}[e+f x]} \sqrt{c+d \operatorname{Sin}[e+f x]}}\right]}{2 \sqrt{2}\, a^{3/2} f}-\frac{(c-d) \operatorname{Cos}[e+f x] \sqrt{c+d \operatorname{Sin}[e+f x]}}{2 f (a+a \operatorname{Sin}[e+f x])^{3/2}}$$

Result (type 3, 1625 leaves):

$$\frac{1}{f (a (1+\operatorname{Sin}[e+f x]))^{3/2}}$$

$$\left(\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]+\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^3 \left(\frac{-c+d}{2\left(\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]+\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right)}+\frac{c \operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]-d \operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]}{\left(\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]+\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^2}\right) \sqrt{c+d \operatorname{Sin}[e+f x]}+$$

$$\Bigg(\Bigg(\sqrt{2}\left(c^2+4 c d-5 d^2\right) \operatorname{Log}\left[1+\operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]\right]-$$

$$\sqrt{2}\left(c^2+4 c d-5 d^2\right) \operatorname{Log}\left[c-d+2 \sqrt{c-d} \sqrt{\frac{1}{1+\operatorname{Cos}[e+f x]}} \sqrt{c+d \operatorname{Sin}[e+f x]}+(-c+d) \operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]\right]-$$

$$4\,i\,\sqrt{c-d}\,d^{3/2}\left(\text{Log}\left[\frac{c-i\left(d+(1+i)\sqrt{2}\sqrt{d}\sqrt{\frac{1}{1+\text{Cos}[e+f x]}}\sqrt{c+d\,\text{Sin}[e+f x]}\right)+(-i c+d)\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{2 d^{5/2}\left(i+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)}\right]-\right.$$

$$\left.\left.\text{Log}\left[\frac{c+i d+(1+i)\sqrt{2}\sqrt{d}\sqrt{\frac{1}{1+\text{Cos}[e+f x]}}\sqrt{c+d\,\text{Sin}[e+f x]}+(i c+d)\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{2 d^{5/2}\left(-i+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)}\right]\right)\right)\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^3$$

$$\left(\frac{c^2}{4\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)\sqrt{c+d\,\text{Sin}[e+f x]}}+\frac{c\,d}{\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)\sqrt{c+d\,\text{Sin}[e+f x]}}-\right.$$

$$\left.\left.\frac{d^2}{4\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)\sqrt{c+d\,\text{Sin}[e+f x]}}+\frac{d^2\,\text{Sin}[e+f x]}{\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)\sqrt{c+d\,\text{Sin}[e+f x]}}\right)\right)\Big/$$

$$\left(f\,(a\,(1+\text{Sin}[e+f x]))^{3/2}\left(\frac{\left(c^2+4 c d-5 d^2\right)\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2}{\sqrt{2}\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)}-\left(\sqrt{2}\left(c^2+4 c d-5 d^2\right)\right.\right.\right.$$

$$\left.\left.\left(\frac{1}{2}(-c+d)\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2+\frac{\sqrt{c-d}\,d\,\text{Cos}[e+f x]\sqrt{\frac{1}{1+\text{Cos}[e+f x]}}}{\sqrt{c+d\,\text{Sin}[e+f x]}}+\sqrt{c-d}\left(\frac{1}{1+\text{Cos}[e+f x]}\right)^{3/2}\text{Sin}[e+f x]\sqrt{c+d\,\text{Sin}[e+f x]}\right)\right)\right/$$

$$\left(c-d+2\sqrt{c-d}\sqrt{\frac{1}{1+\text{Cos}[e+f x]}}\sqrt{c+d\,\text{Sin}[e+f x]}+(-c+d)\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)-$$

$$4\,i\,\sqrt{c-d}\,d^{3/2}\left(\left(\left(2 d^{5/2}\left(i+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\right)\left(\left(\frac{1}{2}(-i c+d)\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2-i\left(\frac{(1+i)\,d^{3/2}\,\text{Cos}[e+f x]\sqrt{\frac{1}{1+\text{Cos}[e+f x]}}}{\sqrt{2}\sqrt{c+d\,\text{Sin}[e+f x]}}+\right.\right.\right.\right.\right.$$

$$\frac{(1+i)\sqrt{d}\,\left(\frac{1}{1+\text{Cos}[e+f x]}\right)^{3/2}\text{Sin}[e+f x]\,\sqrt{c+d\,\text{Sin}[e+f x]}}{\sqrt{2}}\Bigg)\Bigg)\Big/\left(2\,d^{5/2}\left(i+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\right)-$$

$$\Bigg(\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\Bigg(c-i\left(d+(1+i)\sqrt{2}\,\sqrt{d}\,\sqrt{\frac{1}{1+\text{Cos}[e+f x]}}\,\sqrt{c+d\,\text{Sin}[e+f x]}\right)+(-i\,c+d)\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]\Bigg)\Bigg)\Big/\Bigg(4\,d^{5/2}$$

$$\left(i+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)^2\Bigg)\Bigg)\Bigg)\Big/\Bigg(c-i\left(d+(1+i)\sqrt{2}\,\sqrt{d}\,\sqrt{\frac{1}{1+\text{Cos}[e+f x]}}\,\sqrt{c+d\,\text{Sin}[e+f x]}\right)+(-i\,c+d)\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]\Bigg)-$$

$$\Bigg(2\,d^{5/2}\left(-i+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\Bigg(\Bigg(\frac{1}{2}(i\,c+d)\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2+\frac{(1+i)\,d^{3/2}\,\text{Cos}[e+f x]\,\sqrt{\frac{1}{1+\text{Cos}[e+f x]}}}{\sqrt{2}\,\sqrt{c+d\,\text{Sin}[e+f x]}}+$$

$$\frac{(1+i)\sqrt{d}\,\left(\frac{1}{1+\text{Cos}[e+f x]}\right)^{3/2}\text{Sin}[e+f x]\,\sqrt{c+d\,\text{Sin}[e+f x]}}{\sqrt{2}}\Bigg)\Big/\left(2\,d^{5/2}\left(-i+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\right)-\Bigg(\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\Bigg(c+i\,d+$$

$$(1+i)\sqrt{2}\,\sqrt{d}\,\sqrt{\frac{1}{1+\text{Cos}[e+f x]}}\,\sqrt{c+d\,\text{Sin}[e+f x]}+(i\,c+d)\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]\Bigg)\Bigg)\Big/\left(4\,d^{5/2}\left(-i+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)^2\right)\Bigg)\Bigg)\Big/$$

$$\Bigg(c+i\,d+(1+i)\sqrt{2}\,\sqrt{d}\,\sqrt{\frac{1}{1+\text{Cos}[e+f x]}}\,\sqrt{c+d\,\text{Sin}[e+f x]}+(i\,c+d)\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]\Bigg)\Bigg)\Bigg)\Bigg)$$

- **Problem 596: Result more than twice size of optimal antiderivative.**

$$\int\frac{\sqrt{c+d\,\text{Sin}[e+f x]}}{(a+a\,\text{Sin}[e+f x])^{3/2}}\,dx$$

Optimal (type 3, 126 leaves, 4 steps):

$$-\frac{(c+d)\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\sqrt{c-d}\,\text{Cos}[e+f\,x]}{\sqrt{2}\,\sqrt{a+a\,\text{Sin}[e+f\,x]}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}\right]}{2\sqrt{2}\,a^{3/2}\,\sqrt{c-d}\,f}-\frac{\text{Cos}[e+f\,x]\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}{2\,f\,(a+a\,\text{Sin}[e+f\,x])^{3/2}}$$

Result (type 3, 372 leaves):

$$\left(\left(\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)^2\left(-\frac{2\left(\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]-\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)(c+d\,\text{Sin}[e+f\,x])}{\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]}+\right.\right.$$

$$\left((c+d)\left(\text{Log}\left[1+\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]\right]-\text{Log}\left[c-d+2\sqrt{c-d}\,\sqrt{\frac{1}{1+\text{Cos}[e+f\,x]}}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}+(-c+d)\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]\right]\right)\right)\Big/$$

$$\left.\left.\left(\frac{\text{Sec}\left[\frac{1}{2}(e+f\,x)\right]^2}{2+2\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]}-\frac{-\frac{1}{2}(c-d)\,\text{Sec}\left[\frac{1}{2}(e+f\,x)\right]^2+\frac{\sqrt{c-d}\left(\frac{1}{1+\text{Cos}[e+f\,x]}\right)^{3/2}(d+d\,\text{Cos}[e+f\,x]+c\,\text{Sin}[e+f\,x])}{\sqrt{c+d\,\text{Sin}[e+f\,x]}}}{c-d+2\sqrt{c-d}\,\sqrt{\frac{1}{1+\text{Cos}[e+f\,x]}}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}+(-c+d)\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]}\right)\right)\right)\Big/$$

$$\left(4\,f\,(a\,(1+\text{Sin}[e+f\,x]))^{3/2}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}\right)$$

■ **Problem 597: Result more than twice size of optimal antiderivative.**

$$\int\frac{1}{(a+a\,\text{Sin}[e+f\,x])^{3/2}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}\,dx$$

Optimal (type 3, 135 leaves, 4 steps):

$$-\frac{(c-3\,d)\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\sqrt{c-d}\,\text{Cos}[e+f\,x]}{\sqrt{2}\,\sqrt{a+a\,\text{Sin}[e+f\,x]}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}\right]}{2\sqrt{2}\,a^{3/2}\,(c-d)^{3/2}\,f}-\frac{\text{Cos}[e+f\,x]\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}{2\,(c-d)\,f\,(a+a\,\text{Sin}[e+f\,x])^{3/2}}$$

Result (type 3, 381 leaves):

$$\left(\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^2\left(-\frac{2\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)(c+d\,\text{Sin}[e+f x])}{\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]}+\right.\right.$$

$$\left.\left.(c-3d)\left(\text{Log}\left[1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]-\text{Log}\left[c-d+2\sqrt{c-d}\sqrt{\frac{1}{1+\text{Cos}[e+f x]}}\sqrt{c+d\,\text{Sin}[e+f x]}+(-c+d)\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right]\right)\right/\right.$$

$$\left.\left(\frac{\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2}{2+2\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]}-\frac{-\frac{1}{2}(c-d)\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2+\frac{\sqrt{c-d}\left(\frac{1}{1+\text{Cos}[e+f x]}\right)^{3/2}(d+d\,\text{Cos}[e+f x]+c\,\text{Sin}[e+f x])}{\sqrt{c+d\,\text{Sin}[e+f x]}}}{c-d+2\sqrt{c-d}\sqrt{\frac{1}{1+\text{Cos}[e+f x]}}\sqrt{c+d\,\text{Sin}[e+f x]}+(-c+d)\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]}\right)\right)\right)\Bigg/$$

$$\left(4(c-d)f\,(a(1+\text{Sin}[e+f x]))^{3/2}\sqrt{c+d\,\text{Sin}[e+f x]}\right)$$

- **Problem 598: Result more than twice size of optimal antiderivative.**

$$\int\frac{1}{(a+a\,\text{Sin}[e+f x])^{3/2}\,(c+d\,\text{Sin}[e+f x])^{3/2}}\,dx$$

Optimal (type 3, 197 leaves, 5 steps):

$$-\frac{(c-7d)\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\sqrt{c-d}\,\text{Cos}[e+f x]}{\sqrt{2}\,\sqrt{a+a\,\text{Sin}[e+f x]}\,\sqrt{c+d\,\text{Sin}[e+f x]}}\right]}{2\sqrt{2}\,a^{3/2}\,(c-d)^{5/2}\,f}-\frac{\text{Cos}[e+f x]}{2(c-d)\,f\,(a+a\,\text{Sin}[e+f x])^{3/2}\sqrt{c+d\,\text{Sin}[e+f x]}}-\frac{d\,(c+5d)\,\text{Cos}[e+f x]}{2a\,(c-d)^2\,(c+d)\,f\,\sqrt{a+a\,\text{Sin}[e+f x]}\,\sqrt{c+d\,\text{Sin}[e+f x]}}$$

Result (type 3, 401 leaves):

$$\left(\left(\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]+\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^2\left(-\frac{2\left(\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]-\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right)\left(c^2+c d+4 d^2+d(c+5 d)\operatorname{Sin}[e+f x]\right)}{(c+d)\left(\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]+\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right)}+\right.\right.$$

$$\left((c-7 d)\left(\operatorname{Log}\left[1+\operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]\right]-\operatorname{Log}\left[c-d+2\sqrt{c-d}\sqrt{\frac{1}{1+\operatorname{Cos}[e+f x]}}\sqrt{c+d\operatorname{Sin}[e+f x]}+(-c+d)\operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]\right]\right)\right)\Big/$$

$$\left.\left.\left(\frac{\operatorname{Sec}\left[\frac{1}{2}(e+f x)\right]^2}{2+2\operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]}-\frac{-\frac{1}{2}(c-d)\operatorname{Sec}\left[\frac{1}{2}(e+f x)\right]^2+\frac{\sqrt{c-d}\left(\frac{1}{1+\operatorname{Cos}[e+f x]}\right)^{3/2}(d+d\operatorname{Cos}[e+f x]+c\operatorname{Sin}[e+f x])}{\sqrt{c+d\operatorname{Sin}[e+f x]}}}{c-d+2\sqrt{c-d}\sqrt{\frac{1}{1+\operatorname{Cos}[e+f x]}}\sqrt{c+d\operatorname{Sin}[e+f x]}+(-c+d)\operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]}\right)\right)\right)\Big/$$

$$\left(4(c-d)^2 f(a(1+\operatorname{Sin}[e+f x]))^{3/2}\sqrt{c+d\operatorname{Sin}[e+f x]}\right)$$

- **Problem 599: Result more than twice size of optimal antiderivative.**

$$\int\frac{1}{(a+a\operatorname{Sin}[e+f x])^{3/2}(c+d\operatorname{Sin}[e+f x])^{5/2}}\,dx$$

Optimal (type 3, 271 leaves, 6 steps):

$$-\frac{(c-11 d)\operatorname{ArcTanh}\left[\frac{\sqrt{a}\sqrt{c-d}\operatorname{Cos}[e+f x]}{\sqrt{2}\sqrt{a+a\operatorname{Sin}[e+f x]}\sqrt{c+d\operatorname{Sin}[e+f x]}}\right]}{2\sqrt{2}\,a^{3/2}(c-d)^{7/2} f}-\frac{\operatorname{Cos}[e+f x]}{2(c-d) f(a+a\operatorname{Sin}[e+f x])^{3/2}(c+d\operatorname{Sin}[e+f x])^{3/2}}-$$

$$\frac{d(3 c+7 d)\operatorname{Cos}[e+f x]}{6 a(c-d)^2(c+d) f\sqrt{a+a\operatorname{Sin}[e+f x]}(c+d\operatorname{Sin}[e+f x])^{3/2}}-\frac{d\left(3 c^2+38 c d+19 d^2\right)\operatorname{Cos}[e+f x]}{6 a(c-d)^3(c+d)^2 f\sqrt{a+a\operatorname{Sin}[e+f x]}\sqrt{c+d\operatorname{Sin}[e+f x]}}$$

Result (type 3, 601 leaves):

$$\frac{1}{f\,(a\,(1+\mathrm{Sin}[e+f\,x]))^{3/2}}\left(\mathrm{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^3\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}$$

$$\left(\frac{\mathrm{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]}{(c-d)^3\,\left(\mathrm{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^2}-\frac{1}{2\,(c-d)^3\,\left(\mathrm{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)}-\right.$$

$$\left.\frac{2\,\left(d^2\,\mathrm{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]-d^2\,\mathrm{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)}{3\,(c-d)^2\,(c+d)\,(c+d\,\mathrm{Sin}[e+f\,x])^2}-\frac{8\,\left(2\,c\,d^2\,\mathrm{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+d^3\,\mathrm{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]-2\,c\,d^2\,\mathrm{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]-d^3\,\mathrm{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)}{3\,(c-d)^3\,(c+d)^2\,(c+d\,\mathrm{Sin}[e+f\,x])}\right)+$$

$$\left((c-11\,d)\left(\mathrm{Log}\left[1+\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right]-\mathrm{Log}\left[c-d+2\,\sqrt{c-d}\,\sqrt{\frac{1}{1+\mathrm{Cos}[e+f\,x]}}\,\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}+(-c+d)\,\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right]\right)\right.$$

$$\left.\left(\mathrm{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^2\right)\Big/\left(4\,(c-d)^3\,f\,(a\,(1+\mathrm{Sin}[e+f\,x]))^{3/2}\,\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}\right.$$

$$\left.\left(\frac{\mathrm{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]^2}{2+2\,\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]}-\frac{-\frac{1}{2}\,(c-d)\,\mathrm{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]^2+\frac{\sqrt{c-d}\,\left(\frac{1}{1+\mathrm{Cos}[e+f\,x]}\right)^{3/2}\,(d+d\,\mathrm{Cos}[e+f\,x]+c\,\mathrm{Sin}[e+f\,x])}{\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}}}{c-d+2\,\sqrt{c-d}\,\sqrt{\frac{1}{1+\mathrm{Cos}[e+f\,x]}}\,\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}+(-c+d)\,\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]}\right)\right)$$

- **Problem 600: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int\frac{(c+d\,\mathrm{Sin}[e+f\,x])^{5/2}}{(a+a\,\mathrm{Sin}[e+f\,x])^{5/2}}\,dx$$

Optimal (type 3, 260 leaves, 7 steps):

$$-\frac{2\,d^{5/2}\,\mathrm{ArcTan}\left[\frac{\sqrt{a}\,\sqrt{d}\,\mathrm{Cos}[e+f\,x]}{\sqrt{a+a\,\mathrm{Sin}[e+f\,x]}\,\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}}\right]}{a^{5/2}\,f}-\frac{\sqrt{c-d}\,\left(3\,c^2+14\,c\,d+43\,d^2\right)\,\mathrm{ArcTanh}\left[\frac{\sqrt{a}\,\sqrt{c-d}\,\mathrm{Cos}[e+f\,x]}{\sqrt{2}\,\sqrt{a+a\,\mathrm{Sin}[e+f\,x]}\,\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}}\right]}{16\,\sqrt{2}\,a^{5/2}\,f}-$$

$$\frac{(c-d)\,(3\,c+11\,d)\,\mathrm{Cos}[e+f\,x]\,\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}}{16\,a\,f\,(a+a\,\mathrm{Sin}[e+f\,x])^{3/2}}-\frac{(c-d)\,\mathrm{Cos}[e+f\,x]\,(c+d\,\mathrm{Sin}[e+f\,x])^{3/2}}{4\,f\,(a+a\,\mathrm{Sin}[e+f\,x])^{5/2}}$$

Result (type 3, 1845 leaves):

$$\frac{1}{f\,(a\,(1+\mathrm{Sin}[e+f\,x]))^{5/2}}$$

$$\left(\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]+\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^5\left(-\frac{(c-d)^2}{4\left(\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]+\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^3}-\frac{3(c-d)(c+5 d)}{16\left(\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]+\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right)}+\right.$$

$$\left.\frac{3\left(c^2 \operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]+4 c d \operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]-5 d^2 \operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right)}{8\left(\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]+\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^2}+\frac{c^2 \operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]-2 c d \operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]+d^2 \operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]}{2\left(\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]+\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^4}\right)$$

$$\sqrt{c+d \operatorname{Sin}[e+f x]}+\left(\left(\sqrt{2}\left(3 c^3+11 c^2 d+29 c d^2-43 d^3\right) \operatorname{Log}\left[1+\operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]\right]-\right.\right.$$

$$\sqrt{2}\left(3 c^3+11 c^2 d+29 c d^2-43 d^3\right) \operatorname{Log}\left[c-d+2 \sqrt{c-d} \sqrt{\frac{1}{1+\operatorname{Cos}[e+f x]}} \sqrt{c+d \operatorname{Sin}[e+f x]}+(-c+d) \operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]\right]-$$

$$32 i \sqrt{c-d}\, d^{5/2}\left(\operatorname{Log}\left[\frac{c-i\left(d+(1+i) \sqrt{2} \sqrt{d} \sqrt{\frac{1}{1+\operatorname{Cos}[e+f x]}} \sqrt{c+d \operatorname{Sin}[e+f x]}\right)+(-i c+d) \operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]}{16 d^{7/2}\left(i+\operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]\right)}\right]-\right.$$

$$\left.\left.\left.\operatorname{Log}\left[\frac{c+i d+(1+i) \sqrt{2} \sqrt{d} \sqrt{\frac{1}{1+\operatorname{Cos}[e+f x]}} \sqrt{c+d \operatorname{Sin}[e+f x]}+(i c+d) \operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]}{16 d^{7/2}\left(-i+\operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]\right)}\right]\right)\right)\right.$$

$$\left(\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]+\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^5\left(\frac{3 c^3}{32\left(\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]+\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right) \sqrt{c+d \operatorname{Sin}[e+f x]}}+\right.$$

$$\frac{11 c^2 d}{32\left(\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]+\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right) \sqrt{c+d \operatorname{Sin}[e+f x]}}+\frac{29 c d^2}{32\left(\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]+\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right) \sqrt{c+d \operatorname{Sin}[e+f x]}}-$$

$$\left.\left.\frac{11 d^3}{32\left(\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]+\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right) \sqrt{c+d \operatorname{Sin}[e+f x]}}+\frac{d^3 \operatorname{Sin}[e+f x]}{\left(\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]+\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right) \sqrt{c+d \operatorname{Sin}[e+f x]}}\right)\right) \Big/$$

$$\left(f\,(a\,(1+\text{Sin}[e+f x]))^{5/2}\left(\frac{\left(3 c^3+11 c^2 d+29 c d^2-43 d^3\right)\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2}{\sqrt{2}\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)}-\left(\sqrt{2}\left(3 c^3+11 c^2 d+29 c d^2-43 d^3\right)\right.\right.\right.$$

$$\left.\left.\left(\frac{1}{2}(-c+d)\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2+\frac{\sqrt{c-d}\,d\,\text{Cos}[e+f x]\sqrt{\frac{1}{1+\text{Cos}[e+f x]}}}{\sqrt{c+d\,\text{Sin}[e+f x]}}+\sqrt{c-d}\left(\frac{1}{1+\text{Cos}[e+f x]}\right)^{3/2}\text{Sin}[e+f x]\sqrt{c+d\,\text{Sin}[e+f x]}\right)\right)\Big/$$

$$\left(c-d+2\sqrt{c-d}\sqrt{\frac{1}{1+\text{Cos}[e+f x]}}\sqrt{c+d\,\text{Sin}[e+f x]}+(-c+d)\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)-$$

$$32\,\mathrm{i}\sqrt{c-d}\,d^{5/2}\left(\left(16 d^{7/2}\left(\mathrm{i}+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\right)\left(\left(\frac{1}{2}(-\mathrm{i} c+d)\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2-\mathrm{i}\left(\frac{(1+\mathrm{i})\,d^{3/2}\,\text{Cos}[e+f x]\sqrt{\frac{1}{1+\text{Cos}[e+f x]}}}{\sqrt{2}\sqrt{c+d\,\text{Sin}[e+f x]}}+\right.\right.\right.\right.$$

$$\left.\left.\left.\frac{(1+\mathrm{i})\sqrt{d}\left(\frac{1}{1+\text{Cos}[e+f x]}\right)^{3/2}\text{Sin}[e+f x]\sqrt{c+d\,\text{Sin}[e+f x]}}{\sqrt{2}}\right)\right)\Big/\left(16 d^{7/2}\left(\mathrm{i}+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\right)-$$

$$\left(\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\left(c-\mathrm{i}\left(d+(1+\mathrm{i})\sqrt{2}\sqrt{d}\sqrt{\frac{1}{1+\text{Cos}[e+f x]}}\sqrt{c+d\,\text{Sin}[e+f x]}\right)+(-\mathrm{i} c+d)\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\right)\Big/\left(32 d^{7/2}\right.$$

$$\left.\left.\left.\left(\mathrm{i}+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)^2\right)\right)\right)\Big/\left(c-\mathrm{i}\left(d+(1+\mathrm{i})\sqrt{2}\sqrt{d}\sqrt{\frac{1}{1+\text{Cos}[e+f x]}}\sqrt{c+d\,\text{Sin}[e+f x]}\right)+(-\mathrm{i} c+d)\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)-$$

$$\left(16 d^{7/2}\left(-\mathrm{i}+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\right)\left(\left(\frac{1}{2}(\mathrm{i} c+d)\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2+\frac{(1+\mathrm{i})\,d^{3/2}\,\text{Cos}[e+f x]\sqrt{\frac{1}{1+\text{Cos}[e+f x]}}}{\sqrt{2}\sqrt{c+d\,\text{Sin}[e+f x]}}+\right.\right.$$

$$\left(\frac{(1+i)\sqrt{d}\left(\frac{1}{1+\text{Cos}[e+f x]}\right)^{3/2}\text{Sin}[e+f x]\sqrt{c+d\,\text{Sin}[e+f x]}}{\sqrt{2}}\right)\Big/\left(16\,d^{7/2}\left(-i+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\right)-$$

$$\left(\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\left(c+i\,d+(1+i)\sqrt{2}\sqrt{d}\sqrt{\frac{1}{1+\text{Cos}[e+f x]}}\sqrt{c+d\,\text{Sin}[e+f x]}+(i\,c+d)\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\right)\Big/\left(32\,d^{7/2}\right.$$

$$\left.\left.\left(-i+\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)^2\right)\right)\Big/\left(c+i\,d+(1+i)\sqrt{2}\sqrt{d}\sqrt{\frac{1}{1+\text{Cos}[e+f x]}}\sqrt{c+d\,\text{Sin}[e+f x]}+(i\,c+d)\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\Bigg)\Bigg)\Bigg)$$

- **Problem 601: Result more than twice size of optimal antiderivative.**

$$\int \frac{(c+d\,\text{Sin}[e+f x])^{3/2}}{(a+a\,\text{Sin}[e+f x])^{5/2}}\,dx$$

Optimal (type 3, 184 leaves, 5 steps) :

$$-\frac{3\,(c+d)^2\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\sqrt{c-d}\,\text{Cos}[e+f x]}{\sqrt{2}\,\sqrt{a+a\,\text{Sin}[e+f x]}\,\sqrt{c+d\,\text{Sin}[e+f x]}}\right]}{16\sqrt{2}\,a^{5/2}\sqrt{c-d}\,f}-\frac{(c-d)\,\text{Cos}[e+f x]\sqrt{c+d\,\text{Sin}[e+f x]}}{4 f\,(a+a\,\text{Sin}[e+f x])^{5/2}}-\frac{(3 c+7 d)\,\text{Cos}[e+f x]\sqrt{c+d\,\text{Sin}[e+f x]}}{16\,a f\,(a+a\,\text{Sin}[e+f x])^{3/2}}$$

Result (type 3, 544 leaves) :

$$\frac{1}{f\,(a\,(1+\sin[e+f x]))^{5/2}}\left(\cos\left[\frac{1}{2}(e+f x)\right]+\sin\left[\frac{1}{2}(e+f x)\right]\right)^5\left(\frac{-c+d}{4\left(\cos\left[\frac{1}{2}(e+f x)\right]+\sin\left[\frac{1}{2}(e+f x)\right]\right)^3}+\frac{-3c-7d}{16\left(\cos\left[\frac{1}{2}(e+f x)\right]+\sin\left[\frac{1}{2}(e+f x)\right]\right)}+\frac{c\sin\left[\frac{1}{2}(e+f x)\right]-d\sin\left[\frac{1}{2}(e+f x)\right]}{2\left(\cos\left[\frac{1}{2}(e+f x)\right]+\sin\left[\frac{1}{2}(e+f x)\right]\right)^4}+\frac{3c\sin\left[\frac{1}{2}(e+f x)\right]+7d\sin\left[\frac{1}{2}(e+f x)\right]}{8\left(\cos\left[\frac{1}{2}(e+f x)\right]+\sin\left[\frac{1}{2}(e+f x)\right]\right)^2}\right)\sqrt{c+d\sin[e+f x]}+$$

$$\left(3(c+d)^2\left(\operatorname{Log}\left[1+\tan\left[\frac{1}{2}(e+f x)\right]\right]-\operatorname{Log}\left[c-d+2\sqrt{c-d}\sqrt{\frac{1}{1+\cos[e+f x]}}\sqrt{c+d\sin[e+f x]}+(-c+d)\tan\left[\frac{1}{2}(e+f x)\right]\right]\right)\left(\cos\left[\frac{1}{2}(e+f x)\right]+\sin\left[\frac{1}{2}(e+f x)\right]\right)^4\right)\Big/\left(32 f\,(a\,(1+\sin[e+f x]))^{5/2}\sqrt{c+d\sin[e+f x]}\right.$$

$$\left.\left(\frac{\sec\left[\frac{1}{2}(e+f x)\right]^2}{2+2\tan\left[\frac{1}{2}(e+f x)\right]}-\frac{-\frac{1}{2}(c-d)\sec\left[\frac{1}{2}(e+f x)\right]^2+\frac{\sqrt{c-d}\left(\frac{1}{1+\cos[e+f x]}\right)^{3/2}(d+d\cos[e+f x]+c\sin[e+f x])}{\sqrt{c+d\sin[e+f x]}}}{c-d+2\sqrt{c-d}\sqrt{\frac{1}{1+\cos[e+f x]}}\sqrt{c+d\sin[e+f x]}+(-c+d)\tan\left[\frac{1}{2}(e+f x)\right]}\right)\right)$$

- **Problem 602: Result more than twice size of optimal antiderivative.**

$$\int\frac{\sqrt{c+d\sin[e+f x]}}{(a+a\sin[e+f x])^{5/2}}\,dx$$

Optimal (type 3, 191 leaves, 5 steps):

$$-\frac{(3c-5d)(c+d)\operatorname{ArcTanh}\left[\frac{\sqrt{a}\sqrt{c-d}\cos[e+f x]}{\sqrt{2}\sqrt{a+a\sin[e+f x]}\sqrt{c+d\sin[e+f x]}}\right]}{16\sqrt{2}\,a^{5/2}(c-d)^{3/2}f}-\frac{\cos[e+f x]\sqrt{c+d\sin[e+f x]}}{4f\,(a+a\sin[e+f x])^{5/2}}-\frac{(3c-d)\cos[e+f x]\sqrt{c+d\sin[e+f x]}}{16a\,(c-d)f\,(a+a\sin[e+f x])^{3/2}}$$

Result (type 3, 552 leaves):

$$\frac{1}{f\,(a\,(1+\text{Sin}[e+f\,x]))^{5/2}}\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^5\left(\frac{\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]}{2\,\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^4}-\frac{1}{4\,\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^3}+\right.$$

$$\left.\frac{-3\,c+d}{16\,(c-d)\,\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)}+\frac{3\,c\,\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]-d\,\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]}{8\,(c-d)\,\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^2}\right)\sqrt{c+d\,\text{Sin}[e+f\,x]}\;+$$

$$\left(\left(3\,c^2-2\,c\,d-5\,d^2\right)\left(\text{Log}\left[1+\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right]-\text{Log}\left[c-d+2\,\sqrt{c-d}\,\sqrt{\frac{1}{1+\text{Cos}[e+f\,x]}}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}+(-c+d)\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right]\right)\right.$$

$$\left.\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^4\right)\Big/\left(32\,(c-d)\,f\,(a\,(1+\text{Sin}[e+f\,x]))^{5/2}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}\right.$$

$$\left.\left(\frac{\text{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]^2}{2+2\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]}-\frac{-\frac{1}{2}\,(c-d)\,\text{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]^2+\frac{\sqrt{c-d}\,\left(\frac{1}{1+\text{Cos}[e+f\,x]}\right)^{3/2}\,(d+d\,\text{Cos}[e+f\,x]+c\,\text{Sin}[e+f\,x])}{\sqrt{c+d\,\text{Sin}[e+f\,x]}}}{c-d+2\,\sqrt{c-d}\,\sqrt{\frac{1}{1+\text{Cos}[e+f\,x]}}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}+(-c+d)\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]}\right)\right)$$

- **Problem 603: Result more than twice size of optimal antiderivative.**

$$\int\frac{1}{(a+a\,\text{Sin}[e+f\,x])^{5/2}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}\,dx$$

Optimal (type 3, 201 leaves, 5 steps):

$$-\frac{\left(3\,c^2-10\,c\,d+19\,d^2\right)\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\sqrt{c-d}\,\text{Cos}[e+f\,x]}{\sqrt{2}\,\sqrt{a+a\,\text{Sin}[e+f\,x]}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}\right]}{16\,\sqrt{2}\,a^{5/2}\,(c-d)^{5/2}\,f}-\frac{\text{Cos}[e+f\,x]\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}{4\,(c-d)\,f\,(a+a\,\text{Sin}[e+f\,x])^{5/2}}-\frac{3\,(c-3\,d)\,\text{Cos}[e+f\,x]\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}{16\,a\,(c-d)^2\,f\,(a+a\,\text{Sin}[e+f\,x])^{3/2}}$$

Result (type 3, 565 leaves):

$$\frac{1}{f\,(a\,(1+\text{Sin}[e+f\,x]))^{5/2}}\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^5\left(\frac{\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]}{2\,(c-d)\,\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^4}-\frac{1}{4\,(c-d)\,\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^3}-\frac{3\,(c-3\,d)}{16\,(c-d)^2\,\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)}+\frac{3\,\left(c\,\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]-3\,d\,\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)}{8\,(c-d)^2\,\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^2}\right)\sqrt{c+d\,\text{Sin}[e+f\,x]}+$$

$$\left(\left(3\,c^2-10\,c\,d+19\,d^2\right)\left(\text{Log}\left[1+\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right]-\text{Log}\left[c-d+2\,\sqrt{c-d}\,\sqrt{\frac{1}{1+\text{Cos}[e+f\,x]}}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}+(-c+d)\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right]\right)\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^4\right)\Big/\left(32\,(c-d)^2\,f\,(a\,(1+\text{Sin}[e+f\,x]))^{5/2}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}\left(\frac{\text{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]^2}{2+2\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]}-\frac{-\frac{1}{2}\,(c-d)\,\text{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]^2+\frac{\sqrt{c-d}\,\left(\frac{1}{1+\text{Cos}[e+f\,x]}\right)^{3/2}\,(d+d\,\text{Cos}[e+f\,x]+c\,\text{Sin}[e+f\,x])}{\sqrt{c+d\,\text{Sin}[e+f\,x]}}}{c-d+2\,\sqrt{c-d}\,\sqrt{\frac{1}{1+\text{Cos}[e+f\,x]}}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}+(-c+d)\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]}\right)\right)$$

- **Problem 604: Result more than twice size of optimal antiderivative.**

$$\int\frac{1}{(a+a\,\text{Sin}[e+f\,x])^{5/2}\,(c+d\,\text{Sin}[e+f\,x])^{3/2}}\,dx$$

Optimal (type 3, 270 leaves, 6 steps) :

$$-\frac{3\,\left(c^2-6\,c\,d+25\,d^2\right)\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\sqrt{c-d}\,\text{Cos}[e+f\,x]}{\sqrt{2}\,\sqrt{a+a\,\text{Sin}[e+f\,x]}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}\right]}{16\,\sqrt{2}\,a^{5/2}\,(c-d)^{7/2}\,f}-\frac{\text{Cos}[e+f\,x]}{4\,(c-d)\,f\,(a+a\,\text{Sin}[e+f\,x])^{5/2}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}-\frac{(3\,c-13\,d)\,\text{Cos}[e+f\,x]}{16\,a\,(c-d)^2\,f\,(a+a\,\text{Sin}[e+f\,x])^{3/2}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}-\frac{(c-7\,d)\,d\,(3\,c+7\,d)\,\text{Cos}[e+f\,x]}{16\,a^2\,(c-d)^3\,(c+d)\,f\,\sqrt{a+a\,\text{Sin}[e+f\,x]}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}$$

Result (type 3, 622 leaves) :

$$\frac{1}{f\,(a\,(1+\mathrm{Sin}[e+f\,x]))^{5/2}}\left(\mathrm{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^5\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}\,\left(\frac{\mathrm{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]}{2\,(c-d)^2\,\left(\mathrm{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^4}-\right.$$

$$\frac{1}{4\,(c-d)^2\,\left(\mathrm{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^3}+\frac{-3\,c+17\,d}{16\,(c-d)^3\,\left(\mathrm{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)}+$$

$$\left.\frac{3\,c\,\mathrm{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]-17\,d\,\mathrm{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]}{8\,(c-d)^3\,\left(\mathrm{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^2}+\frac{2\,\left(d^3\,\mathrm{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]-d^3\,\mathrm{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)}{(c-d)^3\,(c+d)\,(c+d\,\mathrm{Sin}[e+f\,x])}\right)+$$

$$\left(3\,\left(c^2-6\,c\,d+25\,d^2\right)\,\left(\mathrm{Log}\left[1+\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right]-\mathrm{Log}\left[c-d+2\,\sqrt{c-d}\,\sqrt{\frac{1}{1+\mathrm{Cos}[e+f\,x]}}\,\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}+(-c+d)\,\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right]\right)\right.$$

$$\left.\left(\mathrm{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^4\right)\Big/\left(32\,(c-d)^3\,f\,(a\,(1+\mathrm{Sin}[e+f\,x]))^{5/2}\,\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}\right.$$

$$\left.\left(\frac{\mathrm{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]^2}{2+2\,\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]}-\frac{-\frac{1}{2}\,(c-d)\,\mathrm{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]^2+\frac{\sqrt{c-d}\,\left(\frac{1}{1+\mathrm{Cos}[e+f\,x]}\right)^{3/2}\,(d+d\,\mathrm{Cos}[e+f\,x]+c\,\mathrm{Sin}[e+f\,x])}{\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}}}{c-d+2\,\sqrt{c-d}\,\sqrt{\frac{1}{1+\mathrm{Cos}[e+f\,x]}}\,\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}+(-c+d)\,\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]}\right)\right)$$

- **Problem 605: Result more than twice size of optimal antiderivative.**

$$\int\frac{1}{(a+a\,\mathrm{Sin}[e+f\,x])^{5/2}\,(c+d\,\mathrm{Sin}[e+f\,x])^{5/2}}\,dx$$

Optimal (type 3, 355 leaves, 7 steps) :

$$-\frac{\left(3\,c^2-26\,c\,d+163\,d^2\right)\,\mathrm{ArcTanh}\left[\frac{\sqrt{a}\,\sqrt{c-d}\,\mathrm{Cos}[e+f\,x]}{\sqrt{2}\,\sqrt{a+a\,\mathrm{Sin}[e+f\,x]}\,\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}}\right]}{16\,\sqrt{2}\,a^{5/2}\,(c-d)^{9/2}\,f}-$$

$$\frac{\mathrm{Cos}[e+f\,x]}{4\,(c-d)\,f\,(a+a\,\mathrm{Sin}[e+f\,x])^{5/2}\,(c+d\,\mathrm{Sin}[e+f\,x])^{3/2}}-\frac{(3\,c-17\,d)\,\mathrm{Cos}[e+f\,x]}{16\,a\,(c-d)^2\,f\,(a+a\,\mathrm{Sin}[e+f\,x])^{3/2}\,(c+d\,\mathrm{Sin}[e+f\,x])^{3/2}}-$$

$$\frac{d\,\left(9\,c^2-54\,c\,d-95\,d^2\right)\,\mathrm{Cos}[e+f\,x]}{48\,a^2\,(c-d)^3\,(c+d)\,f\,\sqrt{a+a\,\mathrm{Sin}[e+f\,x]}\,(c+d\,\mathrm{Sin}[e+f\,x])^{3/2}}-\frac{d\,\left(9\,c^3-57\,c^2\,d-493\,c\,d^2-299\,d^3\right)\,\mathrm{Cos}[e+f\,x]}{48\,a^2\,(c-d)^4\,(c+d)^2\,f\,\sqrt{a+a\,\mathrm{Sin}[e+f\,x]}\,\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}}$$

Result (type 3, 717 leaves) :

$$\frac{1}{f\,(a\,(1+\text{Sin}[e+f\,x]))^{5/2}}\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^5\sqrt{c+d\,\text{Sin}[e+f\,x]}\;\left(\frac{\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]}{2\,(c-d)^3\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^4}-\right.$$

$$\frac{1}{4\,(c-d)^3\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^3}+\frac{-3\,c+25\,d}{16\,(c-d)^4\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)}+$$

$$\frac{3\,c\,\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]-25\,d\,\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]}{8\,(c-d)^4\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^2}+\frac{2\left(d^3\,\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]-d^3\,\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)}{3\,(c-d)^3\,(c+d)\,(c+d\,\text{Sin}[e+f\,x])^2}+$$

$$\left.\frac{2\left(11\,c\,d^3\,\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+7\,d^4\,\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]-11\,c\,d^3\,\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]-7\,d^4\,\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)}{3\,(c-d)^4\,(c+d)^2\,(c+d\,\text{Sin}[e+f\,x])}\right)+$$

$$\left(\left(3\,c^2-26\,c\,d+163\,d^2\right)\left(\text{Log}\left[1+\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right]-\text{Log}\left[c-d+2\,\sqrt{c-d}\,\sqrt{\frac{1}{1+\text{Cos}[e+f\,x]}}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}+(-c+d)\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right]\right)\right.$$

$$\left.\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^4\right)\Bigg/\left(32\,(c-d)^4\,f\,(a\,(1+\text{Sin}[e+f\,x]))^{5/2}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}\right.$$

$$\left.\left(\frac{\text{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]^2}{2+2\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]}-\frac{-\frac{1}{2}\,(c-d)\,\text{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]^2+\frac{\sqrt{c-d}\left(\frac{1}{1+\text{Cos}[e+f\,x]}\right)^{3/2}(d+d\,\text{Cos}[e+f\,x]+c\,\text{Sin}[e+f\,x])}{\sqrt{c+d\,\text{Sin}[e+f\,x]}}}{c-d+2\,\sqrt{c-d}\,\sqrt{\frac{1}{1+\text{Cos}[e+f\,x]}}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}+(-c+d)\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]}\right)\right)$$

- **Problem 606: Result more than twice size of optimal antiderivative.**

$$\int(a+a\,\text{Sin}[e+f\,x])^m\,(c+d\,\text{Sin}[e+f\,x])^n\,dx$$

Optimal (type 6, 129 leaves, 4 steps):

$$\left(\sqrt{2}\,\text{AppellF1}\left[\frac{1}{2}+m,\frac{1}{2},-n,\frac{3}{2}+m,\frac{1}{2}\,(1+\text{Sin}[e+f\,x]),-\frac{d\,(1+\text{Sin}[e+f\,x])}{c-d}\right]\right.$$

$$\left.\text{Cos}[e+f\,x]\,(a+a\,\text{Sin}[e+f\,x])^m\,(c+d\,\text{Sin}[e+f\,x])^n\left(\frac{c+d\,\text{Sin}[e+f\,x]}{c-d}\right)^{-n}\right)\Bigg/\left(f\,(1+2\,m)\,\sqrt{1-\text{Sin}[e+f\,x]}\right)$$

Result (type 6, 373 leaves):

$$\left(6\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2}-m,-n,\frac{3}{2},\text{Cos}\left[\frac{1}{4}(2e+\pi+2fx)\right]^2,\frac{2d\,\text{Sin}\left[\frac{1}{4}(2e-\pi+2fx)\right]^2}{c+d}\right]\right.$$

$$\left(\text{Cos}\left[\frac{1}{4}(2e-\pi+2fx)\right]^2\right)^{-\frac{1}{2}+m}\text{Cot}\left[\frac{1}{4}(2e+\pi+2fx)\right](a\,(1+\text{Sin}[e+fx]))^m\,(c+d\,\text{Sin}[e+fx])^n\left(\text{Sin}\left[\frac{1}{4}(2e+\pi+2fx)\right]^2\right)^{\frac{1}{2}-m}\Bigg)\Big/$$

$$\left(f\left(-3\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2}-m,-n,\frac{3}{2},\text{Cos}\left[\frac{1}{4}(2e+\pi+2fx)\right]^2,\frac{2d\,\text{Sin}\left[\frac{1}{4}(2e-\pi+2fx)\right]^2}{c+d}\right]+\right.\right.$$

$$\left(4\,d\,n\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{2}-m,1-n,\frac{5}{2},\text{Cos}\left[\frac{1}{4}(2e+\pi+2fx)\right]^2,\frac{2d\,\text{Sin}\left[\frac{1}{4}(2e-\pi+2fx)\right]^2}{c+d}\right]+\right.$$

$$\left.\left.\left.(c+d)\,(-1+2m)\,\text{AppellF1}\left[\frac{3}{2},\frac{3}{2}-m,-n,\frac{5}{2},\text{Cos}\left[\frac{1}{4}(2e+\pi+2fx)\right]^2,\frac{2d\,\text{Sin}\left[\frac{1}{4}(2e-\pi+2fx)\right]^2}{c+d}\right]\right)\text{Sin}\left[\frac{1}{4}(2e-\pi+2fx)\right]^2\right)\right)$$

- **Problem 607: Attempted integration timed out after 120 seconds.**

$$\int(a+a\,\text{Sin}[e+fx])^m\,(c+d\,\text{Sin}[e+fx])^3\,dx$$

Optimal (type 5, 320 leaves, 6 steps) :

$$-\frac{d\left(d^2\,(4+m)-c\,d\,(5-3m-2m^2)+2c^2\,(8+6m+m^2)\right)\text{Cos}[e+fx]\,(a+a\,\text{Sin}[e+fx])^m}{f\,(1+m)\,(2+m)\,(3+m)}-$$

$$\frac{1}{f\,(1+m)\,(2+m)\,(3+m)}2^{\frac{1}{2}+m}\left(d^3\,m\,(5+3m+m^2)+3c^2\,d\,m\,(6+5m+m^2)+3\,c\,d^2\,(3+4m+4m^2+m^3)+c^3\,(6+11m+6m^2+m^3)\right)$$

$$\text{Cos}[e+fx]\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{1}{2}-m,\frac{3}{2},\frac{1}{2}(1-\text{Sin}[e+fx])\right](1+\text{Sin}[e+fx])^{-\frac{1}{2}-m}\,(a+a\,\text{Sin}[e+fx])^m-$$

$$\frac{d^2\,(d\,m+c\,(5+m))\,\text{Cos}[e+fx]\,(a+a\,\text{Sin}[e+fx])^{1+m}}{a\,f\,(2+m)\,(3+m)}-\frac{d\,\text{Cos}[e+fx]\,(a+a\,\text{Sin}[e+fx])^m\,(c+d\,\text{Sin}[e+fx])^2}{f\,(3+m)}$$

Result (type 1, 1 leaves) :

???

- **Problem 608: Result more than twice size of optimal antiderivative.**

$$\int(a+a\,\text{Sin}[e+fx])^m\,(c+d\,\text{Sin}[e+fx])^2\,dx$$

Optimal (type 5, 193 leaves, 4 steps) :

$$\frac{d\,(d-2\,c\,(2+m))\,\text{Cos}[e+f\,x]\,(a+a\,\text{Sin}[e+f\,x])^m}{f\,(1+m)\,(2+m)}-\frac{1}{f\,(1+m)\,(2+m)}2^{\frac{1}{2}+m}\left(2\,c\,d\,m\,(2+m)+d^2\left(1+m+m^2\right)+c^2\left(2+3\,m+m^2\right)\right)\text{Cos}[e+f\,x]$$

$$\text{Hypergeometric2F1}\left[\frac{1}{2},\,\frac{1}{2}-m,\,\frac{3}{2},\,\frac{1}{2}\,(1-\text{Sin}[e+f\,x])\right]\,(1+\text{Sin}[e+f\,x])^{-\frac{1}{2}-m}\,(a+a\,\text{Sin}[e+f\,x])^m-\frac{d^2\,\text{Cos}[e+f\,x]\,(a+a\,\text{Sin}[e+f\,x])^{1+m}}{a\,f\,(2+m)}$$

Result (type 5, 1774 leaves):

$$-\left(\left(2\left(\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{\frac{1}{2}-m}\left(1-\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{-\frac{1}{2}+m}\left(c+d-2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^2\right.\right.$$

$$\left(4\,\text{Gamma}\left[\frac{3}{2}-m\right]\text{HypergeometricPFQ}\left[\left\{\frac{3}{2},\,2,\,\frac{3}{2}-m\right\},\,\left\{1,\,\frac{9}{2}\right\},\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right.$$

$$\left(c+d-2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^2+16\,\text{Gamma}\left[\frac{3}{2}-m\right]\text{Hypergeometric2F1}\left[\frac{3}{2},\,\frac{3}{2}-m,\,\frac{9}{2},\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]$$

$$\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\left(c^2+c\,d\left(2-3\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)+d^2\left(1-3\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2+2\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\right)\right)+$$

$$7\,\text{Gamma}\left[\frac{1}{2}-m\right]\text{Hypergeometric2F1}\left[\frac{1}{2},\,\frac{1}{2}-m,\,\frac{7}{2},\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\left(15\,c^2+10\,c\,d\left(3-2\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)+\right.$$

$$\left.\left.\left.d^2\left(15-20\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2+12\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\right)\right)\right)(a+a\,\text{Sin}[e+f\,x])^m\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\right)\Big/$$

$$\left(f\left(4\,\text{Gamma}\left[\frac{3}{2}-m\right]\text{HypergeometricPFQ}\left[\left\{\frac{3}{2},\,2,\,\frac{3}{2}-m\right\},\,\left\{1,\,\frac{9}{2}\right\},\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right.\right.$$

$$\left(c+d-2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^2+16\,\text{Gamma}\left[\frac{3}{2}-m\right]\text{Hypergeometric2F1}\left[\frac{3}{2},\,\frac{3}{2}-m,\,\frac{9}{2},\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]$$

$$\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\left(c^2+c\,d\left(2-3\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)+d^2\left(1-3\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2+2\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\right)\right)+$$

$$7\,\text{Gamma}\left[\frac{1}{2}-m\right]\text{Hypergeometric2F1}\left[\frac{1}{2},\,\frac{1}{2}-m,\,\frac{7}{2},\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]$$

$$\left(15\,c^2+10\,c\,d\left(3-2\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)+d^2\left(15-20\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2+12\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\right)\right)+$$

$$\frac{2}{3}\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\left(-48\,d\,\text{Gamma}\left[\frac{3}{2}-m\right]\text{HypergeometricPFQ}\left[\left\{\frac{3}{2},\,2,\,\frac{3}{2}-m\right\},\,\left\{1,\,\frac{9}{2}\right\},\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right.$$

$$\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\left(c+d-2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)+$$

$$12\,\text{Gamma}\left[\frac{3}{2}-m\right]\text{HypergeometricPFQ}\left[\left\{\frac{3}{2},\,2,\,\frac{3}{2}-m\right\},\,\left\{1,\,\frac{9}{2}\right\},\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\left(c+d-2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^2-$$

$$4\,(-3+2\,m)\,\text{Gamma}\left[\frac{3}{2}-m\right]\,\text{HypergeometricPFQ}\left[\left\{\frac{5}{2},\,3,\,\frac{5}{2}-m\right\},\,\left\{2,\,\frac{11}{2}\right\},\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2$$

$$\left(c+d-2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^2+48\,d\,\text{Gamma}\left[\frac{3}{2}-m\right]\,\text{Hypergeometric2F1}\left[\frac{3}{2},\,\frac{3}{2}-m,\,\frac{9}{2},\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]$$

$$\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\,\left(-3\,c\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]+d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\,\left(-3+4\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\right)+$$

$$84\,d\,\text{Gamma}\left[\frac{1}{2}-m\right]\,\text{Hypergeometric2F1}\left[\frac{1}{2},\,\frac{1}{2}-m,\,\frac{7}{2},\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\,\left(-5\,c+d\,\left(-5+6\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\right)+$$

$$48\,\text{Gamma}\left[\frac{3}{2}-m\right]\,\text{Hypergeometric2F1}\left[\frac{3}{2},\,\frac{3}{2}-m,\,\frac{9}{2},\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]$$

$$\left(c^2+c\,d\,\left(2-3\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)+d^2\,\left(1-3\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2+2\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\right)\right)-$$

$$8\,(-3+2\,m)\,\text{Gamma}\left[\frac{3}{2}-m\right]\,\text{Hypergeometric2F1}\left[\frac{5}{2},\,\frac{5}{2}-m,\,\frac{11}{2},\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2$$

$$\left(c^2+c\,d\,\left(2-3\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)+d^2\,\left(1-3\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2+2\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\right)\right)+$$

$$3\,\left(\frac{1}{2}-m\right)\,\text{Gamma}\left[\frac{1}{2}-m\right]\,\text{Hypergeometric2F1}\left[\frac{3}{2},\,\frac{3}{2}-m,\,\frac{9}{2},\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]$$

$$\left.\left.\left.\left.\left.\left(15\,c^2+10\,c\,d\,\left(3-2\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)+d^2\,\left(15-20\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2+12\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\right)\right)\right)\right)\right)\right)\right)$$

- **Problem 609: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int(a+a\,\text{Sin}[e+f\,x])^m\,(c+d\,\text{Sin}[e+f\,x])\,dx$$

Optimal (type 5, 117 leaves, 3 steps):

$$-\frac{d\,\text{Cos}[e+f\,x]\,(a+a\,\text{Sin}[e+f\,x])^m}{f\,(1+m)}-\frac{1}{f\,(1+m)}$$

$$2^{\frac{1}{2}+m}\,(c+c\,m+d\,m)\,\text{Cos}[e+f\,x]\,\text{Hypergeometric2F1}\left[\frac{1}{2},\,\frac{1}{2}-m,\,\frac{3}{2},\,\frac{1}{2}\,(1-\text{Sin}[e+f\,x])\right]\,(1+\text{Sin}[e+f\,x])^{-\frac{1}{2}-m}\,(a+a\,\text{Sin}[e+f\,x])^m$$

Result (type 5, 295 leaves):

$$-\frac{1}{f}(a(1+\text{Sin}[e+f x]))^m\left(\frac{1}{-1+m^2}2^{-1-2m}d\,e^{-i(e+f x)}\left(1+i\,e^{-i(e+f x)}\right)^{-2m}\left(e^{-\frac{1}{4}i(2e+\pi+2f x)}\left(i+e^{i(e+f x)}\right)\right)^{2m}\left(e^{2i(e+f x)}(-1+m)\,\text{Hypergeometric2F1}\left[-1-m,-2m,-m,-i\,e^{-i(e+f x)}\right]-(1+m)\,\text{Hypergeometric2F1}\left[1-m,-2m,2-m,-i\,e^{-i(e+f x)}\right]\right)+\left(2\sqrt{2}\,c\,\text{Cos}\left[\frac{1}{4}(2e-\pi+2f x)\right]^{1+2m}\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{1}{2}+m,\frac{3}{2}+m,\text{Sin}\left[\frac{1}{4}(2e+\pi+2f x)\right]^2\right]\text{Sin}\left[\frac{1}{4}(2e-\pi+2f x)\right]\right)\Big/\left((1+2m)\sqrt{1-\text{Sin}[e+f x]}\right)\right)\text{Sin}\left[\frac{1}{4}(2e+\pi+2f x)\right]^{-2m}$$

- **Problem 611: Result more than twice size of optimal antiderivative.**

$$\int\frac{(a+a\,\text{Sin}[e+f x])^m}{c+d\,\text{Sin}[e+f x]}\,dx$$

Optimal (type 6, 100 leaves, 3 steps):

$$\frac{\sqrt{2}\,\text{AppellF1}\left[\frac{1}{2}+m,\frac{1}{2},1,\frac{3}{2}+m,\frac{1}{2}(1+\text{Sin}[e+f x]),-\frac{d(1+\text{Sin}[e+f x])}{c-d}\right]\text{Cos}[e+f x](a+a\,\text{Sin}[e+f x])^m}{(c-d)\,f\,(1+2m)\sqrt{1-\text{Sin}[e+f x]}}$$

Result (type 6, 363 leaves):

$$-\left(\left(6(c+d)\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2}-m,1,\frac{3}{2},\text{Cos}\left[\frac{1}{4}(2e+\pi+2f x)\right]^2,\frac{2d\,\text{Sin}\left[\frac{1}{4}(2e-\pi+2f x)\right]^2}{c+d}\right]\left(\text{Cos}\left[\frac{1}{4}(2e-\pi+2f x)\right]^2\right)^{-\frac{1}{2}+m}\text{Cot}\left[\frac{1}{4}(2e+\pi+2f x)\right](a(1+\text{Sin}[e+f x]))^m\left(\text{Sin}\left[\frac{1}{4}(2e+\pi+2f x)\right]^2\right)^{\frac{1}{2}-m}\right)\Big/\left(f(c+d\,\text{Sin}[e+f x])\left(3(c+d)\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2}-m,1,\frac{3}{2},\text{Cos}\left[\frac{1}{4}(2e+\pi+2f x)\right]^2,\frac{2d\,\text{Sin}\left[\frac{1}{4}(2e-\pi+2f x)\right]^2}{c+d}\right]+\left(4d\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{2}-m,2,\frac{5}{2},\text{Cos}\left[\frac{1}{4}(2e+\pi+2f x)\right]^2,\frac{2d\,\text{Sin}\left[\frac{1}{4}(2e-\pi+2f x)\right]^2}{c+d}\right]-(c+d)(-1+2m)\,\text{AppellF1}\left[\frac{3}{2},\frac{3}{2}-m,1,\frac{5}{2},\text{Cos}\left[\frac{1}{4}(2e+\pi+2f x)\right]^2,\frac{2d\,\text{Sin}\left[\frac{1}{4}(2e-\pi+2f x)\right]^2}{c+d}\right]\right)\text{Sin}\left[\frac{1}{4}(2e-\pi+2f x)\right]^2\right)\right)\right)$$

- **Problem 612: Result more than twice size of optimal antiderivative.**

$$\int\frac{(a+a\,\text{Sin}[e+f x])^m}{(c+d\,\text{Sin}[e+f x])^2}\,dx$$

Optimal (type 6, 100 leaves, 3 steps):

$$\frac{\sqrt{2}\,\text{AppellF1}\left[\frac{1}{2}+m,\frac{1}{2},2,\frac{3}{2}+m,\frac{1}{2}\,(1+\text{Sin}[e+f\,x]),-\frac{d\,(1+\text{Sin}[e+f\,x])}{c-d}\right]\text{Cos}[e+f\,x]\,(a+a\,\text{Sin}[e+f\,x])^m}{(c-d)^2\,f\,(1+2\,m)\,\sqrt{1-\text{Sin}[e+f\,x]}}$$

Result (type 6, 363 leaves):

$$-\left(\left(6\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2}-m,2,\frac{3}{2},\text{Cos}\left[\frac{1}{4}\,(2\,e+\pi+2\,f\,x)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{4}\,(2\,e-\pi+2\,f\,x)\right]^2}{c+d}\right]\left(\text{Cos}\left[\frac{1}{4}\,(2\,e-\pi+2\,f\,x)\right]^2\right)^{-\frac{1}{2}+m}\text{Cot}\left[\frac{1}{4}\,(2\,e+\pi+2\,f\,x)\right]\,(a\,(1+\text{Sin}[e+f\,x]))^m\left(\text{Sin}\left[\frac{1}{4}\,(2\,e+\pi+2\,f\,x)\right]^2\right)^{\frac{1}{2}-m}\right)\Big/\left(f\,(c+d\,\text{Sin}[e+f\,x])^2\left(3\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2}-m,2,\frac{3}{2},\text{Cos}\left[\frac{1}{4}\,(2\,e+\pi+2\,f\,x)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{4}\,(2\,e-\pi+2\,f\,x)\right]^2}{c+d}\right]+\left(8\,d\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{2}-m,3,\frac{5}{2},\text{Cos}\left[\frac{1}{4}\,(2\,e+\pi+2\,f\,x)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{4}\,(2\,e-\pi+2\,f\,x)\right]^2}{c+d}\right]-(c+d)\,(-1+2\,m)\,\text{AppellF1}\left[\frac{3}{2},\frac{3}{2}-m,2,\frac{5}{2},\text{Cos}\left[\frac{1}{4}\,(2\,e+\pi+2\,f\,x)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{4}\,(2\,e-\pi+2\,f\,x)\right]^2}{c+d}\right]\right)\text{Sin}\left[\frac{1}{4}\,(2\,e-\pi+2\,f\,x)\right]^2\right)\right)\right)$$

- **Problem 613: Result more than twice size of optimal antiderivative.**

$$\int\frac{(a+a\,\text{Sin}[e+f\,x])^m}{(c+d\,\text{Sin}[e+f\,x])^3}\,dx$$

Optimal (type 6, 100 leaves, 3 steps):

$$\frac{\sqrt{2}\,\text{AppellF1}\left[\frac{1}{2}+m,\frac{1}{2},3,\frac{3}{2}+m,\frac{1}{2}\,(1+\text{Sin}[e+f\,x]),-\frac{d\,(1+\text{Sin}[e+f\,x])}{c-d}\right]\text{Cos}[e+f\,x]\,(a+a\,\text{Sin}[e+f\,x])^m}{(c-d)^3\,f\,(1+2\,m)\,\sqrt{1-\text{Sin}[e+f\,x]}}$$

Result (type 6, 363 leaves):

$$-\left(\left(6\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2}-m,3,\frac{3}{2},\text{Cos}\left[\frac{1}{4}(2e+\pi+2fx)\right]^2,\frac{2d\,\text{Sin}\left[\frac{1}{4}(2e-\pi+2fx)\right]^2}{c+d}\right]\right.\right.$$
$$\left.\left(\text{Cos}\left[\frac{1}{4}(2e-\pi+2fx)\right]^2\right)^{-\frac{1}{2}+m}\text{Cot}\left[\frac{1}{4}(2e+\pi+2fx)\right](a(1+\text{Sin}[e+fx]))^m\left(\text{Sin}\left[\frac{1}{4}(2e+\pi+2fx)\right]^2\right)^{\frac{1}{2}-m}\right)\Big/$$
$$\left(f\,(c+d\,\text{Sin}[e+fx])^3\left(3\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2}-m,3,\frac{3}{2},\text{Cos}\left[\frac{1}{4}(2e+\pi+2fx)\right]^2,\frac{2d\,\text{Sin}\left[\frac{1}{4}(2e-\pi+2fx)\right]^2}{c+d}\right]+\right.\right.$$
$$\left(12\,d\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{2}-m,4,\frac{5}{2},\text{Cos}\left[\frac{1}{4}(2e+\pi+2fx)\right]^2,\frac{2d\,\text{Sin}\left[\frac{1}{4}(2e-\pi+2fx)\right]^2}{c+d}\right]-\right.$$
$$\left.\left.\left.\left.(c+d)\,(-1+2m)\,\text{AppellF1}\left[\frac{3}{2},\frac{3}{2}-m,3,\frac{5}{2},\text{Cos}\left[\frac{1}{4}(2e+\pi+2fx)\right]^2,\frac{2d\,\text{Sin}\left[\frac{1}{4}(2e-\pi+2fx)\right]^2}{c+d}\right]\right)\text{Sin}\left[\frac{1}{4}(2e-\pi+2fx)\right]^2\right)\right)\right)$$

Problem 614: Result more than twice size of optimal antiderivative.

$$\int(a+a\,\text{Sin}[e+fx])^m\,(c+d\,\text{Sin}[e+fx])^{5/2}\,dx$$

Optimal (type 6, 138 leaves, 4 steps) :

$$\left(\sqrt{2}\,(c-d)^2\,\text{AppellF1}\left[\frac{1}{2}+m,\frac{1}{2},-\frac{5}{2},\frac{3}{2}+m,\frac{1}{2}(1+\text{Sin}[e+fx]),-\frac{d\,(1+\text{Sin}[e+fx])}{c-d}\right]\text{Cos}[e+fx]\,(a+a\,\text{Sin}[e+fx])^m\sqrt{c+d\,\text{Sin}[e+fx]}\right)\Big/$$
$$\left(f\,(1+2m)\,\sqrt{1-\text{Sin}[e+fx]}\,\sqrt{\frac{c+d\,\text{Sin}[e+fx]}{c-d}}\right)$$

Result (type 6, 365 leaves) :

$$-\left(\left(3\sqrt{2}\ (c+d)\ \text{AppellF1}\left[\frac{1}{2},\frac{1}{2}-m,-\frac{5}{2},\frac{3}{2},\text{Cos}\left[\frac{1}{4}\ (2e+\pi+2fx)\right]^2,\frac{2d\,\text{Sin}\left[\frac{1}{4}\ (2e-\pi+2fx)\right]^2}{c+d}\right]\right.\right.$$

$$\left.\sqrt{1+\text{Sin}[e+fx]}\ (a\ (1+\text{Sin}[e+fx]))^m\ (c+d\,\text{Sin}[e+fx])^{5/2}\,\text{Tan}\left[\frac{1}{4}\ (2e-\pi+2fx)\right]\right)\Big/$$

$$\left(f\sqrt{\text{Cos}\left[\frac{1}{4}\ (2e-\pi+2fx)\right]^2}\ \left(-3\ (c+d)\ \text{AppellF1}\left[\frac{1}{2},\frac{1}{2}-m,-\frac{5}{2},\frac{3}{2},\text{Cos}\left[\frac{1}{4}\ (2e+\pi+2fx)\right]^2,\frac{2d\,\text{Sin}\left[\frac{1}{4}\ (2e-\pi+2fx)\right]^2}{c+d}\right]+\right.\right.$$

$$\left(10\,d\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{2}-m,-\frac{3}{2},\frac{5}{2},\text{Cos}\left[\frac{1}{4}\ (2e+\pi+2fx)\right]^2,\frac{2d\,\text{Sin}\left[\frac{1}{4}\ (2e-\pi+2fx)\right]^2}{c+d}\right]+\right.$$

$$\left.\left.\left.(c+d)\ (-1+2m)\ \text{AppellF1}\left[\frac{3}{2},\frac{3}{2}-m,-\frac{5}{2},\frac{5}{2},\text{Cos}\left[\frac{1}{4}\ (2e+\pi+2fx)\right]^2,\frac{2d\,\text{Sin}\left[\frac{1}{4}\ (2e-\pi+2fx)\right]^2}{c+d}\right]\right)\text{Sin}\left[\frac{1}{4}\ (2e-\pi+2fx)\right]^2\right)\right)\right)$$

- **Problem 615: Result more than twice size of optimal antiderivative.**

$$\int (a+a\,\text{Sin}[e+fx])^m\ (c+d\,\text{Sin}[e+fx])^{3/2}\,dx$$

Optimal (type 6, 136 leaves, 4 steps):

$$\left(\sqrt{2}\ (c-d)\ \text{AppellF1}\left[\frac{1}{2}+m,\frac{1}{2},-\frac{3}{2},\frac{3}{2}+m,\frac{1}{2}\ (1+\text{Sin}[e+fx]),-\frac{d\ (1+\text{Sin}[e+fx])}{c-d}\right]\text{Cos}[e+fx]\ (a+a\,\text{Sin}[e+fx])^m\sqrt{c+d\,\text{Sin}[e+fx]}\right)\Big/$$

$$\left(f\ (1+2m)\ \sqrt{1-\text{Sin}[e+fx]}\ \sqrt{\frac{c+d\,\text{Sin}[e+fx]}{c-d}}\right)$$

Result (type 6, 365 leaves):

$$-\left(\left(3\sqrt{2}\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2}-m,-\frac{3}{2},\frac{3}{2},\text{Cos}\left[\frac{1}{4}(2e+\pi+2fx)\right]^2,\frac{2d\,\text{Sin}\left[\frac{1}{4}(2e-\pi+2fx)\right]^2}{c+d}\right]\right.\right.$$

$$\left.\left.\sqrt{1+\text{Sin}[e+fx]}\,(a\,(1+\text{Sin}[e+fx]))^m\,(c+d\,\text{Sin}[e+fx])^{3/2}\,\text{Tan}\left[\frac{1}{4}(2e-\pi+2fx)\right]\right)\right/$$

$$\left(f\sqrt{\text{Cos}\left[\frac{1}{4}(2e-\pi+2fx)\right]^2}\left(-3\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2}-m,-\frac{3}{2},\frac{3}{2},\text{Cos}\left[\frac{1}{4}(2e+\pi+2fx)\right]^2,\frac{2d\,\text{Sin}\left[\frac{1}{4}(2e-\pi+2fx)\right]^2}{c+d}\right]+\right.\right.$$

$$\left(6\,d\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{2}-m,-\frac{1}{2},\frac{5}{2},\text{Cos}\left[\frac{1}{4}(2e+\pi+2fx)\right]^2,\frac{2d\,\text{Sin}\left[\frac{1}{4}(2e-\pi+2fx)\right]^2}{c+d}\right]+\right.$$

$$\left.\left.\left.(c+d)\,(-1+2m)\,\text{AppellF1}\left[\frac{3}{2},\frac{3}{2}-m,-\frac{3}{2},\frac{5}{2},\text{Cos}\left[\frac{1}{4}(2e+\pi+2fx)\right]^2,\frac{2d\,\text{Sin}\left[\frac{1}{4}(2e-\pi+2fx)\right]^2}{c+d}\right]\right)\text{Sin}\left[\frac{1}{4}(2e-\pi+2fx)\right]^2\right)\right)\right)$$

- **Problem 616: Result more than twice size of optimal antiderivative.**

$$\int (a+a\,\text{Sin}[e+fx])^m\sqrt{c+d\,\text{Sin}[e+fx]}\,dx$$

Optimal (type 6, 131 leaves, 4 steps):

$$\left(\sqrt{2}\,\text{AppellF1}\left[\frac{1}{2}+m,\frac{1}{2},-\frac{1}{2},\frac{3}{2}+m,\frac{1}{2}(1+\text{Sin}[e+fx]),-\frac{d\,(1+\text{Sin}[e+fx])}{c-d}\right]\text{Cos}[e+fx]\,(a+a\,\text{Sin}[e+fx])^m\sqrt{c+d\,\text{Sin}[e+fx]}\right)\Big/$$

$$\left(f\,(1+2m)\sqrt{1-\text{Sin}[e+fx]}\sqrt{\frac{c+d\,\text{Sin}[e+fx]}{c-d}}\right)$$

Result (type 6, 365 leaves):

$$-\left(\left(3\sqrt{2}\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2}-m,-\frac{1}{2},\frac{3}{2},\text{Cos}\left[\frac{1}{4}(2e+\pi+2fx)\right]^2,\frac{2d\,\text{Sin}\left[\frac{1}{4}(2e-\pi+2fx)\right]^2}{c+d}\right]\right.\right.$$

$$\left.\sqrt{1+\text{Sin}[e+fx]}\,(a(1+\text{Sin}[e+fx]))^m\sqrt{c+d\,\text{Sin}[e+fx]}\,\text{Tan}\left[\frac{1}{4}(2e-\pi+2fx)\right]\right)\Big/$$

$$\left(f\sqrt{\text{Cos}\left[\frac{1}{4}(2e-\pi+2fx)\right]^2}\left(-3(c+d)\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2}-m,-\frac{1}{2},\frac{3}{2},\text{Cos}\left[\frac{1}{4}(2e+\pi+2fx)\right]^2,\frac{2d\,\text{Sin}\left[\frac{1}{4}(2e-\pi+2fx)\right]^2}{c+d}\right]+\right.\right.$$

$$\left(2d\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{2}-m,\frac{1}{2},\frac{5}{2},\text{Cos}\left[\frac{1}{4}(2e+\pi+2fx)\right]^2,\frac{2d\,\text{Sin}\left[\frac{1}{4}(2e-\pi+2fx)\right]^2}{c+d}\right]+\right.$$

$$\left.\left.\left.\left.(c+d)(-1+2m)\,\text{AppellF1}\left[\frac{3}{2},\frac{3}{2}-m,-\frac{1}{2},\frac{5}{2},\text{Cos}\left[\frac{1}{4}(2e+\pi+2fx)\right]^2,\frac{2d\,\text{Sin}\left[\frac{1}{4}(2e-\pi+2fx)\right]^2}{c+d}\right]\right)\text{Sin}\left[\frac{1}{4}(2e-\pi+2fx)\right]^2\right)\right)\right)$$

- **Problem 617: Result more than twice size of optimal antiderivative.**

$$\int\frac{(a+a\,\text{Sin}[e+fx])^m}{\sqrt{c+d\,\text{Sin}[e+fx]}}\,dx$$

Optimal (type 6, 131 leaves, 4 steps):

$$\left(\sqrt{2}\,\text{AppellF1}\left[\frac{1}{2}+m,\frac{1}{2},\frac{1}{2},\frac{3}{2}+m,\frac{1}{2}(1+\text{Sin}[e+fx]),-\frac{d(1+\text{Sin}[e+fx])}{c-d}\right]\text{Cos}[e+fx]\,(a+a\,\text{Sin}[e+fx])^m\sqrt{\frac{c+d\,\text{Sin}[e+fx]}{c-d}}\right)\Big/$$

$$\left(f(1+2m)\sqrt{1-\text{Sin}[e+fx]}\,\sqrt{c+d\,\text{Sin}[e+fx]}\right)$$

Result (type 6, 373 leaves):

$$-\Bigg(\Bigg(6\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2}-m,\frac{1}{2},\frac{3}{2},\text{Cos}\left[\frac{1}{4}(2e+\pi+2fx)\right]^2,\frac{2d\,\text{Sin}\left[\frac{1}{4}(2e-\pi+2fx)\right]^2}{c+d}\right]$$

$$\left(\text{Cos}\left[\frac{1}{4}(2e-\pi+2fx)\right]^2\right)^{-\frac{1}{2}+m}\text{Cot}\left[\frac{1}{4}(2e+\pi+2fx)\right](a\,(1+\text{Sin}[e+fx]))^m\left(\text{Sin}\left[\frac{1}{4}(2e+\pi+2fx)\right]^2\right)^{\frac{1}{2}-m}\Bigg)\Bigg/$$

$$\Bigg(f\sqrt{c+d\,\text{Sin}[e+fx]}\,\Bigg(3\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2}-m,\frac{1}{2},\frac{3}{2},\text{Cos}\left[\frac{1}{4}(2e+\pi+2fx)\right]^2,\frac{2d\,\text{Sin}\left[\frac{1}{4}(2e-\pi+2fx)\right]^2}{c+d}\right]+$$

$$\Bigg(2d\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{2}-m,\frac{3}{2},\frac{5}{2},\text{Cos}\left[\frac{1}{4}(2e+\pi+2fx)\right]^2,\frac{2d\,\text{Sin}\left[\frac{1}{4}(2e-\pi+2fx)\right]^2}{c+d}\right]-$$

$$(c+d)\,(-1+2m)\,\text{AppellF1}\left[\frac{3}{2},\frac{3}{2}-m,\frac{1}{2},\frac{5}{2},\text{Cos}\left[\frac{1}{4}(2e+\pi+2fx)\right]^2,\frac{2d\,\text{Sin}\left[\frac{1}{4}(2e-\pi+2fx)\right]^2}{c+d}\right]\Bigg)\text{Sin}\left[\frac{1}{4}(2e-\pi+2fx)\right]^2\Bigg)\Bigg)\Bigg)$$

- **Problem 618: Result more than twice size of optimal antiderivative.**

$$\int\frac{(a+a\,\text{Sin}[e+fx])^m}{(c+d\,\text{Sin}[e+fx])^{3/2}}\,dx$$

Optimal (type 6, 138 leaves, 4 steps):

$$\left(\sqrt{2}\,\text{AppellF1}\left[\frac{1}{2}+m,\frac{1}{2},\frac{3}{2},\frac{3}{2}+m,\frac{1}{2}(1+\text{Sin}[e+fx]),-\frac{d\,(1+\text{Sin}[e+fx])}{c-d}\right]\text{Cos}[e+fx]\,(a+a\,\text{Sin}[e+fx])^m\sqrt{\frac{c+d\,\text{Sin}[e+fx]}{c-d}}\right)\Bigg/$$

$$\left((c-d)\,f\,(1+2m)\sqrt{1-\text{Sin}[e+fx]}\,\sqrt{c+d\,\text{Sin}[e+fx]}\right)$$

Result (type 6, 373 leaves):

$$-\left(\left(6\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2}-m,\frac{3}{2},\frac{3}{2},\text{Cos}\left[\frac{1}{4}\,(2e+\pi+2fx)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{4}\,(2e-\pi+2fx)\right]^2}{c+d}\right]\right.\right.$$
$$\left.\left(\text{Cos}\left[\frac{1}{4}\,(2e-\pi+2fx)\right]^2\right)^{-\frac{1}{2}+m}\,\text{Cot}\left[\frac{1}{4}\,(2e+\pi+2fx)\right]\,(a\,(1+\text{Sin}[e+fx]))^m\,\left(\text{Sin}\left[\frac{1}{4}\,(2e+\pi+2fx)\right]^2\right)^{\frac{1}{2}-m}\right)\Big/$$
$$\left(f\,(c+d\,\text{Sin}[e+fx])^{3/2}\,\left(3\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2}-m,\frac{3}{2},\frac{3}{2},\text{Cos}\left[\frac{1}{4}\,(2e+\pi+2fx)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{4}\,(2e-\pi+2fx)\right]^2}{c+d}\right]+\right.\right.$$
$$\left(6\,d\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{2}-m,\frac{5}{2},\frac{5}{2},\text{Cos}\left[\frac{1}{4}\,(2e+\pi+2fx)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{4}\,(2e-\pi+2fx)\right]^2}{c+d}\right]-\right.$$
$$\left.\left.\left.\left.(c+d)\,(-1+2m)\,\text{AppellF1}\left[\frac{3}{2},\frac{3}{2}-m,\frac{3}{2},\frac{5}{2},\text{Cos}\left[\frac{1}{4}\,(2e+\pi+2fx)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{4}\,(2e-\pi+2fx)\right]^2}{c+d}\right]\right)\,\text{Sin}\left[\frac{1}{4}\,(2e-\pi+2fx)\right]^2\right)\right)\right)$$

- **Problem 619: Result more than twice size of optimal antiderivative.**

$$\int \frac{(a+a\,\text{Sin}[e+fx])^m}{(c+d\,\text{Sin}[e+fx])^{5/2}}\,dx$$

Optimal (type 6, 138 leaves, 4 steps):

$$\left(\sqrt{2}\,\text{AppellF1}\left[\frac{1}{2}+m,\frac{1}{2},\frac{5}{2},\frac{3}{2}+m,\frac{1}{2}\,(1+\text{Sin}[e+fx]),-\frac{d\,(1+\text{Sin}[e+fx])}{c-d}\right]\,\text{Cos}[e+fx]\,(a+a\,\text{Sin}[e+fx])^m\,\sqrt{\frac{c+d\,\text{Sin}[e+fx]}{c-d}}\right)\Big/$$
$$\left((c-d)^2\,f\,(1+2m)\,\sqrt{1-\text{Sin}[e+fx]}\,\sqrt{c+d\,\text{Sin}[e+fx]}\right)$$

Result (type 6, 373 leaves):

$$-\left(\left(6\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2}-m,\frac{5}{2},\frac{3}{2},\text{Cos}\left[\frac{1}{4}(2e+\pi+2fx)\right]^2,\frac{2d\,\text{Sin}\left[\frac{1}{4}(2e-\pi+2fx)\right]^2}{c+d}\right]\right.\right.$$

$$\left.\left(\text{Cos}\left[\frac{1}{4}(2e-\pi+2fx)\right]^2\right)^{-\frac{1}{2}+m}\text{Cot}\left[\frac{1}{4}(2e+\pi+2fx)\right](a\,(1+\text{Sin}[e+fx]))^m\left(\text{Sin}\left[\frac{1}{4}(2e+\pi+2fx)\right]^2\right)^{\frac{1}{2}-m}\right)\Big/$$

$$\left(f\,(c+d\,\text{Sin}[e+fx])^{5/2}\left(3\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2}-m,\frac{5}{2},\frac{3}{2},\text{Cos}\left[\frac{1}{4}(2e+\pi+2fx)\right]^2,\frac{2d\,\text{Sin}\left[\frac{1}{4}(2e-\pi+2fx)\right]^2}{c+d}\right]+\right.\right.$$

$$\left(10\,d\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{2}-m,\frac{7}{2},\frac{5}{2},\text{Cos}\left[\frac{1}{4}(2e+\pi+2fx)\right]^2,\frac{2d\,\text{Sin}\left[\frac{1}{4}(2e-\pi+2fx)\right]^2}{c+d}\right]-\right.$$

$$\left.\left.\left.(c+d)\,(-1+2m)\,\text{AppellF1}\left[\frac{3}{2},\frac{3}{2}-m,\frac{5}{2},\frac{5}{2},\text{Cos}\left[\frac{1}{4}(2e+\pi+2fx)\right]^2,\frac{2d\,\text{Sin}\left[\frac{1}{4}(2e-\pi+2fx)\right]^2}{c+d}\right]\right)\text{Sin}\left[\frac{1}{4}(2e-\pi+2fx)\right]^2\right)\right)\right)$$

Problem 628: Result more than twice size of optimal antiderivative.

$$\int (3-3\,\text{Sin}[e+fx])^{-1-m}\,(1+\text{Sin}[e+fx])^m\,dx$$

Optimal (type 3, 43 leaves, 1 step):

$$\frac{\text{Cos}[e+fx]\,(3-3\,\text{Sin}[e+fx])^{-1-m}\,(1+\text{Sin}[e+fx])^m}{f\,(1+2m)}$$

Result (type 3, 97 leaves):

$$\frac{1}{3\,(f+2fm)}\text{Cos}\left[\frac{1}{4}(2e+\pi+2fx)\right]^{-1-2m}\left(\text{Cos}\left[\frac{1}{2}(e+fx)\right]-\text{Sin}\left[\frac{1}{2}(e+fx)\right]\right)^{2m}(6-6\,\text{Sin}[e+fx])^{-m}\,(1+\text{Sin}[e+fx])^m\,\text{Sin}\left[\frac{1}{4}(2e+\pi+2fx)\right]$$

Problem 629: Result more than twice size of optimal antiderivative.

$$\int (3-4\,\text{Sin}[e+fx])^{-1-m}\,(1+\text{Sin}[e+fx])^m\,dx$$

Optimal (type 5, 83 leaves, 2 steps):

$$\frac{1}{f\,(1+\text{Sin}[e+fx])}2^{1+m}\,\text{Cos}[e+fx]\,\text{Hypergeometric2F1}\left[\frac{1}{2},1+m,\frac{3}{2},\frac{7\,(1-\text{Sin}[e+fx])}{1+\text{Sin}[e+fx]}\right](3-4\,\text{Sin}[e+fx])^{-m}\,(-3+4\,\text{Sin}[e+fx])^m$$

Result (type 5, 176 leaves):

$$\frac{1}{f}2\left(\text{Cos}\left[\frac{1}{4}(2e-\pi+2fx)\right]^2\right)^{-\frac{1}{2}+m}\text{Cot}\left[\frac{1}{4}(2e+\pi+2fx)\right]\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{1}{2}-m,\frac{3}{2},\frac{7\,\text{Sin}\left[\frac{1}{4}(2e-\pi+2fx)\right]^2}{3-4\,\text{Sin}[e+fx]}\right]$$
$$(3-4\,\text{Sin}[e+fx])^{-m}(1+\text{Sin}[e+fx])^m\left(\frac{\text{Cos}\left[\frac{1}{4}(2e-\pi+2fx)\right]^2}{-3+4\,\text{Sin}[e+fx]}\right)^{\frac{1}{2}-m}\left(\text{Sin}\left[\frac{1}{4}(2e+\pi+2fx)\right]^2\right)^{\frac{1}{2}-m}$$

Problem 630: Result more than twice size of optimal antiderivative.

$$\int(3-5\,\text{Sin}[e+fx])^{-1-m}(1+\text{Sin}[e+fx])^m\,dx$$

Optimal (type 5, 78 leaves, 2 steps):

$$\frac{\text{Cos}[e+fx]\,\text{Hypergeometric2F1}\left[\frac{1}{2},1+m,\frac{3}{2},\frac{4(1-\text{Sin}[e+fx])}{1+\text{Sin}[e+fx]}\right](3-5\,\text{Sin}[e+fx])^{-m}(-3+5\,\text{Sin}[e+fx])^m}{f(1+\text{Sin}[e+fx])}$$

Result (type 5, 184 leaves):

$$\frac{1}{f}2^{\frac{1}{2}-m}\left(\text{Cos}\left[\frac{1}{4}(2e-\pi+2fx)\right]^2\right)^{-\frac{1}{2}+m}\text{Cot}\left[\frac{1}{4}(2e+\pi+2fx)\right]\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{1}{2}-m,\frac{3}{2},\frac{8\,\text{Sin}\left[\frac{1}{4}(2e-\pi+2fx)\right]^2}{3-5\,\text{Sin}[e+fx]}\right]$$
$$(3-5\,\text{Sin}[e+fx])^{-m}(1+\text{Sin}[e+fx])^m\left(\frac{\text{Cos}\left[\frac{1}{4}(2e-\pi+2fx)\right]^2}{-3+5\,\text{Sin}[e+fx]}\right)^{\frac{1}{2}-m}\left(\text{Sin}\left[\frac{1}{4}(2e+\pi+2fx)\right]^2\right)^{\frac{1}{2}-m}$$

Problem 633: Result more than twice size of optimal antiderivative.

$$\int(3+3\,\text{Sin}[e+fx])^{-1-m}(a+a\,\text{Sin}[e+fx])^m\,dx$$

Optimal (type 3, 39 leaves, 2 steps):

$$-\frac{\text{Cos}[e+fx]\,(3+3\,\text{Sin}[e+fx])^{-1-m}(a+a\,\text{Sin}[e+fx])^m}{f}$$

Result (type 3, 104 leaves):

$$-\frac{1}{f}2^{-m}\,3^{-1-m}\,\text{Cos}\left[\frac{1}{4}(2e+\pi+2fx)\right]\left(\text{Cos}\left[\frac{1}{2}(e+fx)\right]+\text{Sin}\left[\frac{1}{2}(e+fx)\right]\right)^{2(1+m)}$$
$$(1+\text{Sin}[e+fx])^{-1-m}(a(1+\text{Sin}[e+fx]))^m\,\text{Sin}\left[\frac{1}{4}(2e+\pi+2fx)\right]^{-1-2m}$$

Problem 634: Result more than twice size of optimal antiderivative.

$$\int(3+2\,\text{Sin}[e+fx])^{-1-m}(a+a\,\text{Sin}[e+fx])^m\,dx$$

Optimal (type 5, 83 leaves, 2 steps):

$$-\frac{1}{f}\left(\frac{5}{2}\right)^{-1-m}\text{Cos}[e+f x]\,\text{Hypergeometric2F1}\left[\frac{1}{2},1+m,\frac{3}{2},-\frac{a-a\,\text{Sin}[e+f x]}{5\,(a+a\,\text{Sin}[e+f x])}\right](1+\text{Sin}[e+f x])^{-1-m}(a+a\,\text{Sin}[e+f x])^m$$

Result (type 5, 179 leaves):

$$-\frac{1}{f}2\times 5^{-1-m}\left(\text{Cos}\left[\frac{1}{4}(2e-\pi+2fx)\right]^2\right)^{-\frac{1}{2}+m}\text{Cot}\left[\frac{1}{4}(2e+\pi+2fx)\right]$$
$$\text{Hypergeometric2F1}\left[\frac{1}{2},1+m,\frac{3}{2},-\frac{1}{5}\text{Cos}\left[\frac{1}{4}(2e+\pi+2fx)\right]^2\text{Sec}\left[\frac{1}{4}(2e-\pi+2fx)\right]^2\right](a\,(1+\text{Sin}[e+fx]))^m$$
$$(3+2\,\text{Sin}[e+fx])^{-m}\left(\text{Sec}\left[\frac{1}{4}(2e-\pi+2fx)\right]^2(3+2\,\text{Sin}[e+fx])\right)^m\left(\text{Sin}\left[\frac{1}{4}(2e+\pi+2fx)\right]^2\right)^{\frac{1}{2}-m}$$

Problem 635: Result more than twice size of optimal antiderivative.

$$\int(3+\text{Sin}[e+fx])^{-1-m}(a+a\,\text{Sin}[e+fx])^m\,dx$$

Optimal (type 5, 81 leaves, 2 steps):

$$-\frac{1}{f}2^{-1-m}\text{Cos}[e+fx]\,\text{Hypergeometric2F1}\left[\frac{1}{2},1+m,\frac{3}{2},-\frac{a-a\,\text{Sin}[e+fx]}{2\,(a+a\,\text{Sin}[e+fx])}\right](1+\text{Sin}[e+fx])^{-1-m}(a+a\,\text{Sin}[e+fx])^m$$

Result (type 5, 166 leaves):

$$-\frac{1}{f}2^{-1-2m}\text{Cot}\left[\frac{1}{4}(2e+\pi+2fx)\right]\text{Hypergeometric2F1}\left[\frac{1}{2},1+m,\frac{3}{2},-\frac{1}{2}\text{Cos}\left[\frac{1}{4}(2e+\pi+2fx)\right]^2\text{Sec}\left[\frac{1}{4}(2e-\pi+2fx)\right]^2\right]$$
$$(a\,(1+\text{Sin}[e+fx]))^m\left(\frac{\text{Cos}\left[\frac{1}{4}(2e-\pi+2fx)\right]^2}{3+\text{Sin}[e+fx]}\right)^m\left(\text{Sec}\left[\frac{1}{4}(2e-\pi+2fx)\right]^2(3+\text{Sin}[e+fx])\right)^m\left(\text{Sin}\left[\frac{1}{4}(2e+\pi+2fx)\right]^2\right)^{-m}$$

Problem 637: Result more than twice size of optimal antiderivative.

$$\int(3-\text{Sin}[e+fx])^{-1-m}(a+a\,\text{Sin}[e+fx])^m\,dx$$

Optimal (type 5, 72 leaves, 2 steps):

$$-\frac{1}{f}\text{Cos}[e+fx]\,\text{Hypergeometric2F1}\left[\frac{1}{2},1+m,\frac{3}{2},-\frac{2\,(a-a\,\text{Sin}[e+fx])}{a+a\,\text{Sin}[e+fx]}\right](1+\text{Sin}[e+fx])^{-1-m}(a+a\,\text{Sin}[e+fx])^m$$

Result (type 5, 184 leaves):

$$-\frac{1}{f}2^{\frac{1}{2}-m}\left(\text{Cos}\left[\frac{1}{4}(2e-\pi+2fx)\right]^2\right)^{-\frac{1}{2}+m}\text{Cot}\left[\frac{1}{4}(2e+\pi+2fx)\right]\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{1}{2}-m,\frac{3}{2},-\frac{4\,\text{Sin}\left[\frac{1}{4}(2e-\pi+2fx)\right]^2}{-3+\text{Sin}[e+fx]}\right]$$
$$(3-\text{Sin}[e+fx])^{-m}\left(-\frac{\text{Cos}\left[\frac{1}{4}(2e-\pi+2fx)\right]^2}{-3+\text{Sin}[e+fx]}\right)^{\frac{1}{2}-m}(a\,(1+\text{Sin}[e+fx]))^m\left(\text{Sin}\left[\frac{1}{4}(2e+\pi+2fx)\right]^2\right)^{\frac{1}{2}-m}$$

Problem 638: Result more than twice size of optimal antiderivative.

$$\int (3-2\,\mathrm{Sin}[e+f\,x])^{-1-m}\,(a+a\,\mathrm{Sin}[e+f\,x])^m\,dx$$

Optimal (type 5, 77 leaves, 2 steps):

$$-\frac{1}{f}2^{1+m}\,\mathrm{Cos}[e+f\,x]\,\mathrm{Hypergeometric2F1}\left[\frac{1}{2},\,1+m,\,\frac{3}{2},\,-\frac{5\,(a-a\,\mathrm{Sin}[e+f\,x])}{a+a\,\mathrm{Sin}[e+f\,x]}\right]\,(1+\mathrm{Sin}[e+f\,x])^{-1-m}\,(a+a\,\mathrm{Sin}[e+f\,x])^m$$

Result (type 5, 179 leaves):

$$-\frac{1}{f}2\left(\mathrm{Cos}\left[\frac{1}{4}\,(2\,e-\pi+2\,f\,x)\right]^2\right)^{-\frac{1}{2}+m}\,\mathrm{Cot}\left[\frac{1}{4}\,(2\,e+\pi+2\,f\,x)\right]\,\mathrm{Hypergeometric2F1}\left[\frac{1}{2},\,\frac{1}{2}-m,\,\frac{3}{2},\,\frac{5\,\mathrm{Sin}\left[\frac{1}{4}\,(2\,e-\pi+2\,f\,x)\right]^2}{3-2\,\mathrm{Sin}[e+f\,x]}\right]$$
$$(3-2\,\mathrm{Sin}[e+f\,x])^{-m}\,(a\,(1+\mathrm{Sin}[e+f\,x]))^m\left(-\frac{\mathrm{Cos}\left[\frac{1}{4}\,(2\,e-\pi+2\,f\,x)\right]^2}{-3+2\,\mathrm{Sin}[e+f\,x]}\right)^{\frac{1}{2}-m}\left(\mathrm{Sin}\left[\frac{1}{4}\,(2\,e+\pi+2\,f\,x)\right]^2\right)^{\frac{1}{2}-m}$$

Problem 639: Result more than twice size of optimal antiderivative.

$$\int (3-3\,\mathrm{Sin}[e+f\,x])^{-1-m}\,(a+a\,\mathrm{Sin}[e+f\,x])^m\,dx$$

Optimal (type 3, 45 leaves, 1 step):

$$\frac{\mathrm{Cos}[e+f\,x]\,(3-3\,\mathrm{Sin}[e+f\,x])^{-1-m}\,(a+a\,\mathrm{Sin}[e+f\,x])^m}{f\,(1+2\,m)}$$

Result (type 3, 99 leaves):

$$\frac{1}{3\,(f+2\,f\,m)}\mathrm{Cos}\left[\frac{1}{4}\,(2\,e+\pi+2\,f\,x)\right]^{-1-2\,m}\left(\mathrm{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^{2\,m}\,(6-6\,\mathrm{Sin}[e+f\,x])^{-m}\,(a\,(1+\mathrm{Sin}[e+f\,x]))^m\,\mathrm{Sin}\left[\frac{1}{4}\,(2\,e+\pi+2\,f\,x)\right]$$

Problem 642: Result more than twice size of optimal antiderivative.

$$\int (-3+5\,\mathrm{Sin}[e+f\,x])^{-1-m}\,(a+a\,\mathrm{Sin}[e+f\,x])^m\,dx$$

Optimal (type 5, 72 leaves, 2 steps):

$$-\frac{\mathrm{Cos}[e+f\,x]\,\mathrm{Hypergeometric2F1}\left[\frac{1}{2},\,1+m,\,\frac{3}{2},\,\frac{4\,(a-a\,\mathrm{Sin}[e+f\,x])}{a+a\,\mathrm{Sin}[e+f\,x]}\right]\,(1+\mathrm{Sin}[e+f\,x])^{-1-m}\,(a+a\,\mathrm{Sin}[e+f\,x])^m}{f}$$

Result (type 5, 154 leaves):

$$-\frac{1}{f}\left(\mathrm{Cos}\left[\frac{1}{4}\,(2\,e-\pi+2\,f\,x)\right]^2\right)^{-\frac{1}{2}+m}\,\mathrm{Cot}\left[\frac{1}{4}\,(2\,e+\pi+2\,f\,x)\right]\,\mathrm{Hypergeometric2F1}\left[\frac{1}{2},\,1+m,\,\frac{3}{2},\,4\,\mathrm{Tan}\left[\frac{1}{4}\,(2\,e-\pi+2\,f\,x)\right]^2\right]$$
$$(a\,(1+\mathrm{Sin}[e+f\,x]))^m\left(\mathrm{Sec}\left[\frac{1}{4}\,(2\,e-\pi+2\,f\,x)\right]^2\,(-3+5\,\mathrm{Sin}[e+f\,x])\right)^m\,(-6+10\,\mathrm{Sin}[e+f\,x])^{-m}\left(\mathrm{Sin}\left[\frac{1}{4}\,(2\,e+\pi+2\,f\,x)\right]^2\right)^{\frac{1}{2}-m}$$

Problem 644: Result more than twice size of optimal antiderivative.

$$\int (-3+3\,\text{Sin}[e+f\,x])^{-1-m}\,(a+a\,\text{Sin}[e+f\,x])^m\,dx$$

Optimal (type 3, 45 leaves, 1 step):

$$\frac{\text{Cos}[e+f\,x]\,(-3+3\,\text{Sin}[e+f\,x])^{-1-m}\,(a+a\,\text{Sin}[e+f\,x])^m}{f\,(1+2\,m)}$$

Result (type 3, 110 leaves):

$$\frac{1}{f+2\,f\,m}2^{-m}\,3^{-1-m}\,\text{Cos}\left[\frac{1}{4}\,(2\,e+\pi+2\,f\,x)\right]^{-1-2\,m}\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^{2\,(1+m)}$$
$$(-1+\text{Sin}[e+f\,x])^{-1-m}\,(a\,(1+\text{Sin}[e+f\,x]))^m\,\text{Sin}\left[\frac{1}{4}\,(2\,e+\pi+2\,f\,x)\right]$$

Problem 650: Result more than twice size of optimal antiderivative.

$$\int (-3-3\,\text{Sin}[e+f\,x])^{-1-m}\,(a+a\,\text{Sin}[e+f\,x])^m\,dx$$

Optimal (type 3, 39 leaves, 2 steps):

$$-\frac{\text{Cos}[e+f\,x]\,(-3-3\,\text{Sin}[e+f\,x])^{-1-m}\,(a+a\,\text{Sin}[e+f\,x])^m}{f}$$

Result (type 3, 106 leaves):

$$-\frac{1}{f}2^{-m}\,3^{-1-m}\,\text{Cos}\left[\frac{1}{4}\,(2\,e+\pi+2\,f\,x)\right]\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^{2\,(1+m)}$$
$$(-1-\text{Sin}[e+f\,x])^{-1-m}\,(a\,(1+\text{Sin}[e+f\,x]))^m\,\text{Sin}\left[\frac{1}{4}\,(2\,e+\pi+2\,f\,x)\right]^{-1-2\,m}$$

Problem 655: Unable to integrate problem.

$$\int (a+a\,\text{Sin}[e+f\,x])^3\,(c+d\,\text{Sin}[e+f\,x])^n\,dx$$

Optimal (type 6, 107 leaves, 3 steps):

$$-\frac{1}{f\,\sqrt{1+\text{Sin}[e+f\,x]}}$$
$$8\,\sqrt{2}\,a^3\,\text{AppellF1}\left[\frac{1}{2},-\frac{5}{2},-n,\frac{3}{2},\frac{1}{2}\,(1-\text{Sin}[e+f\,x]),\frac{d\,(1-\text{Sin}[e+f\,x])}{c+d}\right]\text{Cos}[e+f\,x]\,(c+d\,\text{Sin}[e+f\,x])^n\left(\frac{c+d\,\text{Sin}[e+f\,x]}{c+d}\right)^{-n}$$

Result (type 8, 27 leaves):

$$\int (a+a\,\text{Sin}[e+f\,x])^3\,(c+d\,\text{Sin}[e+f\,x])^n\,dx$$

Problem 656: Unable to integrate problem.

$$\int (a + a \operatorname{Sin}[e + f x])^2 (c + d \operatorname{Sin}[e + f x])^n \, dx$$

Optimal (type 6, 107 leaves, 3 steps):

$$-\frac{1}{f \sqrt{1 + \operatorname{Sin}[e + f x]}} 4 \sqrt{2} a^2 \operatorname{AppellF1}\left[\frac{1}{2}, -\frac{3}{2}, -n, \frac{3}{2}, \frac{1}{2} (1 - \operatorname{Sin}[e + f x]), \frac{d (1 - \operatorname{Sin}[e + f x])}{c + d}\right] \operatorname{Cos}[e + f x] (c + d \operatorname{Sin}[e + f x])^n \left(\frac{c + d \operatorname{Sin}[e + f x]}{c + d}\right)^{-n}$$

Result (type 8, 27 leaves):

$$\int (a + a \operatorname{Sin}[e + f x])^2 (c + d \operatorname{Sin}[e + f x])^n \, dx$$

Problem 657: Unable to integrate problem.

$$\int (a + a \operatorname{Sin}[e + f x]) (c + d \operatorname{Sin}[e + f x])^n \, dx$$

Optimal (type 6, 105 leaves, 3 steps):

$$-\frac{1}{f \sqrt{1 + \operatorname{Sin}[e + f x]}} 2 \sqrt{2} a \operatorname{AppellF1}\left[\frac{1}{2}, -\frac{1}{2}, -n, \frac{3}{2}, \frac{1}{2} (1 - \operatorname{Sin}[e + f x]), \frac{d (1 - \operatorname{Sin}[e + f x])}{c + d}\right] \operatorname{Cos}[e + f x] (c + d \operatorname{Sin}[e + f x])^n \left(\frac{c + d \operatorname{Sin}[e + f x]}{c + d}\right)^{-n}$$

Result (type 8, 25 leaves):

$$\int (a + a \operatorname{Sin}[e + f x]) (c + d \operatorname{Sin}[e + f x])^n \, dx$$

Problem 659: Unable to integrate problem.

$$\int \frac{(c + d \operatorname{Sin}[e + f x])^n}{a + a \operatorname{Sin}[e + f x]} \, dx$$

Optimal (type 6, 107 leaves, 3 steps):

$$-\frac{1}{\sqrt{2} a f \sqrt{1 + \operatorname{Sin}[e + f x]}} \operatorname{AppellF1}\left[\frac{1}{2}, \frac{3}{2}, -n, \frac{3}{2}, \frac{1}{2} (1 - \operatorname{Sin}[e + f x]), \frac{d (1 - \operatorname{Sin}[e + f x])}{c + d}\right] \operatorname{Cos}[e + f x] (c + d \operatorname{Sin}[e + f x])^n \left(\frac{c + d \operatorname{Sin}[e + f x]}{c + d}\right)^{-n}$$

Result (type 8, 27 leaves):

$$\int \frac{(c + d \operatorname{Sin}[e + f x])^n}{a + a \operatorname{Sin}[e + f x]} \, dx$$

Problem 660: Unable to integrate problem.

$$\int \frac{(c+d\,\mathrm{Sin}[e+f\,x])^n}{(a+a\,\mathrm{Sin}[e+f\,x])^2}\,dx$$

Optimal (type 6, 109 leaves, 3 steps):

$$-\left(\mathrm{AppellF1}\left[\frac{1}{2},\frac{5}{2},-n,\frac{3}{2},\frac{1}{2}(1-\mathrm{Sin}[e+f\,x]),\frac{d\,(1-\mathrm{Sin}[e+f\,x])}{c+d}\right]\mathrm{Cos}[e+f\,x]\,(c+d\,\mathrm{Sin}[e+f\,x])^n\left(\frac{c+d\,\mathrm{Sin}[e+f\,x]}{c+d}\right)^{-n}\right)\Big/\left(2\sqrt{2}\,a^2\,f\,\sqrt{1+\mathrm{Sin}[e+f\,x]}\right)$$

Result (type 8, 27 leaves):

$$\int \frac{(c+d\,\mathrm{Sin}[e+f\,x])^n}{(a+a\,\mathrm{Sin}[e+f\,x])^2}\,dx$$

Problem 661: Unable to integrate problem.

$$\int \frac{(c+d\,\mathrm{Sin}[e+f\,x])^n}{(a+a\,\mathrm{Sin}[e+f\,x])^3}\,dx$$

Optimal (type 6, 109 leaves, 3 steps):

$$-\left(\mathrm{AppellF1}\left[\frac{1}{2},\frac{7}{2},-n,\frac{3}{2},\frac{1}{2}(1-\mathrm{Sin}[e+f\,x]),\frac{d\,(1-\mathrm{Sin}[e+f\,x])}{c+d}\right]\mathrm{Cos}[e+f\,x]\,(c+d\,\mathrm{Sin}[e+f\,x])^n\left(\frac{c+d\,\mathrm{Sin}[e+f\,x]}{c+d}\right)^{-n}\right)\Big/\left(4\sqrt{2}\,a^3\,f\,\sqrt{1+\mathrm{Sin}[e+f\,x]}\right)$$

Result (type 8, 27 leaves):

$$\int \frac{(c+d\,\mathrm{Sin}[e+f\,x])^n}{(a+a\,\mathrm{Sin}[e+f\,x])^3}\,dx$$

Problem 662: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int (a+a\,\mathrm{Sin}[e+f\,x])^{5/2}\,(c+d\,\mathrm{Sin}[e+f\,x])^n\,dx$$

Optimal (type 5, 257 leaves, 5 steps):

$$\frac{2\,a^3\,(3\,c-d\,(11+4\,n))\,\mathrm{Cos}[e+f\,x]\,(c+d\,\mathrm{Sin}[e+f\,x])^{1+n}}{d^2\,f\,(3+2\,n)\,(5+2\,n)\,\sqrt{a+a\,\mathrm{Sin}[e+f\,x]}}-\frac{2\,a^2\,\mathrm{Cos}[e+f\,x]\,\sqrt{a+a\,\mathrm{Sin}[e+f\,x]}\,(c+d\,\mathrm{Sin}[e+f\,x])^{1+n}}{d\,f\,(5+2\,n)}-\left(2\,a^3\left(3\,c^2-2\,c\,d\,(7+4\,n)+d^2\left(43+56\,n+16\,n^2\right)\right)\mathrm{Cos}[e+f\,x]\,\mathrm{Hypergeometric2F1}\left[\frac{1}{2},-n,\frac{3}{2},\frac{d\,(1-\mathrm{Sin}[e+f\,x])}{c+d}\right](c+d\,\mathrm{Sin}[e+f\,x])^n\left(\frac{c+d\,\mathrm{Sin}[e+f\,x]}{c+d}\right)^{-n}\right)\Big/\left(d^2\,f\,(3+2\,n)\,(5+2\,n)\,\sqrt{a+a\,\mathrm{Sin}[e+f\,x]}\right)$$

Result (type 6, 577 leaves):

$$\Bigg(2\,a\,\mathrm{Cos}[e+f\,x]\,(1+\mathrm{Sin}[e+f\,x])\,(c+d\,\mathrm{Sin}[e+f\,x])^{2n}\left(c+\frac{d\,(-a+a\,(1+\mathrm{Sin}[e+f\,x]))}{a}\right)^{-n}$$

$$\Bigg(-\frac{1}{d^2\,(1+n)}a\,(c+d)\,\mathrm{Hypergeometric2F1}\left[-\frac{1}{2},\,1+n,\,2+n,\,\frac{a\,c-a\,d+a\,d\,(1+\mathrm{Sin}[e+f\,x])}{a\,c+a\,d}\right]$$

$$\sqrt{\frac{d\,(2\,a-a\,(1+\mathrm{Sin}[e+f\,x]))}{a\,(c+d)}}\,(a\,(c-d)+a\,d\,(1+\mathrm{Sin}[e+f\,x]))+\frac{1}{d\,(1+n)}$$

$$2\,a\,\mathrm{Hypergeometric2F1}\left[\frac{1}{2},\,1+n,\,2+n,\,\frac{a\,c-a\,d+a\,d\,(1+\mathrm{Sin}[e+f\,x])}{a\,c+a\,d}\right]\sqrt{\frac{d\,(2\,a-a\,(1+\mathrm{Sin}[e+f\,x]))}{a\,(c+d)}}\,(a\,(c-d)+a\,d\,(1+\mathrm{Sin}[e+f\,x]))+$$

$$\left(3\,a^2\,(c-d)\,\mathrm{AppellF1}\left[2,\,-\frac{1}{2},\,-n,\,3,\,\frac{1}{2}\,(1+\mathrm{Sin}[e+f\,x]),\,-\frac{a\,d\,(1+\mathrm{Sin}[e+f\,x])}{a\,c-a\,d}\right]\,(1+\mathrm{Sin}[e+f\,x])^2\,(-2\,a+a\,(1+\mathrm{Sin}[e+f\,x]))\right)\Big/$$

$$\Bigg(12\,a\,(c-d)\,\mathrm{AppellF1}\left[2,\,-\frac{1}{2},\,-n,\,3,\,\frac{1}{2}\,(1+\mathrm{Sin}[e+f\,x]),\,-\frac{a\,d\,(1+\mathrm{Sin}[e+f\,x])}{a\,c-a\,d}\right]+$$

$$a\,\Bigg(4\,d\,n\,\mathrm{AppellF1}\left[3,\,-\frac{1}{2},\,1-n,\,4,\,\frac{1}{2}\,(1+\mathrm{Sin}[e+f\,x]),\,-\frac{a\,d\,(1+\mathrm{Sin}[e+f\,x])}{a\,c-a\,d}\right]+$$

$$(-c+d)\,\mathrm{AppellF1}\left[3,\,\frac{1}{2},\,-n,\,4,\,\frac{1}{2}\,(1+\mathrm{Sin}[e+f\,x]),\,-\frac{a\,d\,(1+\mathrm{Sin}[e+f\,x])}{a\,c-a\,d}\right]\Bigg)\,(1+\mathrm{Sin}[e+f\,x])\Bigg)\Bigg)\Bigg)\Big/$$

$$\left(f\,\sqrt{a\,(1+\mathrm{Sin}[e+f\,x])}\,\sqrt{\frac{2\,a^2\,(1+\mathrm{Sin}[e+f\,x])-a^2\,(1+\mathrm{Sin}[e+f\,x])^2}{a^2}}\,\sqrt{1-\frac{(-a+a\,(1+\mathrm{Sin}[e+f\,x]))^2}{a^2}}\right)$$

- **Problem 664: Unable to integrate problem.**

$$\int\sqrt{a+a\,\mathrm{Sin}[e+f\,x]}\,(c+d\,\mathrm{Sin}[e+f\,x])^n\,dx$$

Optimal (type 5, 85 leaves, 3 steps):

$$-\frac{2\,a\,\mathrm{Cos}[e+f\,x]\,\mathrm{Hypergeometric2F1}\left[\frac{1}{2},\,-n,\,\frac{3}{2},\,\frac{d\,(1-\mathrm{Sin}[e+f\,x])}{c+d}\right]\,(c+d\,\mathrm{Sin}[e+f\,x])^n\left(\frac{c+d\,\mathrm{Sin}[e+f\,x]}{c+d}\right)^{-n}}{f\,\sqrt{a+a\,\mathrm{Sin}[e+f\,x]}}$$

Result (type 8, 29 leaves):

$$\int\sqrt{a+a\,\mathrm{Sin}[e+f\,x]}\,(c+d\,\mathrm{Sin}[e+f\,x])^n\,dx$$

Problem 665: Result more than twice size of optimal antiderivative.

$$\int \frac{(c+d\,\mathrm{Sin}[e+f\,x])^n}{\sqrt{a+a\,\mathrm{Sin}[e+f\,x]}}\,dx$$

Optimal (type 6, 99 leaves, 3 steps):

$$-\frac{1}{f\sqrt{a+a\,\mathrm{Sin}[e+f\,x]}}\mathrm{AppellF1}\left[\frac{1}{2},-n,1,\frac{3}{2},\frac{d\,(1-\mathrm{Sin}[e+f\,x])}{c+d},\frac{1}{2}\,(1-\mathrm{Sin}[e+f\,x])\right]\mathrm{Cos}[e+f\,x]\,(c+d\,\mathrm{Sin}[e+f\,x])^n\left(\frac{c+d\,\mathrm{Sin}[e+f\,x]}{c+d}\right)^{-n}$$

Result (type 6, 494 leaves):

$$\frac{1}{a\,f}\mathrm{Sec}[e+f\,x]\,(a\,(1+\mathrm{Sin}[e+f\,x]))^{3/2}\,(c+d\,\mathrm{Sin}[e+f\,x])^n$$
$$\left(\left(4\,(c-d)\,\mathrm{AppellF1}\left[1,\frac{1}{2},-n,2,\frac{1}{2}\,(1+\mathrm{Sin}[e+f\,x]),\frac{d\,(1+\mathrm{Sin}[e+f\,x])}{-c+d}\right]\right)\Big/\left(8\,a\,(c-d)\,\mathrm{AppellF1}\left[1,\frac{1}{2},-n,2,\right.\right.\right.$$
$$\left.\frac{1}{2}\,(1+\mathrm{Sin}[e+f\,x]),\frac{d\,(1+\mathrm{Sin}[e+f\,x])}{-c+d}\right]+a\left(4\,d\,n\,\mathrm{AppellF1}\left[2,\frac{1}{2},1-n,3,\frac{1}{2}\,(1+\mathrm{Sin}[e+f\,x]),\frac{d\,(1+\mathrm{Sin}[e+f\,x])}{-c+d}\right]+\right.$$
$$\left.\left.(c-d)\,\mathrm{AppellF1}\left[2,\frac{3}{2},-n,3,\frac{1}{2}\,(1+\mathrm{Sin}[e+f\,x]),\frac{d\,(1+\mathrm{Sin}[e+f\,x])}{-c+d}\right]\right)(1+\mathrm{Sin}[e+f\,x])\right)-$$
$$\left(d\,(-1+2\,n)\,\mathrm{AppellF1}\left[-\frac{1}{2}-n,-\frac{1}{2},-n,\frac{1}{2}-n,\frac{2}{1+\mathrm{Sin}[e+f\,x]},\frac{-c+d}{d+d\,\mathrm{Sin}[e+f\,x]}\right](-1+\mathrm{Sin}[e+f\,x])\right)\Big/$$
$$\left(a\,(1+2\,n)\left(-2\,(c-d)\,n\,\mathrm{AppellF1}\left[\frac{1}{2}-n,-\frac{1}{2},1-n,\frac{3}{2}-n,\frac{2}{1+\mathrm{Sin}[e+f\,x]},\frac{-c+d}{d+d\,\mathrm{Sin}[e+f\,x]}\right]+\right.\right.$$
$$2\,d\,\mathrm{AppellF1}\left[\frac{1}{2}-n,\frac{1}{2},-n,\frac{3}{2}-n,\frac{2}{1+\mathrm{Sin}[e+f\,x]},\frac{-c+d}{d+d\,\mathrm{Sin}[e+f\,x]}\right]+$$
$$\left.\left.\left.d\,(-1+2\,n)\,\mathrm{AppellF1}\left[-\frac{1}{2}-n,-\frac{1}{2},-n,\frac{1}{2}-n,\frac{2}{1+\mathrm{Sin}[e+f\,x]},\frac{-c+d}{d+d\,\mathrm{Sin}[e+f\,x]}\right](1+\mathrm{Sin}[e+f\,x])\right)\right)\right)$$

Problem 666: Result more than twice size of optimal antiderivative.

$$\int \frac{(c+d\,\mathrm{Sin}[e+f\,x])^n}{(a+a\,\mathrm{Sin}[e+f\,x])^{3/2}}\,dx$$

Optimal (type 6, 104 leaves, 3 steps):

$$-\frac{1}{2\,a\,f\sqrt{a+a\,\mathrm{Sin}[e+f\,x]}}$$
$$\mathrm{AppellF1}\left[\frac{1}{2},-n,2,\frac{3}{2},\frac{d\,(1-\mathrm{Sin}[e+f\,x])}{c+d},\frac{1}{2}\,(1-\mathrm{Sin}[e+f\,x])\right]\mathrm{Cos}[e+f\,x]\,(c+d\,\mathrm{Sin}[e+f\,x])^n\left(\frac{c+d\,\mathrm{Sin}[e+f\,x]}{c+d}\right)^{-n}$$

Result (type 6, 918 leaves):

$$\left(\text{Cos}[e+f x]\,(1+\text{Sin}[e+f x])\,(c+d\,\text{Sin}[e+f x])^{2 n}\left(c+\frac{d\,(-a+a\,(1+\text{Sin}[e+f x]))}{a}\right)^{-n}\right.$$

$$\left(\left(4 a^2\,(c-d)\,\text{AppellF1}\left[1,\frac{1}{2},-n,2,\frac{1}{2}\,(1+\text{Sin}[e+f x]),-\frac{a\,d\,(1+\text{Sin}[e+f x])}{a\,c-a\,d}\right](1+\text{Sin}[e+f x])\right)\Big/\right.$$

$$\left(8 a\,(c-d)\,\text{AppellF1}\left[1,\frac{1}{2},-n,2,\frac{1}{2}\,(1+\text{Sin}[e+f x]),-\frac{a\,d\,(1+\text{Sin}[e+f x])}{a\,c-a\,d}\right]+a\left(4 d\,n\,\text{AppellF1}\left[2,\frac{1}{2},1-n,3,\frac{1}{2}\,(1+\text{Sin}[e+f x]),\right.\right.\right.$$

$$\left.\left.\left.-\frac{a\,d\,(1+\text{Sin}[e+f x])}{a\,c-a\,d}\right]+(c-d)\,\text{AppellF1}\left[2,\frac{3}{2},-n,3,\frac{1}{2}\,(1+\text{Sin}[e+f x]),-\frac{a\,d\,(1+\text{Sin}[e+f x])}{a\,c-a\,d}\right]\right)(1+\text{Sin}[e+f x])\right)-$$

$$\left(a\,d\,(-1+2 n)\,\text{AppellF1}\left[-\frac{1}{2}-n,-\frac{1}{2},-n,\frac{1}{2}-n,\frac{2}{1+\text{Sin}[e+f x]},\frac{-c+d}{d\,(1+\text{Sin}[e+f x])}\right](1+\text{Sin}[e+f x])\,(-2 a+a\,(1+\text{Sin}[e+f x]))\right)\Big/$$

$$\left((1+2 n)\left(2 a\left((-c+d)\,n\,\text{AppellF1}\left[\frac{1}{2}-n,-\frac{1}{2},1-n,\frac{3}{2}-n,\frac{2}{1+\text{Sin}[e+f x]},\frac{-c+d}{d\,(1+\text{Sin}[e+f x])}\right]+\right.\right.\right.$$

$$\left.d\,\text{AppellF1}\left[\frac{1}{2}-n,\frac{1}{2},-n,\frac{3}{2}-n,\frac{2}{1+\text{Sin}[e+f x]},\frac{-c+d}{d\,(1+\text{Sin}[e+f x])}\right]\right)+$$

$$\left.\left.a\,d\,(-1+2 n)\,\text{AppellF1}\left[-\frac{1}{2}-n,-\frac{1}{2},-n,\frac{1}{2}-n,\frac{2}{1+\text{Sin}[e+f x]},\frac{-c+d}{d\,(1+\text{Sin}[e+f x])}\right](1+\text{Sin}[e+f x])\right)\right)-$$

$$\left(2 a\,d\,(-3+2 n)\,\text{AppellF1}\left[\frac{1}{2}-n,-\frac{1}{2},-n,\frac{3}{2}-n,\frac{2}{1+\text{Sin}[e+f x]},\frac{-c+d}{d\,(1+\text{Sin}[e+f x])}\right](-2 a+a\,(1+\text{Sin}[e+f x]))\right)\Big/$$

$$\left((-1+2 n)\left(2 a\left((-c+d)\,n\,\text{AppellF1}\left[\frac{3}{2}-n,-\frac{1}{2},1-n,\frac{5}{2}-n,\frac{2}{1+\text{Sin}[e+f x]},\frac{-c+d}{d\,(1+\text{Sin}[e+f x])}\right]+\right.\right.\right.$$

$$\left.d\,\text{AppellF1}\left[\frac{3}{2}-n,\frac{1}{2},-n,\frac{5}{2}-n,\frac{2}{1+\text{Sin}[e+f x]},\frac{-c+d}{d\,(1+\text{Sin}[e+f x])}\right]\right)+$$

$$\left.\left.\left.\left.a\,d\,(-3+2 n)\,\text{AppellF1}\left[\frac{1}{2}-n,-\frac{1}{2},-n,\frac{3}{2}-n,\frac{2}{1+\text{Sin}[e+f x]},\frac{-c+d}{d\,(1+\text{Sin}[e+f x])}\right](1+\text{Sin}[e+f x])\right)\right)\right)\right)\Big/$$

$$\left(2 a^2 f\,\sqrt{a\,(1+\text{Sin}[e+f x])}\,\sqrt{\frac{2 a^2\,(1+\text{Sin}[e+f x])-a^2\,(1+\text{Sin}[e+f x])^2}{a^2}}\right.$$

$$\left.\sqrt{1-\frac{(-a+a\,(1+\text{Sin}[e+f x]))^2}{a^2}}\right)$$

- **Problem 667: Result more than twice size of optimal antiderivative.**

$$\int\frac{(c+d\,\text{Sin}[e+f x])^n}{(a+a\,\text{Sin}[e+f x])^{5/2}}\,dx$$

Optimal (type 6, 104 leaves, 3 steps):

$$-\frac{1}{4 a^2 f \sqrt{a + a \text{Sin}[e + f x]}} \text{AppellF1}\left[\frac{1}{2}, -n, 3, \frac{3}{2}, \frac{d (1 - \text{Sin}[e + f x])}{c + d}, \frac{1}{2} (1 - \text{Sin}[e + f x])\right] \text{Cos}[e + f x] (c + d \text{Sin}[e + f x])^n \left(\frac{c + d \text{Sin}[e + f x]}{c + d}\right)^{-n}$$

Result (type 6, 1377 leaves):

$$\frac{1}{a f \sqrt{1 - \frac{(-a+a (1+\text{Sin}[e+f x]))^2}{a^2}}} 2 \text{Cos}[e + f x] (c + d \text{Sin}[e + f x])^n \left(c + \frac{d (-a + a (1 + \text{Sin}[e + f x]))}{a}\right)^{-n}$$

$$\left(\left((c - d) \text{AppellF1}\left[1, \frac{1}{2}, -n, 2, \frac{1}{2} (1 + \text{Sin}[e + f x]), -\frac{a d (1 + \text{Sin}[e + f x])}{a c - a d}\right] (a (1 + \text{Sin}[e + f x]))^{3/2} (c + d \text{Sin}[e + f x])^n\right) \Big/\right.$$

$$\left(2 a^2 \left(8 a (c - d) \text{AppellF1}\left[1, \frac{1}{2}, -n, 2, \frac{1}{2} (1 + \text{Sin}[e + f x]), -\frac{a d (1 + \text{Sin}[e + f x])}{a c - a d}\right] + \right.\right.$$

$$a \left(4 d n \text{AppellF1}\left[2, \frac{1}{2}, 1 - n, 3, \frac{1}{2} (1 + \text{Sin}[e + f x]), -\frac{a d (1 + \text{Sin}[e + f x])}{a c - a d}\right] + (c - d) \text{AppellF1}\left[2, \frac{3}{2}, -n, 3, \right.\right.$$

$$\left.\left.\left.\frac{1}{2} (1 + \text{Sin}[e + f x]), -\frac{a d (1 + \text{Sin}[e + f x])}{a c - a d}\right]\right) (1 + \text{Sin}[e + f x])\right) \sqrt{\frac{2 a^2 (1 + \text{Sin}[e + f x]) - a^2 (1 + \text{Sin}[e + f x])^2}{a^2}}\right) -$$

$$\left(d (-1 + 2 n) \text{AppellF1}\left[-\frac{1}{2} - n, -\frac{1}{2}, -n, \frac{1}{2} - n, \frac{2}{1 + \text{Sin}[e + f x]}, \frac{-c + d}{d (1 + \text{Sin}[e + f x])}\right] (a (1 + \text{Sin}[e + f x]))^{3/2}\right.$$

$$\left.(c + d \text{Sin}[e + f x])^n (-2 a + a (1 + \text{Sin}[e + f x]))\right) \Big/$$

$$\left(8 a^3 (1 + 2 n) \left(2 a \left((-c + d) n \text{AppellF1}\left[\frac{1}{2} - n, -\frac{1}{2}, 1 - n, \frac{3}{2} - n, \frac{2}{1 + \text{Sin}[e + f x]}, \frac{-c + d}{d (1 + \text{Sin}[e + f x])}\right] + \right.\right.\right.$$

$$\left.d \text{AppellF1}\left[\frac{1}{2} - n, \frac{1}{2}, -n, \frac{3}{2} - n, \frac{2}{1 + \text{Sin}[e + f x]}, \frac{-c + d}{d (1 + \text{Sin}[e + f x])}\right]\right) + a d (-1 + 2 n) \text{AppellF1}\left[-\frac{1}{2} - n, -\frac{1}{2}, -n, \right.$$

$$\left.\left.\frac{1}{2} - n, \frac{2}{1 + \text{Sin}[e + f x]}, \frac{-c + d}{d (1 + \text{Sin}[e + f x])}\right] (1 + \text{Sin}[e + f x])\right) \sqrt{\frac{2 a^2 (1 + \text{Sin}[e + f x]) - a^2 (1 + \text{Sin}[e + f x])^2}{a^2}}\right) -$$

$$\left(d (-3 + 2 n) \text{AppellF1}\left[\frac{1}{2} - n, -\frac{1}{2}, -n, \frac{3}{2} - n, \frac{2}{1 + \text{Sin}[e + f x]}, \frac{-c + d}{d (1 + \text{Sin}[e + f x])}\right] \sqrt{a (1 + \text{Sin}[e + f x])}\right.$$

$$(c+d\,\text{Sin}[e+f\,x])^n\,(-2\,a+a\,(1+\text{Sin}[e+f\,x]))\Bigg)\Bigg/$$

$$\Bigg(4\,a^2\,(-1+2\,n)\,\Bigg(2\,a\,\Bigg((-c+d)\,n\,\text{AppellF1}\Big[\frac{3}{2}-n,\,-\frac{1}{2},\,1-n,\,\frac{5}{2}-n,\,\frac{2}{1+\text{Sin}[e+f\,x]},\,\frac{-c+d}{d\,(1+\text{Sin}[e+f\,x])}\Big]+$$

$$d\,\text{AppellF1}\Big[\frac{3}{2}-n,\,\frac{1}{2},\,-n,\,\frac{5}{2}-n,\,\frac{2}{1+\text{Sin}[e+f\,x]},\,\frac{-c+d}{d\,(1+\text{Sin}[e+f\,x])}\Big]\Bigg)+a\,d\,(-3+2\,n)\,\text{AppellF1}\Big[\frac{1}{2}-n,\,-\frac{1}{2},\,-n,$$

$$\frac{3}{2}-n,\,\frac{2}{1+\text{Sin}[e+f\,x]},\,\frac{-c+d}{d\,(1+\text{Sin}[e+f\,x])}\Big]\,(1+\text{Sin}[e+f\,x])\Bigg)\sqrt{\frac{2\,a^2\,(1+\text{Sin}[e+f\,x])-a^2\,(1+\text{Sin}[e+f\,x])^2}{a^2}}\Bigg)-$$

$$\Bigg(d\,(-5+2\,n)\,\text{AppellF1}\Big[\frac{3}{2}-n,\,-\frac{1}{2},\,-n,\,\frac{5}{2}-n,\,\frac{2}{1+\text{Sin}[e+f\,x]},\,\frac{-c+d}{d\,(1+\text{Sin}[e+f\,x])}\Big]\,(c+d\,\text{Sin}[e+f\,x])^n\,(-2\,a+a\,(1+\text{Sin}[e+f\,x]))\Bigg)\Bigg/$$

$$\Bigg(2\,a\,(-3+2\,n)\,\sqrt{a\,(1+\text{Sin}[e+f\,x])}\,\Bigg(2\,a\,\Bigg((-c+d)\,n\,\text{AppellF1}\Big[\frac{5}{2}-n,\,-\frac{1}{2},\,1-n,\,\frac{7}{2}-n,\,\frac{2}{1+\text{Sin}[e+f\,x]},\,\frac{-c+d}{d\,(1+\text{Sin}[e+f\,x])}\Big]+$$

$$d\,\text{AppellF1}\Big[\frac{5}{2}-n,\,\frac{1}{2},\,-n,\,\frac{7}{2}-n,\,\frac{2}{1+\text{Sin}[e+f\,x]},\,\frac{-c+d}{d\,(1+\text{Sin}[e+f\,x])}\Big]\Bigg)+a\,d\,(-5+2\,n)\,\text{AppellF1}\Big[\frac{3}{2}-n,\,-\frac{1}{2},\,-n,$$

$$\frac{5}{2}-n,\,\frac{2}{1+\text{Sin}[e+f\,x]},\,\frac{-c+d}{d\,(1+\text{Sin}[e+f\,x])}\Big]\,(1+\text{Sin}[e+f\,x])\Bigg)\sqrt{\frac{2\,a^2\,(1+\text{Sin}[e+f\,x])-a^2\,(1+\text{Sin}[e+f\,x])^2}{a^2}}\Bigg)\Bigg)$$

- **Problem 668: Result more than twice size of optimal antiderivative.**

$$\int(a+a\,\text{Sin}[e+f\,x])\,(c+d\,\text{Sin}[e+f\,x])^{1/3}\,dx$$

Optimal (type 6, 107 leaves, 3 steps):

$$-\frac{2\,\sqrt{2}\,a\,\text{AppellF1}\Big[\frac{1}{2},\,-\frac{1}{2},\,-\frac{1}{3},\,\frac{3}{2},\,\frac{1}{2}\,(1-\text{Sin}[e+f\,x]),\,\frac{d\,(1-\text{Sin}[e+f\,x])}{c+d}\Big]\,\text{Cos}[e+f\,x]\,(c+d\,\text{Sin}[e+f\,x])^{1/3}}{f\,\sqrt{1+\text{Sin}[e+f\,x]}\,\left(\frac{c+d\,\text{Sin}[e+f\,x]}{c+d}\right)^{1/3}}$$

Result (type 6, 1736 leaves):

$$a\,\Bigg(\Bigg(c\,\text{Sec}[e]\,(1+\text{Sin}[e+f\,x])\,\Bigg(-\Bigg(\text{AppellF1}\Big[-\frac{2}{3},\,-\frac{1}{2},\,-\frac{1}{2},\,\frac{1}{3},\,-\frac{\text{Csc}[e]\,\left(c+d\,\text{Cos}[f\,x-\text{ArcTan}[\text{Cot}[e]]]\,\sqrt{1+\text{Cot}[e]^2}\,\text{Sin}[e]\right)}{d\,\sqrt{1+\text{Cot}[e]^2}\,\left(1-\frac{c\,\text{Csc}[e]}{d\,\sqrt{1+\text{Cot}[e]^2}}\right)},$$

$$-\frac{\mathrm{Csc}[e]\left(c+d\,\mathrm{Cos}[f\,x-\mathrm{ArcTan}[\mathrm{Cot}[e]]]\sqrt{1+\mathrm{Cot}[e]^2}\,\mathrm{Sin}[e]\right)}{d\sqrt{1+\mathrm{Cot}[e]^2}\left(-1-\frac{c\,\mathrm{Csc}[e]}{d\sqrt{1+\mathrm{Cot}[e]^2}}\right)}\Big]\,\mathrm{Cot}[e]\,\mathrm{Sin}[f\,x-\mathrm{ArcTan}[\mathrm{Cot}[e]]]\Bigg)\Big/$$

$$\left(\sqrt{1+\mathrm{Cot}[e]^2}\sqrt{\frac{d\sqrt{1+\mathrm{Cot}[e]^2}+d\,\mathrm{Cos}[f\,x-\mathrm{ArcTan}[\mathrm{Cot}[e]]]\sqrt{1+\mathrm{Cot}[e]^2}}{d\sqrt{1+\mathrm{Cot}[e]^2}-c\,\mathrm{Csc}[e]}}\right.$$

$$\left.\sqrt{\frac{d\sqrt{1+\mathrm{Cot}[e]^2}-d\,\mathrm{Cos}[f\,x-\mathrm{ArcTan}[\mathrm{Cot}[e]]]\sqrt{1+\mathrm{Cot}[e]^2}}{d\sqrt{1+\mathrm{Cot}[e]^2}+c\,\mathrm{Csc}[e]}}\left(c+d\,\mathrm{Cos}[f\,x-\mathrm{ArcTan}[\mathrm{Cot}[e]]]\sqrt{1+\mathrm{Cot}[e]^2}\,\mathrm{Sin}[e]\right)^{2/3}\right)-$$

$$\frac{\frac{3\,d\,\mathrm{Sin}[e]\left(c+d\,\mathrm{Cos}[f\,x-\mathrm{ArcTan}[\mathrm{Cot}[e]]]\sqrt{1+\mathrm{Cot}[e]^2}\,\mathrm{Sin}[e]\right)}{d^2\,\mathrm{Cos}[e]^2+d^2\,\mathrm{Sin}[e]^2}-\frac{\mathrm{Cot}[e]\,\mathrm{Sin}[f\,x-\mathrm{ArcTan}[\mathrm{Cot}[e]]]}{\sqrt{1+\mathrm{Cot}[e]^2}}}{\left(c+d\,\mathrm{Cos}[f\,x-\mathrm{ArcTan}[\mathrm{Cot}[e]]]\sqrt{1+\mathrm{Cot}[e]^2}\,\mathrm{Sin}[e]\right)^{2/3}}\Bigg)\Bigg)\Big/\left(4\,f\left(\mathrm{Cos}\left[\frac{e}{2}+\frac{f\,x}{2}\right]+\mathrm{Sin}\left[\frac{e}{2}+\frac{f\,x}{2}\right]\right)^2\right)+$$

$$\Bigg(d\,\mathrm{Sec}[e]\,(1+\mathrm{Sin}[e+f\,x])\Bigg)\Bigg(-\Bigg(\mathrm{AppellF1}\Big[-\frac{2}{3},-\frac{1}{2},-\frac{1}{2},\frac{1}{3},-\frac{\mathrm{Csc}[e]\left(c+d\,\mathrm{Cos}[f\,x-\mathrm{ArcTan}[\mathrm{Cot}[e]]]\sqrt{1+\mathrm{Cot}[e]^2}\,\mathrm{Sin}[e]\right)}{d\sqrt{1+\mathrm{Cot}[e]^2}\left(1-\frac{c\,\mathrm{Csc}[e]}{d\sqrt{1+\mathrm{Cot}[e]^2}}\right)},$$

$$-\frac{\mathrm{Csc}[e]\left(c+d\,\mathrm{Cos}[f\,x-\mathrm{ArcTan}[\mathrm{Cot}[e]]]\sqrt{1+\mathrm{Cot}[e]^2}\,\mathrm{Sin}[e]\right)}{d\sqrt{1+\mathrm{Cot}[e]^2}\left(-1-\frac{c\,\mathrm{Csc}[e]}{d\sqrt{1+\mathrm{Cot}[e]^2}}\right)}\Big]\,\mathrm{Cot}[e]\,\mathrm{Sin}[f\,x-\mathrm{ArcTan}[\mathrm{Cot}[e]]]\Bigg)\Big/$$

$$\left(\sqrt{1+\mathrm{Cot}[e]^2}\sqrt{\frac{d\sqrt{1+\mathrm{Cot}[e]^2}+d\,\mathrm{Cos}[f\,x-\mathrm{ArcTan}[\mathrm{Cot}[e]]]\sqrt{1+\mathrm{Cot}[e]^2}}{d\sqrt{1+\mathrm{Cot}[e]^2}-c\,\mathrm{Csc}[e]}}\right.$$

$$\left.\sqrt{\frac{d\sqrt{1+\mathrm{Cot}[e]^2}-d\,\mathrm{Cos}[f\,x-\mathrm{ArcTan}[\mathrm{Cot}[e]]]\sqrt{1+\mathrm{Cot}[e]^2}}{d\sqrt{1+\mathrm{Cot}[e]^2}+c\,\mathrm{Csc}[e]}}\left(c+d\,\mathrm{Cos}[f\,x-\mathrm{ArcTan}[\mathrm{Cot}[e]]]\sqrt{1+\mathrm{Cot}[e]^2}\,\mathrm{Sin}[e]\right)^{2/3}\right)-$$

$$\left.\left.\frac{\frac{3\,d\,\text{Sin}[e]\left(c+d\,\text{Cos}[f\,x-\text{ArcTan}[\text{Cot}[e]]]\sqrt{1+\text{Cot}[e]^2}\,\text{Sin}[e]\right)}{d^2\,\text{Cos}[e]^2+d^2\,\text{Sin}[e]^2}-\frac{\text{Cot}[e]\,\text{Sin}[f\,x-\text{ArcTan}[\text{Cot}[e]]]}{\sqrt{1+\text{Cot}[e]^2}}}{\left(c+d\,\text{Cos}[f\,x-\text{ArcTan}[\text{Cot}[e]]]\sqrt{1+\text{Cot}[e]^2}\,\text{Sin}[e]\right)^{2/3}}\right)\right)\Big/\left(f\left(\text{Cos}\left[\frac{e}{2}+\frac{f\,x}{2}\right]+\text{Sin}\left[\frac{e}{2}+\frac{f\,x}{2}\right]\right)^2\right)+$$

$$\frac{(1+\text{Sin}[e+f\,x])\,(c+d\,\text{Sin}[e+f\,x])^{1/3}\left(-\frac{3\,\text{Cos}[e]\,\text{Cos}[f\,x]}{4\,f}+\frac{3\,\text{Sin}[e]\,\text{Sin}[f\,x]}{4\,f}+\frac{3\,(c+4\,d)\,\text{Tan}[e]}{4\,d\,f}\right)}{\left(\text{Cos}\left[\frac{e}{2}+\frac{f\,x}{2}\right]+\text{Sin}\left[\frac{e}{2}+\frac{f\,x}{2}\right]\right)^2}+$$

$$\frac{1}{4\,f\left(\text{Cos}\left[\frac{e}{2}+\frac{f\,x}{2}\right]+\text{Sin}\left[\frac{e}{2}+\frac{f\,x}{2}\right]\right)^2\sqrt{1+\text{Tan}[e]^2}}$$

$$3\;\text{AppellF1}\left[\frac{1}{3},\frac{1}{2},\frac{1}{2},\frac{4}{3},-\frac{\text{Sec}[e]\left(c+d\,\text{Cos}[e]\,\text{Sin}[f\,x+\text{ArcTan}[\text{Tan}[e]]]\sqrt{1+\text{Tan}[e]^2}\right)}{d\sqrt{1+\text{Tan}[e]^2}\left(1-\frac{c\,\text{Sec}[e]}{d\sqrt{1+\text{Tan}[e]^2}}\right)},\right.$$

$$\left.-\frac{\text{Sec}[e]\left(c+d\,\text{Cos}[e]\,\text{Sin}[f\,x+\text{ArcTan}[\text{Tan}[e]]]\sqrt{1+\text{Tan}[e]^2}\right)}{d\sqrt{1+\text{Tan}[e]^2}\left(-1-\frac{c\,\text{Sec}[e]}{d\sqrt{1+\text{Tan}[e]^2}}\right)}\right]\text{Sec}[e]$$

$$\text{Sec}[f\,x+\text{ArcTan}[\text{Tan}[e]]]\,(1+\text{Sin}[e+f\,x])\sqrt{\frac{d\sqrt{1+\text{Tan}[e]^2}-d\,\text{Sin}[f\,x+\text{ArcTan}[\text{Tan}[e]]]\sqrt{1+\text{Tan}[e]^2}}{c\,\text{Sec}[e]+d\sqrt{1+\text{Tan}[e]^2}}}$$

$$\sqrt{\frac{d\sqrt{1+\text{Tan}[e]^2}+d\,\text{Sin}[f\,x+\text{ArcTan}[\text{Tan}[e]]]\sqrt{1+\text{Tan}[e]^2}}{-c\,\text{Sec}[e]+d\sqrt{1+\text{Tan}[e]^2}}}$$

$$\left(c+d\,\text{Cos}[e]\,\text{Sin}[f\,x+\text{ArcTan}[\text{Tan}[e]]]\sqrt{1+\text{Tan}[e]^2}\right)^{1/3}+$$

$$\frac{1}{d\,f\left(\text{Cos}\left[\frac{e}{2}+\frac{f\,x}{2}\right]+\text{Sin}\left[\frac{e}{2}+\frac{f\,x}{2}\right]\right)^2\sqrt{1+\text{Tan}[e]^2}}$$

$$3\,c\;\text{AppellF1}\left[\frac{1}{3},\frac{1}{2},\frac{1}{2},\frac{4}{3},-\frac{\text{Sec}[e]\left(c+d\,\text{Cos}[e]\,\text{Sin}[f\,x+\text{ArcTan}[\text{Tan}[e]]]\sqrt{1+\text{Tan}[e]^2}\right)}{d\sqrt{1+\text{Tan}[e]^2}\left(1-\frac{c\,\text{Sec}[e]}{d\sqrt{1+\text{Tan}[e]^2}}\right)},\right.$$

$$-\frac{\text{Sec}[e]\left(c+d\,\text{Cos}[e]\,\text{Sin}[f\,x+\text{ArcTan}[\text{Tan}[e]]]\,\sqrt{1+\text{Tan}[e]^2}\right)}{d\,\sqrt{1+\text{Tan}[e]^2}\,\left(-1-\frac{c\,\text{Sec}[e]}{d\,\sqrt{1+\text{Tan}[e]^2}}\right)}\Bigg]\,\text{Sec}[e]$$

$$\text{Sec}[f\,x+\text{ArcTan}[\text{Tan}[e]]]\,(1+\text{Sin}[e+f\,x])\,\sqrt{\frac{d\,\sqrt{1+\text{Tan}[e]^2}-d\,\text{Sin}[f\,x+\text{ArcTan}[\text{Tan}[e]]]\,\sqrt{1+\text{Tan}[e]^2}}{c\,\text{Sec}[e]+d\,\sqrt{1+\text{Tan}[e]^2}}}$$

$$\sqrt{\frac{d\,\sqrt{1+\text{Tan}[e]^2}+d\,\text{Sin}[f\,x+\text{ArcTan}[\text{Tan}[e]]]\,\sqrt{1+\text{Tan}[e]^2}}{-c\,\text{Sec}[e]+d\,\sqrt{1+\text{Tan}[e]^2}}}$$

$$\left.\left(c+d\,\text{Cos}[e]\,\text{Sin}[f\,x+\text{ArcTan}[\text{Tan}[e]]]\,\sqrt{1+\text{Tan}[e]^2}\right)^{1/3}\right)$$

Problem 669: Result more than twice size of optimal antiderivative.

$$\int\frac{a+a\,\text{Sin}[e+f\,x]}{(c+d\,\text{Sin}[e+f\,x])^{1/3}}\,dx$$

Optimal (type 6, 107 leaves, 3 steps):

$$-\frac{2\,\sqrt{2}\,a\,\text{AppellF1}\left[\frac{1}{2},-\frac{1}{2},\frac{1}{3},\frac{3}{2},\frac{1}{2}\,(1-\text{Sin}[e+f\,x]),\frac{d\,(1-\text{Sin}[e+f\,x])}{c+d}\right]\,\text{Cos}[e+f\,x]\,\left(\frac{c+d\,\text{Sin}[e+f\,x]}{c+d}\right)^{1/3}}{f\,\sqrt{1+\text{Sin}[e+f\,x]}\,(c+d\,\text{Sin}[e+f\,x])^{1/3}}$$

Result (type 6, 886 leaves):

$$a\left(\left(\text{Sec}[e]\,(1+\text{Sin}[e+f\,x])\left(-\left(\text{AppellF1}\left[-\frac{1}{3},-\frac{1}{2},-\frac{1}{2},\frac{2}{3},-\frac{\text{Csc}[e]\left(c+d\,\text{Cos}[f\,x-\text{ArcTan}[\text{Cot}[e]]]\,\sqrt{1+\text{Cot}[e]^2}\,\text{Sin}[e]\right)}{d\,\sqrt{1+\text{Cot}[e]^2}\,\left(1-\frac{c\,\text{Csc}[e]}{d\,\sqrt{1+\text{Cot}[e]^2}}\right)},\right.\right.\right.\right.\right.$$

$$\left.-\frac{\text{Csc}[e]\left(c+d\,\text{Cos}[f\,x-\text{ArcTan}[\text{Cot}[e]]]\,\sqrt{1+\text{Cot}[e]^2}\,\text{Sin}[e]\right)}{d\,\sqrt{1+\text{Cot}[e]^2}\,\left(-1-\frac{c\,\text{Csc}[e]}{d\,\sqrt{1+\text{Cot}[e]^2}}\right)}\right]\,\text{Cot}[e]\,\text{Sin}[f\,x-\text{ArcTan}[\text{Cot}[e]]]\Bigg)\Bigg/$$

$$\left(\sqrt{1+\text{Cot}[e]^2}\,\sqrt{\frac{d\sqrt{1+\text{Cot}[e]^2}+d\,\text{Cos}[f\,x-\text{ArcTan}[\text{Cot}[e]]]\,\sqrt{1+\text{Cot}[e]^2}}{d\sqrt{1+\text{Cot}[e]^2}-c\,\text{Csc}[e]}}\right.$$

$$\left.\sqrt{\frac{d\sqrt{1+\text{Cot}[e]^2}-d\,\text{Cos}[f\,x-\text{ArcTan}[\text{Cot}[e]]]\,\sqrt{1+\text{Cot}[e]^2}}{d\sqrt{1+\text{Cot}[e]^2}+c\,\text{Csc}[e]}}\,\left(c+d\,\text{Cos}[f\,x-\text{ArcTan}[\text{Cot}[e]]]\,\sqrt{1+\text{Cot}[e]^2}\,\text{Sin}[e]\right)^{1/3}\right)-$$

$$\left.\left.\frac{\frac{3\,d\,\text{Sin}[e]\left(c+d\,\text{Cos}[f\,x-\text{ArcTan}[\text{Cot}[e]]]\,\sqrt{1+\text{Cot}[e]^2}\,\text{Sin}[e]\right)}{2\left(d^2\,\text{Cos}[e]^2+d^2\,\text{Sin}[e]^2\right)}-\frac{\text{Cot}[e]\,\text{Sin}[f\,x-\text{ArcTan}[\text{Cot}[e]]]}{\sqrt{1+\text{Cot}[e]^2}}}{\left(c+d\,\text{Cos}[f\,x-\text{ArcTan}[\text{Cot}[e]]]\,\sqrt{1+\text{Cot}[e]^2}\,\text{Sin}[e]\right)^{1/3}}\right)\right)\Big/$$

$$\left(f\left(\text{Cos}\left[\frac{e}{2}+\frac{f\,x}{2}\right]+\text{Sin}\left[\frac{e}{2}+\frac{f\,x}{2}\right]\right)^2\right)+\frac{3\,(1+\text{Sin}[e+f\,x])\,(c+d\,\text{Sin}[e+f\,x])^{2/3}\,\text{Tan}[e]}{2\,d\,f\left(\text{Cos}\left[\frac{e}{2}+\frac{f\,x}{2}\right]+\text{Sin}\left[\frac{e}{2}+\frac{f\,x}{2}\right]\right)^2}+$$

$$\frac{1}{2\,d\,f\left(\text{Cos}\left[\frac{e}{2}+\frac{f\,x}{2}\right]+\text{Sin}\left[\frac{e}{2}+\frac{f\,x}{2}\right]\right)^2\sqrt{1+\text{Tan}[e]^2}}$$

$$3\,\text{AppellF1}\left[\frac{2}{3},\frac{1}{2},\frac{1}{2},\frac{5}{3},-\frac{\text{Sec}[e]\left(c+d\,\text{Cos}[e]\,\text{Sin}[f\,x+\text{ArcTan}[\text{Tan}[e]]]\,\sqrt{1+\text{Tan}[e]^2}\right)}{d\sqrt{1+\text{Tan}[e]^2}\left(1-\frac{c\,\text{Sec}[e]}{d\sqrt{1+\text{Tan}[e]^2}}\right)},\right.$$

$$\left.-\frac{\text{Sec}[e]\left(c+d\,\text{Cos}[e]\,\text{Sin}[f\,x+\text{ArcTan}[\text{Tan}[e]]]\,\sqrt{1+\text{Tan}[e]^2}\right)}{d\sqrt{1+\text{Tan}[e]^2}\left(-1-\frac{c\,\text{Sec}[e]}{d\sqrt{1+\text{Tan}[e]^2}}\right)}\right]\text{Sec}[e]$$

$$\text{Sec}[f\,x+\text{ArcTan}[\text{Tan}[e]]]\,(1+\text{Sin}[e+f\,x])\,\sqrt{\frac{d\sqrt{1+\text{Tan}[e]^2}-d\,\text{Sin}[f\,x+\text{ArcTan}[\text{Tan}[e]]]\,\sqrt{1+\text{Tan}[e]^2}}{c\,\text{Sec}[e]+d\sqrt{1+\text{Tan}[e]^2}}}$$

$$\sqrt{\frac{d\sqrt{1+\text{Tan}[e]^2}+d\,\text{Sin}[f\,x+\text{ArcTan}[\text{Tan}[e]]]\,\sqrt{1+\text{Tan}[e]^2}}{-c\,\text{Sec}[e]+d\sqrt{1+\text{Tan}[e]^2}}}$$

$$\left(c+d\,\text{Cos}[e]\,\text{Sin}[f\,x+\text{ArcTan}[\text{Tan}[e]]]\,\sqrt{1+\text{Tan}[e]^2}\right)^{2/3}\Bigg)$$

Problem 670: Result more than twice size of optimal antiderivative.

$$\int \frac{a+a\,\text{Sin}[e+f\,x]}{(c+d\,\text{Sin}[e+f\,x])^{4/3}}\,dx$$

Optimal (type 6, 112 leaves, 3 steps):

$$-\frac{2\sqrt{2}\,a\,\text{AppellF1}\left[\frac{1}{2},-\frac{1}{2},\frac{4}{3},\frac{3}{2},\frac{1}{2}(1-\text{Sin}[e+f\,x]),\frac{d(1-\text{Sin}[e+f\,x])}{c+d}\right]\text{Cos}[e+f\,x]\left(\frac{c+d\,\text{Sin}[e+f\,x]}{c+d}\right)^{1/3}}{(c+d)\,f\,\sqrt{1+\text{Sin}[e+f\,x]}\,(c+d\,\text{Sin}[e+f\,x])^{1/3}}$$

Result (type 6, 942 leaves):

$$a\left(\frac{(1+\text{Sin}[e+f\,x])\,(c+d\,\text{Sin}[e+f\,x])^{2/3}\left(-\frac{3\,\text{Csc}[e]\,\text{Sec}[e]}{d\,(c+d)\,f}+\frac{3\,\text{Csc}[e]\,(c\,\text{Cos}[e]+d\,\text{Sin}[f\,x])}{d\,(c+d)\,f\,(c+d\,\text{Sin}[e+f\,x])}\right)}{\left(\text{Cos}\left[\frac{e}{2}+\frac{f\,x}{2}\right]+\text{Sin}\left[\frac{e}{2}+\frac{f\,x}{2}\right]\right)^2}-\right.$$

$$\left(2\,\text{Sec}[e]\,(1+\text{Sin}[e+f\,x])\right)\left(-\left(\text{AppellF1}\left[-\frac{1}{3},-\frac{1}{2},-\frac{1}{2},\frac{2}{3},-\frac{\text{Csc}[e]\left(c+d\,\text{Cos}[f\,x-\text{ArcTan}[\text{Cot}[e]]]\sqrt{1+\text{Cot}[e]^2}\,\text{Sin}[e]\right)}{d\sqrt{1+\text{Cot}[e]^2}\left(1-\frac{c\,\text{Csc}[e]}{d\sqrt{1+\text{Cot}[e]^2}}\right)},\right.\right.\right.$$

$$\left.\left.-\frac{\text{Csc}[e]\left(c+d\,\text{Cos}[f\,x-\text{ArcTan}[\text{Cot}[e]]]\sqrt{1+\text{Cot}[e]^2}\,\text{Sin}[e]\right)}{d\sqrt{1+\text{Cot}[e]^2}\left(-1-\frac{c\,\text{Csc}[e]}{d\sqrt{1+\text{Cot}[e]^2}}\right)}\right]\text{Cot}[e]\,\text{Sin}[f\,x-\text{ArcTan}[\text{Cot}[e]]]\right)\Bigg/$$

$$\left(\sqrt{1+\text{Cot}[e]^2}\,\sqrt{\frac{d\sqrt{1+\text{Cot}[e]^2}+d\,\text{Cos}[f\,x-\text{ArcTan}[\text{Cot}[e]]]\sqrt{1+\text{Cot}[e]^2}}{d\sqrt{1+\text{Cot}[e]^2}-c\,\text{Csc}[e]}}\right.$$

$$\left.\sqrt{\frac{d\sqrt{1+\text{Cot}[e]^2}-d\,\text{Cos}[f\,x-\text{ArcTan}[\text{Cot}[e]]]\sqrt{1+\text{Cot}[e]^2}}{d\sqrt{1+\text{Cot}[e]^2}+c\,\text{Csc}[e]}}\left(c+d\,\text{Cos}[f\,x-\text{ArcTan}[\text{Cot}[e]]]\sqrt{1+\text{Cot}[e]^2}\,\text{Sin}[e]\right)^{1/3}\right)-$$

$$\left.\left.\frac{\frac{3\,d\,\text{Sin}[e]\left(c+d\,\text{Cos}[f\,x-\text{ArcTan}[\text{Cot}[e]]]\sqrt{1+\text{Cot}[e]^2}\,\text{Sin}[e]\right)}{2\left(d^2\,\text{Cos}[e]^2+d^2\,\text{Sin}[e]^2\right)}-\frac{\text{Cot}[e]\,\text{Sin}[f\,x-\text{ArcTan}[\text{Cot}[e]]]}{\sqrt{1+\text{Cot}[e]^2}}}{\left(c+d\,\text{Cos}[f\,x-\text{ArcTan}[\text{Cot}[e]]]\sqrt{1+\text{Cot}[e]^2}\,\text{Sin}[e]\right)^{1/3}}\right)\right)\Big/$$

$$\left((c+d)\,f\left(\text{Cos}\left[\frac{e}{2}+\frac{f\,x}{2}\right]+\text{Sin}\left[\frac{e}{2}+\frac{f\,x}{2}\right]\right)^2\right)+\frac{1}{2\,d\,(c+d)\,f\left(\text{Cos}\left[\frac{e}{2}+\frac{f\,x}{2}\right]+\text{Sin}\left[\frac{e}{2}+\frac{f\,x}{2}\right]\right)^2\sqrt{1+\text{Tan}[e]^2}}$$

$$3\,\text{AppellF1}\left[\frac{2}{3},\frac{1}{2},\frac{1}{2},\frac{5}{3},-\frac{\text{Sec}[e]\left(c+d\,\text{Cos}[e]\,\text{Sin}[f\,x+\text{ArcTan}[\text{Tan}[e]]]\sqrt{1+\text{Tan}[e]^2}\right)}{d\sqrt{1+\text{Tan}[e]^2}\left(1-\frac{c\,\text{Sec}[e]}{d\sqrt{1+\text{Tan}[e]^2}}\right)},\right.$$

$$\left.-\frac{\text{Sec}[e]\left(c+d\,\text{Cos}[e]\,\text{Sin}[f\,x+\text{ArcTan}[\text{Tan}[e]]]\sqrt{1+\text{Tan}[e]^2}\right)}{d\sqrt{1+\text{Tan}[e]^2}\left(-1-\frac{c\,\text{Sec}[e]}{d\sqrt{1+\text{Tan}[e]^2}}\right)}\right]\text{Sec}[e]$$

$$\text{Sec}[f\,x+\text{ArcTan}[\text{Tan}[e]]]\,(1+\text{Sin}[e+f\,x])\sqrt{\frac{d\sqrt{1+\text{Tan}[e]^2}-d\,\text{Sin}[f\,x+\text{ArcTan}[\text{Tan}[e]]]\sqrt{1+\text{Tan}[e]^2}}{c\,\text{Sec}[e]+d\sqrt{1+\text{Tan}[e]^2}}}$$

$$\sqrt{\frac{d\sqrt{1+\text{Tan}[e]^2}+d\,\text{Sin}[f\,x+\text{ArcTan}[\text{Tan}[e]]]\sqrt{1+\text{Tan}[e]^2}}{-c\,\text{Sec}[e]+d\sqrt{1+\text{Tan}[e]^2}}}$$

$$\left.\left(c+d\,\text{Cos}[e]\,\text{Sin}[f\,x+\text{ArcTan}[\text{Tan}[e]]]\sqrt{1+\text{Tan}[e]^2}\right)^{2/3}\right)$$

- **Problem 692: Result more than twice size of optimal antiderivative.**

$$\int\frac{(a+b\,\text{Sin}[e+f\,x])^3}{(c+d\,\text{Sin}[e+f\,x])^3}\,dx$$

Optimal (type 3, 255 leaves, 6 steps) :

$$\frac{b^3 x}{d^3}-\frac{\left(9 a^2 b c d^4-a^3 d^3 \left(2 c^2+d^2\right)-3 a b^2 d^3 \left(c^2+2 d^2\right)+b^3 \left(2 c^5-5 c^3 d^2+6 c d^4\right)\right) \text{ArcTan}\left[\frac{d+c \text{Tan}\left[\frac{1}{2} (e+f x)\right]}{\sqrt{c^2-d^2}}\right]}{d^3 \left(c^2-d^2\right)^{5/2} f}+$$

$$\frac{(b c-a d)^2 \text{Cos}[e+f x] (a+b \text{Sin}[e+f x])}{2 d \left(c^2-d^2\right) f (c+d \text{Sin}[e+f x])^2}+\frac{(b c-a d)^2 \left(2 b c^2+3 a c d-5 b d^2\right) \text{Cos}[e+f x]}{2 d^2 \left(c^2-d^2\right)^2 f (c+d \text{Sin}[e+f x])}$$

Result (type 3, 521 leaves):

$$\frac{1}{4 d^3 f}\left(-\frac{1}{\left(c^2-d^2\right)^{5/2}}4 \left(9 a^2 b c d^4-a^3 d^3 \left(2 c^2+d^2\right)-3 a b^2 d^3 \left(c^2+2 d^2\right)+b^3 \left(2 c^5-5 c^3 d^2+6 c d^4\right)\right) \text{ArcTan}\left[\frac{d+c \text{Tan}\left[\frac{1}{2} (e+f x)\right]}{\sqrt{c^2-d^2}}\right]+\right.$$

$$\frac{1}{\left(c^2-d^2\right)^2 (c+d \text{Sin}[e+f x])^2}$$

$$\left(4 b^3 c^6 e-6 b^3 c^4 d^2 e+2 b^3 d^6 e+4 b^3 c^6 f x-6 b^3 c^4 d^2 f x+2 b^3 d^6 f x-2 d (b c-a d)^2 \left(-2 b c^3-4 a c^2 d+5 b c d^2+a d^3\right) \text{Cos}[e+f x]-\right.$$

$$2 b^3 \left(-c^2 d+d^3\right)^2 (e+f x) \text{Cos}[2 (e+f x)]+8 b^3 c^5 d e \text{Sin}[e+f x]-16 b^3 c^3 d^3 e \text{Sin}[e+f x]+8 b^3 c d^5 e \text{Sin}[e+f x]+$$

$$8 b^3 c^5 d f x \text{Sin}[e+f x]-16 b^3 c^3 d^3 f x \text{Sin}[e+f x]+8 b^3 c d^5 f x \text{Sin}[e+f x]+3 b^3 c^4 d^2 \text{Sin}[2 (e+f x)]-3 a b^2 c^3 d^3 \text{Sin}[2 (e+f x)]-$$

$$\left.\left.3 a^2 b c^2 d^4 \text{Sin}[2 (e+f x)]-6 b^3 c^2 d^4 \text{Sin}[2 (e+f x)]+3 a^3 c d^5 \text{Sin}[2 (e+f x)]+12 a b^2 c d^5 \text{Sin}[2 (e+f x)]-6 a^2 b d^6 \text{Sin}[2 (e+f x)]\right)\right)$$

- **Problem 714: Result unnecessarily involves imaginary or complex numbers.**

$$\int \frac{(c+d \text{Sin}[e+f x])^5}{(a+b \text{Sin}[e+f x])^3} \, dx$$

Optimal (type 3, 534 leaves, 8 steps):

$$-\frac{d^3 \left(30 a b c d-12 a^2 d^2-b^2 \left(20 c^2+d^2\right)\right) x}{2 b^5}+\frac{1}{b^5 \left(a^2-b^2\right)^{5/2} f}$$

$$(b c-a d)^3 \left(6 a^3 b c d-12 a b^3 c d+12 a^4 d^2+a^2 b^2 \left(2 c^2-29 d^2\right)+b^4 \left(c^2+20 d^2\right)\right) \text{ArcTan}\left[\frac{b+a \text{Tan}\left[\frac{1}{2} (e+f x)\right]}{\sqrt{a^2-b^2}}\right]-\frac{1}{2 b^4 \left(a^2-b^2\right)^2 f}$$

$$d \left(30 a^4 b c d^3-12 a^5 d^4-a^3 b^2 d^2 \left(16 c^2-21 d^2\right)-b^5 c d \left(17 c^2-10 d^2\right)-a^2 b^3 c d \left(4 c^2+55 d^2\right)+a b^4 \left(6 c^4+43 c^2 d^2-6 d^4\right)\right) \text{Cos}[e+f x]+$$

$$\frac{1}{2 b^3 \left(a^2-b^2\right)^2 f}d^2 \left(7 a^3 b c d^2-6 a^4 d^3+b^4 d \left(8 c^2-d^2\right)+a^2 b^2 d \left(c^2+10 d^2\right)-a b^3 c \left(3 c^2+16 d^2\right)\right) \text{Cos}[e+f x] \text{Sin}[e+f x]+$$

$$\frac{(b c-a d)^2 \left(3 a b c+4 a^2 d-7 b^2 d\right) \text{Cos}[e+f x] (c+d \text{Sin}[e+f x])^2}{2 b^2 \left(a^2-b^2\right)^2 f (a+b \text{Sin}[e+f x])}+\frac{(b c-a d)^2 \text{Cos}[e+f x] (c+d \text{Sin}[e+f x])^3}{2 b \left(a^2-b^2\right) f (a+b \text{Sin}[e+f x])^2}$$

Result (type 3, 341 leaves):

$$\frac{1}{4 b^5 f}\left(2 d^3 \left(-30 a b c d+12 a^2 d^2+b^2 \left(20 c^2+d^2\right)\right) (e+f x)+\frac{1}{\left(a^2-b^2\right)^{5/2}}\right.$$

$$4 (b c-a d)^3 \left(6 a^3 b c d-12 a b^3 c d+12 a^4 d^2+a^2 b^2 \left(2 c^2-29 d^2\right)+b^4 \left(c^2+20 d^2\right)\right) \text{ArcTan}\left[\frac{b+a \text{Tan}\left[\frac{1}{2} (e+f x)\right]}{\sqrt{a^2-b^2}}\right]+$$

$$2 b d^4 (-5 b c+3 a d) (\text{Cos}[e+f x]-i \text{Sin}[e+f x])+2 b d^4 (-5 b c+3 a d) (\text{Cos}[e+f x]+i \text{Sin}[e+f x])-$$

$$\left.\frac{2 b (b c-a d)^5 \text{Cos}[e+f x]}{\left(-a^2+b^2\right) (a+b \text{Sin}[e+f x])^2}+\frac{2 b (b c-a d)^4 \left(3 a b c+7 a^2 d-10 b^2 d\right) \text{Cos}[e+f x]}{\left(a^2-b^2\right)^2 (a+b \text{Sin}[e+f x])}-b^2 d^5 \text{Sin}[2 (e+f x)]\right)$$

Problem 715: Result more than twice size of optimal antiderivative.

$$\int \frac{(c+d \text{Sin}[e+f x])^4}{(a+b \text{Sin}[e+f x])^3} \, dx$$

Optimal (type 3, 318 leaves, 7 steps):

$$\frac{d^3 (4 b c-3 a d) x}{b^4}+\frac{(b c-a d)^2 \left(4 a^3 b c d-10 a b^3 c d+6 a^4 d^2+a^2 b^2 \left(2 c^2-15 d^2\right)+b^4 \left(c^2+12 d^2\right)\right) \text{ArcTan}\left[\frac{b+a \text{Tan}\left[\frac{1}{2} (e+f x)\right]}{\sqrt{a^2-b^2}}\right]}{b^4 \left(a^2-b^2\right)^{5/2} f}+$$

$$\frac{d^2 \left(2 a b c d-3 a^2 d^2-b^2 \left(c^2-2 d^2\right)\right) \text{Cos}[e+f x]}{2 b^3 \left(a^2-b^2\right) f}+\frac{3 (b c-a d)^3 \left(a b c+a^2 d-2 b^2 d\right) \text{Cos}[e+f x]}{2 b^3 \left(a^2-b^2\right)^2 f (a+b \text{Sin}[e+f x])}+\frac{(b c-a d)^2 \text{Cos}[e+f x] (c+d \text{Sin}[e+f x])^2}{2 b \left(a^2-b^2\right) f (a+b \text{Sin}[e+f x])^2}$$

Result (type 3, 894 leaves):

$$\frac{1}{4 b^4 f}\left(\frac{1}{\left(a^2-b^2\right)^{5/2}} 4 (b c-a d)^2 \left(4 a^3 b c d-10 a b^3 c d+6 a^4 d^2+a^2 b^2 \left(2 c^2-15 d^2\right)+b^4 \left(c^2+12 d^2\right)\right) \text{ArcTan}\left[\frac{b+a \text{Tan}\left[\frac{1}{2} (e+f x)\right]}{\sqrt{a^2-b^2}}\right]+\right.$$

$$\frac{1}{\left(a^2-b^2\right)^2 (a+b \text{Sin}[e+f x])^2} \left(16 a^6 b c d^3 e-24 a^4 b^3 c d^3 e+8 b^7 c d^3 e-12 a^7 d^4 e+18 a^5 b^2 d^4 e-\right.$$

$$6 a b^6 d^4 e+16 a^6 b c d^3 f x-24 a^4 b^3 c d^3 f x+8 b^7 c d^3 f x-12 a^7 d^4 f x+18 a^5 b^2 d^4 f x-6 a b^6 d^4 f x-$$

$$b \left(8 a b^5 c^3 d-16 a^5 b c d^3+12 a^6 d^4-21 a^4 b^2 d^4+8 a^3 b^3 c d \left(2 c^2+5 d^2\right)+b^6 \left(2 c^4+d^4\right)+2 a^2 b^4 \left(-4 c^4-18 c^2 d^2+d^4\right)\right) \text{Cos}[e+f x]+$$

$$2 b^2 \left(a^2-b^2\right)^2 d^3 (-4 b c+3 a d) (e+f x) \text{Cos}[2 (e+f x)]+a^4 b^3 d^4 \text{Cos}[3 (e+f x)]-2 a^2 b^5 d^4 \text{Cos}[3 (e+f x)]+b^7 d^4 \text{Cos}[3 (e+f x)]+$$

$$32 a^5 b^2 c d^3 e \text{Sin}[e+f x]-64 a^3 b^4 c d^3 e \text{Sin}[e+f x]+32 a b^6 c d^3 e \text{Sin}[e+f x]-24 a^6 b d^4 e \text{Sin}[e+f x]+48 a^4 b^3 d^4 e \text{Sin}[e+f x]-$$

$$24 a^2 b^5 d^4 e \text{Sin}[e+f x]+32 a^5 b^2 c d^3 f x \text{Sin}[e+f x]-64 a^3 b^4 c d^3 f x \text{Sin}[e+f x]+32 a b^6 c d^3 f x \text{Sin}[e+f x]-$$

$$24 a^6 b d^4 f x \text{Sin}[e+f x]+48 a^4 b^3 d^4 f x \text{Sin}[e+f x]-24 a^2 b^5 d^4 f x \text{Sin}[e+f x]+3 a b^6 c^4 \text{Sin}[2 (e+f x)]-4 a^2 b^5 c^3 d \text{Sin}[2 (e+f x)]-$$

$$8 b^7 c^3 d \text{Sin}[2 (e+f x)]-6 a^3 b^4 c^2 d^2 \text{Sin}[2 (e+f x)]+24 a b^6 c^2 d^2 \text{Sin}[2 (e+f x)]+12 a^4 b^3 c d^3 \text{Sin}[2 (e+f x)]-$$

$$\left.\left.24 a^2 b^5 c d^3 \text{Sin}[2 (e+f x)]-9 a^5 b^2 d^4 \text{Sin}[2 (e+f x)]+16 a^3 b^4 d^4 \text{Sin}[2 (e+f x)]-4 a b^6 d^4 \text{Sin}[2 (e+f x)]\right)\right)$$

Problem 716: Result more than twice size of optimal antiderivative.

$$\int \frac{(c+d\,\mathrm{Sin}[e+f\,x])^3}{(a+b\,\mathrm{Sin}[e+f\,x])^3}\,dx$$

Optimal (type 3, 248 leaves, 6 steps):

$$\frac{d^3\,x}{b^3}+\frac{(b\,c-a\,d)\,\left(2\,a^3\,b\,c\,d-8\,a\,b^3\,c\,d+2\,a^4\,d^2+a^2\,b^2\,\left(2\,c^2-5\,d^2\right)+b^4\,\left(c^2+6\,d^2\right)\right)\,\mathrm{ArcTan}\left[\frac{b+a\,\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]}{\sqrt{a^2-b^2}}\right]}{b^3\,\left(a^2-b^2\right)^{5/2}\,f}+$$
$$\frac{(b\,c-a\,d)^2\,\left(3\,a\,b\,c+2\,a^2\,d-5\,b^2\,d\right)\,\mathrm{Cos}[e+f\,x]}{2\,b^2\,\left(a^2-b^2\right)^2\,f\,(a+b\,\mathrm{Sin}[e+f\,x])}+\frac{(b\,c-a\,d)^2\,\mathrm{Cos}[e+f\,x]\,(c+d\,\mathrm{Sin}[e+f\,x])}{2\,b\,\left(a^2-b^2\right)\,f\,(a+b\,\mathrm{Sin}[e+f\,x])^2}$$

Result (type 3, 524 leaves):

$$\frac{1}{4\,b^3\,f}\left(-\frac{1}{\left(a^2-b^2\right)^{5/2}}4\,\left(2\,a^5\,d^3-5\,a^3\,b^2\,d^3+3\,a\,b^4\,d\,\left(3\,c^2+2\,d^2\right)-a^2\,b^3\,c\,\left(2\,c^2+3\,d^2\right)-b^5\,c\,\left(c^2+6\,d^2\right)\right)\,\mathrm{ArcTan}\left[\frac{b+a\,\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]}{\sqrt{a^2-b^2}}\right]+\right.$$
$$\frac{1}{\left(a^2-b^2\right)^2\,(a+b\,\mathrm{Sin}[e+f\,x])^2}$$
$$\left(4\,a^6\,d^3\,e-6\,a^4\,b^2\,d^3\,e+2\,b^6\,d^3\,e+4\,a^6\,d^3\,f\,x-6\,a^4\,b^2\,d^3\,f\,x+2\,b^6\,d^3\,f\,x-2\,b\,(b\,c-a\,d)^2\,\left(-4\,a^2\,b\,c+b^3\,c-2\,a^3\,d+5\,a\,b^2\,d\right)\,\mathrm{Cos}[e+f\,x]-\right.$$
$$2\,\left(-a^2\,b+b^3\right)^2\,d^3\,(e+f\,x)\,\mathrm{Cos}[2\,(e+f\,x)]+8\,a^5\,b\,d^3\,e\,\mathrm{Sin}[e+f\,x]-16\,a^3\,b^3\,d^3\,e\,\mathrm{Sin}[e+f\,x]+8\,a\,b^5\,d^3\,e\,\mathrm{Sin}[e+f\,x]+$$
$$8\,a^5\,b\,d^3\,f\,x\,\mathrm{Sin}[e+f\,x]-16\,a^3\,b^3\,d^3\,f\,x\,\mathrm{Sin}[e+f\,x]+8\,a\,b^5\,d^3\,f\,x\,\mathrm{Sin}[e+f\,x]+3\,a\,b^5\,c^3\,\mathrm{Sin}[2\,(e+f\,x)]-3\,a^2\,b^4\,c^2\,d\,\mathrm{Sin}[2\,(e+f\,x)]-$$
$$\left.\left.6\,b^6\,c^2\,d\,\mathrm{Sin}[2\,(e+f\,x)]-3\,a^3\,b^3\,c\,d^2\,\mathrm{Sin}[2\,(e+f\,x)]+12\,a\,b^5\,c\,d^2\,\mathrm{Sin}[2\,(e+f\,x)]+3\,a^4\,b^2\,d^3\,\mathrm{Sin}[2\,(e+f\,x)]-6\,a^2\,b^4\,d^3\,\mathrm{Sin}[2\,(e+f\,x)]\right)\right)$$

Problem 722: Result more than twice size of optimal antiderivative.

$$\int \frac{1}{(a+b\,\mathrm{Sin}[e+f\,x])^3\,(c+d\,\mathrm{Sin}[e+f\,x])^3}\,dx$$

Optimal (type 3, 669 leaves, 11 steps):

$$-\frac{b^3 \left(10 a^3 b c d-4 a b^3 c d-20 a^4 d^2-a^2 b^2 \left(2 c^2-29 d^2\right)-b^4 \left(c^2+12 d^2\right)\right) \text{ArcTan}\left[\frac{b+a \text{Tan}\left[\frac{1}{2} (e+f x)\right]}{\sqrt{a^2-b^2}}\right]}{\left(a^2-b^2\right)^{5/2} (b c-a d)^5 f}-$$

$$\frac{d^3 \left(a^2 d^2 \left(2 c^2+d^2\right)-a b \left(10 c^3 d-4 c d^3\right)+b^2 \left(20 c^4-29 c^2 d^2+12 d^4\right)\right) \text{ArcTan}\left[\frac{d+c \text{Tan}\left[\frac{1}{2} (e+f x)\right]}{\sqrt{c^2-d^2}}\right]}{(b c-a d)^5 \left(c^2-d^2\right)^{5/2} f}-$$

$$\frac{d \left(a^4 d^3-b^4 d \left(5 c^2-6 d^2\right)+2 a^2 b^2 d \left(4 c^2-5 d^2\right)-3 a b^3 c \left(c^2-d^2\right)\right) \text{Cos}[e+f x]}{2 \left(a^2-b^2\right)^2 (b c-a d)^3 \left(c^2-d^2\right) f (c+d \text{Sin}[e+f x])^2}+$$

$$\frac{b^2 \text{Cos}[e+f x]}{2 \left(a^2-b^2\right) (b c-a d) f (a+b \text{Sin}[e+f x])^2 (c+d \text{Sin}[e+f x])^2}+\frac{b^2 \left(3 a b c-7 a^2 d+4 b^2 d\right) \text{Cos}[e+f x]}{2 \left(a^2-b^2\right)^2 (b c-a d)^2 f (a+b \text{Sin}[e+f x]) (c+d \text{Sin}[e+f x])^2}+$$

$$\left(3 d \left(a^5 c d^4-2 a^3 b^2 c d^4+a b^4 c \left(c^4-2 c^2 d^2+2 d^4\right)+b^5 d \left(2 c^4-7 c^2 d^2+4 d^4\right)-a^2 b^3 d \left(3 c^4-12 c^2 d^2+7 d^4\right)-a^4 b \left(3 c^2 d^3-2 d^5\right)\right) \text{Cos}[e+f x]\right) \Big/ \left(2 \left(a^2-b^2\right)^2 (b c-a d)^4 \left(c^2-d^2\right)^2 f (c+d \text{Sin}[e+f x])\right)$$

Result (type 3, 1815 leaves) :

$$-\left(b^3 \left(2 a^2 b^2 c^2+b^4 c^2-10 a^3 b c d+4 a b^3 c d+20 a^4 d^2-29 a^2 b^2 d^2+12 b^4 d^2\right) \text{ArcTan}\left[\frac{\text{Sec}\left[\frac{1}{2} (e+f x)\right] \left(b \text{Cos}\left[\frac{1}{2} (e+f x)\right]+a \text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)}{\sqrt{a^2-b^2}}\right]\right) \Big/$$

$$\left(\left(a^2-b^2\right)^{5/2} (-b c+a d)^5 f\right)-\frac{1}{(b c-a d)^5 \left(c^2-d^2\right)^{5/2} f}$$

$$d^3 \left(20 b^2 c^4-10 a b c^3 d+2 a^2 c^2 d^2-29 b^2 c^2 d^2+4 a b c d^3+a^2 d^4+12 b^2 d^4\right) \text{ArcTan}\left[\frac{\text{Sec}\left[\frac{1}{2} (e+f x)\right] \left(d \text{Cos}\left[\frac{1}{2} (e+f x)\right]+c \text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)}{\sqrt{c^2-d^2}}\right]+$$

$$\Big(32 a^2 b^5 c^7 \text{Cos}[e+f x]-8 b^7 c^7 \text{Cos}[e+f x]-80 a^3 b^4 c^6 d \text{Cos}[e+f x]+68 a b^6 c^6 d \text{Cos}[e+f x]-92 a^2 b^5 c^5 d^2 \text{Cos}[e+f x]+$$
$$38 b^7 c^5 d^2 \text{Cos}[e+f x]+140 a^3 b^4 c^4 d^3 \text{Cos}[e+f x]-122 a b^6 c^4 d^3 \text{Cos}[e+f x]-80 a^6 b c^3 d^4 \text{Cos}[e+f x]+140 a^4 b^3 c^3 d^4 \text{Cos}[e+f x]+$$
$$48 a^2 b^5 c^3 d^4 \text{Cos}[e+f x]-72 b^7 c^3 d^4 \text{Cos}[e+f x]+32 a^7 c^2 d^5 \text{Cos}[e+f x]-92 a^5 b^2 c^2 d^5 \text{Cos}[e+f x]+48 a^3 b^4 c^2 d^5 \text{Cos}[e+f x]+$$
$$12 a b^6 c^2 d^5 \text{Cos}[e+f x]+68 a^6 b c d^6 \text{Cos}[e+f x]-122 a^4 b^3 c d^6 \text{Cos}[e+f x]+12 a^2 b^5 c d^6 \text{Cos}[e+f x]+36 b^7 c d^6 \text{Cos}[e+f x]-$$
$$8 a^7 d^7 \text{Cos}[e+f x]+38 a^5 b^2 d^7 \text{Cos}[e+f x]-72 a^3 b^4 d^7 \text{Cos}[e+f x]+36 a b^6 d^7 \text{Cos}[e+f x]-12 a b^6 c^6 d \text{Cos}[3 (e+f x)]+$$
$$28 a^2 b^5 c^5 d^2 \text{Cos}[3 (e+f x)]-22 b^7 c^5 d^2 \text{Cos}[3 (e+f x)]+20 a^3 b^4 c^4 d^3 \text{Cos}[3 (e+f x)]+10 a b^6 c^4 d^3 \text{Cos}[3 (e+f x)]+$$
$$20 a^4 b^3 c^3 d^4 \text{Cos}[3 (e+f x)]-96 a^2 b^5 c^3 d^4 \text{Cos}[3 (e+f x)]+64 b^7 c^3 d^4 \text{Cos}[3 (e+f x)]+28 a^5 b^2 c^2 d^5 \text{Cos}[3 (e+f x)]-$$
$$96 a^3 b^4 c^2 d^5 \text{Cos}[3 (e+f x)]+44 a b^6 c^2 d^5 \text{Cos}[3 (e+f x)]-12 a^6 b c d^6 \text{Cos}[3 (e+f x)]+10 a^4 b^3 c d^6 \text{Cos}[3 (e+f x)]+$$
$$44 a^2 b^5 c d^6 \text{Cos}[3 (e+f x)]-36 b^7 c d^6 \text{Cos}[3 (e+f x)]-22 a^5 b^2 d^7 \text{Cos}[3 (e+f x)]+64 a^3 b^4 d^7 \text{Cos}[3 (e+f x)]-$$
$$36 a b^6 d^7 \text{Cos}[3 (e+f x)]+12 a b^6 c^7 \text{Sin}[2 (e+f x)]-4 a^2 b^5 c^6 d \text{Sin}[2 (e+f x)]+16 b^7 c^6 d \text{Sin}[2 (e+f x)]-$$
$$80 a^3 b^4 c^5 d^2 \text{Sin}[2 (e+f x)]+38 a b^6 c^5 d^2 \text{Sin}[2 (e+f x)]-10 a^2 b^5 c^4 d^3 \text{Sin}[2 (e+f x)]-20 b^7 c^4 d^3 \text{Sin}[2 (e+f x)]-$$
$$80 a^5 b^2 c^3 d^4 \text{Sin}[2 (e+f x)]+320 a^3 b^4 c^3 d^4 \text{Sin}[2 (e+f x)]-192 a b^6 c^3 d^4 \text{Sin}[2 (e+f x)]-4 a^6 b c^2 d^5 \text{Sin}[2 (e+f x)]-$$
$$10 a^4 b^3 c^2 d^5 \text{Sin}[2 (e+f x)]+64 a^2 b^5 c^2 d^5 \text{Sin}[2 (e+f x)]-26 b^7 c^2 d^5 \text{Sin}[2 (e+f x)]+12 a^7 c d^6 \text{Sin}[2 (e+f x)]+$$
$$38 a^5 b^2 c d^6 \text{Sin}[2 (e+f x)]-192 a^3 b^4 c d^6 \text{Sin}[2 (e+f x)]+124 a b^6 c d^6 \text{Sin}[2 (e+f x)]+16 a^6 b d^7 \text{Sin}[2 (e+f x)]-$$
$$20 a^4 b^3 d^7 \text{Sin}[2 (e+f x)]-26 a^2 b^5 d^7 \text{Sin}[2 (e+f x)]+24 b^7 d^7 \text{Sin}[2 (e+f x)]-3 a b^6 c^5 d^2 \text{Sin}[4 (e+f x)]+$$
$$9 a^2 b^5 c^4 d^3 \text{Sin}[4 (e+f x)]-6 b^7 c^4 d^3 \text{Sin}[4 (e+f x)]+6 a b^6 c^3 d^4 \text{Sin}[4 (e+f x)]+9 a^4 b^3 c^2 d^5 \text{Sin}[4 (e+f x)]-$$
$$36 a^2 b^5 c^2 d^5 \text{Sin}[4 (e+f x)]+21 b^7 c^2 d^5 \text{Sin}[4 (e+f x)]-3 a^5 b^2 c d^6 \text{Sin}[4 (e+f x)]+6 a^3 b^4 c d^6 \text{Sin}[4 (e+f x)]-$$
$$6 a b^6 c d^6 \text{Sin}[4 (e+f x)]-6 a^4 b^3 d^7 \text{Sin}[4 (e+f x)]+21 a^2 b^5 d^7 \text{Sin}[4 (e+f x)]-12 b^7 d^7 \text{Sin}[4 (e+f x)]\Big) \Big/$$
$$\left(16 \left(a^2-b^2\right)^2 (-b c+a d)^4 \left(c^2-d^2\right)^2 f (a+b \text{Sin}[e+f x])^2 (c+d \text{Sin}[e+f x])^2\right)$$

- **Problem 745: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int \frac{(c+d \text{Sin}[e+f x])^{5/2}}{a+b \text{Sin}[e+f x]} \, dx$$

Optimal (type 4, 296 leaves, 9 steps) :

$$-\frac{2 d^2 \operatorname{Cos}[e+f x] \sqrt{c+d \operatorname{Sin}[e+f x]}}{3 b f}+\frac{2 d (7 b c-3 a d) \operatorname{EllipticE}\left[\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right), \frac{2 d}{c+d}\right] \sqrt{c+d \operatorname{Sin}[e+f x]}}{3 b^2 f \sqrt{\frac{c+d \operatorname{Sin}[e+f x]}{c+d}}}-$$

$$\frac{2 d \left(6 a b c d-3 a^2 d^2-b^2 \left(2 c^2+d^2\right)\right) \operatorname{EllipticF}\left[\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right), \frac{2 d}{c+d}\right] \sqrt{\frac{c+d \operatorname{Sin}[e+f x]}{c+d}}}{3 b^3 f \sqrt{c+d \operatorname{Sin}[e+f x]}}+$$

$$\frac{2 (b c-a d)^3 \operatorname{EllipticPi}\left[\frac{2 b}{a+b}, \frac{1}{2}\left(e-\frac{\pi}{2}+f x\right), \frac{2 d}{c+d}\right] \sqrt{\frac{c+d \operatorname{Sin}[e+f x]}{c+d}}}{b^3 (a+b) f \sqrt{c+d \operatorname{Sin}[e+f x]}}$$

Result (type 4, 868 leaves) :

$$-\frac{2\,d^2\,\mathrm{Cos}[e+f\,x]\,\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}}{3\,b\,f}-$$

$$\frac{1}{6\,b\,f}\left(-\frac{2\left(-6\,b\,c^3-7\,b\,c\,d^2+a\,d^3\right)\mathrm{EllipticPi}\left[\frac{2\,b}{a+b},\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right),\frac{2\,d}{c+d}\right]\sqrt{\frac{c+d\,\mathrm{Sin}[e+f\,x]}{c+d}}}{(a+b)\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}}-\left(2\,\mathrm{i}\left(-18\,b\,c^2\,d+4\,a\,c\,d^2-2\,b\,d^3\right)\right.\right.$$

$$\mathrm{Cos}[e+f\,x]\left((b\,c-a\,d)\,\mathrm{EllipticF}\left[\mathrm{i}\,\mathrm{ArcSinh}\left[\sqrt{-\frac{1}{c+d}}\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}\right],\frac{c+d}{c-d}\right]+a\,d\,\mathrm{EllipticPi}\left[\frac{b\,(c+d)}{b\,c-a\,d},\right.\right.$$

$$\left.\left.\mathrm{i}\,\mathrm{ArcSinh}\left[\sqrt{-\frac{1}{c+d}}\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}\right],\frac{c+d}{c-d}\right]\right)\sqrt{\frac{d-d\,\mathrm{Sin}[e+f\,x]}{c+d}}\sqrt{-\frac{d+d\,\mathrm{Sin}[e+f\,x]}{c-d}}\left(-b\,c+a\,d+b\,(c+d\,\mathrm{Sin}[e+f\,x])\right)\Bigg)\Bigg/$$

$$\left(b\,d^2\sqrt{-\frac{1}{c+d}}\,(b\,c-a\,d)\,(a+b\,\mathrm{Sin}[e+f\,x])\sqrt{1-\mathrm{Sin}[e+f\,x]^2}\sqrt{-\frac{c^2-d^2-2\,c\,(c+d\,\mathrm{Sin}[e+f\,x])+(c+d\,\mathrm{Sin}[e+f\,x])^2}{d^2}}\right)-$$

$$\left(2\,\mathrm{i}\left(7\,b\,c\,d^2-3\,a\,d^3\right)\mathrm{Cos}[e+f\,x]\,\mathrm{Cos}[2\,(e+f\,x)]\left(2\,b\,(c-d)\,(b\,c-a\,d)\,\mathrm{EllipticE}\left[\mathrm{i}\,\mathrm{ArcSinh}\left[\sqrt{-\frac{1}{c+d}}\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}\right],\frac{c+d}{c-d}\right]+\right.\right.$$

$$d\left(-2\,(a+b)\,(-b\,c+a\,d)\,\mathrm{EllipticF}\left[\mathrm{i}\,\mathrm{ArcSinh}\left[\sqrt{-\frac{1}{c+d}}\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}\right],\frac{c+d}{c-d}\right]+\right.$$

$$\left.\left.\left(2\,a^2-b^2\right)d\,\mathrm{EllipticPi}\left[\frac{b\,(c+d)}{b\,c-a\,d},\mathrm{i}\,\mathrm{ArcSinh}\left[\sqrt{-\frac{1}{c+d}}\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}\right],\frac{c+d}{c-d}\right]\right)\right)\sqrt{\frac{d-d\,\mathrm{Sin}[e+f\,x]}{c+d}}$$

$$\left.\sqrt{-\frac{d+d\,\mathrm{Sin}[e+f\,x]}{c-d}}\left(-b\,c+a\,d+b\,(c+d\,\mathrm{Sin}[e+f\,x])\right)\right)\Bigg/\left(b^2\,d\sqrt{-\frac{1}{c+d}}\,(b\,c-a\,d)\,(a+b\,\mathrm{Sin}[e+f\,x])\sqrt{1-\mathrm{Sin}[e+f\,x]^2}\right.$$

$$\left.\left.\left(-2\,c^2+d^2+4\,c\,(c+d\,\mathrm{Sin}[e+f\,x])-2\,(c+d\,\mathrm{Sin}[e+f\,x])^2\right)\sqrt{-\frac{c^2-d^2-2\,c\,(c+d\,\mathrm{Sin}[e+f\,x])+(c+d\,\mathrm{Sin}[e+f\,x])^2}{d^2}}\right)\right)$$

- **Problem 746: Result unnecessarily involves imaginary or complex numbers.**

$$\int \frac{(c+d\,\text{Sin}[e+f\,x])^{3/2}}{a+b\,\text{Sin}[e+f\,x]}\,dx$$

Optimal (type 4, 229 leaves, 8 steps):

$$\frac{2\,d\,\text{EllipticE}\left[\frac{1}{2}\left(e-\frac{\pi}{2}+f\,x\right),\frac{2\,d}{c+d}\right]\sqrt{c+d\,\text{Sin}[e+f\,x]}}{b\,f\,\sqrt{\frac{c+d\,\text{Sin}[e+f\,x]}{c+d}}}+$$

$$\frac{2\,d\,(b\,c-a\,d)\,\text{EllipticF}\left[\frac{1}{2}\left(e-\frac{\pi}{2}+f\,x\right),\frac{2\,d}{c+d}\right]\sqrt{\frac{c+d\,\text{Sin}[e+f\,x]}{c+d}}}{b^2\,f\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}+\frac{2\,(b\,c-a\,d)^2\,\text{EllipticPi}\left[\frac{2\,b}{a+b},\frac{1}{2}\left(e-\frac{\pi}{2}+f\,x\right),\frac{2\,d}{c+d}\right]\sqrt{\frac{c+d\,\text{Sin}[e+f\,x]}{c+d}}}{b^2\,(a+b)\,f\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}$$

Result (type 4, 242 leaves):

$$\frac{1}{b^2\sqrt{-\frac{1}{c+d}}\,f}2\,i\left(b\,(c-d)\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[\sqrt{-\frac{1}{c+d}}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}\right],\frac{c+d}{c-d}\right]+\right.$$

$$(a\,d+b\,(-2\,c+d))\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[\sqrt{-\frac{1}{c+d}}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}\right],\frac{c+d}{c-d}\right]+$$

$$\left.(b\,c-a\,d)\,\text{EllipticPi}\left[\frac{b\,(c+d)}{b\,c-a\,d},i\,\text{ArcSinh}\left[\sqrt{-\frac{1}{c+d}}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}\right],\frac{c+d}{c-d}\right]\right)$$

$$\text{Sec}[e+f\,x]\,\sqrt{-\frac{d\,(-1+\text{Sin}[e+f\,x])}{c+d}}\,\sqrt{-\frac{d\,(1+\text{Sin}[e+f\,x])}{c-d}}$$

- **Problem 749: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int \frac{1}{(a+b\,\text{Sin}[e+f\,x])\,(c+d\,\text{Sin}[e+f\,x])^{3/2}}\,dx$$

Optimal (type 4, 220 leaves, 7 steps):

$$-\frac{2\,d^2\,\text{Cos}[e+f\,x]}{(b\,c-a\,d)\,\left(c^2-d^2\right)\,f\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}-$$

$$\frac{2\,d\,\text{EllipticE}\left[\frac{1}{2}\,\left(e-\frac{\pi}{2}+f\,x\right),\,\frac{2\,d}{c+d}\right]\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}{(b\,c-a\,d)\,\left(c^2-d^2\right)\,f\,\sqrt{\frac{c+d\,\text{Sin}[e+f\,x]}{c+d}}}+\frac{2\,b\,\text{EllipticPi}\left[\frac{2\,b}{a+b},\,\frac{1}{2}\,\left(e-\frac{\pi}{2}+f\,x\right),\,\frac{2\,d}{c+d}\right]\,\sqrt{\frac{c+d\,\text{Sin}[e+f\,x]}{c+d}}}{(a+b)\,(b\,c-a\,d)\,f\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}$$

Result (type 4, 877 leaves) :

$$-\frac{2\, d^2 \operatorname{Cos}[e+f\, x]}{(b\, c-a\, d)\, \left(c^2-d^2\right) f \sqrt{c+d \operatorname{Sin}[e+f\, x]}}-$$

$$\frac{1}{2\, (c-d)\, (c+d)\, (b\, c-a\, d)\, f}\left(-\frac{2\left(-2\, b\, c^2+2\, a\, c\, d+3\, b\, d^2\right) \operatorname{EllipticPi}\left[\frac{2\, b}{a+b},\ \frac{1}{2}\left(-e+\frac{\pi}{2}-f\, x\right),\ \frac{2\, d}{c+d}\right] \sqrt{\frac{c+d \operatorname{Sin}[e+f\, x]}{c+d}}}{(a+b) \sqrt{c+d \operatorname{Sin}[e+f\, x]}}-\right.$$

$$\left(2\, i \left(2\, b\, c\, d+2\, a\, d^2\right) \operatorname{Cos}[e+f\, x] \left((b\, c-a\, d) \operatorname{EllipticF}\left[i \operatorname{ArcSinh}\left[\sqrt{-\frac{1}{c+d}} \sqrt{c+d \operatorname{Sin}[e+f\, x]}\right],\ \frac{c+d}{c-d}\right]+a\, d \operatorname{EllipticPi}\left[\frac{b\, (c+d)}{b\, c-a\, d},\right.\right.\right.$$

$$\left.\left.i \operatorname{ArcSinh}\left[\sqrt{-\frac{1}{c+d}} \sqrt{c+d \operatorname{Sin}[e+f\, x]}\right],\ \frac{c+d}{c-d}\right]\right) \sqrt{\frac{d-d \operatorname{Sin}[e+f\, x]}{c+d}} \sqrt{-\frac{d+d \operatorname{Sin}[e+f\, x]}{c-d}}\ \left(-b\, c+a\, d+b\, (c+d \operatorname{Sin}[e+f\, x])\right)\Bigg)\Bigg/$$

$$\left(b\, d^2 \sqrt{-\frac{1}{c+d}}\ (b\, c-a\, d)\, (a+b \operatorname{Sin}[e+f\, x]) \sqrt{1-\operatorname{Sin}[e+f\, x]^2} \sqrt{-\frac{c^2-d^2-2\, c\, (c+d \operatorname{Sin}[e+f\, x])+(c+d \operatorname{Sin}[e+f\, x])^2}{d^2}}\right)+$$

$$\left(2\, i\, d \operatorname{Cos}[e+f\, x] \operatorname{Cos}[2\, (e+f\, x)] \left(2\, b\, (c-d)\, (b\, c-a\, d) \operatorname{EllipticE}\left[i \operatorname{ArcSinh}\left[\sqrt{-\frac{1}{c+d}} \sqrt{c+d \operatorname{Sin}[e+f\, x]}\right],\ \frac{c+d}{c-d}\right]+\right.\right.$$

$$d \left(-2\, (a+b)\, (-b\, c+a\, d) \operatorname{EllipticF}\left[i \operatorname{ArcSinh}\left[\sqrt{-\frac{1}{c+d}} \sqrt{c+d \operatorname{Sin}[e+f\, x]}\right],\ \frac{c+d}{c-d}\right]+\right.$$

$$\left.\left.\left(2\, a^2-b^2\right) d \operatorname{EllipticPi}\left[\frac{b\, (c+d)}{b\, c-a\, d},\ i \operatorname{ArcSinh}\left[\sqrt{-\frac{1}{c+d}} \sqrt{c+d \operatorname{Sin}[e+f\, x]}\right],\ \frac{c+d}{c-d}\right]\right)\right) \sqrt{\frac{d-d \operatorname{Sin}[e+f\, x]}{c+d}}$$

$$\left.\sqrt{-\frac{d+d \operatorname{Sin}[e+f\, x]}{c-d}}\ \left(-b\, c+a\, d+b\, (c+d \operatorname{Sin}[e+f\, x])\right)\right)\Bigg/\left(b \sqrt{-\frac{1}{c+d}}\ (b\, c-a\, d)\, (a+b \operatorname{Sin}[e+f\, x]) \sqrt{1-\operatorname{Sin}[e+f\, x]^2}\right.$$

$$\left.\left.\left(-2\, c^2+d^2+4\, c\, (c+d \operatorname{Sin}[e+f\, x])-2\, (c+d \operatorname{Sin}[e+f\, x])^2\right) \sqrt{-\frac{c^2-d^2-2\, c\, (c+d \operatorname{Sin}[e+f\, x])+(c+d \operatorname{Sin}[e+f\, x])^2}{d^2}}\right)\right)$$

- **Problem 750: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int \frac{1}{(a+b\,\text{Sin}[e+f\,x])\,(c+d\,\text{Sin}[e+f\,x])^{5/2}}\,dx$$

Optimal (type 4, 399 leaves, 10 steps):

$$-\frac{2\,d^2\,\text{Cos}[e+f\,x]}{3\,(b\,c-a\,d)\,\left(c^2-d^2\right)\,f\,(c+d\,\text{Sin}[e+f\,x])^{3/2}}-\frac{2\,d^2\,\left(7\,b\,c^2-4\,a\,c\,d-3\,b\,d^2\right)\,\text{Cos}[e+f\,x]}{3\,(b\,c-a\,d)^2\,\left(c^2-d^2\right)^2\,f\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}-$$

$$\frac{2\,d\,\left(7\,b\,c^2-4\,a\,c\,d-3\,b\,d^2\right)\,\text{EllipticE}\left[\frac{1}{2}\,\left(e-\frac{\pi}{2}+f\,x\right),\,\frac{2\,d}{c+d}\right]\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}{3\,(b\,c-a\,d)^2\,\left(c^2-d^2\right)^2\,f\,\sqrt{\frac{c+d\,\text{Sin}[e+f\,x]}{c+d}}}+$$

$$\frac{2\,d\,\text{EllipticF}\left[\frac{1}{2}\,\left(e-\frac{\pi}{2}+f\,x\right),\,\frac{2\,d}{c+d}\right]\,\sqrt{\frac{c+d\,\text{Sin}[e+f\,x]}{c+d}}}{3\,(b\,c-a\,d)\,\left(c^2-d^2\right)\,f\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}+\frac{2\,b^2\,\text{EllipticPi}\left[\frac{2\,b}{a+b},\,\frac{1}{2}\,\left(e-\frac{\pi}{2}+f\,x\right),\,\frac{2\,d}{c+d}\right]\,\sqrt{\frac{c+d\,\text{Sin}[e+f\,x]}{c+d}}}{(a+b)\,(b\,c-a\,d)^2\,f\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}$$

Result (type 4, 1079 leaves):

$$\frac{\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}\left(-\frac{2\,d^2\,\mathrm{Cos}[e+f\,x]}{3\,(b\,c-a\,d)\,(c^2-d^2)\,(c+d\,\mathrm{Sin}[e+f\,x])^2}+\frac{2\,(-7\,b\,c^2\,d^2\,\mathrm{Cos}[e+f\,x]+4\,a\,c\,d^3\,\mathrm{Cos}[e+f\,x]+3\,b\,d^4\,\mathrm{Cos}[e+f\,x])}{3\,(b\,c-a\,d)^2\,(c^2-d^2)^2\,(c+d\,\mathrm{Sin}[e+f\,x])}\right)}{f}+\frac{1}{6\,(c-d)^2\,(c+d)^2\,(b\,c-a\,d)^2\,f}$$

$$\left(-\left(2\,(6\,b^2\,c^4-12\,a\,b\,c^3\,d+6\,a^2\,c^2\,d^2-19\,b^2\,c^2\,d^2+8\,a\,b\,c\,d^3+2\,a^2\,d^4+9\,b^2\,d^4)\,\mathrm{EllipticPi}\left[\frac{2\,b}{a+b},\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right),\frac{2\,d}{c+d}\right]\sqrt{\frac{c+d\,\mathrm{Sin}[e+f\,x]}{c+d}}\right)\Big/\right.$$

$$\left((a+b)\,\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}\right)-\left(2\,i\,(-12\,b^2\,c^3\,d-8\,a\,b\,c^2\,d^2+8\,a^2\,c\,d^3+4\,b^2\,c\,d^3+8\,a\,b\,d^4)\,\mathrm{Cos}[e+f\,x]\right.$$

$$\left((b\,c-a\,d)\,\mathrm{EllipticF}\left[i\,\mathrm{ArcSinh}\left[\sqrt{-\frac{1}{c+d}}\,\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}\right],\frac{c+d}{c-d}\right]+a\,d\,\mathrm{EllipticPi}\left[\frac{b\,(c+d)}{b\,c-a\,d},\right.\right.$$

$$\left.\left.i\,\mathrm{ArcSinh}\left[\sqrt{-\frac{1}{c+d}}\,\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}\right],\frac{c+d}{c-d}\right]\right)\sqrt{\frac{d-d\,\mathrm{Sin}[e+f\,x]}{c+d}}\,\sqrt{-\frac{d+d\,\mathrm{Sin}[e+f\,x]}{c-d}}\,(-b\,c+a\,d+b\,(c+d\,\mathrm{Sin}[e+f\,x]))\Bigg)\Big/$$

$$\left(b\,d^2\sqrt{-\frac{1}{c+d}}\,(b\,c-a\,d)\,(a+b\,\mathrm{Sin}[e+f\,x])\,\sqrt{1-\mathrm{Sin}[e+f\,x]^2}\,\sqrt{-\frac{c^2-d^2-2\,c\,(c+d\,\mathrm{Sin}[e+f\,x])+(c+d\,\mathrm{Sin}[e+f\,x])^2}{d^2}}\right)-$$

$$\left(2\,i\,(7\,b^2\,c^2\,d^2-4\,a\,b\,c\,d^3-3\,b^2\,d^4)\,\mathrm{Cos}[e+f\,x]\,\mathrm{Cos}[2\,(e+f\,x)]\left(2\,b\,(c-d)\,(b\,c-a\,d)\,\mathrm{EllipticE}\left[i\,\mathrm{ArcSinh}\left[\sqrt{-\frac{1}{c+d}}\,\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}\right],\right.\right.\right.$$

$$\left.\frac{c+d}{c-d}\right]+d\left(-2\,(a+b)\,(-b\,c+a\,d)\,\mathrm{EllipticF}\left[i\,\mathrm{ArcSinh}\left[\sqrt{-\frac{1}{c+d}}\,\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}\right],\frac{c+d}{c-d}\right]+\right.$$

$$\left.\left.(2\,a^2-b^2)\,d\,\mathrm{EllipticPi}\left[\frac{b\,(c+d)}{b\,c-a\,d},i\,\mathrm{ArcSinh}\left[\sqrt{-\frac{1}{c+d}}\,\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}\right],\frac{c+d}{c-d}\right]\right)\right)\sqrt{\frac{d-d\,\mathrm{Sin}[e+f\,x]}{c+d}}$$

$$\left.\sqrt{-\frac{d+d\,\mathrm{Sin}[e+f\,x]}{c-d}}\,(-b\,c+a\,d+b\,(c+d\,\mathrm{Sin}[e+f\,x]))\right)\Big/\left(b^2\,d\,\sqrt{-\frac{1}{c+d}}\,(b\,c-a\,d)\,(a+b\,\mathrm{Sin}[e+f\,x])\,\sqrt{1-\mathrm{Sin}[e+f\,x]^2}\right.$$

$$\left.\left.(-2\,c^2+d^2+4\,c\,(c+d\,\mathrm{Sin}[e+f\,x])-2\,(c+d\,\mathrm{Sin}[e+f\,x])^2)\,\sqrt{-\frac{c^2-d^2-2\,c\,(c+d\,\mathrm{Sin}[e+f\,x])+(c+d\,\mathrm{Sin}[e+f\,x])^2}{d^2}}\right)\right)$$

- **Problem 751: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int \frac{(c+d\,\mathrm{Sin}[e+f\,x])^{7/2}}{(a+b\,\mathrm{Sin}[e+f\,x])^2}\,dx$$

Optimal (type 4, 534 leaves, 10 steps):

$$\frac{d\left(6\,a\,b\,c\,d-5\,a^2\,d^2-b^2\left(3\,c^2-2\,d^2\right)\right)\mathrm{Cos}[e+f\,x]\,\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}}{3\,b^2\left(a^2-b^2\right)f}+\frac{(b\,c-a\,d)^2\,\mathrm{Cos}[e+f\,x]\,(c+d\,\mathrm{Sin}[e+f\,x])^{3/2}}{b\left(a^2-b^2\right)f\,(a+b\,\mathrm{Sin}[e+f\,x])}+$$
$$\left(\left(29\,a^2\,b\,c\,d^2-15\,a^3\,d^3+b^3\left(3\,c^3-20\,c\,d^2\right)-a\,b^2\left(9\,c^2\,d-12\,d^3\right)\right)\mathrm{EllipticE}\left[\frac{1}{2}\left(e-\frac{\pi}{2}+f\,x\right),\frac{2\,d}{c+d}\right]\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}\right)\Big/$$
$$\left(3\,b^3\left(a^2-b^2\right)f\sqrt{\frac{c+d\,\mathrm{Sin}[e+f\,x]}{c+d}}\right)-\left(\left(24\,a^3\,b\,c\,d^3-15\,a^4\,d^4-12\,a\,b^3\,c\,d\left(c^2+3\,d^2\right)+2\,a^2\,b^2\,d^2\left(c^2+8\,d^2\right)+b^4\left(3\,c^4+16\,c^2\,d^2+2\,d^4\right)\right)\right.$$
$$\left.\mathrm{EllipticF}\left[\frac{1}{2}\left(e-\frac{\pi}{2}+f\,x\right),\frac{2\,d}{c+d}\right]\sqrt{\frac{c+d\,\mathrm{Sin}[e+f\,x]}{c+d}}\right)\Big/\left(3\,b^4\left(a^2-b^2\right)f\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}\right)+$$
$$\frac{(b\,c-a\,d)^3\left(2\,a\,b\,c+5\,a^2\,d-7\,b^2\,d\right)\mathrm{EllipticPi}\left[\frac{2\,b}{a+b},\frac{1}{2}\left(e-\frac{\pi}{2}+f\,x\right),\frac{2\,d}{c+d}\right]\sqrt{\frac{c+d\,\mathrm{Sin}[e+f\,x]}{c+d}}}{(a-b)\,b^4\,(a+b)^2\,f\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}}$$

Result (type 4, 1109 leaves):

$$\frac{\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}\left(-\frac{2\,d^3\,\mathrm{Cos}[e+f\,x]}{3\,b^2}+\frac{-b^3\,c^3\,\mathrm{Cos}[e+f\,x]+3\,a\,b^2\,c^2\,d\,\mathrm{Cos}[e+f\,x]-3\,a^2\,b\,c\,d^2\,\mathrm{Cos}[e+f\,x]+a^3\,d^3\,\mathrm{Cos}[e+f\,x]}{b^2\left(-a^2+b^2\right)(a+b\,\mathrm{Sin}[e+f\,x])}\right)}{f}-$$
$$\frac{1}{12\,(a-b)\,b^2\,(a+b)\,f}\left(-\left(2\left(-12\,a\,b^2\,c^4+39\,b^3\,c^3\,d-45\,a\,b^2\,c^2\,d^2+a^2\,b\,c\,d^3+20\,b^3\,c\,d^3+5\,a^3\,d^4-8\,a\,b^2\,d^4\right)\right.\right.$$
$$\left.\mathrm{EllipticPi}\left[\frac{2\,b}{a+b},\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right),\frac{2\,d}{c+d}\right]\sqrt{\frac{c+d\,\mathrm{Sin}[e+f\,x]}{c+d}}\right)\Big/\left((a+b)\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}\right)-$$
$$\left(2\,i\left(-12\,a\,b^2\,c^3\,d-36\,a^2\,b\,c^2\,d^2+72\,b^3\,c^2\,d^2+20\,a^3\,c\,d^3-56\,a\,b^2\,c\,d^3+8\,a^2\,b\,d^4+4\,b^3\,d^4\right)\mathrm{Cos}[e+f\,x]\right.$$
$$\left((b\,c-a\,d)\,\mathrm{EllipticF}\left[i\,\mathrm{ArcSinh}\left[\sqrt{-\frac{1}{c+d}}\,\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}\right],\frac{c+d}{c-d}\right]+a\,d\,\mathrm{EllipticPi}\left[\frac{b\,(c+d)}{b\,c-a\,d},\right.\right.$$

$$\left.\left.\mathbb{i}\,\text{ArcSinh}\left[\sqrt{-\frac{1}{c+d}}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}\right],\frac{c+d}{c-d}\right]\right)\sqrt{\frac{d-d\,\text{Sin}[e+f\,x]}{c+d}}\,\sqrt{-\frac{d+d\,\text{Sin}[e+f\,x]}{c-d}}\,\left(-b\,c+a\,d+b\,(c+d\,\text{Sin}[e+f\,x])\right)\Bigg)\Bigg/$$

$$\left(b\,d^2\sqrt{-\frac{1}{c+d}}\,(b\,c-a\,d)\,(a+b\,\text{Sin}[e+f\,x])\,\sqrt{1-\text{Sin}[e+f\,x]^2}\,\sqrt{-\frac{c^2-d^2-2\,c\,(c+d\,\text{Sin}[e+f\,x])+(c+d\,\text{Sin}[e+f\,x])^2}{d^2}}\right)-$$

$$\Bigg(2\,\mathbb{i}\,\left(3\,b^3\,c^3\,d-9\,a\,b^2\,c^2\,d^2+29\,a^2\,b\,c\,d^3-20\,b^3\,c\,d^3-15\,a^3\,d^4+12\,a\,b^2\,d^4\right)\text{Cos}[e+f\,x]\,\text{Cos}[2\,(e+f\,x)]$$

$$\Bigg(2\,b\,(c-d)\,(b\,c-a\,d)\,\text{EllipticE}\left[\mathbb{i}\,\text{ArcSinh}\left[\sqrt{-\frac{1}{c+d}}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}\right],\frac{c+d}{c-d}\right]+$$

$$d\,\Bigg(-2\,(a+b)\,(-b\,c+a\,d)\,\text{EllipticF}\left[\mathbb{i}\,\text{ArcSinh}\left[\sqrt{-\frac{1}{c+d}}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}\right],\frac{c+d}{c-d}\right]+$$

$$\left.\left.\left(2\,a^2-b^2\right)d\,\text{EllipticPi}\left[\frac{b\,(c+d)}{b\,c-a\,d},\mathbb{i}\,\text{ArcSinh}\left[\sqrt{-\frac{1}{c+d}}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}\right],\frac{c+d}{c-d}\right]\right)\right)\sqrt{\frac{d-d\,\text{Sin}[e+f\,x]}{c+d}}$$

$$\sqrt{-\frac{d+d\,\text{Sin}[e+f\,x]}{c-d}}\,\left(-b\,c+a\,d+b\,(c+d\,\text{Sin}[e+f\,x])\right)\Bigg)\Bigg/\Bigg(b^2\,d\,\sqrt{-\frac{1}{c+d}}\,(b\,c-a\,d)\,(a+b\,\text{Sin}[e+f\,x])\,\sqrt{1-\text{Sin}[e+f\,x]^2}$$

$$\left.\left(-2\,c^2+d^2+4\,c\,(c+d\,\text{Sin}[e+f\,x])-2\,(c+d\,\text{Sin}[e+f\,x])^2\right)\sqrt{-\frac{c^2-d^2-2\,c\,(c+d\,\text{Sin}[e+f\,x])+(c+d\,\text{Sin}[e+f\,x])^2}{d^2}}\right)\Bigg)$$

- **Problem 752: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int\frac{(c+d\,\text{Sin}[e+f\,x])^{5/2}}{(a+b\,\text{Sin}[e+f\,x])^2}\,dx$$

Optimal (type 4, 390 leaves, 9 steps) :

$$\frac{(b c-a d)^2 \operatorname{Cos}[e+f x] \sqrt{c+d \operatorname{Sin}[e+f x]}}{b\left(a^2-b^2\right) f(a+b \operatorname{Sin}[e+f x])}-\frac{\left(2 a b c d-3 a^2 d^2-b^2\left(c^2-2 d^2\right)\right) \operatorname{EllipticE}\left[\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right), \frac{2 d}{c+d}\right] \sqrt{c+d \operatorname{Sin}[e+f x]}}{b^2\left(a^2-b^2\right) f \sqrt{\frac{c+d \operatorname{Sin}[e+f x]}{c+d}}}+$$

$$\frac{(b c-a d)\left(2 a b c d+3 a^2 d^2-b^2\left(c^2+4 d^2\right)\right) \operatorname{EllipticF}\left[\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right), \frac{2 d}{c+d}\right] \sqrt{\frac{c+d \operatorname{Sin}[e+f x]}{c+d}}}{b^3\left(a^2-b^2\right) f \sqrt{c+d \operatorname{Sin}[e+f x]}}+$$

$$\frac{(b c-a d)^2\left(2 a b c+3 a^2 d-5 b^2 d\right) \operatorname{EllipticPi}\left[\frac{2 b}{a+b}, \frac{1}{2}\left(e-\frac{\pi}{2}+f x\right), \frac{2 d}{c+d}\right] \sqrt{\frac{c+d \operatorname{Sin}[e+f x]}{c+d}}}{(a-b) b^3(a+b)^2 f \sqrt{c+d \operatorname{Sin}[e+f x]}}$$

Result (type 4, 986 leaves) :

$$\frac{\left(-b^2 c^2 \operatorname{Cos}[e+f x]+2 a b c d \operatorname{Cos}[e+f x]-a^2 d^2 \operatorname{Cos}[e+f x]\right) \sqrt{c+d \operatorname{Sin}[e+f x]}}{b\left(-a^2+b^2\right) f(a+b \operatorname{Sin}[e+f x])}+$$

$$\frac{1}{4(a-b) b(a+b) f}\left(-\left(2\left(4 a b c^3-9 b^2 c^2 d+6 a b c d^2+a^2 d^3-2 b^2 d^3\right) \operatorname{EllipticPi}\left[\frac{2 b}{a+b}, \frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right), \frac{2 d}{c+d}\right] \sqrt{\frac{c+d \operatorname{Sin}[e+f x]}{c+d}}\right) \Big/\right.$$

$$\left((a+b) \sqrt{c+d \operatorname{Sin}[e+f x]}\right)-$$

$$\left(2 i\left(4 a b c^2 d+4 a^2 c d^2-12 b^2 c d^2+4 a b d^3\right) \operatorname{Cos}[e+f x]\left((b c-a d) \operatorname{EllipticF}\left[i \operatorname{ArcSinh}\left[\sqrt{-\frac{1}{c+d}} \sqrt{c+d \operatorname{Sin}[e+f x]}\right], \frac{c+d}{c-d}\right]+\right.\right.$$

$$\left.a d \operatorname{EllipticPi}\left[\frac{b(c+d)}{b c-a d}, i \operatorname{ArcSinh}\left[\sqrt{-\frac{1}{c+d}} \sqrt{c+d \operatorname{Sin}[e+f x]}\right], \frac{c+d}{c-d}\right]\right)$$

$$\left.\sqrt{\frac{d-d \operatorname{Sin}[e+f x]}{c+d}} \sqrt{-\frac{d+d \operatorname{Sin}[e+f x]}{c-d}}(-b c+a d+b(c+d \operatorname{Sin}[e+f x]))\right) \Big/$$

$$\left(b d^2 \sqrt{-\frac{1}{c+d}}(b c-a d)(a+b \operatorname{Sin}[e+f x]) \sqrt{1-\operatorname{Sin}[e+f x]^2} \sqrt{-\frac{c^2-d^2-2 c(c+d \operatorname{Sin}[e+f x])+(c+d \operatorname{Sin}[e+f x])^2}{d^2}}\right)-$$

$$\left(2 i\left(-b^2 c^2 d+2 a b c d^2-3 a^2 d^3+2 b^2 d^3\right) \operatorname{Cos}[e+f x] \operatorname{Cos}[2(e+f x)]\right.$$

$$\Big(2\,b\,(c-d)\,(b\,c-a\,d)\,\text{EllipticE}\Big[\text{i}\,\text{ArcSinh}\Big[\sqrt{-\frac{1}{c+d}}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}\Big],\,\frac{c+d}{c-d}\Big]+$$

$$d\,\Big(-2\,(a+b)\,(-b\,c+a\,d)\,\text{EllipticF}\Big[\text{i}\,\text{ArcSinh}\Big[\sqrt{-\frac{1}{c+d}}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}\Big],\,\frac{c+d}{c-d}\Big]+$$

$$\left(2\,a^2-b^2\right)\,d\,\text{EllipticPi}\Big[\frac{b\,(c+d)}{b\,c-a\,d},\,\text{i}\,\text{ArcSinh}\Big[\sqrt{-\frac{1}{c+d}}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}\Big],\,\frac{c+d}{c-d}\Big]\Big)\Big)\,\sqrt{\frac{d-d\,\text{Sin}[e+f\,x]}{c+d}}$$

$$\sqrt{-\frac{d+d\,\text{Sin}[e+f\,x]}{c-d}}\,(-b\,c+a\,d+b\,(c+d\,\text{Sin}[e+f\,x]))\Big)\Big/\Big(b^2\,d\,\sqrt{-\frac{1}{c+d}}\,(b\,c-a\,d)\,(a+b\,\text{Sin}[e+f\,x])\,\sqrt{1-\text{Sin}[e+f\,x]^2}$$

$$\left(-2\,c^2+d^2+4\,c\,(c+d\,\text{Sin}[e+f\,x])-2\,(c+d\,\text{Sin}[e+f\,x])^2\right)\,\sqrt{-\frac{c^2-d^2-2\,c\,(c+d\,\text{Sin}[e+f\,x])+(c+d\,\text{Sin}[e+f\,x])^2}{d^2}}\Big)\Big)$$

- **Problem 753: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int\frac{(c+d\,\text{Sin}[e+f\,x])^{3/2}}{(a+b\,\text{Sin}[e+f\,x])^2}\,dx$$

Optimal (type 4, 351 leaves, 9 steps):

$$\frac{(b\,c-a\,d)\,\text{Cos}[e+f\,x]\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}{\left(a^2-b^2\right)\,f\,(a+b\,\text{Sin}[e+f\,x])}+\frac{(b\,c-a\,d)\,\text{EllipticE}\Big[\frac{1}{2}\left(e-\frac{\pi}{2}+f\,x\right),\,\frac{2\,d}{c+d}\Big]\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}{b\,\left(a^2-b^2\right)\,f\,\sqrt{\frac{c+d\,\text{Sin}[e+f\,x]}{c+d}}}+$$

$$\frac{\left(2\,a\,b\,c\,d+a^2\,d^2-b^2\,\left(c^2+2\,d^2\right)\right)\,\text{EllipticF}\Big[\frac{1}{2}\left(e-\frac{\pi}{2}+f\,x\right),\,\frac{2\,d}{c+d}\Big]\,\sqrt{\frac{c+d\,\text{Sin}[e+f\,x]}{c+d}}}{b^2\,\left(a^2-b^2\right)\,f\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}+$$

$$\frac{(b\,c-a\,d)\,\left(2\,a\,b\,c+a^2\,d-3\,b^2\,d\right)\,\text{EllipticPi}\Big[\frac{2\,b}{a+b},\,\frac{1}{2}\left(e-\frac{\pi}{2}+f\,x\right),\,\frac{2\,d}{c+d}\Big]\,\sqrt{\frac{c+d\,\text{Sin}[e+f\,x]}{c+d}}}{(a-b)\,b^2\,(a+b)^2\,f\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}$$

Result (type 4, 891 leaves):

$$\frac{(b\,c\,\text{Cos}[e+f\,x]-a\,d\,\text{Cos}[e+f\,x])\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}{\left(a^2-b^2\right)\,f\,(a+b\,\text{Sin}[e+f\,x])}+$$

$$\frac{1}{4\,(a-b)\,(a+b)\,f}\left(-\frac{2\left(4\,a\,c^2-5\,b\,c\,d+a\,d^2\right)\text{EllipticPi}\left[\frac{2\,b}{a+b},\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right),\frac{2\,d}{c+d}\right]\sqrt{\frac{c+d\,\text{Sin}[e+f\,x]}{c+d}}}{(a+b)\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}-\right.$$

$$\left(2\,i\left(4\,a\,c\,d-4\,b\,d^2\right)\text{Cos}[e+f\,x]\left((b\,c-a\,d)\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[\sqrt{-\frac{1}{c+d}}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}\right],\frac{c+d}{c-d}\right]+a\,d\,\text{EllipticPi}\left[\frac{b\,(c+d)}{b\,c-a\,d},\right.\right.\right.$$

$$\left.\left.i\,\text{ArcSinh}\left[\sqrt{-\frac{1}{c+d}}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}\right],\frac{c+d}{c-d}\right]\right)\sqrt{\frac{d-d\,\text{Sin}[e+f\,x]}{c+d}}\,\sqrt{-\frac{d+d\,\text{Sin}[e+f\,x]}{c-d}}\,\left.(-b\,c+a\,d+b\,(c+d\,\text{Sin}[e+f\,x]))\right)\Big/$$

$$\left(b\,d^2\,\sqrt{-\frac{1}{c+d}}\,(b\,c-a\,d)\,(a+b\,\text{Sin}[e+f\,x])\,\sqrt{1-\text{Sin}[e+f\,x]^2}\,\sqrt{-\frac{c^2-d^2-2\,c\,(c+d\,\text{Sin}[e+f\,x])+(c+d\,\text{Sin}[e+f\,x])^2}{d^2}}\right)-$$

$$\left(2\,i\left(-b\,c\,d+a\,d^2\right)\text{Cos}[e+f\,x]\,\text{Cos}[2\,(e+f\,x)]\left(2\,b\,(c-d)\,(b\,c-a\,d)\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[\sqrt{-\frac{1}{c+d}}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}\right],\frac{c+d}{c-d}\right]+\right.\right.$$

$$d\left(-2\,(a+b)\,(-b\,c+a\,d)\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[\sqrt{-\frac{1}{c+d}}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}\right],\frac{c+d}{c-d}\right]+\right.$$

$$\left.\left.\left(2\,a^2-b^2\right)d\,\text{EllipticPi}\left[\frac{b\,(c+d)}{b\,c-a\,d},i\,\text{ArcSinh}\left[\sqrt{-\frac{1}{c+d}}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}\right],\frac{c+d}{c-d}\right]\right)\right)\sqrt{\frac{d-d\,\text{Sin}[e+f\,x]}{c+d}}$$

$$\left.\sqrt{-\frac{d+d\,\text{Sin}[e+f\,x]}{c-d}}\,(-b\,c+a\,d+b\,(c+d\,\text{Sin}[e+f\,x]))\right)\Big/\left(b^2\,d\,\sqrt{-\frac{1}{c+d}}\,(b\,c-a\,d)\,(a+b\,\text{Sin}[e+f\,x])\,\sqrt{1-\text{Sin}[e+f\,x]^2}\right.$$

$$\left.\left.\left(-2\,c^2+d^2+4\,c\,(c+d\,\text{Sin}[e+f\,x])-2\,(c+d\,\text{Sin}[e+f\,x])^2\right)\sqrt{-\frac{c^2-d^2-2\,c\,(c+d\,\text{Sin}[e+f\,x])+(c+d\,\text{Sin}[e+f\,x])^2}{d^2}}\right)\right)$$

Problem 754: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}}{(a+b\,\mathrm{Sin}[e+f\,x])^2}\,dx$$

Optimal (type 4, 307 leaves, 9 steps):

$$\frac{b\,\mathrm{Cos}[e+f\,x]\,\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}}{\left(a^2-b^2\right)\,f\,(a+b\,\mathrm{Sin}[e+f\,x])}+\frac{\mathrm{EllipticE}\left[\frac{1}{2}\left(e-\frac{\pi}{2}+f\,x\right),\frac{2\,d}{c+d}\right]\,\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}}{\left(a^2-b^2\right)\,f\,\sqrt{\frac{c+d\,\mathrm{Sin}[e+f\,x]}{c+d}}}-$$

$$\frac{(b\,c-a\,d)\,\mathrm{EllipticF}\left[\frac{1}{2}\left(e-\frac{\pi}{2}+f\,x\right),\frac{2\,d}{c+d}\right]\,\sqrt{\frac{c+d\,\mathrm{Sin}[e+f\,x]}{c+d}}}{b\,\left(a^2-b^2\right)\,f\,\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}}+\frac{\left(2\,a\,b\,c-a^2\,d-b^2\,d\right)\,\mathrm{EllipticPi}\left[\frac{2\,b}{a+b},\frac{1}{2}\left(e-\frac{\pi}{2}+f\,x\right),\frac{2\,d}{c+d}\right]\,\sqrt{\frac{c+d\,\mathrm{Sin}[e+f\,x]}{c+d}}}{(a-b)\,b\,(a+b)^2\,f\,\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}}$$

Result (type 4, 846 leaves):

$$-\frac{b\,\mathrm{Cos}[e+f x]\,\sqrt{c+d\,\mathrm{Sin}[e+f x]}}{\left(-a^2+b^2\right) f\,(a+b\,\mathrm{Sin}[e+f x])}+\frac{1}{4\,(a-b)\,(a+b)\,f}\left(-\frac{2\,(4\,a\,c-b\,d)\,\mathrm{EllipticPi}\left[\frac{2\,b}{a+b},\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right),\frac{2\,d}{c+d}\right]\sqrt{\frac{c+d\,\mathrm{Sin}[e+f x]}{c+d}}}{(a+b)\,\sqrt{c+d\,\mathrm{Sin}[e+f x]}}-\right.$$

$$\left(8\,\mathrm{i}\,a\,\mathrm{Cos}[e+f x]\left((b\,c-a\,d)\,\mathrm{EllipticF}\left[\mathrm{i}\,\mathrm{ArcSinh}\left[\sqrt{-\frac{1}{c+d}}\,\sqrt{c+d\,\mathrm{Sin}[e+f x]}\right],\frac{c+d}{c-d}\right]+a\,d\,\mathrm{EllipticPi}\left[\frac{b\,(c+d)}{b\,c-a\,d},\right.\right.\right.$$

$$\left.\left.\left.\mathrm{i}\,\mathrm{ArcSinh}\left[\sqrt{-\frac{1}{c+d}}\,\sqrt{c+d\,\mathrm{Sin}[e+f x]}\right],\frac{c+d}{c-d}\right]\right)\sqrt{\frac{d-d\,\mathrm{Sin}[e+f x]}{c+d}}\,\sqrt{-\frac{d+d\,\mathrm{Sin}[e+f x]}{c-d}}\,\left(-b\,c+a\,d+b\,(c+d\,\mathrm{Sin}[e+f x])\right)\right)\Big/$$

$$\left(b\,d\,\sqrt{-\frac{1}{c+d}}\,(b\,c-a\,d)\,(a+b\,\mathrm{Sin}[e+f x])\,\sqrt{1-\mathrm{Sin}[e+f x]^2}\,\sqrt{-\frac{c^2-d^2-2\,c\,(c+d\,\mathrm{Sin}[e+f x])+(c+d\,\mathrm{Sin}[e+f x])^2}{d^2}}\right)+$$

$$\left(2\,\mathrm{i}\,\mathrm{Cos}[e+f x]\,\mathrm{Cos}[2\,(e+f x)]\left(2\,b\,(c-d)\,(b\,c-a\,d)\,\mathrm{EllipticE}\left[\mathrm{i}\,\mathrm{ArcSinh}\left[\sqrt{-\frac{1}{c+d}}\,\sqrt{c+d\,\mathrm{Sin}[e+f x]}\right],\frac{c+d}{c-d}\right]+\right.\right.$$

$$d\left(-2\,(a+b)\,(-b\,c+a\,d)\,\mathrm{EllipticF}\left[\mathrm{i}\,\mathrm{ArcSinh}\left[\sqrt{-\frac{1}{c+d}}\,\sqrt{c+d\,\mathrm{Sin}[e+f x]}\right],\frac{c+d}{c-d}\right]+\right.$$

$$\left.\left.\left(2\,a^2-b^2\right) d\,\mathrm{EllipticPi}\left[\frac{b\,(c+d)}{b\,c-a\,d},\,\mathrm{i}\,\mathrm{ArcSinh}\left[\sqrt{-\frac{1}{c+d}}\,\sqrt{c+d\,\mathrm{Sin}[e+f x]}\right],\frac{c+d}{c-d}\right]\right)\right)\sqrt{\frac{d-d\,\mathrm{Sin}[e+f x]}{c+d}}$$

$$\left.\sqrt{-\frac{d+d\,\mathrm{Sin}[e+f x]}{c-d}}\,\left(-b\,c+a\,d+b\,(c+d\,\mathrm{Sin}[e+f x])\right)\right)\Big/\left(b\,\sqrt{-\frac{1}{c+d}}\,(b\,c-a\,d)\,(a+b\,\mathrm{Sin}[e+f x])\,\sqrt{1-\mathrm{Sin}[e+f x]^2}\right.$$

$$\left.\left.\left(-2\,c^2+d^2+4\,c\,(c+d\,\mathrm{Sin}[e+f x])-2\,(c+d\,\mathrm{Sin}[e+f x])^2\right)\sqrt{-\frac{c^2-d^2-2\,c\,(c+d\,\mathrm{Sin}[e+f x])+(c+d\,\mathrm{Sin}[e+f x])^2}{d^2}}\right)\right)$$

- **Problem 755: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int\frac{1}{(a+b\,\mathrm{Sin}[e+f x])^2\,\sqrt{c+d\,\mathrm{Sin}[e+f x]}}\,dx$$

Optimal (type 4, 325 leaves, 9 steps) :

$$\frac{b^2 \cos[e+f x] \sqrt{c+d \sin[e+f x]}}{\left(a^2-b^2\right) (b c-a d) f (a+b \sin[e+f x])}+\frac{b \,\text{EllipticE}\left[\frac{1}{2} \left(e-\frac{\pi}{2}+f x\right), \frac{2 d}{c+d}\right] \sqrt{c+d \sin[e+f x]}}{\left(a^2-b^2\right) (b c-a d) f \sqrt{\frac{c+d \sin[e+f x]}{c+d}}}-$$

$$\frac{\text{EllipticF}\left[\frac{1}{2} \left(e-\frac{\pi}{2}+f x\right), \frac{2 d}{c+d}\right] \sqrt{\frac{c+d \sin[e+f x]}{c+d}}}{\left(a^2-b^2\right) f \sqrt{c+d \sin[e+f x]}}+\frac{\left(2 a b c-3 a^2 d+b^2 d\right) \text{EllipticPi}\left[\frac{2 b}{a+b}, \frac{1}{2} \left(e-\frac{\pi}{2}+f x\right), \frac{2 d}{c+d}\right] \sqrt{\frac{c+d \sin[e+f x]}{c+d}}}{(a-b) (a+b)^2 (b c-a d) f \sqrt{c+d \sin[e+f x]}}$$

Result (type 4, 871 leaves) :

$$-\frac{b^2 \operatorname{Cos}[e+f x] \sqrt{c+d \operatorname{Sin}[e+f x]}}{\left(a^2-b^2\right)(-b c+a d) f (a+b \operatorname{Sin}[e+f x])}+$$

$$\frac{1}{4 (a-b)(a+b)(-b c+a d) f}\left(-\frac{2\left(-4 a b c+4 a^2 d-3 b^2 d\right) \operatorname{EllipticPi}\left[\frac{2 b}{a+b}, \frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right), \frac{2 d}{c+d}\right] \sqrt{\frac{c+d \operatorname{Sin}[e+f x]}{c+d}}}{(a+b) \sqrt{c+d \operatorname{Sin}[e+f x]}}+\right.$$

$$\left(8 i a \operatorname{Cos}[e+f x]\left((b c-a d) \operatorname{EllipticF}\left[i \operatorname{ArcSinh}\left[\sqrt{-\frac{1}{c+d}} \sqrt{c+d \operatorname{Sin}[e+f x]}\right], \frac{c+d}{c-d}\right]+a d \operatorname{EllipticPi}\left[\frac{b (c+d)}{b c-a d},\right.\right.\right.$$

$$\left.\left.i \operatorname{ArcSinh}\left[\sqrt{-\frac{1}{c+d}} \sqrt{c+d \operatorname{Sin}[e+f x]}\right], \frac{c+d}{c-d}\right]\right) \sqrt{\frac{d-d \operatorname{Sin}[e+f x]}{c+d}} \sqrt{-\frac{d+d \operatorname{Sin}[e+f x]}{c-d}}(-b c+a d+b(c+d \operatorname{Sin}[e+f x]))\Big) \Big/$$

$$\left(d \sqrt{-\frac{1}{c+d}}(b c-a d)(a+b \operatorname{Sin}[e+f x]) \sqrt{1-\operatorname{Sin}[e+f x]^2} \sqrt{-\frac{c^2-d^2-2 c(c+d \operatorname{Sin}[e+f x])+(c+d \operatorname{Sin}[e+f x])^2}{d^2}}\right)-$$

$$\left(2 i \operatorname{Cos}[e+f x] \operatorname{Cos}[2(e+f x)]\left(2 b(c-d)(b c-a d) \operatorname{EllipticE}\left[i \operatorname{ArcSinh}\left[\sqrt{-\frac{1}{c+d}} \sqrt{c+d \operatorname{Sin}[e+f x]}\right], \frac{c+d}{c-d}\right]+\right.\right.$$

$$d\left(-2(a+b)(-b c+a d) \operatorname{EllipticF}\left[i \operatorname{ArcSinh}\left[\sqrt{-\frac{1}{c+d}} \sqrt{c+d \operatorname{Sin}[e+f x]}\right], \frac{c+d}{c-d}\right]+\right.$$

$$\left.\left.\left(2 a^2-b^2\right) d \operatorname{EllipticPi}\left[\frac{b(c+d)}{b c-a d}, i \operatorname{ArcSinh}\left[\sqrt{-\frac{1}{c+d}} \sqrt{c+d \operatorname{Sin}[e+f x]}\right], \frac{c+d}{c-d}\right]\right)\right) \sqrt{\frac{d-d \operatorname{Sin}[e+f x]}{c+d}}$$

$$\left.\sqrt{-\frac{d+d \operatorname{Sin}[e+f x]}{c-d}}(-b c+a d+b(c+d \operatorname{Sin}[e+f x]))\right) \Big/ \left(\sqrt{-\frac{1}{c+d}}(b c-a d)(a+b \operatorname{Sin}[e+f x]) \sqrt{1-\operatorname{Sin}[e+f x]^2}\right.$$

$$\left.\left.\left(-2 c^2+d^2+4 c(c+d \operatorname{Sin}[e+f x])-2(c+d \operatorname{Sin}[e+f x])^2\right) \sqrt{-\frac{c^2-d^2-2 c(c+d \operatorname{Sin}[e+f x])+(c+d \operatorname{Sin}[e+f x])^2}{d^2}}\right)\right)$$

- **Problem 756: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int \frac{1}{(a+b\,\mathrm{Sin}[e+f\,x])^2\,(c+d\,\mathrm{Sin}[e+f\,x])^{3/2}}\,dx$$

Optimal (type 4, 449 leaves, 10 steps):

$$\frac{d\left(2 a^2 d^2+b^2\left(c^2-3 d^2\right)\right)\mathrm{Cos}[e+f x]}{\left(a^2-b^2\right)(b c-a d)^2\left(c^2-d^2\right) f \sqrt{c+d\,\mathrm{Sin}[e+f x]}}+\frac{b^2\,\mathrm{Cos}[e+f x]}{\left(a^2-b^2\right)(b c-a d) f (a+b\,\mathrm{Sin}[e+f x]) \sqrt{c+d\,\mathrm{Sin}[e+f x]}}+$$

$$\frac{\left(2 a^2 d^2+b^2\left(c^2-3 d^2\right)\right)\mathrm{EllipticE}\left[\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right),\frac{2 d}{c+d}\right]\sqrt{c+d\,\mathrm{Sin}[e+f x]}}{\left(a^2-b^2\right)(b c-a d)^2\left(c^2-d^2\right) f \sqrt{\frac{c+d\,\mathrm{Sin}[e+f x]}{c+d}}}-\frac{b\,\mathrm{EllipticF}\left[\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right),\frac{2 d}{c+d}\right]\sqrt{\frac{c+d\,\mathrm{Sin}[e+f x]}{c+d}}}{\left(a^2-b^2\right)(b c-a d) f \sqrt{c+d\,\mathrm{Sin}[e+f x]}}+$$

$$\frac{b\left(2 a b c-5 a^2 d+3 b^2 d\right)\mathrm{EllipticPi}\left[\frac{2 b}{a+b},\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right),\frac{2 d}{c+d}\right]\sqrt{\frac{c+d\,\mathrm{Sin}[e+f x]}{c+d}}}{(a-b)(a+b)^2(b c-a d)^2 f \sqrt{c+d\,\mathrm{Sin}[e+f x]}}$$

Result (type 4, 1057 leaves):

$$\frac{\sqrt{c+d\,\mathrm{Sin}[e+f x]}\left(\frac{b^3\,\mathrm{Cos}[e+f x]}{\left(a^2-b^2\right)(-b c+a d)^2(a+b\,\mathrm{Sin}[e+f x])}+\frac{2 d^3\,\mathrm{Cos}[e+f x]}{(b c-a d)^2\left(c^2-d^2\right)(c+d\,\mathrm{Sin}[e+f x])}\right)}{f}+$$

$$\frac{1}{4(a-b)(a+b)(c-d)(c+d)(-b c+a d)^2 f}\left(-\left(2\left(4 a b^2 c^3-8 a^2 b c^2 d+7 b^3 c^2 d+4 a^3 c d^2-8 a b^2 c d^2+10 a^2 b d^3-9 b^3 d^3\right)\right.\right.$$

$$\left.\mathrm{EllipticPi}\left[\frac{2 b}{a+b},\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right),\frac{2 d}{c+d}\right]\sqrt{\frac{c+d\,\mathrm{Sin}[e+f x]}{c+d}}\right)\Big/\left((a+b)\sqrt{c+d\,\mathrm{Sin}[e+f x]}\right)-$$

$$\left(2\,i\left(4 a b^2 c^2 d+4 a^2 b c d^2-4 b^3 c d^2+4 a^3 d^3-8 a b^2 d^3\right)\mathrm{Cos}[e+f x]\left((b c-a d)\,\mathrm{EllipticF}\left[i\,\mathrm{ArcSinh}\left[\sqrt{-\frac{1}{c+d}}\sqrt{c+d\,\mathrm{Sin}[e+f x]}\right],\right.\right.\right.$$

$$\left.\left.\frac{c+d}{c-d}\right]+a d\,\mathrm{EllipticPi}\left[\frac{b(c+d)}{b c-a d},i\,\mathrm{ArcSinh}\left[\sqrt{-\frac{1}{c+d}}\sqrt{c+d\,\mathrm{Sin}[e+f x]}\right],\frac{c+d}{c-d}\right]\right)$$

$$\left.\sqrt{\frac{d-d\,\mathrm{Sin}[e+f x]}{c+d}}\sqrt{-\frac{d+d\,\mathrm{Sin}[e+f x]}{c-d}}\,(-b c+a d+b(c+d\,\mathrm{Sin}[e+f x]))\right)\Big/$$

$$\left(b d^2 \sqrt{-\frac{1}{c+d}} (b c-a d) (a+b \operatorname{Sin}[e+f x]) \sqrt{1-\operatorname{Sin}[e+f x]^2} \sqrt{-\frac{c^2-d^2-2 c (c+d \operatorname{Sin}[e+f x])+(c+d \operatorname{Sin}[e+f x])^2}{d^2}}\right) -$$

$$\left(2 \mathrm{i} \left(-b^3 c^2 d-2 a^2 b d^3+3 b^3 d^3\right) \operatorname{Cos}[e+f x] \operatorname{Cos}[2 (e+f x)] \left(2 b (c-d) (b c-a d) \operatorname{EllipticE}\left[\mathrm{i} \operatorname{ArcSinh}\left[\sqrt{-\frac{1}{c+d}} \sqrt{c+d \operatorname{Sin}[e+f x]}\right],\right.\right.\right.$$

$$\left.\frac{c+d}{c-d}\right] + d \left(-2 (a+b) (-b c+a d) \operatorname{EllipticF}\left[\mathrm{i} \operatorname{ArcSinh}\left[\sqrt{-\frac{1}{c+d}} \sqrt{c+d \operatorname{Sin}[e+f x]}\right], \frac{c+d}{c-d}\right] +\right.$$

$$\left.\left.\left(2 a^2-b^2\right) d \operatorname{EllipticPi}\left[\frac{b (c+d)}{b c-a d}, \mathrm{i} \operatorname{ArcSinh}\left[\sqrt{-\frac{1}{c+d}} \sqrt{c+d \operatorname{Sin}[e+f x]}\right], \frac{c+d}{c-d}\right]\right)\right) \sqrt{\frac{d-d \operatorname{Sin}[e+f x]}{c+d}}$$

$$\left.\sqrt{-\frac{d+d \operatorname{Sin}[e+f x]}{c-d}} (-b c+a d+b (c+d \operatorname{Sin}[e+f x]))\right) \Big/ \left(b^2 d \sqrt{-\frac{1}{c+d}} (b c-a d) (a+b \operatorname{Sin}[e+f x]) \sqrt{1-\operatorname{Sin}[e+f x]^2}\right.$$

$$\left.\left(-2 c^2+d^2+4 c (c+d \operatorname{Sin}[e+f x])-2 (c+d \operatorname{Sin}[e+f x])^2\right) \sqrt{-\frac{c^2-d^2-2 c (c+d \operatorname{Sin}[e+f x])+(c+d \operatorname{Sin}[e+f x])^2}{d^2}}\right)\right)$$

- **Problem 757: Result unnecessarily involves imaginary or complex numbers.**

$$\int \frac{1}{(a+b \operatorname{Sin}[e+f x])^2 (c+d \operatorname{Sin}[e+f x])^{5/2}} \, dx$$

Optimal (type 4, 661 leaves, 11 steps):

$$\frac{d\left(2 a^2 d^2+b^2\left(3 c^2-5 d^2\right)\right) \operatorname{Cos}[e+f x]}{3\left(a^2-b^2\right)(b c-a d)^2\left(c^2-d^2\right) f(c+d \operatorname{Sin}[e+f x])^{3/2}}+\frac{b^2 \operatorname{Cos}[e+f x]}{\left(a^2-b^2\right)(b c-a d) f(a+b \operatorname{Sin}[e+f x])(c+d \operatorname{Sin}[e+f x])^{3/2}}-$$

$$\frac{\left(8 a^3 c d^4-8 a b^2 c d^4-4 a^2 b d^3\left(5 c^2-3 d^2\right)-b^3\left(3 c^4 d-26 c^2 d^3+15 d^5\right)\right) \operatorname{Cos}[e+f x]}{3\left(a^2-b^2\right)(b c-a d)^3\left(c^2-d^2\right)^2 f \sqrt{c+d \operatorname{Sin}[e+f x]}}-$$

$$\left(\left(8 a^3 c d^3-8 a b^2 c d^3-4 a^2 b d^2\left(5 c^2-3 d^2\right)-b^3\left(3 c^4-26 c^2 d^2+15 d^4\right)\right) \operatorname{EllipticE}\left[\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right), \frac{2 d}{c+d}\right] \sqrt{c+d \operatorname{Sin}[e+f x]}\right) /$$

$$\left(3\left(a^2-b^2\right)(b c-a d)^3\left(c^2-d^2\right)^2 f \sqrt{\frac{c+d \operatorname{Sin}[e+f x]}{c+d}}\right)-\frac{\left(2 a^2 d^2+b^2\left(3 c^2-5 d^2\right)\right) \operatorname{EllipticF}\left[\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right), \frac{2 d}{c+d}\right] \sqrt{\frac{c+d \operatorname{Sin}[e+f x]}{c+d}}}{3\left(a^2-b^2\right)(b c-a d)^2\left(c^2-d^2\right) f \sqrt{c+d \operatorname{Sin}[e+f x]}}+$$

$$\frac{b^2(2 a b c-7 a^2 d+5 b^2 d) \operatorname{EllipticPi}\left[\frac{2 b}{a+b}, \frac{1}{2}\left(e-\frac{\pi}{2}+f x\right), \frac{2 d}{c+d}\right] \sqrt{\frac{c+d \operatorname{Sin}[e+f x]}{c+d}}}{(a-b)(a+b)^2(b c-a d)^3 f \sqrt{c+d \operatorname{Sin}[e+f x]}}$$

Result (type 4, 1319 leaves) :

$$\frac{1}{f}\sqrt{c+d \operatorname{Sin}[e+f x]}\left(-\frac{b^4 \operatorname{Cos}[e+f x]}{\left(a^2-b^2\right)(-b c+a d)^3(a+b \operatorname{Sin}[e+f x])}+\frac{2 d^3 \operatorname{Cos}[e+f x]}{3(b c-a d)^2\left(c^2-d^2\right)(c+d \operatorname{Sin}[e+f x])^2}-\right.$$

$$\left.\frac{4\left(-5 b c^2 d^3 \operatorname{Cos}[e+f x]+2 a c d^4 \operatorname{Cos}[e+f x]+3 b d^5 \operatorname{Cos}[e+f x]\right)}{3(b c-a d)^3\left(c^2-d^2\right)^2(c+d \operatorname{Sin}[e+f x])}\right)+\frac{1}{12(a-b)(a+b)(c-d)^2(c+d)^2(-b c+a d)^3 f}$$

$$\left(-\left(2\left(-12 a b^3 c^5+36 a^2 b^2 c^4 d-33 b^4 c^4 d-36 a^3 b c^3 d^2+60 a b^3 c^3 d^2+12 a^4 c^2 d^3-104 a^2 b^2 c^2 d^3+86 b^4 c^2 d^3+28 a^3 b c d^4-40 a b^3 c d^4+\right.\right.\right.$$

$$\left.\left.4 a^4 d^5+44 a^2 b^2 d^5-45 b^4 d^5\right) \operatorname{EllipticPi}\left[\frac{2 b}{a+b}, \frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right), \frac{2 d}{c+d}\right] \sqrt{\frac{c+d \operatorname{Sin}[e+f x]}{c+d}}\right) / \left((a+b) \sqrt{c+d \operatorname{Sin}[e+f x]}\right)-$$

$$\left(2 i\left(-12 a b^3 c^4 d-36 a^2 b^2 c^3 d^2+36 b^4 c^3 d^2-28 a^3 b c^2 d^3+52 a b^3 c^2 d^3+16 a^4 c d^4+4 a^2 b^2 c d^4-20 b^4 c d^4+28 a^3 b d^5-40 a b^3 d^5\right)\right.$$

$$\operatorname{Cos}[e+f x]\left((b c-a d) \operatorname{EllipticF}\left[i \operatorname{ArcSinh}\left[\sqrt{-\frac{1}{c+d}} \sqrt{c+d \operatorname{Sin}[e+f x]}\right], \frac{c+d}{c-d}\right]+a d \operatorname{EllipticPi}\left[\frac{b(c+d)}{b c-a d},\right.\right.$$

$$\left.\left.\mathbb{i}\,\text{ArcSinh}\left[\sqrt{-\frac{1}{c+d}}\,\sqrt{c+d\,\text{Sin}[e+f\,x]},\,\frac{c+d}{c-d}\right]\right)\sqrt{\frac{d-d\,\text{Sin}[e+f\,x]}{c+d}}\,\sqrt{-\frac{d+d\,\text{Sin}[e+f\,x]}{c-d}}\,\left(-b\,c+a\,d+b\,\left(c+d\,\text{Sin}[e+f\,x]\right)\right)\right)\Big/$$

$$\left(b\,d^2\,\sqrt{-\frac{1}{c+d}}\,\left(b\,c-a\,d\right)\,\left(a+b\,\text{Sin}[e+f\,x]\right)\,\sqrt{1-\text{Sin}[e+f\,x]^2}\,\sqrt{-\frac{c^2-d^2-2\,c\,\left(c+d\,\text{Sin}[e+f\,x]\right)+\left(c+d\,\text{Sin}[e+f\,x]\right)^2}{d^2}}\right)-$$

$$\left(2\,\mathbb{i}\,\left(3\,b^4\,c^4\,d+20\,a^2\,b^2\,c^2\,d^3-26\,b^4\,c^2\,d^3-8\,a^3\,b\,c\,d^4+8\,a\,b^3\,c\,d^4-12\,a^2\,b^2\,d^5+15\,b^4\,d^5\right)\,\text{Cos}[e+f\,x]\right.$$

$$\text{Cos}[2\,(e+f\,x)]\,\left(2\,b\,(c-d)\,(b\,c-a\,d)\,\text{EllipticE}\left[\mathbb{i}\,\text{ArcSinh}\left[\sqrt{-\frac{1}{c+d}}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}\right],\,\frac{c+d}{c-d}\right]+\right.$$

$$d\,\left(-2\,(a+b)\,(-b\,c+a\,d)\,\text{EllipticF}\left[\mathbb{i}\,\text{ArcSinh}\left[\sqrt{-\frac{1}{c+d}}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}\right],\,\frac{c+d}{c-d}\right]+\right.$$

$$\left.\left.\left(2\,a^2-b^2\right)\,d\,\text{EllipticPi}\left[\frac{b\,(c+d)}{b\,c-a\,d},\,\mathbb{i}\,\text{ArcSinh}\left[\sqrt{-\frac{1}{c+d}}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}\right],\,\frac{c+d}{c-d}\right]\right)\right)\sqrt{\frac{d-d\,\text{Sin}[e+f\,x]}{c+d}}$$

$$\left.\sqrt{-\frac{d+d\,\text{Sin}[e+f\,x]}{c-d}}\,\left(-b\,c+a\,d+b\,\left(c+d\,\text{Sin}[e+f\,x]\right)\right)\right)\Big/\left(b^2\,d\,\sqrt{-\frac{1}{c+d}}\,\left(b\,c-a\,d\right)\,\left(a+b\,\text{Sin}[e+f\,x]\right)\,\sqrt{1-\text{Sin}[e+f\,x]^2}\right.$$

$$\left.\left(-2\,c^2+d^2+4\,c\,\left(c+d\,\text{Sin}[e+f\,x]\right)-2\,\left(c+d\,\text{Sin}[e+f\,x]\right)^2\right)\,\sqrt{-\frac{c^2-d^2-2\,c\,\left(c+d\,\text{Sin}[e+f\,x]\right)+\left(c+d\,\text{Sin}[e+f\,x]\right)^2}{d^2}}\right)\right)$$

- **Problem 758: Result unnecessarily involves imaginary or complex numbers.**

$$\int\frac{\left(c+d\,\text{Sin}[e+f\,x]\right)^{9/2}}{\left(a+b\,\text{Sin}[e+f\,x]\right)^3}\,dx$$

Optimal (type 4, 816 leaves, 11 steps):

$$\frac{1}{12\,b^3\,(a^2-b^2)^2\,f}d\,\left(36\,a^3\,b\,c\,d^2-35\,a^4\,d^3+b^4\,d\,(45\,c^2-8\,d^2)-18\,a\,b^3\,c\,(c^2+5\,d^2)+a^2\,b^2\,d\,(9\,c^2+61\,d^2)\right)\,\text{Cos}[e+f\,x]\,\sqrt{c+d\,\text{Sin}[e+f\,x]}+$$

$$\frac{(b\,c-a\,d)^2\,(6\,a\,b\,c+7\,a^2\,d-13\,b^2\,d)\,\text{Cos}[e+f\,x]\,(c+d\,\text{Sin}[e+f\,x])^{3/2}}{4\,b^2\,(a^2-b^2)^2\,f\,(a+b\,\text{Sin}[e+f\,x])}+\frac{(b\,c-a\,d)^2\,\text{Cos}[e+f\,x]\,(c+d\,\text{Sin}[e+f\,x])^{5/2}}{2\,b\,(a^2-b^2)\,f\,(a+b\,\text{Sin}[e+f\,x])^2}+$$

$$\left(\left(185\,a^4\,b\,c\,d^3-105\,a^5\,d^4-b^5\,c\,d\,(51\,c^2-104\,d^2)-15\,a^3\,b^2\,d^2\,(3\,c^2-13\,d^2)-a^2\,b^3\,c\,d\,(21\,c^2+361\,d^2)+9\,a\,b^4\,(2\,c^4+17\,c^2\,d^2-8\,d^4)\right)\right.$$

$$\left.\text{EllipticE}\left[\frac{1}{2}\left(e-\frac{\pi}{2}+f\,x\right),\,\frac{2\,d}{c+d}\right]\sqrt{c+d\,\text{Sin}[e+f\,x]}\right)\Bigg/\left(12\,b^4\,(a^2-b^2)^2\,f\,\sqrt{\frac{c+d\,\text{Sin}[e+f\,x]}{c+d}}\right)-$$

$$\left(\left(150\,a^5\,b\,c\,d^4-105\,a^6\,d^5-12\,a^3\,b^3\,c\,d^2\,(4\,c^2+29\,d^2)+a^4\,b^2\,d^3\,(26\,c^2+223\,d^2)-b^6\,d\,(57\,c^4+136\,c^2\,d^2+8\,d^4)+6\,a\,b^5\,c\,(3\,c^4+38\,c^2\,d^2+48\,d^4)-\right.\right.$$

$$\left.\left.a^2\,b^4\,d\,(33\,c^4+70\,c^2\,d^2+128\,d^4)\right)\,\text{EllipticF}\left[\frac{1}{2}\left(e-\frac{\pi}{2}+f\,x\right),\,\frac{2\,d}{c+d}\right]\sqrt{\frac{c+d\,\text{Sin}[e+f\,x]}{c+d}}\right)\Bigg/\left(12\,b^5\,(a^2-b^2)^2\,f\,\sqrt{c+d\,\text{Sin}[e+f\,x]}\right)+$$

$$\left((b\,c-a\,d)^3\,\left(20\,a^3\,b\,c\,d-44\,a\,b^3\,c\,d+35\,a^4\,d^2+2\,a^2\,b^2\,(4\,c^2-43\,d^2)+b^4\,(4\,c^2+63\,d^2)\right)\,\text{EllipticPi}\left[\frac{2\,b}{a+b},\,\frac{1}{2}\left(e-\frac{\pi}{2}+f\,x\right),\,\frac{2\,d}{c+d}\right]\right.$$

$$\left.\sqrt{\frac{c+d\,\text{Sin}[e+f\,x]}{c+d}}\right)\Bigg/\left(4\,(a-b)^2\,b^5\,(a+b)^3\,f\,\sqrt{c+d\,\text{Sin}[e+f\,x]}\right)$$

Result (type 4, 1526 leaves) :

$$\frac{1}{f}\sqrt{c+d\,\text{Sin}[e+f\,x]}$$

$$\left(-\frac{2\,d^4\,\text{Cos}[e+f\,x]}{3\,b^3}+\left(-b^4\,c^4\,\text{Cos}[e+f\,x]+4\,a\,b^3\,c^3\,d\,\text{Cos}[e+f\,x]-6\,a^2\,b^2\,c^2\,d^2\,\text{Cos}[e+f\,x]+4\,a^3\,b\,c\,d^3\,\text{Cos}[e+f\,x]-a^4\,d^4\,\text{Cos}[e+f\,x]\right)\Big/\right.$$

$$\left(2\,b^3\,(-a^2+b^2)\,(a+b\,\text{Sin}[e+f\,x])^2\right)+\left(6\,a\,b^4\,c^4\,\text{Cos}[e+f\,x]-7\,a^2\,b^3\,c^3\,d\,\text{Cos}[e+f\,x]-17\,b^5\,c^3\,d\,\text{Cos}[e+f\,x]-15\,a^3\,b^2\,c^2\,d^2\,\text{Cos}[e+f\,x]+\right.$$

$$\left.51\,a\,b^4\,c^2\,d^2\,\text{Cos}[e+f\,x]+27\,a^4\,b\,c\,d^3\,\text{Cos}[e+f\,x]-51\,a^2\,b^3\,c\,d^3\,\text{Cos}[e+f\,x]-11\,a^5\,d^4\,\text{Cos}[e+f\,x]+17\,a^3\,b^2\,d^4\,\text{Cos}[e+f\,x]\right)\Big/$$

$$\left.\left(4\,b^3\,(-a^2+b^2)^2\,(a+b\,\text{Sin}[e+f\,x])\right)\right)-\frac{1}{48\,(a-b)^2\,b^3\,(a+b)^2\,f}$$

$$\left(-\left(2\,\left(-48\,a^2\,b^3\,c^5-24\,b^5\,c^5+306\,a\,b^4\,c^4\,d-177\,a^2\,b^3\,c^3\,d^2-327\,b^5\,c^3\,d^2-105\,a^3\,b^2\,c^2\,d^3+501\,a\,b^4\,c^2\,d^3+13\,a^4\,b\,c\,d^4-53\,a^2\,b^3\,c\,d^4-104\,b^5\,c\,d^4+\right.\right.\right.$$

$$35 a^5 d^5 - 73 a^3 b^2 d^5 + 56 a b^4 d^5\Big) \text{EllipticPi}\left[\frac{2 b}{a+b}, \frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right), \frac{2 d}{c+d}\right] \sqrt{\frac{c+d \text{Sin}[e+f x]}{c+d}}\Bigg) \Big/ \left((a+b) \sqrt{c+d \text{Sin}[e+f x]}\right) -$$

$$\Bigg(2 i \Big(-60 a^2 b^3 c^4 d - 12 b^5 c^4 d + 36 a^3 b^2 c^3 d^2 + 252 a b^4 c^3 d^2 - 228 a^4 b c^2 d^3 + 276 a^2 b^3 c^2 d^3 - 480 b^5 c^2 d^3 + 140 a^5 c d^4 - 364 a^3 b^2 c d^4 +$$

$$512 a b^4 c d^4 + 56 a^4 b d^5 - 112 a^2 b^3 d^5 - 16 b^5 d^5\Big) \text{Cos}[e+f x] \left((b c - a d) \text{EllipticF}\left[i \text{ArcSinh}\left[\sqrt{-\frac{1}{c+d}} \sqrt{c+d \text{Sin}[e+f x]}\right], \frac{c+d}{c-d}\right] +\right.$$

$$\left. a d \text{EllipticPi}\left[\frac{b (c+d)}{b c - a d}, i \text{ArcSinh}\left[\sqrt{-\frac{1}{c+d}} \sqrt{c+d \text{Sin}[e+f x]}\right], \frac{c+d}{c-d}\right]\right)$$

$$\sqrt{\frac{d-d \text{Sin}[e+f x]}{c+d}} \sqrt{-\frac{d+d \text{Sin}[e+f x]}{c-d}} (-b c + a d + b (c+d \text{Sin}[e+f x]))\Bigg) \Big/$$

$$\left(b d^2 \sqrt{-\frac{1}{c+d}} (b c - a d) (a+b \text{Sin}[e+f x]) \sqrt{1-\text{Sin}[e+f x]^2} \sqrt{-\frac{c^2-d^2-2 c (c+d \text{Sin}[e+f x]) + (c+d \text{Sin}[e+f x])^2}{d^2}}\right) -$$

$$\Bigg(2 i \Big(18 a b^4 c^4 d - 21 a^2 b^3 c^3 d^2 - 51 b^5 c^3 d^2 - 45 a^3 b^2 c^2 d^3 + 153 a b^4 c^2 d^3 + 185 a^4 b c d^4 - 361 a^2 b^3 c d^4 + 104 b^5 c d^4 - 105 a^5 d^5 + 195 a^3 b^2 d^5 -$$

$$72 a b^4 d^5\Big) \text{Cos}[e+f x] \text{Cos}[2 (e+f x)] \left(2 b (c-d) (b c - a d) \text{EllipticE}\left[i \text{ArcSinh}\left[\sqrt{-\frac{1}{c+d}} \sqrt{c+d \text{Sin}[e+f x]}\right], \frac{c+d}{c-d}\right] +\right.$$

$$d \left(-2 (a+b) (-b c + a d) \text{EllipticF}\left[i \text{ArcSinh}\left[\sqrt{-\frac{1}{c+d}} \sqrt{c+d \text{Sin}[e+f x]}\right], \frac{c+d}{c-d}\right] +\right.$$

$$\left.\left. \left(2 a^2 - b^2\right) d \text{EllipticPi}\left[\frac{b (c+d)}{b c - a d}, i \text{ArcSinh}\left[\sqrt{-\frac{1}{c+d}} \sqrt{c+d \text{Sin}[e+f x]}\right], \frac{c+d}{c-d}\right]\right)\right) \sqrt{\frac{d-d \text{Sin}[e+f x]}{c+d}}$$

$$\sqrt{-\frac{d+d \text{Sin}[e+f x]}{c-d}} (-b c + a d + b (c+d \text{Sin}[e+f x]))\Bigg) \Big/ \left(b^2 d \sqrt{-\frac{1}{c+d}} (b c - a d) (a+b \text{Sin}[e+f x]) \sqrt{1-\text{Sin}[e+f x]^2}\right.$$

$$\left(-2 c^2+d^2+4 c (c+d \sin[e+f x])-2 (c+d \sin[e+f x])^2\right) \sqrt{-\frac{c^2-d^2-2 c (c+d \sin[e+f x])+(c+d \sin[e+f x])^2}{d^2}}\Bigg)\Bigg)$$

■ Problem 759: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{(c+d \sin[e+f x])^{7/2}}{(a+b \sin[e+f x])^3} \, dx$$

Optimal (type 4, 605 leaves, 10 steps):

$$\frac{(b c-a d)^2 \left(6 a b c+5 a^2 d-11 b^2 d\right) \cos[e+f x] \sqrt{c+d \sin[e+f x]}}{4 b^2 \left(a^2-b^2\right)^2 f (a+b \sin[e+f x])}+\frac{(b c-a d)^2 \cos[e+f x] (c+d \sin[e+f x])^{3/2}}{2 b \left(a^2-b^2\right) f (a+b \sin[e+f x])^2}-$$

$$\left(\left(8 a^3 b c d^2-15 a^4 d^3+b^4 d \left(13 c^2-8 d^2\right)-2 a b^3 c \left(3 c^2+13 d^2\right)+a^2 b^2 d \left(5 c^2+29 d^2\right)\right) \text{EllipticE}\left[\frac{1}{2} \left(e-\frac{\pi}{2}+f x\right), \frac{2 d}{c+d}\right] \sqrt{c+d \sin[e+f x]}\right) \Big/$$

$$\left(4 b^3 \left(a^2-b^2\right)^2 f \sqrt{\frac{c+d \sin[e+f x]}{c+d}}\right)+\Bigg(3 (b c-a d) \left(4 a^3 b c d^2+5 a^4 d^3+a^2 b^2 d \left(c^2-11 d^2\right)-2 a b^3 c \left(c^2+5 d^2\right)+b^4 d \left(5 c^2+8 d^2\right)\right)$$

$$\text{EllipticF}\left[\frac{1}{2} \left(e-\frac{\pi}{2}+f x\right), \frac{2 d}{c+d}\right] \sqrt{\frac{c+d \sin[e+f x]}{c+d}}\Bigg) \Big/ \left(4 b^4 \left(a^2-b^2\right)^2 f \sqrt{c+d \sin[e+f x]}\right)+$$

$$\Bigg((b c-a d)^2 \left(12 a^3 b c d-36 a b^3 c d+15 a^4 d^2+2 a^2 b^2 \left(4 c^2-19 d^2\right)+b^4 \left(4 c^2+35 d^2\right)\right) \text{EllipticPi}\left[\frac{2 b}{a+b}, \frac{1}{2} \left(e-\frac{\pi}{2}+f x\right), \frac{2 d}{c+d}\right]$$

$$\sqrt{\frac{c+d \sin[e+f x]}{c+d}}\Bigg) \Big/ \left(4 (a-b)^2 b^4 (a+b)^3 f \sqrt{c+d \sin[e+f x]}\right)$$

Result (type 4, 1323 leaves):

$$\frac{1}{f}\sqrt{c+d \sin[e+f x]} \left(\frac{-b^3 c^3 \cos[e+f x]+3 a b^2 c^2 d \cos[e+f x]-3 a^2 b c d^2 \cos[e+f x]+a^3 d^3 \cos[e+f x]}{2 b^2 \left(-a^2+b^2\right) (a+b \sin[e+f x])^2}+\right.$$

$$\left(6 a b^3 c^3 \cos[e+f x]-5 a^2 b^2 c^2 d \cos[e+f x]-13 b^4 c^2 d \cos[e+f x]-8 a^3 b c d^2 \cos[e+f x]+\right.$$

$$\left.\left.26 a b^3 c d^2 \cos[e+f x]+7 a^4 d^3 \cos[e+f x]-13 a^2 b^2 d^3 \cos[e+f x]\right) \Big/ \left(4 b^2 \left(-a^2+b^2\right)^2 (a+b \sin[e+f x])\right)\right)+$$

$$\frac{1}{16 (a-b)^2 b^2 (a+b)^2 f}\Bigg(-\Bigg(2 \left(16 a^2 b^2 c^4+8 b^4 c^4-78 a b^3 c^3 d+33 a^2 b^2 c^2 d^2+57 b^4 c^2 d^2+8 a^3 b c d^3-50 a b^3 c d^3+5 a^4 d^4-7 a^2 b^2 d^4+8 b^4 d^4\right)$$

$$\text{EllipticPi}\left[\frac{2 b}{a+b}, \frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right), \frac{2 d}{c+d}\right] \sqrt{\frac{c+d \operatorname{Sin}[e+f x]}{c+d}}\Bigg) \Big/ \left((a+b) \sqrt{c+d \operatorname{Sin}[e+f x]}\right) -$$

$$\Bigg(2 i \left(20 a^2 b^2 c^3 d+4 b^4 c^3 d-8 a^3 b c^2 d^2-64 a b^3 c^2 d^2+20 a^4 c d^3-12 a^2 b^2 c d^3+64 b^4 c d^3+8 a^3 b d^4-32 a b^3 d^4\right)$$

$$\operatorname{Cos}[e+f x] \Bigg((b c-a d) \text{EllipticF}\left[i \operatorname{ArcSinh}\left[\sqrt{-\frac{1}{c+d}} \sqrt{c+d \operatorname{Sin}[e+f x]}\right], \frac{c+d}{c-d}\right]+a d \text{EllipticPi}\left[\frac{b (c+d)}{b c-a d},\right.$$

$$\left.\left. i \operatorname{ArcSinh}\left[\sqrt{-\frac{1}{c+d}} \sqrt{c+d \operatorname{Sin}[e+f x]}\right], \frac{c+d}{c-d}\right]\right) \sqrt{\frac{d-d \operatorname{Sin}[e+f x]}{c+d}} \sqrt{-\frac{d+d \operatorname{Sin}[e+f x]}{c-d}} (-b c+a d+b (c+d \operatorname{Sin}[e+f x]))\Bigg) \Big/$$

$$\left(b d^2 \sqrt{-\frac{1}{c+d}} (b c-a d) (a+b \operatorname{Sin}[e+f x]) \sqrt{1-\operatorname{Sin}[e+f x]^2} \sqrt{-\frac{c^2-d^2-2 c (c+d \operatorname{Sin}[e+f x])+(c+d \operatorname{Sin}[e+f x])^2}{d^2}}\right) -$$

$$\Bigg(2 i \left(-6 a b^3 c^3 d+5 a^2 b^2 c^2 d^2+13 b^4 c^2 d^2+8 a^3 b c d^3-26 a b^3 c d^3-15 a^4 d^4+29 a^2 b^2 d^4-8 b^4 d^4\right) \operatorname{Cos}[e+f x]$$

$$\operatorname{Cos}[2 (e+f x)] \Bigg(2 b (c-d) (b c-a d) \text{EllipticE}\left[i \operatorname{ArcSinh}\left[\sqrt{-\frac{1}{c+d}} \sqrt{c+d \operatorname{Sin}[e+f x]}\right], \frac{c+d}{c-d}\right]+$$

$$d \Bigg(-2 (a+b) (-b c+a d) \text{EllipticF}\left[i \operatorname{ArcSinh}\left[\sqrt{-\frac{1}{c+d}} \sqrt{c+d \operatorname{Sin}[e+f x]}\right], \frac{c+d}{c-d}\right]+$$

$$\left.\left.\left(2 a^2-b^2\right) d \text{EllipticPi}\left[\frac{b (c+d)}{b c-a d}, i \operatorname{ArcSinh}\left[\sqrt{-\frac{1}{c+d}} \sqrt{c+d \operatorname{Sin}[e+f x]}\right], \frac{c+d}{c-d}\right]\right)\right) \sqrt{\frac{d-d \operatorname{Sin}[e+f x]}{c+d}}$$

$$\sqrt{-\frac{d+d \operatorname{Sin}[e+f x]}{c-d}} (-b c+a d+b (c+d \operatorname{Sin}[e+f x]))\Bigg) \Big/ \Bigg(b^2 d \sqrt{-\frac{1}{c+d}} (b c-a d) (a+b \operatorname{Sin}[e+f x]) \sqrt{1-\operatorname{Sin}[e+f x]^2}$$

$$\left.\left.\left(-2 c^2+d^2+4 c (c+d \operatorname{Sin}[e+f x])-2 (c+d \operatorname{Sin}[e+f x])^2\right) \sqrt{-\frac{c^2-d^2-2 c (c+d \operatorname{Sin}[e+f x])+(c+d \operatorname{Sin}[e+f x])^2}{d^2}}\right)\right)$$

Problem 760: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{(c+d \sin[e+f x])^{5/2}}{(a+b \sin[e+f x])^3} \, dx$$

Optimal (type 4, 549 leaves, 10 steps):

$$\frac{(b c-a d)^2 \cos[e+f x] \sqrt{c+d \sin[e+f x]}}{2 b \left(a^2-b^2\right) f (a+b \sin[e+f x])^2}+\frac{3 (b c-a d) \left(2 a b c+a^2 d-3 b^2 d\right) \cos[e+f x] \sqrt{c+d \sin[e+f x]}}{4 b \left(a^2-b^2\right)^2 f (a+b \sin[e+f x])}+$$

$$\frac{3 (b c-a d) \left(2 a b c+a^2 d-3 b^2 d\right) \text{EllipticE}\left[\frac{1}{2} \left(e-\frac{\pi}{2}+f x\right), \frac{2 d}{c+d}\right] \sqrt{c+d \sin[e+f x]}}{4 b^2 \left(a^2-b^2\right)^2 f \sqrt{\frac{c+d \sin[e+f x]}{c+d}}}+$$

$$\left(\left(4 a^3 b c d^2+3 a^4 d^3+a^2 b^2 d \left(7 c^2-5 d^2\right)+b^4 d \left(11 c^2+8 d^2\right)-2 a b^3 c \left(3 c^2+11 d^2\right)\right) \text{EllipticF}\left[\frac{1}{2} \left(e-\frac{\pi}{2}+f x\right), \frac{2 d}{c+d}\right] \sqrt{\frac{c+d \sin[e+f x]}{c+d}}\right) \Big/$$

$$\left(4 b^3 \left(a^2-b^2\right)^2 f \sqrt{c+d \sin[e+f x]}\right)+\left((b c-a d) \left(4 a^3 b c d-28 a b^3 c d+3 a^4 d^2+2 a^2 b^2 \left(4 c^2-3 d^2\right)+b^4 \left(4 c^2+15 d^2\right)\right)\right.$$

$$\left.\text{EllipticPi}\left[\frac{2 b}{a+b}, \frac{1}{2} \left(e-\frac{\pi}{2}+f x\right), \frac{2 d}{c+d}\right] \sqrt{\frac{c+d \sin[e+f x]}{c+d}}\right) \Big/ \left(4 (a-b)^2 b^3 (a+b)^3 f \sqrt{c+d \sin[e+f x]}\right)$$

Result (type 4, 1149 leaves):

$$\frac{1}{f}\sqrt{c+d \sin[e+f x]} \left(\frac{-b^2 c^2 \cos[e+f x]+2 a b c d \cos[e+f x]-a^2 d^2 \cos[e+f x]}{2 b \left(-a^2+b^2\right) (a+b \sin[e+f x])^2}-\right.$$

$$\left(3 \left(-2 a b^2 c^2 \cos[e+f x]+a^2 b c d \cos[e+f x]+3 b^3 c d \cos[e+f x]+a^3 d^2 \cos[e+f x]-3 a b^2 d^2 \cos[e+f x]\right)\right) \Big/$$

$$\left.\left(4 b \left(-a^2+b^2\right)^2 (a+b \sin[e+f x])\right)\right)-\frac{1}{16 (a-b)^2 b (a+b)^2 f}$$

$$\left(-\left(2 \left(-16 a^2 b c^3-8 b^3 c^3+54 a b^2 c^2 d-15 a^2 b c d^2-21 b^3 c d^2+a^3 d^3+5 a b^2 d^3\right) \text{EllipticPi}\left[\frac{2 b}{a+b}, \frac{1}{2} \left(-e+\frac{\pi}{2}-f x\right), \frac{2 d}{c+d}\right]\right.\right.$$

$$\left.\sqrt{\frac{c+d \sin[e+f x]}{c+d}}\right) \Big/ \left((a+b) \sqrt{c+d \sin[e+f x]}\right)-\left(2 i \left(-20 a^2 b c^2 d-4 b^3 c^2 d+4 a^3 c d^2+44 a b^2 c d^2-8 a^2 b d^3-16 b^3 d^3\right)\right.$$

$$\text{Cos}[e+f x] \left((b c-a d) \text{EllipticF}\left[i \text{ArcSinh}\left[\sqrt{-\frac{1}{c+d}} \sqrt{c+d \text{Sin}[e+f x]}\right], \frac{c+d}{c-d}\right]+a d \text{EllipticPi}\left[\frac{b (c+d)}{b c-a d},\right.\right.$$

$$\left.\left. i \text{ArcSinh}\left[\sqrt{-\frac{1}{c+d}} \sqrt{c+d \text{Sin}[e+f x]}\right], \frac{c+d}{c-d}\right]\right) \sqrt{\frac{d-d \text{Sin}[e+f x]}{c+d}} \sqrt{-\frac{d+d \text{Sin}[e+f x]}{c-d}} (-b c+a d+b (c+d \text{Sin}[e+f x]))\Bigg) \Bigg/$$

$$\left(b d^2 \sqrt{-\frac{1}{c+d}} (b c-a d) (a+b \text{Sin}[e+f x]) \sqrt{1-\text{Sin}[e+f x]^2} \sqrt{-\frac{c^2-d^2-2 c (c+d \text{Sin}[e+f x])+(c+d \text{Sin}[e+f x])^2}{d^2}}\right)-$$

$$\Big(2 i \left(6 a b^2 c^2 d-3 a^2 b c d^2-9 b^3 c d^2-3 a^3 d^3+9 a b^2 d^3\right) \text{Cos}[e+f x] \text{Cos}[2 (e+f x)]$$

$$\Big(2 b (c-d) (b c-a d) \text{EllipticE}\left[i \text{ArcSinh}\left[\sqrt{-\frac{1}{c+d}} \sqrt{c+d \text{Sin}[e+f x]}\right], \frac{c+d}{c-d}\right]+$$

$$d \Big(-2 (a+b) (-b c+a d) \text{EllipticF}\left[i \text{ArcSinh}\left[\sqrt{-\frac{1}{c+d}} \sqrt{c+d \text{Sin}[e+f x]}\right], \frac{c+d}{c-d}\right]+$$

$$\left.\left.\left(2 a^2-b^2\right) d \text{EllipticPi}\left[\frac{b (c+d)}{b c-a d}, i \text{ArcSinh}\left[\sqrt{-\frac{1}{c+d}} \sqrt{c+d \text{Sin}[e+f x]}\right], \frac{c+d}{c-d}\right]\right)\right) \sqrt{\frac{d-d \text{Sin}[e+f x]}{c+d}}$$

$$\sqrt{-\frac{d+d \text{Sin}[e+f x]}{c-d}} (-b c+a d+b (c+d \text{Sin}[e+f x]))\Bigg) \Bigg/ \Bigg(b^2 d \sqrt{-\frac{1}{c+d}} (b c-a d) (a+b \text{Sin}[e+f x]) \sqrt{1-\text{Sin}[e+f x]^2}$$

$$\left.\left(-2 c^2+d^2+4 c (c+d \text{Sin}[e+f x])-2 (c+d \text{Sin}[e+f x])^2\right) \sqrt{-\frac{c^2-d^2-2 c (c+d \text{Sin}[e+f x])+(c+d \text{Sin}[e+f x])^2}{d^2}}\right)\Bigg)$$

- **Problem 761: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int \frac{(c+d \text{Sin}[e+f x])^{3/2}}{(a+b \text{Sin}[e+f x])^3} \, dx$$

Optimal (type 4, 472 leaves, 10 steps) :

$$\frac{(b c-a d) \operatorname{Cos}[e+f x] \sqrt{c+d \operatorname{Sin}[e+f x]}}{2 (a^2-b^2) f (a+b \operatorname{Sin}[e+f x])^2}+\frac{(6 a b c-a^2 d-5 b^2 d) \operatorname{Cos}[e+f x] \sqrt{c+d \operatorname{Sin}[e+f x]}}{4 (a^2-b^2)^2 f (a+b \operatorname{Sin}[e+f x])}+$$

$$\frac{(6 a b c-a^2 d-5 b^2 d) \operatorname{EllipticE}\left[\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right), \frac{2 d}{c+d}\right] \sqrt{c+d \operatorname{Sin}[e+f x]}}{4 b (a^2-b^2)^2 f \sqrt{\frac{c+d \operatorname{Sin}[e+f x]}{c+d}}}-$$

$$\frac{(b c-a d) (6 a b c+a^2 d-7 b^2 d) \operatorname{EllipticF}\left[\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right), \frac{2 d}{c+d}\right] \sqrt{\frac{c+d \operatorname{Sin}[e+f x]}{c+d}}}{4 b^2 (a^2-b^2)^2 f \sqrt{c+d \operatorname{Sin}[e+f x]}}-$$

$$\left(\left(4 a^3 b c d+20 a b^3 c d+a^4 d^2-b^4 (4 c^2+3 d^2)-2 a^2 b^2 (4 c^2+5 d^2)\right) \operatorname{EllipticPi}\left[\frac{2 b}{a+b}, \frac{1}{2}\left(e-\frac{\pi}{2}+f x\right), \frac{2 d}{c+d}\right] \sqrt{\frac{c+d \operatorname{Sin}[e+f x]}{c+d}}\right) \Big/$$
$$\left(4 (a-b)^2 b^2 (a+b)^3 f \sqrt{c+d \operatorname{Sin}[e+f x]}\right)$$

Result (type 4, 1001 leaves) :

$$\frac{\sqrt{c+d \operatorname{Sin}[e+f x]} \left(\frac{b c \operatorname{Cos}[e+f x]-a d \operatorname{Cos}[e+f x]}{2 (a^2-b^2) (a+b \operatorname{Sin}[e+f x])^2}+\frac{6 a b c \operatorname{Cos}[e+f x]-a^2 d \operatorname{Cos}[e+f x]-5 b^2 d \operatorname{Cos}[e+f x]}{4 (a^2-b^2)^2 (a+b \operatorname{Sin}[e+f x])}\right)}{f}+$$

$$\frac{1}{16 (a-b)^2 (a+b)^2 f}\left(-\left(2 (16 a^2 c^2+8 b^2 c^2-30 a b c d+5 a^2 d^2+b^2 d^2) \operatorname{EllipticPi}\left[\frac{2 b}{a+b}, \frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right), \frac{2 d}{c+d}\right] \sqrt{\frac{c+d \operatorname{Sin}[e+f x]}{c+d}}\right) \Big/\right.$$
$$\left((a+b) \sqrt{c+d \operatorname{Sin}[e+f x]}\right)-$$
$$\left(2 i (20 a^2 c d+4 b^2 c d-24 a b d^2) \operatorname{Cos}[e+f x] \left((b c-a d) \operatorname{EllipticF}\left[i \operatorname{ArcSinh}\left[\sqrt{-\frac{1}{c+d}} \sqrt{c+d \operatorname{Sin}[e+f x]}\right], \frac{c+d}{c-d}\right]+\right.\right.$$
$$\left.a d \operatorname{EllipticPi}\left[\frac{b (c+d)}{b c-a d}, i \operatorname{ArcSinh}\left[\sqrt{-\frac{1}{c+d}} \sqrt{c+d \operatorname{Sin}[e+f x]}\right], \frac{c+d}{c-d}\right]\right)$$
$$\left.\sqrt{\frac{d-d \operatorname{Sin}[e+f x]}{c+d}} \sqrt{-\frac{d+d \operatorname{Sin}[e+f x]}{c-d}} (-b c+a d+b (c+d \operatorname{Sin}[e+f x]))\right) \Big/$$

$$\left(b d^2 \sqrt{-\frac{1}{c+d}} (b c-a d) (a+b \operatorname{Sin}[e+f x]) \sqrt{1-\operatorname{Sin}[e+f x]^2} \sqrt{-\frac{c^2-d^2-2 c (c+d \operatorname{Sin}[e+f x])+(c+d \operatorname{Sin}[e+f x])^2}{d^2}}\right)-$$

$$\left(2 i \left(-6 a b c d+a^2 d^2+5 b^2 d^2\right) \operatorname{Cos}[e+f x] \operatorname{Cos}[2 (e+f x)] \left(2 b (c-d) (b c-a d) \operatorname{EllipticE}\left[i \operatorname{ArcSinh}\left[\sqrt{-\frac{1}{c+d}} \sqrt{c+d \operatorname{Sin}[e+f x]}\right], \frac{c+d}{c-d}\right]+d \left(-2 (a+b) (-b c+a d) \operatorname{EllipticF}\left[i \operatorname{ArcSinh}\left[\sqrt{-\frac{1}{c+d}} \sqrt{c+d \operatorname{Sin}[e+f x]}\right], \frac{c+d}{c-d}\right]+\left(2 a^2-b^2\right) d \operatorname{EllipticPi}\left[\frac{b (c+d)}{b c-a d}, i \operatorname{ArcSinh}\left[\sqrt{-\frac{1}{c+d}} \sqrt{c+d \operatorname{Sin}[e+f x]}\right], \frac{c+d}{c-d}\right]\right)\right) \sqrt{\frac{d-d \operatorname{Sin}[e+f x]}{c+d}} \sqrt{-\frac{d+d \operatorname{Sin}[e+f x]}{c-d}} (-b c+a d+b (c+d \operatorname{Sin}[e+f x]))\right) \Big/ \left(b^2 d \sqrt{-\frac{1}{c+d}} (b c-a d) (a+b \operatorname{Sin}[e+f x]) \sqrt{1-\operatorname{Sin}[e+f x]^2} \left(-2 c^2+d^2+4 c (c+d \operatorname{Sin}[e+f x])-2 (c+d \operatorname{Sin}[e+f x])^2\right) \sqrt{-\frac{c^2-d^2-2 c (c+d \operatorname{Sin}[e+f x])+(c+d \operatorname{Sin}[e+f x])^2}{d^2}}\right)$$

- **Problem 762: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int \frac{\sqrt{c+d \operatorname{Sin}[e+f x]}}{(a+b \operatorname{Sin}[e+f x])^3} \, dx$$

Optimal (type 4, 487 leaves, 10 steps):

$$\frac{b\,\text{Cos}[e+f\,x]\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}{2\,(a^2-b^2)\,f\,(a+b\,\text{Sin}[e+f\,x])^2}+\frac{b\,(6\,a\,b\,c-5\,a^2\,d-b^2\,d)\,\text{Cos}[e+f\,x]\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}{4\,(a^2-b^2)^2\,(b\,c-a\,d)\,f\,(a+b\,\text{Sin}[e+f\,x])}+$$

$$\frac{(6\,a\,b\,c-5\,a^2\,d-b^2\,d)\,\text{EllipticE}\left[\frac{1}{2}\left(e-\frac{\pi}{2}+f\,x\right),\frac{2\,d}{c+d}\right]\sqrt{c+d\,\text{Sin}[e+f\,x]}}{4\,(a^2-b^2)^2\,(b\,c-a\,d)\,f\,\sqrt{\frac{c+d\,\text{Sin}[e+f\,x]}{c+d}}}-$$

$$\frac{3\,(2\,a\,b\,c-a^2\,d-b^2\,d)\,\text{EllipticF}\left[\frac{1}{2}\left(e-\frac{\pi}{2}+f\,x\right),\frac{2\,d}{c+d}\right]\sqrt{\frac{c+d\,\text{Sin}[e+f\,x]}{c+d}}}{4\,b\,(a^2-b^2)^2\,f\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}-$$

$$\left((12\,a^3\,b\,c\,d+12\,a\,b^3\,c\,d-3\,a^4\,d^2-b^4\,(4\,c^2-d^2)-2\,a^2\,b^2\,(4\,c^2+5\,d^2))\,\text{EllipticPi}\left[\frac{2\,b}{a+b},\frac{1}{2}\left(e-\frac{\pi}{2}+f\,x\right),\frac{2\,d}{c+d}\right]\sqrt{\frac{c+d\,\text{Sin}[e+f\,x]}{c+d}}\right)\Big/$$

$$\left(4\,(a-b)^2\,b\,(a+b)^3\,(b\,c-a\,d)\,f\,\sqrt{c+d\,\text{Sin}[e+f\,x]}\right)$$

Result (type 4, 1038 leaves) :

$$\frac{\sqrt{c+d\,\text{Sin}[e+f\,x]}\left(\frac{b\,\text{Cos}[e+f\,x]}{2\,(a^2-b^2)\,(a+b\,\text{Sin}[e+f\,x])^2}-\frac{6\,a\,b^2\,c\,\text{Cos}[e+f\,x]-5\,a^2\,b\,d\,\text{Cos}[e+f\,x]-b^3\,d\,\text{Cos}[e+f\,x]}{4\,(a^2-b^2)^2\,(-b\,c+a\,d)\,(a+b\,\text{Sin}[e+f\,x])}\right)}{f}+$$

$$\frac{1}{16\,(a-b)^2\,(a+b)^2\,(-b\,c+a\,d)\,f}\left(-\left(2\,(-16\,a^2\,b\,c^2-8\,b^3\,c^2+16\,a^3\,c\,d+14\,a\,b^2\,c\,d-9\,a^2\,b\,d^2+3\,b^3\,d^2)\right.\right.$$

$$\left.\text{EllipticPi}\left[\frac{2\,b}{a+b},\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right),\frac{2\,d}{c+d}\right]\sqrt{\frac{c+d\,\text{Sin}[e+f\,x]}{c+d}}\right)\Big/\left((a+b)\,\sqrt{c+d\,\text{Sin}[e+f\,x]}\right)-$$

$$\left(2\,\mathrm{i}\,(-20\,a^2\,b\,c\,d-4\,b^3\,c\,d+16\,a^3\,d^2+8\,a\,b^2\,d^2)\,\text{Cos}[e+f\,x]\,\left((b\,c-a\,d)\,\text{EllipticF}\left[\mathrm{i}\,\text{ArcSinh}\left[\sqrt{-\frac{1}{c+d}}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}\right],\frac{c+d}{c-d}\right]+\right.\right.$$

$$\left.a\,d\,\text{EllipticPi}\left[\frac{b\,(c+d)}{b\,c-a\,d},\mathrm{i}\,\text{ArcSinh}\left[\sqrt{-\frac{1}{c+d}}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}\right],\frac{c+d}{c-d}\right]\right)$$

$$\left.\sqrt{\frac{d-d\,\text{Sin}[e+f\,x]}{c+d}}\,\sqrt{-\frac{d+d\,\text{Sin}[e+f\,x]}{c-d}}\,(-b\,c+a\,d+b\,(c+d\,\text{Sin}[e+f\,x]))\right)\Big/$$

$$\left(b\,d^2\sqrt{-\frac{1}{c+d}}\,(b\,c-a\,d)\,(a+b\,\mathrm{Sin}[e+f\,x])\,\sqrt{1-\mathrm{Sin}[e+f\,x]^2}\,\sqrt{-\frac{c^2-d^2-2\,c\,(c+d\,\mathrm{Sin}[e+f\,x])+(c+d\,\mathrm{Sin}[e+f\,x])^2}{d^2}}\right)-$$

$$\left(2\,\mathrm{i}\,\left(6\,a\,b^2\,c\,d-5\,a^2\,b\,d^2-b^3\,d^2\right)\mathrm{Cos}[e+f\,x]\,\mathrm{Cos}[2\,(e+f\,x)]\,\left(2\,b\,(c-d)\,(b\,c-a\,d)\,\mathrm{EllipticE}\left[\mathrm{i}\,\mathrm{ArcSinh}\left[\sqrt{-\frac{1}{c+d}}\,\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}\right],\right.\right.\right.$$

$$\left.\frac{c+d}{c-d}\right]+d\left(-2\,(a+b)\,(-b\,c+a\,d)\,\mathrm{EllipticF}\left[\mathrm{i}\,\mathrm{ArcSinh}\left[\sqrt{-\frac{1}{c+d}}\,\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}\right],\frac{c+d}{c-d}\right]+\right.$$

$$\left.\left.\left(2\,a^2-b^2\right)d\,\mathrm{EllipticPi}\left[\frac{b\,(c+d)}{b\,c-a\,d},\mathrm{i}\,\mathrm{ArcSinh}\left[\sqrt{-\frac{1}{c+d}}\,\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}\right],\frac{c+d}{c-d}\right]\right)\right)\sqrt{\frac{d-d\,\mathrm{Sin}[e+f\,x]}{c+d}}$$

$$\left.\sqrt{-\frac{d+d\,\mathrm{Sin}[e+f\,x]}{c-d}}\,(-b\,c+a\,d+b\,(c+d\,\mathrm{Sin}[e+f\,x]))\right)\Bigg/\left(b^2\,d\,\sqrt{-\frac{1}{c+d}}\,(b\,c-a\,d)\,(a+b\,\mathrm{Sin}[e+f\,x])\,\sqrt{1-\mathrm{Sin}[e+f\,x]^2}\right.$$

$$\left.\left(-2\,c^2+d^2+4\,c\,(c+d\,\mathrm{Sin}[e+f\,x])-2\,(c+d\,\mathrm{Sin}[e+f\,x])^2\right)\sqrt{-\frac{c^2-d^2-2\,c\,(c+d\,\mathrm{Sin}[e+f\,x])+(c+d\,\mathrm{Sin}[e+f\,x])^2}{d^2}}\right)\right)$$

- **Problem 763: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int\frac{1}{(a+b\,\mathrm{Sin}[e+f\,x])^3\,\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}}\,dx$$

Optimal (type 4, 503 leaves, 10 steps) :

$$\frac{b^2 \operatorname{Cos}[e+f x] \sqrt{c+d \operatorname{Sin}[e+f x]}}{2\left(a^2-b^2\right)(b c-a d) f(a+b \operatorname{Sin}[e+f x])^2}+\frac{3 b^2\left(2 a b c-3 a^2 d+b^2 d\right) \operatorname{Cos}[e+f x] \sqrt{c+d \operatorname{Sin}[e+f x]}}{4\left(a^2-b^2\right)^2(b c-a d)^2 f(a+b \operatorname{Sin}[e+f x])}+$$

$$\frac{3 b\left(2 a b c-3 a^2 d+b^2 d\right) \operatorname{EllipticE}\left[\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right), \frac{2 d}{c+d}\right] \sqrt{c+d \operatorname{Sin}[e+f x]}}{4\left(a^2-b^2\right)^2(b c-a d)^2 f \sqrt{\frac{c+d \operatorname{Sin}[e+f x]}{c+d}}}-$$

$$\frac{\left(6 a b c-7 a^2 d+b^2 d\right) \operatorname{EllipticF}\left[\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right), \frac{2 d}{c+d}\right] \sqrt{\frac{c+d \operatorname{Sin}[e+f x]}{c+d}}}{4\left(a^2-b^2\right)^2(b c-a d) f \sqrt{c+d \operatorname{Sin}[e+f x]}}-$$

$$\left(\left(20 a^3 b c d+4 a b^3 c d-15 a^4 d^2-2 a^2 b^2\left(4 c^2-3 d^2\right)-b^4\left(4 c^2+3 d^2\right)\right) \operatorname{EllipticPi}\left[\frac{2 b}{a+b}, \frac{1}{2}\left(e-\frac{\pi}{2}+f x\right), \frac{2 d}{c+d}\right] \sqrt{\frac{c+d \operatorname{Sin}[e+f x]}{c+d}}\right) \Big/$$

$$\left(4(a-b)^2(a+b)^3(b c-a d)^2 f \sqrt{c+d \operatorname{Sin}[e+f x]}\right)$$

Result (type 4, 1069 leaves):

$$\frac{\sqrt{c+d \operatorname{Sin}[e+f x]}\left(-\frac{b^2 \operatorname{Cos}[e+f x]}{2\left(a^2-b^2\right)(-b c+a d)(a+b \operatorname{Sin}[e+f x])^2}+\frac{3\left(2 a b^3 c \operatorname{Cos}[e+f x]-3 a^2 b^2 d \operatorname{Cos}[e+f x]+b^4 d \operatorname{Cos}[e+f x]\right)}{4\left(a^2-b^2\right)^2(-b c+a d)^2(a+b \operatorname{Sin}[e+f x])}\right)}{f}+$$

$$\frac{1}{16(a-b)^2(a+b)^2(-b c+a d)^2 f}\left(-\left(2\left(16 a^2 b^2 c^2+8 b^4 c^2-32 a^3 b c d+2 a b^3 c d+16 a^4 d^2-19 a^2 b^2 d^2+9 b^4 d^2\right)\right.\right.$$

$$\left.\operatorname{EllipticPi}\left[\frac{2 b}{a+b}, \frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right), \frac{2 d}{c+d}\right] \sqrt{\frac{c+d \operatorname{Sin}[e+f x]}{c+d}}\right) \Big/ \left((a+b) \sqrt{c+d \operatorname{Sin}[e+f x]}\right)-$$

$$\left(2 i\left(20 a^2 b^2 c d+4 b^4 c d-32 a^3 b d^2+8 a b^3 d^2\right) \operatorname{Cos}[e+f x]\left((b c-a d) \operatorname{EllipticF}\left[i \operatorname{ArcSinh}\left[\sqrt{-\frac{1}{c+d}} \sqrt{c+d \operatorname{Sin}[e+f x]}\right], \frac{c+d}{c-d}\right]+\right.\right.$$

$$\left.a d \operatorname{EllipticPi}\left[\frac{b(c+d)}{b c-a d}, i \operatorname{ArcSinh}\left[\sqrt{-\frac{1}{c+d}} \sqrt{c+d \operatorname{Sin}[e+f x]}\right], \frac{c+d}{c-d}\right]\right)$$

$$\left.\sqrt{\frac{d-d \operatorname{Sin}[e+f x]}{c+d}} \sqrt{-\frac{d+d \operatorname{Sin}[e+f x]}{c-d}}(-b c+a d+b(c+d \operatorname{Sin}[e+f x]))\right) \Big/$$

$$\left(b\, d^2 \sqrt{-\frac{1}{c+d}}\, (b\, c-a\, d)\, (a+b\, \text{Sin}[e+f\, x])\, \sqrt{1-\text{Sin}[e+f\, x]^2}\, \sqrt{-\frac{c^2-d^2-2\, c\, (c+d\, \text{Sin}[e+f\, x])+(c+d\, \text{Sin}[e+f\, x])^2}{d^2}}\right)-$$

$$\left(2\, i\, \left(-6\, a\, b^3\, c\, d+9\, a^2\, b^2\, d^2-3\, b^4\, d^2\right)\, \text{Cos}[e+f\, x]\, \text{Cos}[2\, (e+f\, x)]\, \left(2\, b\, (c-d)\, (b\, c-a\, d)\, \text{EllipticE}\left[i\, \text{ArcSinh}\left[\sqrt{-\frac{1}{c+d}}\, \sqrt{c+d\, \text{Sin}[e+f\, x]}\right],\right.\right.\right.$$

$$\left.\frac{c+d}{c-d}\right]+d\, \left(-2\, (a+b)\, (-b\, c+a\, d)\, \text{EllipticF}\left[i\, \text{ArcSinh}\left[\sqrt{-\frac{1}{c+d}}\, \sqrt{c+d\, \text{Sin}[e+f\, x]}\right],\, \frac{c+d}{c-d}\right]+\right.$$

$$\left.\left.\left(2\, a^2-b^2\right)\, d\, \text{EllipticPi}\left[\frac{b\, (c+d)}{b\, c-a\, d},\, i\, \text{ArcSinh}\left[\sqrt{-\frac{1}{c+d}}\, \sqrt{c+d\, \text{Sin}[e+f\, x]}\right],\, \frac{c+d}{c-d}\right]\right)\right)\, \sqrt{\frac{d-d\, \text{Sin}[e+f\, x]}{c+d}}$$

$$\left.\sqrt{-\frac{d+d\, \text{Sin}[e+f\, x]}{c-d}}\, (-b\, c+a\, d+b\, (c+d\, \text{Sin}[e+f\, x]))\right)\Big/\left(b^2\, d\, \sqrt{-\frac{1}{c+d}}\, (b\, c-a\, d)\, (a+b\, \text{Sin}[e+f\, x])\, \sqrt{1-\text{Sin}[e+f\, x]^2}\right.$$

$$\left.\left(-2\, c^2+d^2+4\, c\, (c+d\, \text{Sin}[e+f\, x])-2\, (c+d\, \text{Sin}[e+f\, x])^2\right)\, \sqrt{-\frac{c^2-d^2-2\, c\, (c+d\, \text{Sin}[e+f\, x])+(c+d\, \text{Sin}[e+f\, x])^2}{d^2}}\right)\Bigg)$$

- **Problem 764: Result unnecessarily involves imaginary or complex numbers.**

$$\int \frac{1}{(a+b\, \text{Sin}[e+f\, x])^3\, (c+d\, \text{Sin}[e+f\, x])^{3/2}}\, dx$$

Optimal (type 4, 682 leaves, 11 steps):

$$-\frac{d\left(8a^4d^3+a^2b^2d\left(13c^2-29d^2\right)-b^4d\left(7c^2-15d^2\right)-6ab^3c\left(c^2-d^2\right)\right)\text{Cos}[e+fx]}{4\left(a^2-b^2\right)^2(bc-ad)^3\left(c^2-d^2\right)f\sqrt{c+d\,\text{Sin}[e+fx]}}+$$

$$\frac{b^2\,\text{Cos}[e+fx]}{2\left(a^2-b^2\right)(bc-ad)f(a+b\,\text{Sin}[e+fx])^2\sqrt{c+d\,\text{Sin}[e+fx]}}+\frac{b^2\left(6abc-11a^2d+5b^2d\right)\text{Cos}[e+fx]}{4\left(a^2-b^2\right)^2(bc-ad)^2f(a+b\,\text{Sin}[e+fx])\sqrt{c+d\,\text{Sin}[e+fx]}}-$$

$$\left(\left(8a^4d^3+a^2b^2d\left(13c^2-29d^2\right)-b^4d\left(7c^2-15d^2\right)-6ab^3c\left(c^2-d^2\right)\right)\text{EllipticE}\left[\frac{1}{2}\left(e-\frac{\pi}{2}+fx\right),\frac{2d}{c+d}\right]\sqrt{c+d\,\text{Sin}[e+fx]}\right)\Big/$$

$$\left(4\left(a^2-b^2\right)^2(bc-ad)^3\left(c^2-d^2\right)f\sqrt{\frac{c+d\,\text{Sin}[e+fx]}{c+d}}\right)-\frac{b\left(6abc-11a^2d+5b^2d\right)\text{EllipticF}\left[\frac{1}{2}\left(e-\frac{\pi}{2}+fx\right),\frac{2d}{c+d}\right]\sqrt{\frac{c+d\,\text{Sin}[e+fx]}{c+d}}}{4\left(a^2-b^2\right)^2(bc-ad)^2f\sqrt{c+d\,\text{Sin}[e+fx]}}-$$

$$\left(b\left(28a^3bcd-4ab^3cd-35a^4d^2-2a^2b^2\left(4c^2-19d^2\right)-b^4\left(4c^2+15d^2\right)\right)\text{EllipticPi}\left[\frac{2b}{a+b},\frac{1}{2}\left(e-\frac{\pi}{2}+fx\right),\frac{2d}{c+d}\right]\sqrt{\frac{c+d\,\text{Sin}[e+fx]}{c+d}}\right)\Big/$$

$$\left(4(a-b)^2(a+b)^3(bc-ad)^3f\sqrt{c+d\,\text{Sin}[e+fx]}\right)$$

Result (type 4, 1318 leaves):

$$\frac{1}{f}\sqrt{c+d\,\text{Sin}[e+fx]}\left(\frac{b^3\,\text{Cos}[e+fx]}{2\left(a^2-b^2\right)(-bc+ad)^2(a+b\,\text{Sin}[e+fx])^2}-\frac{6ab^4c\,\text{Cos}[e+fx]-13a^2b^3d\,\text{Cos}[e+fx]+7b^5d\,\text{Cos}[e+fx]}{4\left(a^2-b^2\right)^2(-bc+ad)^3(a+b\,\text{Sin}[e+fx])}-\right.$$

$$\left.\frac{2d^4\,\text{Cos}[e+fx]}{(bc-ad)^3\left(c^2-d^2\right)(c+d\,\text{Sin}[e+fx])}\right)+\frac{1}{16(a-b)^2(a+b)^2(c-d)(c+d)(-bc+ad)^3f}$$

$$\left(-\left(2\left(-16a^2b^3c^4-8b^5c^4+48a^3b^2c^3d-18ab^4c^3d-48a^4bc^2d^2+95a^2b^3c^2d^2-29b^5c^2d^2+16a^5cd^3-80a^3b^2cd^3+34ab^4cd^3+\right.\right.\right.$$

$$\left.\left.56a^4bd^4-95a^2b^3d^4+45b^5d^4\right)\text{EllipticPi}\left[\frac{2b}{a+b},\frac{1}{2}\left(-e+\frac{\pi}{2}-fx\right),\frac{2d}{c+d}\right]\sqrt{\frac{c+d\,\text{Sin}[e+fx]}{c+d}}\right)\Big/\left((a+b)\sqrt{c+d\,\text{Sin}[e+fx]}\right)-$$

$$\left(2\,i\left(-20a^2b^3c^3d-4b^5c^3d+48a^3b^2c^2d^2-24ab^4c^2d^2+16a^4bcd^3-12a^2b^3cd^3+20b^5cd^3+16a^5d^4-80a^3b^2d^4+40ab^4d^4\right)\right.$$

$$\text{Cos}[e+fx]\left((bc-ad)\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[\sqrt{-\frac{1}{c+d}}\sqrt{c+d\,\text{Sin}[e+fx]}\right],\frac{c+d}{c-d}\right]+ad\,\text{EllipticPi}\left[\frac{b(c+d)}{bc-ad},\right.\right.$$

$$\left.\left.\mathbb{i}\,\text{ArcSinh}\left[\sqrt{-\frac{1}{c+d}}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}\right],\frac{c+d}{c-d}\right]\right)\sqrt{\frac{d-d\,\text{Sin}[e+f\,x]}{c+d}}\,\sqrt{-\frac{d+d\,\text{Sin}[e+f\,x]}{c-d}}\,\left(-b\,c+a\,d+b\,(c+d\,\text{Sin}[e+f\,x])\right)\Bigg)\Big/$$

$$\left(b\,d^2\,\sqrt{-\frac{1}{c+d}}\,(b\,c-a\,d)\,(a+b\,\text{Sin}[e+f\,x])\,\sqrt{1-\text{Sin}[e+f\,x]^2}\,\sqrt{-\frac{c^2-d^2-2\,c\,(c+d\,\text{Sin}[e+f\,x])+(c+d\,\text{Sin}[e+f\,x])^2}{d^2}}\right)-$$

$$\Big(2\,\mathbb{i}\,\left(6\,a\,b^4\,c^3\,d-13\,a^2\,b^3\,c^2\,d^2+7\,b^5\,c^2\,d^2-6\,a\,b^4\,c\,d^3-8\,a^4\,b\,d^4+29\,a^2\,b^3\,d^4-15\,b^5\,d^4\right)\,\text{Cos}[e+f\,x]$$

$$\text{Cos}[2\,(e+f\,x)]\,\Big(2\,b\,(c-d)\,(b\,c-a\,d)\,\text{EllipticE}\left[\mathbb{i}\,\text{ArcSinh}\left[\sqrt{-\frac{1}{c+d}}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}\right],\frac{c+d}{c-d}\right]+$$

$$d\,\Big(-2\,(a+b)\,(-b\,c+a\,d)\,\text{EllipticF}\left[\mathbb{i}\,\text{ArcSinh}\left[\sqrt{-\frac{1}{c+d}}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}\right],\frac{c+d}{c-d}\right]+$$

$$\left.\left.\left(2\,a^2-b^2\right)\,d\,\text{EllipticPi}\left[\frac{b\,(c+d)}{b\,c-a\,d},\mathbb{i}\,\text{ArcSinh}\left[\sqrt{-\frac{1}{c+d}}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}\right],\frac{c+d}{c-d}\right]\right)\right)\sqrt{\frac{d-d\,\text{Sin}[e+f\,x]}{c+d}}$$

$$\sqrt{-\frac{d+d\,\text{Sin}[e+f\,x]}{c-d}}\,\left(-b\,c+a\,d+b\,(c+d\,\text{Sin}[e+f\,x])\right)\Bigg)\Big/\Bigg(b^2\,d\,\sqrt{-\frac{1}{c+d}}\,(b\,c-a\,d)\,(a+b\,\text{Sin}[e+f\,x])\,\sqrt{1-\text{Sin}[e+f\,x]^2}$$

$$\left(-2\,c^2+d^2+4\,c\,(c+d\,\text{Sin}[e+f\,x])-2\,(c+d\,\text{Sin}[e+f\,x])^2\right)\,\sqrt{-\frac{c^2-d^2-2\,c\,(c+d\,\text{Sin}[e+f\,x])+(c+d\,\text{Sin}[e+f\,x])^2}{d^2}}\Bigg)\Bigg)$$

- **Problem 765: Result more than twice size of optimal antiderivative.**

$$\int\sqrt{a+b\,\text{Sin}[e+f\,x]}\,(c+d\,\text{Sin}[e+f\,x])^{5/2}\,dx$$

Optimal (type 4, 888 leaves, 8 steps) :

$$\frac{1}{24\,b^2\,(b\,c-a\,d)\,f}\sqrt{a+b}\,(c-d)\,\sqrt{c+d}\,\left(14\,a\,b\,c\,d-3\,a^2\,d^2+b^2\,\left(33\,c^2+16\,d^2\right)\right)\,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}{\sqrt{c+d}\,\sqrt{a+b\,\text{Sin}[e+f\,x]}}\right],\,\frac{(a-b)\,(c+d)}{(a+b)\,(c-d)}\right]$$

$$\text{Sec}[e+f\,x]\,\sqrt{-\frac{(b\,c-a\,d)\,(1-\text{Sin}[e+f\,x])}{(c+d)\,(a+b\,\text{Sin}[e+f\,x])}}\,\sqrt{\frac{(b\,c-a\,d)\,(1+\text{Sin}[e+f\,x])}{(c-d)\,(a+b\,\text{Sin}[e+f\,x])}}\,(a+b\,\text{Sin}[e+f\,x])-\frac{1}{8\,b^3\,\sqrt{a+b}\,d\,f}$$

$$\sqrt{c+d}\,\left(5\,a^2\,b\,c\,d^2-a^3\,d^3-a\,b^2\,d\,\left(15\,c^2+4\,d^2\right)-5\,b^3\,\left(c^3+4\,c\,d^2\right)\right)\,\text{EllipticPi}\left[\frac{b\,(c+d)}{(a+b)\,d},\,\text{ArcSin}\left[\frac{\sqrt{a+b}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}{\sqrt{c+d}\,\sqrt{a+b\,\text{Sin}[e+f\,x]}}\right],\,\frac{(a-b)\,(c+d)}{(a+b)\,(c-d)}\right]$$

$$\text{Sec}[e+f\,x]\,\sqrt{-\frac{(b\,c-a\,d)\,(1-\text{Sin}[e+f\,x])}{(c+d)\,(a+b\,\text{Sin}[e+f\,x])}}\,\sqrt{\frac{(b\,c-a\,d)\,(1+\text{Sin}[e+f\,x])}{(c-d)\,(a+b\,\text{Sin}[e+f\,x])}}\,(a+b\,\text{Sin}[e+f\,x])-$$

$$\frac{\left(14\,a\,b\,c\,d-3\,a^2\,d^2+b^2\,\left(33\,c^2+16\,d^2\right)\right)\,\text{Cos}[e+f\,x]\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}{24\,b\,f\,\sqrt{a+b\,\text{Sin}[e+f\,x]}}-\frac{d\,(13\,b\,c-3\,a\,d)\,\text{Cos}[e+f\,x]\,\sqrt{a+b\,\text{Sin}[e+f\,x]}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}{12\,b\,f}-$$

$$\frac{d^2\,\text{Cos}[e+f\,x]\,(a+b\,\text{Sin}[e+f\,x])^{3/2}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}{3\,b\,f}+\frac{1}{24\,b^3\,\sqrt{c+d}\,f}$$

$$(a+b)^{3/2}\,\left(3\,a^2\,d^2-6\,a\,b\,d\,(2\,c+d)+b^2\,\left(33\,c^2+26\,c\,d+16\,d^2\right)\right)\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{c+d}\,\sqrt{a+b\,\text{Sin}[e+f\,x]}}{\sqrt{a+b}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}\right],\,\frac{(a+b)\,(c-d)}{(a-b)\,(c+d)}\right]$$

$$\text{Sec}[e+f\,x]\,\sqrt{\frac{(b\,c-a\,d)\,(1-\text{Sin}[e+f\,x])}{(a+b)\,(c+d\,\text{Sin}[e+f\,x])}}\,\sqrt{-\frac{(b\,c-a\,d)\,(1+\text{Sin}[e+f\,x])}{(a-b)\,(c+d\,\text{Sin}[e+f\,x])}}\,(c+d\,\text{Sin}[e+f\,x])$$

Result (type 4, 1948 leaves):

$$-\frac{1}{48\,b\,f}\left(-\left(4\,(-b\,c+a\,d)\,\left(-48\,a\,b\,c^3-59\,b^2\,c^2\,d-58\,a\,b\,c\,d^2+a^2\,d^3-16\,b^2\,d^3\right)\,\sqrt{\frac{(c+d)\,\text{Cot}\left[\frac{1}{2}\,\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{-c+d}}\right.\right.$$

$$\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\,\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}}{\sqrt{2}}\right],\,\frac{2\,(-b\,c+a\,d)}{(a+b)\,(-c+d)}\right]\,\text{Sec}[e+f\,x]\,\text{Sin}\left[\frac{1}{2}\,\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4$$

$$\left.\sqrt{\frac{(c+d)\,\text{Csc}\left[\frac{1}{2}\,\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(a+b\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}\,\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\,\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}\right)\Big/$$

$$\left((a+b)\,(c+d)\,\sqrt{a+b\,\text{Sin}[e+f\,x]}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}\right)-4\,(-b\,c+a\,d)\,\left(-48\,b^2\,c^3-92\,a\,b\,c^2\,d+4\,a^2\,c\,d^2-76\,b^2\,c\,d^2-28\,a\,b\,d^3\right)$$

$$\left(\left(\sqrt{\frac{(c+d)\,\text{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{-c+d}}\;\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}}{\sqrt{2}}\right],\;\frac{2\,(-b\,c+a\,d)}{(a+b)\,(-c+d)}\right]\right.\right.$$

$$\text{Sec}[e+f\,x]\;\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\,\sqrt{\frac{(c+d)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(a+b\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}$$

$$\left.\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}\right)\Big/\left((a+b)\,(c+d)\,\sqrt{a+b\,\text{Sin}[e+f\,x]}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}\right)-$$

$$\left(\sqrt{\frac{(c+d)\,\text{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{-c+d}}\;\text{EllipticPi}\left[\frac{-b\,c+a\,d}{(a+b)\,d},\,\text{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}}{\sqrt{2}}\right],\;\frac{2\,(-b\,c+a\,d)}{(a+b)\,(-c+d)}\right]\,\text{Sec}[e+f\,x]\right.$$

$$\left.\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\,\sqrt{\frac{(c+d)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(a+b\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}\;\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}\right)\Big/$$

$$\left.\left((a+b)\,d\,\sqrt{a+b\,\text{Sin}[e+f\,x]}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}\right)\right)+2\,\left(33\,b^2\,c^2\,d+14\,a\,b\,c\,d^2-3\,a^2\,d^3+16\,b^2\,d^3\right)\,\left(\frac{\text{Cos}[e+f\,x]\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}{d\,\sqrt{a+b\,\text{Sin}[e+f\,x]}}+\right.$$

$$\left(\sqrt{\frac{a-b}{a+b}}\,(a+b)\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{\frac{a-b}{a+b}}\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]}{\sqrt{\frac{a+b\,\text{Sin}[e+f\,x]}{a+b}}}\right],\;\frac{2\,(-b\,c+a\,d)}{(a-b)\,(c+d)}\right]\,\sqrt{c+d\,\text{Sin}[e+f\,x]}\right)\Big/$$

$$\left(b\,d\,\sqrt{\frac{(a+b)\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{a+b\,\text{Sin}[e+f\,x]}}\,\sqrt{a+b\,\text{Sin}[e+f\,x]}\,\sqrt{\frac{a+b\,\text{Sin}[e+f\,x]}{a+b}}\,\sqrt{\frac{(a+b)\,(c+d\,\text{Sin}[e+f\,x])}{(c+d)\,(a+b\,\text{Sin}[e+f\,x])}}\right)-$$

$$\frac{1}{b\,d}\,2\,(-b\,c+a\,d)\left(\left(\left((a+b)\,c+a\,d)\,\sqrt{\frac{(c+d)\,\text{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{-c+d}}\;\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}}{\sqrt{2}}\right],\right.\right.\right.\right.$$

$$\left.\frac{2\,(-b\,c+a\,d)}{(a+b)\,(-c+d)}\right]\,\text{Sec}[e+f\,x]\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\,\sqrt{\frac{(c+d)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(a+b\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}$$

$$\left.\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}\right)\Big/\left((a+b)\,(c+d)\,\sqrt{a+b\,\text{Sin}[e+f\,x]}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}\right)-$$

$$\left((b\,c+a\,d)\,\sqrt{\frac{(c+d)\,\text{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{-c+d}}\;\text{EllipticPi}\left[\frac{-b\,c+a\,d}{(a+b)\,d},\,\text{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}}{\sqrt{2}}\right],\right.\right.$$

$$\left.\frac{2\,(-b\,c+a\,d)}{(a+b)\,(-c+d)}\right]\,\text{Sec}[e+f\,x]\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\,\sqrt{\frac{(c+d)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(a+b\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}$$

$$\left.\left.\left.\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}\right)\Big/\left((a+b)\,d\,\sqrt{a+b\,\text{Sin}[e+f\,x]}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}\right)\right)\right)\right)+$$

$$\frac{\sqrt{a+b\,\text{Sin}[e+f\,x]}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}\,\left(-\frac{d\,(13\,b\,c+a\,d)\,\text{Cos}[e+f\,x]}{12\,b}-\frac{1}{6}\,d^2\,\text{Sin}[2\,(e+f\,x)]\right)}{f}$$

- **Problem 766: Result more than twice size of optimal antiderivative.**

$$\int\sqrt{a+b\,\text{Sin}[e+f\,x]}\,(c+d\,\text{Sin}[e+f\,x])^{3/2}\,dx$$

Optimal (type 4, 784 leaves, 8 steps):

$$\frac{1}{4 b (b c - a d) f}\sqrt{a+b}\,(c-d)\sqrt{c+d}\,(5 b c + a d)\,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b}\sqrt{c+d\,\text{Sin}[e+f x]}}{\sqrt{c+d}\sqrt{a+b\,\text{Sin}[e+f x]}}\right],\frac{(a-b)(c+d)}{(a+b)(c-d)}\right]$$

$$\text{Sec}[e+f x]\sqrt{-\frac{(b c-a d)(1-\text{Sin}[e+f x])}{(c+d)(a+b\,\text{Sin}[e+f x])}}\sqrt{\frac{(b c-a d)(1+\text{Sin}[e+f x])}{(c-d)(a+b\,\text{Sin}[e+f x])}}\,(a+b\,\text{Sin}[e+f x])+\frac{1}{4 b^2\sqrt{a+b}\,d f}$$

$$\sqrt{c+d}\left(6 a b c d-a^2 d^2+b^2\left(3 c^2+4 d^2\right)\right)\text{EllipticPi}\left[\frac{b(c+d)}{(a+b) d},\text{ArcSin}\left[\frac{\sqrt{a+b}\sqrt{c+d\,\text{Sin}[e+f x]}}{\sqrt{c+d}\sqrt{a+b\,\text{Sin}[e+f x]}}\right],\frac{(a-b)(c+d)}{(a+b)(c-d)}\right]$$

$$\text{Sec}[e+f x]\sqrt{-\frac{(b c-a d)(1-\text{Sin}[e+f x])}{(c+d)(a+b\,\text{Sin}[e+f x])}}\sqrt{\frac{(b c-a d)(1+\text{Sin}[e+f x])}{(c-d)(a+b\,\text{Sin}[e+f x])}}\,(a+b\,\text{Sin}[e+f x])+$$

$$\frac{(b c-a d)\,\text{Cos}[e+f x]\sqrt{c+d\,\text{Sin}[e+f x]}}{2 f\sqrt{a+b\,\text{Sin}[e+f x]}}-\frac{(5 b c+a d)\,\text{Cos}[e+f x]\sqrt{c+d\,\text{Sin}[e+f x]}}{4 f\sqrt{a+b\,\text{Sin}[e+f x]}}+\frac{1}{4 b^2\sqrt{c+d}\,f}$$

$$(a+b)^{3/2}(5 b c-a d+2 b d)\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{c+d}\sqrt{a+b\,\text{Sin}[e+f x]}}{\sqrt{a+b}\sqrt{c+d\,\text{Sin}[e+f x]}}\right],\frac{(a+b)(c-d)}{(a-b)(c+d)}\right]\text{Sec}[e+f x]$$

$$\sqrt{\frac{(b c-a d)(1-\text{Sin}[e+f x])}{(a+b)(c+d\,\text{Sin}[e+f x])}}\sqrt{-\frac{(b c-a d)(1+\text{Sin}[e+f x])}{(a-b)(c+d\,\text{Sin}[e+f x])}}\,(c+d\,\text{Sin}[e+f x])-\frac{b\,\text{Cos}[e+f x]\,(c+d\,\text{Sin}[e+f x])^{3/2}}{2 f\sqrt{a+b\,\text{Sin}[e+f x]}}$$

Result (type 4, 1849 leaves) :

$$-\frac{d\,\text{Cos}[e+f x]\sqrt{a+b\,\text{Sin}[e+f x]}\sqrt{c+d\,\text{Sin}[e+f x]}}{2 f}+$$

$$\frac{1}{8 f}\left(-\left(4(-b c+a d)\left(8 a c^2+7 b c d+3 a d^2\right)\sqrt{\frac{(c+d)\,\text{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{-c+d}}\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2(c+d\,\text{Sin}[e+f x])}{-b c+a d}}}{\sqrt{2}}\right],\right.\right.\right.$$

$$\left.\frac{2(-b c+a d)}{(a+b)(-c+d)}\right]\text{Sec}[e+f x]\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^4\sqrt{\frac{(c+d)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2(a+b\,\text{Sin}[e+f x])}{-b c+a d}}$$

$$\left.\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2(c+d\,\text{Sin}[e+f x])}{-b c+a d}}\right)\Big/\left((a+b)(c+d)\sqrt{a+b\,\text{Sin}[e+f x]}\sqrt{c+d\,\text{Sin}[e+f x]}\right)-$$

$$4\,(-b\,c+a\,d)\,\left(8\,b\,c^2+12\,a\,c\,d+4\,b\,d^2\right)\left(\left(\sqrt{\frac{(c+d)\,\mathrm{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{-c+d}}\;\mathrm{EllipticF}\left[\mathrm{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\mathrm{Sin}[e+f\,x])}{-b\,c+a\,d}}}{\sqrt{2}}\right],\right.\right.\right.$$

$$\left.\frac{2\,(-b\,c+a\,d)}{(a+b)\,(-c+d)}\right]\,\mathrm{Sec}[e+f\,x]\,\mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\sqrt{\frac{(c+d)\,\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(a+b\,\mathrm{Sin}[e+f\,x])}{-b\,c+a\,d}}$$

$$\left.\sqrt{-\frac{(a+b)\,\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\mathrm{Sin}[e+f\,x])}{-b\,c+a\,d}}\right)\Big/\left((a+b)\,(c+d)\,\sqrt{a+b\,\mathrm{Sin}[e+f\,x]}\,\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}\right)-$$

$$\left(\sqrt{\frac{(c+d)\,\mathrm{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{-c+d}}\;\mathrm{EllipticPi}\left[\frac{-b\,c+a\,d}{(a+b)\,d},\,\mathrm{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\mathrm{Sin}[e+f\,x])}{-b\,c+a\,d}}}{\sqrt{2}}\right],\,\frac{2\,(-b\,c+a\,d)}{(a+b)\,(-c+d)}\right]\,\mathrm{Sec}[e+f\,x]\right.$$

$$\left.\mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\sqrt{\frac{(c+d)\,\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(a+b\,\mathrm{Sin}[e+f\,x])}{-b\,c+a\,d}}\,\sqrt{-\frac{(a+b)\,\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\mathrm{Sin}[e+f\,x])}{-b\,c+a\,d}}\right)\Big/$$

$$\left.\left((a+b)\,d\,\sqrt{a+b\,\mathrm{Sin}[e+f\,x]}\,\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}\right)\right)+2\,\left(-5\,b\,c\,d-a\,d^2\right)\left(\frac{\mathrm{Cos}[e+f\,x]\,\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}}{d\,\sqrt{a+b\,\mathrm{Sin}[e+f\,x]}}+\right.$$

$$\left(\sqrt{\frac{a-b}{a+b}}\,(a+b)\,\mathrm{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\,\mathrm{EllipticE}\left[\mathrm{ArcSin}\left[\frac{\sqrt{\frac{a-b}{a+b}}\,\mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]}{\sqrt{\frac{a+b\,\mathrm{Sin}[e+f\,x]}{a+b}}}\right],\,\frac{2\,(-b\,c+a\,d)}{(a-b)\,(c+d)}\right]\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}\right)\Big/$$

$$\left(b\,d\,\sqrt{\frac{(a+b)\,\mathrm{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{a+b\,\mathrm{Sin}[e+f\,x]}}\,\sqrt{a+b\,\mathrm{Sin}[e+f\,x]}\,\sqrt{\frac{a+b\,\mathrm{Sin}[e+f\,x]}{a+b}}\,\sqrt{\frac{(a+b)\,(c+d\,\mathrm{Sin}[e+f\,x])}{(c+d)\,(a+b\,\mathrm{Sin}[e+f\,x])}}\right)-$$

$$\frac{1}{b\,d}2\,(-b\,c+a\,d)\left(\left(\left((a+b)\,c+a\,d\right)\sqrt{\frac{(c+d)\,\text{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{-c+d}}\;\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}}{\sqrt{2}}\right],\right.\right.\right.$$

$$\left.\frac{2\,(-b\,c+a\,d)}{(a+b)\,(-c+d)}\right]\,\text{Sec}[e+f\,x]\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\sqrt{\frac{(c+d)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2(a+b\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}$$

$$\left.\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}\right)\Big/\left((a+b)\,(c+d)\sqrt{a+b\,\text{Sin}[e+f\,x]}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}\right)-$$

$$\left((b\,c+a\,d)\sqrt{\frac{(c+d)\,\text{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{-c+d}}\;\text{EllipticPi}\left[\frac{-b\,c+a\,d}{(a+b)\,d},\,\text{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}}{\sqrt{2}}\right],\right.\right.$$

$$\left.\frac{2\,(-b\,c+a\,d)}{(a+b)\,(-c+d)}\right]\,\text{Sec}[e+f\,x]\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\sqrt{\frac{(c+d)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2(a+b\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}$$

$$\left.\left.\left.\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}\right)\Big/\left((a+b)\,d\sqrt{a+b\,\text{Sin}[e+f\,x]}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}\right)\right)\right)$$

- **Problem 767: Humongous result has more than 200000 leaves.**

$$\int\sqrt{a+b\,\text{Sin}[e+f\,x]}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}\,dx$$

Optimal (type 4, 628 leaves, 7 steps):

$$\frac{1}{(b c-a d) f}\sqrt{a+b}\,(c-d)\sqrt{c+d}\,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b}\,\sqrt{c+d\,\text{Sin}[e+f x]}}{\sqrt{c+d}\,\sqrt{a+b\,\text{Sin}[e+f x]}}\right],\frac{(a-b)(c+d)}{(a+b)(c-d)}\right]$$
$$\text{Sec}[e+f x]\sqrt{-\frac{(b c-a d)(1-\text{Sin}[e+f x])}{(c+d)(a+b\,\text{Sin}[e+f x])}}\sqrt{\frac{(b c-a d)(1+\text{Sin}[e+f x])}{(c-d)(a+b\,\text{Sin}[e+f x])}}(a+b\,\text{Sin}[e+f x])+$$
$$\frac{1}{b\sqrt{a+b}\,d f}\sqrt{c+d}\,(b c+a d)\,\text{EllipticPi}\left[\frac{b(c+d)}{(a+b) d},\text{ArcSin}\left[\frac{\sqrt{a+b}\,\sqrt{c+d\,\text{Sin}[e+f x]}}{\sqrt{c+d}\,\sqrt{a+b\,\text{Sin}[e+f x]}}\right],\frac{(a-b)(c+d)}{(a+b)(c-d)}\right]$$
$$\text{Sec}[e+f x]\sqrt{-\frac{(b c-a d)(1-\text{Sin}[e+f x])}{(c+d)(a+b\,\text{Sin}[e+f x])}}\sqrt{\frac{(b c-a d)(1+\text{Sin}[e+f x])}{(c-d)(a+b\,\text{Sin}[e+f x])}}(a+b\,\text{Sin}[e+f x])-$$
$$\frac{b\,\text{Cos}[e+f x]\sqrt{c+d\,\text{Sin}[e+f x]}}{f\sqrt{a+b\,\text{Sin}[e+f x]}}+\frac{1}{b\sqrt{c+d}\,f}(a+b)^{3/2}\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{c+d}\,\sqrt{a+b\,\text{Sin}[e+f x]}}{\sqrt{a+b}\,\sqrt{c+d\,\text{Sin}[e+f x]}}\right],\frac{(a+b)(c-d)}{(a-b)(c+d)}\right]$$
$$\text{Sec}[e+f x]\sqrt{\frac{(b c-a d)(1-\text{Sin}[e+f x])}{(a+b)(c+d\,\text{Sin}[e+f x])}}\sqrt{-\frac{(b c-a d)(1+\text{Sin}[e+f x])}{(a-b)(c+d\,\text{Sin}[e+f x])}}(c+d\,\text{Sin}[e+f x])$$

Result (type ?, 228 392 leaves) : Display of huge result suppressed!

- **Problem 768: Result more than twice size of optimal antiderivative.**

$$\int\frac{\sqrt{a+b\,\text{Sin}[e+f x]}}{\sqrt{c+d\,\text{Sin}[e+f x]}}\,dx$$

Optimal (type 4, 198 leaves, 1 step) :

$$\frac{1}{\sqrt{a+b}\,d f}2\sqrt{c+d}\,\text{EllipticPi}\left[\frac{b(c+d)}{(a+b) d},\text{ArcSin}\left[\frac{\sqrt{a+b}\,\sqrt{c+d\,\text{Sin}[e+f x]}}{\sqrt{c+d}\,\sqrt{a+b\,\text{Sin}[e+f x]}}\right],\frac{(a-b)(c+d)}{(a+b)(c-d)}\right]$$
$$\text{Sec}[e+f x]\sqrt{-\frac{(b c-a d)(1-\text{Sin}[e+f x])}{(c+d)(a+b\,\text{Sin}[e+f x])}}\sqrt{\frac{(b c-a d)(1+\text{Sin}[e+f x])}{(c-d)(a+b\,\text{Sin}[e+f x])}}(a+b\,\text{Sin}[e+f x])$$

Result (type 4, 578 leaves) :

$$-\frac{1}{f}4\,(-b\,c+a\,d)\left(\left(\sqrt{\frac{(c+d)\,\mathrm{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{-c+d}}\;\mathrm{EllipticF}\left[\mathrm{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2(c+d\,\mathrm{Sin}[e+f\,x])}{-b\,c+a\,d}}}{\sqrt{2}}\right],\frac{2\,(-b\,c+a\,d)}{(a+b)\,(-c+d)}\right]\right.\right.$$

$$\mathrm{Sec}[e+f\,x]\,\mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\sqrt{\frac{(c+d)\,\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2(a+b\,\mathrm{Sin}[e+f\,x])}{-b\,c+a\,d}}$$

$$\left.\sqrt{-\frac{(a+b)\,\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2(c+d\,\mathrm{Sin}[e+f\,x])}{-b\,c+a\,d}}\right)\Big/\left((c+d)\sqrt{a+b\,\mathrm{Sin}[e+f\,x]}\;\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}\right)-$$

$$\left(b\sqrt{\frac{(c+d)\,\mathrm{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{-c+d}}\;\mathrm{EllipticPi}\left[\frac{-b\,c+a\,d}{(a+b)\,d},\mathrm{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2(c+d\,\mathrm{Sin}[e+f\,x])}{-b\,c+a\,d}}}{\sqrt{2}}\right],\frac{2\,(-b\,c+a\,d)}{(a+b)\,(-c+d)}\right]\right.$$

$$\mathrm{Sec}[e+f\,x]\,\mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\sqrt{\frac{(c+d)\,\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2(a+b\,\mathrm{Sin}[e+f\,x])}{-b\,c+a\,d}}$$

$$\left.\left.\sqrt{-\frac{(a+b)\,\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2(c+d\,\mathrm{Sin}[e+f\,x])}{-b\,c+a\,d}}\right)\Big/\left((a+b)\,d\sqrt{a+b\,\mathrm{Sin}[e+f\,x]}\;\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}\right)\right)$$

- **Problem 769: Result more than twice size of optimal antiderivative.**

$$\int\frac{\sqrt{a+b\,\mathrm{Sin}[e+f\,x]}}{(c+d\,\mathrm{Sin}[e+f\,x])^{3/2}}\,dx$$

Optimal (type 4, 409 leaves, 3 steps) :

$$-\left(2\,(a-b)\,\sqrt{a+b}\,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{c+d}\,\sqrt{a+b\,\text{Sin}[e+f\,x]}}{\sqrt{a+b}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}\right],\frac{(a+b)\,(c-d)}{(a-b)\,(c+d)}\right]\text{Sec}[e+f\,x]\right.$$

$$\left.\sqrt{\frac{(b\,c-a\,d)\,(1-\text{Sin}[e+f\,x])}{(a+b)\,(c+d\,\text{Sin}[e+f\,x])}}\,\sqrt{-\frac{(b\,c-a\,d)\,(1+\text{Sin}[e+f\,x])}{(a-b)\,(c+d\,\text{Sin}[e+f\,x])}}\,(c+d\,\text{Sin}[e+f\,x])\right)\Big/\left((c-d)\,\sqrt{c+d}\,(b\,c-a\,d)\,f\right)+$$

$$\left(2\,(a-b)\,\sqrt{a+b}\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{c+d}\,\sqrt{a+b\,\text{Sin}[e+f\,x]}}{\sqrt{a+b}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}\right],\frac{(a+b)\,(c-d)}{(a-b)\,(c+d)}\right]\text{Sec}[e+f\,x]\,\sqrt{\frac{(b\,c-a\,d)\,(1-\text{Sin}[e+f\,x])}{(a+b)\,(c+d\,\text{Sin}[e+f\,x])}}\right.$$

$$\left.\sqrt{-\frac{(b\,c-a\,d)\,(1+\text{Sin}[e+f\,x])}{(a-b)\,(c+d\,\text{Sin}[e+f\,x])}}\,(c+d\,\text{Sin}[e+f\,x])\right)\Big/\left((c-d)\,\sqrt{c+d}\,(b\,c-a\,d)\,f\right)$$

Result (type 4, 1830 leaves) :

$$-\frac{2\,d\,\text{Cos}[e+f\,x]\,\sqrt{a+b\,\text{Sin}[e+f\,x]}}{\left(-c^2+d^2\right)\,f\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}+\frac{1}{(c-d)\,(c+d)\,f}$$

$$\left(-\left(4\,a\,c\,(-b\,c+a\,d)\,\sqrt{\frac{(c+d)\,\text{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{-c+d}}\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}}{\sqrt{2}}\right],\frac{2\,(-b\,c+a\,d)}{(a+b)\,(-c+d)}\right]\text{Sec}[e+f\,x]\right.\right.$$

$$\left.\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\sqrt{\frac{(c+d)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(a+b\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}\,\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}\right)\Big/$$

$$\left((a+b)\,(c+d)\,\sqrt{a+b\,\text{Sin}[e+f\,x]}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}\right)-4\,(-b\,c+a\,d)\,(b\,c+a\,d)$$

$$\left(\left(\sqrt{\frac{(c+d)\,\text{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{-c+d}}\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}}{\sqrt{2}}\right],\frac{2\,(-b\,c+a\,d)}{(a+b)\,(-c+d)}\right]\right.\right.$$

$$\text{Sec}[e+f\,x]\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\sqrt{\frac{(c+d)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(a+b\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}$$

$$\left.\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}\right)\Big/\left((a+b)\,(c+d)\,\sqrt{a+b\,\text{Sin}[e+f\,x]}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}\right)-$$

$$\left(\sqrt{\frac{(c+d)\,\text{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{-c+d}}\;\text{EllipticPi}\left[\frac{-b\,c+a\,d}{(a+b)\,d},\,\text{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}}{\sqrt{2}}\right],\,\frac{2\,(-b\,c+a\,d)}{(a+b)\,(-c+d)}\right]\,\text{Sec}[e+f\,x]\right.$$

$$\left.\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\sqrt{\frac{(c+d)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(a+b\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}\;\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}\right)\Big/$$

$$\left.\left((a+b)\,d\,\sqrt{a+b\,\text{Sin}[e+f\,x]}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}\right)\right)-2\,b\,d\left(\frac{\text{Cos}[e+f\,x]\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}{d\,\sqrt{a+b\,\text{Sin}[e+f\,x]}}+\right.$$

$$\left(\sqrt{\frac{a-b}{a+b}}\,(a+b)\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{\frac{a-b}{a+b}}\;\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]}{\sqrt{\frac{a+b\,\text{Sin}[e+f\,x]}{a+b}}}\right],\,\frac{2\,(-b\,c+a\,d)}{(a-b)\,(c+d)}\right]\,\sqrt{c+d\,\text{Sin}[e+f\,x]}\right)\Big/$$

$$\left(b\,d\sqrt{\frac{(a+b)\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{a+b\,\text{Sin}[e+f\,x]}}\,\sqrt{a+b\,\text{Sin}[e+f\,x]}\,\sqrt{\frac{a+b\,\text{Sin}[e+f\,x]}{a+b}}\,\sqrt{\frac{(a+b)\,(c+d\,\text{Sin}[e+f\,x])}{(c+d)\,(a+b\,\text{Sin}[e+f\,x])}}\right)-$$

$$\frac{1}{b\,d}\,2\,(-b\,c+a\,d)\left(\left(\left((a+b)\,c+a\,d\right)\sqrt{\frac{(c+d)\,\text{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{-c+d}}\;\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}}{\sqrt{2}}\right],\right.\right.\right.$$

$$\left.\frac{2\,(-b\,c+a\,d)}{(a+b)\,(-c+d)}\right]\,\text{Sec}[e+f\,x]\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\sqrt{\frac{(c+d)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(a+b\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}$$

$$\sqrt{-\frac{(a+b)\,\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 (c+d\,\mathrm{Sin}[e+f x])}{-b c+a d}}\Bigg/\left((a+b)\,(c+d)\,\sqrt{a+b\,\mathrm{Sin}[e+f x]}\,\sqrt{c+d\,\mathrm{Sin}[e+f x]}\right)-$$

$$\left((b c+a d)\,\sqrt{\frac{(c+d)\,\mathrm{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{-c+d}}\ \mathrm{EllipticPi}\left[\frac{-b c+a d}{(a+b)\,d},\,\mathrm{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 (c+d\,\mathrm{Sin}[e+f x])}{-b c+a d}}}{\sqrt{2}}\right],\right.\right.$$

$$\left.\frac{2\,(-b c+a d)}{(a+b)\,(-c+d)}\right]\,\mathrm{Sec}[e+f x]\,\mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^4\sqrt{\frac{(c+d)\,\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 (a+b\,\mathrm{Sin}[e+f x])}{-b c+a d}}$$

$$\left.\left.\left.\sqrt{-\frac{(a+b)\,\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 (c+d\,\mathrm{Sin}[e+f x])}{-b c+a d}}\right)\Bigg/\left((a+b)\,d\,\sqrt{a+b\,\mathrm{Sin}[e+f x]}\,\sqrt{c+d\,\mathrm{Sin}[e+f x]}\right)\right)\right)\right)$$

- **Problem 770: Result more than twice size of optimal antiderivative.**

$$\int \frac{\sqrt{a+b\,\mathrm{Sin}[e+f x]}}{(c+d\,\mathrm{Sin}[e+f x])^{5/2}}\,dx$$

Optimal (type 4, 489 leaves, 4 steps):

$$\frac{2\,d\,\text{Cos}[e+f\,x]\,\sqrt{a+b\,\text{Sin}[e+f\,x]}}{3\,(c^2-d^2)\,f\,(c+d\,\text{Sin}[e+f\,x])^{3/2}}+$$

$$\left(2\,(a-b)\,\sqrt{a+b}\,\left(4\,a\,c\,d-b\,(3\,c^2+d^2)\right)\,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{c+d}\,\sqrt{a+b\,\text{Sin}[e+f\,x]}}{\sqrt{a+b}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}\right],\,\frac{(a+b)\,(c-d)}{(a-b)\,(c+d)}\right]\,\text{Sec}[e+f\,x]\right.$$
$$\left.\sqrt{\frac{(b\,c-a\,d)\,(1-\text{Sin}[e+f\,x])}{(a+b)\,(c+d\,\text{Sin}[e+f\,x])}}\,\sqrt{-\frac{(b\,c-a\,d)\,(1+\text{Sin}[e+f\,x])}{(a-b)\,(c+d\,\text{Sin}[e+f\,x])}}\,(c+d\,\text{Sin}[e+f\,x])\right)\Big/\left(3\,(c-d)^2\,(c+d)^{3/2}\,(b\,c-a\,d)^2\,f\right)+$$

$$\left(2\,(a-b)\,\sqrt{a+b}\,(3\,c+d)\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{c+d}\,\sqrt{a+b\,\text{Sin}[e+f\,x]}}{\sqrt{a+b}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}\right],\,\frac{(a+b)\,(c-d)}{(a-b)\,(c+d)}\right]\,\text{Sec}[e+f\,x]\right.$$
$$\left.\sqrt{\frac{(b\,c-a\,d)\,(1-\text{Sin}[e+f\,x])}{(a+b)\,(c+d\,\text{Sin}[e+f\,x])}}\,\sqrt{-\frac{(b\,c-a\,d)\,(1+\text{Sin}[e+f\,x])}{(a-b)\,(c+d\,\text{Sin}[e+f\,x])}}\,(c+d\,\text{Sin}[e+f\,x])\right)\Big/\left(3\,(c-d)^2\,(c+d)^{3/2}\,(b\,c-a\,d)\,f\right)$$

Result (type 4, 2037 leaves) :

$$\frac{1}{f}\sqrt{a+b\,\text{Sin}[e+f\,x]}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}\,\left(\frac{2\,d\,\text{Cos}[e+f\,x]}{3\,(c^2-d^2)\,(c+d\,\text{Sin}[e+f\,x])^2}+\frac{2\,\left(3\,b\,c^2\,d\,\text{Cos}[e+f\,x]-4\,a\,c\,d^2\,\text{Cos}[e+f\,x]+b\,d^3\,\text{Cos}[e+f\,x]\right)}{3\,(b\,c-a\,d)\,(c^2-d^2)^2\,(c+d\,\text{Sin}[e+f\,x])}\right)+$$

$$\frac{1}{3\,(c-d)^2\,(c+d)^2\,(-b\,c+a\,d)\,f}\left(-\left(4\,(-b\,c+a\,d)\,\left(-3\,a\,b\,c^3+3\,a^2\,c^2\,d+b^2\,c^2\,d-a\,b\,c\,d^2+a^2\,d^3-b^2\,d^3\right)\,\sqrt{\frac{(c+d)\,\text{Cot}\left[\frac{1}{2}\,\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{-c+d}}\right.\right.$$
$$\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\,\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}}{\sqrt{2}}\right],\,\frac{2\,(-b\,c+a\,d)}{(a+b)\,(-c+d)}\right]\,\text{Sec}[e+f\,x]\,\text{Sin}\left[\frac{1}{2}\,\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4$$
$$\left.\sqrt{\frac{(c+d)\,\text{Csc}\left[\frac{1}{2}\,\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(a+b\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}\,\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\,\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}\right)\Big/$$
$$\left((a+b)\,(c+d)\,\sqrt{a+b\,\text{Sin}[e+f\,x]}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}\right)-4\,(-b\,c+a\,d)\,\left(-3\,b^2\,c^3+a\,b\,c^2\,d+4\,a^2\,c\,d^2-b^2\,c\,d^2-a\,b\,d^3\right)$$

$$\left(\left(\sqrt{\frac{(c+d)\,\text{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{-c+d}}\;\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}}{\sqrt{2}}\right],\,\frac{2\,(-b\,c+a\,d)}{(a+b)\,(-c+d)}\right]\right.\right.$$

$$\text{Sec}[e+f\,x]\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\sqrt{\frac{(c+d)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(a+b\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}$$

$$\left.\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}\right)\Big/\left((a+b)\,(c+d)\,\sqrt{a+b\,\text{Sin}[e+f\,x]}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}\right)-$$

$$\left(\sqrt{\frac{(c+d)\,\text{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{-c+d}}\;\text{EllipticPi}\left[\frac{-b\,c+a\,d}{(a+b)\,d},\,\text{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}}{\sqrt{2}}\right],\,\frac{2\,(-b\,c+a\,d)}{(a+b)\,(-c+d)}\right]\text{Sec}[e+f\,x]\right.$$

$$\left.\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\sqrt{\frac{(c+d)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(a+b\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}\;\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}\right)\Big/$$

$$\left.\left((a+b)\,d\,\sqrt{a+b\,\text{Sin}[e+f\,x]}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}\right)\right)+2\left(3\,b^2\,c^2\,d-4\,a\,b\,c\,d^2+b^2\,d^3\right)\left(\frac{\text{Cos}[e+f\,x]\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}{d\,\sqrt{a+b\,\text{Sin}[e+f\,x]}}+\right.$$

$$\left(\sqrt{\frac{a-b}{a+b}}\,(a+b)\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{\frac{a-b}{a+b}}\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]}{\sqrt{\frac{a+b\,\text{Sin}[e+f\,x]}{a+b}}}\right],\,\frac{2\,(-b\,c+a\,d)}{(a-b)\,(c+d)}\right]\sqrt{c+d\,\text{Sin}[e+f\,x]}\right)\Big/$$

$$\left(b\,d\,\sqrt{\frac{(a+b)\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{a+b\,\text{Sin}[e+f\,x]}}\,\sqrt{a+b\,\text{Sin}[e+f\,x]}\,\sqrt{\frac{a+b\,\text{Sin}[e+f\,x]}{a+b}}\,\sqrt{\frac{(a+b)\,(c+d\,\text{Sin}[e+f\,x])}{(c+d)\,(a+b\,\text{Sin}[e+f\,x])}}\right)-$$

$$\frac{1}{b\,d}2\,(-b\,c+a\,d)\left(\left(((a+b)\,c+a\,d)\sqrt{\frac{(c+d)\,\text{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{-c+d}}\;\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}}{\sqrt{2}}\right],\right.\right.\right.$$

$$\left.\frac{2\,(-b\,c+a\,d)}{(a+b)\,(-c+d)}\right]\text{Sec}[e+f\,x]\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\sqrt{\frac{(c+d)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2(a+b\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}$$

$$\left.\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}\right)\Big/\left((a+b)\,(c+d)\,\sqrt{a+b\,\text{Sin}[e+f\,x]}\;\sqrt{c+d\,\text{Sin}[e+f\,x]}\right)-$$

$$\left((b\,c+a\,d)\sqrt{\frac{(c+d)\,\text{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{-c+d}}\;\text{EllipticPi}\left[\frac{-b\,c+a\,d}{(a+b)\,d},\,\text{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}}{\sqrt{2}}\right],\right.\right.$$

$$\left.\frac{2\,(-b\,c+a\,d)}{(a+b)\,(-c+d)}\right]\text{Sec}[e+f\,x]\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\sqrt{\frac{(c+d)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2(a+b\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}$$

$$\left.\left.\left.\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}\right)\Big/\left((a+b)\,d\,\sqrt{a+b\,\text{Sin}[e+f\,x]}\;\sqrt{c+d\,\text{Sin}[e+f\,x]}\right)\right)\right)$$

- **Problem 772: Result more than twice size of optimal antiderivative.**

$$\int (a+b\,\text{Sin}[e+f\,x])^{3/2}\,(c+d\,\text{Sin}[e+f\,x])^{3/2}\,dx$$

Optimal (type 4, 870 leaves, 8 steps):

$$\frac{1}{24\,b\,d\,(b\,c-a\,d)\,f}\sqrt{a+b}\,(c-d)\,\sqrt{c+d}\,\left(38\,a\,b\,c\,d+3\,a^2\,d^2+b^2\,\left(3\,c^2+16\,d^2\right)\right)\,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}{\sqrt{c+d}\,\sqrt{a+b\,\text{Sin}[e+f\,x]}}\right],\,\frac{(a-b)\,(c+d)}{(a+b)\,(c-d)}\right]$$

$$\text{Sec}[e+f\,x]\,\sqrt{-\frac{(b\,c-a\,d)\,(1-\text{Sin}[e+f\,x])}{(c+d)\,(a+b\,\text{Sin}[e+f\,x])}}\,\sqrt{\frac{(b\,c-a\,d)\,(1+\text{Sin}[e+f\,x])}{(c-d)\,(a+b\,\text{Sin}[e+f\,x])}}\,(a+b\,\text{Sin}[e+f\,x])+\frac{1}{8\,b^2\,\sqrt{a+b}\,d^2\,f}$$

$$\sqrt{c+d}\,(b\,c+a\,d)\,\left(10\,a\,b\,c\,d-a^2\,d^2-b^2\,\left(c^2-12\,d^2\right)\right)\,\text{EllipticPi}\left[\frac{b\,(c+d)}{(a+b)\,d},\,\text{ArcSin}\left[\frac{\sqrt{a+b}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}{\sqrt{c+d}\,\sqrt{a+b\,\text{Sin}[e+f\,x]}}\right],\,\frac{(a-b)\,(c+d)}{(a+b)\,(c-d)}\right]$$

$$\text{Sec}[e+f\,x]\,\sqrt{-\frac{(b\,c-a\,d)\,(1-\text{Sin}[e+f\,x])}{(c+d)\,(a+b\,\text{Sin}[e+f\,x])}}\,\sqrt{\frac{(b\,c-a\,d)\,(1+\text{Sin}[e+f\,x])}{(c-d)\,(a+b\,\text{Sin}[e+f\,x])}}\,(a+b\,\text{Sin}[e+f\,x])-$$

$$\frac{\left(38\,a\,b\,c\,d+3\,a^2\,d^2+b^2\,\left(3\,c^2+16\,d^2\right)\right)\,\text{Cos}[e+f\,x]\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}{24\,d\,f\,\sqrt{a+b\,\text{Sin}[e+f\,x]}}-$$

$$\frac{(3\,b\,c+7\,a\,d)\,\text{Cos}[e+f\,x]\,\sqrt{a+b\,\text{Sin}[e+f\,x]}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}{12\,f}-\frac{1}{24\,b^2\,d\,\sqrt{c+d}\,f}$$

$$(a+b)^{3/2}\,\left(3\,a^2\,d^2-6\,a\,b\,d\,(4\,c+d)-b^2\,\left(3\,c^2+14\,c\,d+16\,d^2\right)\right)\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{c+d}\,\sqrt{a+b\,\text{Sin}[e+f\,x]}}{\sqrt{a+b}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}\right],\,\frac{(a+b)\,(c-d)}{(a-b)\,(c+d)}\right]\,\text{Sec}[e+f\,x]$$

$$\sqrt{\frac{(b\,c-a\,d)\,(1-\text{Sin}[e+f\,x])}{(a+b)\,(c+d\,\text{Sin}[e+f\,x])}}\,\sqrt{-\frac{(b\,c-a\,d)\,(1+\text{Sin}[e+f\,x])}{(a-b)\,(c+d\,\text{Sin}[e+f\,x])}}\,(c+d\,\text{Sin}[e+f\,x])-\frac{b\,\text{Cos}[e+f\,x]\,\sqrt{a+b\,\text{Sin}[e+f\,x]}\,(c+d\,\text{Sin}[e+f\,x])^{3/2}}{3\,f}$$

Result (type 4, 1922 leaves):

$$\frac{1}{48\,f}\Bigg(\Bigg(-\Bigg(4\,(-b\,c+a\,d)\,\left(48\,a^2\,c^2+17\,b^2\,c^2+82\,a\,b\,c\,d+17\,a^2\,d^2+16\,b^2\,d^2\right)\,\sqrt{\frac{(c+d)\,\text{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{-c+d}}$$

$$\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}}{\sqrt{2}}\right],\,\frac{2\,(-b\,c+a\,d)}{(a+b)\,(-c+d)}\right]\,\text{Sec}[e+f\,x]\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4$$

$$\sqrt{\frac{(c+d)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(a+b\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}\,\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}\Bigg)\Bigg/$$

$$\left((a+b)\,(c+d)\,\sqrt{a+b\,\text{Sin}[e+f\,x]}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}\right)-4\,(-b\,c+a\,d)\,\left(68\,a\,b\,c^2+68\,a^2\,c\,d+52\,b^2\,c\,d+52\,a\,b\,d^2\right)$$

$$\left(\left(\sqrt{\frac{(c+d)\,\text{Cot}\left[\frac{1}{2}\,\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{-c+d}}\;\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\,\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}}{\sqrt{2}}\right],\,\frac{2\,(-b\,c+a\,d)}{(a+b)\,(-c+d)}\right]\right.\right.$$

$$\text{Sec}[e+f\,x]\;\text{Sin}\left[\frac{1}{2}\,\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\,\sqrt{\frac{(c+d)\,\text{Csc}\left[\frac{1}{2}\,\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(a+b\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}$$

$$\left.\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\,\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}\right)\Big/\left((a+b)\,(c+d)\,\sqrt{a+b\,\text{Sin}[e+f\,x]}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}\right)-$$

$$\left(\sqrt{\frac{(c+d)\,\text{Cot}\left[\frac{1}{2}\,\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{-c+d}}\;\text{EllipticPi}\left[\frac{-b\,c+a\,d}{(a+b)\,d},\,\text{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\,\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}}{\sqrt{2}}\right],\,\frac{2\,(-b\,c+a\,d)}{(a+b)\,(-c+d)}\right]\,\text{Sec}[e+f\,x]\right.$$

$$\left.\text{Sin}\left[\frac{1}{2}\,\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\,\sqrt{\frac{(c+d)\,\text{Csc}\left[\frac{1}{2}\,\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(a+b\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}\,\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\,\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}\right)\Big/$$

$$\left.\left((a+b)\,d\,\sqrt{a+b\,\text{Sin}[e+f\,x]}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}\right)\right)+2\,\left(-3\,b^2\,c^2-38\,a\,b\,c\,d-3\,a^2\,d^2-16\,b^2\,d^2\right)\,\left(\frac{\text{Cos}[e+f\,x]\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}{d\,\sqrt{a+b\,\text{Sin}[e+f\,x]}}+\right.$$

$$\left(\sqrt{\frac{a-b}{a+b}}\,(a+b)\,\text{Cos}\left[\frac{1}{2}\,\left(-e+\frac{\pi}{2}-f\,x\right)\right]\,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{\frac{a-b}{a+b}}\,\text{Sin}\left[\frac{1}{2}\,\left(-e+\frac{\pi}{2}-f\,x\right)\right]}{\sqrt{\frac{a+b\,\text{Sin}[e+f\,x]}{a+b}}}\right],\,\frac{2\,(-b\,c+a\,d)}{(a-b)\,(c+d)}\right]\,\sqrt{c+d\,\text{Sin}[e+f\,x]}\right)\Big/$$

$$\left(b\,d\sqrt{\frac{(a+b)\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{a+b\,\text{Sin}[e+f\,x]}}\;\sqrt{a+b\,\text{Sin}[e+f\,x]}\;\sqrt{\frac{a+b\,\text{Sin}[e+f\,x]}{a+b}}\;\sqrt{\frac{(a+b)\,(c+d\,\text{Sin}[e+f\,x])}{(c+d)\,(a+b\,\text{Sin}[e+f\,x])}}\right)-$$

$$\frac{1}{b\,d}2\,(-b\,c+a\,d)\left(\left(\left((a+b)\,c+a\,d\right)\sqrt{\frac{(c+d)\,\text{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{-c+d}}\;\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}}{\sqrt{2}}\right],\right.\right.\right.$$

$$\left.\frac{2\,(-b\,c+a\,d)}{(a+b)\,(-c+d)}\right]\text{Sec}[e+f\,x]\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\sqrt{\frac{(c+d)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(a+b\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}$$

$$\left.\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}\right)\Big/\left((a+b)\,(c+d)\,\sqrt{a+b\,\text{Sin}[e+f\,x]}\;\sqrt{c+d\,\text{Sin}[e+f\,x]}\right)-$$

$$\left((b\,c+a\,d)\sqrt{\frac{(c+d)\,\text{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{-c+d}}\;\text{EllipticPi}\left[\frac{-b\,c+a\,d}{(a+b)\,d},\,\text{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}}{\sqrt{2}}\right],\right.\right.$$

$$\left.\frac{2\,(-b\,c+a\,d)}{(a+b)\,(-c+d)}\right]\text{Sec}[e+f\,x]\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\sqrt{\frac{(c+d)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(a+b\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}$$

$$\left.\left.\left.\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}\right)\Big/\left((a+b)\,d\,\sqrt{a+b\,\text{Sin}[e+f\,x]}\;\sqrt{c+d\,\text{Sin}[e+f\,x]}\right)\right)\right)+$$

$$\frac{\sqrt{a+b\,\text{Sin}[e+f\,x]}\;\sqrt{c+d\,\text{Sin}[e+f\,x]}\;\left(-\frac{7}{12}\,(b\,c+a\,d)\,\text{Cos}[e+f\,x]-\frac{1}{6}\,b\,d\,\text{Sin}[2\,(e+f\,x)]\right)}{f}$$

- **Problem 773: Result more than twice size of optimal antiderivative.**

$$\int(a+b\,\text{Sin}[e+f\,x])^{3/2}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}\,dx$$

Optimal (type 4, 740 leaves, 7 steps) :

$$\frac{1}{4\,d\,(b\,c-a\,d)\,f}\sqrt{a+b}\,(c-d)\,\sqrt{c+d}\,(b\,c+5\,a\,d)\,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}{\sqrt{c+d}\,\sqrt{a+b\,\text{Sin}[e+f\,x]}}\right],\frac{(a-b)\,(c+d)}{(a+b)\,(c-d)}\right]$$

$$\text{Sec}[e+f\,x]\,\sqrt{-\frac{(b\,c-a\,d)\,(1-\text{Sin}[e+f\,x])}{(c+d)\,(a+b\,\text{Sin}[e+f\,x])}}\,\sqrt{\frac{(b\,c-a\,d)\,(1+\text{Sin}[e+f\,x])}{(c-d)\,(a+b\,\text{Sin}[e+f\,x])}}\,(a+b\,\text{Sin}[e+f\,x])+\frac{1}{4\,b\,\sqrt{a+b}\,d^2\,f}$$

$$\sqrt{c+d}\,\left(6\,a\,b\,c\,d+3\,a^2\,d^2-b^2\,\left(c^2-4\,d^2\right)\right)\,\text{EllipticPi}\left[\frac{b\,(c+d)}{(a+b)\,d},\text{ArcSin}\left[\frac{\sqrt{a+b}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}{\sqrt{c+d}\,\sqrt{a+b\,\text{Sin}[e+f\,x]}}\right],\frac{(a-b)\,(c+d)}{(a+b)\,(c-d)}\right]$$

$$\text{Sec}[e+f\,x]\,\sqrt{-\frac{(b\,c-a\,d)\,(1-\text{Sin}[e+f\,x])}{(c+d)\,(a+b\,\text{Sin}[e+f\,x])}}\,\sqrt{\frac{(b\,c-a\,d)\,(1+\text{Sin}[e+f\,x])}{(c-d)\,(a+b\,\text{Sin}[e+f\,x])}}\,(a+b\,\text{Sin}[e+f\,x])-$$

$$\frac{b\,(b\,c+5\,a\,d)\,\text{Cos}[e+f\,x]\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}{4\,d\,f\,\sqrt{a+b\,\text{Sin}[e+f\,x]}}-\frac{b\,\text{Cos}[e+f\,x]\,\sqrt{a+b\,\text{Sin}[e+f\,x]}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}{2\,f}+\frac{1}{4\,b\,d\,\sqrt{c+d}\,f}$$

$$(a+b)^{3/2}\,(3\,a\,d+b\,(c+2\,d))\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{c+d}\,\sqrt{a+b\,\text{Sin}[e+f\,x]}}{\sqrt{a+b}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}\right],\frac{(a+b)\,(c-d)}{(a-b)\,(c+d)}\right]$$

$$\text{Sec}[e+f\,x]\,\sqrt{\frac{(b\,c-a\,d)\,(1-\text{Sin}[e+f\,x])}{(a+b)\,(c+d\,\text{Sin}[e+f\,x])}}\,\sqrt{-\frac{(b\,c-a\,d)\,(1+\text{Sin}[e+f\,x])}{(a-b)\,(c+d\,\text{Sin}[e+f\,x])}}\,(c+d\,\text{Sin}[e+f\,x])$$

Result (type 4, 1849 leaves):

$$-\frac{b\,\text{Cos}[e+f\,x]\,\sqrt{a+b\,\text{Sin}[e+f\,x]}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}{2\,f}+$$

$$\frac{1}{8\,f}\left(-\left(\left(4\,(-b\,c+a\,d)\,\left(8\,a^2\,c+3\,b^2\,c+7\,a\,b\,d\right)\,\sqrt{\frac{(c+d)\,\text{Cot}\left[\frac{1}{2}\,\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{-c+d}}\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\,\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}}{\sqrt{2}}\right],\right.\right.\right.\right.$$

$$\left.\frac{2\,(-b\,c+a\,d)}{(a+b)\,(-c+d)}\right]\,\text{Sec}[e+f\,x]\,\text{Sin}\left[\frac{1}{2}\,\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\,\sqrt{\frac{(c+d)\,\text{Csc}\left[\frac{1}{2}\,\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(a+b\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}$$

$$\left.\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\,\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}\right)\Big/\left((a+b)\,(c+d)\,\sqrt{a+b\,\text{Sin}[e+f\,x]}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}\right)-$$

$$4\,(-b\,c+a\,d)\,\left(12\,a\,b\,c+8\,a^2\,d+4\,b^2\,d\right)\left(\left(\sqrt{\frac{(c+d)\,\text{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{-c+d}}\;\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}}{\sqrt{2}}\right],\right.\right.\right.$$

$$\left.\frac{2\,(-b\,c+a\,d)}{(a+b)\,(-c+d)}\right]\,\text{Sec}[e+f\,x]\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\sqrt{\frac{(c+d)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(a+b\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}$$

$$\left.\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}\right)\Big/\left((a+b)\,(c+d)\,\sqrt{a+b\,\text{Sin}[e+f\,x]}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}\right)-$$

$$\left(\sqrt{\frac{(c+d)\,\text{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{-c+d}}\;\text{EllipticPi}\left[\frac{-b\,c+a\,d}{(a+b)\,d},\,\text{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}}{\sqrt{2}}\right],\,\frac{2\,(-b\,c+a\,d)}{(a+b)\,(-c+d)}\right]\,\text{Sec}[e+f\,x]\right.$$

$$\left.\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\sqrt{\frac{(c+d)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(a+b\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}\;\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}\right)\Big/$$

$$\left.\left((a+b)\,d\,\sqrt{a+b\,\text{Sin}[e+f\,x]}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}\right)\right)+2\,\left(-b^2\,c-5\,a\,b\,d\right)\left(\frac{\text{Cos}[e+f\,x]\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}{d\,\sqrt{a+b\,\text{Sin}[e+f\,x]}}+\right.$$

$$\left(\sqrt{\frac{a-b}{a+b}}\,(a+b)\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{\frac{a-b}{a+b}}\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]}{\sqrt{\frac{a+b\,\text{Sin}[e+f\,x]}{a+b}}}\right],\,\frac{2\,(-b\,c+a\,d)}{(a-b)\,(c+d)}\right]\sqrt{c+d\,\text{Sin}[e+f\,x]}\right)\Big/$$

$$\left(b\,d\,\sqrt{\frac{(a+b)\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{a+b\,\text{Sin}[e+f\,x]}}\,\sqrt{a+b\,\text{Sin}[e+f\,x]}\,\sqrt{\frac{a+b\,\text{Sin}[e+f\,x]}{a+b}}\,\sqrt{\frac{(a+b)\,(c+d\,\text{Sin}[e+f\,x])}{(c+d)\,(a+b\,\text{Sin}[e+f\,x])}}\right)-$$

$$\frac{1}{b\,d}2\,(-b\,c+a\,d)\left(\left(((a+b)\,c+a\,d)\sqrt{\frac{(c+d)\,\text{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{-c+d}}\;\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}}{\sqrt{2}}\right],\right.\right.\right.$$

$$\left.\frac{2\,(-b\,c+a\,d)}{(a+b)\,(-c+d)}\right]\text{Sec}[e+f\,x]\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\sqrt{\frac{(c+d)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2(a+b\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}$$

$$\left.\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}\right)\Big/\left((a+b)\,(c+d)\sqrt{a+b\,\text{Sin}[e+f\,x]}\sqrt{c+d\,\text{Sin}[e+f\,x]}\right)-$$

$$\left((b\,c+a\,d)\sqrt{\frac{(c+d)\,\text{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{-c+d}}\;\text{EllipticPi}\left[\frac{-b\,c+a\,d}{(a+b)\,d},\,\text{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}}{\sqrt{2}}\right],\right.\right.$$

$$\left.\frac{2\,(-b\,c+a\,d)}{(a+b)\,(-c+d)}\right]\text{Sec}[e+f\,x]\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\sqrt{\frac{(c+d)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2(a+b\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}$$

$$\left.\left.\left.\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}\right)\Big/\left((a+b)\,d\sqrt{a+b\,\text{Sin}[e+f\,x]}\sqrt{c+d\,\text{Sin}[e+f\,x]}\right)\right)\right)\right)$$

- **Problem 774: Humongous result has more than 200000 leaves.**

$$\int\frac{(a+b\,\text{Sin}[e+f\,x])^{3/2}}{\sqrt{c+d\,\text{Sin}[e+f\,x]}}\,dx$$

Optimal (type 4, 644 leaves, 6 steps):

$$-\frac{b\,\text{Cos}[e+f\,x]\,\sqrt{a+b\,\text{Sin}[e+f\,x]}}{f\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}-\frac{1}{d\,(b\,c-a\,d)\,f}(a-b)\,b\,\sqrt{a+b}\,\sqrt{c+d}\,\text{EllipticE}\Big[\text{ArcSin}\Big[\frac{\sqrt{c+d}\,\sqrt{a+b\,\text{Sin}[e+f\,x]}}{\sqrt{a+b}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}\Big],\frac{(a+b)\,(c-d)}{(a-b)\,(c+d)}\Big]$$

$$\text{Sec}[e+f\,x]\,\sqrt{\frac{(b\,c-a\,d)\,(1-\text{Sin}[e+f\,x])}{(a+b)\,(c+d\,\text{Sin}[e+f\,x])}}\,\sqrt{-\frac{(b\,c-a\,d)\,(1+\text{Sin}[e+f\,x])}{(a-b)\,(c+d\,\text{Sin}[e+f\,x])}}\,(c+d\,\text{Sin}[e+f\,x])+$$

$$\frac{1}{d^2\,\sqrt{c+d}\,f}\sqrt{a+b}\,(b\,(c-d)-2\,a\,d)\,\text{EllipticF}\Big[\text{ArcSin}\Big[\frac{\sqrt{c+d}\,\sqrt{a+b\,\text{Sin}[e+f\,x]}}{\sqrt{a+b}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}\Big],\frac{(a+b)\,(c-d)}{(a-b)\,(c+d)}\Big]$$

$$\text{Sec}[e+f\,x]\,\sqrt{\frac{(b\,c-a\,d)\,(1-\text{Sin}[e+f\,x])}{(a+b)\,(c+d\,\text{Sin}[e+f\,x])}}\,\sqrt{-\frac{(b\,c-a\,d)\,(1+\text{Sin}[e+f\,x])}{(a-b)\,(c+d\,\text{Sin}[e+f\,x])}}\,(c+d\,\text{Sin}[e+f\,x])-$$

$$\frac{1}{d^2\,\sqrt{c+d}\,f}\sqrt{a+b}\,(b\,c-3\,a\,d)\,\text{EllipticPi}\Big[\frac{(a+b)\,d}{b\,(c+d)},\,\text{ArcSin}\Big[\frac{\sqrt{c+d}\,\sqrt{a+b\,\text{Sin}[e+f\,x]}}{\sqrt{a+b}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}\Big],\frac{(a+b)\,(c-d)}{(a-b)\,(c+d)}\Big]$$

$$\text{Sec}[e+f\,x]\,\sqrt{\frac{(b\,c-a\,d)\,(1-\text{Sin}[e+f\,x])}{(a+b)\,(c+d\,\text{Sin}[e+f\,x])}}\,\sqrt{-\frac{(b\,c-a\,d)\,(1+\text{Sin}[e+f\,x])}{(a-b)\,(c+d\,\text{Sin}[e+f\,x])}}\,(c+d\,\text{Sin}[e+f\,x])$$

Result (type ?, 222 963 leaves) : Display of huge result suppressed!

- **Problem 775: Result more than twice size of optimal antiderivative.**

$$\int\frac{(a+b\,\text{Sin}[e+f\,x])^{3/2}}{(c+d\,\text{Sin}[e+f\,x])^{3/2}}\,dx$$

Optimal (type 4, 600 leaves, 5 steps) :

$$\frac{1}{(c-d)\, d\, \sqrt{c+d}\, f} 2\, (a-b)\, \sqrt{a+b}\, \text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{c+d}\, \sqrt{a+b\, \text{Sin}[e+f\, x]}}{\sqrt{a+b}\, \sqrt{c+d\, \text{Sin}[e+f\, x]}}\right], \frac{(a+b)\, (c-d)}{(a-b)\, (c+d)}\right]$$

$$\text{Sec}[e+f\, x]\, \sqrt{\frac{(b\, c-a\, d)\, (1-\text{Sin}[e+f\, x])}{(a+b)\, (c+d\, \text{Sin}[e+f\, x])}}\, \sqrt{-\frac{(b\, c-a\, d)\, (1+\text{Sin}[e+f\, x])}{(a-b)\, (c+d\, \text{Sin}[e+f\, x])}}\, (c+d\, \text{Sin}[e+f\, x]) -$$

$$\frac{1}{(c-d)\, d^2\, \sqrt{c+d}\, f} 2\, \sqrt{a+b}\, (b\, (c-2\, d)+a\, d)\, \text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{c+d}\, \sqrt{a+b\, \text{Sin}[e+f\, x]}}{\sqrt{a+b}\, \sqrt{c+d\, \text{Sin}[e+f\, x]}}\right], \frac{(a+b)\, (c-d)}{(a-b)\, (c+d)}\right]$$

$$\text{Sec}[e+f\, x]\, \sqrt{\frac{(b\, c-a\, d)\, (1-\text{Sin}[e+f\, x])}{(a+b)\, (c+d\, \text{Sin}[e+f\, x])}}\, \sqrt{-\frac{(b\, c-a\, d)\, (1+\text{Sin}[e+f\, x])}{(a-b)\, (c+d\, \text{Sin}[e+f\, x])}}\, (c+d\, \text{Sin}[e+f\, x]) +$$

$$\frac{1}{d^2\, \sqrt{c+d}\, f} 2\, b\, \sqrt{a+b}\, \text{EllipticPi}\left[\frac{(a+b)\, d}{b\, (c+d)}, \text{ArcSin}\left[\frac{\sqrt{c+d}\, \sqrt{a+b\, \text{Sin}[e+f\, x]}}{\sqrt{a+b}\, \sqrt{c+d\, \text{Sin}[e+f\, x]}}\right], \frac{(a+b)\, (c-d)}{(a-b)\, (c+d)}\right]$$

$$\text{Sec}[e+f\, x]\, \sqrt{\frac{(b\, c-a\, d)\, (1-\text{Sin}[e+f\, x])}{(a+b)\, (c+d\, \text{Sin}[e+f\, x])}}\, \sqrt{-\frac{(b\, c-a\, d)\, (1+\text{Sin}[e+f\, x])}{(a-b)\, (c+d\, \text{Sin}[e+f\, x])}}\, (c+d\, \text{Sin}[e+f\, x])$$

Result (type 4, 1866 leaves) :

$$-\frac{2\, (b\, c\, \text{Cos}[e+f\, x]-a\, d\, \text{Cos}[e+f\, x])\, \sqrt{a+b\, \text{Sin}[e+f\, x]}}{\left(c^2-d^2\right)\, f\, \sqrt{c+d\, \text{Sin}[e+f\, x]}} + \frac{1}{(c-d)\, (c+d)\, f}$$

$$\left(-\left(4\, (-b\, c+a\, d)\, \left(a^2\, c-a\, b\, d\right)\, \sqrt{\frac{(c+d)\, \text{Cot}\left[\frac{1}{2}\, \left(-e+\frac{\pi}{2}-f\, x\right)\right]^2}{-c+d}}\, \text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\, \text{Csc}\left[\frac{1}{2}\, \left(-e+\frac{\pi}{2}-f\, x\right)\right]^2\, (c+d\, \text{Sin}[e+f\, x])}{-b\, c+a\, d}}}{\sqrt{2}}\right], \frac{2\, (-b\, c+a\, d)}{(a+b)\, (-c+d)}\right]\right.\right.$$

$$\text{Sec}[e+f\, x]\, \text{Sin}\left[\frac{1}{2}\, \left(-e+\frac{\pi}{2}-f\, x\right)\right]^4\, \sqrt{\frac{(c+d)\, \text{Csc}\left[\frac{1}{2}\, \left(-e+\frac{\pi}{2}-f\, x\right)\right]^2\, (a+b\, \text{Sin}[e+f\, x])}{-b\, c+a\, d}}$$

$$\left.\sqrt{-\frac{(a+b)\, \text{Csc}\left[\frac{1}{2}\, \left(-e+\frac{\pi}{2}-f\, x\right)\right]^2\, (c+d\, \text{Sin}[e+f\, x])}{-b\, c+a\, d}}\right) \Big/ \left((a+b)\, (c+d)\, \sqrt{a+b\, \text{Sin}[e+f\, x]}\, \sqrt{c+d\, \text{Sin}[e+f\, x]}\right) -$$

$$4\,(-b\,c+a\,d)\,\left(a^2\,d-b^2\,d\right)\Bigg(\Bigg(\sqrt{\frac{(c+d)\,\mathrm{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{-c+d}}\ \mathrm{EllipticF}\left[\mathrm{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\mathrm{Sin}[e+f\,x])}{-b\,c+a\,d}}}{\sqrt{2}}\right],\ \frac{2\,(-b\,c+a\,d)}{(a+b)\,(-c+d)}\right]$$

$$\mathrm{Sec}[e+f\,x]\,\mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\sqrt{\frac{(c+d)\,\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(a+b\,\mathrm{Sin}[e+f\,x])}{-b\,c+a\,d}}$$

$$\sqrt{-\frac{(a+b)\,\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\mathrm{Sin}[e+f\,x])}{-b\,c+a\,d}}\Bigg)\Big/\left((a+b)\,(c+d)\,\sqrt{a+b\,\mathrm{Sin}[e+f\,x]}\,\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}\right)-$$

$$\Bigg(\sqrt{\frac{(c+d)\,\mathrm{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{-c+d}}\ \mathrm{EllipticPi}\left[\frac{-b\,c+a\,d}{(a+b)\,d},\ \mathrm{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\mathrm{Sin}[e+f\,x])}{-b\,c+a\,d}}}{\sqrt{2}}\right],\ \frac{2\,(-b\,c+a\,d)}{(a+b)\,(-c+d)}\right]\mathrm{Sec}[e+f\,x]$$

$$\mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\sqrt{\frac{(c+d)\,\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(a+b\,\mathrm{Sin}[e+f\,x])}{-b\,c+a\,d}}\ \sqrt{-\frac{(a+b)\,\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\mathrm{Sin}[e+f\,x])}{-b\,c+a\,d}}\Bigg)\Big/$$

$$\left((a+b)\,d\,\sqrt{a+b\,\mathrm{Sin}[e+f\,x]}\,\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}\right)\Bigg)+2\left(b^2\,c-a\,b\,d\right)\Bigg(\frac{\mathrm{Cos}[e+f\,x]\,\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}}{d\,\sqrt{a+b\,\mathrm{Sin}[e+f\,x]}}+$$

$$\Bigg(\sqrt{\frac{a-b}{a+b}}\,(a+b)\,\mathrm{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\mathrm{EllipticE}\left[\mathrm{ArcSin}\left[\frac{\sqrt{\frac{a-b}{a+b}}\ \mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]}{\sqrt{\frac{a+b\,\mathrm{Sin}[e+f\,x]}{a+b}}}\right],\ \frac{2\,(-b\,c+a\,d)}{(a-b)\,(c+d)}\right]\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}\Bigg)\Big/$$

$$\Bigg(b\,d\,\sqrt{\frac{(a+b)\,\mathrm{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{a+b\,\mathrm{Sin}[e+f\,x]}}\ \sqrt{a+b\,\mathrm{Sin}[e+f\,x]}\ \sqrt{\frac{a+b\,\mathrm{Sin}[e+f\,x]}{a+b}}\ \sqrt{\frac{(a+b)\,(c+d\,\mathrm{Sin}[e+f\,x])}{(c+d)\,(a+b\,\mathrm{Sin}[e+f\,x])}}\Bigg)-$$

$$\frac{1}{b\,d}2\,(-b\,c+a\,d)\left(\left(((a+b)\,c+a\,d)\sqrt{\frac{(c+d)\,\text{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{-c+d}}\ \text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}}{\sqrt{2}}\right],\right.\right.\right.$$

$$\left.\frac{2\,(-b\,c+a\,d)}{(a+b)\,(-c+d)}\right]\text{Sec}[e+f\,x]\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\sqrt{\frac{(c+d)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2(a+b\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}$$

$$\left.\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}\right)\Big/\left((a+b)\,(c+d)\sqrt{a+b\,\text{Sin}[e+f\,x]}\ \sqrt{c+d\,\text{Sin}[e+f\,x]}\right)-$$

$$\left((b\,c+a\,d)\sqrt{\frac{(c+d)\,\text{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{-c+d}}\ \text{EllipticPi}\left[\frac{-b\,c+a\,d}{(a+b)\,d},\,\text{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}}{\sqrt{2}}\right],\right.\right.$$

$$\left.\frac{2\,(-b\,c+a\,d)}{(a+b)\,(-c+d)}\right]\text{Sec}[e+f\,x]\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\sqrt{\frac{(c+d)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2(a+b\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}$$

$$\left.\left.\left.\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}\right)\Big/\left((a+b)\,d\sqrt{a+b\,\text{Sin}[e+f\,x]}\ \sqrt{c+d\,\text{Sin}[e+f\,x]}\right)\right)\right)\right)$$

- **Problem 776: Result more than twice size of optimal antiderivative.**

$$\int\frac{(a+b\,\text{Sin}[e+f\,x])^{3/2}}{(c+d\,\text{Sin}[e+f\,x])^{5/2}}\,dx$$

Optimal (type 4, 497 leaves, 4 steps) :

$$-\frac{2\,(b\,c-a\,d)\,\mathrm{Cos}[e+f\,x]\,\sqrt{a+b\,\mathrm{Sin}[e+f\,x]}}{3\,(c^2-d^2)\,f\,(c+d\,\mathrm{Sin}[e+f\,x])^{3/2}}-$$

$$\left(8\,(a-b)\,\sqrt{a+b}\,(a\,c-b\,d)\,\mathrm{EllipticE}\left[\mathrm{ArcSin}\left[\frac{\sqrt{c+d}\,\sqrt{a+b\,\mathrm{Sin}[e+f\,x]}}{\sqrt{a+b}\,\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}}\right],\frac{(a+b)\,(c-d)}{(a-b)\,(c+d)}\right]\mathrm{Sec}[e+f\,x]\right.$$

$$\left.\sqrt{\frac{(b\,c-a\,d)\,(1-\mathrm{Sin}[e+f\,x])}{(a+b)\,(c+d\,\mathrm{Sin}[e+f\,x])}}\,\sqrt{-\frac{(b\,c-a\,d)\,(1+\mathrm{Sin}[e+f\,x])}{(a-b)\,(c+d\,\mathrm{Sin}[e+f\,x])}}\,(c+d\,\mathrm{Sin}[e+f\,x])\right)\Big/\left(3\,(c-d)^2\,(c+d)^{3/2}\,(b\,c-a\,d)\,f\right)+$$

$$\left(2\,(a-b)\,\sqrt{a+b}\,(a\,(3\,c+d)-b\,(c+3\,d))\,\mathrm{EllipticF}\left[\mathrm{ArcSin}\left[\frac{\sqrt{c+d}\,\sqrt{a+b\,\mathrm{Sin}[e+f\,x]}}{\sqrt{a+b}\,\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}}\right],\frac{(a+b)\,(c-d)}{(a-b)\,(c+d)}\right]\mathrm{Sec}[e+f\,x]\right.$$

$$\left.\sqrt{\frac{(b\,c-a\,d)\,(1-\mathrm{Sin}[e+f\,x])}{(a+b)\,(c+d\,\mathrm{Sin}[e+f\,x])}}\,\sqrt{-\frac{(b\,c-a\,d)\,(1+\mathrm{Sin}[e+f\,x])}{(a-b)\,(c+d\,\mathrm{Sin}[e+f\,x])}}\,(c+d\,\mathrm{Sin}[e+f\,x])\right)\Big/\left(3\,(c-d)^2\,(c+d)^{3/2}\,(b\,c-a\,d)\,f\right)$$

Result (type 4, 1982 leaves):

$$\frac{\sqrt{a+b\,\mathrm{Sin}[e+f\,x]}\,\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}\left(-\frac{2\,(b\,c\,\mathrm{Cos}[e+f\,x]-a\,d\,\mathrm{Cos}[e+f\,x])}{3\,(c^2-d^2)\,(c+d\,\mathrm{Sin}[e+f\,x])^2}-\frac{8\,(-a\,c\,d\,\mathrm{Cos}[e+f\,x]+b\,d^2\,\mathrm{Cos}[e+f\,x])}{3\,(c^2-d^2)^2\,(c+d\,\mathrm{Sin}[e+f\,x])}\right)}{f}+$$

$$\frac{1}{3\,(c-d)^2\,(c+d)^2\,f}\left(-\left(4\,(-b\,c+a\,d)\,\left(3\,a^2\,c^2+b^2\,c^2-4\,a\,b\,c\,d+a^2\,d^2-b^2\,d^2\right)\sqrt{\frac{(c+d)\,\mathrm{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{-c+d}}\right.\right.$$

$$\mathrm{EllipticF}\left[\mathrm{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\mathrm{Sin}[e+f\,x])}{-b\,c+a\,d}}}{\sqrt{2}}\right],\frac{2\,(-b\,c+a\,d)}{(a+b)\,(-c+d)}\right]\mathrm{Sec}[e+f\,x]\,\mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4$$

$$\left.\sqrt{\frac{(c+d)\,\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(a+b\,\mathrm{Sin}[e+f\,x])}{-b\,c+a\,d}}\,\sqrt{-\frac{(a+b)\,\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\mathrm{Sin}[e+f\,x])}{-b\,c+a\,d}}\right)\Big/$$

$$\left((a+b)\,(c+d)\,\sqrt{a+b\,\mathrm{Sin}[e+f\,x]}\,\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}\right)-4\,(-b\,c+a\,d)\,\left(4\,a\,b\,c^2+4\,a^2\,c\,d-4\,b^2\,c\,d-4\,a\,b\,d^2\right)$$

$$\Bigg(\Bigg(\sqrt{\frac{(c+d)\,\text{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{-c+d}}\ \text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 (c+d\,\text{Sin}[e+f x])}{-b c+a d}}}{\sqrt{2}}\right],\ \frac{2\,(-b c+a d)}{(a+b)\,(-c+d)}\right]$$

$$\text{Sec}[e+f x]\ \text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^4 \sqrt{\frac{(c+d)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 (a+b\,\text{Sin}[e+f x])}{-b c+a d}}$$

$$\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 (c+d\,\text{Sin}[e+f x])}{-b c+a d}}\Bigg)\Big/\left((a+b)\,(c+d)\,\sqrt{a+b\,\text{Sin}[e+f x]}\ \sqrt{c+d\,\text{Sin}[e+f x]}\right)-$$

$$\Bigg(\sqrt{\frac{(c+d)\,\text{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{-c+d}}\ \text{EllipticPi}\left[\frac{-b c+a d}{(a+b)\,d},\ \text{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 (c+d\,\text{Sin}[e+f x])}{-b c+a d}}}{\sqrt{2}}\right],\ \frac{2\,(-b c+a d)}{(a+b)\,(-c+d)}\right]\text{Sec}[e+f x]$$

$$\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^4 \sqrt{\frac{(c+d)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 (a+b\,\text{Sin}[e+f x])}{-b c+a d}}\ \sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 (c+d\,\text{Sin}[e+f x])}{-b c+a d}}\Bigg)\Big/$$

$$\left((a+b)\,d\,\sqrt{a+b\,\text{Sin}[e+f x]}\ \sqrt{c+d\,\text{Sin}[e+f x]}\right)\Bigg)+2\left(-4 a b c d+4 b^2 d^2\right)\Bigg(\frac{\text{Cos}[e+f x]\,\sqrt{c+d\,\text{Sin}[e+f x]}}{d\,\sqrt{a+b\,\text{Sin}[e+f x]}}+$$

$$\Bigg(\sqrt{\frac{a-b}{a+b}}\ (a+b)\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{\frac{a-b}{a+b}}\ \text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}{\sqrt{\frac{a+b\,\text{Sin}[e+f x]}{a+b}}}\right],\ \frac{2\,(-b c+a d)}{(a-b)\,(c+d)}\right]\sqrt{c+d\,\text{Sin}[e+f x]}\Bigg)\Big/$$

$$\Bigg(b\,d\,\sqrt{\frac{(a+b)\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{a+b\,\text{Sin}[e+f x]}}\ \sqrt{a+b\,\text{Sin}[e+f x]}\ \sqrt{\frac{a+b\,\text{Sin}[e+f x]}{a+b}}\ \sqrt{\frac{(a+b)\,(c+d\,\text{Sin}[e+f x])}{(c+d)\,(a+b\,\text{Sin}[e+f x])}}\Bigg)-$$

$$\frac{1}{b\,d}2\,(-b\,c+a\,d)\left(\left(((a+b)\,c+a\,d)\sqrt{\frac{(c+d)\,\mathrm{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{-c+d}}\;\mathrm{EllipticF}\left[\mathrm{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2(c+d\,\mathrm{Sin}[e+f\,x])}{-b\,c+a\,d}}}{\sqrt{2}}\right],\right.\right.\right.$$

$$\left.\frac{2\,(-b\,c+a\,d)}{(a+b)\,(-c+d)}\right]\mathrm{Sec}[e+f\,x]\,\mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\sqrt{\frac{(c+d)\,\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2(a+b\,\mathrm{Sin}[e+f\,x])}{-b\,c+a\,d}}$$

$$\left.\sqrt{-\frac{(a+b)\,\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2(c+d\,\mathrm{Sin}[e+f\,x])}{-b\,c+a\,d}}\right)\Big/\left((a+b)\,(c+d)\sqrt{a+b\,\mathrm{Sin}[e+f\,x]}\,\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}\right)-$$

$$\left((b\,c+a\,d)\sqrt{\frac{(c+d)\,\mathrm{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{-c+d}}\;\mathrm{EllipticPi}\left[\frac{-b\,c+a\,d}{(a+b)\,d},\,\mathrm{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2(c+d\,\mathrm{Sin}[e+f\,x])}{-b\,c+a\,d}}}{\sqrt{2}}\right],\right.\right.$$

$$\left.\frac{2\,(-b\,c+a\,d)}{(a+b)\,(-c+d)}\right]\mathrm{Sec}[e+f\,x]\,\mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\sqrt{\frac{(c+d)\,\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2(a+b\,\mathrm{Sin}[e+f\,x])}{-b\,c+a\,d}}$$

$$\left.\left.\left.\sqrt{-\frac{(a+b)\,\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2(c+d\,\mathrm{Sin}[e+f\,x])}{-b\,c+a\,d}}\right)\Big/\left((a+b)\,d\sqrt{a+b\,\mathrm{Sin}[e+f\,x]}\,\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}\right)\right)\right)$$

- **Problem 779: Result more than twice size of optimal antiderivative.**

$$\int(a+b\,\mathrm{Sin}[e+f\,x])^{5/2}\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}\,dx$$

Optimal (type 4, 894 leaves, 8 steps):

$$\frac{1}{24 d^2 (b c - a d) f}\sqrt{a+b}\,(c-d)\sqrt{c+d}\left(14 a b c d + 33 a^2 d^2 - b^2\left(3 c^2 - 16 d^2\right)\right)\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b}\,\sqrt{c+d\,\text{Sin}[e+f x]}}{\sqrt{c+d}\,\sqrt{a+b\,\text{Sin}[e+f x]}}\right],\frac{(a-b)(c+d)}{(a+b)(c-d)}\right]$$
$$\text{Sec}[e+f x]\sqrt{-\frac{(b c-a d)(1-\text{Sin}[e+f x])}{(c+d)(a+b\,\text{Sin}[e+f x])}}\sqrt{\frac{(b c-a d)(1+\text{Sin}[e+f x])}{(c-d)(a+b\,\text{Sin}[e+f x])}}(a+b\,\text{Sin}[e+f x])+\frac{1}{8 b\sqrt{a+b}\,d^3 f}$$
$$\sqrt{c+d}\left(15 a^2 b c d^2+5 a^3 d^3-5 a b^2 d\left(c^2-4 d^2\right)+b^3\left(c^3+4 c d^2\right)\right)\text{EllipticPi}\left[\frac{b(c+d)}{(a+b) d},\text{ArcSin}\left[\frac{\sqrt{a+b}\,\sqrt{c+d\,\text{Sin}[e+f x]}}{\sqrt{c+d}\,\sqrt{a+b\,\text{Sin}[e+f x]}}\right],\frac{(a-b)(c+d)}{(a+b)(c-d)}\right]$$
$$\text{Sec}[e+f x]\sqrt{-\frac{(b c-a d)(1-\text{Sin}[e+f x])}{(c+d)(a+b\,\text{Sin}[e+f x])}}\sqrt{\frac{(b c-a d)(1+\text{Sin}[e+f x])}{(c-d)(a+b\,\text{Sin}[e+f x])}}(a+b\,\text{Sin}[e+f x])-$$
$$\frac{b\left(14 a b c d+33 a^2 d^2-b^2\left(3 c^2-16 d^2\right)\right)\text{Cos}[e+f x]\sqrt{c+d\,\text{Sin}[e+f x]}}{24 d^2 f\sqrt{a+b\,\text{Sin}[e+f x]}}+$$
$$\frac{b(3 b c-13 a d)\text{Cos}[e+f x]\sqrt{a+b\,\text{Sin}[e+f x]}\sqrt{c+d\,\text{Sin}[e+f x]}}{12 d f}+\frac{1}{24 b d^2\sqrt{c+d}\,f}$$
$$(a+b)^{3/2}\left(15 a^2 d^2+6 a b d(2 c+3 d)-b^2\left(3 c^2-2 c d-16 d^2\right)\right)\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{c+d}\,\sqrt{a+b\,\text{Sin}[e+f x]}}{\sqrt{a+b}\,\sqrt{c+d\,\text{Sin}[e+f x]}}\right],\frac{(a+b)(c-d)}{(a-b)(c+d)}\right]\text{Sec}[e+f x]$$
$$\sqrt{\frac{(b c-a d)(1-\text{Sin}[e+f x])}{(a+b)(c+d\,\text{Sin}[e+f x])}}\sqrt{-\frac{(b c-a d)(1+\text{Sin}[e+f x])}{(a-b)(c+d\,\text{Sin}[e+f x])}}(c+d\,\text{Sin}[e+f x])-\frac{b^2\text{Cos}[e+f x]\sqrt{a+b\,\text{Sin}[e+f x]}\,(c+d\,\text{Sin}[e+f x])^{3/2}}{3 d f}$$

Result (type 4, 1949 leaves) :

$$\frac{1}{48 d f}\left(-\left(4(-b c+a d)\left(-b^3 c^2+48 a^3 c d+58 a b^2 c d+59 a^2 b d^2+16 b^3 d^2\right)\sqrt{\frac{(c+d)\,\text{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{-c+d}}\right.\right.$$
$$\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2(c+d\,\text{Sin}[e+f x])}{-b c+a d}}}{\sqrt{2}}\right],\frac{2(-b c+a d)}{(a+b)(-c+d)}\right]\text{Sec}[e+f x]\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^4$$
$$\left.\sqrt{\frac{(c+d)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2(a+b\,\text{Sin}[e+f x])}{-b c+a d}}\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2(c+d\,\text{Sin}[e+f x])}{-b c+a d}}\right)\Big/$$

$$\left((a+b)\,(c+d)\,\sqrt{a+b\,\mathrm{Sin}[e+f\,x]}\,\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}\right) - 4\,(-b\,c+a\,d)\,\left(-4\,a\,b^2\,c^2+92\,a^2\,b\,c\,d+28\,b^3\,c\,d+48\,a^3\,d^2+76\,a\,b^2\,d^2\right)$$

$$\left(\left(\sqrt{\frac{(c+d)\,\mathrm{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{-c+d}}\ \mathrm{EllipticF}\left[\mathrm{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\mathrm{Sin}[e+f\,x])}{-b\,c+a\,d}}}{\sqrt{2}}\right],\ \frac{2\,(-b\,c+a\,d)}{(a+b)\,(-c+d)}\right]\right.\right.$$

$$\mathrm{Sec}[e+f\,x]\,\mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\sqrt{\frac{(c+d)\,\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(a+b\,\mathrm{Sin}[e+f\,x])}{-b\,c+a\,d}}$$

$$\left.\sqrt{-\frac{(a+b)\,\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\mathrm{Sin}[e+f\,x])}{-b\,c+a\,d}}\right)\Big/\left((a+b)\,(c+d)\,\sqrt{a+b\,\mathrm{Sin}[e+f\,x]}\,\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}\right) -$$

$$\left(\sqrt{\frac{(c+d)\,\mathrm{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{-c+d}}\ \mathrm{EllipticPi}\left[\frac{-b\,c+a\,d}{(a+b)\,d},\ \mathrm{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\mathrm{Sin}[e+f\,x])}{-b\,c+a\,d}}}{\sqrt{2}}\right],\ \frac{2\,(-b\,c+a\,d)}{(a+b)\,(-c+d)}\right]\mathrm{Sec}[e+f\,x]\right.$$

$$\left.\mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\sqrt{\frac{(c+d)\,\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(a+b\,\mathrm{Sin}[e+f\,x])}{-b\,c+a\,d}}\ \sqrt{-\frac{(a+b)\,\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\mathrm{Sin}[e+f\,x])}{-b\,c+a\,d}}\right)\Big/$$

$$\left.\left((a+b)\,d\,\sqrt{a+b\,\mathrm{Sin}[e+f\,x]}\,\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}\right)\right) + 2\left(3\,b^3\,c^2-14\,a\,b^2\,c\,d-33\,a^2\,b\,d^2-16\,b^3\,d^2\right)\left(\frac{\mathrm{Cos}[e+f\,x]\,\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}}{d\,\sqrt{a+b\,\mathrm{Sin}[e+f\,x]}}+\right.$$

$$\left(\sqrt{\frac{a-b}{a+b}}\,(a+b)\,\mathrm{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\mathrm{EllipticE}\left[\mathrm{ArcSin}\left[\frac{\sqrt{\frac{a-b}{a+b}}\ \mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]}{\sqrt{\frac{a+b\,\mathrm{Sin}[e+f\,x]}{a+b}}}\right],\ \frac{2\,(-b\,c+a\,d)}{(a-b)\,(c+d)}\right]\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}\right)\Big/$$

$$\left(b\,d\,\sqrt{\frac{(a+b)\,\mathrm{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{a+b\,\mathrm{Sin}[e+f\,x]}}\,\sqrt{a+b\,\mathrm{Sin}[e+f\,x]}\,\sqrt{\frac{a+b\,\mathrm{Sin}[e+f\,x]}{a+b}}\,\sqrt{\frac{(a+b)\,(c+d\,\mathrm{Sin}[e+f\,x])}{(c+d)\,(a+b\,\mathrm{Sin}[e+f\,x])}}\right)-$$

$$\frac{1}{b\,d}2\,(-b\,c+a\,d)\left(\left(\left((a+b)\,c+a\,d\right)\sqrt{\frac{(c+d)\,\mathrm{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{-c+d}}\,\mathrm{EllipticF}\left[\mathrm{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\mathrm{Sin}[e+f\,x])}{-b\,c+a\,d}}}{\sqrt{2}}\right],\right.\right.\right.$$

$$\left.\frac{2\,(-b\,c+a\,d)}{(a+b)\,(-c+d)}\right]\,\mathrm{Sec}[e+f\,x]\,\mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\sqrt{\frac{(c+d)\,\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(a+b\,\mathrm{Sin}[e+f\,x])}{-b\,c+a\,d}}$$

$$\left.\sqrt{-\frac{(a+b)\,\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\mathrm{Sin}[e+f\,x])}{-b\,c+a\,d}}\right)\Big/\left((a+b)\,(c+d)\,\sqrt{a+b\,\mathrm{Sin}[e+f\,x]}\,\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}\right)-$$

$$\left((b\,c+a\,d)\sqrt{\frac{(c+d)\,\mathrm{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{-c+d}}\,\mathrm{EllipticPi}\left[\frac{-b\,c+a\,d}{(a+b)\,d},\,\mathrm{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\mathrm{Sin}[e+f\,x])}{-b\,c+a\,d}}}{\sqrt{2}}\right],\right.\right.$$

$$\left.\frac{2\,(-b\,c+a\,d)}{(a+b)\,(-c+d)}\right]\,\mathrm{Sec}[e+f\,x]\,\mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\sqrt{\frac{(c+d)\,\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(a+b\,\mathrm{Sin}[e+f\,x])}{-b\,c+a\,d}}$$

$$\left.\left.\left.\sqrt{-\frac{(a+b)\,\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\mathrm{Sin}[e+f\,x])}{-b\,c+a\,d}}\right)\Big/\left((a+b)\,d\,\sqrt{a+b\,\mathrm{Sin}[e+f\,x]}\,\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}\right)\right)\right)+$$

$$\frac{\sqrt{a+b\,\mathrm{Sin}[e+f\,x]}\,\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}\,\left(-\frac{b\,(b\,c+13\,a\,d)\,\mathrm{Cos}[e+f\,x]}{12\,d}-\frac{1}{6}\,b^2\,\mathrm{Sin}[2\,(e+f\,x)]\right)}{f}$$

- **Problem 780: Result more than twice size of optimal antiderivative.**

$$\int\frac{(a+b\,\mathrm{Sin}[e+f\,x])^{5/2}}{\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}}\,dx$$

Optimal (type 4, 745 leaves, 7 steps):

$$-\frac{1}{4 d^2 (b c-a d) f}3 b \sqrt{a+b} (c-d) \sqrt{c+d} (b c-3 a d) \text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b} \sqrt{c+d \sin[e+f x]}}{\sqrt{c+d} \sqrt{a+b \sin[e+f x]}}\right], \frac{(a-b) (c+d)}{(a+b) (c-d)}\right]$$

$$\text{Sec}[e+f x] \sqrt{-\frac{(b c-a d) (1-\sin[e+f x])}{(c+d) (a+b \sin[e+f x])}} \sqrt{\frac{(b c-a d) (1+\sin[e+f x])}{(c-d) (a+b \sin[e+f x])}} (a+b \sin[e+f x])-\frac{1}{4 \sqrt{a+b} d^3 f}$$

$$\sqrt{c+d} \left(10 a b c d-15 a^2 d^2-b^2 \left(3 c^2+4 d^2\right)\right) \text{EllipticPi}\left[\frac{b (c+d)}{(a+b) d}, \text{ArcSin}\left[\frac{\sqrt{a+b} \sqrt{c+d \sin[e+f x]}}{\sqrt{c+d} \sqrt{a+b \sin[e+f x]}}\right], \frac{(a-b) (c+d)}{(a+b) (c-d)}\right]$$

$$\text{Sec}[e+f x] \sqrt{-\frac{(b c-a d) (1-\sin[e+f x])}{(c+d) (a+b \sin[e+f x])}} \sqrt{\frac{(b c-a d) (1+\sin[e+f x])}{(c-d) (a+b \sin[e+f x])}} (a+b \sin[e+f x])+$$

$$\frac{3 b^2 (b c-3 a d) \cos[e+f x] \sqrt{c+d \sin[e+f x]}}{4 d^2 f \sqrt{a+b \sin[e+f x]}}-\frac{b^2 \cos[e+f x] \sqrt{a+b \sin[e+f x]} \sqrt{c+d \sin[e+f x]}}{2 d f}-\frac{1}{4 d^2 \sqrt{c+d} f}$$

$$(a+b)^{3/2} (3 b c-7 a d-2 b d) \text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{c+d} \sqrt{a+b \sin[e+f x]}}{\sqrt{a+b} \sqrt{c+d \sin[e+f x]}}\right], \frac{(a+b) (c-d)}{(a-b) (c+d)}\right]$$

$$\text{Sec}[e+f x] \sqrt{\frac{(b c-a d) (1-\sin[e+f x])}{(a+b) (c+d \sin[e+f x])}} \sqrt{-\frac{(b c-a d) (1+\sin[e+f x])}{(a-b) (c+d \sin[e+f x])}} (c+d \sin[e+f x])$$

Result (type 4, 1864 leaves):

$$-\frac{b^2 \cos[e+f x] \sqrt{a+b \sin[e+f x]} \sqrt{c+d \sin[e+f x]}}{2 d f}+$$

$$\frac{1}{8 d f}\left(-\left(4 (-b c+a d) \left(-b^3 c+8 a^3 d+11 a b^2 d\right) \sqrt{\frac{(c+d) \cot\left[\frac{1}{2} \left(-e+\frac{\pi}{2}-f x\right)\right]^2}{-c+d}} \text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{-\frac{(a+b) \csc\left[\frac{1}{2} \left(-e+\frac{\pi}{2}-f x\right)\right]^2 (c+d \sin[e+f x])}{-b c+a d}}}{\sqrt{2}}\right],\right.\right.\right.$$

$$\left.\frac{2 (-b c+a d)}{(a+b) (-c+d)}\right] \text{Sec}[e+f x] \sin\left[\frac{1}{2} \left(-e+\frac{\pi}{2}-f x\right)\right]^4 \sqrt{\frac{(c+d) \csc\left[\frac{1}{2} \left(-e+\frac{\pi}{2}-f x\right)\right]^2 (a+b \sin[e+f x])}{-b c+a d}}$$

$$\left.\sqrt{-\frac{(a+b) \csc\left[\frac{1}{2} \left(-e+\frac{\pi}{2}-f x\right)\right]^2 (c+d \sin[e+f x])}{-b c+a d}}\right) \Big/ \left((a+b) (c+d) \sqrt{a+b \sin[e+f x]} \sqrt{c+d \sin[e+f x]}\right)-$$

$$4\,(-b c+a d)\,\left(-4 a b^2 c+24 a^2 b d+4 b^3 d\right)\Bigg(\Bigg(\sqrt{\frac{(c+d)\,\text{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{-c+d}}\;\text{EllipticF}\Big[\text{ArcSin}\Big[\frac{\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 (c+d\,\text{Sin}[e+f x])}{-b c+a d}}}{\sqrt{2}}\Big],$$

$$\frac{2\,(-b c+a d)}{(a+b)\,(-c+d)}\Big]\,\text{Sec}[e+f x]\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^4\sqrt{\frac{(c+d)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 (a+b\,\text{Sin}[e+f x])}{-b c+a d}}$$

$$\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 (c+d\,\text{Sin}[e+f x])}{-b c+a d}}\Bigg)\Big/\left((a+b)\,(c+d)\,\sqrt{a+b\,\text{Sin}[e+f x]}\,\sqrt{c+d\,\text{Sin}[e+f x]}\right)-$$

$$\Bigg(\sqrt{\frac{(c+d)\,\text{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{-c+d}}\;\text{EllipticPi}\Big[\frac{-b c+a d}{(a+b)\,d},\,\text{ArcSin}\Big[\frac{\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 (c+d\,\text{Sin}[e+f x])}{-b c+a d}}}{\sqrt{2}}\Big],\,\frac{2\,(-b c+a d)}{(a+b)\,(-c+d)}\Big]\,\text{Sec}[e+f x]$$

$$\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^4\sqrt{\frac{(c+d)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 (a+b\,\text{Sin}[e+f x])}{-b c+a d}}\,\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 (c+d\,\text{Sin}[e+f x])}{-b c+a d}}\Bigg)\Big/$$

$$\left((a+b)\,d\,\sqrt{a+b\,\text{Sin}[e+f x]}\,\sqrt{c+d\,\text{Sin}[e+f x]}\right)\Bigg)+2\,\left(3 b^3 c-9 a b^2 d\right)\Bigg(\frac{\text{Cos}[e+f x]\,\sqrt{c+d\,\text{Sin}[e+f x]}}{d\,\sqrt{a+b\,\text{Sin}[e+f x]}}+$$

$$\Bigg(\sqrt{\frac{a-b}{a+b}}\,(a+b)\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\,\text{EllipticE}\Big[\text{ArcSin}\Big[\frac{\sqrt{\frac{a-b}{a+b}}\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}{\sqrt{\frac{a+b\,\text{Sin}[e+f x]}{a+b}}}\Big],\,\frac{2\,(-b c+a d)}{(a-b)\,(c+d)}\Big]\,\sqrt{c+d\,\text{Sin}[e+f x]}\Bigg)\Big/$$

$$\Bigg(b\,d\,\sqrt{\frac{(a+b)\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{a+b\,\text{Sin}[e+f x]}}\,\sqrt{a+b\,\text{Sin}[e+f x]}\,\sqrt{\frac{a+b\,\text{Sin}[e+f x]}{a+b}}\,\sqrt{\frac{(a+b)\,(c+d\,\text{Sin}[e+f x])}{(c+d)\,(a+b\,\text{Sin}[e+f x])}}\Bigg)-$$

$$\frac{1}{b\,d}2\,(-b\,c+a\,d)\left(\left(\left((a+b)\,c+a\,d\right)\sqrt{\frac{(c+d)\,\mathrm{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{-c+d}}\;\mathrm{EllipticF}\left[\mathrm{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2(c+d\,\mathrm{Sin}[e+f\,x])}{-b\,c+a\,d}}}{\sqrt{2}}\right],\right.\right.\right.$$

$$\left.\frac{2\,(-b\,c+a\,d)}{(a+b)\,(-c+d)}\right]\mathrm{Sec}[e+f\,x]\,\mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\sqrt{\frac{(c+d)\,\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2(a+b\,\mathrm{Sin}[e+f\,x])}{-b\,c+a\,d}}$$

$$\left.\sqrt{-\frac{(a+b)\,\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2(c+d\,\mathrm{Sin}[e+f\,x])}{-b\,c+a\,d}}\right)\Big/\left((a+b)\,(c+d)\,\sqrt{a+b\,\mathrm{Sin}[e+f\,x]}\,\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}\right)-$$

$$\left((b\,c+a\,d)\sqrt{\frac{(c+d)\,\mathrm{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{-c+d}}\;\mathrm{EllipticPi}\left[\frac{-b\,c+a\,d}{(a+b)\,d},\,\mathrm{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2(c+d\,\mathrm{Sin}[e+f\,x])}{-b\,c+a\,d}}}{\sqrt{2}}\right],\right.\right.$$

$$\left.\frac{2\,(-b\,c+a\,d)}{(a+b)\,(-c+d)}\right]\mathrm{Sec}[e+f\,x]\,\mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\sqrt{\frac{(c+d)\,\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2(a+b\,\mathrm{Sin}[e+f\,x])}{-b\,c+a\,d}}$$

$$\left.\left.\left.\sqrt{-\frac{(a+b)\,\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2(c+d\,\mathrm{Sin}[e+f\,x])}{-b\,c+a\,d}}\right)\Big/\left((a+b)\,d\,\sqrt{a+b\,\mathrm{Sin}[e+f\,x]}\,\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}\right)\right)\right)$$

- **Problem 781: Result more than twice size of optimal antiderivative.**

$$\int\frac{(a+b\,\mathrm{Sin}[e+f\,x])^{5/2}}{(c+d\,\mathrm{Sin}[e+f\,x])^{3/2}}\,dx$$

Optimal (type 4, 780 leaves, 7 steps):

$$-\frac{1}{d^2\sqrt{c+d}\,(b c-a d) f}\sqrt{a+b}\,\left(4 a b c d-2 a^2 d^2-b^2\left(3 c^2-d^2\right)\right) \text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b}\,\sqrt{c+d \text{Sin}[e+f x]}}{\sqrt{c+d}\,\sqrt{a+b \text{Sin}[e+f x]}}\right],\frac{(a-b)(c+d)}{(a+b)(c-d)}\right]$$

$$\text{Sec}[e+f x]\sqrt{-\frac{(b c-a d)(1-\text{Sin}[e+f x])}{(c+d)(a+b \text{Sin}[e+f x])}}\sqrt{\frac{(b c-a d)(1+\text{Sin}[e+f x])}{(c-d)(a+b \text{Sin}[e+f x])}}\,(a+b \text{Sin}[e+f x])-$$

$$\frac{1}{\sqrt{a+b}\,d^3 f}b\sqrt{c+d}\,(3 b c-5 a d) \text{EllipticPi}\left[\frac{b(c+d)}{(a+b) d},\text{ArcSin}\left[\frac{\sqrt{a+b}\,\sqrt{c+d \text{Sin}[e+f x]}}{\sqrt{c+d}\,\sqrt{a+b \text{Sin}[e+f x]}}\right],\frac{(a-b)(c+d)}{(a+b)(c-d)}\right]$$

$$\text{Sec}[e+f x]\sqrt{-\frac{(b c-a d)(1-\text{Sin}[e+f x])}{(c+d)(a+b \text{Sin}[e+f x])}}\sqrt{\frac{(b c-a d)(1+\text{Sin}[e+f x])}{(c-d)(a+b \text{Sin}[e+f x])}}\,(a+b \text{Sin}[e+f x])+$$

$$\frac{2 (b c-a d)^2 \text{Cos}[e+f x]\sqrt{a+b \text{Sin}[e+f x]}}{d\left(c^2-d^2\right) f\sqrt{c+d \text{Sin}[e+f x]}}+\frac{b\left(4 a b c d-2 a^2 d^2-b^2\left(3 c^2-d^2\right)\right) \text{Cos}[e+f x]\sqrt{c+d \text{Sin}[e+f x]}}{d^2\left(c^2-d^2\right) f\sqrt{a+b \text{Sin}[e+f x]}}-$$

$$\frac{1}{d^2 (c+d)^{3/2} f}(a+b)^{3/2}(2 a d-b(3 c+d)) \text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{c+d}\,\sqrt{a+b \text{Sin}[e+f x]}}{\sqrt{a+b}\,\sqrt{c+d \text{Sin}[e+f x]}}\right],\frac{(a+b)(c-d)}{(a-b)(c+d)}\right]$$

$$\text{Sec}[e+f x]\sqrt{\frac{(b c-a d)(1-\text{Sin}[e+f x])}{(a+b)(c+d \text{Sin}[e+f x])}}\sqrt{-\frac{(b c-a d)(1+\text{Sin}[e+f x])}{(a-b)(c+d \text{Sin}[e+f x])}}\,(c+d \text{Sin}[e+f x])$$

Result (type 4, 1976 leaves) :

$$-\frac{2\left(b^2 c^2 \text{Cos}[e+f x]-2 a b c d \text{Cos}[e+f x]+a^2 d^2 \text{Cos}[e+f x]\right)\sqrt{a+b \text{Sin}[e+f x]}}{d\left(-c^2+d^2\right) f\sqrt{c+d \text{Sin}[e+f x]}}-$$

$$\frac{1}{2(c-d) d (c+d) f}\left(-\left(4(-b c+a d)\left(-b^3 c^2-2 a^3 c d-2 a b^2 c d+4 a^2 b d^2+b^3 d^2\right)\sqrt{\frac{(c+d) \text{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{-c+d}}\right.\right.$$

$$\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{-\frac{(a+b) \text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 (c+d \text{Sin}[e+f x])}{-b c+a d}}}{\sqrt{2}}\right],\frac{2(-b c+a d)}{(a+b)(-c+d)}\right] \text{Sec}[e+f x] \text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^4$$

$$\left.\sqrt{\frac{(c+d) \text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 (a+b \text{Sin}[e+f x])}{-b c+a d}}\sqrt{-\frac{(a+b) \text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 (c+d \text{Sin}[e+f x])}{-b c+a d}}\right)\Big/$$

$$\left((a+b)\,(c+d)\,\sqrt{a+b\,\mathrm{Sin}[e+f\,x]}\,\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}\right)-4\,(-b\,c+a\,d)\,\left(-4\,a\,b^2\,c^2+2\,a^2\,b\,c\,d-2\,b^3\,c\,d-2\,a^3\,d^2+6\,a\,b^2\,d^2\right)$$

$$\left(\left(\sqrt{\frac{(c+d)\,\mathrm{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{-c+d}}\ \mathrm{EllipticF}\left[\mathrm{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\mathrm{Sin}[e+f\,x])}{-b\,c+a\,d}}}{\sqrt{2}}\right],\ \frac{2\,(-b\,c+a\,d)}{(a+b)\,(-c+d)}\right]\right.\right.$$

$$\mathrm{Sec}[e+f\,x]\,\mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\,\sqrt{\frac{(c+d)\,\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(a+b\,\mathrm{Sin}[e+f\,x])}{-b\,c+a\,d}}$$

$$\left.\sqrt{-\frac{(a+b)\,\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\mathrm{Sin}[e+f\,x])}{-b\,c+a\,d}}\right)\Big/\left((a+b)\,(c+d)\,\sqrt{a+b\,\mathrm{Sin}[e+f\,x]}\,\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}\right)-$$

$$\left(\sqrt{\frac{(c+d)\,\mathrm{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{-c+d}}\ \mathrm{EllipticPi}\left[\frac{-b\,c+a\,d}{(a+b)\,d},\ \mathrm{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\mathrm{Sin}[e+f\,x])}{-b\,c+a\,d}}}{\sqrt{2}}\right],\ \frac{2\,(-b\,c+a\,d)}{(a+b)\,(-c+d)}\right]\mathrm{Sec}[e+f\,x]\right.$$

$$\left.\mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\,\sqrt{\frac{(c+d)\,\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(a+b\,\mathrm{Sin}[e+f\,x])}{-b\,c+a\,d}}\ \sqrt{-\frac{(a+b)\,\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\mathrm{Sin}[e+f\,x])}{-b\,c+a\,d}}\right)\Big/$$

$$\left.\left((a+b)\,d\,\sqrt{a+b\,\mathrm{Sin}[e+f\,x]}\,\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}\right)\right)+2\,\left(3\,b^3\,c^2-4\,a\,b^2\,c\,d+2\,a^2\,b\,d^2-b^3\,d^2\right)\,\left(\frac{\mathrm{Cos}[e+f\,x]\,\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}}{d\,\sqrt{a+b\,\mathrm{Sin}[e+f\,x]}}+\right.$$

$$\left(\sqrt{\frac{a-b}{a+b}}\,(a+b)\,\mathrm{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\mathrm{EllipticE}\left[\mathrm{ArcSin}\left[\frac{\sqrt{\frac{a-b}{a+b}}\ \mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]}{\sqrt{\frac{a+b\,\mathrm{Sin}[e+f\,x]}{a+b}}}\right],\ \frac{2\,(-b\,c+a\,d)}{(a-b)\,(c+d)}\right]\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}\right)\Big/$$

$$\left(b\, d\, \sqrt{\frac{(a+b)\, \mathrm{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{a+b\, \mathrm{Sin}[e+f x]}}\, \sqrt{a+b\, \mathrm{Sin}[e+f x]}\, \sqrt{\frac{a+b\, \mathrm{Sin}[e+f x]}{a+b}}\, \sqrt{\frac{(a+b)\, (c+d\, \mathrm{Sin}[e+f x])}{(c+d)\, (a+b\, \mathrm{Sin}[e+f x])}}\right) -$$

$$\frac{1}{b\, d} 2\, (-b\, c+a\, d) \left(\left(\left((a+b)\, c+a\, d\right) \sqrt{\frac{(c+d)\, \mathrm{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{-c+d}}\, \mathrm{EllipticF}\left[\mathrm{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\, \mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 (c+d\, \mathrm{Sin}[e+f x])}{-b\, c+a\, d}}}{\sqrt{2}}\right],\right.\right.\right.$$

$$\left.\frac{2\, (-b\, c+a\, d)}{(a+b)\, (-c+d)}\right] \mathrm{Sec}[e+f x]\, \mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^4 \sqrt{\frac{(c+d)\, \mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 (a+b\, \mathrm{Sin}[e+f x])}{-b\, c+a\, d}}$$

$$\left.\sqrt{-\frac{(a+b)\, \mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 (c+d\, \mathrm{Sin}[e+f x])}{-b\, c+a\, d}}\right) \Big/ \left((a+b)\, (c+d)\, \sqrt{a+b\, \mathrm{Sin}[e+f x]}\, \sqrt{c+d\, \mathrm{Sin}[e+f x]}\right) -$$

$$\left((b\, c+a\, d) \sqrt{\frac{(c+d)\, \mathrm{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{-c+d}}\, \mathrm{EllipticPi}\left[\frac{-b\, c+a\, d}{(a+b)\, d}, \mathrm{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\, \mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 (c+d\, \mathrm{Sin}[e+f x])}{-b\, c+a\, d}}}{\sqrt{2}}\right],\right.\right.$$

$$\left.\frac{2\, (-b\, c+a\, d)}{(a+b)\, (-c+d)}\right] \mathrm{Sec}[e+f x]\, \mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^4 \sqrt{\frac{(c+d)\, \mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 (a+b\, \mathrm{Sin}[e+f x])}{-b\, c+a\, d}}$$

$$\left.\left.\left.\sqrt{-\frac{(a+b)\, \mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 (c+d\, \mathrm{Sin}[e+f x])}{-b\, c+a\, d}}\right) \Big/ \left((a+b)\, d\, \sqrt{a+b\, \mathrm{Sin}[e+f x]}\, \sqrt{c+d\, \mathrm{Sin}[e+f x]}\right)\right)\right)$$

Problem 782: Result more than twice size of optimal antiderivative.

$$\int \frac{(a+b\, \mathrm{Sin}[e+f x])^{5/2}}{(c+d\, \mathrm{Sin}[e+f x])^{5/2}}\, dx$$

Optimal (type 4, 737 leaves, 6 steps) :

$$\frac{2\,(b\,c-a\,d)^2\,\mathrm{Cos}[e+f\,x]\,\sqrt{a+b\,\mathrm{Sin}[e+f\,x]}}{3\,d\,\left(c^2-d^2\right)\,f\,(c+d\,\mathrm{Sin}[e+f\,x])^{3/2}}+\frac{1}{3\,(c-d)^2\,d^2\,(c+d)^{3/2}\,f}$$

$$2\,(a-b)\,\sqrt{a+b}\,\left(3\,b\,c^2+4\,a\,c\,d-7\,b\,d^2\right)\,\mathrm{EllipticE}\left[\mathrm{ArcSin}\left[\frac{\sqrt{c+d}\,\sqrt{a+b\,\mathrm{Sin}[e+f\,x]}}{\sqrt{a+b}\,\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}}\right],\,\frac{(a+b)\,(c-d)}{(a-b)\,(c+d)}\right]\,\mathrm{Sec}[e+f\,x]$$

$$\sqrt{\frac{(b\,c-a\,d)\,(1-\mathrm{Sin}[e+f\,x])}{(a+b)\,(c+d\,\mathrm{Sin}[e+f\,x])}}\,\sqrt{-\frac{(b\,c-a\,d)\,(1+\mathrm{Sin}[e+f\,x])}{(a-b)\,(c+d\,\mathrm{Sin}[e+f\,x])}}\,(c+d\,\mathrm{Sin}[e+f\,x])-\frac{1}{3\,(c-d)^2\,d^3\,(c+d)^{3/2}\,f}2\,\sqrt{a+b}$$

$$\left(a^2\,d^2\,(3\,c+d)+a\,b\,d\,\left(3\,c^2-4\,c\,d-7\,d^2\right)+b^2\,\left(3\,c^3-6\,c^2\,d-2\,c\,d^2+9\,d^3\right)\right)\,\mathrm{EllipticF}\left[\mathrm{ArcSin}\left[\frac{\sqrt{c+d}\,\sqrt{a+b\,\mathrm{Sin}[e+f\,x]}}{\sqrt{a+b}\,\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}}\right],\,\frac{(a+b)\,(c-d)}{(a-b)\,(c+d)}\right]$$

$$\mathrm{Sec}[e+f\,x]\,\sqrt{\frac{(b\,c-a\,d)\,(1-\mathrm{Sin}[e+f\,x])}{(a+b)\,(c+d\,\mathrm{Sin}[e+f\,x])}}\,\sqrt{-\frac{(b\,c-a\,d)\,(1+\mathrm{Sin}[e+f\,x])}{(a-b)\,(c+d\,\mathrm{Sin}[e+f\,x])}}\,(c+d\,\mathrm{Sin}[e+f\,x])+$$

$$\frac{1}{d^3\,\sqrt{c+d}\,f}2\,b^2\,\sqrt{a+b}\,\mathrm{EllipticPi}\left[\frac{(a+b)\,d}{b\,(c+d)},\,\mathrm{ArcSin}\left[\frac{\sqrt{c+d}\,\sqrt{a+b\,\mathrm{Sin}[e+f\,x]}}{\sqrt{a+b}\,\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}}\right],\,\frac{(a+b)\,(c-d)}{(a-b)\,(c+d)}\right]$$

$$\mathrm{Sec}[e+f\,x]\,\sqrt{\frac{(b\,c-a\,d)\,(1-\mathrm{Sin}[e+f\,x])}{(a+b)\,(c+d\,\mathrm{Sin}[e+f\,x])}}\,\sqrt{-\frac{(b\,c-a\,d)\,(1+\mathrm{Sin}[e+f\,x])}{(a-b)\,(c+d\,\mathrm{Sin}[e+f\,x])}}\,(c+d\,\mathrm{Sin}[e+f\,x])$$

Result (type 4, 2139 leaves) :

$$\frac{1}{f}\sqrt{a+b\,\mathrm{Sin}[e+f\,x]}\,\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}\,\left(-\frac{2\,\left(b^2\,c^2\,\mathrm{Cos}[e+f\,x]-2\,a\,b\,c\,d\,\mathrm{Cos}[e+f\,x]+a^2\,d^2\,\mathrm{Cos}[e+f\,x]\right)}{3\,d\,\left(-c^2+d^2\right)\,(c+d\,\mathrm{Sin}[e+f\,x])^2}-\right.$$

$$\left(2\,\left(3\,b^2\,c^3\,\mathrm{Cos}[e+f\,x]+a\,b\,c^2\,d\,\mathrm{Cos}[e+f\,x]-4\,a^2\,c\,d^2\,\mathrm{Cos}[e+f\,x]-7\,b^2\,c\,d^2\,\mathrm{Cos}[e+f\,x]+7\,a\,b\,d^3\,\mathrm{Cos}[e+f\,x]\right)\right)\Big/$$

$$\left.\left(3\,d\,\left(-c^2+d^2\right)^2\,(c+d\,\mathrm{Sin}[e+f\,x])\right)\right)+\frac{1}{3\,(c-d)^2\,d\,(c+d)^2\,f}$$

$$\left(-\frac{1}{(a+b)\,(c+d)\,\sqrt{a+b\,\mathrm{Sin}[e+f\,x]}\,\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}}4\,(-b\,c+a\,d)\,\left(-b^3\,c^3+3\,a^3\,c^2\,d+2\,a\,b^2\,c^2\,d-8\,a^2\,b\,c\,d^2+b^3\,c\,d^2+a^3\,d^3+2\,a\,b^2\,d^3\right)\right.$$

$$\sqrt{\frac{(c+d)\,\mathrm{Cot}\left[\frac{1}{2}\,\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{-c+d}}\,\mathrm{EllipticF}\left[\mathrm{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\mathrm{Csc}\left[\frac{1}{2}\,\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\mathrm{Sin}[e+f\,x])}{-b\,c+a\,d}}}{\sqrt{2}}\right],\,\frac{2\,(-b\,c+a\,d)}{(a+b)\,(-c+d)}\right]\,\mathrm{Sec}[e+f\,x]$$

$$\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^4 \sqrt{\frac{(c+d)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 (a+b\,\text{Sin}[e+f x])}{-b c+a d}} \sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 (c+d\,\text{Sin}[e+f x])}{-b c+a d}} -$$

$$4\,(-b c+a d)\left(-4 a b^2 c^3+3 a^2 b c^2 d+b^3 c^2 d+4 a^3 c d^2-7 a^2 b d^3+3 b^3 d^3\right)$$

$$\left(\left(\sqrt{\frac{(c+d)\,\text{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{-c+d}}\ \text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 (c+d\,\text{Sin}[e+f x])}{-b c+a d}}}{\sqrt{2}}\right], \frac{2\,(-b c+a d)}{(a+b)\,(-c+d)}\right]\right.\right.$$

$$\text{Sec}[e+f x]\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^4 \sqrt{\frac{(c+d)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 (a+b\,\text{Sin}[e+f x])}{-b c+a d}}$$

$$\left.\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 (c+d\,\text{Sin}[e+f x])}{-b c+a d}}\right) \Big/ \left((a+b)\,(c+d)\,\sqrt{a+b\,\text{Sin}[e+f x]}\,\sqrt{c+d\,\text{Sin}[e+f x]}\right) -$$

$$\left(\sqrt{\frac{(c+d)\,\text{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{-c+d}}\ \text{EllipticPi}\left[\frac{-b c+a d}{(a+b)\,d}, \text{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 (c+d\,\text{Sin}[e+f x])}{-b c+a d}}}{\sqrt{2}}\right], \frac{2\,(-b c+a d)}{(a+b)\,(-c+d)}\right]\right.$$

$$\text{Sec}[e+f x]\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^4 \sqrt{\frac{(c+d)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 (a+b\,\text{Sin}[e+f x])}{-b c+a d}}$$

$$\left.\left.\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 (c+d\,\text{Sin}[e+f x])}{-b c+a d}}\right) \Big/ \left((a+b)\,d\,\sqrt{a+b\,\text{Sin}[e+f x]}\,\sqrt{c+d\,\text{Sin}[e+f x]}\right)\right) +$$

$$2\left(3 b^3 c^3+a b^2 c^2 d-4 a^2 b c d^2-7 b^3 c d^2+7 a b^2 d^3\right)\left(\frac{\text{Cos}[e+f x]\,\sqrt{c+d\,\text{Sin}[e+f x]}}{d\,\sqrt{a+b\,\text{Sin}[e+f x]}}+\right.$$

$$\left(\sqrt{\frac{a-b}{a+b}}\,(a+b)\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{\frac{a-b}{a+b}}\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]}{\sqrt{\frac{a+b\,\text{Sin}[e+f\,x]}{a+b}}}\right],\,\frac{2\,(-b\,c+a\,d)}{(a-b)\,(c+d)}\right]\,\sqrt{c+d\,\text{Sin}[e+f\,x]}\right)\Big/$$

$$\left(b\,d\,\sqrt{\frac{(a+b)\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{a+b\,\text{Sin}[e+f\,x]}}\,\sqrt{a+b\,\text{Sin}[e+f\,x]}\,\sqrt{\frac{a+b\,\text{Sin}[e+f\,x]}{a+b}}\,\sqrt{\frac{(a+b)\,(c+d\,\text{Sin}[e+f\,x])}{(c+d)\,(a+b\,\text{Sin}[e+f\,x])}}\right)-$$

$$\frac{1}{b\,d}\,2\,(-b\,c+a\,d)\left(\left(\left((a+b)\,c+a\,d\right)\sqrt{\frac{(c+d)\,\text{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{-c+d}}\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}}{\sqrt{2}}\right],\right.\right.\right.$$

$$\left.\frac{2\,(-b\,c+a\,d)}{(a+b)\,(-c+d)}\right]\,\text{Sec}[e+f\,x]\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\,\sqrt{\frac{(c+d)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(a+b\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}$$

$$\left.\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}\right)\Big/\left((a+b)\,(c+d)\,\sqrt{a+b\,\text{Sin}[e+f\,x]}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}\right)-$$

$$\left((b\,c+a\,d)\sqrt{\frac{(c+d)\,\text{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{-c+d}}\,\text{EllipticPi}\left[\frac{-b\,c+a\,d}{(a+b)\,d},\,\text{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}}{\sqrt{2}}\right],\right.\right.$$

$$\left.\frac{2\,(-b\,c+a\,d)}{(a+b)\,(-c+d)}\right]\,\text{Sec}[e+f\,x]\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\,\sqrt{\frac{(c+d)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(a+b\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}$$

$$\left.\left.\left.\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}\right)\Big/\left((a+b)\,d\,\sqrt{a+b\,\text{Sin}[e+f\,x]}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}\right)\right)\right)$$

- **Problem 783: Result more than twice size of optimal antiderivative.**

$$\int \frac{(c+d\,\text{Sin}[e+f\,x])^{5/2}}{\sqrt{a+b\,\text{Sin}[e+f\,x]}}\,dx$$

Optimal (type 4, 772 leaves, 7 steps):

$$\frac{1}{4\,b^2\,(b\,c-a\,d)\,f}3\,\sqrt{a+b}\,(c-d)\,d\,\sqrt{c+d}\,(3\,b\,c-a\,d)\,\text{EllipticE}\Big[\text{ArcSin}\Big[\frac{\sqrt{a+b}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}{\sqrt{c+d}\,\sqrt{a+b\,\text{Sin}[e+f\,x]}}\Big],\frac{(a-b)\,(c+d)}{(a+b)\,(c-d)}\Big]$$
$$\text{Sec}[e+f\,x]\,\sqrt{-\frac{(b\,c-a\,d)\,(1-\text{Sin}[e+f\,x])}{(c+d)\,(a+b\,\text{Sin}[e+f\,x])}}\,\sqrt{\frac{(b\,c-a\,d)\,(1+\text{Sin}[e+f\,x])}{(c-d)\,(a+b\,\text{Sin}[e+f\,x])}}\,(a+b\,\text{Sin}[e+f\,x])-\frac{1}{4\,b^3\,\sqrt{a+b}\,f}$$
$$\sqrt{c+d}\,\left(10\,a\,b\,c\,d-3\,a^2\,d^2-b^2\,\left(15\,c^2+4\,d^2\right)\right)\,\text{EllipticPi}\Big[\frac{b\,(c+d)}{(a+b)\,d},\,\text{ArcSin}\Big[\frac{\sqrt{a+b}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}{\sqrt{c+d}\,\sqrt{a+b\,\text{Sin}[e+f\,x]}}\Big],\frac{(a-b)\,(c+d)}{(a+b)\,(c-d)}\Big]$$
$$\text{Sec}[e+f\,x]\,\sqrt{-\frac{(b\,c-a\,d)\,(1-\text{Sin}[e+f\,x])}{(c+d)\,(a+b\,\text{Sin}[e+f\,x])}}\,\sqrt{\frac{(b\,c-a\,d)\,(1+\text{Sin}[e+f\,x])}{(c-d)\,(a+b\,\text{Sin}[e+f\,x])}}\,(a+b\,\text{Sin}[e+f\,x])-$$
$$\frac{3\,d\,(3\,b\,c-a\,d)\,\text{Cos}[e+f\,x]\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}{4\,b\,f\,\sqrt{a+b\,\text{Sin}[e+f\,x]}}-\frac{d^2\,\text{Cos}[e+f\,x]\,\sqrt{a+b\,\text{Sin}[e+f\,x]}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}{2\,b\,f}+\frac{1}{4\,b^3\,\sqrt{c+d}\,f}$$
$$\sqrt{a+b}\,\left(3\,a^2\,d^2-a\,b\,d\,(7\,c+3\,d)+b^2\,\left(8\,c^2+9\,c\,d+2\,d^2\right)\right)\,\text{EllipticF}\Big[\text{ArcSin}\Big[\frac{\sqrt{c+d}\,\sqrt{a+b\,\text{Sin}[e+f\,x]}}{\sqrt{a+b}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}\Big],\frac{(a+b)\,(c-d)}{(a-b)\,(c+d)}\Big]$$
$$\text{Sec}[e+f\,x]\,\sqrt{\frac{(b\,c-a\,d)\,(1-\text{Sin}[e+f\,x])}{(a+b)\,(c+d\,\text{Sin}[e+f\,x])}}\,\sqrt{-\frac{(b\,c-a\,d)\,(1+\text{Sin}[e+f\,x])}{(a-b)\,(c+d\,\text{Sin}[e+f\,x])}}\,(c+d\,\text{Sin}[e+f\,x])$$

Result (type 4, 1864 leaves):

$$-\frac{d^2\,\text{Cos}[e+f\,x]\,\sqrt{a+b\,\text{Sin}[e+f\,x]}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}{2\,b\,f}+$$
$$\frac{1}{8\,b\,f}\Bigg(-\Bigg(4\,(-b\,c+a\,d)\,\left(8\,b\,c^3+11\,b\,c\,d^2-a\,d^3\right)\,\sqrt{\frac{(c+d)\,\text{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{-c+d}}\,\text{EllipticF}\Big[\text{ArcSin}\Big[\frac{\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}}{\sqrt{2}}\Big],$$
$$\frac{2\,(-b\,c+a\,d)}{(a+b)\,(-c+d)}\Big]\,\text{Sec}[e+f\,x]\,\text{Sin}\Big[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^4\,\sqrt{\frac{(c+d)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(a+b\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}$$

$$\left.\sqrt{-\frac{(a+b)\,\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2(c+d\,\mathrm{Sin}[e+f\,x])}{-b\,c+a\,d}}\right)\Bigg/\left((a+b)\,(c+d)\,\sqrt{a+b\,\mathrm{Sin}[e+f\,x]}\,\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}\right)-$$

$$4\,(-b\,c+a\,d)\,\left(24\,b\,c^2\,d-4\,a\,c\,d^2+4\,b\,d^3\right)\left(\left(\sqrt{\frac{(c+d)\,\mathrm{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{-c+d}}\;\mathrm{EllipticF}\left[\mathrm{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2(c+d\,\mathrm{Sin}[e+f\,x])}{-b\,c+a\,d}}}{\sqrt{2}}\right],\right.\right.\right.$$

$$\left.\frac{2\,(-b\,c+a\,d)}{(a+b)\,(-c+d)}\right]\mathrm{Sec}[e+f\,x]\,\mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\sqrt{\frac{(c+d)\,\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2(a+b\,\mathrm{Sin}[e+f\,x])}{-b\,c+a\,d}}$$

$$\left.\sqrt{-\frac{(a+b)\,\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2(c+d\,\mathrm{Sin}[e+f\,x])}{-b\,c+a\,d}}\right)\Bigg/\left((a+b)\,(c+d)\,\sqrt{a+b\,\mathrm{Sin}[e+f\,x]}\,\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}\right)-$$

$$\left(\sqrt{\frac{(c+d)\,\mathrm{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{-c+d}}\;\mathrm{EllipticPi}\left[\frac{-b\,c+a\,d}{(a+b)\,d},\mathrm{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2(c+d\,\mathrm{Sin}[e+f\,x])}{-b\,c+a\,d}}}{\sqrt{2}}\right],\frac{2\,(-b\,c+a\,d)}{(a+b)\,(-c+d)}\right]\mathrm{Sec}[e+f\,x]\right.$$

$$\left.\mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\sqrt{\frac{(c+d)\,\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2(a+b\,\mathrm{Sin}[e+f\,x])}{-b\,c+a\,d}}\;\sqrt{-\frac{(a+b)\,\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2(c+d\,\mathrm{Sin}[e+f\,x])}{-b\,c+a\,d}}\right)\Bigg/$$

$$\left.\left((a+b)\,d\,\sqrt{a+b\,\mathrm{Sin}[e+f\,x]}\,\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}\right)\right)+2\left(-9\,b\,c\,d^2+3\,a\,d^3\right)\left(\frac{\mathrm{Cos}[e+f\,x]\,\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}}{d\,\sqrt{a+b\,\mathrm{Sin}[e+f\,x]}}+\right.$$

$$\left(\sqrt{\frac{a-b}{a+b}}\,(a+b)\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{\frac{a-b}{a+b}}\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]}{\sqrt{\frac{a+b\,\text{Sin}[e+f\,x]}{a+b}}}\right],\frac{2\,(-b\,c+a\,d)}{(a-b)\,(c+d)}\right]\sqrt{c+d\,\text{Sin}[e+f\,x]}\right)\Big/$$

$$\left(b\,d\,\sqrt{\frac{(a+b)\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{a+b\,\text{Sin}[e+f\,x]}}\,\sqrt{a+b\,\text{Sin}[e+f\,x]}\,\sqrt{\frac{a+b\,\text{Sin}[e+f\,x]}{a+b}}\,\sqrt{\frac{(a+b)\,(c+d\,\text{Sin}[e+f\,x])}{(c+d)\,(a+b\,\text{Sin}[e+f\,x])}}\right)-$$

$$\frac{1}{b\,d}\,2\,(-b\,c+a\,d)\left(\left(\left((a+b)\,c+a\,d\right)\sqrt{\frac{(c+d)\,\text{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{-c+d}}\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}}{\sqrt{2}}\right],\right.\right.\right.$$

$$\left.\frac{2\,(-b\,c+a\,d)}{(a+b)\,(-c+d)}\right]\text{Sec}[e+f\,x]\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\sqrt{\frac{(c+d)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2(a+b\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}$$

$$\left.\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}\right)\Big/\left((a+b)\,(c+d)\,\sqrt{a+b\,\text{Sin}[e+f\,x]}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}\right)-$$

$$\left((b\,c+a\,d)\sqrt{\frac{(c+d)\,\text{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{-c+d}}\,\text{EllipticPi}\left[\frac{-b\,c+a\,d}{(a+b)\,d},\text{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}}{\sqrt{2}}\right],\right.\right.$$

$$\left.\frac{2\,(-b\,c+a\,d)}{(a+b)\,(-c+d)}\right]\text{Sec}[e+f\,x]\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\sqrt{\frac{(c+d)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2(a+b\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}$$

$$\left.\left.\left.\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}\right)\Big/\left((a+b)\,d\,\sqrt{a+b\,\text{Sin}[e+f\,x]}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}\right)\right)\right)$$

- **Problem 784: Humongous result has more than 200000 leaves.**

$$\int \frac{(c+d\,\text{Sin}[e+f\,x])^{3/2}}{\sqrt{a+b\,\text{Sin}[e+f\,x]}}\,dx$$

Optimal (type 4, 644 leaves, 6 steps):

$$\frac{1}{b\,(b\,c-a\,d)\,f}\sqrt{a+b}\,(c-d)\,d\,\sqrt{c+d}\,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}{\sqrt{c+d}\,\sqrt{a+b\,\text{Sin}[e+f\,x]}}\right],\frac{(a-b)\,(c+d)}{(a+b)\,(c-d)}\right]$$
$$\text{Sec}[e+f\,x]\,\sqrt{-\frac{(b\,c-a\,d)\,(1-\text{Sin}[e+f\,x])}{(c+d)\,(a+b\,\text{Sin}[e+f\,x])}}\,\sqrt{\frac{(b\,c-a\,d)\,(1+\text{Sin}[e+f\,x])}{(c-d)\,(a+b\,\text{Sin}[e+f\,x])}}\,(a+b\,\text{Sin}[e+f\,x])+\frac{1}{b^2\,\sqrt{a+b}\,f}$$
$$\sqrt{c+d}\,(3\,b\,c-a\,d)\,\text{EllipticPi}\left[\frac{b\,(c+d)}{(a+b)\,d},\text{ArcSin}\left[\frac{\sqrt{a+b}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}{\sqrt{c+d}\,\sqrt{a+b\,\text{Sin}[e+f\,x]}}\right],\frac{(a-b)\,(c+d)}{(a+b)\,(c-d)}\right]\,\text{Sec}[e+f\,x]$$
$$\sqrt{-\frac{(b\,c-a\,d)\,(1-\text{Sin}[e+f\,x])}{(c+d)\,(a+b\,\text{Sin}[e+f\,x])}}\,\sqrt{\frac{(b\,c-a\,d)\,(1+\text{Sin}[e+f\,x])}{(c-d)\,(a+b\,\text{Sin}[e+f\,x])}}\,(a+b\,\text{Sin}[e+f\,x])-\frac{d\,\text{Cos}[e+f\,x]\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}{f\,\sqrt{a+b\,\text{Sin}[e+f\,x]}}-$$
$$\frac{1}{b^2\,\sqrt{c+d}\,f}\sqrt{a+b}\,(a\,d-b\,(2\,c+d))\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{c+d}\,\sqrt{a+b\,\text{Sin}[e+f\,x]}}{\sqrt{a+b}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}\right],\frac{(a+b)\,(c-d)}{(a-b)\,(c+d)}\right]$$
$$\text{Sec}[e+f\,x]\,\sqrt{\frac{(b\,c-a\,d)\,(1-\text{Sin}[e+f\,x])}{(a+b)\,(c+d\,\text{Sin}[e+f\,x])}}\,\sqrt{-\frac{(b\,c-a\,d)\,(1+\text{Sin}[e+f\,x])}{(a-b)\,(c+d\,\text{Sin}[e+f\,x])}}\,(c+d\,\text{Sin}[e+f\,x])$$

Result (type ?, 222 963 leaves): Display of huge result suppressed!

- **Problem 785: Result more than twice size of optimal antiderivative.**

$$\int \frac{\sqrt{c+d\,\text{Sin}[e+f\,x]}}{\sqrt{a+b\,\text{Sin}[e+f\,x]}}\,dx$$

Optimal (type 4, 198 leaves, 1 step):

$$\frac{1}{b\,\sqrt{c+d}\,f}2\,\sqrt{a+b}\,\text{EllipticPi}\left[\frac{(a+b)\,d}{b\,(c+d)},\text{ArcSin}\left[\frac{\sqrt{c+d}\,\sqrt{a+b\,\text{Sin}[e+f\,x]}}{\sqrt{a+b}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}\right],\frac{(a+b)\,(c-d)}{(a-b)\,(c+d)}\right]$$
$$\text{Sec}[e+f\,x]\,\sqrt{\frac{(b\,c-a\,d)\,(1-\text{Sin}[e+f\,x])}{(a+b)\,(c+d\,\text{Sin}[e+f\,x])}}\,\sqrt{-\frac{(b\,c-a\,d)\,(1+\text{Sin}[e+f\,x])}{(a-b)\,(c+d\,\text{Sin}[e+f\,x])}}\,(c+d\,\text{Sin}[e+f\,x])$$

Result (type 4, 578 leaves):

$$-\frac{1}{f}4\,(b\,c-a\,d)\Bigg(\Bigg(\sqrt{\frac{(a+b)\,\text{Cot}\big[\tfrac{1}{2}\big(-e+\tfrac{\pi}{2}-f\,x\big)\big]^2}{-a+b}}\;\text{EllipticF}\Bigg[\text{ArcSin}\Bigg[\frac{\sqrt{-\frac{(c+d)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(a+b\,\text{Sin}[e+f\,x])}{b\,c-a\,d}}}{\sqrt{2}}\Bigg],\;\frac{2\,(b\,c-a\,d)}{(-a+b)\,(c+d)}\Bigg]$$

$$\text{Sec}[e+f\,x]\;\text{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^4\sqrt{-\frac{(c+d)\,\text{Csc}\big[\tfrac{1}{2}\big(-e+\tfrac{\pi}{2}-f\,x\big)\big]^2\,(a+b\,\text{Sin}[e+f\,x])}{b\,c-a\,d}}$$

$$\sqrt{\frac{(a+b)\,\text{Csc}\big[\tfrac{1}{2}\big(-e+\tfrac{\pi}{2}-f\,x\big)\big]^2\,(c+d\,\text{Sin}[e+f\,x])}{b\,c-a\,d}}\Bigg)\Big/\Big((a+b)\,\sqrt{a+b\,\text{Sin}[e+f\,x]}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}\Big)-$$

$$\Bigg(d\,\sqrt{\frac{(a+b)\,\text{Cot}\big[\tfrac{1}{2}\big(-e+\tfrac{\pi}{2}-f\,x\big)\big]^2}{-a+b}}\;\text{EllipticPi}\Bigg[\frac{b\,c-a\,d}{b\,(c+d)},\,\text{ArcSin}\Bigg[\frac{\sqrt{-\frac{(c+d)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(a+b\,\text{Sin}[e+f\,x])}{b\,c-a\,d}}}{\sqrt{2}}\Bigg],\;\frac{2\,(b\,c-a\,d)}{(-a+b)\,(c+d)}\Bigg]$$

$$\text{Sec}[e+f\,x]\;\text{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^4\sqrt{-\frac{(c+d)\,\text{Csc}\big[\tfrac{1}{2}\big(-e+\tfrac{\pi}{2}-f\,x\big)\big]^2\,(a+b\,\text{Sin}[e+f\,x])}{b\,c-a\,d}}$$

$$\sqrt{\frac{(a+b)\,\text{Csc}\big[\tfrac{1}{2}\big(-e+\tfrac{\pi}{2}-f\,x\big)\big]^2\,(c+d\,\text{Sin}[e+f\,x])}{b\,c-a\,d}}\Bigg)\Big/\Big(b\,(c+d)\,\sqrt{a+b\,\text{Sin}[e+f\,x]}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}\Big)\Bigg)$$

- **Problem 787: Humongous result has more than 200000 leaves.**

$$\int\frac{1}{\sqrt{a+b\,\text{Sin}[e+f\,x]}\,\left(c+d\,\text{Sin}[e+f\,x]\right)^{3/2}}\,dx$$

Optimal (type 4, 405 leaves, 3 steps) :

$$\left(2(a-b)\sqrt{a+b}\,d\,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{c+d}\,\sqrt{a+b\,\text{Sin}[e+f\,x]}}{\sqrt{a+b}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}\right],\frac{(a+b)(c-d)}{(a-b)(c+d)}\right]\text{Sec}[e+f\,x]\right.$$
$$\left.\sqrt{\frac{(b\,c-a\,d)(1-\text{Sin}[e+f\,x])}{(a+b)(c+d\,\text{Sin}[e+f\,x])}}\,\sqrt{-\frac{(b\,c-a\,d)(1+\text{Sin}[e+f\,x])}{(a-b)(c+d\,\text{Sin}[e+f\,x])}}\,(c+d\,\text{Sin}[e+f\,x])\right)\Big/\left((c-d)\sqrt{c+d}\,(b\,c-a\,d)^2 f\right)+$$
$$\left(2\sqrt{a+b}\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{c+d}\,\sqrt{a+b\,\text{Sin}[e+f\,x]}}{\sqrt{a+b}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}\right],\frac{(a+b)(c-d)}{(a-b)(c+d)}\right]\text{Sec}[e+f\,x]\sqrt{\frac{(b\,c-a\,d)(1-\text{Sin}[e+f\,x])}{(a+b)(c+d\,\text{Sin}[e+f\,x])}}\right.$$
$$\left.\sqrt{-\frac{(b\,c-a\,d)(1+\text{Sin}[e+f\,x])}{(a-b)(c+d\,\text{Sin}[e+f\,x])}}\,(c+d\,\text{Sin}[e+f\,x])\right)\Big/\left((c-d)\sqrt{c+d}\,(b\,c-a\,d)\,f\right)$$

Result (type ?, 204 942 leaves) : Display of huge result suppressed!

Problem 788: Result more than twice size of optimal antiderivative.

$$\int\frac{1}{\sqrt{a+b\,\text{Sin}[e+f\,x]}\,(c+d\,\text{Sin}[e+f\,x])^{5/2}}\,dx$$

Optimal (type 4, 521 leaves, 4 steps) :

$$-\frac{2\,d^2\,\text{Cos}[e+f\,x]\sqrt{a+b\,\text{Sin}[e+f\,x]}}{3(b\,c-a\,d)\left(c^2-d^2\right)f\,(c+d\,\text{Sin}[e+f\,x])^{3/2}}-$$
$$\left(4(a-b)\sqrt{a+b}\,d\left(2\,a\,c\,d-b\left(3\,c^2-d^2\right)\right)\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{c+d}\,\sqrt{a+b\,\text{Sin}[e+f\,x]}}{\sqrt{a+b}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}\right],\frac{(a+b)(c-d)}{(a-b)(c+d)}\right]\text{Sec}[e+f\,x]\right.$$
$$\left.\sqrt{\frac{(b\,c-a\,d)(1-\text{Sin}[e+f\,x])}{(a+b)(c+d\,\text{Sin}[e+f\,x])}}\,\sqrt{-\frac{(b\,c-a\,d)(1+\text{Sin}[e+f\,x])}{(a-b)(c+d\,\text{Sin}[e+f\,x])}}\,(c+d\,\text{Sin}[e+f\,x])\right)\Big/\left(3(c-d)^2(c+d)^{3/2}(b\,c-a\,d)^3 f\right)-$$
$$\left(2\sqrt{a+b}\left(a\,d\,(3\,c+d)-b\left(3\,c^2+3\,c\,d-2\,d^2\right)\right)\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{c+d}\,\sqrt{a+b\,\text{Sin}[e+f\,x]}}{\sqrt{a+b}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}\right],\frac{(a+b)(c-d)}{(a-b)(c+d)}\right]\text{Sec}[e+f\,x]\right.$$
$$\left.\sqrt{\frac{(b\,c-a\,d)(1-\text{Sin}[e+f\,x])}{(a+b)(c+d\,\text{Sin}[e+f\,x])}}\,\sqrt{-\frac{(b\,c-a\,d)(1+\text{Sin}[e+f\,x])}{(a-b)(c+d\,\text{Sin}[e+f\,x])}}\,(c+d\,\text{Sin}[e+f\,x])\right)\Big/\left(3(c-d)^2(c+d)^{3/2}(b\,c-a\,d)^2 f\right)$$

Result (type 4, 2072 leaves) :

$$\frac{1}{f}\sqrt{a+b\,\text{Sin}[e+f\,x]}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}$$

$$\left(-\frac{2 d^2 \operatorname{Cos}[e+f x]}{3 (b c-a d) \left(c^2-d^2\right) (c+d \operatorname{Sin}[e+f x])^2}+\frac{4 \left(-3 b c^2 d^2 \operatorname{Cos}[e+f x]+2 a c d^3 \operatorname{Cos}[e+f x]+b d^4 \operatorname{Cos}[e+f x]\right)}{3 (b c-a d)^2 \left(c^2-d^2\right)^2 (c+d \operatorname{Sin}[e+f x])}\right)+$$

$$\frac{1}{3 (c-d)^2 (c+d)^2 (b c-a d)^2 f}$$

$$\left(-\frac{1}{(a+b) (c+d) \sqrt{a+b \operatorname{Sin}[e+f x]} \sqrt{c+d \operatorname{Sin}[e+f x]}} 4 (-b c+a d) \left(3 b^2 c^4-6 a b c^3 d+3 a^2 c^2 d^2-5 b^2 c^2 d^2+2 a b c d^3+a^2 d^4+2 b^2 d^4\right)\right.$$

$$\sqrt{\frac{(c+d) \operatorname{Cot}\left[\frac{1}{2} \left(-e+\frac{\pi}{2}-f x\right)\right]^2}{-c+d}} \operatorname{EllipticF}\left[\operatorname{ArcSin}\left[\frac{\sqrt{-\frac{(a+b) \operatorname{Csc}\left[\frac{1}{2} \left(-e+\frac{\pi}{2}-f x\right)\right]^2 (c+d \operatorname{Sin}[e+f x])}{-b c+a d}}}{\sqrt{2}}\right], \frac{2 (-b c+a d)}{(a+b) (-c+d)}\right] \operatorname{Sec}[e+f x]$$

$$\operatorname{Sin}\left[\frac{1}{2} \left(-e+\frac{\pi}{2}-f x\right)\right]^4 \sqrt{\frac{(c+d) \operatorname{Csc}\left[\frac{1}{2} \left(-e+\frac{\pi}{2}-f x\right)\right]^2 (a+b \operatorname{Sin}[e+f x])}{-b c+a d}} \sqrt{-\frac{(a+b) \operatorname{Csc}\left[\frac{1}{2} \left(-e+\frac{\pi}{2}-f x\right)\right]^2 (c+d \operatorname{Sin}[e+f x])}{-b c+a d}} -$$

$$4 (-b c+a d) \left(-6 b^2 c^3 d-2 a b c^2 d^2+4 a^2 c d^3+2 b^2 c d^3+2 a b d^4\right)$$

$$\left(\left(\sqrt{\frac{(c+d) \operatorname{Cot}\left[\frac{1}{2} \left(-e+\frac{\pi}{2}-f x\right)\right]^2}{-c+d}} \operatorname{EllipticF}\left[\operatorname{ArcSin}\left[\frac{\sqrt{-\frac{(a+b) \operatorname{Csc}\left[\frac{1}{2} \left(-e+\frac{\pi}{2}-f x\right)\right]^2 (c+d \operatorname{Sin}[e+f x])}{-b c+a d}}}{\sqrt{2}}\right], \frac{2 (-b c+a d)}{(a+b) (-c+d)}\right]\right.\right.$$

$$\operatorname{Sec}[e+f x] \operatorname{Sin}\left[\frac{1}{2} \left(-e+\frac{\pi}{2}-f x\right)\right]^4 \sqrt{\frac{(c+d) \operatorname{Csc}\left[\frac{1}{2} \left(-e+\frac{\pi}{2}-f x\right)\right]^2 (a+b \operatorname{Sin}[e+f x])}{-b c+a d}}$$

$$\left.\sqrt{-\frac{(a+b) \operatorname{Csc}\left[\frac{1}{2} \left(-e+\frac{\pi}{2}-f x\right)\right]^2 (c+d \operatorname{Sin}[e+f x])}{-b c+a d}}\right) \Big/ \left((a+b) (c+d) \sqrt{a+b \operatorname{Sin}[e+f x]} \sqrt{c+d \operatorname{Sin}[e+f x]}\right) -$$

$$\left(\sqrt{\frac{(c+d) \operatorname{Cot}\left[\frac{1}{2} \left(-e+\frac{\pi}{2}-f x\right)\right]^2}{-c+d}} \operatorname{EllipticPi}\left[\frac{-b c+a d}{(a+b) d}, \operatorname{ArcSin}\left[\frac{\sqrt{-\frac{(a+b) \operatorname{Csc}\left[\frac{1}{2} \left(-e+\frac{\pi}{2}-f x\right)\right]^2 (c+d \operatorname{Sin}[e+f x])}{-b c+a d}}}{\sqrt{2}}\right], \frac{2 (-b c+a d)}{(a+b) (-c+d)}\right] \operatorname{Sec}[e+f x]\right.$$

$$\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\sqrt{\frac{(c+d)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2(a+b\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}\Bigg)\Big/$$

$$\left((a+b)\,d\sqrt{a+b\,\text{Sin}[e+f\,x]}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}\right)\Bigg)+2\left(6\,b^2\,c^2\,d^2-4\,a\,b\,c\,d^3-2\,b^2\,d^4\right)\Bigg(\frac{\text{Cos}[e+f\,x]\sqrt{c+d\,\text{Sin}[e+f\,x]}}{d\sqrt{a+b\,\text{Sin}[e+f\,x]}}+$$

$$\left(\sqrt{\frac{a-b}{a+b}}\,(a+b)\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{\frac{a-b}{a+b}}\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]}{\sqrt{\frac{a+b\,\text{Sin}[e+f\,x]}{a+b}}}\right],\frac{2\,(-b\,c+a\,d)}{(a-b)\,(c+d)}\right]\sqrt{c+d\,\text{Sin}[e+f\,x]}\right)\Big/$$

$$\left(b\,d\sqrt{\frac{(a+b)\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{a+b\,\text{Sin}[e+f\,x]}}\sqrt{a+b\,\text{Sin}[e+f\,x]}\sqrt{\frac{a+b\,\text{Sin}[e+f\,x]}{a+b}}\sqrt{\frac{(a+b)\,(c+d\,\text{Sin}[e+f\,x])}{(c+d)\,(a+b\,\text{Sin}[e+f\,x])}}\right)-$$

$$\frac{1}{b\,d}\,2\,(-b\,c+a\,d)\Bigg(\Bigg(((a+b)\,c+a\,d)\sqrt{\frac{(c+d)\,\text{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{-c+d}}\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}}{\sqrt{2}}\right],\right.$$

$$\left.\frac{2\,(-b\,c+a\,d)}{(a+b)\,(-c+d)}\right]\text{Sec}[e+f\,x]\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\sqrt{\frac{(c+d)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2(a+b\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}$$

$$\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}\Bigg)\Big/\left((a+b)\,(c+d)\sqrt{a+b\,\text{Sin}[e+f\,x]}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}\right)-$$

$$\Bigg((b\,c+a\,d)\sqrt{\frac{(c+d)\,\text{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{-c+d}}\,\text{EllipticPi}\left[\frac{-b\,c+a\,d}{(a+b)\,d},\text{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}}{\sqrt{2}}\right],\right.$$

$$\frac{2(-b c+a d)}{(a+b)(-c+d)}\Big]\,\text{Sec}[e+f x]\,\text{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^4\sqrt{\frac{(c+d)\,\text{Csc}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f x\big)\big]^2(a+b\,\text{Sin}[e+f x])}{-b c+a d}}$$

$$\sqrt{-\frac{(a+b)\,\text{Csc}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f x\big)\big]^2(c+d\,\text{Sin}[e+f x])}{-b c+a d}}\Bigg)\Bigg/\Big((a+b)\,d\,\sqrt{a+b\,\text{Sin}[e+f x]}\,\sqrt{c+d\,\text{Sin}[e+f x]}\Big)\Bigg)\Bigg)\Bigg)$$

Problem 789: Result more than twice size of optimal antiderivative.

$$\int\frac{(c+d\,\text{Sin}[e+f x])^{5/2}}{(a+b\,\text{Sin}[e+f x])^{3/2}}\,dx$$

Optimal (type 4, 822 leaves, 7 steps):

$$\Bigg((c-d)\sqrt{c+d}\,\big(2 b^2 c^2-4 a b c d+3 a^2 d^2-b^2 d^2\big)\,\text{EllipticE}\Big[\text{ArcSin}\Big[\frac{\sqrt{a+b}\,\sqrt{c+d\,\text{Sin}[e+f x]}}{\sqrt{c+d}\,\sqrt{a+b\,\text{Sin}[e+f x]}}\Big],\frac{(a-b)(c+d)}{(a+b)(c-d)}\Big]\,\text{Sec}[e+f x]$$

$$\sqrt{-\frac{(b c-a d)(1-\text{Sin}[e+f x])}{(c+d)(a+b\,\text{Sin}[e+f x])}}\,\sqrt{\frac{(b c-a d)(1+\text{Sin}[e+f x])}{(c-d)(a+b\,\text{Sin}[e+f x])}}\,(a+b\,\text{Sin}[e+f x])\Bigg)\Bigg/\Big((a-b)\,b^2\sqrt{a+b}\,(b c-a d)\,f\Big)+$$

$$\frac{1}{b^3\sqrt{a+b}\,f}d\sqrt{c+d}\,(5 b c-3 a d)\,\text{EllipticPi}\Big[\frac{b(c+d)}{(a+b)d},\text{ArcSin}\Big[\frac{\sqrt{a+b}\,\sqrt{c+d\,\text{Sin}[e+f x]}}{\sqrt{c+d}\,\sqrt{a+b\,\text{Sin}[e+f x]}}\Big],\frac{(a-b)(c+d)}{(a+b)(c-d)}\Big]$$

$$\text{Sec}[e+f x]\sqrt{-\frac{(b c-a d)(1-\text{Sin}[e+f x])}{(c+d)(a+b\,\text{Sin}[e+f x])}}\,\sqrt{\frac{(b c-a d)(1+\text{Sin}[e+f x])}{(c-d)(a+b\,\text{Sin}[e+f x])}}\,(a+b\,\text{Sin}[e+f x])+$$

$$\frac{2(b c-a d)^2\,\text{Cos}[e+f x]\sqrt{c+d\,\text{Sin}[e+f x]}}{b\big(a^2-b^2\big)f\sqrt{a+b\,\text{Sin}[e+f x]}}+\frac{\big(4 a b c d-3 a^2 d^2-b^2\big(2 c^2-d^2\big)\big)\,\text{Cos}[e+f x]\sqrt{c+d\,\text{Sin}[e+f x]}}{b\big(a^2-b^2\big)f\sqrt{a+b\,\text{Sin}[e+f x]}}-\frac{1}{(a-b)\,b^3\sqrt{c+d}\,f}$$

$$\sqrt{a+b}\,\big(3 a^2 d^2-2 a b d(c+3 d)-b^2\big(2 c^2-6 c d-d^2\big)\big)\,\text{EllipticF}\Big[\text{ArcSin}\Big[\frac{\sqrt{c+d}\,\sqrt{a+b\,\text{Sin}[e+f x]}}{\sqrt{a+b}\,\sqrt{c+d\,\text{Sin}[e+f x]}}\Big],\frac{(a+b)(c-d)}{(a-b)(c+d)}\Big]$$

$$\text{Sec}[e+f x]\sqrt{\frac{(b c-a d)(1-\text{Sin}[e+f x])}{(a+b)(c+d\,\text{Sin}[e+f x])}}\,\sqrt{-\frac{(b c-a d)(1+\text{Sin}[e+f x])}{(a-b)(c+d\,\text{Sin}[e+f x])}}\,(c+d\,\text{Sin}[e+f x])$$

Result (type 4, 1975 leaves):

$$-\frac{2\big(b^2 c^2\,\text{Cos}[e+f x]-2 a b c d\,\text{Cos}[e+f x]+a^2 d^2\,\text{Cos}[e+f x]\big)\sqrt{c+d\,\text{Sin}[e+f x]}}{b\big(-a^2+b^2\big)f\sqrt{a+b\,\text{Sin}[e+f x]}}+$$

$$\frac{1}{2\,(a-b)\,b\,(a+b)\,f}\left(-\left(4\,(-b\,c+a\,d)\,\left(2\,a\,b\,c^3-4\,b^2\,c^2\,d+2\,a\,b\,c\,d^2+a^2\,d^3-b^2\,d^3\right)\sqrt{\frac{(c+d)\,\text{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{-c+d}}\right.\right.$$

$$\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}}{\sqrt{2}}\right],\,\frac{2\,(-b\,c+a\,d)}{(a+b)\,(-c+d)}\right]\,\text{Sec}[e+f\,x]\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4$$

$$\left.\sqrt{\frac{(c+d)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(a+b\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}\,\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}\right)\Big/$$

$$\left((a+b)\,(c+d)\,\sqrt{a+b\,\text{Sin}[e+f\,x]}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}\right)-4\,(-b\,c+a\,d)\,\left(2\,b^2\,c^3-2\,a\,b\,c^2\,d+4\,a^2\,c\,d^2-6\,b^2\,c\,d^2+2\,a\,b\,d^3\right)$$

$$\left(\left(\sqrt{\frac{(c+d)\,\text{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{-c+d}}\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}}{\sqrt{2}}\right],\,\frac{2\,(-b\,c+a\,d)}{(a+b)\,(-c+d)}\right]\right.\right.$$

$$\text{Sec}[e+f\,x]\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\sqrt{\frac{(c+d)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(a+b\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}$$

$$\left.\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}\right)\Big/\left((a+b)\,(c+d)\,\sqrt{a+b\,\text{Sin}[e+f\,x]}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}\right)-$$

$$\left(\sqrt{\frac{(c+d)\,\text{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{-c+d}}\,\text{EllipticPi}\left[\frac{-b\,c+a\,d}{(a+b)\,d},\,\text{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}}{\sqrt{2}}\right],\,\frac{2\,(-b\,c+a\,d)}{(a+b)\,(-c+d)}\right]\,\text{Sec}[e+f\,x]\right.$$

$$\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^4 \sqrt{\frac{(c+d)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 (a+b\,\text{Sin}[e+f x])}{-b c+a d}}\ \sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 (c+d\,\text{Sin}[e+f x])}{-b c+a d}}\Bigg) \Big/$$

$$\left((a+b)\,d\,\sqrt{a+b\,\text{Sin}[e+f x]}\ \sqrt{c+d\,\text{Sin}[e+f x]}\right)\Bigg)+2\left(-2 b^2 c^2 d+4 a b c d^2-3 a^2 d^3+b^2 d^3\right)\Bigg(\frac{\text{Cos}[e+f x]\,\sqrt{c+d\,\text{Sin}[e+f x]}}{d\,\sqrt{a+b\,\text{Sin}[e+f x]}}+$$

$$\Bigg(\sqrt{\frac{a-b}{a+b}}\,(a+b)\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{\frac{a-b}{a+b}}\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}{\sqrt{\frac{a+b\,\text{Sin}[e+f x]}{a+b}}}\right],\frac{2(-b c+a d)}{(a-b)(c+d)}\right]\sqrt{c+d\,\text{Sin}[e+f x]}\Bigg)\Big/$$

$$\Bigg(b\,d\,\sqrt{\frac{(a+b)\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{a+b\,\text{Sin}[e+f x]}}\ \sqrt{a+b\,\text{Sin}[e+f x]}\ \sqrt{\frac{a+b\,\text{Sin}[e+f x]}{a+b}}\ \sqrt{\frac{(a+b)(c+d\,\text{Sin}[e+f x])}{(c+d)(a+b\,\text{Sin}[e+f x])}}\Bigg)-$$

$$\frac{1}{b d}\,2\,(-b c+a d)\Bigg(\Bigg(((a+b) c+a d)\sqrt{\frac{(c+d)\,\text{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{-c+d}}\ \text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 (c+d\,\text{Sin}[e+f x])}{-b c+a d}}}{\sqrt{2}}\right],\right.$$

$$\left.\frac{2(-b c+a d)}{(a+b)(-c+d)}\right]\text{Sec}[e+f x]\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^4\sqrt{\frac{(c+d)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 (a+b\,\text{Sin}[e+f x])}{-b c+a d}}$$

$$\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 (c+d\,\text{Sin}[e+f x])}{-b c+a d}}\Bigg)\Big/\left((a+b)(c+d)\sqrt{a+b\,\text{Sin}[e+f x]}\ \sqrt{c+d\,\text{Sin}[e+f x]}\right)-$$

$$\Bigg((b c+a d)\sqrt{\frac{(c+d)\,\text{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{-c+d}}\ \text{EllipticPi}\left[\frac{-b c+a d}{(a+b)\,d},\text{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 (c+d\,\text{Sin}[e+f x])}{-b c+a d}}}{\sqrt{2}}\right],\right.$$

$$\left.\left.\left.\frac{2(-b c+a d)}{(a+b)(-c+d)}\right]\mathrm{Sec}[e+f x]\,\mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^4\sqrt{\frac{(c+d)\,\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2(a+b\,\mathrm{Sin}[e+f x])}{-b c+a d}}\sqrt{-\frac{(a+b)\,\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2(c+d\,\mathrm{Sin}[e+f x])}{-b c+a d}}\right)\Big/\left((a+b)\,d\sqrt{a+b\,\mathrm{Sin}[e+f x]}\sqrt{c+d\,\mathrm{Sin}[e+f x]}\right)\right)\right)\right)$$

- **Problem 790: Result more than twice size of optimal antiderivative.**

$$\int\frac{(c+d\,\mathrm{Sin}[e+f x])^{3/2}}{(a+b\,\mathrm{Sin}[e+f x])^{3/2}}\,dx$$

Optimal (type 4, 600 leaves, 5 steps) :

$$\frac{1}{(a-b)\,b\sqrt{a+b}\,f}2(c-d)\sqrt{c+d}\,\mathrm{EllipticE}\left[\mathrm{ArcSin}\left[\frac{\sqrt{a+b}\sqrt{c+d\,\mathrm{Sin}[e+f x]}}{\sqrt{c+d}\sqrt{a+b\,\mathrm{Sin}[e+f x]}}\right],\frac{(a-b)(c+d)}{(a+b)(c-d)}\right]$$
$$\mathrm{Sec}[e+f x]\sqrt{-\frac{(b c-a d)(1-\mathrm{Sin}[e+f x])}{(c+d)(a+b\,\mathrm{Sin}[e+f x])}}\sqrt{\frac{(b c-a d)(1+\mathrm{Sin}[e+f x])}{(c-d)(a+b\,\mathrm{Sin}[e+f x])}}(a+b\,\mathrm{Sin}[e+f x])+$$
$$\frac{1}{b^2\sqrt{a+b}\,f}2d\sqrt{c+d}\,\mathrm{EllipticPi}\left[\frac{b(c+d)}{(a+b)\,d},\mathrm{ArcSin}\left[\frac{\sqrt{a+b}\sqrt{c+d\,\mathrm{Sin}[e+f x]}}{\sqrt{c+d}\sqrt{a+b\,\mathrm{Sin}[e+f x]}}\right],\frac{(a-b)(c+d)}{(a+b)(c-d)}\right]$$
$$\mathrm{Sec}[e+f x]\sqrt{-\frac{(b c-a d)(1-\mathrm{Sin}[e+f x])}{(c+d)(a+b\,\mathrm{Sin}[e+f x])}}\sqrt{\frac{(b c-a d)(1+\mathrm{Sin}[e+f x])}{(c-d)(a+b\,\mathrm{Sin}[e+f x])}}(a+b\,\mathrm{Sin}[e+f x])+$$
$$\frac{1}{(a-b)\,b^2\sqrt{c+d}\,f}2\sqrt{a+b}\,(b(c-2d)+a d)\,\mathrm{EllipticF}\left[\mathrm{ArcSin}\left[\frac{\sqrt{c+d}\sqrt{a+b\,\mathrm{Sin}[e+f x]}}{\sqrt{a+b}\sqrt{c+d\,\mathrm{Sin}[e+f x]}}\right],\frac{(a+b)(c-d)}{(a-b)(c+d)}\right]$$
$$\mathrm{Sec}[e+f x]\sqrt{\frac{(b c-a d)(1-\mathrm{Sin}[e+f x])}{(a+b)(c+d\,\mathrm{Sin}[e+f x])}}\sqrt{-\frac{(b c-a d)(1+\mathrm{Sin}[e+f x])}{(a-b)(c+d\,\mathrm{Sin}[e+f x])}}(c+d\,\mathrm{Sin}[e+f x])$$

Result (type 4, 1866 leaves) :

$$-\frac{2(-b c\,\mathrm{Cos}[e+f x]+a d\,\mathrm{Cos}[e+f x])\sqrt{c+d\,\mathrm{Sin}[e+f x]}}{(a^2-b^2)\,f\sqrt{a+b\,\mathrm{Sin}[e+f x]}}+\frac{1}{(a-b)(a+b)\,f}$$

$$\left(-\left(4\,(-b\,c+a\,d)\,\left(a\,c^2-b\,c\,d\right)\sqrt{\frac{(c+d)\,\text{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{-c+d}}\;\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}}{\sqrt{2}}\right],\frac{2\,(-b\,c+a\,d)}{(a+b)\,(-c+d)}\right]\right.\right.$$

$$\text{Sec}[e+f\,x]\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\sqrt{\frac{(c+d)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(a+b\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}$$

$$\left.\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}\right)\bigg/\left((a+b)\,(c+d)\,\sqrt{a+b\,\text{Sin}[e+f\,x]}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}\right)-$$

$$4\,(-b\,c+a\,d)\,\left(b\,c^2-b\,d^2\right)\left(\left(\sqrt{\frac{(c+d)\,\text{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{-c+d}}\;\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}}{\sqrt{2}}\right],\frac{2\,(-b\,c+a\,d)}{(a+b)\,(-c+d)}\right]\right.\right.$$

$$\text{Sec}[e+f\,x]\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\sqrt{\frac{(c+d)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(a+b\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}$$

$$\left.\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}\right)\bigg/\left((a+b)\,(c+d)\,\sqrt{a+b\,\text{Sin}[e+f\,x]}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}\right)-$$

$$\left(\sqrt{\frac{(c+d)\,\text{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{-c+d}}\;\text{EllipticPi}\left[\frac{-b\,c+a\,d}{(a+b)\,d},\text{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}}{\sqrt{2}}\right],\frac{2\,(-b\,c+a\,d)}{(a+b)\,(-c+d)}\right]\text{Sec}[e+f\,x]\right.$$

$$\left.\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\sqrt{\frac{(c+d)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(a+b\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}\;\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}\right)\bigg/$$

$$\left(\left((a+b)\,d\,\sqrt{a+b\,\mathrm{Sin}[e+f\,x]}\,\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}\right)\right)+2\left(-b\,c\,d+a\,d^2\right)\left(\frac{\mathrm{Cos}[e+f\,x]\,\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}}{d\,\sqrt{a+b\,\mathrm{Sin}[e+f\,x]}}+\right.$$

$$\left(\sqrt{\frac{a-b}{a+b}}\,(a+b)\,\mathrm{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\,\mathrm{EllipticE}\left[\mathrm{ArcSin}\left[\frac{\sqrt{\frac{a-b}{a+b}}\,\mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]}{\sqrt{\frac{a+b\,\mathrm{Sin}[e+f\,x]}{a+b}}}\right],\frac{2\,(-b\,c+a\,d)}{(a-b)\,(c+d)}\right]\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}\right)\Big/$$

$$\left(b\,d\,\sqrt{\frac{(a+b)\,\mathrm{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{a+b\,\mathrm{Sin}[e+f\,x]}}\,\sqrt{a+b\,\mathrm{Sin}[e+f\,x]}\,\sqrt{\frac{a+b\,\mathrm{Sin}[e+f\,x]}{a+b}}\,\sqrt{\frac{(a+b)\,(c+d\,\mathrm{Sin}[e+f\,x])}{(c+d)\,(a+b\,\mathrm{Sin}[e+f\,x])}}\right)-$$

$$\frac{1}{b\,d}\,2\,(-b\,c+a\,d)\left(\left(\left((a+b)\,c+a\,d\right)\sqrt{\frac{(c+d)\,\mathrm{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{-c+d}}\,\mathrm{EllipticF}\left[\mathrm{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\mathrm{Sin}[e+f\,x])}{-b\,c+a\,d}}}{\sqrt{2}}\right],\right.\right.\right.$$

$$\left.\frac{2\,(-b\,c+a\,d)}{(a+b)\,(-c+d)}\right]\mathrm{Sec}[e+f\,x]\,\mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\sqrt{\frac{(c+d)\,\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(a+b\,\mathrm{Sin}[e+f\,x])}{-b\,c+a\,d}}$$

$$\left.\sqrt{-\frac{(a+b)\,\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\mathrm{Sin}[e+f\,x])}{-b\,c+a\,d}}\right)\Big/\left((a+b)\,(c+d)\,\sqrt{a+b\,\mathrm{Sin}[e+f\,x]}\,\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}\right)-$$

$$\left((b\,c+a\,d)\sqrt{\frac{(c+d)\,\mathrm{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{-c+d}}\,\mathrm{EllipticPi}\left[\frac{-b\,c+a\,d}{(a+b)\,d},\mathrm{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\mathrm{Sin}[e+f\,x])}{-b\,c+a\,d}}}{\sqrt{2}}\right],\right.\right.$$

$$\left.\frac{2\,(-b\,c+a\,d)}{(a+b)\,(-c+d)}\right]\mathrm{Sec}[e+f\,x]\,\mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\sqrt{\frac{(c+d)\,\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(a+b\,\mathrm{Sin}[e+f\,x])}{-b\,c+a\,d}}$$

$$\left.\left.\left.\sqrt{-\frac{(a+b)\,\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\mathrm{Sin}[e+f\,x])}{-b\,c+a\,d}}\right)\middle/\left((a+b)\,d\,\sqrt{a+b\,\mathrm{Sin}[e+f\,x]}\,\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}\right)\right)\right)\right)$$

- **Problem 792: Humongous result has more than 200000 leaves.**

$$\int \frac{1}{(a+b\,\mathrm{Sin}[e+f\,x])^{3/2}\,\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}}\,dx$$

Optimal (type 4, 405 leaves, 3 steps):

$$\left(2\,b\,(c-d)\,\sqrt{c+d}\,\mathrm{EllipticE}\left[\mathrm{ArcSin}\left[\frac{\sqrt{a+b}\,\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}}{\sqrt{c+d}\,\sqrt{a+b\,\mathrm{Sin}[e+f\,x]}}\right],\frac{(a-b)\,(c+d)}{(a+b)\,(c-d)}\right]\mathrm{Sec}[e+f\,x]\right.$$
$$\left.\sqrt{-\frac{(b\,c-a\,d)\,(1-\mathrm{Sin}[e+f\,x])}{(c+d)\,(a+b\,\mathrm{Sin}[e+f\,x])}}\,\sqrt{\frac{(b\,c-a\,d)\,(1+\mathrm{Sin}[e+f\,x])}{(c-d)\,(a+b\,\mathrm{Sin}[e+f\,x])}}\,(a+b\,\mathrm{Sin}[e+f\,x])\right)\middle/\left((a-b)\,\sqrt{a+b}\,(b\,c-a\,d)^2\,f\right)+$$
$$\left(2\,\sqrt{a+b}\,\mathrm{EllipticF}\left[\mathrm{ArcSin}\left[\frac{\sqrt{c+d}\,\sqrt{a+b\,\mathrm{Sin}[e+f\,x]}}{\sqrt{a+b}\,\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}}\right],\frac{(a+b)\,(c-d)}{(a-b)\,(c+d)}\right]\mathrm{Sec}[e+f\,x]\,\sqrt{\frac{(b\,c-a\,d)\,(1-\mathrm{Sin}[e+f\,x])}{(a+b)\,(c+d\,\mathrm{Sin}[e+f\,x])}}\right.$$
$$\left.\sqrt{-\frac{(b\,c-a\,d)\,(1+\mathrm{Sin}[e+f\,x])}{(a-b)\,(c+d\,\mathrm{Sin}[e+f\,x])}}\,(c+d\,\mathrm{Sin}[e+f\,x])\right)\middle/\left((a-b)\,\sqrt{c+d}\,(b\,c-a\,d)\,f\right)$$

Result (type ?, 204 906 leaves): Display of huge result suppressed!

- **Problem 793: Result more than twice size of optimal antiderivative.**

$$\int \frac{1}{(a+b\,\mathrm{Sin}[e+f\,x])^{3/2}\,(c+d\,\mathrm{Sin}[e+f\,x])^{3/2}}\,dx$$

Optimal (type 4, 495 leaves, 4 steps):

$$\frac{2 b^2 \operatorname{Cos}[e+f x]}{(a^2-b^2)(b c-a d) f \sqrt{a+b \operatorname{Sin}[e+f x]} \sqrt{c+d \operatorname{Sin}[e+f x]}} - \left(2 (a^2 d^2 + b^2 (c^2 - 2 d^2)) \operatorname{EllipticE}\left[\operatorname{ArcSin}\left[\frac{\sqrt{c+d} \sqrt{a+b \operatorname{Sin}[e+f x]}}{\sqrt{a+b} \sqrt{c+d \operatorname{Sin}[e+f x]}}\right], \frac{(a+b)(c-d)}{(a-b)(c+d)}\right] \operatorname{Sec}[e+f x] \sqrt{\frac{(b c-a d)(1-\operatorname{Sin}[e+f x])}{(a+b)(c+d \operatorname{Sin}[e+f x])}} \sqrt{-\frac{(b c-a d)(1+\operatorname{Sin}[e+f x])}{(a-b)(c+d \operatorname{Sin}[e+f x])}} (c+d \operatorname{Sin}[e+f x])\right) \Big/ \left(\sqrt{a+b} (c-d) \sqrt{c+d} (b c-a d)^3 f\right) + \left(2 (b (c-2 d)-a d) \operatorname{EllipticF}\left[\operatorname{ArcSin}\left[\frac{\sqrt{c+d} \sqrt{a+b \operatorname{Sin}[e+f x]}}{\sqrt{a+b} \sqrt{c+d \operatorname{Sin}[e+f x]}}\right], \frac{(a+b)(c-d)}{(a-b)(c+d)}\right] \operatorname{Sec}[e+f x] \sqrt{\frac{(b c-a d)(1-\operatorname{Sin}[e+f x])}{(a+b)(c+d \operatorname{Sin}[e+f x])}} \sqrt{-\frac{(b c-a d)(1+\operatorname{Sin}[e+f x])}{(a-b)(c+d \operatorname{Sin}[e+f x])}} (c+d \operatorname{Sin}[e+f x])\right) \Big/ \left(\sqrt{a+b} (c-d) \sqrt{c+d} (b c-a d)^2 f\right)$$

Result (type 4, 2052 leaves) :

$$\frac{\sqrt{a+b \operatorname{Sin}[e+f x]} \sqrt{c+d \operatorname{Sin}[e+f x]} \left(\frac{2 b^3 \operatorname{Cos}[e+f x]}{(a^2-b^2)(-b c+a d)^2 (a+b \operatorname{Sin}[e+f x])} + \frac{2 d^3 \operatorname{Cos}[e+f x]}{(b c-a d)^2 (c^2-d^2)(c+d \operatorname{Sin}[e+f x])}\right)}{f} + \frac{1}{(a-b)(a+b)(c-d)(c+d)(-b c+a d)^2 f} \left(-\frac{1}{(a+b)(c+d) \sqrt{a+b \operatorname{Sin}[e+f x]} \sqrt{c+d \operatorname{Sin}[e+f x]}} 4 (-b c+a d) (a b^2 c^3 - 2 a^2 b c^2 d + 2 b^3 c^2 d + a^3 c d^2 - 2 a b^2 c d^2 + 2 a^2 b d^3 - 2 b^3 d^3) \sqrt{\frac{(c+d) \operatorname{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{-c+d}} \operatorname{EllipticF}\left[\operatorname{ArcSin}\left[\frac{\sqrt{-\frac{(a+b) \operatorname{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 (c+d \operatorname{Sin}[e+f x])}{-b c+a d}}}{\sqrt{2}}\right], \frac{2 (-b c+a d)}{(a+b)(-c+d)}\right] \operatorname{Sec}[e+f x] \operatorname{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^4 \sqrt{\frac{(c+d) \operatorname{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 (a+b \operatorname{Sin}[e+f x])}{-b c+a d}} \sqrt{-\frac{(a+b) \operatorname{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 (c+d \operatorname{Sin}[e+f x])}{-b c+a d}} - 4 (-b c+a d) (b^3 c^3 + a b^2 c^2 d + a^2 b c d^2 - 2 b^3 c d^2 + a^3 d^3 - 2 a b^2 d^3) \left(\left(\sqrt{\frac{(c+d) \operatorname{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{-c+d}} \operatorname{EllipticF}\left[\operatorname{ArcSin}\left[\frac{\sqrt{-\frac{(a+b) \operatorname{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 (c+d \operatorname{Sin}[e+f x])}{-b c+a d}}}{\sqrt{2}}\right], \frac{2 (-b c+a d)}{(a+b)(-c+d)}\right]\right.\right.$$

$$\text{Sec}[e+f x]\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^4\sqrt{\frac{(c+d)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2(a+b\,\text{Sin}[e+f x])}{-b c+a d}}$$

$$\left.\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2(c+d\,\text{Sin}[e+f x])}{-b c+a d}}\right)\Big/\left((a+b)\,(c+d)\,\sqrt{a+b\,\text{Sin}[e+f x]}\,\sqrt{c+d\,\text{Sin}[e+f x]}\right)-$$

$$\left(\sqrt{\frac{(c+d)\,\text{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{-c+d}}\,\text{EllipticPi}\left[\frac{-b c+a d}{(a+b)\,d},\,\text{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2(c+d\,\text{Sin}[e+f x])}{-b c+a d}}}{\sqrt{2}}\right],\,\frac{2\,(-b c+a d)}{(a+b)\,(-c+d)}\right]\text{Sec}[e+f x]\right.$$

$$\left.\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^4\sqrt{\frac{(c+d)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2(a+b\,\text{Sin}[e+f x])}{-b c+a d}}\,\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2(c+d\,\text{Sin}[e+f x])}{-b c+a d}}\right)\Big/$$

$$\left.\left((a+b)\,d\,\sqrt{a+b\,\text{Sin}[e+f x]}\,\sqrt{c+d\,\text{Sin}[e+f x]}\right)\right)+2\left(-b^3 c^2 d-a^2 b d^3+2 b^3 d^3\right)\left(\frac{\text{Cos}[e+f x]\,\sqrt{c+d\,\text{Sin}[e+f x]}}{d\,\sqrt{a+b\,\text{Sin}[e+f x]}}+\right.$$

$$\left(\sqrt{\frac{a-b}{a+b}}\,(a+b)\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{\frac{a-b}{a+b}}\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}{\sqrt{\frac{a+b\,\text{Sin}[e+f x]}{a+b}}}\right],\,\frac{2\,(-b c+a d)}{(a-b)\,(c+d)}\right]\sqrt{c+d\,\text{Sin}[e+f x]}\right)\Big/$$

$$\left(b\,d\,\sqrt{\frac{(a+b)\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{a+b\,\text{Sin}[e+f x]}}\,\sqrt{a+b\,\text{Sin}[e+f x]}\,\sqrt{\frac{a+b\,\text{Sin}[e+f x]}{a+b}}\,\sqrt{\frac{(a+b)\,(c+d\,\text{Sin}[e+f x])}{(c+d)\,(a+b\,\text{Sin}[e+f x])}}\right)-$$

$$\frac{1}{b d}\,2\,(-b c+a d)\left(\left(((a+b)\,c+a d)\,\sqrt{\frac{(c+d)\,\text{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{-c+d}}\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2(c+d\,\text{Sin}[e+f x])}{-b c+a d}}}{\sqrt{2}}\right],\right.\right.\right.$$

$$\frac{2(-b c+a d)}{(a+b)(-c+d)}\Big]\,\text{Sec}[e+f x]\,\text{Sin}\Big[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\Big]^4\sqrt{\frac{(c+d)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2(a+b\,\text{Sin}[e+f x])}{-b c+a d}}$$

$$\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2(c+d\,\text{Sin}[e+f x])}{-b c+a d}}\Bigg)\Big/\left((a+b)(c+d)\sqrt{a+b\,\text{Sin}[e+f x]}\,\sqrt{c+d\,\text{Sin}[e+f x]}\right)-$$

$$\Bigg((b c+a d)\sqrt{\frac{(c+d)\,\text{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{-c+d}}\ \text{EllipticPi}\Big[\frac{-b c+a d}{(a+b) d},\ \text{ArcSin}\Big[\frac{\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2(c+d\,\text{Sin}[e+f x])}{-b c+a d}}}{\sqrt{2}}\Big],$$

$$\frac{2(-b c+a d)}{(a+b)(-c+d)}\Big]\,\text{Sec}[e+f x]\,\text{Sin}\Big[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\Big]^4\sqrt{\frac{(c+d)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2(a+b\,\text{Sin}[e+f x])}{-b c+a d}}$$

$$\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2(c+d\,\text{Sin}[e+f x])}{-b c+a d}}\Bigg)\Big/\left((a+b)\, d\sqrt{a+b\,\text{Sin}[e+f x]}\,\sqrt{c+d\,\text{Sin}[e+f x]}\right)\Bigg)\Bigg)\Bigg)$$

- **Problem 794: Result more than twice size of optimal antiderivative.**

$$\int\frac{1}{(a+b\,\text{Sin}[e+f x])^{3/2}\,(c+d\,\text{Sin}[e+f x])^{5/2}}\,dx$$

Optimal (type 4, 681 leaves, 5 steps) :

$$\frac{2 b^2 \operatorname{Cos}[e+f x]}{\left(a^2-b^2\right) (b c-a d) f \sqrt{a+b \operatorname{Sin}[e+f x]} (c+d \operatorname{Sin}[e+f x])^{3/2}}+\frac{2 d \left(a^2 d^2+b^2 \left(3 c^2-4 d^2\right)\right) \operatorname{Cos}[e+f x] \sqrt{a+b \operatorname{Sin}[e+f x]}}{3 \left(a^2-b^2\right) (b c-a d)^2 \left(c^2-d^2\right) f (c+d \operatorname{Sin}[e+f x])^{3/2}}+$$

$$\left(2 \left(4 a^3 c d^3-4 a b^2 c d^3-a^2 b d^2 \left(9 c^2-5 d^2\right)-b^3 \left(3 c^4-15 c^2 d^2+8 d^4\right)\right) \operatorname{EllipticE}\left[\operatorname{ArcSin}\left[\frac{\sqrt{c+d} \sqrt{a+b \operatorname{Sin}[e+f x]}}{\sqrt{a+b} \sqrt{c+d \operatorname{Sin}[e+f x]}}\right], \frac{(a+b) (c-d)}{(a-b) (c+d)}\right] \operatorname{Sec}[\right.$$

$$\left. e+f x] \sqrt{\frac{(b c-a d) (1-\operatorname{Sin}[e+f x])}{(a+b) (c+d \operatorname{Sin}[e+f x])}} \sqrt{-\frac{(b c-a d) (1+\operatorname{Sin}[e+f x])}{(a-b) (c+d \operatorname{Sin}[e+f x])}} (c+d \operatorname{Sin}[e+f x])\right) \Big/ \left(3 \sqrt{a+b} (c-d)^2 (c+d)^{3/2} (b c-a d)^4 f\right)+$$

$$\left(2 \left(a^2 d^2 (3 c+d)-6 a b d \left(c^2-d^2\right)+b^2 \left(3 c^3-9 c^2 d-6 c d^2+8 d^3\right)\right) \operatorname{EllipticF}\left[\operatorname{ArcSin}\left[\frac{\sqrt{c+d} \sqrt{a+b \operatorname{Sin}[e+f x]}}{\sqrt{a+b} \sqrt{c+d \operatorname{Sin}[e+f x]}}\right], \frac{(a+b) (c-d)}{(a-b) (c+d)}\right]\right.$$

$$\left. \operatorname{Sec}[e+f x] \sqrt{\frac{(b c-a d) (1-\operatorname{Sin}[e+f x])}{(a+b) (c+d \operatorname{Sin}[e+f x])}} \sqrt{-\frac{(b c-a d) (1+\operatorname{Sin}[e+f x])}{(a-b) (c+d \operatorname{Sin}[e+f x])}} (c+d \operatorname{Sin}[e+f x])\right) \Big/ \left(3 \sqrt{a+b} (c-d)^2 (c+d)^{3/2} (b c-a d)^3 f\right)$$

Result (type 4, 2320 leaves) :

$$\frac{1}{f}\sqrt{a+b \operatorname{Sin}[e+f x]} \sqrt{c+d \operatorname{Sin}[e+f x]} \left(-\frac{2 b^4 \operatorname{Cos}[e+f x]}{\left(a^2-b^2\right) (-b c+a d)^3 (a+b \operatorname{Sin}[e+f x])}+\right.$$

$$\left.\frac{2 d^3 \operatorname{Cos}[e+f x]}{3 (b c-a d)^2 \left(c^2-d^2\right) (c+d \operatorname{Sin}[e+f x])^2}-\frac{2 \left(-9 b c^2 d^3 \operatorname{Cos}[e+f x]+4 a c d^4 \operatorname{Cos}[e+f x]+5 b d^5 \operatorname{Cos}[e+f x]\right)}{3 (b c-a d)^3 \left(c^2-d^2\right)^2 (c+d \operatorname{Sin}[e+f x])}\right)+$$

$$\frac{1}{3 (a-b) (a+b) (c-d)^2 (c+d)^2 (-b c+a d)^3 f}\left(-\frac{1}{(a+b) (c+d) \sqrt{a+b \operatorname{Sin}[e+f x]} \sqrt{c+d \operatorname{Sin}[e+f x]}} 4 (-b c+a d) \left(-3 a b^3 c^5+9 a^2 b^2 c^4 d-\right.\right.$$

$$9 b^4 c^4 d-9 a^3 b c^3 d^2+15 a b^3 c^3 d^2+3 a^4 c^2 d^3-20 a^2 b^2 c^2 d^3+17 b^4 c^2 d^3+5 a^3 b c d^4-8 a b^3 c d^4+a^4 d^5+7 a^2 b^2 d^5-8 b^4 d^5\Big)$$

$$\sqrt{\frac{(c+d) \operatorname{Cot}\left[\frac{1}{2} \left(-e+\frac{\pi}{2}-f x\right)\right]^2}{-c+d}} \operatorname{EllipticF}\left[\operatorname{ArcSin}\left[\frac{\sqrt{-\frac{(a+b) \operatorname{Csc}\left[\frac{1}{2} \left(-e+\frac{\pi}{2}-f x\right)\right]^2 (c+d \operatorname{Sin}[e+f x])}{-b c+a d}}}{\sqrt{2}}\right], \frac{2 (-b c+a d)}{(a+b) (-c+d)}\right] \operatorname{Sec}[e+f x]$$

$$\operatorname{Sin}\left[\frac{1}{2} \left(-e+\frac{\pi}{2}-f x\right)\right]^4 \sqrt{\frac{(c+d) \operatorname{Csc}\left[\frac{1}{2} \left(-e+\frac{\pi}{2}-f x\right)\right]^2 (a+b \operatorname{Sin}[e+f x])}{-b c+a d}} \sqrt{-\frac{(a+b) \operatorname{Csc}\left[\frac{1}{2} \left(-e+\frac{\pi}{2}-f x\right)\right]^2 (c+d \operatorname{Sin}[e+f x])}{-b c+a d}}-$$

$$4 (-b c+a d) \left(-3 b^4 c^5-3 a b^3 c^4 d-9 a^2 b^2 c^3 d^2+15 b^4 c^3 d^2-5 a^3 b c^2 d^3+11 a b^3 c^2 d^3+4 a^4 c d^4+a^2 b^2 c d^4-8 b^4 c d^4+5 a^3 b d^5-8 a b^3 d^5\right)$$

$$\left(\left(\sqrt{\frac{(c+d)\,\mathrm{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{-c+d}}\ \mathrm{EllipticF}\left[\mathrm{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 (c+d\,\mathrm{Sin}[e+f x])}{-b c+a d}}}{\sqrt{2}}\right],\ \frac{2(-b c+a d)}{(a+b)(-c+d)}\right]\right.\right.$$

$$\mathrm{Sec}[e+f x]\,\mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^4 \sqrt{\frac{(c+d)\,\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 (a+b\,\mathrm{Sin}[e+f x])}{-b c+a d}}$$

$$\left.\sqrt{-\frac{(a+b)\,\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 (c+d\,\mathrm{Sin}[e+f x])}{-b c+a d}}\right) \Big/ \left((a+b)(c+d)\sqrt{a+b\,\mathrm{Sin}[e+f x]}\ \sqrt{c+d\,\mathrm{Sin}[e+f x]}\right) -$$

$$\left(\sqrt{\frac{(c+d)\,\mathrm{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{-c+d}}\ \mathrm{EllipticPi}\left[\frac{-b c+a d}{(a+b) d},\ \mathrm{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 (c+d\,\mathrm{Sin}[e+f x])}{-b c+a d}}}{\sqrt{2}}\right],\ \frac{2(-b c+a d)}{(a+b)(-c+d)}\right]\right.$$

$$\mathrm{Sec}[e+f x]\,\mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^4 \sqrt{\frac{(c+d)\,\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 (a+b\,\mathrm{Sin}[e+f x])}{-b c+a d}}$$

$$\left.\left.\sqrt{-\frac{(a+b)\,\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 (c+d\,\mathrm{Sin}[e+f x])}{-b c+a d}}\right) \Big/ \left((a+b)\, d\sqrt{a+b\,\mathrm{Sin}[e+f x]}\ \sqrt{c+d\,\mathrm{Sin}[e+f x]}\right)\right) +$$

$$2\left(3 b^4 c^4 d+9 a^2 b^2 c^2 d^3-15 b^4 c^2 d^3-4 a^3 b c d^4+4 a b^3 c d^4-5 a^2 b^2 d^5+8 b^4 d^5\right)\left(\frac{\mathrm{Cos}[e+f x]\sqrt{c+d\,\mathrm{Sin}[e+f x]}}{d\sqrt{a+b\,\mathrm{Sin}[e+f x]}} +\right.$$

$$\left(\sqrt{\frac{a-b}{a+b}}\ (a+b)\,\mathrm{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\mathrm{EllipticE}\left[\mathrm{ArcSin}\left[\frac{\sqrt{\frac{a-b}{a+b}}\ \mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}{\sqrt{\frac{a+b\,\mathrm{Sin}[e+f x]}{a+b}}}\right],\ \frac{2(-b c+a d)}{(a-b)(c+d)}\right]\sqrt{c+d\,\mathrm{Sin}[e+f x]}\right)\Big/$$

$$\left(b\,d\,\sqrt{\frac{(a+b)\,\mathrm{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{a+b\,\mathrm{Sin}[e+f\,x]}}\,\sqrt{a+b\,\mathrm{Sin}[e+f\,x]}\,\sqrt{\frac{a+b\,\mathrm{Sin}[e+f\,x]}{a+b}}\,\sqrt{\frac{(a+b)\,(c+d\,\mathrm{Sin}[e+f\,x])}{(c+d)\,(a+b\,\mathrm{Sin}[e+f\,x])}}\right)-$$

$$\frac{1}{b\,d}\,2\,(-b\,c+a\,d)\left(\left(((a+b)\,c+a\,d)\,\sqrt{\frac{(c+d)\,\mathrm{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{-c+d}}\,\mathrm{EllipticF}\left[\mathrm{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\mathrm{Sin}[e+f\,x])}{-b\,c+a\,d}}}{\sqrt{2}}\right],\right.\right.\right.$$

$$\left.\frac{2\,(-b\,c+a\,d)}{(a+b)\,(-c+d)}\right]\mathrm{Sec}[e+f\,x]\,\mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\sqrt{\frac{(c+d)\,\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(a+b\,\mathrm{Sin}[e+f\,x])}{-b\,c+a\,d}}$$

$$\left.\sqrt{-\frac{(a+b)\,\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\mathrm{Sin}[e+f\,x])}{-b\,c+a\,d}}\right)\Big/\left((a+b)\,(c+d)\,\sqrt{a+b\,\mathrm{Sin}[e+f\,x]}\,\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}\right)-$$

$$\left((b\,c+a\,d)\,\sqrt{\frac{(c+d)\,\mathrm{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{-c+d}}\,\mathrm{EllipticPi}\left[\frac{-b\,c+a\,d}{(a+b)\,d},\,\mathrm{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\mathrm{Sin}[e+f\,x])}{-b\,c+a\,d}}}{\sqrt{2}}\right],\right.\right.$$

$$\left.\frac{2\,(-b\,c+a\,d)}{(a+b)\,(-c+d)}\right]\mathrm{Sec}[e+f\,x]\,\mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\sqrt{\frac{(c+d)\,\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(a+b\,\mathrm{Sin}[e+f\,x])}{-b\,c+a\,d}}$$

$$\left.\left.\left.\sqrt{-\frac{(a+b)\,\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\mathrm{Sin}[e+f\,x])}{-b\,c+a\,d}}\right)\Big/\left((a+b)\,d\,\sqrt{a+b\,\mathrm{Sin}[e+f\,x]}\,\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}\right)\right)\right)\right)$$

- **Problem 795: Result more than twice size of optimal antiderivative.**

$$\int\frac{(c+d\,\mathrm{Sin}[e+f\,x])^{5/2}}{(a+b\,\mathrm{Sin}[e+f\,x])^{5/2}}\,dx$$

Optimal (type 4, 736 leaves, 6 steps) :

$$\frac{1}{3\,(a-b)^2\,b^2\,(a+b)^{3/2}\,f}2\,(c-d)\,\sqrt{c+d}\,\left(4\,a\,b\,c+3\,a^2\,d-7\,b^2\,d\right)\,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}{\sqrt{c+d}\,\sqrt{a+b\,\text{Sin}[e+f\,x]}}\right],\,\frac{(a-b)\,(c+d)}{(a+b)\,(c-d)}\right]$$

$$\text{Sec}[e+f\,x]\,\sqrt{-\frac{(b\,c-a\,d)\,(1-\text{Sin}[e+f\,x])}{(c+d)\,(a+b\,\text{Sin}[e+f\,x])}}\,\sqrt{\frac{(b\,c-a\,d)\,(1+\text{Sin}[e+f\,x])}{(c-d)\,(a+b\,\text{Sin}[e+f\,x])}}\,(a+b\,\text{Sin}[e+f\,x])\,+$$

$$\frac{1}{b^3\,\sqrt{a+b}\,f}2\,d^2\,\sqrt{c+d}\,\text{EllipticPi}\left[\frac{b\,(c+d)}{(a+b)\,d},\,\text{ArcSin}\left[\frac{\sqrt{a+b}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}{\sqrt{c+d}\,\sqrt{a+b\,\text{Sin}[e+f\,x]}}\right],\,\frac{(a-b)\,(c+d)}{(a+b)\,(c-d)}\right]\,\text{Sec}[e+f\,x]$$

$$\sqrt{-\frac{(b\,c-a\,d)\,(1-\text{Sin}[e+f\,x])}{(c+d)\,(a+b\,\text{Sin}[e+f\,x])}}\,\sqrt{\frac{(b\,c-a\,d)\,(1+\text{Sin}[e+f\,x])}{(c-d)\,(a+b\,\text{Sin}[e+f\,x])}}\,(a+b\,\text{Sin}[e+f\,x])+\frac{2\,(b\,c-a\,d)^2\,\text{Cos}[e+f\,x]\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}{3\,b\,\left(a^2-b^2\right)\,f\,(a+b\,\text{Sin}[e+f\,x])^{3/2}}\,+$$

$$\left(2\,\left(3\,a^2\,b\,(c-2\,d)\,d+3\,a^3\,d^2+a\,b^2\,\left(3\,c^2-4\,c\,d-2\,d^2\right)+b^3\,\left(c^2-7\,c\,d+9\,d^2\right)\right)\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{c+d}\,\sqrt{a+b\,\text{Sin}[e+f\,x]}}{\sqrt{a+b}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}\right],\,\frac{(a+b)\,(c-d)}{(a-b)\,(c+d)}\right]\right.$$

$$\left.\text{Sec}[e+f\,x]\,\sqrt{\frac{(b\,c-a\,d)\,(1-\text{Sin}[e+f\,x])}{(a+b)\,(c+d\,\text{Sin}[e+f\,x])}}\,\sqrt{-\frac{(b\,c-a\,d)\,(1+\text{Sin}[e+f\,x])}{(a-b)\,(c+d\,\text{Sin}[e+f\,x])}}\,(c+d\,\text{Sin}[e+f\,x])\right)\Big/\left(3\,(a-b)^2\,b^3\,\sqrt{a+b}\,\sqrt{c+d}\,f\right)$$

Result (type 4, 2142 leaves) :

$$\frac{1}{f}\sqrt{a+b\,\text{Sin}[e+f\,x]}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}\,\left(-\frac{2\,\left(b^2\,c^2\,\text{Cos}[e+f\,x]-2\,a\,b\,c\,d\,\text{Cos}[e+f\,x]+a^2\,d^2\,\text{Cos}[e+f\,x]\right)}{3\,b\,\left(-a^2+b^2\right)\,(a+b\,\text{Sin}[e+f\,x])^2}\,-\right.$$

$$\left(2\,\left(-4\,a\,b^2\,c^2\,\text{Cos}[e+f\,x]+a^2\,b\,c\,d\,\text{Cos}[e+f\,x]+7\,b^3\,c\,d\,\text{Cos}[e+f\,x]+3\,a^3\,d^2\,\text{Cos}[e+f\,x]-7\,a\,b^2\,d^2\,\text{Cos}[e+f\,x]\right)\right)\Big/$$

$$\left.\left(3\,b\,\left(-a^2+b^2\right)^2\,(a+b\,\text{Sin}[e+f\,x])\right)\right)-\frac{1}{3\,(a-b)^2\,b\,(a+b)^2\,f}$$

$$\left(-\frac{1}{(a+b)\,(c+d)\,\sqrt{a+b\,\text{Sin}[e+f\,x]}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}4\,(-b\,c+a\,d)\,\left(-3\,a^2\,b\,c^3-b^3\,c^3+8\,a\,b^2\,c^2\,d-2\,a^2\,b\,c\,d^2-2\,b^3\,c\,d^2+a^3\,d^3-a\,b^2\,d^3\right)\right.$$

$$\sqrt{\frac{(c+d)\,\text{Cot}\left[\frac{1}{2}\,\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{-c+d}}\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\,\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}}{\sqrt{2}}\right],\,\frac{2\,(-b\,c+a\,d)}{(a+b)\,(-c+d)}\right]\,\text{Sec}[e+f\,x]$$

$$\text{Sin}\left[\frac{1}{2}\,\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\,\sqrt{\frac{(c+d)\,\text{Csc}\left[\frac{1}{2}\,\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(a+b\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}\,\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\,\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}\,-$$

$$4\,(-b\,c+a\,d)\,\left(-4\,a\,b^2\,c^3-3\,a^2\,b\,c^2\,d+7\,b^3\,c^2\,d+4\,a^3\,c\,d^2-a^2\,b\,d^3-3\,b^3\,d^3\right)$$

$$\left(\left(\sqrt{\frac{(c+d)\,\text{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{-c+d}}\ \text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}}{\sqrt{2}}\right],\ \frac{2\,(-b\,c+a\,d)}{(a+b)\,(-c+d)}\right]\right.\right.$$

$$\text{Sec}[e+f\,x]\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\sqrt{\frac{(c+d)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(a+b\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}$$

$$\left.\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}\right)\Big/\left((a+b)\,(c+d)\,\sqrt{a+b\,\text{Sin}[e+f\,x]}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}\right)-$$

$$\left(\sqrt{\frac{(c+d)\,\text{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{-c+d}}\ \text{EllipticPi}\left[\frac{-b\,c+a\,d}{(a+b)\,d},\ \text{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}}{\sqrt{2}}\right],\ \frac{2\,(-b\,c+a\,d)}{(a+b)\,(-c+d)}\right]\right.$$

$$\text{Sec}[e+f\,x]\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\sqrt{\frac{(c+d)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(a+b\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}$$

$$\left.\left.\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}\right)\Big/\left((a+b)\,d\,\sqrt{a+b\,\text{Sin}[e+f\,x]}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}\right)\right)+$$

$$2\left(4\,a\,b^2\,c^2\,d-a^2\,b\,c\,d^2-7\,b^3\,c\,d^2-3\,a^3\,d^3+7\,a\,b^2\,d^3\right)\left(\frac{\text{Cos}[e+f\,x]\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}{d\,\sqrt{a+b\,\text{Sin}[e+f\,x]}}+\right.$$

$$\left(\sqrt{\frac{a-b}{a+b}}\,(a+b)\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{\frac{a-b}{a+b}}\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]}{\sqrt{\frac{a+b\,\text{Sin}[e+f\,x]}{a+b}}}\right],\ \frac{2\,(-b\,c+a\,d)}{(a-b)\,(c+d)}\right]\sqrt{c+d\,\text{Sin}[e+f\,x]}\right)\Big/$$

$$\left(b\,d\,\sqrt{\frac{(a+b)\,\mathrm{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{a+b\,\mathrm{Sin}[e+f\,x]}}\,\sqrt{a+b\,\mathrm{Sin}[e+f\,x]}\,\sqrt{\frac{a+b\,\mathrm{Sin}[e+f\,x]}{a+b}}\,\sqrt{\frac{(a+b)\,(c+d\,\mathrm{Sin}[e+f\,x])}{(c+d)\,(a+b\,\mathrm{Sin}[e+f\,x])}}\right)-$$

$$\frac{1}{b\,d}2\,(-b\,c+a\,d)\left(\left(\left((a+b)\,c+a\,d\right)\sqrt{\frac{(c+d)\,\mathrm{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{-c+d}}\,\mathrm{EllipticF}\left[\mathrm{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\mathrm{Sin}[e+f\,x])}{-b\,c+a\,d}}}{\sqrt{2}}\right],\right.\right.\right.$$

$$\left.\frac{2\,(-b\,c+a\,d)}{(a+b)\,(-c+d)}\right]\mathrm{Sec}[e+f\,x]\,\mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\sqrt{\frac{(c+d)\,\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(a+b\,\mathrm{Sin}[e+f\,x])}{-b\,c+a\,d}}$$

$$\left.\sqrt{-\frac{(a+b)\,\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\mathrm{Sin}[e+f\,x])}{-b\,c+a\,d}}\right)\Big/\left((a+b)\,(c+d)\,\sqrt{a+b\,\mathrm{Sin}[e+f\,x]}\,\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}\right)-$$

$$\left((b\,c+a\,d)\sqrt{\frac{(c+d)\,\mathrm{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{-c+d}}\,\mathrm{EllipticPi}\left[\frac{-b\,c+a\,d}{(a+b)\,d},\,\mathrm{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\mathrm{Sin}[e+f\,x])}{-b\,c+a\,d}}}{\sqrt{2}}\right],\right.\right.$$

$$\left.\frac{2\,(-b\,c+a\,d)}{(a+b)\,(-c+d)}\right]\mathrm{Sec}[e+f\,x]\,\mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\sqrt{\frac{(c+d)\,\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(a+b\,\mathrm{Sin}[e+f\,x])}{-b\,c+a\,d}}$$

$$\left.\left.\left.\sqrt{-\frac{(a+b)\,\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\mathrm{Sin}[e+f\,x])}{-b\,c+a\,d}}\right)\Big/\left((a+b)\,d\,\sqrt{a+b\,\mathrm{Sin}[e+f\,x]}\,\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}\right)\right)\right)$$

- **Problem 796: Result more than twice size of optimal antiderivative.**

$$\int\frac{(c+d\,\mathrm{Sin}[e+f\,x])^{3/2}}{(a+b\,\mathrm{Sin}[e+f\,x])^{5/2}}\,dx$$

Optimal (type 4, 497 leaves, 4 steps) :

$$\left(8\,(c-d)\,\sqrt{c+d}\,(a c-b d)\,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b}\,\sqrt{c+d\,\text{Sin}[e+f x]}}{\sqrt{c+d}\,\sqrt{a+b\,\text{Sin}[e+f x]}}\right],\frac{(a-b)\,(c+d)}{(a+b)\,(c-d)}\right]\text{Sec}[e+f x]\,\sqrt{-\frac{(b c-a d)\,(1-\text{Sin}[e+f x])}{(c+d)\,(a+b\,\text{Sin}[e+f x])}}\right.$$

$$\left.\sqrt{\frac{(b c-a d)\,(1+\text{Sin}[e+f x])}{(c-d)\,(a+b\,\text{Sin}[e+f x])}}\,(a+b\,\text{Sin}[e+f x])\right)\Big/\left(3\,(a-b)^2\,(a+b)^{3/2}\,(b c-a d)\,f\right)+\frac{2\,(b c-a d)\,\text{Cos}[e+f x]\,\sqrt{c+d\,\text{Sin}[e+f x]}}{3\,\left(a^2-b^2\right)\,f\,(a+b\,\text{Sin}[e+f x])^{3/2}}+$$

$$\left(2\,(c-d)\,(3 a c+b c-a d-3 b d)\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{c+d}\,\sqrt{a+b\,\text{Sin}[e+f x]}}{\sqrt{a+b}\,\sqrt{c+d\,\text{Sin}[e+f x]}}\right],\frac{(a+b)\,(c-d)}{(a-b)\,(c+d)}\right]\text{Sec}[e+f x]\right.$$

$$\left.\sqrt{\frac{(b c-a d)\,(1-\text{Sin}[e+f x])}{(a+b)\,(c+d\,\text{Sin}[e+f x])}}\,\sqrt{-\frac{(b c-a d)\,(1+\text{Sin}[e+f x])}{(a-b)\,(c+d\,\text{Sin}[e+f x])}}\,(c+d\,\text{Sin}[e+f x])\right)\Big/\left(3\,(a-b)^2\,\sqrt{a+b}\,\sqrt{c+d}\,(b c-a d)\,f\right)$$

Result (type 4, 1982 leaves) :

$$\frac{\sqrt{a+b\,\text{Sin}[e+f x]}\,\sqrt{c+d\,\text{Sin}[e+f x]}\,\left(-\frac{2\,(-b c\,\text{Cos}[e+f x]+a d\,\text{Cos}[e+f x])}{3\,\left(a^2-b^2\right)\,(a+b\,\text{Sin}[e+f x])^2}-\frac{8\,\left(-a b c\,\text{Cos}[e+f x]+b^2 d\,\text{Cos}[e+f x]\right)}{3\,\left(a^2-b^2\right)^2\,(a+b\,\text{Sin}[e+f x])}\right)}{f}+$$

$$\frac{1}{3\,(a-b)^2\,(a+b)^2\,f}\left(-\left(\left(4\,(-b c+a d)\,\left(3 a^2 c^2+b^2 c^2-4 a b c d+a^2 d^2-b^2 d^2\right)\sqrt{\frac{(c+d)\,\text{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{-c+d}}\right.\right.\right.$$

$$\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\,(c+d\,\text{Sin}[e+f x])}{-b c+a d}}}{\sqrt{2}}\right],\frac{2\,(-b c+a d)}{(a+b)\,(-c+d)}\right]\text{Sec}[e+f x]\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^4$$

$$\left.\sqrt{\frac{(c+d)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\,(a+b\,\text{Sin}[e+f x])}{-b c+a d}}\,\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\,(c+d\,\text{Sin}[e+f x])}{-b c+a d}}\right)\Big/$$

$$\left((a+b)\,(c+d)\,\sqrt{a+b\,\text{Sin}[e+f x]}\,\sqrt{c+d\,\text{Sin}[e+f x]}\right)-4\,(-b c+a d)\,\left(4 a b c^2+4 a^2 c d-4 b^2 c d-4 a b d^2\right)$$

$$\left(\left(\sqrt{\frac{(c+d)\,\text{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{-c+d}}\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\,(c+d\,\text{Sin}[e+f x])}{-b c+a d}}}{\sqrt{2}}\right],\frac{2\,(-b c+a d)}{(a+b)\,(-c+d)}\right]\right.\right.$$

$$\text{Sec}[e+f x]\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^4\sqrt{\frac{(c+d)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2(a+b\,\text{Sin}[e+f x])}{-b c+a d}}$$

$$\left.\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2(c+d\,\text{Sin}[e+f x])}{-b c+a d}}\right)\Big/\left((a+b)\,(c+d)\,\sqrt{a+b\,\text{Sin}[e+f x]}\,\sqrt{c+d\,\text{Sin}[e+f x]}\right)-$$

$$\left(\sqrt{\frac{(c+d)\,\text{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{-c+d}}\,\text{EllipticPi}\left[\frac{-b c+a d}{(a+b)\,d},\text{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2(c+d\,\text{Sin}[e+f x])}{-b c+a d}}}{\sqrt{2}}\right],\frac{2\,(-b c+a d)}{(a+b)\,(-c+d)}\right]\text{Sec}[e+f x]\right.$$

$$\left.\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^4\sqrt{\frac{(c+d)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2(a+b\,\text{Sin}[e+f x])}{-b c+a d}}\,\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2(c+d\,\text{Sin}[e+f x])}{-b c+a d}}\right)\Big/$$

$$\left.\left((a+b)\,d\,\sqrt{a+b\,\text{Sin}[e+f x]}\,\sqrt{c+d\,\text{Sin}[e+f x]}\right)\right)+2\left(-4 a b c d+4 b^2 d^2\right)\left(\frac{\text{Cos}[e+f x]\,\sqrt{c+d\,\text{Sin}[e+f x]}}{d\,\sqrt{a+b\,\text{Sin}[e+f x]}}+\right.$$

$$\left(\sqrt{\frac{a-b}{a+b}}\,(a+b)\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{\frac{a-b}{a+b}}\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}{\sqrt{\frac{a+b\,\text{Sin}[e+f x]}{a+b}}}\right],\frac{2\,(-b c+a d)}{(a-b)\,(c+d)}\right]\sqrt{c+d\,\text{Sin}[e+f x]}\right)\Big/$$

$$\left(b\,d\,\sqrt{\frac{(a+b)\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{a+b\,\text{Sin}[e+f x]}}\,\sqrt{a+b\,\text{Sin}[e+f x]}\,\sqrt{\frac{a+b\,\text{Sin}[e+f x]}{a+b}}\,\sqrt{\frac{(a+b)\,(c+d\,\text{Sin}[e+f x])}{(c+d)\,(a+b\,\text{Sin}[e+f x])}}\right)-$$

$$\frac{1}{b\,d}\,2\,(-b c+a d)\left(\left(((a+b)\,c+a d)\,\sqrt{\frac{(c+d)\,\text{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{-c+d}}\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2(c+d\,\text{Sin}[e+f x])}{-b c+a d}}}{\sqrt{2}}\right],\right.\right.\right.$$

$$\frac{2\,(-b\,c+a\,d)}{(a+b)\,(-c+d)}\Big]\,\text{Sec}[e+f\,x]\,\text{Sin}\Big[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^4\sqrt{\frac{(c+d)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2(a+b\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}$$

$$\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}\Bigg)\Big/\left((a+b)\,(c+d)\,\sqrt{a+b\,\text{Sin}[e+f\,x]}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}\right)-$$

$$\Bigg((b\,c+a\,d)\,\sqrt{\frac{(c+d)\,\text{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{-c+d}}\;\text{EllipticPi}\Big[\frac{-b\,c+a\,d}{(a+b)\,d},\,\text{ArcSin}\Big[\frac{\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}}{\sqrt{2}}\Big],$$

$$\frac{2\,(-b\,c+a\,d)}{(a+b)\,(-c+d)}\Big]\,\text{Sec}[e+f\,x]\,\text{Sin}\Big[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^4\sqrt{\frac{(c+d)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2(a+b\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}$$

$$\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}\Bigg)\Big/\left((a+b)\,d\,\sqrt{a+b\,\text{Sin}[e+f\,x]}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}\right)\Bigg)\Bigg)\Bigg)$$

- **Problem 797: Result more than twice size of optimal antiderivative.**

$$\int\frac{\sqrt{c+d\,\text{Sin}[e+f\,x]}}{(a+b\,\text{Sin}[e+f\,x])^{5/2}}\,dx$$

Optimal (type 4, 489 leaves, 4 steps) :

$$\Big(2\,(c-d)\,\sqrt{c+d}\,\left(4\,a\,b\,c-3\,a^2\,d-b^2\,d\right)\,\text{EllipticE}\Big[\text{ArcSin}\Big[\frac{\sqrt{a+b}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}{\sqrt{c+d}\,\sqrt{a+b\,\text{Sin}[e+f\,x]}}\Big],\,\frac{(a-b)\,(c+d)}{(a+b)\,(c-d)}\Big]\,\text{Sec}[e+f\,x]$$

$$\sqrt{-\frac{(b\,c-a\,d)\,(1-\text{Sin}[e+f\,x])}{(c+d)\,(a+b\,\text{Sin}[e+f\,x])}}\,\sqrt{\frac{(b\,c-a\,d)\,(1+\text{Sin}[e+f\,x])}{(c-d)\,(a+b\,\text{Sin}[e+f\,x])}}\,(a+b\,\text{Sin}[e+f\,x])\Big)\Big/\left(3\,(a-b)^2\,(a+b)^{3/2}\,(b\,c-a\,d)^2\,f\right)+$$

$$\frac{2\,b\,\text{Cos}[e+f\,x]\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}{3\,\left(a^2-b^2\right)\,f\,(a+b\,\text{Sin}[e+f\,x])^{3/2}}+\Big(2\,(3\,a+b)\,(c-d)\,\text{EllipticF}\Big[\text{ArcSin}\Big[\frac{\sqrt{c+d}\,\sqrt{a+b\,\text{Sin}[e+f\,x]}}{\sqrt{a+b}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}\Big],\,\frac{(a+b)\,(c-d)}{(a-b)\,(c+d)}\Big]\,\text{Sec}[e+f\,x]$$

$$\sqrt{\frac{(b\,c-a\,d)\,(1-\text{Sin}[e+f\,x])}{(a+b)\,(c+d\,\text{Sin}[e+f\,x])}}\,\sqrt{-\frac{(b\,c-a\,d)\,(1+\text{Sin}[e+f\,x])}{(a-b)\,(c+d\,\text{Sin}[e+f\,x])}}\,(c+d\,\text{Sin}[e+f\,x])\Big)\Big/\left(3\,(a-b)^2\,\sqrt{a+b}\,\sqrt{c+d}\,(b\,c-a\,d)\,f\right)$$

Result (type 4, 2037 leaves) :

$$\frac{1}{f}\sqrt{a+b\,\text{Sin}[e+f\,x]}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}\,\left(\frac{2\,b\,\text{Cos}[e+f\,x]}{3\,\left(a^2-b^2\right)\,(a+b\,\text{Sin}[e+f\,x])^2}+\frac{2\,\left(-4\,a\,b^2\,c\,\text{Cos}[e+f\,x]+3\,a^2\,b\,d\,\text{Cos}[e+f\,x]+b^3\,d\,\text{Cos}[e+f\,x]\right)}{3\,\left(a^2-b^2\right)^2\,(-b\,c+a\,d)\,(a+b\,\text{Sin}[e+f\,x])}\right)+$$

$$\frac{1}{3\,(a-b)^2\,(a+b)^2\,(-b\,c+a\,d)\,f}\Bigg(-\Bigg(4\,(-b\,c+a\,d)\,\left(-3\,a^2\,b\,c^2-b^3\,c^2+3\,a^3\,c\,d+a\,b^2\,c\,d-a^2\,b\,d^2+b^3\,d^2\right)\,\sqrt{\frac{(c+d)\,\text{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{-c+d}}$$

$$\text{EllipticF}\Bigg[\text{ArcSin}\Bigg[\frac{\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}}{\sqrt{2}}\Bigg],\,\frac{2\,(-b\,c+a\,d)}{(a+b)\,(-c+d)}\Bigg]\,\text{Sec}[e+f\,x]\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4$$

$$\sqrt{\frac{(c+d)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(a+b\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}\,\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}\Bigg)\Bigg/$$

$$\left((a+b)\,(c+d)\,\sqrt{a+b\,\text{Sin}[e+f\,x]}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}\right)-4\,(-b\,c+a\,d)\,\left(-4\,a\,b^2\,c^2-a^2\,b\,c\,d+b^3\,c\,d+3\,a^3\,d^2+a\,b^2\,d^2\right)$$

$$\Bigg(\Bigg(\sqrt{\frac{(c+d)\,\text{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{-c+d}}\,\text{EllipticF}\Bigg[\text{ArcSin}\Bigg[\frac{\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}}{\sqrt{2}}\Bigg],\,\frac{2\,(-b\,c+a\,d)}{(a+b)\,(-c+d)}\Bigg]$$

$$\mathrm{Sec}[e+f x]\,\mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^4 \sqrt{\frac{(c+d)\,\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 (a+b\,\mathrm{Sin}[e+f x])}{-b c+a d}}$$

$$\left.\sqrt{-\frac{(a+b)\,\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 (c+d\,\mathrm{Sin}[e+f x])}{-b c+a d}}\right) \Big/ \left((a+b)\,(c+d)\,\sqrt{a+b\,\mathrm{Sin}[e+f x]}\,\sqrt{c+d\,\mathrm{Sin}[e+f x]}\right) -$$

$$\left(\sqrt{\frac{(c+d)\,\mathrm{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{-c+d}}\ \mathrm{EllipticPi}\left[\frac{-b c+a d}{(a+b)\,d},\ \mathrm{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 (c+d\,\mathrm{Sin}[e+f x])}{-b c+a d}}}{\sqrt{2}}\right],\ \frac{2\,(-b c+a d)}{(a+b)\,(-c+d)}\right]\mathrm{Sec}[e+f x]\right.$$

$$\left.\mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^4 \sqrt{\frac{(c+d)\,\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 (a+b\,\mathrm{Sin}[e+f x])}{-b c+a d}}\ \sqrt{-\frac{(a+b)\,\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 (c+d\,\mathrm{Sin}[e+f x])}{-b c+a d}}\right) \Big/$$

$$\left.\left((a+b)\,d\,\sqrt{a+b\,\mathrm{Sin}[e+f x]}\,\sqrt{c+d\,\mathrm{Sin}[e+f x]}\right)\right) + 2\left(4 a b^2 c d-3 a^2 b d^2-b^3 d^2\right)\left(\frac{\mathrm{Cos}[e+f x]\,\sqrt{c+d\,\mathrm{Sin}[e+f x]}}{d\,\sqrt{a+b\,\mathrm{Sin}[e+f x]}}+\right.$$

$$\left(\sqrt{\frac{a-b}{a+b}}\,(a+b)\,\mathrm{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\mathrm{EllipticE}\left[\mathrm{ArcSin}\left[\frac{\sqrt{\frac{a-b}{a+b}}\,\mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}{\sqrt{\frac{a+b\,\mathrm{Sin}[e+f x]}{a+b}}}\right],\ \frac{2\,(-b c+a d)}{(a-b)\,(c+d)}\right]\sqrt{c+d\,\mathrm{Sin}[e+f x]}\right) \Big/$$

$$\left(b d\,\sqrt{\frac{(a+b)\,\mathrm{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{a+b\,\mathrm{Sin}[e+f x]}}\,\sqrt{a+b\,\mathrm{Sin}[e+f x]}\,\sqrt{\frac{a+b\,\mathrm{Sin}[e+f x]}{a+b}}\,\sqrt{\frac{(a+b)\,(c+d\,\mathrm{Sin}[e+f x])}{(c+d)\,(a+b\,\mathrm{Sin}[e+f x])}}\right) -$$

$$\frac{1}{b d}\,2\,(-b c+a d)\left(\left(\left((a+b)\,c+a d\right)\sqrt{\frac{(c+d)\,\mathrm{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{-c+d}}\ \mathrm{EllipticF}\left[\mathrm{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 (c+d\,\mathrm{Sin}[e+f x])}{-b c+a d}}}{\sqrt{2}}\right],\right.\right.\right.$$

$$\left.\frac{2\,(-b\,c+a\,d)}{(a+b)\,(-c+d)}\right]\,\mathrm{Sec}[e+f\,x]\,\mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\sqrt{\frac{(c+d)\,\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(a+b\,\mathrm{Sin}[e+f\,x])}{-b\,c+a\,d}}$$

$$\left.\sqrt{-\frac{(a+b)\,\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\mathrm{Sin}[e+f\,x])}{-b\,c+a\,d}}\right)\Big/\left((a+b)\,(c+d)\,\sqrt{a+b\,\mathrm{Sin}[e+f\,x]}\,\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}\right)-$$

$$\left((b\,c+a\,d)\,\sqrt{\frac{(c+d)\,\mathrm{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{-c+d}}\;\mathrm{EllipticPi}\left[\frac{-b\,c+a\,d}{(a+b)\,d},\,\mathrm{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\mathrm{Sin}[e+f\,x])}{-b\,c+a\,d}}}{\sqrt{2}}\right],\right.\right.$$

$$\left.\frac{2\,(-b\,c+a\,d)}{(a+b)\,(-c+d)}\right]\,\mathrm{Sec}[e+f\,x]\,\mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\sqrt{\frac{(c+d)\,\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(a+b\,\mathrm{Sin}[e+f\,x])}{-b\,c+a\,d}}$$

$$\left.\left.\left.\sqrt{-\frac{(a+b)\,\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\mathrm{Sin}[e+f\,x])}{-b\,c+a\,d}}\right)\Big/\left((a+b)\,d\,\sqrt{a+b\,\mathrm{Sin}[e+f\,x]}\,\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}\right)\right)\right)\right)$$

- **Problem 798: Result more than twice size of optimal antiderivative.**

$$\int\frac{1}{(a+b\,\mathrm{Sin}[e+f\,x])^{5/2}\,\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}}\,dx$$

Optimal (type 4, 516 leaves, 4 steps) :

$$\left(4 b (c-d) \sqrt{c+d} \left(2 a b c-3 a^2 d+b^2 d\right) \text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b} \sqrt{c+d \text{Sin}[e+f x]}}{\sqrt{c+d} \sqrt{a+b \text{Sin}[e+f x]}}\right], \frac{(a-b) (c+d)}{(a+b) (c-d)}\right] \text{Sec}[e+f x] \sqrt{-\frac{(b c-a d) (1-\text{Sin}[e+f x])}{(c+d) (a+b \text{Sin}[e+f x])}} \sqrt{\frac{(b c-a d) (1+\text{Sin}[e+f x])}{(c-d) (a+b \text{Sin}[e+f x])}} (a+b \text{Sin}[e+f x])\right) \Big/ \left(3 (a-b)^2 (a+b)^{3/2} (b c-a d)^3 f\right)+\frac{2 b^2 \text{Cos}[e+f x] \sqrt{c+d \text{Sin}[e+f x]}}{3 \left(a^2-b^2\right) (b c-a d) f (a+b \text{Sin}[e+f x])^{3/2}}+$$

$$\left(2 \left(3 a b (c-d)-3 a^2 d+b^2 (c+2 d)\right) \text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{c+d} \sqrt{a+b \text{Sin}[e+f x]}}{\sqrt{a+b} \sqrt{c+d \text{Sin}[e+f x]}}\right], \frac{(a+b) (c-d)}{(a-b) (c+d)}\right] \text{Sec}[e+f x] \sqrt{\frac{(b c-a d) (1-\text{Sin}[e+f x])}{(a+b) (c+d \text{Sin}[e+f x])}} \sqrt{-\frac{(b c-a d) (1+\text{Sin}[e+f x])}{(a-b) (c+d \text{Sin}[e+f x])}} (c+d \text{Sin}[e+f x])\right) \Big/ \left(3 (a-b)^2 \sqrt{a+b} \sqrt{c+d} (b c-a d)^2 f\right)$$

Result (type 4, 2072 leaves) :

$$\frac{1}{f}\sqrt{a+b \text{Sin}[e+f x]} \sqrt{c+d \text{Sin}[e+f x]} \left(-\frac{2 b^2 \text{Cos}[e+f x]}{3 \left(a^2-b^2\right) (-b c+a d) (a+b \text{Sin}[e+f x])^2}+\frac{4 \left(2 a b^3 c \text{Cos}[e+f x]-3 a^2 b^2 d \text{Cos}[e+f x]+b^4 d \text{Cos}[e+f x]\right)}{3 \left(a^2-b^2\right)^2 (-b c+a d)^2 (a+b \text{Sin}[e+f x])}\right)+$$

$$\frac{1}{3 (a-b)^2 (a+b)^2 (-b c+a d)^2 f}$$

$$\left(-\frac{1}{(a+b) (c+d) \sqrt{a+b \text{Sin}[e+f x]} \sqrt{c+d \text{Sin}[e+f x]}} 4 (-b c+a d) \left(3 a^2 b^2 c^2+b^4 c^2-6 a^3 b c d+2 a b^3 c d+3 a^4 d^2-5 a^2 b^2 d^2+2 b^4 d^2\right)\right.$$

$$\sqrt{\frac{(c+d) \text{Cot}\left[\frac{1}{2} \left(-e+\frac{\pi}{2}-f x\right)\right]^2}{-c+d}} \text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{-\frac{(a+b) \text{Csc}\left[\frac{1}{2} \left(-e+\frac{\pi}{2}-f x\right)\right]^2 (c+d \text{Sin}[e+f x])}{-b c+a d}}}{\sqrt{2}}\right], \frac{2 (-b c+a d)}{(a+b) (-c+d)}\right] \text{Sec}[e+f x]$$

$$\text{Sin}\left[\frac{1}{2} \left(-e+\frac{\pi}{2}-f x\right)\right]^4 \sqrt{\frac{(c+d) \text{Csc}\left[\frac{1}{2} \left(-e+\frac{\pi}{2}-f x\right)\right]^2 (a+b \text{Sin}[e+f x])}{-b c+a d}} \sqrt{-\frac{(a+b) \text{Csc}\left[\frac{1}{2} \left(-e+\frac{\pi}{2}-f x\right)\right]^2 (c+d \text{Sin}[e+f x])}{-b c+a d}}-$$

$$4 (-b c+a d) \left(4 a b^3 c^2-2 a^2 b^2 c d+2 b^4 c d-6 a^3 b d^2+2 a b^3 d^2\right)$$

$$\left(\left(\left(\sqrt{\frac{(c+d)\,\text{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{-c+d}}\;\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}}{\sqrt{2}}\right],\;\frac{2\,(-b\,c+a\,d)}{(a+b)\,(-c+d)}\right]\right.\right.\right.$$

$$\text{Sec}[e+f\,x]\;\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\sqrt{\frac{(c+d)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(a+b\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}$$

$$\left.\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}\right)\Big/\left((a+b)\,(c+d)\,\sqrt{a+b\,\text{Sin}[e+f\,x]}\;\sqrt{c+d\,\text{Sin}[e+f\,x]}\right)-$$

$$\left(\sqrt{\frac{(c+d)\,\text{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{-c+d}}\;\text{EllipticPi}\left[\frac{-b\,c+a\,d}{(a+b)\,d},\;\text{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}}{\sqrt{2}}\right],\;\frac{2\,(-b\,c+a\,d)}{(a+b)\,(-c+d)}\right]\;\text{Sec}[e+f\,x]\right.$$

$$\left.\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\sqrt{\frac{(c+d)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(a+b\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}\;\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}\right)\Big/$$

$$\left.\left((a+b)\,d\,\sqrt{a+b\,\text{Sin}[e+f\,x]}\;\sqrt{c+d\,\text{Sin}[e+f\,x]}\right)\right)+2\,\left(-4\,a\,b^3\,c\,d+6\,a^2\,b^2\,d^2-2\,b^4\,d^2\right)\,\left(\frac{\text{Cos}[e+f\,x]\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}{d\,\sqrt{a+b\,\text{Sin}[e+f\,x]}}+\right.$$

$$\left(\sqrt{\frac{a-b}{a+b}}\,(a+b)\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{\frac{a-b}{a+b}}\;\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]}{\sqrt{\frac{a+b\,\text{Sin}[e+f\,x]}{a+b}}}\right],\;\frac{2\,(-b\,c+a\,d)}{(a-b)\,(c+d)}\right]\,\sqrt{c+d\,\text{Sin}[e+f\,x]}\right)\Big/$$

$$\left(b\,d\,\sqrt{\frac{(a+b)\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{a+b\,\text{Sin}[e+f\,x]}}\;\sqrt{a+b\,\text{Sin}[e+f\,x]}\;\sqrt{\frac{a+b\,\text{Sin}[e+f\,x]}{a+b}}\;\sqrt{\frac{(a+b)\,(c+d\,\text{Sin}[e+f\,x])}{(c+d)\,(a+b\,\text{Sin}[e+f\,x])}}\right)-$$

$$\frac{1}{b\,d}\,2\,(-b\,c+a\,d)\left(\left(\left((a+b)\,c+a\,d\right)\sqrt{\frac{(c+d)\,\mathrm{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{-c+d}}\;\mathrm{EllipticF}\left[\mathrm{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2(c+d\,\mathrm{Sin}[e+f\,x])}{-b\,c+a\,d}}}{\sqrt{2}}\right],\right.\right.\right.$$

$$\left.\frac{2\,(-b\,c+a\,d)}{(a+b)\,(-c+d)}\right]\mathrm{Sec}[e+f\,x]\,\mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\sqrt{\frac{(c+d)\,\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2(a+b\,\mathrm{Sin}[e+f\,x])}{-b\,c+a\,d}}$$

$$\left.\sqrt{-\frac{(a+b)\,\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2(c+d\,\mathrm{Sin}[e+f\,x])}{-b\,c+a\,d}}\right)\bigg/\left((a+b)\,(c+d)\,\sqrt{a+b\,\mathrm{Sin}[e+f\,x]}\,\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}\right)-$$

$$\left((b\,c+a\,d)\sqrt{\frac{(c+d)\,\mathrm{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{-c+d}}\;\mathrm{EllipticPi}\left[\frac{-b\,c+a\,d}{(a+b)\,d},\,\mathrm{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2(c+d\,\mathrm{Sin}[e+f\,x])}{-b\,c+a\,d}}}{\sqrt{2}}\right],\right.\right.$$

$$\left.\frac{2\,(-b\,c+a\,d)}{(a+b)\,(-c+d)}\right]\mathrm{Sec}[e+f\,x]\,\mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\sqrt{\frac{(c+d)\,\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2(a+b\,\mathrm{Sin}[e+f\,x])}{-b\,c+a\,d}}$$

$$\left.\left.\left.\sqrt{-\frac{(a+b)\,\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2(c+d\,\mathrm{Sin}[e+f\,x])}{-b\,c+a\,d}}\right)\bigg/\left((a+b)\,d\,\sqrt{a+b\,\mathrm{Sin}[e+f\,x]}\,\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}\right)\right)\right)$$

- **Problem 799: Result more than twice size of optimal antiderivative.**

$$\int\frac{1}{(a+b\,\mathrm{Sin}[e+f\,x])^{5/2}\,(c+d\,\mathrm{Sin}[e+f\,x])^{3/2}}\,dx$$

Optimal (type 4, 688 leaves, 5 steps) :

$$\frac{2 b^2 \text{Cos}[e+f x]}{3 (a^2-b^2) (b c-a d) f (a+b \text{Sin}[e+f x])^{3/2} \sqrt{c+d \text{Sin}[e+f x]}}+\frac{8 b^2 (a b c-2 a^2 d+b^2 d) \text{Cos}[e+f x]}{3 (a^2-b^2)^2 (b c-a d)^2 f \sqrt{a+b \text{Sin}[e+f x]} \sqrt{c+d \text{Sin}[e+f x]}}+$$

$$\left(2 \left(3 a^4 d^3-b^4 d (5 c^2-8 d^2)+3 a^2 b^2 d (3 c^2-5 d^2)-4 a b^3 c (c^2-d^2)\right) \text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{c+d} \sqrt{a+b \text{Sin}[e+f x]}}{\sqrt{a+b} \sqrt{c+d \text{Sin}[e+f x]}}\right], \frac{(a+b) (c-d)}{(a-b) (c+d)}\right]\right.$$

$$\left.\text{Sec}[e+f x] \sqrt{\frac{(b c-a d) (1-\text{Sin}[e+f x])}{(a+b) (c+d \text{Sin}[e+f x])}} \sqrt{-\frac{(b c-a d) (1+\text{Sin}[e+f x])}{(a-b) (c+d \text{Sin}[e+f x])}} (c+d \text{Sin}[e+f x])\right) \Big/$$

$$\left(3 \sqrt{a+b} (a^2-b^2) (c-d) \sqrt{c+d} (b c-a d)^4 f\right)-\left(2 \left(3 a^2 b (2 c-3 d) d-3 a^3 d^2-3 a b^2 (c^2-2 d^2)+b^3 (c^2-6 c d+8 d^2)\right)\right.$$

$$\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{c+d} \sqrt{a+b \text{Sin}[e+f x]}}{\sqrt{a+b} \sqrt{c+d \text{Sin}[e+f x]}}\right], \frac{(a+b) (c-d)}{(a-b) (c+d)}\right] \text{Sec}[e+f x] \sqrt{\frac{(b c-a d) (1-\text{Sin}[e+f x])}{(a+b) (c+d \text{Sin}[e+f x])}}$$

$$\left.\sqrt{-\frac{(b c-a d) (1+\text{Sin}[e+f x])}{(a-b) (c+d \text{Sin}[e+f x])}} (c+d \text{Sin}[e+f x])\right) \Big/ \left(3 \sqrt{a+b} (a^2-b^2) (c-d) \sqrt{c+d} (b c-a d)^3 f\right)$$

Result (type 4, 2322 leaves) :

$$\frac{1}{f}\sqrt{a+b \text{Sin}[e+f x]} \sqrt{c+d \text{Sin}[e+f x]}$$

$$\left(\frac{2 b^3 \text{Cos}[e+f x]}{3 (a^2-b^2) (-b c+a d)^2 (a+b \text{Sin}[e+f x])^2}-\frac{2 (4 a b^4 c \text{Cos}[e+f x]-9 a^2 b^3 d \text{Cos}[e+f x]+5 b^5 d \text{Cos}[e+f x])}{3 (a^2-b^2)^2 (-b c+a d)^3 (a+b \text{Sin}[e+f x])}-\right.$$

$$\left.\frac{2 d^4 \text{Cos}[e+f x]}{(b c-a d)^3 (c^2-d^2) (c+d \text{Sin}[e+f x])}\right)+\frac{1}{3 (a-b)^2 (a+b)^2 (c-d) (c+d) (-b c+a d)^3 f}$$

$$\left(-\frac{1}{(a+b) (c+d) \sqrt{a+b \text{Sin}[e+f x]} \sqrt{c+d \text{Sin}[e+f x]}} 4 (-b c+a d) \left(-3 a^2 b^3 c^4-b^5 c^4+9 a^3 b^2 c^3 d-5 a b^4 c^3 d-9 a^4 b c^2 d^2+\right.\right.$$

$$\left.20 a^2 b^3 c^2 d^2-7 b^5 c^2 d^2+3 a^5 c d^3-15 a^3 b^2 c d^3+8 a b^4 c d^3+9 a^4 b d^4-17 a^2 b^3 d^4+8 b^5 d^4\right) \sqrt{\frac{(c+d) \text{Cot}\left[\frac{1}{2} \left(-e+\frac{\pi}{2}-f x\right)\right]^2}{-c+d}}$$

$$\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}}{\sqrt{2}}\right],\ \frac{2\,(-b\,c+a\,d)}{(a+b)\,(-c+d)}\right]\,\text{Sec}[e+f\,x]\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4$$

$$\sqrt{\frac{(c+d)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(a+b\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}\ \sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}\ -$$

$$4\,(-b\,c+a\,d)\,\left(-4\,a\,b^4\,c^4+5\,a^2\,b^3\,c^3\,d-5\,b^5\,c^3\,d+9\,a^3\,b^2\,c^2\,d^2-a\,b^4\,c^2\,d^2+3\,a^4\,b\,c\,d^3-11\,a^2\,b^3\,c\,d^3+8\,b^5\,c\,d^3+3\,a^5\,d^4-15\,a^3\,b^2\,d^4+8\,a\,b^4\,d^4\right)$$

$$\left(\left(\sqrt{\frac{(c+d)\,\text{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{-c+d}}\ \text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}}{\sqrt{2}}\right],\ \frac{2\,(-b\,c+a\,d)}{(a+b)\,(-c+d)}\right]\right.\right.$$

$$\text{Sec}[e+f\,x]\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\sqrt{\frac{(c+d)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(a+b\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}$$

$$\left.\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}\right)\Big/\left((a+b)\,(c+d)\,\sqrt{a+b\,\text{Sin}[e+f\,x]}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}\right)-$$

$$\left(\sqrt{\frac{(c+d)\,\text{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{-c+d}}\ \text{EllipticPi}\left[\frac{-b\,c+a\,d}{(a+b)\,d},\ \text{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}}{\sqrt{2}}\right],\ \frac{2\,(-b\,c+a\,d)}{(a+b)\,(-c+d)}\right]\right.$$

$$\text{Sec}[e+f\,x]\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\sqrt{\frac{(c+d)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(a+b\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}$$

$$\left.\left.\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}\right)\Big/\left((a+b)\,d\,\sqrt{a+b\,\text{Sin}[e+f\,x]}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}\right)\right)+$$

$$2\left(4ab^4c^3d-9a^2b^3c^2d^2+5b^5c^2d^2-4ab^4cd^3-3a^4bd^4+15a^2b^3d^4-8b^5d^4\right)\left(\frac{\text{Cos}[e+fx]\sqrt{c+d\,\text{Sin}[e+fx]}}{d\sqrt{a+b\,\text{Sin}[e+fx]}}+\right.$$

$$\left(\sqrt{\frac{a-b}{a+b}}\,(a+b)\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-fx\right)\right]\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{\frac{a-b}{a+b}}\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-fx\right)\right]}{\sqrt{\frac{a+b\,\text{Sin}[e+fx]}{a+b}}}\right],\frac{2(-bc+ad)}{(a-b)(c+d)}\right]\sqrt{c+d\,\text{Sin}[e+fx]}\right)\Big/$$

$$\left(bd\sqrt{\frac{(a+b)\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-fx\right)\right]^2}{a+b\,\text{Sin}[e+fx]}}\sqrt{a+b\,\text{Sin}[e+fx]}\sqrt{\frac{a+b\,\text{Sin}[e+fx]}{a+b}}\sqrt{\frac{(a+b)(c+d\,\text{Sin}[e+fx])}{(c+d)(a+b\,\text{Sin}[e+fx])}}\right)-$$

$$\frac{1}{bd}2(-bc+ad)\left(\left(((a+b)c+ad)\sqrt{\frac{(c+d)\,\text{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-fx\right)\right]^2}{-c+d}}\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-fx\right)\right]^2(c+d\,\text{Sin}[e+fx])}{-bc+ad}}}{\sqrt{2}}\right],\right.\right.\right.$$

$$\left.\frac{2(-bc+ad)}{(a+b)(-c+d)}\right]\text{Sec}[e+fx]\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-fx\right)\right]^4\sqrt{\frac{(c+d)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-fx\right)\right]^2(a+b\,\text{Sin}[e+fx])}{-bc+ad}}$$

$$\left.\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-fx\right)\right]^2(c+d\,\text{Sin}[e+fx])}{-bc+ad}}\right)\Big/\left((a+b)(c+d)\sqrt{a+b\,\text{Sin}[e+fx]}\sqrt{c+d\,\text{Sin}[e+fx]}\right)-$$

$$\left((bc+ad)\sqrt{\frac{(c+d)\,\text{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-fx\right)\right]^2}{-c+d}}\,\text{EllipticPi}\left[\frac{-bc+ad}{(a+b)d},\text{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-fx\right)\right]^2(c+d\,\text{Sin}[e+fx])}{-bc+ad}}}{\sqrt{2}}\right],\right.\right.$$

$$\left.\frac{2(-bc+ad)}{(a+b)(-c+d)}\right]\text{Sec}[e+fx]\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-fx\right)\right]^4\sqrt{\frac{(c+d)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-fx\right)\right]^2(a+b\,\text{Sin}[e+fx])}{-bc+ad}}$$

$$\left.\left.\left.\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}\right)\right/\left((a+b)\,d\,\sqrt{a+b\,\text{Sin}[e+f\,x]}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}\right)\right)\right)\right)$$

- **Problem 800: Result more than twice size of optimal antiderivative.**

$$\int \frac{1}{(a+b\,\text{Sin}[e+f\,x])^{5/2}\,(c+d\,\text{Sin}[e+f\,x])^{5/2}}\,dx$$

Optimal (type 4, 941 leaves, 6 steps):

$$\frac{2\,b^2\,\text{Cos}[e+f\,x]}{3\,(a^2-b^2)\,(b\,c-a\,d)\,f\,(a+b\,\text{Sin}[e+f\,x])^{3/2}\,(c+d\,\text{Sin}[e+f\,x])^{3/2}}+\frac{4\,b^2\,(2\,a\,b\,c-5\,a^2\,d+3\,b^2\,d)\,\text{Cos}[e+f\,x]}{3\,(a^2-b^2)^2\,(b\,c-a\,d)^2\,f\,\sqrt{a+b\,\text{Sin}[e+f\,x]}\,(c+d\,\text{Sin}[e+f\,x])^{3/2}}-$$

$$\frac{2\,d\,\left(a^4\,d^3+a^2\,b^2\,d\,(11\,c^2-13\,d^2)-b^4\,d\,(7\,c^2-8\,d^2)-4\,a\,b^3\,c\,(c^2-d^2)\right)\,\text{Cos}[e+f\,x]\,\sqrt{a+b\,\text{Sin}[e+f\,x]}}{3\,(a^2-b^2)^2\,(b\,c-a\,d)^3\,(c^2-d^2)\,f\,(c+d\,\text{Sin}[e+f\,x])^{3/2}}-$$

$$\left(8\,\left(a^5\,c\,d^4-2\,a^3\,b^2\,c\,d^4+a\,b^4\,c\,(c^4-2\,c^2\,d^2+2\,d^4)+b^5\,d\,(2\,c^4-7\,c^2\,d^2+4\,d^4)-a^2\,b^3\,d\,(3\,c^4-12\,c^2\,d^2+7\,d^4)-a^4\,b\,(3\,c^2\,d^3-2\,d^5)\right)\right.$$

$$\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{c+d}\,\sqrt{a+b\,\text{Sin}[e+f\,x]}}{\sqrt{a+b}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}\right],\,\frac{(a+b)\,(c-d)}{(a-b)\,(c+d)}\right]\,\text{Sec}[e+f\,x]\,\sqrt{\frac{(b\,c-a\,d)\,(1-\text{Sin}[e+f\,x])}{(a+b)\,(c+d\,\text{Sin}[e+f\,x])}}$$

$$\left.\sqrt{-\frac{(b\,c-a\,d)\,(1+\text{Sin}[e+f\,x])}{(a-b)\,(c+d\,\text{Sin}[e+f\,x])}}\,(c+d\,\text{Sin}[e+f\,x])\right)\Big/\left(3\,\sqrt{a+b}\,(a^2-b^2)\,(c-d)^2\,(c+d)^{3/2}\,(b\,c-a\,d)^5\,f\right)-$$

$$\left(2\,\left(a^4\,d^3\,(3\,c+d)-9\,a^3\,b\,d^2\,(c^2-d^2)+a^2\,b^2\,d\,(9\,c^3-18\,c^2\,d-15\,c\,d^2+16\,d^3)+b^4\,(c^4-9\,c^3\,d+16\,c^2\,d^2+12\,c\,d^3-16\,d^4)-3\,a\,b^3\,(c^4-5\,c^2\,d^2+4\,d^4)\right)\right.$$

$$\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{c+d}\,\sqrt{a+b\,\text{Sin}[e+f\,x]}}{\sqrt{a+b}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}\right],\,\frac{(a+b)\,(c-d)}{(a-b)\,(c+d)}\right]\,\text{Sec}[e+f\,x]\,\sqrt{\frac{(b\,c-a\,d)\,(1-\text{Sin}[e+f\,x])}{(a+b)\,(c+d\,\text{Sin}[e+f\,x])}}$$

$$\left.\sqrt{-\frac{(b\,c-a\,d)\,(1+\text{Sin}[e+f\,x])}{(a-b)\,(c+d\,\text{Sin}[e+f\,x])}}\,(c+d\,\text{Sin}[e+f\,x])\right)\Big/\left(3\,\sqrt{a+b}\,(a^2-b^2)\,(c-d)^2\,(c+d)^{3/2}\,(b\,c-a\,d)^4\,f\right)$$

Result (type 4, 2639 leaves):

$$\frac{1}{f}\sqrt{a+b\,\text{Sin}[e+f\,x]}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}$$

$$\left(-\frac{2\,b^4\,\text{Cos}[e+f\,x]}{3\,(a^2-b^2)\,(-b\,c+a\,d)^3\,(a+b\,\text{Sin}[e+f\,x])^2}+\frac{8\,(a\,b^5\,c\,\text{Cos}[e+f\,x]-3\,a^2\,b^4\,d\,\text{Cos}[e+f\,x]+2\,b^6\,d\,\text{Cos}[e+f\,x])}{3\,(a^2-b^2)^2\,(-b\,c+a\,d)^4\,(a+b\,\text{Sin}[e+f\,x])}-\frac{2\,d^4\,\text{Cos}[e+f\,x]}{3\,(b\,c-a\,d)^3\,(c^2-d^2)\,(c+d\,\text{Sin}[e+f\,x])^2}+\frac{8\,(-3\,b\,c^2\,d^4\,\text{Cos}[e+f\,x]+a\,c\,d^5\,\text{Cos}[e+f\,x]+2\,b\,d^6\,\text{Cos}[e+f\,x])}{3\,(b\,c-a\,d)^4\,(c^2-d^2)^2\,(c+d\,\text{Sin}[e+f\,x])}\right)+$$

$$\frac{1}{3\,(a-b)^2\,(a+b)^2\,(c-d)^2\,(c+d)^2\,(-b\,c+a\,d)^4\,f}\left(-\frac{1}{(a+b)\,(c+d)\,\sqrt{a+b\,\text{Sin}[e+f\,x]}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}\,4\,(-b\,c+a\,d)\right.$$

$$(3\,a^2\,b^4\,c^6+b^6\,c^6-12\,a^3\,b^3\,c^5\,d+8\,a\,b^5\,c^5\,d+18\,a^4\,b^2\,c^4\,d^2-41\,a^2\,b^4\,c^4\,d^2+15\,b^6\,c^4\,d^2-12\,a^5\,b\,c^3\,d^3+48\,a^3\,b^3\,c^3\,d^3-28\,a\,b^5\,c^3\,d^3+3\,a^6\,c^2\,d^4-41\,a^4\,b^2\,c^2\,d^4+74\,a^2\,b^4\,c^2\,d^4-32\,b^6\,c^2\,d^4+8\,a^5\,b\,c\,d^5-28\,a^3\,b^3\,c\,d^5+16\,a\,b^5\,c\,d^5+a^6\,d^6+15\,a^4\,b^2\,d^6-32\,a^2\,b^4\,d^6+16\,b^6\,d^6)$$

$$\sqrt{\frac{(c+d)\,\text{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{-c+d}}\;\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}}{\sqrt{2}}\right],\,\frac{2\,(-b\,c+a\,d)}{(a+b)\,(-c+d)}\right]\,\text{Sec}[e+f\,x]$$

$$\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\sqrt{\frac{(c+d)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(a+b\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}\,\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}-$$

$$4\,(-b\,c+a\,d)\,(4\,a\,b^5\,c^6-8\,a^2\,b^4\,c^5\,d+8\,b^6\,c^5\,d-12\,a^3\,b^3\,c^4\,d^2-12\,a^4\,b^2\,c^3\,d^3+40\,a^2\,b^4\,c^3\,d^3-28\,b^6\,c^3\,d^3-8\,a^5\,b\,c^2\,d^4+40\,a^3\,b^3\,c^2\,d^4-20\,a\,b^5\,c^2\,d^4+4\,a^6\,c\,d^5-20\,a^2\,b^4\,c\,d^5+16\,b^6\,c\,d^5+8\,a^5\,b\,d^6-28\,a^3\,b^3\,d^6+16\,a\,b^5\,d^6)$$

$$\left(\left(\sqrt{\frac{(c+d)\,\text{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{-c+d}}\;\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}}{\sqrt{2}}\right],\,\frac{2\,(-b\,c+a\,d)}{(a+b)\,(-c+d)}\right]\right.\right.$$

$$\text{Sec}[e+f\,x]\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\sqrt{\frac{(c+d)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(a+b\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}$$

$$\left.\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}\right)\Big/\left((a+b)\,(c+d)\,\sqrt{a+b\,\text{Sin}[e+f\,x]}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}\right)-$$

$$\left(\sqrt{\frac{(c+d)\,\text{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{-c+d}}\ \text{EllipticPi}\left[\frac{-b c+a d}{(a+b)\,d},\ \text{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 (c+d\,\text{Sin}[e+f x])}{-b c+a d}}}{\sqrt{2}}\right],\ \frac{2\,(-b c+a d)}{(a+b)\,(-c+d)}\right]\right.$$

$$\text{Sec}[e+f x]\ \text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^4 \sqrt{\frac{(c+d)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 (a+b\,\text{Sin}[e+f x])}{-b c+a d}}$$

$$\left.\left.\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 (c+d\,\text{Sin}[e+f x])}{-b c+a d}}\right) \Big/ \left((a+b)\,d\,\sqrt{a+b\,\text{Sin}[e+f x]}\ \sqrt{c+d\,\text{Sin}[e+f x]}\right)\right)+$$

$$2\left(-4 a b^5 c^5 d+12 a^2 b^4 c^4 d^2-8 b^6 c^4 d^2+8 a b^5 c^3 d^3+12 a^4 b^2 c^2 d^4-48 a^2 b^4 c^2 d^4+28 b^6 c^2 d^4-4 a^5 b c d^5+8 a^3 b^3 c d^5-\right.$$

$$\left.8 a b^5 c d^5-8 a^4 b^2 d^6+28 a^2 b^4 d^6-16 b^6 d^6\right)\left(\frac{\text{Cos}[e+f x]\,\sqrt{c+d\,\text{Sin}[e+f x]}}{d\,\sqrt{a+b\,\text{Sin}[e+f x]}}+\right.$$

$$\left(\sqrt{\frac{a-b}{a+b}}\ (a+b)\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{\frac{a-b}{a+b}}\ \text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}{\sqrt{\frac{a+b\,\text{Sin}[e+f x]}{a+b}}}\right],\ \frac{2\,(-b c+a d)}{(a-b)\,(c+d)}\right]\sqrt{c+d\,\text{Sin}[e+f x]}\right)\Big/$$

$$\left(b\,d\,\sqrt{\frac{(a+b)\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{a+b\,\text{Sin}[e+f x]}}\ \sqrt{a+b\,\text{Sin}[e+f x]}\ \sqrt{\frac{a+b\,\text{Sin}[e+f x]}{a+b}}\ \sqrt{\frac{(a+b)\,(c+d\,\text{Sin}[e+f x])}{(c+d)\,(a+b\,\text{Sin}[e+f x])}}\right)-$$

$$\frac{1}{b\,d}\,2\,(-b c+a d)\left(\left(\left((a+b)\,c+a d\right)\sqrt{\frac{(c+d)\,\text{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{-c+d}}\ \text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 (c+d\,\text{Sin}[e+f x])}{-b c+a d}}}{\sqrt{2}}\right],\right.\right.\right.$$

$$\left.\frac{2\,(-b c+a d)}{(a+b)\,(-c+d)}\right]\text{Sec}[e+f x]\ \text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^4 \sqrt{\frac{(c+d)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 (a+b\,\text{Sin}[e+f x])}{-b c+a d}}$$

$$\sqrt{-\frac{(a+b)\,\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2(c+d\,\mathrm{Sin}[e+f\,x])}{-b\,c+a\,d}}\Bigg/\left((a+b)\,(c+d)\,\sqrt{a+b\,\mathrm{Sin}[e+f\,x]}\,\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}\right)-$$

$$\Bigg((b\,c+a\,d)\,\sqrt{\frac{(c+d)\,\mathrm{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{-c+d}}\;\mathrm{EllipticPi}\left[\frac{-b\,c+a\,d}{(a+b)\,d},\,\mathrm{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2(c+d\,\mathrm{Sin}[e+f\,x])}{-b\,c+a\,d}}}{\sqrt{2}}\right],$$

$$\frac{2\,(-b\,c+a\,d)}{(a+b)\,(-c+d)}\right]\mathrm{Sec}[e+f\,x]\,\mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\sqrt{\frac{(c+d)\,\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2(a+b\,\mathrm{Sin}[e+f\,x])}{-b\,c+a\,d}}$$

$$\sqrt{-\frac{(a+b)\,\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2(c+d\,\mathrm{Sin}[e+f\,x])}{-b\,c+a\,d}}\Bigg/\left((a+b)\,d\,\sqrt{a+b\,\mathrm{Sin}[e+f\,x]}\,\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}\right)\Bigg)\Bigg)\Bigg)$$

- **Problem 802: Unable to integrate problem.**

$$\int(a+b\,\mathrm{Sin}[e+f\,x])^m\,(c+d\,\mathrm{Sin}[e+f\,x])^2\,dx$$

Optimal (type 6, 311 leaves, 8 steps):

$$-\frac{d^2\,\mathrm{Cos}[e+f\,x]\,(a+b\,\mathrm{Sin}[e+f\,x])^{1+m}}{b\,f\,(2+m)}+$$

$$\left(\sqrt{2}\,(a+b)\,d\,(a\,d-2\,b\,c\,(2+m))\,\mathrm{AppellF1}\left[\frac{1}{2},\frac{1}{2},-1-m,\frac{3}{2},\frac{1}{2}(1-\mathrm{Sin}[e+f\,x]),\frac{b\,(1-\mathrm{Sin}[e+f\,x])}{a+b}\right]\mathrm{Cos}[e+f\,x]\right.$$

$$\left.(a+b\,\mathrm{Sin}[e+f\,x])^m\left(\frac{a+b\,\mathrm{Sin}[e+f\,x]}{a+b}\right)^{-m}\right)\Bigg/\left(b^2\,f\,(2+m)\,\sqrt{1+\mathrm{Sin}[e+f\,x]}\right)-$$

$$\left(\sqrt{2}\,\left(a\,d\,(a\,d-2\,b\,c\,(2+m))+b^2\left(d^2\,(1+m)+c^2\,(2+m)\right)\right)\mathrm{AppellF1}\left[\frac{1}{2},\frac{1}{2},-m,\frac{3}{2},\frac{1}{2}(1-\mathrm{Sin}[e+f\,x]),\frac{b\,(1-\mathrm{Sin}[e+f\,x])}{a+b}\right]\right.$$

$$\left.\mathrm{Cos}[e+f\,x]\,(a+b\,\mathrm{Sin}[e+f\,x])^m\left(\frac{a+b\,\mathrm{Sin}[e+f\,x]}{a+b}\right)^{-m}\right)\Bigg/\left(b^2\,f\,(2+m)\,\sqrt{1+\mathrm{Sin}[e+f\,x]}\right)$$

Result (type 8, 27 leaves):

$$\int(a+b\,\mathrm{Sin}[e+f\,x])^m\,(c+d\,\mathrm{Sin}[e+f\,x])^2\,dx$$

Problem 814: Unable to integrate problem.

$$\int (d\,\mathrm{Csc}[e+f\,x])^n\,(a+a\,\mathrm{Sin}[e+f\,x])^3\,dx$$

Optimal (type 5, 272 leaves, 8 steps):

$$\frac{a^3 d^3 (1-2n)\,\mathrm{Cot}[e+f x]\,(d\,\mathrm{Csc}[e+f x])^{-3+n}}{f (1-n)(2-n)}+\frac{d^3\,\mathrm{Cot}[e+f x]\,(d\,\mathrm{Csc}[e+f x])^{-3+n}\left(a^3+a^3\,\mathrm{Csc}[e+f x]\right)}{f(1-n)}+$$
$$\frac{a^3 d^3 (5-4n)\,\mathrm{Cos}[e+f x]\,(d\,\mathrm{Csc}[e+f x])^{-3+n}\,\mathrm{Hypergeometric2F1}\left[\frac{1}{2},\frac{3-n}{2},\frac{5-n}{2},\mathrm{Sin}[e+f x]^2\right]}{f(1-n)(3-n)\sqrt{\mathrm{Cos}[e+f x]^2}}+$$
$$\frac{a^3 d^4 (11-4n)\,\mathrm{Cos}[e+f x]\,(d\,\mathrm{Csc}[e+f x])^{-4+n}\,\mathrm{Hypergeometric2F1}\left[\frac{1}{2},\frac{4-n}{2},\frac{6-n}{2},\mathrm{Sin}[e+f x]^2\right]}{f(2-n)(4-n)\sqrt{\mathrm{Cos}[e+f x]^2}}$$

Result (type 9, 28 213 leaves): Display of huge result suppressed!

Problem 816: Result unnecessarily involves imaginary or complex numbers.

$$\int (d\,\mathrm{Csc}[e+f\,x])^n\,(a+a\,\mathrm{Sin}[e+f\,x])\,dx$$

Optimal (type 5, 149 leaves, 6 steps):

$$\frac{a\,d\,\mathrm{Cos}[e+f x]\,(d\,\mathrm{Csc}[e+f x])^{-1+n}\,\mathrm{Hypergeometric2F1}\left[\frac{1}{2},\frac{1-n}{2},\frac{3-n}{2},\mathrm{Sin}[e+f x]^2\right]}{f(1-n)\sqrt{\mathrm{Cos}[e+f x]^2}}+$$
$$\frac{a\,d^2\,\mathrm{Cos}[e+f x]\,(d\,\mathrm{Csc}[e+f x])^{-2+n}\,\mathrm{Hypergeometric2F1}\left[\frac{1}{2},\frac{2-n}{2},\frac{4-n}{2},\mathrm{Sin}[e+f x]^2\right]}{f(2-n)\sqrt{\mathrm{Cos}[e+f x]^2}}$$

Result (type 5, 278 leaves):

$$\frac{1}{f(-1+n)\,n\,(1+n)\left(\mathrm{Cos}\left[\frac{1}{2}(e+f x)\right]+\mathrm{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^2}\,2^{-1+n}\,a\,e^{-i(e+f n x)}\left(1-e^{2i(e+f x)}\right)^n\left(\frac{i\,e^{i(e+f x)}}{-1+e^{2i(e+f x)}}\right)^n$$
$$\mathrm{Csc}[e+f x]^{-1-n}\,(d\,\mathrm{Csc}[e+f x])^n\,(1+\mathrm{Csc}[e+f x])\left(e^{i f(-1+n)x}\,n\,(1+n)\,\mathrm{Hypergeometric2F1}\left[\frac{1}{2}(-1+n),n,\frac{1+n}{2},e^{2i(e+f x)}\right]-\right.$$
$$\left.e^{i e}(-1+n)\left(2\,i\,e^{i f n x}(1+n)\,\mathrm{Hypergeometric2F1}\left[\frac{n}{2},n,\frac{2+n}{2},e^{2i(e+f x)}\right]+e^{i(e+f(1+n)x)}\,n\,\mathrm{Hypergeometric2F1}\left[n,\frac{1+n}{2},\frac{3+n}{2},e^{2i(e+f x)}\right]\right)\right)$$

Problem 817: Unable to integrate problem.

$$\int \frac{(d\,\mathrm{Csc}[e+f\,x])^n}{a+a\,\mathrm{Sin}[e+f\,x]}\,dx$$

Optimal (type 5, 171 leaves, 7 steps):

$$-\frac{\text{Cot}[e+f x] (d \text{Csc}[e+f x])^n}{f (a+a \text{Csc}[e+f x])}+\frac{d n \text{Cos}[e+f x] (d \text{Csc}[e+f x])^{-1+n} \text{Hypergeometric2F1}\left[\frac{1}{2},\frac{1-n}{2},\frac{3-n}{2},\text{Sin}[e+f x]^2\right]}{a f (1-n) \sqrt{\text{Cos}[e+f x]^2}}+$$
$$\frac{\text{Cos}[e+f x] (d \text{Csc}[e+f x])^n \text{Hypergeometric2F1}\left[\frac{1}{2},-\frac{n}{2},\frac{2-n}{2},\text{Sin}[e+f x]^2\right]}{a f \sqrt{\text{Cos}[e+f x]^2}}$$

Result (type 8, 25 leaves) :

$$\int \frac{(d \text{Csc}[e+f x])^n}{a+a \text{Sin}[e+f x]} \, dx$$

- **Problem 818: Unable to integrate problem.**

$$\int \frac{(d \text{Csc}[e+f x])^n}{(a+a \text{Sin}[e+f x])^2} \, dx$$

Optimal (type 5, 231 leaves, 8 steps) :

$$-\frac{2 n \text{Cot}[e+f x] (d \text{Csc}[e+f x])^{2+n}}{3 a^2 d^2 f (1+\text{Csc}[e+f x])}+\frac{\text{Cot}[e+f x] (d \text{Csc}[e+f x])^{2+n}}{3 d^2 f (a+a \text{Csc}[e+f x])^2}+$$
$$\frac{2 n \text{Cos}[e+f x] (d \text{Csc}[e+f x])^{2+n} \text{Hypergeometric2F1}\left[\frac{1}{2},\frac{1}{2} (-2-n),-\frac{n}{2},\text{Sin}[e+f x]^2\right]}{3 a^2 d^2 f \sqrt{\text{Cos}[e+f x]^2}}-$$
$$\frac{(1+2 n) \text{Cos}[e+f x] (d \text{Csc}[e+f x])^{1+n} \text{Hypergeometric2F1}\left[\frac{1}{2},\frac{1}{2} (-1-n),\frac{1-n}{2},\text{Sin}[e+f x]^2\right]}{3 a^2 d f \sqrt{\text{Cos}[e+f x]^2}}$$

Result (type 8, 25 leaves) :

$$\int \frac{(d \text{Csc}[e+f x])^n}{(a+a \text{Sin}[e+f x])^2} \, dx$$

- **Problem 819: Result more than twice size of optimal antiderivative.**

$$\int (c (d \text{Sin}[e+f x])^p)^n (a+a \text{Sin}[e+f x])^m \, dx$$

Optimal (type 6, 113 leaves, 5 steps) :

$$-\frac{1}{f}2^{\frac{1}{2}+m} \text{AppellF1}\left[\frac{1}{2},-n p,\frac{1}{2}-m,\frac{3}{2},1-\text{Sin}[e+f x],\frac{1}{2} (1-\text{Sin}[e+f x])\right]$$
$$\text{Cos}[e+f x] \text{Sin}[e+f x]^{-n p} (c (d \text{Sin}[e+f x])^p)^n (1+\text{Sin}[e+f x])^{-\frac{1}{2}-m} (a+a \text{Sin}[e+f x])^m$$

Result (type 6, 2967 leaves) :

$$-\left(\left(3 \text{AppellF1}\left[\frac{1}{2},-n p,1+m+n p,\frac{3}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right] \text{Cos}[e+f x] \left(\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{-m} \text{Sin}[e+f x]^{n p}\right.\right.$$

$$(c\,(d\,\text{Sin}[e+f x])^p)^n\,(a+a\,\text{Sin}[e+f x])^m\Big)\Big/\Big(f\,\Big(3\,\text{AppellF1}\Big[\frac{1}{2},-n p,1+m+n p,\frac{3}{2},\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]-$$

$$2\,\Big((1+m+n p)\,\text{AppellF1}\Big[\frac{3}{2},-n p,2+m+n p,\frac{5}{2},\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]+$$

$$n p\,\text{AppellF1}\Big[\frac{3}{2},1-n p,1+m+n p,\frac{5}{2},\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big)$$

$$\Big(-\Big(\Big(3 n p\,\text{AppellF1}\Big[\frac{1}{2},-n p,1+m+n p,\frac{3}{2},\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\,\text{Cos}[e+f x]^2\,\Big(\text{Sec}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big)^{-m}$$

$$\text{Sin}[e+f x]^{-1+n p}\Big)\Big/\Big(3\,\text{AppellF1}\Big[\frac{1}{2},-n p,1+m+n p,\frac{3}{2},\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]-$$

$$2\,\Big((1+m+n p)\,\text{AppellF1}\Big[\frac{3}{2},-n p,2+m+n p,\frac{5}{2},\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]+n p$$

$$\text{AppellF1}\Big[\frac{3}{2},1-n p,1+m+n p,\frac{5}{2},\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big)\Big)+$$

$$\Big(3\,\text{AppellF1}\Big[\frac{1}{2},-n p,1+m+n p,\frac{3}{2},\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\,\Big(\text{Sec}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big)^{-m}\,\text{Sin}[e+f x]^{1+n p}\Big)\Big/$$

$$\Big(3\,\text{AppellF1}\Big[\frac{1}{2},-n p,1+m+n p,\frac{3}{2},\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]-$$

$$2\,\Big((1+m+n p)\,\text{AppellF1}\Big[\frac{3}{2},-n p,2+m+n p,\frac{5}{2},\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]+$$

$$n p\,\text{AppellF1}\Big[\frac{3}{2},1-n p,1+m+n p,\frac{5}{2},\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big)-$$

$$\Big(3 m\,\text{AppellF1}\Big[\frac{1}{2},-n p,1+m+n p,\frac{3}{2},\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\,\text{Cos}[e+f x]\,\Big(\text{Sec}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big)^{-m}$$

$$\text{Sin}[e+f x]^{n p}\,\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]\Big)\Big/\Big(3\,\text{AppellF1}\Big[\frac{1}{2},-n p,1+m+n p,\frac{3}{2},\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]-$$

$$2\,\Big((1+m+n p)\,\text{AppellF1}\Big[\frac{3}{2},-n p,2+m+n p,\frac{5}{2},\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]+$$

$$n p\,\text{AppellF1}\Big[\frac{3}{2},1-n p,1+m+n p,\frac{5}{2},\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big)+$$

$$\Big(3\,\text{Cos}[e+f x]\,\Big(\text{Sec}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big)^{-m}\,\text{Sin}[e+f x]^{n p}\,\Big(-\frac{1}{3}(1+m+n p)\,\text{AppellF1}\Big[\frac{3}{2},-n p,2+m+n p,\frac{5}{2},$$

$$\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]-\frac{1}{3}n p\,\text{AppellF1}\Big[\frac{3}{2},$$

$$1-n p,1+m+n p,\frac{5}{2},\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]\Big)\Big)\Big/$$

$$\Big(3\,\text{AppellF1}\Big[\frac{1}{2},\,-n\,p,\,1+m+n\,p,\,\frac{3}{2},\,\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]-$$
$$2\,\Big((1+m+n\,p)\,\text{AppellF1}\Big[\frac{3}{2},\,-n\,p,\,2+m+n\,p,\,\frac{5}{2},\,\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+$$
$$n\,p\,\text{AppellF1}\Big[\frac{3}{2},\,1-n\,p,\,1+m+n\,p,\,\frac{5}{2},\,\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)-$$
$$\Big(3\,\text{AppellF1}\Big[\frac{1}{2},\,-n\,p,\,1+m+n\,p,\,\frac{3}{2},\,\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\,\text{Cos}[e+f\,x]\,\Big(\text{Sec}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)^{-m}$$
$$\text{Sin}[e+f\,x]^{n\,p}\,\Big(-2\,\Big((1+m+n\,p)\,\text{AppellF1}\Big[\frac{3}{2},\,-n\,p,\,2+m+n\,p,\,\frac{5}{2},\,\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+n\,p\,\text{AppellF1}\Big[\frac{3}{2},$$
$$1-n\,p,\,1+m+n\,p,\,\frac{5}{2},\,\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\Big)\,\text{Sec}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]+$$
$$3\,\Big(-\frac{1}{3}\,(1+m+n\,p)\,\text{AppellF1}\Big[\frac{3}{2},\,-n\,p,\,2+m+n\,p,\,\frac{5}{2},\,\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2$$
$$\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]-\frac{1}{3}\,n\,p\,\text{AppellF1}\Big[\frac{3}{2},\,1-n\,p,\,1+m+n\,p,\,\frac{5}{2},\,\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]$$
$$\text{Sec}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\Big)-2\,\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\,\Big((1+m+n\,p)\,\Big(-\frac{3}{5}\,(2+m+n\,p)\,\text{AppellF1}\Big[\frac{5}{2},\,-n\,p,$$
$$3+m+n\,p,\,\frac{7}{2},\,\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]-$$
$$\frac{3}{5}\,n\,p\,\text{AppellF1}\Big[\frac{5}{2},\,1-n\,p,\,2+m+n\,p,\,\frac{7}{2},\,\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2$$
$$\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\Big)+n\,p\,\Big(-\frac{3}{5}\,(1+m+n\,p)\,\text{AppellF1}\Big[\frac{5}{2},\,1-n\,p,\,2+m+n\,p,\,\frac{7}{2},\,\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,$$
$$-\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]+\frac{3}{5}\,(1-n\,p)\,\text{AppellF1}\Big[\frac{5}{2},\,2-n\,p,\,1+m+n\,p,$$
$$\frac{7}{2},\,\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\Big)\Big)\Big)\Big)\Big/$$
$$\Big(3\,\text{AppellF1}\Big[\frac{1}{2},\,-n\,p,\,1+m+n\,p,\,\frac{3}{2},\,\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]-$$
$$2\,\Big((1+m+n\,p)\,\text{AppellF1}\Big[\frac{3}{2},\,-n\,p,\,2+m+n\,p,\,\frac{5}{2},\,\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+n\,p$$
$$\text{AppellF1}\Big[\frac{3}{2},\,1-n\,p,\,1+m+n\,p,\,\frac{5}{2},\,\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)^2\Big)\Big)\Big)$$

- **Problem 820: Unable to integrate problem.**

$$\int (c\,(d\,\text{Sin}[e+f\,x])^p)^n\,(a+a\,\text{Sin}[e+f\,x])^3\,dx$$

Optimal (type 5, 299 leaves, 7 steps) :

$$-\frac{a^3\,(7+2\,n\,p)\,\text{Cos}[e+f\,x]\,\text{Sin}[e+f\,x]\,(c\,(d\,\text{Sin}[e+f\,x])^p)^n}{f\,(2+n\,p)\,(3+n\,p)}+$$
$$\left(a^3\,(5+4\,n\,p)\,\text{Cos}[e+f\,x]\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{1}{2}\,(1+n\,p),\frac{1}{2}\,(3+n\,p),\text{Sin}[e+f\,x]^2\right]\,\text{Sin}[e+f\,x]\,(c\,(d\,\text{Sin}[e+f\,x])^p)^n\right)\Big/$$
$$\left(f\,(1+n\,p)\,(2+n\,p)\,\sqrt{\text{Cos}[e+f\,x]^2}\right)+$$
$$\left(a^3\,(11+4\,n\,p)\,\text{Cos}[e+f\,x]\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{1}{2}\,(2+n\,p),\frac{1}{2}\,(4+n\,p),\text{Sin}[e+f\,x]^2\right]\,\text{Sin}[e+f\,x]^2\,(c\,(d\,\text{Sin}[e+f\,x])^p)^n\right)\Big/$$
$$\left(f\,(2+n\,p)\,(3+n\,p)\,\sqrt{\text{Cos}[e+f\,x]^2}\right)-\frac{\text{Cos}[e+f\,x]\,\text{Sin}[e+f\,x]\,(c\,(d\,\text{Sin}[e+f\,x])^p)^n\,\left(a^3+a^3\,\text{Sin}[e+f\,x]\right)}{f\,(3+n\,p)}$$

Result (type 9, 26 224 leaves) : Display of huge result suppressed!

Problem 822: Result unnecessarily involves imaginary or complex numbers.

$$\int (c\,(d\,\text{Sin}[e+f\,x])^p)^n\,(a+a\,\text{Sin}[e+f\,x])\,dx$$

Optimal (type 5, 163 leaves, 4 steps) :

$$\left(a\,\text{Cos}[e+f\,x]\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{1}{2}\,(1+n\,p),\frac{1}{2}\,(3+n\,p),\text{Sin}[e+f\,x]^2\right]\,\text{Sin}[e+f\,x]\,(c\,(d\,\text{Sin}[e+f\,x])^p)^n\right)\Big/\left(f\,(1+n\,p)\,\sqrt{\text{Cos}[e+f\,x]^2}\right)+$$
$$\left(a\,\text{Cos}[e+f\,x]\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{1}{2}\,(2+n\,p),\frac{1}{2}\,(4+n\,p),\text{Sin}[e+f\,x]^2\right]\,\text{Sin}[e+f\,x]^2\,(c\,(d\,\text{Sin}[e+f\,x])^p)^n\right)\Big/\left(f\,(2+n\,p)\,\sqrt{\text{Cos}[e+f\,x]^2}\right)$$

Result (type 5, 307 leaves) :

$$\frac{1}{f\,n\,p\,(-1+n\,p)\,(1+n\,p)\,\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^2}$$
$$2^{-1-n\,p}\,a\,e^{-i\,(e+f\,x)}\,\left(1-e^{2\,i\,(e+f\,x)}\right)^{-n\,p}\,\left(-i\,e^{-i\,(e+f\,x)}\,\left(-1+e^{2\,i\,(e+f\,x)}\right)\right)^{n\,p}\,\left(2\,i\,e^{i\,(e+f\,x)}\,\left(-1+n^2\,p^2\right)\,\text{Hypergeometric2F1}\left[-n\,p,-\frac{n\,p}{2},1-\frac{n\,p}{2},e^{2\,i\,(e+f\,x)}\right]+\right.$$
$$n\,p\,(1-n\,p)\,\text{Hypergeometric2F1}\left[-n\,p,\frac{1}{2}\,(-1-n\,p),\frac{1}{2}\,(1-n\,p),e^{2\,i\,(e+f\,x)}\right]+$$
$$\left.e^{2\,i\,(e+f\,x)}\,n\,p\,(1+n\,p)\,\text{Hypergeometric2F1}\left[-n\,p,\frac{1}{2}\,(1-n\,p),\frac{1}{2}\,(3-n\,p),e^{2\,i\,(e+f\,x)}\right]\right)\,\text{Sin}[e+f\,x]^{-n\,p}\,(c\,(d\,\text{Sin}[e+f\,x])^p)^n\,(1+\text{Sin}[e+f\,x])$$

Problem 823: Unable to integrate problem.

$$\int \frac{(c\,(d\,\text{Sin}[e+f\,x])^p)^n}{a+a\,\text{Sin}[e+f\,x]}\,dx$$

Optimal (type 5, 189 leaves, 5 steps) :

$$\frac{\text{Cos}[e+f x]\ \text{Hypergeometric2F1}\left[\frac{1}{2},\frac{n p}{2},\frac{1}{2}(2+n p),\text{Sin}[e+f x]^2\right](c\ (d\ \text{Sin}[e+f x])^p)^n}{a f \sqrt{\text{Cos}[e+f x]^2}} -$$

$$\left(n p\ \text{Cos}[e+f x]\ \text{Hypergeometric2F1}\left[\frac{1}{2},\frac{1}{2}(1+n p),\frac{1}{2}(3+n p),\text{Sin}[e+f x]^2\right]\text{Sin}[e+f x]\ (c\ (d\ \text{Sin}[e+f x])^p)^n\right)\Big/$$

$$\left(a f\ (1+n p)\sqrt{\text{Cos}[e+f x]^2}\right) - \frac{\text{Cos}[e+f x]\ (c\ (d\ \text{Sin}[e+f x])^p)^n}{f\ (a+a\ \text{Sin}[e+f x])}$$

Result (type 8, 29 leaves) :

$$\int \frac{(c\ (d\ \text{Sin}[e+f x])^p)^n}{a+a\ \text{Sin}[e+f x]}\,dx$$

Problem 824: Unable to integrate problem.

$$\int \frac{(c\ (d\ \text{Sin}[e+f x])^p)^n}{(a+a\ \text{Sin}[e+f x])^2}\,dx$$

Optimal (type 5, 288 leaves, 6 steps) :

$$-\left(n p\ (1-2 n p)\ \text{Cos}[e+f x]\ \text{Hypergeometric2F1}\left[\frac{1}{2},\frac{1}{2}(1+n p),\frac{1}{2}(3+n p),\text{Sin}[e+f x]^2\right]\text{Sin}[e+f x]\ (c\ (d\ \text{Sin}[e+f x])^p)^n\right)\Big/$$

$$\left(3 a^2 f\ (1+n p)\sqrt{\text{Cos}[e+f x]^2}\right) +$$

$$\left(2\left(1-n^2 p^2\right)\text{Cos}[e+f x]\ \text{Hypergeometric2F1}\left[\frac{1}{2},\frac{1}{2}(2+n p),\frac{1}{2}(4+n p),\text{Sin}[e+f x]^2\right]\text{Sin}[e+f x]^2\ (c\ (d\ \text{Sin}[e+f x])^p)^n\right)\Big/$$

$$\left(3 a^2 f\ (2+n p)\sqrt{\text{Cos}[e+f x]^2}\right) + \frac{2\ (1-n p)\ \text{Cos}[e+f x]\ \text{Sin}[e+f x]\ (c\ (d\ \text{Sin}[e+f x])^p)^n}{3 a^2 f\ (1+\text{Sin}[e+f x])} + \frac{\text{Cos}[e+f x]\ \text{Sin}[e+f x]\ (c\ (d\ \text{Sin}[e+f x])^p)^n}{3 f\ (a+a\ \text{Sin}[e+f x])^2}$$

Result (type 8, 29 leaves) :

$$\int \frac{(c\ (d\ \text{Sin}[e+f x])^p)^n}{(a+a\ \text{Sin}[e+f x])^2}\,dx$$

Problem 828: Result more than twice size of optimal antiderivative.

$$\int \frac{(d\ \text{Csc}[e+f x])^n}{a+b\ \text{Sin}[e+f x]}\,dx$$

Optimal (type 6, 204 leaves, 7 steps) :

$$\frac{1}{\left(a^2-b^2\right) d\, f} b\, \text{AppellF1}\left[\frac{1}{2},\ \frac{n}{2},\ 1,\ \frac{3}{2},\ \text{Cos}[e+f x]^2,\ -\frac{b^2 \text{Cos}[e+f x]^2}{a^2-b^2}\right] \text{Cos}[e+f x]\ (d\, \text{Csc}[e+f x])^{1+n}\ \text{Sin}[e+f x]\ \left(\text{Sin}[e+f x]^2\right)^{n/2} -$$

$$\frac{1}{\left(a^2-b^2\right) d\, f} a\, \text{AppellF1}\left[\frac{1}{2},\ \frac{1+n}{2},\ 1,\ \frac{3}{2},\ \text{Cos}[e+f x]^2,\ -\frac{b^2 \text{Cos}[e+f x]^2}{a^2-b^2}\right] \text{Cos}[e+f x]\ (d\, \text{Csc}[e+f x])^{1+n}\ \left(\text{Sin}[e+f x]^2\right)^{\frac{1+n}{2}}$$

Result (type 6, 7063 leaves) :

$$\left((d\, \text{Csc}[e+f x])^n\ \text{Tan}[e+f x]\ \left(\text{Cot}[e+f x]\ \sqrt{1+\text{Tan}[e+f x]^2}\right)^n\right.$$

$$\left(\left(a^3\ (-3+n)\ \text{AppellF1}\left[\frac{1-n}{2},\ -\frac{n}{2},\ 1,\ \frac{3-n}{2},\ -\text{Tan}[e+f x]^2,\ \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\right]\right)\right/$$

$$\left((-1+n)\ \left(-a^2\ (-3+n)\ \text{AppellF1}\left[\frac{1-n}{2},\ -\frac{n}{2},\ 1,\ \frac{3-n}{2},\ -\text{Tan}[e+f x]^2,\ \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\right] +\right.\right.$$

$$\left(a^2\, n\, \text{AppellF1}\left[\frac{3-n}{2},\ 1-\frac{n}{2},\ 1,\ \frac{5-n}{2},\ -\text{Tan}[e+f x]^2,\ \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\right] +\right.$$

$$\left.\left.2\ \left(-a^2+b^2\right)\ \text{AppellF1}\left[\frac{3-n}{2},\ -\frac{n}{2},\ 2,\ \frac{5-n}{2},\ -\text{Tan}[e+f x]^2,\ \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\right]\right) \text{Tan}[e+f x]^2\right)$$

$$\left.\left(-b^2\, \text{Tan}[e+f x]^2+a^2\ \left(1+\text{Tan}[e+f x]^2\right)\right)\right) + \frac{1}{b\ (-2+n)\ \left(b^2\, \text{Tan}[e+f x]^2-a^2\ \left(1+\text{Tan}[e+f x]^2\right)\right)}$$

$$\text{Tan}[e+f x]\ \left(-\left(\left(a^2\ \left(a^2-b^2\right)\ (-4+n)\ \text{AppellF1}\left[1-\frac{n}{2},\ \frac{1}{2}\ (-1-n),\ 1,\ 2-\frac{n}{2},\ -\text{Tan}[e+f x]^2,\ \frac{\left(-a^2+b^2\right) \text{Tan}[e+f x]^2}{a^2}\right] \sqrt{1+\text{Tan}[e+f x]^2}\right)\right/\right.$$

$$\left(-a^2\ (-4+n)\ \text{AppellF1}\left[1-\frac{n}{2},\ \frac{1}{2}\ (-1-n),\ 1,\ 2-\frac{n}{2},\ -\text{Tan}[e+f x]^2,\ \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\right] +\right.$$

$$\left(-2\ \left(a^2-b^2\right)\ \text{AppellF1}\left[2-\frac{n}{2},\ \frac{1}{2}\ (-1-n),\ 2,\ 3-\frac{n}{2},\ -\text{Tan}[e+f x]^2,\ \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\right] +\right.$$

$$\left.\left.\left.a^2\ (1+n)\ \text{AppellF1}\left[2-\frac{n}{2},\ \frac{1-n}{2},\ 1,\ 3-\frac{n}{2},\ -\text{Tan}[e+f x]^2,\ \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\right]\right) \text{Tan}[e+f x]^2\right)\right) -$$

$$\left.\left.\left.\text{Hypergeometric2F1}\left[\frac{1}{2}-\frac{n}{2},\ 1-\frac{n}{2},\ 2-\frac{n}{2},\ -\text{Tan}[e+f x]^2\right]\ \left(1+\text{Tan}[e+f x]^2\right)^{-n/2}\ \left(-b^2\, \text{Tan}[e+f x]^2+a^2\ \left(1+\text{Tan}[e+f x]^2\right)\right)\right)\right)\right)\right/$$

$$\left(f\ (a+b\, \text{Sin}[e+f x])\ \left(\text{Sec}[e+f x]^2\ \left(\text{Cot}[e+f x]\ \sqrt{1+\text{Tan}[e+f x]^2}\right)^n\right.\right.$$

$$\left(\left(a^3\ (-3+n)\ \text{AppellF1}\left[\frac{1-n}{2},\ -\frac{n}{2},\ 1,\ \frac{3-n}{2},\ -\text{Tan}[e+f x]^2,\ \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\right]\right)\right/$$

$$\left((-1+n)\left(-a^2(-3+n)\,\text{AppellF1}\left[\frac{1-n}{2},-\frac{n}{2},1,\frac{3-n}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+\right.\right.$$

$$\left(a^2 n\,\text{AppellF1}\left[\frac{3-n}{2},1-\frac{n}{2},1,\frac{5-n}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+\right.$$

$$\left.2\left(-a^2+b^2\right)\text{AppellF1}\left[\frac{3-n}{2},-\frac{n}{2},2,\frac{5-n}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]\right)\text{Tan}[e+f x]^2\Big)$$

$$\left.\left(-b^2\,\text{Tan}[e+f x]^2+a^2\left(1+\text{Tan}[e+f x]^2\right)\right)\right)+\frac{1}{b(-2+n)\left(b^2\,\text{Tan}[e+f x]^2-a^2\left(1+\text{Tan}[e+f x]^2\right)\right)}$$

$$\text{Tan}[e+f x]\left(-\left(\left(a^2\left(a^2-b^2\right)(-4+n)\,\text{AppellF1}\left[1-\frac{n}{2},\frac{1}{2}(-1-n),1,2-\frac{n}{2},-\text{Tan}[e+f x]^2,\frac{\left(-a^2+b^2\right)\text{Tan}[e+f x]^2}{a^2}\right]\right.\right.\right.$$

$$\left.\sqrt{1+\text{Tan}[e+f x]^2}\right)\Big/\left(-a^2(-4+n)\,\text{AppellF1}\left[1-\frac{n}{2},\frac{1}{2}(-1-n),1,2-\frac{n}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+\right.$$

$$\left(-2\left(a^2-b^2\right)\text{AppellF1}\left[2-\frac{n}{2},\frac{1}{2}(-1-n),2,3-\frac{n}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+\right.$$

$$\left.\left.a^2(1+n)\,\text{AppellF1}\left[2-\frac{n}{2},\frac{1-n}{2},1,3-\frac{n}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]\right)\text{Tan}[e+f x]^2\right)\right)-$$

$$\left.\text{Hypergeometric2F1}\left[\frac{1}{2}-\frac{n}{2},1-\frac{n}{2},2-\frac{n}{2},-\text{Tan}[e+f x]^2\right]\left(1+\text{Tan}[e+f x]^2\right)^{-n/2}\left(-b^2\,\text{Tan}[e+f x]^2+a^2\left(1+\text{Tan}[e+f x]^2\right)\right)\right)\right)+$$

$$n\,\text{Tan}[e+f x]\left(\text{Cot}[e+f x]\sqrt{1+\text{Tan}[e+f x]^2}\right)^{-1+n}\left(\frac{\text{Sec}[e+f x]^2}{\sqrt{1+\text{Tan}[e+f x]^2}}-\text{Csc}[e+f x]^2\sqrt{1+\text{Tan}[e+f x]^2}\right)$$

$$\left(\left(a^3(-3+n)\,\text{AppellF1}\left[\frac{1-n}{2},-\frac{n}{2},1,\frac{3-n}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]\right)\Big/\right.$$

$$\left((-1+n)\left(-a^2(-3+n)\,\text{AppellF1}\left[\frac{1-n}{2},-\frac{n}{2},1,\frac{3-n}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+\right.\right.$$

$$\left(a^2 n\,\text{AppellF1}\left[\frac{3-n}{2},1-\frac{n}{2},1,\frac{5-n}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+\right.$$

$$\left.2\left(-a^2+b^2\right)\text{AppellF1}\left[\frac{3-n}{2},-\frac{n}{2},2,\frac{5-n}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]\right)\text{Tan}[e+f x]^2\Big)$$

$$\left.\left(-b^2\,\text{Tan}[e+f x]^2+a^2\left(1+\text{Tan}[e+f x]^2\right)\right)\right)+\frac{1}{b(-2+n)\left(b^2\,\text{Tan}[e+f x]^2-a^2\left(1+\text{Tan}[e+f x]^2\right)\right)}$$

$$\text{Tan}[e+f x]\left(-\left(\left(a^2\left(a^2-b^2\right)(-4+n)\,\text{AppellF1}\left[1-\frac{n}{2},\frac{1}{2}(-1-n),1,2-\frac{n}{2},-\text{Tan}[e+f x]^2,\frac{\left(-a^2+b^2\right)\text{Tan}[e+f x]^2}{a^2}\right]\right.\right.\right.$$

$$\sqrt{1+\text{Tan}[e+f\,x]^2}\Bigg)\Bigg/\Bigg(-a^2\,(-4+n)\,\text{AppellF1}\Big[1-\frac{n}{2},\,\frac{1}{2}\,(-1-n),\,1,\,2-\frac{n}{2},\,-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\Big]+$$

$$\Bigg(-2\,\left(a^2-b^2\right)\text{AppellF1}\Big[2-\frac{n}{2},\,\frac{1}{2}\,(-1-n),\,2,\,3-\frac{n}{2},\,-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\Big]+$$

$$a^2\,(1+n)\,\text{AppellF1}\Big[2-\frac{n}{2},\,\frac{1-n}{2},\,1,\,3-\frac{n}{2},\,-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\Big]\Bigg)\,\text{Tan}[e+f\,x]^2\Bigg)\Bigg)-$$

$$\text{Hypergeometric2F1}\Big[\frac{1}{2}-\frac{n}{2},\,1-\frac{n}{2},\,2-\frac{n}{2},\,-\text{Tan}[e+f\,x]^2\Big]\,\left(1+\text{Tan}[e+f\,x]^2\right)^{-n/2}\,\left(-b^2\,\text{Tan}[e+f\,x]^2+a^2\,\left(1+\text{Tan}[e+f\,x]^2\right)\right)\Bigg)\Bigg)+$$

$$\text{Tan}[e+f\,x]\,\left(\text{Cot}[e+f\,x]\,\sqrt{1+\text{Tan}[e+f\,x]^2}\right)^n\,\Bigg(-\Bigg(\Bigg(a^3\,(-3+n)\,\text{AppellF1}\Big[\frac{1-n}{2},\,-\frac{n}{2},\,1,\,\frac{3-n}{2},\,-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\Big]$$

$$\left(2\,a^2\,\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]-2\,b^2\,\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]\right)\Bigg)\Bigg/$$

$$\Bigg((-1+n)\,\Bigg(-a^2\,(-3+n)\,\text{AppellF1}\Big[\frac{1-n}{2},\,-\frac{n}{2},\,1,\,\frac{3-n}{2},\,-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\Big]+$$

$$\Bigg(a^2\,n\,\text{AppellF1}\Big[\frac{3-n}{2},\,1-\frac{n}{2},\,1,\,\frac{5-n}{2},\,-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\Big]+2\,\left(-a^2+b^2\right)\text{AppellF1}\Big[\frac{3-n}{2},\,-\frac{n}{2},\,2,\,\frac{5-n}{2},$$

$$-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\Big]\Bigg)\,\text{Tan}[e+f\,x]^2\Bigg)\,\left(-b^2\,\text{Tan}[e+f\,x]^2+a^2\,\left(1+\text{Tan}[e+f\,x]^2\right)\right)^2\Bigg)\Bigg)+\Bigg(a^3\,(-3+n)$$

$$\Bigg(\frac{1}{3-n}\,(1-n)\,n\,\text{AppellF1}\Big[1+\frac{1-n}{2},\,1-\frac{n}{2},\,1,\,1+\frac{3-n}{2},\,-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\Big]\,\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]+\frac{1}{3-n}$$

$$2\,\left(-1+\frac{b^2}{a^2}\right)\,(1-n)\,\text{AppellF1}\Big[1+\frac{1-n}{2},\,-\frac{n}{2},\,2,\,1+\frac{3-n}{2},\,-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\Big]\,\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]\Bigg)\Bigg)\Bigg/$$

$$\Bigg((-1+n)\,\Bigg(-a^2\,(-3+n)\,\text{AppellF1}\Big[\frac{1-n}{2},\,-\frac{n}{2},\,1,\,\frac{3-n}{2},\,-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\Big]+$$

$$\Bigg(a^2\,n\,\text{AppellF1}\Big[\frac{3-n}{2},\,1-\frac{n}{2},\,1,\,\frac{5-n}{2},\,-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\Big]+2\,\left(-a^2+b^2\right)\text{AppellF1}\Big[\frac{3-n}{2},\,-\frac{n}{2},$$

$$2,\,\frac{5-n}{2},\,-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\Big]\Bigg)\,\text{Tan}[e+f\,x]^2\Bigg)\,\left(-b^2\,\text{Tan}[e+f\,x]^2+a^2\,\left(1+\text{Tan}[e+f\,x]^2\right)\right)\Bigg)-$$

$$\Bigg(a^3\,(-3+n)\,\text{AppellF1}\Big[\frac{1-n}{2},\,-\frac{n}{2},\,1,\,\frac{3-n}{2},\,-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\Big]$$

$$\Bigg(2\,\Bigg(a^2\,n\,\text{AppellF1}\Big[\frac{3-n}{2},\,1-\frac{n}{2},\,1,\,\frac{5-n}{2},\,-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\Big]+$$

$$2\,(-a^2+b^2)\,\text{AppellF1}\Big[\frac{3-n}{2},\,-\frac{n}{2},\,2,\,\frac{5-n}{2},\,-\text{Tan}[e+f\,x]^2,\,\Big(-1+\frac{b^2}{a^2}\Big)\,\text{Tan}[e+f\,x]^2\Big]\Big)\,\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]-a^2\,(-3+n)$$

$$\Big(\frac{1}{3-n}(1-n)\,n\,\text{AppellF1}\Big[1+\frac{1-n}{2},\,1-\frac{n}{2},\,1,\,1+\frac{3-n}{2},\,-\text{Tan}[e+f\,x]^2,\,\Big(-1+\frac{b^2}{a^2}\Big)\,\text{Tan}[e+f\,x]^2\Big]\,\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]+\frac{1}{3-n}$$

$$2\,\Big(-1+\frac{b^2}{a^2}\Big)\,(1-n)\,\text{AppellF1}\Big[1+\frac{1-n}{2},\,-\frac{n}{2},\,2,\,1+\frac{3-n}{2},\,-\text{Tan}[e+f\,x]^2,\,\Big(-1+\frac{b^2}{a^2}\Big)\,\text{Tan}[e+f\,x]^2\Big]\,\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]\Big)+$$

$$\text{Tan}[e+f\,x]^2\,\Big(a^2\,n\,\Big(\frac{1}{5-n}2\,\Big(-1+\frac{b^2}{a^2}\Big)\,(3-n)\,\text{AppellF1}\Big[1+\frac{3-n}{2},\,1-\frac{n}{2},\,2,\,1+\frac{5-n}{2},\,-\text{Tan}[e+f\,x]^2,\,\Big(-1+\frac{b^2}{a^2}\Big)\,\text{Tan}[e+f\,x]^2\Big]$$

$$\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]-\frac{1}{5-n}2\,(3-n)\,\Big(1-\frac{n}{2}\Big)\,\text{AppellF1}\Big[1+\frac{3-n}{2},\,2-\frac{n}{2},\,1,\,1+\frac{5-n}{2},\,-\text{Tan}[e+f\,x]^2,$$

$$\Big(-1+\frac{b^2}{a^2}\Big)\,\text{Tan}[e+f\,x]^2\Big]\,\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]\Big)+2\,(-a^2+b^2)\,\Big(\frac{1}{5-n}(3-n)\,n\,\text{AppellF1}\Big[1+\frac{3-n}{2},\,1-\frac{n}{2},$$

$$2,\,1+\frac{5-n}{2},\,-\text{Tan}[e+f\,x]^2,\,\Big(-1+\frac{b^2}{a^2}\Big)\,\text{Tan}[e+f\,x]^2\Big]\,\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]+\frac{1}{5-n}4\,\Big(-1+\frac{b^2}{a^2}\Big)\,(3-n)$$

$$\text{AppellF1}\Big[1+\frac{3-n}{2},\,-\frac{n}{2},\,3,\,1+\frac{5-n}{2},\,-\text{Tan}[e+f\,x]^2,\,\Big(-1+\frac{b^2}{a^2}\Big)\,\text{Tan}[e+f\,x]^2\Big]\,\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]\Big)\Big)\Big)\Big)\Big/$$

$$\Big((-1+n)\,\Big(-a^2\,(-3+n)\,\text{AppellF1}\Big[\frac{1-n}{2},\,-\frac{n}{2},\,1,\,\frac{3-n}{2},\,-\text{Tan}[e+f\,x]^2,\,\Big(-1+\frac{b^2}{a^2}\Big)\,\text{Tan}[e+f\,x]^2\Big]+$$

$$\Big(a^2\,n\,\text{AppellF1}\Big[\frac{3-n}{2},\,1-\frac{n}{2},\,1,\,\frac{5-n}{2},\,-\text{Tan}[e+f\,x]^2,\,\Big(-1+\frac{b^2}{a^2}\Big)\,\text{Tan}[e+f\,x]^2\Big]+2\,(-a^2+b^2)\,\text{AppellF1}\Big[\frac{3-n}{2},\,-\frac{n}{2},\,2,$$

$$\frac{5-n}{2},\,-\text{Tan}[e+f\,x]^2,\,\Big(-1+\frac{b^2}{a^2}\Big)\,\text{Tan}[e+f\,x]^2\Big]\Big)\,\text{Tan}[e+f\,x]^2\Big)^2\,\Big(-b^2\,\text{Tan}[e+f\,x]^2+a^2\,\big(1+\text{Tan}[e+f\,x]^2\big)\Big)\Big)-$$

$$\frac{1}{b\,(-2+n)\,\big(b^2\,\text{Tan}[e+f\,x]^2-a^2\,(1+\text{Tan}[e+f\,x]^2)\big)^2}\,\text{Tan}[e+f\,x]\,\big(-2\,a^2\,\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]+2\,b^2\,\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]\big)$$

$$\Big(-\Big(\Big(a^2\,(a^2-b^2)\,(-4+n)\,\text{AppellF1}\Big[1-\frac{n}{2},\,\frac{1}{2}(-1-n),\,1,\,2-\frac{n}{2},\,-\text{Tan}[e+f\,x]^2,\,\frac{(-a^2+b^2)\,\text{Tan}[e+f\,x]^2}{a^2}\Big]\,\sqrt{1+\text{Tan}[e+f\,x]^2}\Big)\Big/$$

$$\Big(-a^2\,(-4+n)\,\text{AppellF1}\Big[1-\frac{n}{2},\,\frac{1}{2}(-1-n),\,1,\,2-\frac{n}{2},\,-\text{Tan}[e+f\,x]^2,\,\Big(-1+\frac{b^2}{a^2}\Big)\,\text{Tan}[e+f\,x]^2\Big]+$$

$$\Big(-2\,(a^2-b^2)\,\text{AppellF1}\Big[2-\frac{n}{2},\,\frac{1}{2}(-1-n),\,2,\,3-\frac{n}{2},\,-\text{Tan}[e+f\,x]^2,\,\Big(-1+\frac{b^2}{a^2}\Big)\,\text{Tan}[e+f\,x]^2\Big]+$$

$$a^2\,(1+n)\,\text{AppellF1}\Big[2-\frac{n}{2},\,\frac{1-n}{2},\,1,\,3-\frac{n}{2},\,-\text{Tan}[e+f\,x]^2,\,\Big(-1+\frac{b^2}{a^2}\Big)\,\text{Tan}[e+f\,x]^2\Big]\Big)\,\text{Tan}[e+f\,x]^2\Big)\Big)-$$

$$\text{Hypergeometric2F1}\left[\frac{1}{2}-\frac{n}{2},1-\frac{n}{2},2-\frac{n}{2},-\text{Tan}[e+f x]^2\right]\left(1+\text{Tan}[e+f x]^2\right)^{-n/2}\left(-b^2\,\text{Tan}[e+f x]^2+a^2\left(1+\text{Tan}[e+f x]^2\right)\right)\Bigg)+$$

$$\frac{1}{b\,(-2+n)\left(b^2\,\text{Tan}[e+f x]^2-a^2\left(1+\text{Tan}[e+f x]^2\right)\right)}\,\text{Sec}[e+f x]^2$$

$$\Bigg(-\Bigg(\Bigg(a^2\left(a^2-b^2\right)(-4+n)\,\text{AppellF1}\left[1-\frac{n}{2},\frac{1}{2}(-1-n),1,2-\frac{n}{2},-\text{Tan}[e+f x]^2,\frac{\left(-a^2+b^2\right)\text{Tan}[e+f x]^2}{a^2}\right]\sqrt{1+\text{Tan}[e+f x]^2}\Bigg)\Big/$$

$$\Bigg(-a^2\,(-4+n)\,\text{AppellF1}\left[1-\frac{n}{2},\frac{1}{2}(-1-n),1,2-\frac{n}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+$$

$$\Bigg(-2\left(a^2-b^2\right)\text{AppellF1}\left[2-\frac{n}{2},\frac{1}{2}(-1-n),2,3-\frac{n}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+$$

$$a^2\,(1+n)\,\text{AppellF1}\left[2-\frac{n}{2},\frac{1-n}{2},1,3-\frac{n}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]\Bigg)\,\text{Tan}[e+f x]^2\Bigg)\Bigg)-$$

$$\text{Hypergeometric2F1}\left[\frac{1}{2}-\frac{n}{2},1-\frac{n}{2},2-\frac{n}{2},-\text{Tan}[e+f x]^2\right]\left(1+\text{Tan}[e+f x]^2\right)^{-n/2}\left(-b^2\,\text{Tan}[e+f x]^2+a^2\left(1+\text{Tan}[e+f x]^2\right)\right)\Bigg)+$$

$$\frac{1}{b\,(-2+n)\left(b^2\,\text{Tan}[e+f x]^2-a^2\left(1+\text{Tan}[e+f x]^2\right)\right)}\,\text{Tan}[e+f x]\,\Bigg(-\text{Hypergeometric2F1}\left[\frac{1}{2}-\frac{n}{2},1-\frac{n}{2},2-\frac{n}{2},-\text{Tan}[e+f x]^2\right]$$

$$\left(2\,a^2\,\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]-2\,b^2\,\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]\right)\left(1+\text{Tan}[e+f x]^2\right)^{-n/2}-$$

$$\Bigg(a^2\left(a^2-b^2\right)(-4+n)\,\text{AppellF1}\left[1-\frac{n}{2},\frac{1}{2}(-1-n),1,2-\frac{n}{2},-\text{Tan}[e+f x]^2,\frac{\left(-a^2+b^2\right)\text{Tan}[e+f x]^2}{a^2}\right]\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]\Bigg)\Big/$$

$$\Bigg(\sqrt{1+\text{Tan}[e+f x]^2}\;\Bigg(-a^2\,(-4+n)\,\text{AppellF1}\left[1-\frac{n}{2},\frac{1}{2}(-1-n),1,2-\frac{n}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+$$

$$\Bigg(-2\left(a^2-b^2\right)\text{AppellF1}\left[2-\frac{n}{2},\frac{1}{2}(-1-n),2,3-\frac{n}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+$$

$$a^2\,(1+n)\,\text{AppellF1}\left[2-\frac{n}{2},\frac{1-n}{2},1,3-\frac{n}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]\Bigg)\,\text{Tan}[e+f x]^2\Bigg)\Bigg)-$$

$$\Bigg(a^2\left(a^2-b^2\right)(-4+n)\left(-\frac{1}{2-\frac{n}{2}}(-1-n)\left(1-\frac{n}{2}\right)\text{AppellF1}\left[2-\frac{n}{2},1+\frac{1}{2}(-1-n),1,3-\frac{n}{2},-\text{Tan}[e+f x]^2,\right.\right.$$

$$\left.\frac{\left(-a^2+b^2\right)\text{Tan}[e+f x]^2}{a^2}\right]\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]+\frac{1}{a^2\left(2-\frac{n}{2}\right)}2\left(-a^2+b^2\right)\left(1-\frac{n}{2}\right)\text{AppellF1}\left[2-\frac{n}{2},\frac{1}{2}(-1-n),\right.$$

$$\left.\left.2,3-\frac{n}{2},-\text{Tan}[e+f x]^2,\frac{\left(-a^2+b^2\right)\text{Tan}[e+f x]^2}{a^2}\right]\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]\right)\sqrt{1+\text{Tan}[e+f x]^2}\Bigg)\Big/$$

$$\left(-a^2\,(-4+n)\,\text{AppellF1}\left[1-\frac{n}{2},\frac{1}{2}(-1-n),1,2-\frac{n}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+\right.$$

$$\left(-2\left(a^2-b^2\right)\text{AppellF1}\left[2-\frac{n}{2},\frac{1}{2}(-1-n),2,3-\frac{n}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+\right.$$

$$\left.\left.a^2\,(1+n)\,\text{AppellF1}\left[2-\frac{n}{2},\frac{1-n}{2},1,3-\frac{n}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]\right)\text{Tan}[e+f x]^2\right)+$$

$$n\,\text{Hypergeometric2F1}\left[\frac{1}{2}-\frac{n}{2},1-\frac{n}{2},2-\frac{n}{2},-\text{Tan}[e+f x]^2\right]\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]\left(1+\text{Tan}[e+f x]^2\right)^{-1-\frac{n}{2}}$$

$$\left(-b^2\,\text{Tan}[e+f x]^2+a^2\left(1+\text{Tan}[e+f x]^2\right)\right)-2\left(1-\frac{n}{2}\right)\text{Csc}[e+f x]\,\text{Sec}[e+f x]\left(1+\text{Tan}[e+f x]^2\right)^{-n/2}$$

$$\left(-b^2\,\text{Tan}[e+f x]^2+a^2\left(1+\text{Tan}[e+f x]^2\right)\right)\left(-\text{Hypergeometric2F1}\left[\frac{1}{2}-\frac{n}{2},1-\frac{n}{2},2-\frac{n}{2},-\text{Tan}[e+f x]^2\right]+\left(1+\text{Tan}[e+f x]^2\right)^{-\frac{1}{2}+\frac{n}{2}}\right)+$$

$$\left(a^2\left(a^2-b^2\right)(-4+n)\,\text{AppellF1}\left[1-\frac{n}{2},\frac{1}{2}(-1-n),1,2-\frac{n}{2},-\text{Tan}[e+f x]^2,\frac{\left(-a^2+b^2\right)\text{Tan}[e+f x]^2}{a^2}\right]\right.$$

$$\sqrt{1+\text{Tan}[e+f x]^2}\left(2\left(-2\left(a^2-b^2\right)\text{AppellF1}\left[2-\frac{n}{2},\frac{1}{2}(-1-n),2,3-\frac{n}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+\right.\right.$$

$$\left.a^2\,(1+n)\,\text{AppellF1}\left[2-\frac{n}{2},\frac{1-n}{2},1,3-\frac{n}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]\right)\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]-$$

$$a^2\,(-4+n)\left(-\frac{1}{2-\frac{n}{2}}(-1-n)\left(1-\frac{n}{2}\right)\text{AppellF1}\left[2-\frac{n}{2},1+\frac{1}{2}(-1-n),1,3-\frac{n}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]\right.$$

$$\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]+\frac{1}{2-\frac{n}{2}}2\left(-1+\frac{b^2}{a^2}\right)\left(1-\frac{n}{2}\right)\text{AppellF1}\left[2-\frac{n}{2},\frac{1}{2}(-1-n),2,\right.$$

$$\left.\left.3-\frac{n}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]\right)+\text{Tan}[e+f x]^2$$

$$\left(-2\left(a^2-b^2\right)\left(-\frac{1}{3-\frac{n}{2}}(-1-n)\left(2-\frac{n}{2}\right)\text{AppellF1}\left[3-\frac{n}{2},1+\frac{1}{2}(-1-n),2,4-\frac{n}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]\right.\right.$$

$$\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]+\frac{1}{3-\frac{n}{2}}4\left(-1+\frac{b^2}{a^2}\right)\left(2-\frac{n}{2}\right)\text{AppellF1}\left[3-\frac{n}{2},\frac{1}{2}(-1-n),3,4-\frac{n}{2},-\text{Tan}[e+f x]^2,\right.$$

$$\left.\left.\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]\right)+a^2\,(1+n)\left(-\frac{1}{3-\frac{n}{2}}(1-n)\left(2-\frac{n}{2}\right)\text{AppellF1}\left[3-\frac{n}{2},1+\frac{1-n}{2},\right.\right.$$

$$1,4-\frac{n}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\Big]\,\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]+\frac{1}{3-\frac{n}{2}}2\left(-1+\frac{b^2}{a^2}\right)\left(2-\frac{n}{2}\right)$$

$$\text{AppellF1}\left[3-\frac{n}{2},\frac{1-n}{2},2,4-\frac{n}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]\Bigg)\Bigg)\Bigg)\Bigg)\Bigg/$$
$$\Bigg(-a^2(-4+n)\,\text{AppellF1}\left[1-\frac{n}{2},\frac{1}{2}(-1-n),1,2-\frac{n}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+$$
$$\Bigg(-2\left(a^2-b^2\right)\text{AppellF1}\left[2-\frac{n}{2},\frac{1}{2}(-1-n),2,3-\frac{n}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+$$
$$a^2(1+n)\,\text{AppellF1}\left[2-\frac{n}{2},\frac{1-n}{2},1,3-\frac{n}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]\Bigg)\text{Tan}[e+f x]^2\Bigg)^2\Bigg)\Bigg)\Bigg)\Bigg)$$

- **Problem 829: Result more than twice size of optimal antiderivative.**

$$\int\frac{(d\,\text{Csc}[e+f x])^n}{(a+b\,\text{Sin}[e+f x])^2}\,dx$$

Optimal (type 6, 321 leaves, 10 steps):

$$-\frac{1}{\left(a^2-b^2\right)^2 d^2 f}$$
$$b^2\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2}(-1+n),2,\frac{3}{2},\text{Cos}[e+f x]^2,-\frac{b^2\,\text{Cos}[e+f x]^2}{a^2-b^2}\right]\text{Cos}[e+f x]\,(d\,\text{Csc}[e+f x])^{2+n}\,\text{Sin}[e+f x]^3\left(\text{Sin}[e+f x]^2\right)^{\frac{1}{2}(-1+n)}-$$
$$\frac{1}{\left(a^2-b^2\right)^2 d^2 f}a^2\,\text{AppellF1}\left[\frac{1}{2},\frac{1+n}{2},2,\frac{3}{2},\text{Cos}[e+f x]^2,-\frac{b^2\,\text{Cos}[e+f x]^2}{a^2-b^2}\right]\text{Cos}[e+f x]\,(d\,\text{Csc}[e+f x])^{2+n}\,\text{Sin}[e+f x]\left(\text{Sin}[e+f x]^2\right)^{\frac{1+n}{2}}+$$
$$\frac{1}{\left(a^2-b^2\right)^2 d^2 f}2\,a\,b\,\text{AppellF1}\left[\frac{1}{2},\frac{n}{2},2,\frac{3}{2},\text{Cos}[e+f x]^2,-\frac{b^2\,\text{Cos}[e+f x]^2}{a^2-b^2}\right]\text{Cos}[e+f x]\,(d\,\text{Csc}[e+f x])^{2+n}\left(\text{Sin}[e+f x]^2\right)^{\frac{2+n}{2}}$$

Result (type 6, 8880 leaves):

$$\Bigg(a^2(d\,\text{Csc}[e+f x])^n\,\text{Tan}[e+f x]\left(\text{Cot}[e+f x]\sqrt{1+\text{Tan}[e+f x]^2}\right)^n$$
$$\Bigg(-\Bigg(\Bigg(\left(a^2+b^2\right)(-3+n)\,\text{AppellF1}\left[\frac{1-n}{2},-\frac{n}{2},1,\frac{3-n}{2},-\text{Tan}[e+f x]^2,\frac{\left(-a^2+b^2\right)\text{Tan}[e+f x]^2}{a^2}\right]\Bigg)\Bigg/$$
$$\Bigg((-1+n)\Bigg(-a^2(-3+n)\,\text{AppellF1}\left[\frac{1-n}{2},-\frac{n}{2},1,\frac{3-n}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+$$
$$\Bigg(a^2 n\,\text{AppellF1}\left[\frac{3-n}{2},1-\frac{n}{2},1,\frac{5-n}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+2\left(-a^2+b^2\right)\text{AppellF1}\Bigg[\frac{3-n}{2},-\frac{n}{2},2,$$
$$\frac{5-n}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\Bigg]\Bigg)\text{Tan}[e+f x]^2\Bigg)\left(-b^2\,\text{Tan}[e+f x]^2+a^2\left(1+\text{Tan}[e+f x]^2\right)\right)\Bigg)\Bigg)+$$

$$\frac{1}{\left(b^2\,\text{Tan}[e+f\,x]^2-a^2\left(1+\text{Tan}[e+f\,x]^2\right)\right)^2}\,2\,a\,b\left(-\left(a\,b\,(-3+n)\,\text{AppellF1}\left[\frac{1-n}{2},-\frac{n}{2},2,\frac{3-n}{2},-\text{Tan}[e+f\,x]^2,\frac{\left(-a^2+b^2\right)\text{Tan}[e+f\,x]^2}{a^2}\right]\right)\Big/\right.$$

$$\left((-1+n)\left(a^2\,(-3+n)\,\text{AppellF1}\left[\frac{1-n}{2},-\frac{n}{2},2,\frac{3-n}{2},-\text{Tan}[e+f\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\right]-\right.\right.$$

$$\left(a^2\,n\,\text{AppellF1}\left[\frac{3-n}{2},1-\frac{n}{2},2,\frac{5-n}{2},-\text{Tan}[e+f\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\right]+\right.$$

$$\left.\left.\left.4\left(-a^2+b^2\right)\text{AppellF1}\left[\frac{3-n}{2},-\frac{n}{2},3,\frac{5-n}{2},-\text{Tan}[e+f\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\right]\right)\text{Tan}[e+f\,x]^2\right)\right)-$$

$$\left(\left(a^2-b^2\right)(-4+n)\,\text{AppellF1}\left[1-\frac{n}{2},\frac{1}{2}(-1-n),2,2-\frac{n}{2},-\text{Tan}[e+f\,x]^2,\frac{\left(-a^2+b^2\right)\text{Tan}[e+f\,x]^2}{a^2}\right]\text{Tan}[e+f\,x]\sqrt{1+\text{Tan}[e+f\,x]^2}\right)\Big/$$

$$\left((-2+n)\left(a^2\,(-4+n)\,\text{AppellF1}\left[1-\frac{n}{2},\frac{1}{2}(-1-n),2,2-\frac{n}{2},-\text{Tan}[e+f\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\right]+\right.\right.$$

$$\left(4\left(a^2-b^2\right)\text{AppellF1}\left[2-\frac{n}{2},\frac{1}{2}(-1-n),3,3-\frac{n}{2},-\text{Tan}[e+f\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\right]-\right.$$

$$\left.\left.\left.\left.a^2\,(1+n)\,\text{AppellF1}\left[2-\frac{n}{2},\frac{1-n}{2},2,3-\frac{n}{2},-\text{Tan}[e+f\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\right]\right)\text{Tan}[e+f\,x]^2\right)\right)\right)\right)\Big/$$

$$\left(\left(-a^2+b^2\right)f\,(a+b\,\text{Sin}[e+f\,x])^2\left(\frac{1}{-a^2+b^2}\,a^2\,\text{Sec}[e+f\,x]^2\left(\text{Cot}[e+f\,x]\sqrt{1+\text{Tan}[e+f\,x]^2}\right)^n\right.\right.$$

$$\left(-\left(\left(\left(a^2+b^2\right)(-3+n)\,\text{AppellF1}\left[\frac{1-n}{2},-\frac{n}{2},1,\frac{3-n}{2},-\text{Tan}[e+f\,x]^2,\frac{\left(-a^2+b^2\right)\text{Tan}[e+f\,x]^2}{a^2}\right]\right)\Big/\right.\right.$$

$$\left((-1+n)\left(-a^2\,(-3+n)\,\text{AppellF1}\left[\frac{1-n}{2},-\frac{n}{2},1,\frac{3-n}{2},-\text{Tan}[e+f\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\right]+\right.\right.$$

$$\left(a^2\,n\,\text{AppellF1}\left[\frac{3-n}{2},1-\frac{n}{2},1,\frac{5-n}{2},-\text{Tan}[e+f\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\right]+2\left(-a^2+b^2\right)\text{AppellF1}\left[\frac{3-n}{2},-\frac{n}{2},2,\right.\right.$$

$$\left.\left.\left.\left.\frac{5-n}{2},-\text{Tan}[e+f\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\right]\right)\text{Tan}[e+f\,x]^2\right)\left(-b^2\,\text{Tan}[e+f\,x]^2+a^2\left(1+\text{Tan}[e+f\,x]^2\right)\right)\right)\right)+$$

$$\frac{1}{\left(b^2\,\text{Tan}[e+f\,x]^2-a^2\left(1+\text{Tan}[e+f\,x]^2\right)\right)^2}\,2\,a\,b\left(-\left(a\,b\,(-3+n)\,\text{AppellF1}\left[\frac{1-n}{2},-\frac{n}{2},2,\frac{3-n}{2},-\text{Tan}[e+f\,x]^2,\right.\right.\right.$$

$$\left.\left.\frac{\left(-a^2+b^2\right)\text{Tan}[e+f\,x]^2}{a^2}\right]\right)\Big/\left((-1+n)\left(a^2\,(-3+n)\,\text{AppellF1}\left[\frac{1-n}{2},-\frac{n}{2},2,\frac{3-n}{2},-\text{Tan}[e+f\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\right]-\right.\right.$$

$$\left(a^2\, n\, \text{AppellF1}\left[\frac{3-n}{2},\,1-\frac{n}{2},\,2,\,\frac{5-n}{2},\,-\text{Tan}[e+f x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+\right.$$

$$\left.\left.4\left(-a^2+b^2\right)\text{AppellF1}\left[\frac{3-n}{2},\,-\frac{n}{2},\,3,\,\frac{5-n}{2},\,-\text{Tan}[e+f x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]\right)\text{Tan}[e+f x]^2\right)\right)-$$

$$\left(\left(a^2-b^2\right)(-4+n)\,\text{AppellF1}\left[1-\frac{n}{2},\,\frac{1}{2}(-1-n),\,2,\,2-\frac{n}{2},\,-\text{Tan}[e+f x]^2,\,\frac{\left(-a^2+b^2\right)\text{Tan}[e+f x]^2}{a^2}\right]\text{Tan}[e+f x]\right.$$

$$\left.\sqrt{1+\text{Tan}[e+f x]^2}\right)\Big/\left((-2+n)\left(a^2(-4+n)\,\text{AppellF1}\left[1-\frac{n}{2},\,\frac{1}{2}(-1-n),\,2,\,2-\frac{n}{2},\,-\text{Tan}[e+f x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+\right.\right.$$

$$\left(4\left(a^2-b^2\right)\text{AppellF1}\left[2-\frac{n}{2},\,\frac{1}{2}(-1-n),\,3,\,3-\frac{n}{2},\,-\text{Tan}[e+f x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]-\right.$$

$$\left.\left.\left.\left.a^2(1+n)\,\text{AppellF1}\left[2-\frac{n}{2},\,\frac{1-n}{2},\,2,\,3-\frac{n}{2},\,-\text{Tan}[e+f x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]\right)\text{Tan}[e+f x]^2\right)\right)\right)\right)+$$

$$\frac{1}{-a^2+b^2}\,a^2\, n\,\text{Tan}[e+f x]\left(\text{Cot}[e+f x]\sqrt{1+\text{Tan}[e+f x]^2}\right)^{-1+n}\left(\frac{\text{Sec}[e+f x]^2}{\sqrt{1+\text{Tan}[e+f x]^2}}-\text{Csc}[e+f x]^2\sqrt{1+\text{Tan}[e+f x]^2}\right)$$

$$\left(-\left(\left(\left(a^2+b^2\right)(-3+n)\,\text{AppellF1}\left[\frac{1-n}{2},\,-\frac{n}{2},\,1,\,\frac{3-n}{2},\,-\text{Tan}[e+f x]^2,\,\frac{\left(-a^2+b^2\right)\text{Tan}[e+f x]^2}{a^2}\right]\right)\Big/\right.\right.$$

$$\left((-1+n)\left(-a^2(-3+n)\,\text{AppellF1}\left[\frac{1-n}{2},\,-\frac{n}{2},\,1,\,\frac{3-n}{2},\,-\text{Tan}[e+f x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+\right.\right.$$

$$\left(a^2\, n\,\text{AppellF1}\left[\frac{3-n}{2},\,1-\frac{n}{2},\,1,\,\frac{5-n}{2},\,-\text{Tan}[e+f x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+2\left(-a^2+b^2\right)\text{AppellF1}\left[\frac{3-n}{2},\,-\frac{n}{2},\,2,\right.\right.$$

$$\left.\left.\left.\left.\left.\frac{5-n}{2},\,-\text{Tan}[e+f x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]\right)\text{Tan}[e+f x]^2\right)\left(-b^2\,\text{Tan}[e+f x]^2+a^2\left(1+\text{Tan}[e+f x]^2\right)\right)\right)\right)+$$

$$\frac{1}{\left(b^2\,\text{Tan}[e+f x]^2-a^2\left(1+\text{Tan}[e+f x]^2\right)\right)^2}\,2\,a\,b\left(-\left(a\,b\,(-3+n)\,\text{AppellF1}\left[\frac{1-n}{2},\,-\frac{n}{2},\,2,\,\frac{3-n}{2},\,-\text{Tan}[e+f x]^2,\right.\right.\right.$$

$$\left.\left.\frac{\left(-a^2+b^2\right)\text{Tan}[e+f x]^2}{a^2}\right]\right)\Big/\left((-1+n)\left(a^2(-3+n)\,\text{AppellF1}\left[\frac{1-n}{2},\,-\frac{n}{2},\,2,\,\frac{3-n}{2},\,-\text{Tan}[e+f x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]-\right.\right.$$

$$\left(a^2\, n\,\text{AppellF1}\left[\frac{3-n}{2},\,1-\frac{n}{2},\,2,\,\frac{5-n}{2},\,-\text{Tan}[e+f x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+\right.$$

$$\left.\left.\left.4\left(-a^2+b^2\right)\text{AppellF1}\left[\frac{3-n}{2},\,-\frac{n}{2},\,3,\,\frac{5-n}{2},\,-\text{Tan}[e+f x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]\right)\text{Tan}[e+f x]^2\right)\right)-$$

$$\left(\left(a^2-b^2\right)(-4+n)\,\text{AppellF1}\left[1-\frac{n}{2},\frac{1}{2}(-1-n),2,2-\frac{n}{2},-\text{Tan}[e+fx]^2,\frac{\left(-a^2+b^2\right)\text{Tan}[e+fx]^2}{a^2}\right]\text{Tan}[e+fx]\right.$$

$$\left.\sqrt{1+\text{Tan}[e+fx]^2}\right)\Big/\left((-2+n)\left(a^2(-4+n)\,\text{AppellF1}\left[1-\frac{n}{2},\frac{1}{2}(-1-n),2,2-\frac{n}{2},-\text{Tan}[e+fx]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+fx]^2\right]+\right.\right.$$

$$\left(4\left(a^2-b^2\right)\text{AppellF1}\left[2-\frac{n}{2},\frac{1}{2}(-1-n),3,3-\frac{n}{2},-\text{Tan}[e+fx]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+fx]^2\right]-\right.$$

$$\left.\left.\left.a^2(1+n)\,\text{AppellF1}\left[2-\frac{n}{2},\frac{1-n}{2},2,3-\frac{n}{2},-\text{Tan}[e+fx]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+fx]^2\right]\right)\text{Tan}[e+fx]^2\right)\right)\right)+$$

$$\frac{1}{-a^2+b^2}a^2\,\text{Tan}[e+fx]\left(\text{Cot}[e+fx]\sqrt{1+\text{Tan}[e+fx]^2}\right)^n\left(\left(\left(a^2+b^2\right)(-3+n)\,\text{AppellF1}\left[\frac{1-n}{2},-\frac{n}{2},1,\frac{3-n}{2},-\text{Tan}[e+fx]^2,\right.\right.\right.$$

$$\left.\left.\frac{\left(-a^2+b^2\right)\text{Tan}[e+fx]^2}{a^2}\right]\left(2a^2\,\text{Sec}[e+fx]^2\,\text{Tan}[e+fx]-2b^2\,\text{Sec}[e+fx]^2\,\text{Tan}[e+fx]\right)\right)\Big/$$

$$\left((-1+n)\left(-a^2(-3+n)\,\text{AppellF1}\left[\frac{1-n}{2},-\frac{n}{2},1,\frac{3-n}{2},-\text{Tan}[e+fx]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+fx]^2\right]+\right.\right.$$

$$\left(a^2n\,\text{AppellF1}\left[\frac{3-n}{2},1-\frac{n}{2},1,\frac{5-n}{2},-\text{Tan}[e+fx]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+fx]^2\right]+2\left(-a^2+b^2\right)\text{AppellF1}\left[\frac{3-n}{2},-\frac{n}{2},2,\right.\right.$$

$$\left.\left.\left.\left.\frac{5-n}{2},-\text{Tan}[e+fx]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+fx]^2\right]\right)\text{Tan}[e+fx]^2\right)\left(-b^2\,\text{Tan}[e+fx]^2+a^2\left(1+\text{Tan}[e+fx]^2\right)\right)^2\right)-$$

$$\left(\left(a^2+b^2\right)(-3+n)\left(\frac{1}{3-n}(1-n)\,n\,\text{AppellF1}\left[1+\frac{1-n}{2},1-\frac{n}{2},1,1+\frac{3-n}{2},-\text{Tan}[e+fx]^2,\frac{\left(-a^2+b^2\right)\text{Tan}[e+fx]^2}{a^2}\right]\right.\right.$$

$$\text{Sec}[e+fx]^2\,\text{Tan}[e+fx]+\frac{1}{a^2(3-n)}2\left(-a^2+b^2\right)(1-n)\,\text{AppellF1}\left[1+\frac{1-n}{2},-\frac{n}{2},2,\right.$$

$$\left.\left.\left.1+\frac{3-n}{2},-\text{Tan}[e+fx]^2,\frac{\left(-a^2+b^2\right)\text{Tan}[e+fx]^2}{a^2}\right]\text{Sec}[e+fx]^2\,\text{Tan}[e+fx]\right)\right)\Big/$$

$$\left((-1+n)\left(-a^2(-3+n)\,\text{AppellF1}\left[\frac{1-n}{2},-\frac{n}{2},1,\frac{3-n}{2},-\text{Tan}[e+fx]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+fx]^2\right]+\right.\right.$$

$$\left(a^2n\,\text{AppellF1}\left[\frac{3-n}{2},1-\frac{n}{2},1,\frac{5-n}{2},-\text{Tan}[e+fx]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+fx]^2\right]+2\left(-a^2+b^2\right)\text{AppellF1}\left[\frac{3-n}{2},-\frac{n}{2},\right.\right.$$

$$\left.\left.\left.\left.2,\frac{5-n}{2},-\text{Tan}[e+fx]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+fx]^2\right]\right)\text{Tan}[e+fx]^2\right)\left(-b^2\,\text{Tan}[e+fx]^2+a^2\left(1+\text{Tan}[e+fx]^2\right)\right)\right)-$$

$$\frac{1}{\left(b^2\,\text{Tan}[e+fx]^2-a^2\left(1+\text{Tan}[e+fx]^2\right)\right)^3}4ab\left(-2a^2\,\text{Sec}[e+fx]^2\,\text{Tan}[e+fx]+2b^2\,\text{Sec}[e+fx]^2\,\text{Tan}[e+fx]\right)$$

$$\left(-\left(a\,b\,(-3+n)\,\text{AppellF1}\left[\frac{1-n}{2},-\frac{n}{2},2,\frac{3-n}{2},-\text{Tan}[e+f\,x]^2,\frac{(-a^2+b^2)\,\text{Tan}[e+f\,x]^2}{a^2}\right]\right)\Big/\right.$$

$$\left((-1+n)\left(a^2\,(-3+n)\,\text{AppellF1}\left[\frac{1-n}{2},-\frac{n}{2},2,\frac{3-n}{2},-\text{Tan}[e+f\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\right]-\right.\right.$$

$$\left(a^2\,n\,\text{AppellF1}\left[\frac{3-n}{2},1-\frac{n}{2},2,\frac{5-n}{2},-\text{Tan}[e+f\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\right]+\right.$$

$$\left.\left.\left.4\,(-a^2+b^2)\,\text{AppellF1}\left[\frac{3-n}{2},-\frac{n}{2},3,\frac{5-n}{2},-\text{Tan}[e+f\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\right]\right)\text{Tan}[e+f\,x]^2\right)\right)-$$

$$\left((a^2-b^2)\,(-4+n)\,\text{AppellF1}\left[1-\frac{n}{2},\frac{1}{2}(-1-n),2,2-\frac{n}{2},-\text{Tan}[e+f\,x]^2,\frac{(-a^2+b^2)\,\text{Tan}[e+f\,x]^2}{a^2}\right]\text{Tan}[e+f\,x]\right.$$

$$\left.\sqrt{1+\text{Tan}[e+f\,x]^2}\right)\Big/\left((-2+n)\left(a^2\,(-4+n)\,\text{AppellF1}\left[1-\frac{n}{2},\frac{1}{2}(-1-n),2,2-\frac{n}{2},-\text{Tan}[e+f\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\right]+\right.\right.$$

$$\left(4\,(a^2-b^2)\,\text{AppellF1}\left[2-\frac{n}{2},\frac{1}{2}(-1-n),3,3-\frac{n}{2},-\text{Tan}[e+f\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\right]-\right.$$

$$\left.\left.\left.a^2\,(1+n)\,\text{AppellF1}\left[2-\frac{n}{2},\frac{1-n}{2},2,3-\frac{n}{2},-\text{Tan}[e+f\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\right]\right)\text{Tan}[e+f\,x]^2\right)\right)+$$

$$\left((a^2+b^2)\,(-3+n)\,\text{AppellF1}\left[\frac{1-n}{2},-\frac{n}{2},1,\frac{3-n}{2},-\text{Tan}[e+f\,x]^2,\frac{(-a^2+b^2)\,\text{Tan}[e+f\,x]^2}{a^2}\right]\right.$$

$$\left(2\left(a^2\,n\,\text{AppellF1}\left[\frac{3-n}{2},1-\frac{n}{2},1,\frac{5-n}{2},-\text{Tan}[e+f\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\right]+\right.\right.$$

$$\left.2\,(-a^2+b^2)\,\text{AppellF1}\left[\frac{3-n}{2},-\frac{n}{2},2,\frac{5-n}{2},-\text{Tan}[e+f\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\right]\right)\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]-a^2\,(-3+n)$$

$$\left(\frac{1}{3-n}(1-n)\,n\,\text{AppellF1}\left[1+\frac{1-n}{2},1-\frac{n}{2},1,1+\frac{3-n}{2},-\text{Tan}[e+f\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\right]\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]+\frac{1}{3-n}\right.$$

$$\left.2\left(-1+\frac{b^2}{a^2}\right)(1-n)\,\text{AppellF1}\left[1+\frac{1-n}{2},-\frac{n}{2},2,1+\frac{3-n}{2},-\text{Tan}[e+f\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\right]\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]\right)+$$

$$\text{Tan}[e+f\,x]^2\left(a^2\,n\left(\frac{1}{5-n}2\left(-1+\frac{b^2}{a^2}\right)(3-n)\,\text{AppellF1}\left[1+\frac{3-n}{2},1-\frac{n}{2},2,1+\frac{5-n}{2},-\text{Tan}[e+f\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\right]\right.\right.$$

$$\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]-\frac{1}{5-n}2\,(3-n)\left(1-\frac{n}{2}\right)\text{AppellF1}\left[1+\frac{3-n}{2},2-\frac{n}{2},1,1+\frac{5-n}{2},-\text{Tan}[e+f\,x]^2,\right.$$

$$\left.\left.\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\right]\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]\right)+2\,(-a^2+b^2)\left(\frac{1}{5-n}(3-n)\,n\,\text{AppellF1}\left[1+\frac{3-n}{2},1-\frac{n}{2},\right.\right.$$

$$2,\ 1+\frac{5-n}{2},\ -\text{Tan}[e+f x]^2,\ \left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\Big]\ \text{Sec}[e+f x]^2\ \text{Tan}[e+f x]+\frac{1}{5-n}4\left(-1+\frac{b^2}{a^2}\right)(3-n)$$

$$\text{AppellF1}\Big[1+\frac{3-n}{2},\ -\frac{n}{2},\ 3,\ 1+\frac{5-n}{2},\ -\text{Tan}[e+f x]^2,\ \left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\Big]\ \text{Sec}[e+f x]^2\ \text{Tan}[e+f x]\Big)\Big)\Big)\Big)\Big/$$

$$\Big((-1+n)\ \Big(-a^2\ (-3+n)\ \text{AppellF1}\Big[\frac{1-n}{2},\ -\frac{n}{2},\ 1,\ \frac{3-n}{2},\ -\text{Tan}[e+f x]^2,\ \left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\Big]+$$

$$\Big(a^2\, n\, \text{AppellF1}\Big[\frac{3-n}{2},\ 1-\frac{n}{2},\ 1,\ \frac{5-n}{2},\ -\text{Tan}[e+f x]^2,\ \left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\Big]+2\left(-a^2+b^2\right)\text{AppellF1}\Big[\frac{3-n}{2},\ -\frac{n}{2},\ 2,$$

$$\frac{5-n}{2},\ -\text{Tan}[e+f x]^2,\ \left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\Big]\Big)\ \text{Tan}[e+f x]^2\Big)^2\ \left(-b^2\ \text{Tan}[e+f x]^2+a^2\left(1+\text{Tan}[e+f x]^2\right)\right)\Big)+$$

$$\frac{1}{\left(b^2\ \text{Tan}[e+f x]^2-a^2\left(1+\text{Tan}[e+f x]^2\right)\right)^2}\,2\,a\,b\ \Big(-\Big(a\,b\ (-3+n)\ \Big(1/(3-n)\ (1-n)\ n\ \text{AppellF1}\Big[1+\frac{1-n}{2},\ 1-\frac{n}{2},\ 2,$$

$$1+\frac{3-n}{2},\ -\text{Tan}[e+f x]^2,\ \frac{\left(-a^2+b^2\right)\text{Tan}[e+f x]^2}{a^2}\Big]\ \text{Sec}[e+f x]^2\ \text{Tan}[e+f x]+1\Big/\left(a^2\ (3-n)\right)4\left(-a^2+b^2\right)(1-n)$$

$$\text{AppellF1}\Big[1+\frac{1-n}{2},\ -\frac{n}{2},\ 3,\ 1+\frac{3-n}{2},\ -\text{Tan}[e+f x]^2,\ \frac{\left(-a^2+b^2\right)\text{Tan}[e+f x]^2}{a^2}\Big]\ \text{Sec}[e+f x]^2\ \text{Tan}[e+f x]\Big)\Big)\Big/$$

$$\Big((-1+n)\ \Big(a^2\ (-3+n)\ \text{AppellF1}\Big[\frac{1-n}{2},\ -\frac{n}{2},\ 2,\ \frac{3-n}{2},\ -\text{Tan}[e+f x]^2,\ \left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\Big]-$$

$$\Big(a^2\, n\, \text{AppellF1}\Big[\frac{3-n}{2},\ 1-\frac{n}{2},\ 2,\ \frac{5-n}{2},\ -\text{Tan}[e+f x]^2,\ \left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\Big]+$$

$$4\left(-a^2+b^2\right)\text{AppellF1}\Big[\frac{3-n}{2},\ -\frac{n}{2},\ 3,\ \frac{5-n}{2},\ -\text{Tan}[e+f x]^2,\ \left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\Big]\Big)\ \text{Tan}[e+f x]^2\Big)\Big)-$$

$$\Big(\left(a^2-b^2\right)\ (-4+n)\ \text{AppellF1}\Big[1-\frac{n}{2},\ \frac{1}{2}\ (-1-n),\ 2,\ 2-\frac{n}{2},\ -\text{Tan}[e+f x]^2,\ \frac{\left(-a^2+b^2\right)\text{Tan}[e+f x]^2}{a^2}\Big]\ \text{Sec}[e+f x]^2\ \text{Tan}[e+f x]^2\Big)\Big/$$

$$\Big((-2+n)\ \sqrt{1+\text{Tan}[e+f x]^2}\ \Big(a^2\ (-4+n)\ \text{AppellF1}\Big[1-\frac{n}{2},\ \frac{1}{2}\ (-1-n),\ 2,\ 2-\frac{n}{2},\ -\text{Tan}[e+f x]^2,\ \left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\Big]+$$

$$\Big(4\left(a^2-b^2\right)\text{AppellF1}\Big[2-\frac{n}{2},\ \frac{1}{2}\ (-1-n),\ 3,\ 3-\frac{n}{2},\ -\text{Tan}[e+f x]^2,\ \left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\Big]-$$

$$a^2\ (1+n)\ \text{AppellF1}\Big[2-\frac{n}{2},\ \frac{1-n}{2},\ 2,\ 3-\frac{n}{2},\ -\text{Tan}[e+f x]^2,\ \left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\Big]\Big)\ \text{Tan}[e+f x]^2\Big)\Big)-$$

$$\Big(\left(a^2-b^2\right)\ (-4+n)\ \text{AppellF1}\Big[1-\frac{n}{2},\ \frac{1}{2}\ (-1-n),\ 2,\ 2-\frac{n}{2},\ -\text{Tan}[e+f x]^2,\ \frac{\left(-a^2+b^2\right)\text{Tan}[e+f x]^2}{a^2}\Big]\ \text{Sec}[e+f x]^2$$

$$\sqrt{1+\text{Tan}[e+f x]^2}\Bigg) \Bigg/ \Bigg((-2+n)\Bigg(a^2(-4+n)\,\text{AppellF1}\Big[1-\frac{n}{2},\frac{1}{2}(-1-n),2,2-\frac{n}{2},-\text{Tan}[e+f x]^2,\Big(-1+\frac{b^2}{a^2}\Big)\text{Tan}[e+f x]^2\Big]+$$

$$\Bigg(4(a^2-b^2)\,\text{AppellF1}\Big[2-\frac{n}{2},\frac{1}{2}(-1-n),3,3-\frac{n}{2},-\text{Tan}[e+f x]^2,\Big(-1+\frac{b^2}{a^2}\Big)\text{Tan}[e+f x]^2\Big]-$$

$$a^2(1+n)\,\text{AppellF1}\Big[2-\frac{n}{2},\frac{1-n}{2},2,3-\frac{n}{2},-\text{Tan}[e+f x]^2,\Big(-1+\frac{b^2}{a^2}\Big)\text{Tan}[e+f x]^2\Big]\Bigg)\text{Tan}[e+f x]^2\Bigg)\Bigg)-$$

$$\Bigg((a^2-b^2)(-4+n)\,\text{Tan}[e+f x]\Bigg(-\frac{1}{2-\frac{n}{2}}(-1-n)\Big(1-\frac{n}{2}\Big)\text{AppellF1}\Big[2-\frac{n}{2},1+\frac{1}{2}(-1-n),2,3-\frac{n}{2},-\text{Tan}[e+f x]^2,$$

$$\frac{(-a^2+b^2)\,\text{Tan}[e+f x]^2}{a^2}\Big]\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]+\frac{1}{a^2\left(2-\frac{n}{2}\right)}4(-a^2+b^2)\Big(1-\frac{n}{2}\Big)\text{AppellF1}\Big[2-\frac{n}{2},\frac{1}{2}(-1-n),$$

$$3,3-\frac{n}{2},-\text{Tan}[e+f x]^2,\frac{(-a^2+b^2)\,\text{Tan}[e+f x]^2}{a^2}\Big]\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]\Bigg)\sqrt{1+\text{Tan}[e+f x]^2}\Bigg)\Bigg/$$

$$\Bigg((-2+n)\Bigg(a^2(-4+n)\,\text{AppellF1}\Big[1-\frac{n}{2},\frac{1}{2}(-1-n),2,2-\frac{n}{2},-\text{Tan}[e+f x]^2,\Big(-1+\frac{b^2}{a^2}\Big)\text{Tan}[e+f x]^2\Big]+$$

$$\Bigg(4(a^2-b^2)\,\text{AppellF1}\Big[2-\frac{n}{2},\frac{1}{2}(-1-n),3,3-\frac{n}{2},-\text{Tan}[e+f x]^2,\Big(-1+\frac{b^2}{a^2}\Big)\text{Tan}[e+f x]^2\Big]-$$

$$a^2(1+n)\,\text{AppellF1}\Big[2-\frac{n}{2},\frac{1-n}{2},2,3-\frac{n}{2},-\text{Tan}[e+f x]^2,\Big(-1+\frac{b^2}{a^2}\Big)\text{Tan}[e+f x]^2\Big]\Bigg)\text{Tan}[e+f x]^2\Bigg)\Bigg)+$$

$$\Bigg(a\,b(-3+n)\,\text{AppellF1}\Big[\frac{1-n}{2},-\frac{n}{2},2,\frac{3-n}{2},-\text{Tan}[e+f x]^2,\frac{(-a^2+b^2)\,\text{Tan}[e+f x]^2}{a^2}\Big]$$

$$\Bigg(-2\Bigg(a^2 n\,\text{AppellF1}\Big[\frac{3-n}{2},1-\frac{n}{2},2,\frac{5-n}{2},-\text{Tan}[e+f x]^2,\Big(-1+\frac{b^2}{a^2}\Big)\text{Tan}[e+f x]^2\Big]+4(-a^2+b^2)\,\text{AppellF1}\Big[\frac{3-n}{2},-\frac{n}{2},3,$$

$$\frac{5-n}{2},-\text{Tan}[e+f x]^2,\Big(-1+\frac{b^2}{a^2}\Big)\text{Tan}[e+f x]^2\Big]\Bigg)\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]+a^2(-3+n)\Bigg(\frac{1}{3-n}(1-n)\,n\,\text{AppellF1}\Big[$$

$$1+\frac{1-n}{2},1-\frac{n}{2},2,1+\frac{3-n}{2},-\text{Tan}[e+f x]^2,\Big(-1+\frac{b^2}{a^2}\Big)\text{Tan}[e+f x]^2\Big]\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]+\frac{1}{3-n}4\Big(-1+\frac{b^2}{a^2}\Big)$$

$$(1-n)\,\text{AppellF1}\Big[1+\frac{1-n}{2},-\frac{n}{2},3,1+\frac{3-n}{2},-\text{Tan}[e+f x]^2,\Big(-1+\frac{b^2}{a^2}\Big)\text{Tan}[e+f x]^2\Big]\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]\Bigg)-$$

$$\text{Tan}[e+f x]^2\Bigg(a^2 n\Bigg(\frac{1}{5-n}4\Big(-1+\frac{b^2}{a^2}\Big)(3-n)\,\text{AppellF1}\Big[1+\frac{3-n}{2},1-\frac{n}{2},3,1+\frac{5-n}{2},-\text{Tan}[e+f x]^2,\Big(-1+\frac{b^2}{a^2}\Big)\text{Tan}[e+f x]^2\Big]$$

$$\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]-\frac{1}{5-n}2(3-n)\Big(1-\frac{n}{2}\Big)\text{AppellF1}\Big[1+\frac{3-n}{2},2-\frac{n}{2},2,1+\frac{5-n}{2},-\text{Tan}[e+f x]^2,$$

$$\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\Big]\,\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]\Bigg)+4\left(-a^2+b^2\right)\left(\frac{1}{5-n}(3-n)\,n\,\text{AppellF1}\Big[1+\frac{3-n}{2},\,1-\frac{n}{2},\right.$$

$$3,\,1+\frac{5-n}{2},\,-\text{Tan}[e+f x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\Big]\,\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]+\frac{1}{5-n}6\left(-1+\frac{b^2}{a^2}\right)(3-n)$$

$$\left.\text{AppellF1}\Big[1+\frac{3-n}{2},\,-\frac{n}{2},\,4,\,1+\frac{5-n}{2},\,-\text{Tan}[e+f x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\Big]\,\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]\right)\Bigg)\Bigg)\Bigg)\Bigg/$$

$$\Bigg((-1+n)\,\Bigg(a^2\,(-3+n)\,\text{AppellF1}\Big[\frac{1-n}{2},\,-\frac{n}{2},\,2,\,\frac{3-n}{2},\,-\text{Tan}[e+f x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\Big]-$$

$$\Bigg(a^2\,n\,\text{AppellF1}\Big[\frac{3-n}{2},\,1-\frac{n}{2},\,2,\,\frac{5-n}{2},\,-\text{Tan}[e+f x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\Big]+$$

$$4\left(-a^2+b^2\right)\text{AppellF1}\Big[\frac{3-n}{2},\,-\frac{n}{2},\,3,\,\frac{5-n}{2},\,-\text{Tan}[e+f x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\Big]\Bigg)\text{Tan}[e+f x]^2\Bigg)^2\Bigg)+$$

$$\Bigg(\left(a^2-b^2\right)(-4+n)\,\text{AppellF1}\Big[1-\frac{n}{2},\,\frac{1}{2}(-1-n),\,2,\,2-\frac{n}{2},\,-\text{Tan}[e+f x]^2,\,\frac{\left(-a^2+b^2\right)\text{Tan}[e+f x]^2}{a^2}\Big]\,\text{Tan}[e+f x]$$

$$\sqrt{1+\text{Tan}[e+f x]^2}\,\Bigg(2\,\Bigg(4\left(a^2-b^2\right)\text{AppellF1}\Big[2-\frac{n}{2},\,\frac{1}{2}(-1-n),\,3,\,3-\frac{n}{2},\,-\text{Tan}[e+f x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\Big]-$$

$$a^2\,(1+n)\,\text{AppellF1}\Big[2-\frac{n}{2},\,\frac{1-n}{2},\,2,\,3-\frac{n}{2},\,-\text{Tan}[e+f x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\Big]\Bigg)\,\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]+$$

$$a^2\,(-4+n)\,\Bigg(-\frac{1}{2-\frac{n}{2}}(-1-n)\left(1-\frac{n}{2}\right)\text{AppellF1}\Big[2-\frac{n}{2},\,1+\frac{1}{2}(-1-n),\,2,\,3-\frac{n}{2},\,-\text{Tan}[e+f x]^2,$$

$$\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\Big]\,\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]+\frac{1}{2-\frac{n}{2}}4\left(-1+\frac{b^2}{a^2}\right)\left(1-\frac{n}{2}\right)\text{AppellF1}\Big[2-\frac{n}{2},$$

$$\frac{1}{2}(-1-n),\,3,\,3-\frac{n}{2},\,-\text{Tan}[e+f x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\Big]\,\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]\Bigg)+\text{Tan}[e+f x]^2$$

$$\Bigg(4\left(a^2-b^2\right)\Bigg(-\frac{1}{3-\frac{n}{2}}(-1-n)\left(2-\frac{n}{2}\right)\text{AppellF1}\Big[3-\frac{n}{2},\,1+\frac{1}{2}(-1-n),\,3,\,4-\frac{n}{2},\,-\text{Tan}[e+f x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\Big]$$

$$\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]+\frac{1}{3-\frac{n}{2}}6\left(-1+\frac{b^2}{a^2}\right)\left(2-\frac{n}{2}\right)\text{AppellF1}\Big[3-\frac{n}{2},\,\frac{1}{2}(-1-n),\,4,\,4-\frac{n}{2},\,-\text{Tan}[e+f x]^2,$$

$$\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\Big]\,\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]\Bigg)-a^2\,(1+n)\,\Bigg(-\frac{1}{3-\frac{n}{2}}(1-n)\left(2-\frac{n}{2}\right)\text{AppellF1}\Big[3-\frac{n}{2},\,1+\frac{1-n}{2},$$

$$2,\ 4-\frac{n}{2},\ -\text{Tan}[e+f x]^2,\ \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\Big] \text{Sec}[e+f x]^2 \text{Tan}[e+f x]+\frac{1}{3-\frac{n}{2}} 4 \left(-1+\frac{b^2}{a^2}\right) \left(2-\frac{n}{2}\right)$$

$$\text{AppellF1}\Big[3-\frac{n}{2},\ \frac{1-n}{2},\ 3,\ 4-\frac{n}{2},\ -\text{Tan}[e+f x]^2,\ \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\Big] \text{Sec}[e+f x]^2 \text{Tan}[e+f x]\Bigg)\Bigg)\Bigg)\Bigg) \Big/$$

$$\Bigg((-2+n) \Bigg(a^2 (-4+n) \text{AppellF1}\Big[1-\frac{n}{2},\ \frac{1}{2} (-1-n),\ 2,\ 2-\frac{n}{2},\ -\text{Tan}[e+f x]^2,\ \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\Big]+$$

$$\Bigg(4 \left(a^2-b^2\right) \text{AppellF1}\Big[2-\frac{n}{2},\ \frac{1}{2} (-1-n),\ 3,\ 3-\frac{n}{2},\ -\text{Tan}[e+f x]^2,\ \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\Big]-$$

$$a^2 (1+n) \text{AppellF1}\Big[2-\frac{n}{2},\ \frac{1-n}{2},\ 2,\ 3-\frac{n}{2},\ -\text{Tan}[e+f x]^2,\ \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\Big]\Bigg) \text{Tan}[e+f x]^2\Bigg)^2\Bigg)\Bigg)\Bigg)\Bigg)$$

Problem 830: Result more than twice size of optimal antiderivative.

$$\int \frac{(d \,\text{Csc}[e+f x])^n}{(a+b \,\text{Sin}[e+f x])^3} \, dx$$

Optimal (type 6, 432 leaves, 12 steps):

$$-\frac{1}{\left(a^2-b^2\right)^3 d^3 f} 3 a b^2 \text{AppellF1}\Big[\frac{1}{2},\ \frac{1}{2} (-1+n),\ 3,\ \frac{3}{2},\ \text{Cos}[e+f x]^2,\ -\frac{b^2 \text{Cos}[e+f x]^2}{a^2-b^2}\Big]$$

$$\text{Cos}[e+f x] \,(d \,\text{Csc}[e+f x])^{3+n} \text{Sin}[e+f x]^4 \left(\text{Sin}[e+f x]^2\right)^{\frac{1}{2} (-1+n)}+\frac{1}{\left(a^2-b^2\right)^3 d^3 f}$$

$$b^3 \text{AppellF1}\Big[\frac{1}{2},\ \frac{1}{2} (-2+n),\ 3,\ \frac{3}{2},\ \text{Cos}[e+f x]^2,\ -\frac{b^2 \text{Cos}[e+f x]^2}{a^2-b^2}\Big] \text{Cos}[e+f x] \,(d \,\text{Csc}[e+f x])^{3+n} \text{Sin}[e+f x]^3 \left(\text{Sin}[e+f x]^2\right)^{n/2}+$$

$$\frac{1}{\left(a^2-b^2\right)^3 d^3 f} 3 a^2 b \,\text{AppellF1}\Big[\frac{1}{2},\ \frac{n}{2},\ 3,\ \frac{3}{2},\ \text{Cos}[e+f x]^2,\ -\frac{b^2 \text{Cos}[e+f x]^2}{a^2-b^2}\Big] \text{Cos}[e+f x] \,(d \,\text{Csc}[e+f x])^{3+n} \text{Sin}[e+f x]^3 \left(\text{Sin}[e+f x]^2\right)^{n/2}-$$

$$\frac{1}{\left(a^2-b^2\right)^3 d^3 f} a^3 \text{AppellF1}\Big[\frac{1}{2},\ \frac{1+n}{2},\ 3,\ \frac{3}{2},\ \text{Cos}[e+f x]^2,\ -\frac{b^2 \text{Cos}[e+f x]^2}{a^2-b^2}\Big] \text{Cos}[e+f x] \,(d \,\text{Csc}[e+f x])^{3+n} \left(\text{Sin}[e+f x]^2\right)^{\frac{3+n}{2}}$$

Result (type 6, 21714 leaves): Display of huge result suppressed!

Problem 835: Result more than twice size of optimal antiderivative.

$$\int \frac{(c \,(d \,\text{Sin}[e+f x])^p)^n}{a+b \,\text{Sin}[e+f x]} \, dx$$

Optimal (type 6, 204 leaves, 6 steps):

$$\frac{1}{\left(a^2-b^2\right) f} b \,\text{AppellF1}\left[\frac{1}{2},-\frac{n p}{2},1,\frac{3}{2},\text{Cos}[e+f x]^2,-\frac{b^2 \text{Cos}[e+f x]^2}{a^2-b^2}\right] \text{Cos}[e+f x] \left(\text{Sin}[e+f x]^2\right)^{-\frac{n p}{2}} \left(c \left(d \,\text{Sin}[e+f x]\right)^p\right)^n-\frac{1}{\left(a^2-b^2\right) f}$$
$$a \,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2} (1-n p),1,\frac{3}{2},\text{Cos}[e+f x]^2,-\frac{b^2 \text{Cos}[e+f x]^2}{a^2-b^2}\right] \text{Cot}[e+f x] \left(\text{Sin}[e+f x]^2\right)^{\frac{1}{2} (1-n p)} \left(c \left(d \,\text{Sin}[e+f x]\right)^p\right)^n$$

Result (type 6, 7184 leaves) :

$$\left((c (d \,\text{Sin}[e+f x])^p)^n \,\text{Tan}[e+f x] \left(\frac{\text{Tan}[e+f x]}{\sqrt{1+\text{Tan}[e+f x]^2}}\right)^{n p}\right.$$
$$\left(-\frac{\text{Hypergeometric2F1}\left[\frac{1}{2}+\frac{n p}{2},1+\frac{n p}{2},2+\frac{n p}{2},-\text{Tan}[e+f x]^2\right] \text{Tan}[e+f x] \left(1+\text{Tan}[e+f x]^2\right)^{\frac{n p}{2}}}{2 b+b n p}-\right.$$
$$\left(a^2 \left(a^2-b^2\right) (4+n p) \,\text{AppellF1}\left[1+\frac{n p}{2},\frac{1}{2} (-1+n p),1,2+\frac{n p}{2},-\text{Tan}[e+f x]^2,\frac{\left(-a^2+b^2\right) \text{Tan}[e+f x]^2}{a^2}\right] \text{Tan}[e+f x]\right.$$
$$\left.\sqrt{1+\text{Tan}[e+f x]^2}\right) \Big/ \left(b (2+n p) \left(a^2 (4+n p) \,\text{AppellF1}\left[1+\frac{n p}{2},\frac{1}{2} (-1+n p),1,2+\frac{n p}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\right]+\right.\right.$$
$$\left(-2 \left(a^2-b^2\right) \text{AppellF1}\left[2+\frac{n p}{2},\frac{1}{2} (-1+n p),2,3+\frac{n p}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\right]+a^2 (1-n p) \,\text{AppellF1}\left[2+\frac{n p}{2},\frac{1}{2}\right.\right.$$
$$\left.\left.\left.(1+n p),1,3+\frac{n p}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\right]\right) \text{Tan}[e+f x]^2\right) \left(b^2 \,\text{Tan}[e+f x]^2-a^2 \left(1+\text{Tan}[e+f x]^2\right)\right)\Big)-$$
$$\left(a^3 (3+n p) \,\text{AppellF1}\left[\frac{1}{2} (1+n p),\frac{n p}{2},1,\frac{1}{2} (3+n p),-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\right]\right) \Big/$$
$$\left((1+n p) \left(-a^2 (3+n p) \,\text{AppellF1}\left[\frac{1}{2} (1+n p),\frac{n p}{2},1,\frac{1}{2} (3+n p),-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\right]+\right.\right.$$
$$\left(2 \left(a^2-b^2\right) \text{AppellF1}\left[\frac{1}{2} (3+n p),\frac{n p}{2},2,\frac{1}{2} (5+n p),-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\right]+\right.$$
$$\left.a^2 n p \,\text{AppellF1}\left[\frac{1}{2} (3+n p),1+\frac{n p}{2},1,\frac{1}{2} (5+n p),-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\right]\right) \text{Tan}[e+f x]^2\Big)$$
$$\left.\left.\left(-b^2 \,\text{Tan}[e+f x]^2+a^2 \left(1+\text{Tan}[e+f x]^2\right)\right)\right)\right)\Big) \Big/ \left(f (a+b \,\text{Sin}[e+f x]) \,\text{Sec}[e+f x]^2 \left(\frac{\text{Tan}[e+f x]}{\sqrt{1+\text{Tan}[e+f x]^2}}\right)^{n p}\right.$$
$$\left(-\frac{\text{Hypergeometric2F1}\left[\frac{1}{2}+\frac{n p}{2},1+\frac{n p}{2},2+\frac{n p}{2},-\text{Tan}[e+f x]^2\right] \text{Tan}[e+f x] \left(1+\text{Tan}[e+f x]^2\right)^{\frac{n p}{2}}}{2 b+b n p}-\right.$$

$$\left(a^2\left(a^2-b^2\right)(4+n p)\,\text{AppellF1}\left[1+\frac{n p}{2},\frac{1}{2}(-1+n p),1,2+\frac{n p}{2},-\text{Tan}[e+f x]^2,\frac{\left(-a^2+b^2\right)\text{Tan}[e+f x]^2}{a^2}\right]\text{Tan}[e+f x]\sqrt{1+\text{Tan}[e+f x]^2}\right)\Big/\left(b(2+n p)\left(a^2(4+n p)\,\text{AppellF1}\left[1+\frac{n p}{2},\frac{1}{2}(-1+n p),1,2+\frac{n p}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+\left(-2\left(a^2-b^2\right)\text{AppellF1}\left[2+\frac{n p}{2},\frac{1}{2}(-1+n p),2,3+\frac{n p}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+a^2(1-n p)\,\text{AppellF1}\left[2+\frac{n p}{2},\frac{1}{2}(1+n p),1,3+\frac{n p}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]\right)\text{Tan}[e+f x]^2\right)\left(b^2\,\text{Tan}[e+f x]^2-a^2\left(1+\text{Tan}[e+f x]^2\right)\right)\right)-$$

$$\left(a^3(3+n p)\,\text{AppellF1}\left[\frac{1}{2}(1+n p),\frac{n p}{2},1,\frac{1}{2}(3+n p),-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]\right)\Big/\left((1+n p)\left(-a^2(3+n p)\,\text{AppellF1}\left[\frac{1}{2}(1+n p),\frac{n p}{2},1,\frac{1}{2}(3+n p),-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+\left(2\left(a^2-b^2\right)\text{AppellF1}\left[\frac{1}{2}(3+n p),\frac{n p}{2},2,\frac{1}{2}(5+n p),-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+a^2\,n p\,\text{AppellF1}\left[\frac{1}{2}(3+n p),1+\frac{n p}{2},1,\frac{1}{2}(5+n p),-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]\right)\text{Tan}[e+f x]^2\right)\left(-b^2\,\text{Tan}[e+f x]^2+a^2\left(1+\text{Tan}[e+f x]^2\right)\right)\right)+$$

$$n p\,\text{Tan}[e+f x]\left(\frac{\text{Tan}[e+f x]}{\sqrt{1+\text{Tan}[e+f x]^2}}\right)^{-1+n p}\left(-\frac{\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]^2}{\left(1+\text{Tan}[e+f x]^2\right)^{3/2}}+\frac{\text{Sec}[e+f x]^2}{\sqrt{1+\text{Tan}[e+f x]^2}}\right)$$

$$\left(-\frac{\text{Hypergeometric2F1}\left[\frac{1}{2}+\frac{n p}{2},1+\frac{n p}{2},2+\frac{n p}{2},-\text{Tan}[e+f x]^2\right]\text{Tan}[e+f x]\left(1+\text{Tan}[e+f x]^2\right)^{\frac{n p}{2}}}{2 b+b n p}-\right.$$

$$\left(a^2\left(a^2-b^2\right)(4+n p)\,\text{AppellF1}\left[1+\frac{n p}{2},\frac{1}{2}(-1+n p),1,2+\frac{n p}{2},-\text{Tan}[e+f x]^2,\frac{\left(-a^2+b^2\right)\text{Tan}[e+f x]^2}{a^2}\right]\text{Tan}[e+f x]\sqrt{1+\text{Tan}[e+f x]^2}\right)\Big/\left(b(2+n p)\left(a^2(4+n p)\,\text{AppellF1}\left[1+\frac{n p}{2},\frac{1}{2}(-1+n p),1,2+\frac{n p}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+\left(-2\left(a^2-b^2\right)\text{AppellF1}\left[2+\frac{n p}{2},\frac{1}{2}(-1+n p),2,3+\frac{n p}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+a^2(1-n p)\,\text{AppellF1}\left[2+\frac{n p}{2},\frac{1}{2}(1+n p),1,3+\frac{n p}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]\right)\text{Tan}[e+f x]^2\right)\left(b^2\,\text{Tan}[e+f x]^2-a^2\left(1+\text{Tan}[e+f x]^2\right)\right)\right)-$$

$$\left(a^3(3+n p)\,\text{AppellF1}\left[\frac{1}{2}(1+n p),\frac{n p}{2},1,\frac{1}{2}(3+n p),-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]\right)\Big/$$

$$\Bigg((1+n p)\Bigg(-a^2(3+n p)\,\text{AppellF1}\Big[\frac{1}{2}(1+n p),\frac{n p}{2},1,\frac{1}{2}(3+n p),-\text{Tan}[e+f x]^2,\Big(-1+\frac{b^2}{a^2}\Big)\text{Tan}[e+f x]^2\Big]+$$

$$\Big(2(a^2-b^2)\,\text{AppellF1}\Big[\frac{1}{2}(3+n p),\frac{n p}{2},2,\frac{1}{2}(5+n p),-\text{Tan}[e+f x]^2,\Big(-1+\frac{b^2}{a^2}\Big)\text{Tan}[e+f x]^2\Big]+a^2 n p\,\text{AppellF1}\Big[\frac{1}{2}(3+n p),1+$$

$$\frac{n p}{2},1,\frac{1}{2}(5+n p),-\text{Tan}[e+f x]^2,\Big(-1+\frac{b^2}{a^2}\Big)\text{Tan}[e+f x]^2\Big]\Big)\text{Tan}[e+f x]^2\Big)\Big(-b^2\,\text{Tan}[e+f x]^2+a^2\big(1+\text{Tan}[e+f x]^2\big)\Big)\Bigg)\Bigg)+$$

$$\text{Tan}[e+f x]\left(\frac{\text{Tan}[e+f x]}{\sqrt{1+\text{Tan}[e+f x]^2}}\right)^{n p}\Bigg(-\frac{\text{Hypergeometric2F1}\Big[\frac{1}{2}+\frac{n p}{2},1+\frac{n p}{2},2+\frac{n p}{2},-\text{Tan}[e+f x]^2\Big]\text{Sec}[e+f x]^2\big(1+\text{Tan}[e+f x]^2\big)^{\frac{n p}{2}}}{2 b+b n p}-$$

$$\frac{1}{2 b+b n p}n p\,\text{Hypergeometric2F1}\Big[\frac{1}{2}+\frac{n p}{2},1+\frac{n p}{2},2+\frac{n p}{2},-\text{Tan}[e+f x]^2\Big]\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]^2\big(1+\text{Tan}[e+f x]^2\big)^{-1+\frac{n p}{2}}+$$

$$\Bigg(a^2(a^2-b^2)(4+n p)\,\text{AppellF1}\Big[1+\frac{n p}{2},\frac{1}{2}(-1+n p),1,2+\frac{n p}{2},-\text{Tan}[e+f x]^2,\frac{(-a^2+b^2)\text{Tan}[e+f x]^2}{a^2}\Big]$$

$$\text{Tan}[e+f x]\big(-2a^2\,\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]+2b^2\,\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]\big)\sqrt{1+\text{Tan}[e+f x]^2}\Bigg)\Bigg/$$

$$\Bigg(b(2+n p)\Bigg(a^2(4+n p)\,\text{AppellF1}\Big[1+\frac{n p}{2},\frac{1}{2}(-1+n p),1,2+\frac{n p}{2},-\text{Tan}[e+f x]^2,\Big(-1+\frac{b^2}{a^2}\Big)\text{Tan}[e+f x]^2\Big]+$$

$$\Big(-2(a^2-b^2)\,\text{AppellF1}\Big[2+\frac{n p}{2},\frac{1}{2}(-1+n p),2,3+\frac{n p}{2},-\text{Tan}[e+f x]^2,\Big(-1+\frac{b^2}{a^2}\Big)\text{Tan}[e+f x]^2\Big]+a^2(1-n p)\,\text{AppellF1}\Big[2+\frac{n p}{2},$$

$$\frac{1}{2}(1+n p),1,3+\frac{n p}{2},-\text{Tan}[e+f x]^2,\Big(-1+\frac{b^2}{a^2}\Big)\text{Tan}[e+f x]^2\Big]\Big)\text{Tan}[e+f x]^2\Big)\Big(b^2\,\text{Tan}[e+f x]^2-a^2\big(1+\text{Tan}[e+f x]^2\big)\Big)^2\Bigg)-$$

$$\Bigg(a^2(a^2-b^2)(4+n p)\,\text{AppellF1}\Big[1+\frac{n p}{2},\frac{1}{2}(-1+n p),1,2+\frac{n p}{2},-\text{Tan}[e+f x]^2,\frac{(-a^2+b^2)\text{Tan}[e+f x]^2}{a^2}\Big]\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]^2\Bigg)\Bigg/$$

$$\Bigg(b(2+n p)\sqrt{1+\text{Tan}[e+f x]^2}\Bigg(a^2(4+n p)\,\text{AppellF1}\Big[1+\frac{n p}{2},\frac{1}{2}(-1+n p),1,2+\frac{n p}{2},-\text{Tan}[e+f x]^2,\Big(-1+\frac{b^2}{a^2}\Big)\text{Tan}[e+f x]^2\Big]+$$

$$\Big(-2(a^2-b^2)\,\text{AppellF1}\Big[2+\frac{n p}{2},\frac{1}{2}(-1+n p),2,3+\frac{n p}{2},-\text{Tan}[e+f x]^2,\Big(-1+\frac{b^2}{a^2}\Big)\text{Tan}[e+f x]^2\Big]+a^2(1-n p)\,\text{AppellF1}\Big[2+\frac{n p}{2},$$

$$\frac{1}{2}(1+n p),1,3+\frac{n p}{2},-\text{Tan}[e+f x]^2,\Big(-1+\frac{b^2}{a^2}\Big)\text{Tan}[e+f x]^2\Big]\Big)\text{Tan}[e+f x]^2\Big)\Big(b^2\,\text{Tan}[e+f x]^2-a^2\big(1+\text{Tan}[e+f x]^2\big)\Big)\Bigg)-$$

$$\Bigg(a^2(a^2-b^2)(4+n p)\,\text{AppellF1}\Big[1+\frac{n p}{2},\frac{1}{2}(-1+n p),1,2+\frac{n p}{2},-\text{Tan}[e+f x]^2,\frac{(-a^2+b^2)\text{Tan}[e+f x]^2}{a^2}\Big]\text{Sec}[e+f x]^2$$

$$\left.\sqrt{1+\text{Tan}[e+f x]^2}\right)\Big/\left(b\,(2+n p)\left(a^2\,(4+n p)\,\text{AppellF1}\left[1+\frac{n p}{2},\frac{1}{2}(-1+n p),1,2+\frac{n p}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+\right.\right.$$

$$\left(-2\left(a^2-b^2\right)\text{AppellF1}\left[2+\frac{n p}{2},\frac{1}{2}(-1+n p),2,3+\frac{n p}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+a^2\,(1-n p)\,\text{AppellF1}\left[2+\frac{n p}{2},\right.\right.$$

$$\left.\left.\left.\left.\frac{1}{2}(1+n p),1,3+\frac{n p}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]\right)\text{Tan}[e+f x]^2\right)\left(b^2\,\text{Tan}[e+f x]^2-a^2\left(1+\text{Tan}[e+f x]^2\right)\right)\right)-$$

$$\left(a^2\left(a^2-b^2\right)(4+n p)\,\text{Tan}[e+f x]\left(\frac{1}{a^2\left(2+\frac{n p}{2}\right)}2\left(-a^2+b^2\right)\left(1+\frac{n p}{2}\right)\text{AppellF1}\left[2+\frac{n p}{2},\frac{1}{2}(-1+n p),2,3+\frac{n p}{2},\right.\right.\right.$$

$$\left.-\text{Tan}[e+f x]^2,\frac{\left(-a^2+b^2\right)\text{Tan}[e+f x]^2}{a^2}\right]\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]-\frac{1}{2+\frac{n p}{2}}\left(1+\frac{n p}{2}\right)(-1+n p)\,\text{AppellF1}\left[2+\frac{n p}{2},1+\right.$$

$$\left.\left.\left.\frac{1}{2}(-1+n p),1,3+\frac{n p}{2},-\text{Tan}[e+f x]^2,\frac{\left(-a^2+b^2\right)\text{Tan}[e+f x]^2}{a^2}\right]\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]\right)\sqrt{1+\text{Tan}[e+f x]^2}\right)\Big/$$

$$\left(b\,(2+n p)\left(a^2\,(4+n p)\,\text{AppellF1}\left[1+\frac{n p}{2},\frac{1}{2}(-1+n p),1,2+\frac{n p}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+\right.\right.$$

$$\left(-2\left(a^2-b^2\right)\text{AppellF1}\left[2+\frac{n p}{2},\frac{1}{2}(-1+n p),2,3+\frac{n p}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+a^2\,(1-n p)\,\text{AppellF1}\left[2+\frac{n p}{2},\right.\right.$$

$$\left.\left.\left.\left.\frac{1}{2}(1+n p),1,3+\frac{n p}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]\right)\text{Tan}[e+f x]^2\right)\left(b^2\,\text{Tan}[e+f x]^2-a^2\left(1+\text{Tan}[e+f x]^2\right)\right)\right)+$$

$$\left(a^3\,(3+n p)\,\text{AppellF1}\left[\frac{1}{2}(1+n p),\frac{n p}{2},1,\frac{1}{2}(3+n p),-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]\right.$$

$$\left.\left(2\,a^2\,\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]-2\,b^2\,\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]\right)\right)\Big/$$

$$\left((1+n p)\left(-a^2\,(3+n p)\,\text{AppellF1}\left[\frac{1}{2}(1+n p),\frac{n p}{2},1,\frac{1}{2}(3+n p),-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+\right.\right.$$

$$\left(2\left(a^2-b^2\right)\text{AppellF1}\left[\frac{1}{2}(3+n p),\frac{n p}{2},2,\frac{1}{2}(5+n p),-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+a^2\,n p\,\text{AppellF1}\left[\frac{1}{2}(3+n p),1+\right.\right.$$

$$\left.\left.\left.\left.\frac{n p}{2},1,\frac{1}{2}(5+n p),-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]\right)\text{Tan}[e+f x]^2\right)\left(-b^2\,\text{Tan}[e+f x]^2+a^2\left(1+\text{Tan}[e+f x]^2\right)\right)^2\right)-$$

$$\left(a^3\,(3+n p)\left(\frac{1}{3+n p}2\left(-1+\frac{b^2}{a^2}\right)(1+n p)\,\text{AppellF1}\left[1+\frac{1}{2}(1+n p),\frac{n p}{2},2,1+\frac{1}{2}(3+n p),-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\right.\right.\right.$$

$$\left.\text{Tan}[e+f x]^2\right]\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]-\frac{1}{3+n p}n p\,(1+n p)\,\text{AppellF1}\left[1+\frac{1}{2}(1+n p),1+\right.$$

$$\frac{n p}{2}, 1, 1+\frac{1}{2}(3+n p), -\text{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\Big]\,\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]\Big)\Big)\Big/$$

$$\Bigg((1+n p)\left(-a^2(3+n p)\,\text{AppellF1}\Big[\frac{1}{2}(1+n p), \frac{n p}{2}, 1, \frac{1}{2}(3+n p), -\text{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\Big]+\right.$$

$$\Bigg(2\left(a^2-b^2\right)\text{AppellF1}\Big[\frac{1}{2}(3+n p), \frac{n p}{2}, 2, \frac{1}{2}(5+n p), -\text{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\Big]+$$

$$a^2\,n\,p\,\text{AppellF1}\Big[\frac{1}{2}(3+n p), 1+\frac{n p}{2}, 1, \frac{1}{2}(5+n p), -\text{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\Big]\Bigg)\text{Tan}[e+f x]^2\Bigg)$$

$$\left(-b^2\,\text{Tan}[e+f x]^2+a^2\left(1+\text{Tan}[e+f x]^2\right)\right)\Bigg)-\frac{1}{2 b+b n p}2\left(1+\frac{n p}{2}\right)\text{Sec}[e+f x]^2\left(1+\text{Tan}[e+f x]^2\right)^{\frac{n p}{2}}$$

$$\left(-\text{Hypergeometric2F1}\Big[\frac{1}{2}+\frac{n p}{2}, 1+\frac{n p}{2}, 2+\frac{n p}{2}, -\text{Tan}[e+f x]^2\Big]+\left(1+\text{Tan}[e+f x]^2\right)^{-\frac{1}{2}-\frac{n p}{2}}\right)+$$

$$\Bigg(a^2\left(a^2-b^2\right)(4+n p)\,\text{AppellF1}\Big[1+\frac{n p}{2}, \frac{1}{2}(-1+n p), 1, 2+\frac{n p}{2}, -\text{Tan}[e+f x]^2, \frac{\left(-a^2+b^2\right)\text{Tan}[e+f x]^2}{a^2}\Big]\,\text{Tan}[e+f x]$$

$$\sqrt{1+\text{Tan}[e+f x]^2}\,\Bigg(2\left(-2\left(a^2-b^2\right)\text{AppellF1}\Big[2+\frac{n p}{2}, \frac{1}{2}(-1+n p), 2, 3+\frac{n p}{2}, -\text{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\Big]+\right.$$

$$\left.a^2(1-n p)\,\text{AppellF1}\Big[2+\frac{n p}{2}, \frac{1}{2}(1+n p), 1, 3+\frac{n p}{2}, -\text{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\Big]\right)\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]+$$

$$a^2(4+n p)\left(\frac{1}{2+\frac{n p}{2}}2\left(-1+\frac{b^2}{a^2}\right)\left(1+\frac{n p}{2}\right)\text{AppellF1}\Big[2+\frac{n p}{2}, \frac{1}{2}(-1+n p), 2, 3+\frac{n p}{2}, -\text{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\Big]\right.$$

$$\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]-\frac{1}{2+\frac{n p}{2}}\left(1+\frac{n p}{2}\right)(-1+n p)\,\text{AppellF1}\Big[2+\frac{n p}{2}, 1+\frac{1}{2}(-1+n p), 1,$$

$$\left.3+\frac{n p}{2}, -\text{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\Big]\,\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]\right)+\text{Tan}[e+f x]^2$$

$$\Bigg(-2\left(a^2-b^2\right)\left(\frac{1}{3+\frac{n p}{2}}4\left(-1+\frac{b^2}{a^2}\right)\left(2+\frac{n p}{2}\right)\text{AppellF1}\Big[3+\frac{n p}{2}, \frac{1}{2}(-1+n p), 3, 4+\frac{n p}{2}, -\text{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\Big]\right.$$

$$\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]-\frac{1}{3+\frac{n p}{2}}\left(2+\frac{n p}{2}\right)(-1+n p)\,\text{AppellF1}\Big[3+\frac{n p}{2}, 1+\frac{1}{2}(-1+n p), 2, 4+\frac{n p}{2}, -\text{Tan}[e+f x]^2,$$

$$\left.\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\Big]\,\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]\right)+a^2(1-n p)\left(\frac{1}{3+\frac{n p}{2}}2\left(-1+\frac{b^2}{a^2}\right)\left(2+\frac{n p}{2}\right)\text{AppellF1}\Big[3+\frac{n p}{2},\right.$$

$$\frac{1}{2}(1+n\,p),\,2,\,4+\frac{n\,p}{2},\,-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2]\,\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]-\frac{1}{3+\frac{n\,p}{2}}\left(2+\frac{n\,p}{2}\right)(1+n\,p)$$

$$\text{AppellF1}[3+\frac{n\,p}{2},\,1+\frac{1}{2}(1+n\,p),\,1,\,4+\frac{n\,p}{2},\,-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2]\,\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]))))\Big/$$

$$(b\,(2+n\,p)\,(a^2\,(4+n\,p)\,\text{AppellF1}[1+\frac{n\,p}{2},\,\frac{1}{2}(-1+n\,p),\,1,\,2+\frac{n\,p}{2},\,-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2]+$$

$$(-2\,(a^2-b^2)\,\text{AppellF1}[2+\frac{n\,p}{2},\,\frac{1}{2}(-1+n\,p),\,2,\,3+\frac{n\,p}{2},\,-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2]+$$

$$a^2\,(1-n\,p)\,\text{AppellF1}[2+\frac{n\,p}{2},\,\frac{1}{2}(1+n\,p),\,1,\,3+\frac{n\,p}{2},\,-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2])\,\text{Tan}[e+f\,x]^2)^2$$

$$(b^2\,\text{Tan}[e+f\,x]^2-a^2\,(1+\text{Tan}[e+f\,x]^2)))+(a^3\,(3+n\,p)\,\text{AppellF1}[\frac{1}{2}(1+n\,p),\,\frac{n\,p}{2},\,1,\,\frac{1}{2}(3+n\,p),\,-\text{Tan}[e+f\,x]^2,$$

$$\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2]\,(2\,(2\,(a^2-b^2)\,\text{AppellF1}[\frac{1}{2}(3+n\,p),\,\frac{n\,p}{2},\,2,\,\frac{1}{2}(5+n\,p),\,-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2]+$$

$$a^2\,n\,p\,\text{AppellF1}[\frac{1}{2}(3+n\,p),\,1+\frac{n\,p}{2},\,1,\,\frac{1}{2}(5+n\,p),\,-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2])\,\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]-$$

$$a^2\,(3+n\,p)\,(\frac{1}{3+n\,p}2\left(-1+\frac{b^2}{a^2}\right)(1+n\,p)\,\text{AppellF1}[1+\frac{1}{2}(1+n\,p),\,\frac{n\,p}{2},\,2,\,1+\frac{1}{2}(3+n\,p),\,-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2]$$

$$\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]-\frac{1}{3+n\,p}n\,p\,(1+n\,p)\,\text{AppellF1}[1+\frac{1}{2}(1+n\,p),\,1+\frac{n\,p}{2},\,1,\,1+\frac{1}{2}(3+n\,p),\,-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)$$

$$\text{Tan}[e+f\,x]^2]\,\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x])+\text{Tan}[e+f\,x]^2\,(2\,(a^2-b^2)\,(\frac{1}{5+n\,p}4\left(-1+\frac{b^2}{a^2}\right)(3+n\,p)\,\text{AppellF1}[1+\frac{1}{2}(3+n\,p),$$

$$\frac{n\,p}{2},\,3,\,1+\frac{1}{2}(5+n\,p),\,-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2]\,\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]-\frac{1}{5+n\,p}n\,p\,(3+n\,p)$$

$$\text{AppellF1}[1+\frac{1}{2}(3+n\,p),\,1+\frac{n\,p}{2},\,2,\,1+\frac{1}{2}(5+n\,p),\,-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2]\,\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x])+$$

$$a^2\,n\,p\,(\frac{1}{5+n\,p}2\left(-1+\frac{b^2}{a^2}\right)(3+n\,p)\,\text{AppellF1}[1+\frac{1}{2}(3+n\,p),\,1+\frac{n\,p}{2},\,2,\,1+\frac{1}{2}(5+n\,p),\,-\text{Tan}[e+f\,x]^2,$$

$$\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2]\,\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]-\frac{1}{5+n\,p}2\left(1+\frac{n\,p}{2}\right)(3+n\,p)\,\text{AppellF1}[1+\frac{1}{2}(3+n\,p),$$

$$2+\frac{n\,p}{2},\,1,\,1+\frac{1}{2}(5+n\,p),\,-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2]\,\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]))))\Big/$$

$$\left((1+n p)\left(-a^2 (3+n p) \text{AppellF1}\left[\frac{1}{2}(1+n p), \frac{n p}{2}, 1, \frac{1}{2}(3+n p), -\text{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\right]+\left(2\left(a^2-b^2\right) \text{AppellF1}\left[\frac{1}{2}(3+n p), \frac{n p}{2}, 2, \frac{1}{2}(5+n p), -\text{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\right]+a^2 n p \text{AppellF1}\left[\frac{1}{2}(3+n p), 1+\frac{n p}{2}, 1, \frac{1}{2}(5+n p), -\text{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\right]\right) \text{Tan}[e+f x]^2\right)^2 \left(-b^2 \text{Tan}[e+f x]^2+a^2\left(1+\text{Tan}[e+f x]^2\right)\right)\right)\right)\right)\right)$$

Problem 836: Result more than twice size of optimal antiderivative.

$$\int \frac{(c\,(d\,\text{Sin}[e+f x])^p)^n}{(a+b\,\text{Sin}[e+f x])^2}\,dx$$

Optimal (type 6, 322 leaves, 11 steps):

$$\frac{1}{\left(a^2-b^2\right)^2 f} 2\,a\,b\,\text{AppellF1}\left[\frac{1}{2}, -\frac{n p}{2}, 2, \frac{3}{2}, \text{Cos}[e+f x]^2, -\frac{b^2 \text{Cos}[e+f x]^2}{a^2-b^2}\right] \text{Cos}[e+f x] \left(\text{Sin}[e+f x]^2\right)^{-\frac{n p}{2}} (c\,(d\,\text{Sin}[e+f x])^p)^n - \frac{1}{\left(a^2-b^2\right)^2 f} b^2 \text{AppellF1}\left[\frac{1}{2}, \frac{1}{2}(-1-n p), 2, \frac{3}{2}, \text{Cos}[e+f x]^2, -\frac{b^2 \text{Cos}[e+f x]^2}{a^2-b^2}\right] \text{Cos}[e+f x]\,\text{Sin}[e+f x] \left(\text{Sin}[e+f x]^2\right)^{\frac{1}{2}(-1-n p)} (c\,(d\,\text{Sin}[e+f x])^p)^n - \frac{1}{\left(a^2-b^2\right)^2 f} a^2 \text{AppellF1}\left[\frac{1}{2}, \frac{1}{2}(1-n p), 2, \frac{3}{2}, \text{Cos}[e+f x]^2, -\frac{b^2 \text{Cos}[e+f x]^2}{a^2-b^2}\right] \text{Cot}[e+f x] \left(\text{Sin}[e+f x]^2\right)^{\frac{1}{2}(1-n p)} (c\,(d\,\text{Sin}[e+f x])^p)^n$$

Result (type 6, 9486 leaves):

$$\left(a^2 (c\,(d\,\text{Sin}[e+f x])^p)^n \text{Tan}[e+f x] \left(\frac{\text{Tan}[e+f x]}{\sqrt{1+\text{Tan}[e+f x]^2}}\right)^{n p}\right.$$
$$\left(\left(\left(2\,a\,b\left(a^2-b^2\right)(4+n p) \text{AppellF1}\left[1+\frac{n p}{2}, \frac{1}{2}(-1+n p), 2, 2+\frac{n p}{2}, -\text{Tan}[e+f x]^2, \frac{\left(-a^2+b^2\right) \text{Tan}[e+f x]^2}{a^2}\right] \text{Tan}[e+f x]\right.\right.\right.$$
$$\left.\sqrt{1+\text{Tan}[e+f x]^2}\right) \Big/ \left((2+n p)\left(a^2 (4+n p) \text{AppellF1}\left[1+\frac{n p}{2}, \frac{1}{2}(-1+n p), 2, 2+\frac{n p}{2}, -\text{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\right]+\right.\right.$$
$$\left(-4\left(a^2-b^2\right) \text{AppellF1}\left[2+\frac{n p}{2}, \frac{1}{2}(-1+n p), 3, 3+\frac{n p}{2}, -\text{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\right]+\right.$$
$$\left.\left.\left. a^2 (1-n p) \text{AppellF1}\left[2+\frac{n p}{2}, \frac{1}{2}(1+n p), 2, 3+\frac{n p}{2}, -\text{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\right]\right) \text{Tan}[e+f x]^2\right)\right)+$$
$$\frac{1}{1+n p}(3+n p)\left(\left(2\,a^2 b^2 \text{AppellF1}\left[\frac{1}{2}(1+n p), \frac{n p}{2}, 2, \frac{1}{2}(3+n p), -\text{Tan}[e+f x]^2, \frac{\left(-a^2+b^2\right) \text{Tan}[e+f x]^2}{a^2}\right]\right) \Big/\right.$$
$$\left(a^2 (3+n p) \text{AppellF1}\left[\frac{1}{2}(1+n p), \frac{n p}{2}, 2, \frac{1}{2}(3+n p), -\text{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\right]-\right.$$

$$\left(4\left(a^2-b^2\right)\text{AppellF1}\left[\frac{1}{2}(3+n\,p),\frac{n\,p}{2},3,\frac{1}{2}(5+n\,p),-\text{Tan}[e+f\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\right]+a^2\,n\,p\right.$$

$$\left.\text{AppellF1}\left[\frac{1}{2}(3+n\,p),1+\frac{n\,p}{2},2,\frac{1}{2}(5+n\,p),-\text{Tan}[e+f\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\right]\right)\text{Tan}[e+f\,x]^2\Bigg)+$$

$$\left(\left(a^2+b^2\right)\text{AppellF1}\left[\frac{1}{2}(1+n\,p),\frac{n\,p}{2},1,\frac{1}{2}(3+n\,p),-\text{Tan}[e+f\,x]^2,\frac{\left(-a^2+b^2\right)\text{Tan}[e+f\,x]^2}{a^2}\right]\left(-b^2\,\text{Tan}[e+f\,x]^2+\right.\right.$$

$$\left.\left.a^2\left(1+\text{Tan}[e+f\,x]^2\right)\right)\right)\Big/\left(-a^2(3+n\,p)\,\text{AppellF1}\left[\frac{1}{2}(1+n\,p),\frac{n\,p}{2},1,\frac{1}{2}(3+n\,p),-\text{Tan}[e+f\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\right]+\right.$$

$$\left(2\left(a^2-b^2\right)\text{AppellF1}\left[\frac{1}{2}(3+n\,p),\frac{n\,p}{2},2,\frac{1}{2}(5+n\,p),-\text{Tan}[e+f\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\right]+a^2\,n\,p\right.$$

$$\left.\left.\text{AppellF1}\left[\frac{1}{2}(3+n\,p),1+\frac{n\,p}{2},1,\frac{1}{2}(5+n\,p),-\text{Tan}[e+f\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\right]\right)\text{Tan}[e+f\,x]^2\right)\Bigg)\Bigg)\Bigg)\Big/$$

$$\left(\left(-a^2+b^2\right)f\,(a+b\,\text{Sin}[e+f\,x])^2\left(b^2\,\text{Tan}[e+f\,x]^2-a^2\left(1+\text{Tan}[e+f\,x]^2\right)\right)^2\left(-\frac{1}{\left(-a^2+b^2\right)\left(b^2\,\text{Tan}[e+f\,x]^2-a^2\left(1+\text{Tan}[e+f\,x]^2\right)\right)^3}\right.\right.$$

$$2\,a^2\,\text{Tan}[e+f\,x]\left(-2\,a^2\,\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]+2\,b^2\,\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]\right)\left(\frac{\text{Tan}[e+f\,x]}{\sqrt{1+\text{Tan}[e+f\,x]^2}}\right)^{n\,p}$$

$$\left(\left(2\,a\,b\left(a^2-b^2\right)(4+n\,p)\,\text{AppellF1}\left[1+\frac{n\,p}{2},\frac{1}{2}(-1+n\,p),2,2+\frac{n\,p}{2},-\text{Tan}[e+f\,x]^2,\frac{\left(-a^2+b^2\right)\text{Tan}[e+f\,x]^2}{a^2}\right]\text{Tan}[e+f\,x]\right.\right.$$

$$\left.\sqrt{1+\text{Tan}[e+f\,x]^2}\right)\Big/\left((2+n\,p)\left(a^2(4+n\,p)\,\text{AppellF1}\left[1+\frac{n\,p}{2},\frac{1}{2}(-1+n\,p),2,2+\frac{n\,p}{2},-\text{Tan}[e+f\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\right]+\right.\right.$$

$$\left(-4\left(a^2-b^2\right)\text{AppellF1}\left[2+\frac{n\,p}{2},\frac{1}{2}(-1+n\,p),3,3+\frac{n\,p}{2},-\text{Tan}[e+f\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\right]+\right.$$

$$\left.\left.\left.a^2(1-n\,p)\,\text{AppellF1}\left[2+\frac{n\,p}{2},\frac{1}{2}(1+n\,p),2,3+\frac{n\,p}{2},-\text{Tan}[e+f\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\right]\right)\text{Tan}[e+f\,x]^2\right)\right)+$$

$$\frac{1}{1+n\,p}(3+n\,p)\left(\left(2\,a^2\,b^2\,\text{AppellF1}\left[\frac{1}{2}(1+n\,p),\frac{n\,p}{2},2,\frac{1}{2}(3+n\,p),-\text{Tan}[e+f\,x]^2,\frac{\left(-a^2+b^2\right)\text{Tan}[e+f\,x]^2}{a^2}\right]\right)\Big/\right.$$

$$\left(a^2(3+n\,p)\,\text{AppellF1}\left[\frac{1}{2}(1+n\,p),\frac{n\,p}{2},2,\frac{1}{2}(3+n\,p),-\text{Tan}[e+f\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\right]-\right.$$

$$\left(4\left(a^2-b^2\right)\text{AppellF1}\left[\frac{1}{2}(3+n\,p),\frac{n\,p}{2},3,\frac{1}{2}(5+n\,p),-\text{Tan}[e+f\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\right]+\right.$$

$$a^2\, n\, p\, \text{AppellF1}\left[\frac{1}{2}(3+n p),\, 1+\frac{n p}{2},\, 2,\, \frac{1}{2}(5+n p),\, -\text{Tan}[e+f x]^2,\, \left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]\right)\text{Tan}[e+f x]^2\Bigg) +$$

$$\Bigg(\left(a^2+b^2\right)\text{AppellF1}\left[\frac{1}{2}(1+n p),\, \frac{n p}{2},\, 1,\, \frac{1}{2}(3+n p),\, -\text{Tan}[e+f x]^2,\, \frac{\left(-a^2+b^2\right)\text{Tan}[e+f x]^2}{a^2}\right]$$

$$\left(-b^2\,\text{Tan}[e+f x]^2+a^2\left(1+\text{Tan}[e+f x]^2\right)\right)\Bigg)\Big/\Bigg(-a^2(3+n p)\,\text{AppellF1}\left[\frac{1}{2}(1+n p),\, \frac{n p}{2},\, 1,\, \frac{1}{2}(3+n p),\, -\text{Tan}[e+f x]^2,\right.$$

$$\left.\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right] + \Bigg(2\left(a^2-b^2\right)\text{AppellF1}\left[\frac{1}{2}(3+n p),\, \frac{n p}{2},\, 2,\, \frac{1}{2}(5+n p),\, -\text{Tan}[e+f x]^2,\, \left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right] +$$

$$a^2\, n\, p\, \text{AppellF1}\left[\frac{1}{2}(3+n p),\, 1+\frac{n p}{2},\, 1,\, \frac{1}{2}(5+n p),\, -\text{Tan}[e+f x]^2,\, \left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]\Bigg)\text{Tan}[e+f x]^2\Bigg)\Bigg) +$$

$$\frac{1}{\left(-a^2+b^2\right)\left(b^2\,\text{Tan}[e+f x]^2-a^2\left(1+\text{Tan}[e+f x]^2\right)\right)^2}\, a^2\,\text{Sec}[e+f x]^2\left(\frac{\text{Tan}[e+f x]}{\sqrt{1+\text{Tan}[e+f x]^2}}\right)^{n p}$$

$$\Bigg(\Bigg(2\, a\, b\left(a^2-b^2\right)(4+n p)\,\text{AppellF1}\left[1+\frac{n p}{2},\, \frac{1}{2}(-1+n p),\, 2,\, 2+\frac{n p}{2},\, -\text{Tan}[e+f x]^2,\, \frac{\left(-a^2+b^2\right)\text{Tan}[e+f x]^2}{a^2}\right]\text{Tan}[e+f x]$$

$$\sqrt{1+\text{Tan}[e+f x]^2}\Bigg)\Big/\Bigg((2+n p)\Bigg(a^2(4+n p)\,\text{AppellF1}\left[1+\frac{n p}{2},\, \frac{1}{2}(-1+n p),\, 2,\, 2+\frac{n p}{2},\, -\text{Tan}[e+f x]^2,\, \left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right] +$$

$$\Bigg(-4\left(a^2-b^2\right)\text{AppellF1}\left[2+\frac{n p}{2},\, \frac{1}{2}(-1+n p),\, 3,\, 3+\frac{n p}{2},\, -\text{Tan}[e+f x]^2,\, \left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right] +$$

$$a^2(1-n p)\,\text{AppellF1}\left[2+\frac{n p}{2},\, \frac{1}{2}(1+n p),\, 2,\, 3+\frac{n p}{2},\, -\text{Tan}[e+f x]^2,\, \left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]\Bigg)\text{Tan}[e+f x]^2\Bigg)\Bigg) +$$

$$\frac{1}{1+n p}(3+n p)\Bigg(\Bigg(2\, a^2\, b^2\,\text{AppellF1}\left[\frac{1}{2}(1+n p),\, \frac{n p}{2},\, 2,\, \frac{1}{2}(3+n p),\, -\text{Tan}[e+f x]^2,\, \frac{\left(-a^2+b^2\right)\text{Tan}[e+f x]^2}{a^2}\right]\Bigg)\Big/$$

$$\Bigg(a^2(3+n p)\,\text{AppellF1}\left[\frac{1}{2}(1+n p),\, \frac{n p}{2},\, 2,\, \frac{1}{2}(3+n p),\, -\text{Tan}[e+f x]^2,\, \left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right] -$$

$$\Bigg(4\left(a^2-b^2\right)\text{AppellF1}\left[\frac{1}{2}(3+n p),\, \frac{n p}{2},\, 3,\, \frac{1}{2}(5+n p),\, -\text{Tan}[e+f x]^2,\, \left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right] +$$

$$a^2\, n\, p\, \text{AppellF1}\left[\frac{1}{2}(3+n p),\, 1+\frac{n p}{2},\, 2,\, \frac{1}{2}(5+n p),\, -\text{Tan}[e+f x]^2,\, \left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]\Bigg)\text{Tan}[e+f x]^2\Bigg) +$$

$$\Bigg(\left(a^2+b^2\right)\text{AppellF1}\left[\frac{1}{2}(1+n p),\, \frac{n p}{2},\, 1,\, \frac{1}{2}(3+n p),\, -\text{Tan}[e+f x]^2,\, \frac{\left(-a^2+b^2\right)\text{Tan}[e+f x]^2}{a^2}\right]\Big(-b^2\,\text{Tan}[e+f x]^2 +$$

$$a^2\left(1+\text{Tan}[e+f x]^2\right)\Big)\Bigg)\Big/\Bigg(-a^2(3+n p)\,\text{AppellF1}\left[\frac{1}{2}(1+n p),\, \frac{n p}{2},\, 1,\, \frac{1}{2}(3+n p),\, -\text{Tan}[e+f x]^2,\, \left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right] +$$

$$\Big(2\,(a^2-b^2)\,\text{AppellF1}\Big[\frac{1}{2}\,(3+n\,p),\,\frac{n\,p}{2},\,2,\,\frac{1}{2}\,(5+n\,p),\,-\text{Tan}[e+f\,x]^2,\,\Big(-1+\frac{b^2}{a^2}\Big)\,\text{Tan}[e+f\,x]^2\Big]+$$

$$a^2\,n\,p\,\text{AppellF1}\Big[\frac{1}{2}\,(3+n\,p),\,1+\frac{n\,p}{2},\,1,\,\frac{1}{2}\,(5+n\,p),\,-\text{Tan}[e+f\,x]^2,\,\Big(-1+\frac{b^2}{a^2}\Big)\,\text{Tan}[e+f\,x]^2\Big]\Big)\,\text{Tan}[e+f\,x]^2\Big)\Big)\Big)+$$

$$\frac{1}{(-a^2+b^2)\,\big(b^2\,\text{Tan}[e+f\,x]^2-a^2\,(1+\text{Tan}[e+f\,x]^2)\big)^2}\,a^2\,n\,p\,\text{Tan}[e+f\,x]\,\left(\frac{\text{Tan}[e+f\,x]}{\sqrt{1+\text{Tan}[e+f\,x]^2}}\right)^{-1+n\,p}$$

$$\left(-\frac{\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]^2}{(1+\text{Tan}[e+f\,x]^2)^{3/2}}+\frac{\text{Sec}[e+f\,x]^2}{\sqrt{1+\text{Tan}[e+f\,x]^2}}\right)$$

$$\Big(\Big(2\,a\,b\,(a^2-b^2)\,(4+n\,p)\,\text{AppellF1}\Big[1+\frac{n\,p}{2},\,\frac{1}{2}\,(-1+n\,p),\,2,\,2+\frac{n\,p}{2},\,-\text{Tan}[e+f\,x]^2,\,\frac{(-a^2+b^2)\,\text{Tan}[e+f\,x]^2}{a^2}\Big]\,\text{Tan}[e+f\,x]$$

$$\sqrt{1+\text{Tan}[e+f\,x]^2}\Big)\Big/\Big((2+n\,p)\,\Big(a^2\,(4+n\,p)\,\text{AppellF1}\Big[1+\frac{n\,p}{2},\,\frac{1}{2}\,(-1+n\,p),\,2,\,2+\frac{n\,p}{2},\,-\text{Tan}[e+f\,x]^2,\,\Big(-1+\frac{b^2}{a^2}\Big)\,\text{Tan}[e+f\,x]^2\Big]+$$

$$\Big(-4\,(a^2-b^2)\,\text{AppellF1}\Big[2+\frac{n\,p}{2},\,\frac{1}{2}\,(-1+n\,p),\,3,\,3+\frac{n\,p}{2},\,-\text{Tan}[e+f\,x]^2,\,\Big(-1+\frac{b^2}{a^2}\Big)\,\text{Tan}[e+f\,x]^2\Big]+$$

$$a^2\,(1-n\,p)\,\text{AppellF1}\Big[2+\frac{n\,p}{2},\,\frac{1}{2}\,(1+n\,p),\,2,\,3+\frac{n\,p}{2},\,-\text{Tan}[e+f\,x]^2,\,\Big(-1+\frac{b^2}{a^2}\Big)\,\text{Tan}[e+f\,x]^2\Big]\Big)\,\text{Tan}[e+f\,x]^2\Big)\Big)+$$

$$\frac{1}{1+n\,p}\,(3+n\,p)\,\Big(\Big(2\,a^2\,b^2\,\text{AppellF1}\Big[\frac{1}{2}\,(1+n\,p),\,\frac{n\,p}{2},\,2,\,\frac{1}{2}\,(3+n\,p),\,-\text{Tan}[e+f\,x]^2,\,\frac{(-a^2+b^2)\,\text{Tan}[e+f\,x]^2}{a^2}\Big]\Big)\Big/$$

$$\Big(a^2\,(3+n\,p)\,\text{AppellF1}\Big[\frac{1}{2}\,(1+n\,p),\,\frac{n\,p}{2},\,2,\,\frac{1}{2}\,(3+n\,p),\,-\text{Tan}[e+f\,x]^2,\,\Big(-1+\frac{b^2}{a^2}\Big)\,\text{Tan}[e+f\,x]^2\Big]-$$

$$\Big(4\,(a^2-b^2)\,\text{AppellF1}\Big[\frac{1}{2}\,(3+n\,p),\,\frac{n\,p}{2},\,3,\,\frac{1}{2}\,(5+n\,p),\,-\text{Tan}[e+f\,x]^2,\,\Big(-1+\frac{b^2}{a^2}\Big)\,\text{Tan}[e+f\,x]^2\Big]+$$

$$a^2\,n\,p\,\text{AppellF1}\Big[\frac{1}{2}\,(3+n\,p),\,1+\frac{n\,p}{2},\,2,\,\frac{1}{2}\,(5+n\,p),\,-\text{Tan}[e+f\,x]^2,\,\Big(-1+\frac{b^2}{a^2}\Big)\,\text{Tan}[e+f\,x]^2\Big]\Big)\,\text{Tan}[e+f\,x]^2\Big)+$$

$$\Big((a^2+b^2)\,\text{AppellF1}\Big[\frac{1}{2}\,(1+n\,p),\,\frac{n\,p}{2},\,1,\,\frac{1}{2}\,(3+n\,p),\,-\text{Tan}[e+f\,x]^2,\,\frac{(-a^2+b^2)\,\text{Tan}[e+f\,x]^2}{a^2}\Big]\,\big(-b^2\,\text{Tan}[e+f\,x]^2+$$

$$a^2\,(1+\text{Tan}[e+f\,x]^2)\big)\Big)\Big/\Big(-a^2\,(3+n\,p)\,\text{AppellF1}\Big[\frac{1}{2}\,(1+n\,p),\,\frac{n\,p}{2},\,1,\,\frac{1}{2}\,(3+n\,p),\,-\text{Tan}[e+f\,x]^2,\,\Big(-1+\frac{b^2}{a^2}\Big)\,\text{Tan}[e+f\,x]^2\Big]+$$

$$\Big(2\,(a^2-b^2)\,\text{AppellF1}\Big[\frac{1}{2}\,(3+n\,p),\,\frac{n\,p}{2},\,2,\,\frac{1}{2}\,(5+n\,p),\,-\text{Tan}[e+f\,x]^2,\,\Big(-1+\frac{b^2}{a^2}\Big)\,\text{Tan}[e+f\,x]^2\Big]+$$

$$a^2\, n\, p\, \mathrm{AppellF1}\Big[\frac{1}{2}(3+n\,p),\ 1+\frac{n\,p}{2},\ 1,\ \frac{1}{2}(5+n\,p),\ -\mathrm{Tan}[e+f\,x]^2,\ \Big(-1+\frac{b^2}{a^2}\Big)\mathrm{Tan}[e+f\,x]^2\Big]\Big)\,\mathrm{Tan}[e+f\,x]^2\Big)\Big)\Big)\ +$$

$$\frac{1}{(-a^2+b^2)\,\big(b^2\,\mathrm{Tan}[e+f\,x]^2-a^2\,(1+\mathrm{Tan}[e+f\,x]^2)\big)^2}\,a^2\,\mathrm{Tan}[e+f\,x]\,\Bigg(\frac{\mathrm{Tan}[e+f\,x]}{\sqrt{1+\mathrm{Tan}[e+f\,x]^2}}\Bigg)^{n\,p}$$

$$\Big(\Big(2\,a\,b\,(a^2-b^2)\,(4+n\,p)\,\mathrm{AppellF1}\Big[1+\frac{n\,p}{2},\ \frac{1}{2}(-1+n\,p),\ 2,\ 2+\frac{n\,p}{2},\ -\mathrm{Tan}[e+f\,x]^2,\ \frac{(-a^2+b^2)\,\mathrm{Tan}[e+f\,x]^2}{a^2}\Big]\,\mathrm{Sec}[e+f\,x]^2$$

$$\mathrm{Tan}[e+f\,x]^2\Big)\Big/\Big((2+n\,p)\,\sqrt{1+\mathrm{Tan}[e+f\,x]^2}\,\Big(a^2\,(4+n\,p)\,\mathrm{AppellF1}\Big[1+\frac{n\,p}{2},\ \frac{1}{2}(-1+n\,p),\ 2,\ 2+\frac{n\,p}{2},\ -\mathrm{Tan}[e+f\,x]^2,$$

$$\Big(-1+\frac{b^2}{a^2}\Big)\mathrm{Tan}[e+f\,x]^2\Big]+\Big(-4\,(a^2-b^2)\,\mathrm{AppellF1}\Big[2+\frac{n\,p}{2},\ \frac{1}{2}(-1+n\,p),\ 3,\ 3+\frac{n\,p}{2},\ -\mathrm{Tan}[e+f\,x]^2,\ \Big(-1+\frac{b^2}{a^2}\Big)\mathrm{Tan}[e+f\,x]^2\Big]\ +$$

$$a^2\,(1-n\,p)\,\mathrm{AppellF1}\Big[2+\frac{n\,p}{2},\ \frac{1}{2}(1+n\,p),\ 2,\ 3+\frac{n\,p}{2},\ -\mathrm{Tan}[e+f\,x]^2,\ \Big(-1+\frac{b^2}{a^2}\Big)\mathrm{Tan}[e+f\,x]^2\Big]\Big)\,\mathrm{Tan}[e+f\,x]^2\Big)\Big)\ +$$

$$\Big(2\,a\,b\,(a^2-b^2)\,(4+n\,p)\,\mathrm{AppellF1}\Big[1+\frac{n\,p}{2},\ \frac{1}{2}(-1+n\,p),\ 2,\ 2+\frac{n\,p}{2},\ -\mathrm{Tan}[e+f\,x]^2,\ \frac{(-a^2+b^2)\,\mathrm{Tan}[e+f\,x]^2}{a^2}\Big]\,\mathrm{Sec}[e+f\,x]^2$$

$$\sqrt{1+\mathrm{Tan}[e+f\,x]^2}\Big)\Big/\Big((2+n\,p)\,\Big(a^2\,(4+n\,p)\,\mathrm{AppellF1}\Big[1+\frac{n\,p}{2},\ \frac{1}{2}(-1+n\,p),\ 2,\ 2+\frac{n\,p}{2},\ -\mathrm{Tan}[e+f\,x]^2,\ \Big(-1+\frac{b^2}{a^2}\Big)\mathrm{Tan}[e+f\,x]^2\Big]\ +$$

$$\Big(-4\,(a^2-b^2)\,\mathrm{AppellF1}\Big[2+\frac{n\,p}{2},\ \frac{1}{2}(-1+n\,p),\ 3,\ 3+\frac{n\,p}{2},\ -\mathrm{Tan}[e+f\,x]^2,\ \Big(-1+\frac{b^2}{a^2}\Big)\mathrm{Tan}[e+f\,x]^2\Big]\ +$$

$$a^2\,(1-n\,p)\,\mathrm{AppellF1}\Big[2+\frac{n\,p}{2},\ \frac{1}{2}(1+n\,p),\ 2,\ 3+\frac{n\,p}{2},\ -\mathrm{Tan}[e+f\,x]^2,\ \Big(-1+\frac{b^2}{a^2}\Big)\mathrm{Tan}[e+f\,x]^2\Big]\Big)\,\mathrm{Tan}[e+f\,x]^2\Big)\Big)\ +$$

$$\Big(2\,a\,b\,(a^2-b^2)\,(4+n\,p)\,\mathrm{Tan}[e+f\,x]\,\Big(\frac{1}{a^2\,\big(2+\frac{n\,p}{2}\big)}4\,(-a^2+b^2)\,\Big(1+\frac{n\,p}{2}\Big)\,\mathrm{AppellF1}\Big[2+\frac{n\,p}{2},\ \frac{1}{2}(-1+n\,p),\ 3,\ 3+\frac{n\,p}{2},$$

$$-\mathrm{Tan}[e+f\,x]^2,\ \frac{(-a^2+b^2)\,\mathrm{Tan}[e+f\,x]^2}{a^2}\Big]\,\mathrm{Sec}[e+f\,x]^2\,\mathrm{Tan}[e+f\,x]-\frac{1}{2+\frac{n\,p}{2}}\Big(1+\frac{n\,p}{2}\Big)\,(-1+n\,p)\,\mathrm{AppellF1}\Big[2+\frac{n\,p}{2},$$

$$1+\frac{1}{2}(-1+n\,p),\ 2,\ 3+\frac{n\,p}{2},\ -\mathrm{Tan}[e+f\,x]^2,\ \frac{(-a^2+b^2)\,\mathrm{Tan}[e+f\,x]^2}{a^2}\Big]\,\mathrm{Sec}[e+f\,x]^2\,\mathrm{Tan}[e+f\,x]\Big)\,\sqrt{1+\mathrm{Tan}[e+f\,x]^2}\Big)\Big/$$

$$\Big((2+n\,p)\,\Big(a^2\,(4+n\,p)\,\mathrm{AppellF1}\Big[1+\frac{n\,p}{2},\ \frac{1}{2}(-1+n\,p),\ 2,\ 2+\frac{n\,p}{2},\ -\mathrm{Tan}[e+f\,x]^2,\ \Big(-1+\frac{b^2}{a^2}\Big)\mathrm{Tan}[e+f\,x]^2\Big]\ +$$

$$\Big(-4\,(a^2-b^2)\,\mathrm{AppellF1}\Big[2+\frac{n\,p}{2},\ \frac{1}{2}(-1+n\,p),\ 3,\ 3+\frac{n\,p}{2},\ -\mathrm{Tan}[e+f\,x]^2,\ \Big(-1+\frac{b^2}{a^2}\Big)\mathrm{Tan}[e+f\,x]^2\Big]\ +$$

$$a^2\ (1-n\,p)\ \text{AppellF1}\Big[2+\frac{n\,p}{2},\ \frac{1}{2}\ (1+n\,p),\ 2,\ 3+\frac{n\,p}{2},\ -\text{Tan}[e+f\,x]^2,\ \left(-1+\frac{b^2}{a^2}\right)\ \text{Tan}[e+f\,x]^2\Big]\Big)\ \text{Tan}[e+f\,x]^2\Big)\Big)\ -$$

$$\Big(2\,a\,b\ \left(a^2-b^2\right)\ (4+n\,p)\ \text{AppellF1}\Big[1+\frac{n\,p}{2},\ \frac{1}{2}\ (-1+n\,p),\ 2,\ 2+\frac{n\,p}{2},\ -\text{Tan}[e+f\,x]^2,\ \frac{\left(-a^2+b^2\right)\ \text{Tan}[e+f\,x]^2}{a^2}\Big]\ \text{Tan}[e+f\,x]$$

$$\sqrt{1+\text{Tan}[e+f\,x]^2}\ \Big(2\ \Big(-4\ \left(a^2-b^2\right)\ \text{AppellF1}\Big[2+\frac{n\,p}{2},\ \frac{1}{2}\ (-1+n\,p),\ 3,\ 3+\frac{n\,p}{2},\ -\text{Tan}[e+f\,x]^2,\ \left(-1+\frac{b^2}{a^2}\right)\ \text{Tan}[e+f\,x]^2\Big]\ +$$

$$a^2\ (1-n\,p)\ \text{AppellF1}\Big[2+\frac{n\,p}{2},\ \frac{1}{2}\ (1+n\,p),\ 2,\ 3+\frac{n\,p}{2},\ -\text{Tan}[e+f\,x]^2,\ \left(-1+\frac{b^2}{a^2}\right)\ \text{Tan}[e+f\,x]^2\Big]\Big)\ \text{Sec}[e+f\,x]^2\ \text{Tan}[e+f\,x]\ +$$

$$a^2\ (4+n\,p)\ \Big(\frac{1}{2+\frac{n\,p}{2}}4\ \left(-1+\frac{b^2}{a^2}\right)\ \left(1+\frac{n\,p}{2}\right)\ \text{AppellF1}\Big[2+\frac{n\,p}{2},\ \frac{1}{2}\ (-1+n\,p),\ 3,\ 3+\frac{n\,p}{2},\ -\text{Tan}[e+f\,x]^2,\ \left(-1+\frac{b^2}{a^2}\right)\ \text{Tan}[e+f\,x]^2\Big]$$

$$\text{Sec}[e+f\,x]^2\ \text{Tan}[e+f\,x]\ -\ \frac{1}{2+\frac{n\,p}{2}}\left(1+\frac{n\,p}{2}\right)\ (-1+n\,p)\ \text{AppellF1}\Big[2+\frac{n\,p}{2},\ 1+\frac{1}{2}\ (-1+n\,p),\ 2,$$

$$3+\frac{n\,p}{2},\ -\text{Tan}[e+f\,x]^2,\ \left(-1+\frac{b^2}{a^2}\right)\ \text{Tan}[e+f\,x]^2\Big]\ \text{Sec}[e+f\,x]^2\ \text{Tan}[e+f\,x]\Big)\ +\ \text{Tan}[e+f\,x]^2$$

$$\Big(-4\ \left(a^2-b^2\right)\ \Big(\frac{1}{3+\frac{n\,p}{2}}6\ \left(-1+\frac{b^2}{a^2}\right)\ \left(2+\frac{n\,p}{2}\right)\ \text{AppellF1}\Big[3+\frac{n\,p}{2},\ \frac{1}{2}\ (-1+n\,p),\ 4,\ 4+\frac{n\,p}{2},\ -\text{Tan}[e+f\,x]^2,\ \left(-1+\frac{b^2}{a^2}\right)\ \text{Tan}[e+f\,x]^2\Big]$$

$$\text{Sec}[e+f\,x]^2\ \text{Tan}[e+f\,x]\ -\ \frac{1}{3+\frac{n\,p}{2}}\left(2+\frac{n\,p}{2}\right)\ (-1+n\,p)\ \text{AppellF1}\Big[3+\frac{n\,p}{2},\ 1+\frac{1}{2}\ (-1+n\,p),\ 3,\ 4+\frac{n\,p}{2},\ -\text{Tan}[e+f\,x]^2,$$

$$\left(-1+\frac{b^2}{a^2}\right)\ \text{Tan}[e+f\,x]^2\Big]\ \text{Sec}[e+f\,x]^2\ \text{Tan}[e+f\,x]\Big)\ +\ a^2\ (1-n\,p)\ \Big(\frac{1}{3+\frac{n\,p}{2}}4\ \left(-1+\frac{b^2}{a^2}\right)\ \left(2+\frac{n\,p}{2}\right)\ \text{AppellF1}\Big[3+\frac{n\,p}{2},$$

$$\frac{1}{2}\ (1+n\,p),\ 3,\ 4+\frac{n\,p}{2},\ -\text{Tan}[e+f\,x]^2,\ \left(-1+\frac{b^2}{a^2}\right)\ \text{Tan}[e+f\,x]^2\Big]\ \text{Sec}[e+f\,x]^2\ \text{Tan}[e+f\,x]\ -\ \frac{1}{3+\frac{n\,p}{2}}\left(2+\frac{n\,p}{2}\right)\ (1+n\,p)$$

$$\text{AppellF1}\Big[3+\frac{n\,p}{2},\ 1+\frac{1}{2}\ (1+n\,p),\ 2,\ 4+\frac{n\,p}{2},\ -\text{Tan}[e+f\,x]^2,\ \left(-1+\frac{b^2}{a^2}\right)\ \text{Tan}[e+f\,x]^2\Big]\ \text{Sec}[e+f\,x]^2\ \text{Tan}[e+f\,x]\Big)\Big)\Big)\Big)\Big/$$

$$\Big((2+n\,p)\ \Big(a^2\ (4+n\,p)\ \text{AppellF1}\Big[1+\frac{n\,p}{2},\ \frac{1}{2}\ (-1+n\,p),\ 2,\ 2+\frac{n\,p}{2},\ -\text{Tan}[e+f\,x]^2,\ \left(-1+\frac{b^2}{a^2}\right)\ \text{Tan}[e+f\,x]^2\Big]\ +$$

$$\Big(-4\ \left(a^2-b^2\right)\ \text{AppellF1}\Big[2+\frac{n\,p}{2},\ \frac{1}{2}\ (-1+n\,p),\ 3,\ 3+\frac{n\,p}{2},\ -\text{Tan}[e+f\,x]^2,\ \left(-1+\frac{b^2}{a^2}\right)\ \text{Tan}[e+f\,x]^2\Big]\ +$$

$$a^2\ (1-n\,p)\ \text{AppellF1}\Big[2+\frac{n\,p}{2},\ \frac{1}{2}\ (1+n\,p),\ 2,\ 3+\frac{n\,p}{2},\ -\text{Tan}[e+f\,x]^2,\ \left(-1+\frac{b^2}{a^2}\right)\ \text{Tan}[e+f\,x]^2\Big]\Big)\ \text{Tan}[e+f\,x]^2\Big)^2\Big)\ +$$

$$\frac{1}{1+n\,p}(3+n\,p)\left(\left(\left(a^2+b^2\right)\text{AppellF1}\left[\frac{1}{2}(1+n\,p),\ \frac{n\,p}{2},\ 1,\ \frac{1}{2}(3+n\,p),\ -\text{Tan}[e+f\,x]^2,\ \frac{\left(-a^2+b^2\right)\text{Tan}[e+f\,x]^2}{a^2}\right]\right.\right.$$

$$\left.\left(2\,a^2\,\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]-2\,b^2\,\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]\right)\right)\Big/$$

$$\left(-a^2(3+n\,p)\,\text{AppellF1}\left[\frac{1}{2}(1+n\,p),\ \frac{n\,p}{2},\ 1,\ \frac{1}{2}(3+n\,p),\ -\text{Tan}[e+f\,x]^2,\ \left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\right]+\right.$$

$$\left(2\left(a^2-b^2\right)\text{AppellF1}\left[\frac{1}{2}(3+n\,p),\ \frac{n\,p}{2},\ 2,\ \frac{1}{2}(5+n\,p),\ -\text{Tan}[e+f\,x]^2,\ \left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\right]+\right.$$

$$\left.\left.a^2\,n\,p\,\text{AppellF1}\left[\frac{1}{2}(3+n\,p),\ 1+\frac{n\,p}{2},\ 1,\ \frac{1}{2}(5+n\,p),\ -\text{Tan}[e+f\,x]^2,\ \left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\right]\right)\text{Tan}[e+f\,x]^2\right)+$$

$$\left(2\,a^2\,b^2\left(\frac{1}{a^2(3+n\,p)}4\left(-a^2+b^2\right)(1+n\,p)\,\text{AppellF1}\left[1+\frac{1}{2}(1+n\,p),\ \frac{n\,p}{2},\ 3,\ 1+\frac{1}{2}(3+n\,p),\ -\text{Tan}[e+f\,x]^2,\right.\right.\right.$$

$$\left.\frac{\left(-a^2+b^2\right)\text{Tan}[e+f\,x]^2}{a^2}\right]\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]-\frac{1}{3+n\,p}n\,p\,(1+n\,p)\,\text{AppellF1}\left[1+\frac{1}{2}(1+n\,p),\right.$$

$$\left.\left.\left.1+\frac{n\,p}{2},\ 2,\ 1+\frac{1}{2}(3+n\,p),\ -\text{Tan}[e+f\,x]^2,\ \frac{\left(-a^2+b^2\right)\text{Tan}[e+f\,x]^2}{a^2}\right]\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]\right)\right)\Big/$$

$$\left(a^2(3+n\,p)\,\text{AppellF1}\left[\frac{1}{2}(1+n\,p),\ \frac{n\,p}{2},\ 2,\ \frac{1}{2}(3+n\,p),\ -\text{Tan}[e+f\,x]^2,\ \left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\right]-\right.$$

$$\left(4\left(a^2-b^2\right)\text{AppellF1}\left[\frac{1}{2}(3+n\,p),\ \frac{n\,p}{2},\ 3,\ \frac{1}{2}(5+n\,p),\ -\text{Tan}[e+f\,x]^2,\ \left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\right]+\right.$$

$$\left.\left.a^2\,n\,p\,\text{AppellF1}\left[\frac{1}{2}(3+n\,p),\ 1+\frac{n\,p}{2},\ 2,\ \frac{1}{2}(5+n\,p),\ -\text{Tan}[e+f\,x]^2,\ \left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\right]\right)\text{Tan}[e+f\,x]^2\right)+$$

$$\left(\left(a^2+b^2\right)\left(\frac{1}{a^2(3+n\,p)}2\left(-a^2+b^2\right)(1+n\,p)\,\text{AppellF1}\left[1+\frac{1}{2}(1+n\,p),\ \frac{n\,p}{2},\ 2,\ 1+\frac{1}{2}(3+n\,p),\ -\text{Tan}[e+f\,x]^2,\right.\right.\right.$$

$$\left.\frac{\left(-a^2+b^2\right)\text{Tan}[e+f\,x]^2}{a^2}\right]\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]-\frac{1}{3+n\,p}n\,p\,(1+n\,p)\,\text{AppellF1}\left[1+\frac{1}{2}(1+n\,p),\right.$$

$$\left.\left.1+\frac{n\,p}{2},\ 1,\ 1+\frac{1}{2}(3+n\,p),\ -\text{Tan}[e+f\,x]^2,\ \frac{\left(-a^2+b^2\right)\text{Tan}[e+f\,x]^2}{a^2}\right]\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]\right)$$

$$\left.\left(-b^2\,\text{Tan}[e+f\,x]^2+a^2\left(1+\text{Tan}[e+f\,x]^2\right)\right)\right)\Big/\left(-a^2(3+n\,p)\,\text{AppellF1}\left[\frac{1}{2}(1+n\,p),\ \frac{n\,p}{2},\ 1,\ \frac{1}{2}(3+n\,p),\ -\text{Tan}[e+f\,x]^2,\right.\right.$$

$$\left.\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\right]+\left(2\left(a^2-b^2\right)\text{AppellF1}\left[\frac{1}{2}(3+n\,p),\ \frac{n\,p}{2},\ 2,\ \frac{1}{2}(5+n\,p),\ -\text{Tan}[e+f\,x]^2,\ \left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\right]+\right.$$

$$a^2\, n\, p\, \text{AppellF1}\left[\frac{1}{2}(3+n\,p),\, 1+\frac{n\,p}{2},\, 1,\, \frac{1}{2}(5+n\,p),\, -\text{Tan}[e+f\,x]^2,\, \left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\right]\right)\text{Tan}[e+f\,x]^2\Big) -$$

$$\Big(\left(a^2+b^2\right)\text{AppellF1}\left[\frac{1}{2}(1+n\,p),\, \frac{n\,p}{2},\, 1,\, \frac{1}{2}(3+n\,p),\, -\text{Tan}[e+f\,x]^2,\, \frac{\left(-a^2+b^2\right)\text{Tan}[e+f\,x]^2}{a^2}\right]\left(-b^2\,\text{Tan}[e+f\,x]^2+\right.$$

$$a^2\left(1+\text{Tan}[e+f\,x]^2\right)\Big)\left(2\left(2\left(a^2-b^2\right)\text{AppellF1}\left[\frac{1}{2}(3+n\,p),\, \frac{n\,p}{2},\, 2,\, \frac{1}{2}(5+n\,p),\, -\text{Tan}[e+f\,x]^2,\, \left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\right]+\right.\right.$$

$$a^2\, n\, p\, \text{AppellF1}\left[\frac{1}{2}(3+n\,p),\, 1+\frac{n\,p}{2},\, 1,\, \frac{1}{2}(5+n\,p),\, -\text{Tan}[e+f\,x]^2,\, \left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\right]\right)\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x] -$$

$$a^2\,(3+n\,p)\left(\frac{1}{3+n\,p}2\left(-1+\frac{b^2}{a^2}\right)(1+n\,p)\,\text{AppellF1}\left[1+\frac{1}{2}(1+n\,p),\, \frac{n\,p}{2},\, 2,\, 1+\frac{1}{2}(3+n\,p),\, -\text{Tan}[e+f\,x]^2,\right.\right.$$

$$\left.\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\right]\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x] - \frac{1}{3+n\,p}n\,p\,(1+n\,p)\,\text{AppellF1}\left[1+\frac{1}{2}(1+n\,p),\right.$$

$$\left.\left.1+\frac{n\,p}{2},\, 1,\, 1+\frac{1}{2}(3+n\,p),\, -\text{Tan}[e+f\,x]^2,\, \left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\right]\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]\right)+$$

$$\text{Tan}[e+f\,x]^2\left(2\left(a^2-b^2\right)\left(\frac{1}{5+n\,p}4\left(-1+\frac{b^2}{a^2}\right)(3+n\,p)\,\text{AppellF1}\left[1+\frac{1}{2}(3+n\,p),\, \frac{n\,p}{2},\, 3,\, 1+\frac{1}{2}(5+n\,p),\right.\right.\right.$$

$$\left.-\text{Tan}[e+f\,x]^2,\, \left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\right]\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x] - \frac{1}{5+n\,p}n\,p\,(3+n\,p)\,\text{AppellF1}\Big[$$

$$\left.\left.1+\frac{1}{2}(3+n\,p),\, 1+\frac{n\,p}{2},\, 2,\, 1+\frac{1}{2}(5+n\,p),\, -\text{Tan}[e+f\,x]^2,\, \left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\right]\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]\right)+$$

$$a^2\, n\, p\left(\frac{1}{5+n\,p}2\left(-1+\frac{b^2}{a^2}\right)(3+n\,p)\,\text{AppellF1}\left[1+\frac{1}{2}(3+n\,p),\, 1+\frac{n\,p}{2},\, 2,\, 1+\frac{1}{2}(5+n\,p),\, -\text{Tan}[e+f\,x]^2,\right.\right.$$

$$\left.\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\right]\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x] - \frac{1}{5+n\,p}2\left(1+\frac{n\,p}{2}\right)(3+n\,p)\,\text{AppellF1}\left[1+\frac{1}{2}(3+n\,p),\right.$$

$$\left.\left.\left.\left.\left.2+\frac{n\,p}{2},\, 1,\, 1+\frac{1}{2}(5+n\,p),\, -\text{Tan}[e+f\,x]^2,\, \left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\right]\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]\right)\right)\right)\right)\Big) \Big/$$

$$\Big(-a^2\,(3+n\,p)\,\text{AppellF1}\left[\frac{1}{2}(1+n\,p),\, \frac{n\,p}{2},\, 1,\, \frac{1}{2}(3+n\,p),\, -\text{Tan}[e+f\,x]^2,\, \left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\right]+$$

$$\Big(2\left(a^2-b^2\right)\text{AppellF1}\left[\frac{1}{2}(3+n\,p),\, \frac{n\,p}{2},\, 2,\, \frac{1}{2}(5+n\,p),\, -\text{Tan}[e+f\,x]^2,\, \left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\right]+$$

$$a^2\, n\, p\, \text{AppellF1}\left[\frac{1}{2}(3+n\,p),\, 1+\frac{n\,p}{2},\, 1,\, \frac{1}{2}(5+n\,p),\, -\text{Tan}[e+f\,x]^2,\, \left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\right]\Big)\text{Tan}[e+f\,x]^2\Big)^2 -$$

$$\left(2\,a^2\,b^2\,\text{AppellF1}\left[\frac{1}{2}\,(1+n\,p),\,\frac{n\,p}{2},\,2,\,\frac{1}{2}\,(3+n\,p),\,-\text{Tan}[e+f\,x]^2,\,\frac{\left(-a^2+b^2\right)\,\text{Tan}[e+f\,x]^2}{a^2}\right]\right.$$

$$\left(-2\,\left(4\,\left(a^2-b^2\right)\,\text{AppellF1}\left[\frac{1}{2}\,(3+n\,p),\,\frac{n\,p}{2},\,3,\,\frac{1}{2}\,(5+n\,p),\,-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\,\text{Tan}[e+f\,x]^2\right]+\right.\right.$$

$$\left.a^2\,n\,p\,\text{AppellF1}\left[\frac{1}{2}\,(3+n\,p),\,1+\frac{n\,p}{2},\,2,\,\frac{1}{2}\,(5+n\,p),\,-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\,\text{Tan}[e+f\,x]^2\right]\right)\,\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]+$$

$$a^2\,(3+n\,p)\,\left(\frac{1}{3+n\,p}4\,\left(-1+\frac{b^2}{a^2}\right)\,(1+n\,p)\,\text{AppellF1}\left[1+\frac{1}{2}\,(1+n\,p),\,\frac{n\,p}{2},\,3,\,1+\frac{1}{2}\,(3+n\,p),\,-\text{Tan}[e+f\,x]^2,\right.\right.$$

$$\left.\left(-1+\frac{b^2}{a^2}\right)\,\text{Tan}[e+f\,x]^2\right]\,\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]-\frac{1}{3+n\,p}n\,p\,(1+n\,p)\,\text{AppellF1}\left[1+\frac{1}{2}\,(1+n\,p),\right.$$

$$\left.\left.1+\frac{n\,p}{2},\,2,\,1+\frac{1}{2}\,(3+n\,p),\,-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\,\text{Tan}[e+f\,x]^2\right]\,\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]\right)-$$

$$\text{Tan}[e+f\,x]^2\,\left(4\,\left(a^2-b^2\right)\,\left(\frac{1}{5+n\,p}6\,\left(-1+\frac{b^2}{a^2}\right)\,(3+n\,p)\,\text{AppellF1}\left[1+\frac{1}{2}\,(3+n\,p),\,\frac{n\,p}{2},\,4,\,1+\frac{1}{2}\,(5+n\,p),\right.\right.\right.$$

$$\left.-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\,\text{Tan}[e+f\,x]^2\right]\,\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]-\frac{1}{5+n\,p}n\,p\,(3+n\,p)\,\text{AppellF1}\left[\right.$$

$$\left.\left.1+\frac{1}{2}\,(3+n\,p),\,1+\frac{n\,p}{2},\,3,\,1+\frac{1}{2}\,(5+n\,p),\,-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\,\text{Tan}[e+f\,x]^2\right]\,\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]\right)+$$

$$a^2\,n\,p\,\left(\frac{1}{5+n\,p}4\,\left(-1+\frac{b^2}{a^2}\right)\,(3+n\,p)\,\text{AppellF1}\left[1+\frac{1}{2}\,(3+n\,p),\,1+\frac{n\,p}{2},\,3,\,1+\frac{1}{2}\,(5+n\,p),\,-\text{Tan}[e+f\,x]^2,\right.\right.$$

$$\left.\left(-1+\frac{b^2}{a^2}\right)\,\text{Tan}[e+f\,x]^2\right]\,\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]-\frac{1}{5+n\,p}2\,\left(1+\frac{n\,p}{2}\right)\,(3+n\,p)\,\text{AppellF1}\left[1+\frac{1}{2}\,(3+n\,p),\right.$$

$$\left.\left.\left.\left.\left.2+\frac{n\,p}{2},\,2,\,1+\frac{1}{2}\,(5+n\,p),\,-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\,\text{Tan}[e+f\,x]^2\right]\,\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]\right)\right)\right)\right)\Big/$$

$$\left(a^2\,(3+n\,p)\,\text{AppellF1}\left[\frac{1}{2}\,(1+n\,p),\,\frac{n\,p}{2},\,2,\,\frac{1}{2}\,(3+n\,p),\,-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\,\text{Tan}[e+f\,x]^2\right]-\right.$$

$$\left(4\,\left(a^2-b^2\right)\,\text{AppellF1}\left[\frac{1}{2}\,(3+n\,p),\,\frac{n\,p}{2},\,3,\,\frac{1}{2}\,(5+n\,p),\,-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\,\text{Tan}[e+f\,x]^2\right]+\right.$$

$$\left.\left.\left.\left.\left.a^2\,n\,p\,\text{AppellF1}\left[\frac{1}{2}\,(3+n\,p),\,1+\frac{n\,p}{2},\,2,\,\frac{1}{2}\,(5+n\,p),\,-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\,\text{Tan}[e+f\,x]^2\right]\right)\,\text{Tan}[e+f\,x]^2\right)^2\right)\right)\right)\right)$$

- **Problem 837: Result more than twice size of optimal antiderivative.**

$$\int \frac{(c\,(d\,\text{Sin}[e+f\,x])^p)^n}{(a+b\,\text{Sin}[e+f\,x])^3}\,dx$$

Optimal (type 6, 428 leaves, 14 steps) :

$$\frac{1}{\left(a^2-b^2\right)^3 f} 3\,a^2\,b\,\text{AppellF1}\left[\frac{1}{2},-\frac{n\,p}{2},3,\frac{3}{2},\text{Cos}[e+f\,x]^2,-\frac{b^2\,\text{Cos}[e+f\,x]^2}{a^2-b^2}\right]\text{Cos}[e+f\,x]\left(\text{Sin}[e+f\,x]^2\right)^{-\frac{n\,p}{2}}(c\,(d\,\text{Sin}[e+f\,x])^p)^n+\frac{1}{\left(a^2-b^2\right)^3 f} b^3\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2}(-2-n\,p),3,\frac{3}{2},\text{Cos}[e+f\,x]^2,-\frac{b^2\,\text{Cos}[e+f\,x]^2}{a^2-b^2}\right]\text{Cos}[e+f\,x]\left(\text{Sin}[e+f\,x]^2\right)^{-\frac{n\,p}{2}}(c\,(d\,\text{Sin}[e+f\,x])^p)^n-\frac{1}{\left(a^2-b^2\right)^3 f} 3\,a\,b^2\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2}(-1-n\,p),3,\frac{3}{2},\text{Cos}[e+f\,x]^2,-\frac{b^2\,\text{Cos}[e+f\,x]^2}{a^2-b^2}\right]\text{Cos}[e+f\,x]\,\text{Sin}[e+f\,x]\left(\text{Sin}[e+f\,x]^2\right)^{\frac{1}{2}(-1-n\,p)}(c\,(d\,\text{Sin}[e+f\,x])^p)^n-\frac{1}{\left(a^2-b^2\right)^3 f} a^3\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2}(1-n\,p),3,\frac{3}{2},\text{Cos}[e+f\,x]^2,-\frac{b^2\,\text{Cos}[e+f\,x]^2}{a^2-b^2}\right]\text{Cot}[e+f\,x]\left(\text{Sin}[e+f\,x]^2\right)^{\frac{1}{2}(1-n\,p)}(c\,(d\,\text{Sin}[e+f\,x])^p)^n$$

Result (type 6, 22711 leaves) : Display of huge result suppressed!

Test results for the 1563 problems in "4.1.2.2 (g cos)^p (a+b sin)^m (c+d sin)^n.m"

- **Problem 6: Result unnecessarily involves imaginary or complex numbers.**

$$\int \frac{\text{Cos}[e+f\,x]^2\,\sqrt{a+a\,\text{Sin}[e+f\,x]}}{(c-c\,\text{Sin}[e+f\,x])^{3/2}}\,dx$$

Optimal (type 3, 99 leaves, 5 steps) :

$$-\frac{2\,a\,\text{Cos}[e+f\,x]\,\text{Log}[1-\text{Sin}[e+f\,x]]}{c\,f\,\sqrt{a+a\,\text{Sin}[e+f\,x]}\,\sqrt{c-c\,\text{Sin}[e+f\,x]}}-\frac{\text{Cos}[e+f\,x]\,\sqrt{a+a\,\text{Sin}[e+f\,x]}}{c\,f\,\sqrt{c-c\,\text{Sin}[e+f\,x]}}$$

Result (type 3, 127 leaves) :

$$-\left(\left(\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]-\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)^3\sqrt{a\,(1+\text{Sin}[e+f\,x])}\left(-2\,i\,f\,x+4\,i\,\text{ArcTan}\left[e^{i\,(e+f\,x)}\right]+2\,\text{Log}\left[1+e^{2\,i\,(e+f\,x)}\right]+\text{Sin}[e+f\,x]\right)\right)\Big/\left(f\left(\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)(c-c\,\text{Sin}[e+f\,x])^{3/2}\right)$$

- **Problem 7: Result unnecessarily involves imaginary or complex numbers.**

$$\int \frac{\text{Cos}[e+f\,x]^2\,\sqrt{a+a\,\text{Sin}[e+f\,x]}}{(c-c\,\text{Sin}[e+f\,x])^{5/2}}\,dx$$

Optimal (type 3, 97 leaves, 5 steps) :

$$\frac{\cos[e+f x] \sqrt{a+a \sin[e+f x]}}{c f (c-c \sin[e+f x])^{3/2}}+\frac{a \cos[e+f x] \log[1-\sin[e+f x]]}{c^2 f \sqrt{a+a \sin[e+f x]} \sqrt{c-c \sin[e+f x]}}$$

Result (type 3, 118 leaves):

$$\frac{1}{c^2 f \sqrt{c-c \sin[e+f x]}} \sec[e+f x] \sqrt{a (1+\sin[e+f x])} \left(2-i f x+\log\left[1+e^{2 i (e+f x)}\right]-2 i \operatorname{ArcTan}\left[e^{i (e+f x)}\right] (-1+\sin[e+f x])+\left(i f x-\log\left[1+e^{2 i (e+f x)}\right]\right) \sin[e+f x]\right)$$

- **Problem 13: Result more than twice size of optimal antiderivative.**

$$\int \frac{\cos[e+f x]^2 (a+a \sin[e+f x])^{3/2}}{\sqrt{c-c \sin[e+f x]}} \, dx$$

Optimal (type 3, 45 leaves, 2 steps):

$$\frac{\cos[e+f x] (a+a \sin[e+f x])^{5/2}}{3 a f \sqrt{c-c \sin[e+f x]}}$$

Result (type 3, 111 leaves):

$$\left(\left(\cos\left[\frac{1}{2} (e+f x)\right]-\sin\left[\frac{1}{2} (e+f x)\right]\right) (a (1+\sin[e+f x]))^{3/2} (-6 \cos[2 (e+f x)]+15 \sin[e+f x]-\sin[3 (e+f x)])\right) \Big/ \left(12 f \left(\cos\left[\frac{1}{2} (e+f x)\right]+\sin\left[\frac{1}{2} (e+f x)\right]\right)^3 \sqrt{c-c \sin[e+f x]}\right)$$

- **Problem 17: Result more than twice size of optimal antiderivative.**

$$\int \frac{\cos[e+f x]^2 (a+a \sin[e+f x])^{3/2}}{(c-c \sin[e+f x])^{9/2}} \, dx$$

Optimal (type 3, 48 leaves, 2 steps):

$$\frac{\cos[e+f x] (a+a \sin[e+f x])^{5/2}}{6 a c f (c-c \sin[e+f x])^{7/2}}$$

Result (type 3, 110 leaves):

$$-\frac{a (-5+3 \cos[2 (e+f x)]) \left(\cos\left[\frac{1}{2} (e+f x)\right]-\sin\left[\frac{1}{2} (e+f x)\right]\right)^3 \sqrt{a (1+\sin[e+f x])}}{6 c^4 f \left(\cos\left[\frac{1}{2} (e+f x)\right]+\sin\left[\frac{1}{2} (e+f x)\right]\right) (-1+\sin[e+f x])^4 \sqrt{c-c \sin[e+f x]}}$$

- **Problem 23: Result more than twice size of optimal antiderivative.**

$$\int \frac{\cos[e+f x]^2 (a+a \sin[e+f x])^{5/2}}{\sqrt{c-c \sin[e+f x]}} \, dx$$

Optimal (type 3, 45 leaves, 2 steps):

$$\frac{\text{Cos}[e+f x] (a+a \text{Sin}[e+f x])^{7/2}}{4 a f \sqrt{c-c \text{Sin}[e+f x]}}$$

Result (type 3, 119 leaves):

$$\left(\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)(a(1+\text{Sin}[e+f x]))^{5/2}(-28 \text{Cos}[2(e+f x)]+\text{Cos}[4(e+f x)]+56 \text{Sin}[e+f x]-8 \text{Sin}[3(e+f x)])\right) \Big/ \left(32 f \left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^5 \sqrt{c-c \text{Sin}[e+f x]}\right)$$

Problem 28: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Cos}[e+f x]^2 (a+a \text{Sin}[e+f x])^{5/2}}{(c-c \text{Sin}[e+f x])^{11/2}} \, dx$$

Optimal (type 3, 48 leaves, 2 steps):

$$\frac{\text{Cos}[e+f x] (a+a \text{Sin}[e+f x])^{7/2}}{8 a c f (c-c \text{Sin}[e+f x])^{9/2}}$$

Result (type 3, 329 leaves):

$$\frac{2\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^3(a(1+\text{Sin}[e+f x]))^{5/2}}{f\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^5(c-c \text{Sin}[e+f x])^{11/2}}-\frac{4\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^5(a(1+\text{Sin}[e+f x]))^{5/2}}{f\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^5(c-c \text{Sin}[e+f x])^{11/2}}+$$
$$\frac{3\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^7(a(1+\text{Sin}[e+f x]))^{5/2}}{f\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^5(c-c \text{Sin}[e+f x])^{11/2}}-\frac{\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^9(a(1+\text{Sin}[e+f x]))^{5/2}}{f\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^5(c-c \text{Sin}[e+f x])^{11/2}}$$

Problem 29: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Cos}[e+f x]^2 (a+a \text{Sin}[e+f x])^{5/2}}{(c-c \text{Sin}[e+f x])^{13/2}} \, dx$$

Optimal (type 3, 97 leaves, 3 steps):

$$\frac{\text{Cos}[e+f x] (a+a \text{Sin}[e+f x])^{7/2}}{10 a c f (c-c \text{Sin}[e+f x])^{11/2}}+\frac{\text{Cos}[e+f x] (a+a \text{Sin}[e+f x])^{7/2}}{80 a c^2 f (c-c \text{Sin}[e+f x])^{9/2}}$$

Result (type 3, 333 leaves):

$$\frac{8\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^3(a(1+\text{Sin}[e+f x]))^{5/2}}{5 f\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^5(c-c \text{Sin}[e+f x])^{13/2}}-\frac{3\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^5(a(1+\text{Sin}[e+f x]))^{5/2}}{f\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^5(c-c \text{Sin}[e+f x])^{13/2}}+$$
$$\frac{2\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^7(a(1+\text{Sin}[e+f x]))^{5/2}}{f\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^5(c-c \text{Sin}[e+f x])^{13/2}}-\frac{\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^9(a(1+\text{Sin}[e+f x]))^{5/2}}{2 f\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^5(c-c \text{Sin}[e+f x])^{13/2}}$$

Problem 30: Result more than twice size of optimal antiderivative.

$$\int \text{Cos}[e+f x]^2 (a+a \text{Sin}[e+f x])^{7/2} (c-c \text{Sin}[e+f x])^{9/2} \, dx$$

Optimal (type 3, 236 leaves, 6 steps):

$$-\frac{4 a^4 \text{Cos}[e+f x] (c-c \text{Sin}[e+f x])^{11/2}}{315 c f \sqrt{a+a \text{Sin}[e+f x]}}-\frac{4 a^3 \text{Cos}[e+f x] \sqrt{a+a \text{Sin}[e+f x]} (c-c \text{Sin}[e+f x])^{11/2}}{105 c f}-\frac{a^2 \text{Cos}[e+f x] (a+a \text{Sin}[e+f x])^{3/2} (c-c \text{Sin}[e+f x])^{11/2}}{15 c f}-\frac{4 a \text{Cos}[e+f x] (a+a \text{Sin}[e+f x])^{5/2} (c-c \text{Sin}[e+f x])^{11/2}}{45 c f}-\frac{\text{Cos}[e+f x] (a+a \text{Sin}[e+f x])^{7/2} (c-c \text{Sin}[e+f x])^{11/2}}{10 c f}$$

Result (type 3, 919 leaves):

$$\frac{21\,\text{Cos}[2\,(e+f\,x)]\,(a\,(1+\text{Sin}[e+f\,x]))^{7/2}\,(c-c\,\text{Sin}[e+f\,x])^{9/2}}{512\,f\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^9\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^7}+$$

$$\frac{3\,\text{Cos}[4\,(e+f\,x)]\,(a\,(1+\text{Sin}[e+f\,x]))^{7/2}\,(c-c\,\text{Sin}[e+f\,x])^{9/2}}{128\,f\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^9\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^7}+$$

$$\frac{9\,\text{Cos}[6\,(e+f\,x)]\,(a\,(1+\text{Sin}[e+f\,x]))^{7/2}\,(c-c\,\text{Sin}[e+f\,x])^{9/2}}{1024\,f\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^9\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^7}+$$

$$\frac{\text{Cos}[8\,(e+f\,x)]\,(a\,(1+\text{Sin}[e+f\,x]))^{7/2}\,(c-c\,\text{Sin}[e+f\,x])^{9/2}}{512\,f\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^9\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^7}+$$

$$\frac{\text{Cos}[10\,(e+f\,x)]\,(a\,(1+\text{Sin}[e+f\,x]))^{7/2}\,(c-c\,\text{Sin}[e+f\,x])^{9/2}}{5120\,f\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^9\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^7}+$$

$$\frac{63\,\text{Sin}[e+f\,x]\,(a\,(1+\text{Sin}[e+f\,x]))^{7/2}\,(c-c\,\text{Sin}[e+f\,x])^{9/2}}{128\,f\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^9\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^7}+$$

$$\frac{7\,(a\,(1+\text{Sin}[e+f\,x]))^{7/2}\,(c-c\,\text{Sin}[e+f\,x])^{9/2}\,\text{Sin}[3\,(e+f\,x)]}{64\,f\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^9\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^7}+$$

$$\frac{9\,(a\,(1+\text{Sin}[e+f\,x]))^{7/2}\,(c-c\,\text{Sin}[e+f\,x])^{9/2}\,\text{Sin}[5\,(e+f\,x)]}{320\,f\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^9\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^7}+$$

$$\frac{9\,(a\,(1+\text{Sin}[e+f\,x]))^{7/2}\,(c-c\,\text{Sin}[e+f\,x])^{9/2}\,\text{Sin}[7\,(e+f\,x)]}{1792\,f\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^9\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^7}+$$

$$\frac{(a\,(1+\text{Sin}[e+f\,x]))^{7/2}\,(c-c\,\text{Sin}[e+f\,x])^{9/2}\,\text{Sin}[9\,(e+f\,x)]}{2304\,f\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^9\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^7}$$

- **Problem 35: Result more than twice size of optimal antiderivative.**

$$\int \frac{\text{Cos}[e+f\,x]^2\,(a+a\,\text{Sin}[e+f\,x])^{7/2}}{\sqrt{c-c\,\text{Sin}[e+f\,x]}}\,dx$$

Optimal (type 3, 45 leaves, 2 steps):

$$\frac{\text{Cos}[e+f\,x]\,(a+a\,\text{Sin}[e+f\,x])^{9/2}}{5\,a\,f\,\sqrt{c-c\,\text{Sin}[e+f\,x]}}$$

Result (type 3, 142 leaves):

$$\left(a^3\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)(1+\text{Sin}[e+f x])^3\sqrt{a(1+\text{Sin}[e+f x])}\right.$$
$$\left.(-120\,\text{Cos}[2(e+f x)]+10\,\text{Cos}[4(e+f x)]+210\,\text{Sin}[e+f x]-45\,\text{Sin}[3(e+f x)]+\text{Sin}[5(e+f x)])\right)\Big/$$
$$\left(80 f\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^7\sqrt{c-c\,\text{Sin}[e+f x]}\right)$$

- **Problem 41: Result more than twice size of optimal antiderivative.**

$$\int\frac{\text{Cos}[e+f x]^2(a+a\,\text{Sin}[e+f x])^{7/2}}{(c-c\,\text{Sin}[e+f x])^{13/2}}\,dx$$

Optimal (type 3, 48 leaves, 2 steps):

$$\frac{\text{Cos}[e+f x](a+a\,\text{Sin}[e+f x])^{9/2}}{10\,a\,c\,f(c-c\,\text{Sin}[e+f x])^{11/2}}$$

Result (type 3, 412 leaves):

$$\frac{16\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^3(a(1+\text{Sin}[e+f x]))^{7/2}}{5 f\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^7(c-c\,\text{Sin}[e+f x])^{13/2}}-$$
$$\frac{8\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^5(a(1+\text{Sin}[e+f x]))^{7/2}}{f\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^7(c-c\,\text{Sin}[e+f x])^{13/2}}+\frac{8\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^7(a(1+\text{Sin}[e+f x]))^{7/2}}{f\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^7(c-c\,\text{Sin}[e+f x])^{13/2}}-$$
$$\frac{4\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^9(a(1+\text{Sin}[e+f x]))^{7/2}}{f\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^7(c-c\,\text{Sin}[e+f x])^{13/2}}+\frac{\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^{11}(a(1+\text{Sin}[e+f x]))^{7/2}}{f\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^7(c-c\,\text{Sin}[e+f x])^{13/2}}$$

- **Problem 42: Result more than twice size of optimal antiderivative.**

$$\int\frac{\text{Cos}[e+f x]^2(a+a\,\text{Sin}[e+f x])^{7/2}}{(c-c\,\text{Sin}[e+f x])^{15/2}}\,dx$$

Optimal (type 3, 97 leaves, 3 steps):

$$\frac{\text{Cos}[e+f x](a+a\,\text{Sin}[e+f x])^{9/2}}{12\,a\,c\,f(c-c\,\text{Sin}[e+f x])^{13/2}}+\frac{\text{Cos}[e+f x](a+a\,\text{Sin}[e+f x])^{9/2}}{120\,a\,c^2 f(c-c\,\text{Sin}[e+f x])^{11/2}}$$

Result (type 3, 419 leaves):

$$\frac{8 \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]-\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^3 (a (1+\text{Sin}[e+f x]))^{7/2}}{3 f \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]+\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^7 (c-c \text{Sin}[e+f x])^{15/2}}-$$

$$\frac{32 \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]-\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^5 (a (1+\text{Sin}[e+f x]))^{7/2}}{5 f \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]+\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^7 (c-c \text{Sin}[e+f x])^{15/2}}+\frac{6 \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]-\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^7 (a (1+\text{Sin}[e+f x]))^{7/2}}{f \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]+\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^7 (c-c \text{Sin}[e+f x])^{15/2}}-$$

$$\frac{8 \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]-\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^9 (a (1+\text{Sin}[e+f x]))^{7/2}}{3 f \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]+\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^7 (c-c \text{Sin}[e+f x])^{15/2}}+\frac{\left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]-\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^{11} (a (1+\text{Sin}[e+f x]))^{7/2}}{2 f \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]+\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^7 (c-c \text{Sin}[e+f x])^{15/2}}$$

- **Problem 43: Result more than twice size of optimal antiderivative.**

$$\int \frac{\text{Cos}[e+f x]^2 (a+a \text{Sin}[e+f x])^{7/2}}{(c-c \text{Sin}[e+f x])^{17/2}} \, dx$$

Optimal (type 3, 145 leaves, 4 steps):

$$\frac{\text{Cos}[e+f x] (a+a \text{Sin}[e+f x])^{9/2}}{14 a c f (c-c \text{Sin}[e+f x])^{15/2}}+\frac{\text{Cos}[e+f x] (a+a \text{Sin}[e+f x])^{9/2}}{84 a c^2 f (c-c \text{Sin}[e+f x])^{13/2}}+\frac{\text{Cos}[e+f x] (a+a \text{Sin}[e+f x])^{9/2}}{840 a c^3 f (c-c \text{Sin}[e+f x])^{11/2}}$$

Result (type 3, 419 leaves):

$$\frac{16 \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]-\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^3 (a (1+\text{Sin}[e+f x]))^{7/2}}{7 f \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]+\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^7 (c-c \text{Sin}[e+f x])^{17/2}}-$$

$$\frac{16 \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]-\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^5 (a (1+\text{Sin}[e+f x]))^{7/2}}{3 f \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]+\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^7 (c-c \text{Sin}[e+f x])^{17/2}}+\frac{24 \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]-\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^7 (a (1+\text{Sin}[e+f x]))^{7/2}}{5 f \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]+\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^7 (c-c \text{Sin}[e+f x])^{17/2}}-$$

$$\frac{2 \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]-\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^9 (a (1+\text{Sin}[e+f x]))^{7/2}}{f \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]+\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^7 (c-c \text{Sin}[e+f x])^{17/2}}+\frac{\left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]-\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^{11} (a (1+\text{Sin}[e+f x]))^{7/2}}{3 f \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]+\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^7 (c-c \text{Sin}[e+f x])^{17/2}}$$

- **Problem 44: Result more than twice size of optimal antiderivative.**

$$\int \frac{\text{Cos}[e+f x]^2 (c-c \text{Sin}[e+f x])^{5/2}}{\sqrt{a+a \text{Sin}[e+f x]}} \, dx$$

Optimal (type 3, 45 leaves, 2 steps):

$$-\frac{\text{Cos}[e+f x] (c-c \text{Sin}[e+f x])^{7/2}}{4 c f \sqrt{a+a \text{Sin}[e+f x]}}$$

Result (type 3, 134 leaves):

$$\left(c^2 \left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)(-1+\text{Sin}[e+f x])^2 \sqrt{c-c\,\text{Sin}[e+f x]}\,(28\,\text{Cos}[2(e+f x)]-\text{Cos}[4(e+f x)]+56\,\text{Sin}[e+f x]-8\,\text{Sin}[3(e+f x)])\right)\Big/\left(32 f\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^5 \sqrt{a(1+\text{Sin}[e+f x])}\right)$$

Problem 45: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Cos}[e+f x]^2 (c-c\,\text{Sin}[e+f x])^{3/2}}{\sqrt{a+a\,\text{Sin}[e+f x]}}\,dx$$

Optimal (type 3, 45 leaves, 2 steps):

$$-\frac{\text{Cos}[e+f x]\,(c-c\,\text{Sin}[e+f x])^{5/2}}{3 c f \sqrt{a+a\,\text{Sin}[e+f x]}}$$

Result (type 3, 120 leaves):

$$-\left(c\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)(-1+\text{Sin}[e+f x])\sqrt{c-c\,\text{Sin}[e+f x]}\,(6\,\text{Cos}[2(e+f x)]+15\,\text{Sin}[e+f x]-\text{Sin}[3(e+f x)])\right)\Big/\left(12 f\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^3\sqrt{a(1+\text{Sin}[e+f x])}\right)$$

Problem 53: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{\text{Cos}[e+f x]^2 \sqrt{c-c\,\text{Sin}[e+f x]}}{(a+a\,\text{Sin}[e+f x])^{3/2}}\,dx$$

Optimal (type 3, 96 leaves, 5 steps):

$$\frac{2 c\,\text{Cos}[e+f x]\,\text{Log}[1+\text{Sin}[e+f x]]}{a f\sqrt{a+a\,\text{Sin}[e+f x]}\sqrt{c-c\,\text{Sin}[e+f x]}}+\frac{\text{Cos}[e+f x]\sqrt{c-c\,\text{Sin}[e+f x]}}{a f\sqrt{a+a\,\text{Sin}[e+f x]}}$$

Result (type 3, 127 leaves):

$$-\left(\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^3\left(2\,i f x+4\,i\,\text{ArcTan}\left[e^{i(e+f x)}\right]-2\,\text{Log}\left[1+e^{2 i(e+f x)}\right]+\text{Sin}[e+f x]\right)\sqrt{c-c\,\text{Sin}[e+f x]}\right)\Big/\left(f\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)(a(1+\text{Sin}[e+f x]))^{3/2}\right)$$

Problem 61: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{\text{Cos}[e+f x]^2 \sqrt{c-c\,\text{Sin}[e+f x]}}{(a+a\,\text{Sin}[e+f x])^{5/2}}\,dx$$

Optimal (type 3, 97 leaves, 5 steps):

$$-\frac{c\,\text{Cos}[e+f x]\,\text{Log}[1+\text{Sin}[e+f x]]}{a^2 f \sqrt{a+a\,\text{Sin}[e+f x]}\,\sqrt{c-c\,\text{Sin}[e+f x]}}-\frac{\text{Cos}[e+f x]\,\sqrt{c-c\,\text{Sin}[e+f x]}}{a f\,(a+a\,\text{Sin}[e+f x])^{3/2}}$$

Result (type 3, 121 leaves):

$$\frac{1}{a^2 f \sqrt{a\,(1+\text{Sin}[e+f x])}}\,i\,\text{Sec}[e+f x]\,\sqrt{c-c\,\text{Sin}[e+f x]}\,\left(2\,i+f x+i\,\text{Log}\left[1+e^{2\,i\,(e+f x)}\right]+\left(f x+i\,\text{Log}\left[1+e^{2\,i\,(e+f x)}\right]\right)\text{Sin}[e+f x]+2\,\text{ArcTan}\left[e^{i\,(e+f x)}\right]\,(1+\text{Sin}[e+f x])\right)$$

- **Problem 65: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int \text{Cos}[e+f x]^2\,(a+a\,\text{Sin}[e+f x])^m\,(c-c\,\text{Sin}[e+f x])^n\,dx$$

Optimal (type 5, 114 leaves, 5 steps):

$$\frac{1}{f\,(3+2 m)}2^{\frac{3}{2}+n}\,c^2\,\text{Cos}[e+f x]^3\,\text{Hypergeometric2F1}\left[\frac{1}{2}\,(3+2 m),\,\frac{1}{2}\,(-1-2 n),\,\frac{1}{2}\,(5+2 m),\,\frac{1}{2}\,(1+\text{Sin}[e+f x])\right]$$
$$(1-\text{Sin}[e+f x])^{\frac{1}{2}-n}\,(a+a\,\text{Sin}[e+f x])^m\,(c-c\,\text{Sin}[e+f x])^{-2+n}$$

Result (type 6, 15 688 leaves):

$$-\left(\left(4^{3+n}\,(3+2 n)\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\,(a+a\,\text{Sin}[e+f x])^m\right.\right.$$
$$(c-c\,\text{Sin}[e+f x])^n\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\left(\frac{\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}\right)^{2 n}\left(\frac{1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}\right)^{2 m}$$
$$\left(\left(5\,\text{AppellF1}\left[\frac{1}{2}+n,\,-2 m,\,3+2\,(m+n),\,\frac{3}{2}+n,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^2\right)\Big/\right.$$
$$\left(-(3+2 n)\,\text{AppellF1}\left[\frac{1}{2}+n,\,-2 m,\,3+2\,(m+n),\,\frac{3}{2}+n,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$
$$2\left(2 m\,\text{AppellF1}\left[\frac{3}{2}+n,\,1-2 m,\,3+2\,(m+n),\,\frac{5}{2}+n,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+(3+2 m+2 n)\right.$$
$$\left.\left.\text{AppellF1}\left[\frac{3}{2}+n,\,-2 m,\,2\,(2+m+n),\,\frac{5}{2}+n,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)+$$
$$\left(4\,\text{AppellF1}\left[\frac{1}{2}+n,\,-2 m,\,5+2\,(m+n),\,\frac{3}{2}+n,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\Big/$$
$$\left(-(3+2 n)\,\text{AppellF1}\left[\frac{1}{2}+n,\,-2 m,\,5+2\,(m+n),\,\frac{3}{2}+n,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$2\left(2\,m\,\text{AppellF1}\left[\frac{3}{2}+n,1-2m,5+2(m+n),\frac{5}{2}+n,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+(5+2m+2n)\right.$$
$$\left.\text{AppellF1}\left[\frac{3}{2}+n,-2m,2(3+m+n),\frac{5}{2}+n,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)-$$
$$\left(\text{AppellF1}\left[\frac{1}{2}+n,-2m,2(1+m+n),\frac{3}{2}+n,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^3\right)\Big/$$
$$\left(-(3+2n)\,\text{AppellF1}\left[\frac{1}{2}+n,-2m,2(1+m+n),\frac{3}{2}+n,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$
$$4\left(m\,\text{AppellF1}\left[\frac{3}{2}+n,1-2m,2(1+m+n),\frac{5}{2}+n,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$
$$\left.\left.(1+m+n)\,\text{AppellF1}\left[\frac{3}{2}+n,-2m,3+2(m+n),\frac{5}{2}+n,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)-$$
$$\left(8\,\text{AppellF1}\left[\frac{1}{2}+n,-2m,2(2+m+n),\frac{3}{2}+n,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\right)\Big/$$
$$\left(-(3+2n)\,\text{AppellF1}\left[\frac{1}{2}+n,-2m,2(2+m+n),\frac{3}{2}+n,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$
$$4\left(m\,\text{AppellF1}\left[\frac{3}{2}+n,1-2m,2(2+m+n),\frac{5}{2}+n,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+(2+m+n)\right.$$
$$\left.\left.\text{AppellF1}\left[\frac{3}{2}+n,-2m,5+2(m+n),\frac{5}{2}+n,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\Bigg)\Bigg/$$
$$\left(f(1+2n)\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^5\left(-\frac{1}{(1+2n)\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^6}5\times 2^{3+2n}(3+2n)\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right.\right.$$
$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\left(\frac{\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}\right)^{2n}\left(\frac{1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}\right)^{2m}$$
$$\left(\left(5\,\text{AppellF1}\left[\frac{1}{2}+n,-2m,3+2(m+n),\frac{3}{2}+n,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^2\right)\Big/\right.$$
$$\left(-(3+2n)\,\text{AppellF1}\left[\frac{1}{2}+n,-2m,3+2(m+n),\frac{3}{2}+n,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+2\right.$$
$$\left(2\,m\,\text{AppellF1}\left[\frac{3}{2}+n,1-2m,3+2(m+n),\frac{5}{2}+n,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+(3+2m+2n)\right.$$
$$\left.\text{AppellF1}\left[\frac{3}{2}+n,-2m,2(2+m+n),\frac{5}{2}+n,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)+$$

$$\left(4\,\text{AppellF1}\left[\frac{1}{2}+n,-2m,5+2(m+n),\frac{3}{2}+n,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\Big/$$

$$\left(-(3+2n)\,\text{AppellF1}\left[\frac{1}{2}+n,-2m,5+2(m+n),\frac{3}{2}+n,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+2\right.$$

$$\left(2m\,\text{AppellF1}\left[\frac{3}{2}+n,1-2m,5+2(m+n),\frac{5}{2}+n,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+(5+2m+2n)\right.$$

$$\left.\left.\text{AppellF1}\left[\frac{3}{2}+n,-2m,2(3+m+n),\frac{5}{2}+n,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)-$$

$$\left(\text{AppellF1}\left[\frac{1}{2}+n,-2m,2(1+m+n),\frac{3}{2}+n,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^3\right)\Big/$$

$$\left(-(3+2n)\,\text{AppellF1}\left[\frac{1}{2}+n,-2m,2(1+m+n),\frac{3}{2}+n,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+4\right.$$

$$\left(m\,\text{AppellF1}\left[\frac{3}{2}+n,1-2m,2(1+m+n),\frac{5}{2}+n,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+(1+m+n)\right.$$

$$\left.\left.\text{AppellF1}\left[\frac{3}{2}+n,-2m,3+2(m+n),\frac{5}{2}+n,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)-$$

$$\left(8\,\text{AppellF1}\left[\frac{1}{2}+n,-2m,2(2+m+n),\frac{3}{2}+n,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\right)\Big/$$

$$\left(-(3+2n)\,\text{AppellF1}\left[\frac{1}{2}+n,-2m,2(2+m+n),\frac{3}{2}+n,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+4\right.$$

$$\left(m\,\text{AppellF1}\left[\frac{3}{2}+n,1-2m,2(2+m+n),\frac{5}{2}+n,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+(2+m+n)\right.$$

$$\left.\left.\left.\text{AppellF1}\left[\frac{3}{2}+n,-2m,5+2(m+n),\frac{5}{2}+n,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\right)+$$

$$\frac{1}{(1+2n)\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^5}\,4^{1+n}(3+2n)\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\left(\frac{\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}\right)^{2n}\left(\frac{1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}\right)^{2m}$$

$$\left(\left(5\,\text{AppellF1}\left[\frac{1}{2}+n,-2m,3+2(m+n),\frac{3}{2}+n,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^2\right)\Big/\right.$$

$$\left(-(3+2n)\,\text{AppellF1}\left[\frac{1}{2}+n,-2m,3+2(m+n),\frac{3}{2}+n,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$2\left(2m\,\text{AppellF1}\left[\frac{3}{2}+n,1-2m,3+2(m+n),\frac{5}{2}+n,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+(3+2m+2n)\right.$$

$$\left.\left.\text{AppellF1}\left[\frac{3}{2}+n,-2m,2(2+m+n),\frac{5}{2}+n,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)+$$

$$\left(4\,\text{AppellF1}\left[\frac{1}{2}+n,\,-2m,\,5+2(m+n),\,\frac{3}{2}+n,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\Big/$$

$$\left(-(3+2n)\,\text{AppellF1}\left[\frac{1}{2}+n,\,-2m,\,5+2(m+n),\,\frac{3}{2}+n,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.$$

$$2\left(2\,m\,\text{AppellF1}\left[\frac{3}{2}+n,\,1-2m,\,5+2(m+n),\,\frac{5}{2}+n,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+(5+2m+2n)\right.$$

$$\left.\left.\text{AppellF1}\left[\frac{3}{2}+n,\,-2m,\,2(3+m+n),\,\frac{5}{2}+n,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)-$$

$$\left(\text{AppellF1}\left[\frac{1}{2}+n,\,-2m,\,2(1+m+n),\,\frac{3}{2}+n,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^3\right)\Big/$$

$$\left(-(3+2n)\,\text{AppellF1}\left[\frac{1}{2}+n,\,-2m,\,2(1+m+n),\,\frac{3}{2}+n,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.$$

$$4\left(m\,\text{AppellF1}\left[\frac{3}{2}+n,\,1-2m,\,2(1+m+n),\,\frac{5}{2}+n,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+(1+m+n)\right.$$

$$\left.\left.\text{AppellF1}\left[\frac{3}{2}+n,\,-2m,\,3+2(m+n),\,\frac{5}{2}+n,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)-$$

$$\left(8\,\text{AppellF1}\left[\frac{1}{2}+n,\,-2m,\,2(2+m+n),\,\frac{3}{2}+n,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\right)\Big/$$

$$\left(-(3+2n)\,\text{AppellF1}\left[\frac{1}{2}+n,\,-2m,\,2(2+m+n),\,\frac{3}{2}+n,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.$$

$$4\left(m\,\text{AppellF1}\left[\frac{3}{2}+n,\,1-2m,\,2(2+m+n),\,\frac{5}{2}+n,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+(2+m+n)\right.$$

$$\left.\left.\text{AppellF1}\left[\frac{3}{2}+n,\,-2m,\,5+2(m+n),\,\frac{5}{2}+n,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\right)+$$

$$\frac{1}{(1+2n)\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^5}\,2^{5+2n}\,n\,(3+2n)\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\left(\frac{\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}\right)^{-1+2n}$$

$$\left(\frac{1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}\right)^{2m}\left(-\frac{\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{2\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^2}+\frac{\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{4\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)}\right)$$

$$\left(\left(5\,\text{AppellF1}\left[\frac{1}{2}+n,\,-2m,\,3+2(m+n),\,\frac{3}{2}+n,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^2\right)\Big/\right.$$

$$\left(-(3+2n)\,\text{AppellF1}\left[\frac{1}{2}+n,\,-2m,\,3+2(m+n),\,\frac{3}{2}+n,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.$$

$$2\,\Big(2\,m\,\text{AppellF1}\Big[\frac{3}{2}+n,\,1-2\,m,\,3+2\,(m+n),\,\frac{5}{2}+n,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+(3+2\,m+2\,n)$$

$$\text{AppellF1}\Big[\frac{3}{2}+n,\,-2\,m,\,2\,(2+m+n),\,\frac{5}{2}+n,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)+$$

$$\Big(4\,\text{AppellF1}\Big[\frac{1}{2}+n,\,-2\,m,\,5+2\,(m+n),\,\frac{3}{2}+n,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\Big)\Big/$$

$$\Big(-(3+2\,n)\,\text{AppellF1}\Big[\frac{1}{2}+n,\,-2\,m,\,5+2\,(m+n),\,\frac{3}{2}+n,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+$$

$$2\,\Big(2\,m\,\text{AppellF1}\Big[\frac{3}{2}+n,\,1-2\,m,\,5+2\,(m+n),\,\frac{5}{2}+n,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+(5+2\,m+2\,n)$$

$$\text{AppellF1}\Big[\frac{3}{2}+n,\,-2\,m,\,2\,(3+m+n),\,\frac{5}{2}+n,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)-$$

$$\Big(\text{AppellF1}\Big[\frac{1}{2}+n,\,-2\,m,\,2\,(1+m+n),\,\frac{3}{2}+n,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\,\Big(1+\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)^3\Big)\Big/$$

$$\Big(-(3+2\,n)\,\text{AppellF1}\Big[\frac{1}{2}+n,\,-2\,m,\,2\,(1+m+n),\,\frac{3}{2}+n,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+$$

$$4\,\Big(m\,\text{AppellF1}\Big[\frac{3}{2}+n,\,1-2\,m,\,2\,(1+m+n),\,\frac{5}{2}+n,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+(1+m+n)$$

$$\text{AppellF1}\Big[\frac{3}{2}+n,\,-2\,m,\,3+2\,(m+n),\,\frac{5}{2}+n,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)-$$

$$\Big(8\,\text{AppellF1}\Big[\frac{1}{2}+n,\,-2\,m,\,2\,(2+m+n),\,\frac{3}{2}+n,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\,\Big(1+\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)\Big)\Big/$$

$$\Big(-(3+2\,n)\,\text{AppellF1}\Big[\frac{1}{2}+n,\,-2\,m,\,2\,(2+m+n),\,\frac{3}{2}+n,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+$$

$$4\,\Big(m\,\text{AppellF1}\Big[\frac{3}{2}+n,\,1-2\,m,\,2\,(2+m+n),\,\frac{5}{2}+n,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+(2+m+n)$$

$$\text{AppellF1}\Big[\frac{3}{2}+n,\,-2\,m,\,5+2\,(m+n),\,\frac{5}{2}+n,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)\Big)+$$

$$\frac{1}{(1+2\,n)\,\Big(1+\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)^5}\,2^{5+2\,n}\,m\,(3+2\,n)\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\,\left(\frac{\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]}{1+\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2}\right)^{2\,n}$$

$$\left(\frac{1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2}{1+\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2}\right)^{-1+2\,m}$$

$$\left(-\frac{\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)}{2\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^2}-\frac{\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]}{2\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)}\right)$$

$$\left(\left(5\,\text{AppellF1}\left[\frac{1}{2}+n,-2\,m,3+2\,(m+n),\frac{3}{2}+n,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^2\right)\Big/\right.$$

$$\left(-(3+2\,n)\,\text{AppellF1}\left[\frac{1}{2}+n,-2\,m,3+2\,(m+n),\frac{3}{2}+n,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.$$

$$2\left(2\,m\,\text{AppellF1}\left[\frac{3}{2}+n,1-2\,m,3+2\,(m+n),\frac{5}{2}+n,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+(3+2\,m+2\,n)\right.$$

$$\left.\left.\text{AppellF1}\left[\frac{3}{2}+n,-2\,m,2\,(2+m+n),\frac{5}{2}+n,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)+$$

$$\left(4\,\text{AppellF1}\left[\frac{1}{2}+n,-2\,m,5+2\,(m+n),\frac{3}{2}+n,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\Big/$$

$$\left(-(3+2\,n)\,\text{AppellF1}\left[\frac{1}{2}+n,-2\,m,5+2\,(m+n),\frac{3}{2}+n,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.$$

$$2\left(2\,m\,\text{AppellF1}\left[\frac{3}{2}+n,1-2\,m,5+2\,(m+n),\frac{5}{2}+n,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+(5+2\,m+2\,n)\right.$$

$$\left.\left.\text{AppellF1}\left[\frac{3}{2}+n,-2\,m,2\,(3+m+n),\frac{5}{2}+n,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)-$$

$$\left(\text{AppellF1}\left[\frac{1}{2}+n,-2\,m,2\,(1+m+n),\frac{3}{2}+n,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^3\right)\Big/$$

$$\left(-(3+2\,n)\,\text{AppellF1}\left[\frac{1}{2}+n,-2\,m,2\,(1+m+n),\frac{3}{2}+n,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.$$

$$4\left(m\,\text{AppellF1}\left[\frac{3}{2}+n,1-2\,m,2\,(1+m+n),\frac{5}{2}+n,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+(1+m+n)\right.$$

$$\left.\left.\text{AppellF1}\left[\frac{3}{2}+n,-2\,m,3+2\,(m+n),\frac{5}{2}+n,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)-$$

$$\left(8\,\text{AppellF1}\left[\frac{1}{2}+n,-2\,m,2\,(2+m+n),\frac{3}{2}+n,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\right)\Big/$$

$$\left(-(3+2\,n)\,\text{AppellF1}\left[\frac{1}{2}+n,-2\,m,2\,(2+m+n),\frac{3}{2}+n,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.$$

$$4\left(m\,\text{AppellF1}\left[\frac{3}{2}+n,1-2\,m,2\,(2+m+n),\frac{5}{2}+n,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+(2+m+n)\right.$$

$$\left.\left.\text{AppellF1}\left[\frac{3}{2}+n,-2\,m,5+2\,(m+n),\frac{5}{2}+n,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)+$$

$$\frac{1}{(1+2n)\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^5}4^{2+n}(3+2n)\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\left(\frac{\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}\right)^{2n}$$

$$\left(\frac{1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}\right)^{2m}$$

$$\left(\left(5\,\text{AppellF1}\left[\frac{1}{2}+n,-2m,3+2(m+n),\frac{3}{2}+n,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right.\right.$$

$$\left.\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\right)\Big/$$

$$\left(-(3+2n)\,\text{AppellF1}\left[\frac{1}{2}+n,-2m,3+2(m+n),\frac{3}{2}+n,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$2\left(2m\,\text{AppellF1}\left[\frac{3}{2}+n,1-2m,3+2(m+n),\frac{5}{2}+n,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+(3+2m+2n)\right.$$

$$\left.\left.\text{AppellF1}\left[\frac{3}{2}+n,-2m,2(2+m+n),\frac{5}{2}+n,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)+$$

$$\left(5\left(-\frac{1}{\frac{3}{2}+n}m\left(\frac{1}{2}+n\right)\text{AppellF1}\left[\frac{3}{2}+n,1-2m,3+2(m+n),\frac{5}{2}+n,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right.\right.$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{1}{2\left(\frac{3}{2}+n\right)}\left(\frac{1}{2}+n\right)(3+2(m+n))$$

$$\text{AppellF1}\left[\frac{3}{2}+n,-2m,4+2(m+n),\frac{5}{2}+n,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]$$

$$\left.\left.\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^2\right)\Big/$$

$$\left(-(3+2n)\,\text{AppellF1}\left[\frac{1}{2}+n,-2m,3+2(m+n),\frac{3}{2}+n,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$2\left(2m\,\text{AppellF1}\left[\frac{3}{2}+n,1-2m,3+2(m+n),\frac{5}{2}+n,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+(3+2m+2n)\right.$$

$$\left.\left.\text{AppellF1}\left[\frac{3}{2}+n,-2m,2(2+m+n),\frac{5}{2}+n,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)+$$

$$\left(4\left(-\frac{1}{\frac{3}{2}+n}m\left(\frac{1}{2}+n\right)\text{AppellF1}\left[\frac{3}{2}+n,1-2m,5+2(m+n),\frac{5}{2}+n,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right.\right.$$

$$\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]-\frac{1}{2\left(\frac{3}{2}+n\right)}\Big(\frac{1}{2}+n\Big)\,(5+2\,(m+n))\,\text{AppellF1}\Big[\frac{3}{2}+n,\,-2\,m,\,6+2\,(m+n),$$

$$\frac{5}{2}+n,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]\Big)\Big)\Big/$$

$$\Big(-(3+2\,n)\,\text{AppellF1}\Big[\frac{1}{2}+n,\,-2\,m,\,5+2\,(m+n),\,\frac{3}{2}+n,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]+$$

$$2\,\Big(2\,m\,\text{AppellF1}\Big[\frac{3}{2}+n,\,1-2\,m,\,5+2\,(m+n),\,\frac{5}{2}+n,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]+(5+2\,m+2\,n)$$

$$\text{AppellF1}\Big[\frac{3}{2}+n,\,-2\,m,\,2\,(3+m+n),\,\frac{5}{2}+n,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big)-$$

$$\Big(3\,\text{AppellF1}\Big[\frac{1}{2}+n,\,-2\,m,\,2\,(1+m+n),\,\frac{3}{2}+n,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]$$

$$\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]\,\Big(1+\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big)^2\Big)\Big/$$

$$\Big(2\,\Big(-(3+2\,n)\,\text{AppellF1}\Big[\frac{1}{2}+n,\,-2\,m,\,2\,(1+m+n),\,\frac{3}{2}+n,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]+$$

$$4\,\Big(m\,\text{AppellF1}\Big[\frac{3}{2}+n,\,1-2\,m,\,2\,(1+m+n),\,\frac{5}{2}+n,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]+(1+m+n)$$

$$\text{AppellF1}\Big[\frac{3}{2}+n,\,-2\,m,\,3+2\,(m+n),\,\frac{5}{2}+n,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big)\Big)-$$

$$\Big(\Big(-\frac{1}{\frac{3}{2}+n}m\,\Big(\frac{1}{2}+n\Big)\,\text{AppellF1}\Big[\frac{3}{2}+n,\,1-2\,m,\,2\,(1+m+n),\,\frac{5}{2}+n,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]$$

$$\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]-\frac{1}{\frac{3}{2}+n}\Big(\frac{1}{2}+n\Big)\,(1+m+n)$$

$$\text{AppellF1}\Big[\frac{3}{2}+n,\,-2\,m,\,1+2\,(1+m+n),\,\frac{5}{2}+n,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]$$

$$\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]\Big)\,\Big(1+\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big)^3\Big)\Big/$$

$$\Big(-(3+2\,n)\,\text{AppellF1}\Big[\frac{1}{2}+n,\,-2\,m,\,2\,(1+m+n),\,\frac{3}{2}+n,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]+$$

$$4\,\Big(m\,\text{AppellF1}\Big[\frac{3}{2}+n,\,1-2\,m,\,2\,(1+m+n),\,\frac{5}{2}+n,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]+(1+m+n)$$

$$\text{AppellF1}\Big[\frac{3}{2}+n,\ -2m,\ 3+2(m+n),\ \frac{5}{2}+n,\ \text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big]\Big)\ \text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big)-$$

$$\Big(4\,\text{AppellF1}\Big[\frac{1}{2}+n,\ -2m,\ 2(2+m+n),\ \frac{3}{2}+n,\ \text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big]\ \text{Sec}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\ \text{Tan}\Big[$$

$$\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]\Big)\Big/\ \Big(-(3+2n)\ \text{AppellF1}\Big[\frac{1}{2}+n,\ -2m,\ 2(2+m+n),\ \frac{3}{2}+n,\ \text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big]+$$

$$4\Big(m\,\text{AppellF1}\Big[\frac{3}{2}+n,\ 1-2m,\ 2(2+m+n),\ \frac{5}{2}+n,\ \text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big]+(2+m+n)$$

$$\text{AppellF1}\Big[\frac{3}{2}+n,\ -2m,\ 5+2(m+n),\ \frac{5}{2}+n,\ \text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big]\Big)\ \text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big)-$$

$$\Big(8\Big(-\frac{1}{\frac{3}{2}+n}m\left(\frac{1}{2}+n\right)\text{AppellF1}\Big[\frac{3}{2}+n,\ 1-2m,\ 2(2+m+n),\ \frac{5}{2}+n,\ \text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big]$$

$$\text{Sec}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\ \text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]-\frac{1}{\frac{3}{2}+n}\left(\frac{1}{2}+n\right)(2+m+n)$$

$$\text{AppellF1}\Big[\frac{3}{2}+n,\ -2m,\ 1+2(2+m+n),\ \frac{5}{2}+n,\ \text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big]$$

$$\text{Sec}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\ \text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]\Big)\ \Big(1+\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big)\Big)\Big/$$

$$\Big(-(3+2n)\ \text{AppellF1}\Big[\frac{1}{2}+n,\ -2m,\ 2(2+m+n),\ \frac{3}{2}+n,\ \text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big]+$$

$$4\Big(m\,\text{AppellF1}\Big[\frac{3}{2}+n,\ 1-2m,\ 2(2+m+n),\ \frac{5}{2}+n,\ \text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big]+(2+m+n)$$

$$\text{AppellF1}\Big[\frac{3}{2}+n,\ -2m,\ 5+2(m+n),\ \frac{5}{2}+n,\ \text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big]\Big)\ \text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big)+$$

$$\Big(\text{AppellF1}\Big[\frac{1}{2}+n,\ -2m,\ 2(1+m+n),\ \frac{3}{2}+n,\ \text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big]\ \Big(1+\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big)^3$$

$$\Big(2\Big(m\,\text{AppellF1}\Big[\frac{3}{2}+n,\ 1-2m,\ 2(1+m+n),\ \frac{5}{2}+n,\ \text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big]+(1+m+n)$$

$$\text{AppellF1}\Big[\frac{3}{2}+n,\ -2m,\ 3+2(m+n),\ \frac{5}{2}+n,\ \text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big]\Big)\ \text{Sec}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2$$

$$\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]-(3+2n)\ \Big(-\frac{1}{\frac{3}{2}+n}m\left(\frac{1}{2}+n\right)\text{AppellF1}\Big[\frac{3}{2}+n,\ 1-2m,\ 2(1+m+n),\ \frac{5}{2}+n,\ \text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2,$$

$$-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]\ \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-\frac{1}{\frac{3}{2}+n}\left(\frac{1}{2}+n\right)(1+m+n)\ \text{AppellF1}\Big[\frac{3}{2}+n,\ -2\,m,$$

$$1+2\,(1+m+n),\ \frac{5}{2}+n,\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]\ \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\Bigg)+$$

$$4\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Bigg(m\Bigg(-\frac{1}{\frac{5}{2}+n}\left(\frac{3}{2}+n\right)(1+m+n)\ \text{AppellF1}\Big[\frac{5}{2}+n,\ 1-2\,m,\ 1+2\,(1+m+n),\ \frac{7}{2}+n,$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]\ \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]+$$

$$\frac{1}{2\left(\frac{5}{2}+n\right)}(1-2\,m)\left(\frac{3}{2}+n\right)\text{AppellF1}\Big[\frac{5}{2}+n,\ 2-2\,m,\ 2\,(1+m+n),\ \frac{7}{2}+n,\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,$$

$$-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]\ \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\Bigg)+(1+m+n)$$

$$\Bigg(-\frac{1}{\frac{5}{2}+n}m\left(\frac{3}{2}+n\right)\text{AppellF1}\Big[\frac{5}{2}+n,\ 1-2\,m,\ 3+2\,(m+n),\ \frac{7}{2}+n,\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-\frac{1}{2\left(\frac{5}{2}+n\right)}\left(\frac{3}{2}+n\right)(3+2\,(m+n))\ \text{AppellF1}\Big[\frac{5}{2}+n,\ -2\,m,\ 4+2\,(m+n),$$

$$\frac{7}{2}+n,\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]\ \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\Bigg)\Bigg)\Bigg)\Bigg)\Bigg)\Big/$$

$$\Bigg(-(3+2\,n)\ \text{AppellF1}\Big[\frac{1}{2}+n,\ -2\,m,\ 2\,(1+m+n),\ \frac{3}{2}+n,\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]+$$

$$4\Bigg(m\,\text{AppellF1}\Big[\frac{3}{2}+n,\ 1-2\,m,\ 2\,(1+m+n),\ \frac{5}{2}+n,\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]+(1+m+n)$$

$$\text{AppellF1}\Big[\frac{3}{2}+n,\ -2\,m,\ 3+2\,(m+n),\ \frac{5}{2}+n,\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]\Bigg)\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Bigg)^2+$$

$$\Bigg(8\,\text{AppellF1}\Big[\frac{1}{2}+n,\ -2\,m,\ 2\,(2+m+n),\ \frac{3}{2}+n,\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)$$

$$\Bigg(2\Bigg(m\,\text{AppellF1}\Big[\frac{3}{2}+n,\ 1-2\,m,\ 2\,(2+m+n),\ \frac{5}{2}+n,\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]+(2+m+n)$$

$$\text{AppellF1}\Big[\frac{3}{2}+n,\ -2\,m,\ 5+2\,(m+n),\ \frac{5}{2}+n,\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]\Bigg)\ \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2$$

$$\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]-(3+2\,n)\,\Bigg(-\frac{1}{\frac{3}{2}+n}m\,\Big(\frac{1}{2}+n\Big)\,\text{AppellF1}\Big[\frac{3}{2}+n,\,1-2\,m,\,2\,(2+m+n),\,\frac{5}{2}+n,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,$$

$$-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]-\frac{1}{\frac{3}{2}+n}\Big(\frac{1}{2}+n\Big)\,(2+m+n)\,\text{AppellF1}\Big[\frac{3}{2}+n,\,-2\,m,$$

$$1+2\,(2+m+n),\,\frac{5}{2}+n,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\Bigg)+$$

$$4\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\,\Bigg(m\,\Bigg(-\frac{1}{\frac{5}{2}+n}\Big(\frac{3}{2}+n\Big)\,(2+m+n)\,\text{AppellF1}\Big[\frac{5}{2}+n,\,1-2\,m,\,1+2\,(2+m+n),\,\frac{7}{2}+n,$$

$$\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]+$$

$$\frac{1}{2\,\big(\frac{5}{2}+n\big)}(1-2\,m)\,\Big(\frac{3}{2}+n\Big)\,\text{AppellF1}\Big[\frac{5}{2}+n,\,2-2\,m,\,2\,(2+m+n),\,\frac{7}{2}+n,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,$$

$$-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\Bigg)+(2+m+n)$$

$$\Bigg(-\frac{1}{\frac{5}{2}+n}m\,\Big(\frac{3}{2}+n\Big)\,\text{AppellF1}\Big[\frac{5}{2}+n,\,1-2\,m,\,5+2\,(m+n),\,\frac{7}{2}+n,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]$$

$$\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]-\frac{1}{2\,\big(\frac{5}{2}+n\big)}\Big(\frac{3}{2}+n\Big)\,(5+2\,(m+n))\,\text{AppellF1}\Big[\frac{5}{2}+n,\,-2\,m,\,6+2\,(m+n),$$

$$\frac{7}{2}+n,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\Bigg)\Bigg)\Bigg)\Bigg)\Bigg)\Bigg/$$

$$\Bigg(-(3+2\,n)\,\text{AppellF1}\Big[\frac{1}{2}+n,\,-2\,m,\,2\,(2+m+n),\,\frac{3}{2}+n,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+$$

$$4\,\Bigg(m\,\text{AppellF1}\Big[\frac{3}{2}+n,\,1-2\,m,\,2\,(2+m+n),\,\frac{5}{2}+n,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+(2+m+n)$$

$$\text{AppellF1}\Big[\frac{3}{2}+n,\,-2\,m,\,5+2\,(m+n),\,\frac{5}{2}+n,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\Bigg)\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Bigg)^2-$$

$$\Bigg(5\,\text{AppellF1}\Big[\frac{1}{2}+n,\,-2\,m,\,3+2\,(m+n),\,\frac{3}{2}+n,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\,\Big(1+\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)^2$$

$$\Bigg(\Bigg(2\,m\,\text{AppellF1}\Big[\frac{3}{2}+n,\,1-2\,m,\,3+2\,(m+n),\,\frac{5}{2}+n,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+$$

$$(3+2m+2n)\,\text{AppellF1}\left[\frac{3}{2}+n,-2m,2(2+m+n),\frac{5}{2}+n,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\Bigg)$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]-(3+2n)\Bigg(-\frac{1}{\frac{3}{2}+n}m\left(\frac{1}{2}+n\right)\text{AppellF1}\left[\frac{3}{2}+n,1-2m,3+2(m+n),\right.$$

$$\frac{5}{2}+n,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\Bigg]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]-\frac{1}{2\left(\frac{3}{2}+n\right)}$$

$$\left(\frac{1}{2}+n\right)(3+2(m+n))\,\text{AppellF1}\left[\frac{3}{2}+n,-2m,4+2(m+n),\frac{5}{2}+n,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]\Bigg)+2\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\Bigg(2m\Bigg(-\frac{1}{2\left(\frac{5}{2}+n\right)}$$

$$\left(\frac{3}{2}+n\right)(3+2(m+n))\,\text{AppellF1}\left[\frac{5}{2}+n,1-2m,4+2(m+n),\frac{7}{2}+n,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]+\frac{1}{2\left(\frac{5}{2}+n\right)}(1-2m)\left(\frac{3}{2}+n\right)\text{AppellF1}\left[\frac{5}{2}+n,2-2m,3+2(m+n),\frac{7}{2}+\right.$$

$$n,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\Bigg]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]\Bigg)+(3+2m+2n)$$

$$\Bigg(-\frac{1}{\frac{5}{2}+n}m\left(\frac{3}{2}+n\right)\text{AppellF1}\left[\frac{5}{2}+n,1-2m,2(2+m+n),\frac{7}{2}+n,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]-\frac{1}{\frac{5}{2}+n}\left(\frac{3}{2}+n\right)(2+m+n)\,\text{AppellF1}\left[\frac{5}{2}+n,-2m,1+2(2+m+n),\right.$$

$$\frac{7}{2}+n,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\Bigg]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]\Bigg)\Bigg)\Bigg)\Bigg)\Bigg)\Bigg/$$

$$\Bigg(-(3+2n)\,\text{AppellF1}\left[\frac{1}{2}+n,-2m,3+2(m+n),\frac{3}{2}+n,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+$$

$$2\Bigg(2m\,\text{AppellF1}\left[\frac{3}{2}+n,1-2m,3+2(m+n),\frac{5}{2}+n,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+(3+2m+2n)$$

$$\text{AppellF1}\left[\frac{3}{2}+n,-2m,2(2+m+n),\frac{5}{2}+n,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\Bigg)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\Bigg)^2-$$

$$\Bigg(4\,\text{AppellF1}\left[\frac{1}{2}+n,-2m,5+2(m+n),\frac{3}{2}+n,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]$$

$$\Bigg(\Bigg(2\,m\,\text{AppellF1}\Big[\frac{3}{2}+n,\,1-2\,m,\,5+2\,(m+n),\,\frac{5}{2}+n,\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]+$$

$$(5+2\,m+2\,n)\,\text{AppellF1}\Big[\frac{3}{2}+n,\,-2\,m,\,2\,(3+m+n),\,\frac{5}{2}+n,\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]\Bigg)$$

$$\text{Sec}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]-(3+2\,n)\,\Bigg(-\frac{1}{\frac{3}{2}+n}m\left(\frac{1}{2}+n\right)\text{AppellF1}\Big[\frac{3}{2}+n,\,1-2\,m,\,5+2\,(m+n),$$

$$\frac{5}{2}+n,\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]-\frac{1}{2\left(\frac{3}{2}+n\right)}$$

$$\left(\frac{1}{2}+n\right)\,(5+2\,(m+n))\,\text{AppellF1}\Big[\frac{3}{2}+n,\,-2\,m,\,6+2\,(m+n),\,\frac{5}{2}+n,\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]$$

$$\text{Sec}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]\Bigg)+2\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\,\Bigg(2\,m\,\Bigg(-\frac{1}{2\left(\frac{5}{2}+n\right)}$$

$$\left(\frac{3}{2}+n\right)\,(5+2\,(m+n))\,\text{AppellF1}\Big[\frac{5}{2}+n,\,1-2\,m,\,6+2\,(m+n),\,\frac{7}{2}+n,\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]$$

$$\text{Sec}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]+\frac{1}{2\left(\frac{5}{2}+n\right)}(1-2\,m)\,\left(\frac{3}{2}+n\right)\text{AppellF1}\Big[\frac{5}{2}+n,\,2-2\,m,\,5+2\,(m+n),\,\frac{7}{2}+$$

$$n,\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]\Bigg)+(5+2\,m+2\,n)$$

$$\Bigg(-\frac{1}{\frac{5}{2}+n}m\left(\frac{3}{2}+n\right)\text{AppellF1}\Big[\frac{5}{2}+n,\,1-2\,m,\,2\,(3+m+n),\,\frac{7}{2}+n,\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]$$

$$\text{Sec}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]-\frac{1}{\frac{5}{2}+n}\left(\frac{3}{2}+n\right)\,(3+m+n)\,\text{AppellF1}\Big[\frac{5}{2}+n,\,-2\,m,\,1+2\,(3+m+n),$$

$$\frac{7}{2}+n,\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]\Bigg)\Bigg)\Bigg)\Bigg)\Bigg)\Bigg/$$

$$\Bigg(-(3+2\,n)\,\text{AppellF1}\Big[\frac{1}{2}+n,\,-2\,m,\,5+2\,(m+n),\,\frac{3}{2}+n,\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]+$$

$$2\,\Bigg(2\,m\,\text{AppellF1}\Big[\frac{3}{2}+n,\,1-2\,m,\,5+2\,(m+n),\,\frac{5}{2}+n,\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]+(5+2\,m+2\,n)\,\text{AppellF1}\Big[$$

$$\frac{3}{2}+n,\,-2\,m,\,2\,(3+m+n),\,\frac{5}{2}+n,\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]\Bigg)\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Bigg)^2\Bigg)\Bigg)\Bigg)\Bigg)$$

Problem 66: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \text{Cos}[e+f x]^2 (a+a \text{Sin}[e+f x])^m (c-c \text{Sin}[e+f x])^3 \, dx$$

Optimal (type 5, 86 leaves, 4 steps):

$$-\frac{1}{9 f} 2^{\frac{3}{2}+m} a^4 c^3 \text{Cos}[e+f x]^9 \text{Hypergeometric2F1}\left[\frac{9}{2}, -\frac{1}{2}-m, \frac{11}{2}, \frac{1}{2} (1-\text{Sin}[e+f x])\right] (1+\text{Sin}[e+f x])^{-\frac{1}{2}-m} (a+a \text{Sin}[e+f x])^{-4+m}$$

Result (type 6, 17 864 leaves):

$$-\left(\left(\left(\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{-2 m} (a+a \text{Sin}[e+f x])^m (c-c \text{Sin}[e+f x])^3\right.\right.\right.$$

$$\left(\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2 m} \text{Cos}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]^{10}-6 \text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2 m} \text{Cos}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]^9 \text{Sin}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]+\right.$$

$$13 \text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2 m} \text{Cos}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]^8 \text{Sin}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]^2-$$

$$8 \text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2 m} \text{Cos}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]^7 \text{Sin}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]^3-14 \text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2 m} \text{Cos}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]^6$$

$$\text{Sin}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]^4+28 \text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2 m} \text{Cos}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]^5 \text{Sin}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]^5-$$

$$14 \text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2 m} \text{Cos}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]^4 \text{Sin}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]^6-8 \text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2 m} \text{Cos}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]^3$$

$$\text{Sin}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]^7+13 \text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2 m} \text{Cos}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]^2 \text{Sin}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]^8-$$

$$\left.6 \text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2 m} \text{Cos}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right] \text{Sin}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]^9+\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2 m} \text{Sin}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]^{10}\right)$$

$$\left(\left(3 \text{AppellF1}\left[\frac{1}{2}, -2 (1+m), 7+2 m, \frac{3}{2}, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right] \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\right.\right.$$

$$\left.\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{2 (1+m)} \left(\frac{1}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}\right)^{7+2 m}\right) \Bigg/ \left(3 \text{AppellF1}\left[\frac{1}{2}, -2 (1+m), 7+2 m, \frac{3}{2}, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\right.\right.$$

$$\left.-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]-2 \left(2 (1+m) \text{AppellF1}\left[\frac{3}{2}, -1-2 m, 7+2 m, \frac{5}{2}, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$\left.\left.(7+2 m) \text{AppellF1}\left[\frac{3}{2}, -2 (1+m), 2 (4+m), \frac{5}{2}, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right) \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)+$$

$$\left(18 \text{AppellF1}\left[\frac{1}{2}, -2 (1+m), 9+2 m, \frac{3}{2}, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right] \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\right.$$

$$\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{2(1+m)}\left(\frac{1}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}\right)^{9+2m}\Bigg/$$

$$\Bigg(3\,\text{AppellF1}\left[\frac{1}{2},-2(1+m),9+2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]-$$

$$2\Bigg(2(1+m)\,\text{AppellF1}\left[\frac{3}{2},-1-2m,9+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$(9+2m)\,\text{AppellF1}\left[\frac{3}{2},-2(1+m),2(5+m),\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\Bigg)\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)+$$

$$\Bigg(3\,\text{AppellF1}\left[\frac{1}{2},-2(1+m),11+2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]$$

$$\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{2(1+m)}\left(\frac{1}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}\right)^{11+2m}\Bigg)\Bigg/$$

$$\Bigg(3\,\text{AppellF1}\left[\frac{1}{2},-2(1+m),11+2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]-$$

$$2\Bigg(2(1+m)\,\text{AppellF1}\left[\frac{3}{2},-1-2m,11+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$(11+2m)\,\text{AppellF1}\left[\frac{3}{2},-2(1+m),2(6+m),\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\Bigg)\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)-$$

$$\Bigg(12\,\text{AppellF1}\left[\frac{1}{2},-2(1+m),2(4+m),\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]$$

$$\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{2(1+m)}\left(\frac{1}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}\right)^{2m}\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{2m-2(4+m)}\Bigg)\Bigg/$$

$$\Bigg(3\,\text{AppellF1}\left[\frac{1}{2},-2(1+m),2(4+m),\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]-$$

$$4\Bigg((1+m)\,\text{AppellF1}\left[\frac{3}{2},-1-2m,8+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$(4+m)\,\text{AppellF1}\left[\frac{3}{2},-2(1+m),9+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\Bigg)\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)-$$

$$\Bigg(12\,\text{AppellF1}\left[\frac{1}{2},-2(1+m),2(5+m),\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]$$

$$\Big(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big)^{2(1+m)}\left(\frac{1}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}\right)^{2m}\Big(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big)^{2m-2(5+m)}\Big)\Big/$$

$$\Big(3\,\text{AppellF1}\left[\frac{1}{2},-2(1+m),2(5+m),\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]-$$

$$4\Big((1+m)\,\text{AppellF1}\left[\frac{3}{2},-1-2m,2(5+m),\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$(5+m)\,\text{AppellF1}\left[\frac{3}{2},-2(1+m),11+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\Big)\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big)\Big)\Big/$$

$$\Big(f\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^6\Big(\Big(\Big(3\,\text{AppellF1}\left[\frac{1}{2},-2(1+m),7+2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big)^{2(1+m)}\left(\frac{1}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}\right)^{7+2m}\Big)\Big/$$

$$\Big(4\Big(3\,\text{AppellF1}\left[\frac{1}{2},-2(1+m),7+2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]-$$

$$2\Big(2(1+m)\,\text{AppellF1}\left[\frac{3}{2},-1-2m,7+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+(7+2m)$$

$$\text{AppellF1}\left[\frac{3}{2},-2(1+m),2(4+m),\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\Big)\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big)\Big)+$$

$$\Big(3\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\Big(-\frac{1}{6}(7+2m)\,\text{AppellF1}\left[\frac{3}{2},-2(1+m),8+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{1}{3}(1+m)\,\text{AppellF1}\left[\frac{3}{2},1-2(1+m),7+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\right.$$

$$\left.-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\Big)\Big(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big)^{2(1+m)}$$

$$\left(\frac{1}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}\right)^{7+2m}\Big)\Big/\Big(3\,\text{AppellF1}\left[\frac{1}{2},-2(1+m),7+2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]-$$

$$2\Big(2(1+m)\,\text{AppellF1}\left[\frac{3}{2},-1-2m,7+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$(7+2m)\,\text{AppellF1}\left[\frac{3}{2},-2(1+m),2(4+m),\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\Big)\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big)-$$

$$\Bigg(3\,(1+m)\,\text{AppellF1}\left[\frac{1}{2},\,-2\,(1+m),\,7+2\,m,\,\frac{3}{2},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{-1+2\,(1+m)}\left(\frac{1}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}\right)^{7+2\,m}\Bigg)\Big/$$

$$\Bigg(3\,\text{AppellF1}\left[\frac{1}{2},\,-2\,(1+m),\,7+2\,m,\,\frac{3}{2},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]-$$

$$2\,\Bigg(2\,(1+m)\,\text{AppellF1}\left[\frac{3}{2},\,-1-2\,m,\,7+2\,m,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+$$

$$(7+2\,m)\,\text{AppellF1}\left[\frac{3}{2},\,-2\,(1+m),\,2\,(4+m),\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\Bigg)\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Bigg)-$$

$$\Bigg(3\,(7+2\,m)\,\text{AppellF1}\left[\frac{1}{2},\,-2\,(1+m),\,7+2\,m,\,\frac{3}{2},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{2\,(1+m)}\left(\frac{1}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}\right)^{8+2\,m}\Bigg)\Big/$$

$$\Bigg(2\,\Bigg(3\,\text{AppellF1}\left[\frac{1}{2},\,-2\,(1+m),\,7+2\,m,\,\frac{3}{2},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]-$$

$$2\,\Bigg(2\,(1+m)\,\text{AppellF1}\left[\frac{3}{2},\,-1-2\,m,\,7+2\,m,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+(7+2\,m)$$

$$\text{AppellF1}\left[\frac{3}{2},\,-2\,(1+m),\,2\,(4+m),\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\Bigg)\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Bigg)\Bigg)+$$

$$\Bigg(9\,\text{AppellF1}\left[\frac{1}{2},\,-2\,(1+m),\,9+2\,m,\,\frac{3}{2},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2$$

$$\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{2\,(1+m)}\left(\frac{1}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}\right)^{9+2\,m}\Bigg)\Big/$$

$$\Bigg(2\,\Bigg(3\,\text{AppellF1}\left[\frac{1}{2},\,-2\,(1+m),\,9+2\,m,\,\frac{3}{2},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]-$$

$$2\,\Bigg(2\,(1+m)\,\text{AppellF1}\left[\frac{3}{2},\,-1-2\,m,\,9+2\,m,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+(9+2\,m)$$

$$\text{AppellF1}\left[\frac{3}{2},\,-2\,(1+m),\,2\,(5+m),\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\Bigg)\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Bigg)\Bigg)+$$

$$\left(18\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\left(-\frac{1}{6}(9+2m)\,\text{AppellF1}\left[\frac{3}{2},-2(1+m),10+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right.\right.$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{1}{3}(1+m)\,\text{AppellF1}\left[\frac{3}{2},1-2(1+m),9+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\right.$$

$$\left.\left.-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{2(1+m)}$$

$$\left.\left(\frac{1}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}\right)^{9+2m}\right)\Bigg/\left(3\,\text{AppellF1}\left[\frac{1}{2},-2(1+m),9+2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]-\right.$$

$$2\left(2(1+m)\,\text{AppellF1}\left[\frac{3}{2},-1-2m,9+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$\left.\left.(9+2m)\,\text{AppellF1}\left[\frac{3}{2},-2(1+m),2(5+m),\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)-$$

$$\left(18(1+m)\,\text{AppellF1}\left[\frac{1}{2},-2(1+m),9+2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right.$$

$$\left.\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{-1+2(1+m)}\left(\frac{1}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}\right)^{9+2m}\right)\Bigg/$$

$$\left(3\,\text{AppellF1}\left[\frac{1}{2},-2(1+m),9+2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]-\right.$$

$$2\left(2(1+m)\,\text{AppellF1}\left[\frac{3}{2},-1-2m,9+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$\left.\left.(9+2m)\,\text{AppellF1}\left[\frac{3}{2},-2(1+m),2(5+m),\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)-$$

$$\left(9(9+2m)\,\text{AppellF1}\left[\frac{1}{2},-2(1+m),9+2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right.$$

$$\left.\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{2(1+m)}\left(\frac{1}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}\right)^{10+2m}\right)\Bigg/$$

$$\left(3\,\text{AppellF1}\left[\frac{1}{2},-2(1+m),9+2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]-\right.$$

$$2\left(2(1+m)\,\text{AppellF1}\left[\frac{3}{2},-1-2m,9+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$(9+2m)\,\text{AppellF1}\left[\frac{3}{2},-2(1+m),2(5+m),\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)+$$

$$\left(3\,\text{AppellF1}\left[\frac{1}{2},-2(1+m),11+2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right.$$

$$\left.\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)^{2(1+m)}\left(\frac{1}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2}\right)^{11+2m}\right)\Big/$$

$$\left(4\left(3\,\text{AppellF1}\left[\frac{1}{2},-2(1+m),11+2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]-\right.\right.$$

$$2\left(2(1+m)\,\text{AppellF1}\left[\frac{3}{2},-1-2m,11+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+(11+2m)\right.$$

$$\left.\left.\text{AppellF1}\left[\frac{3}{2},-2(1+m),2(6+m),\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)+$$

$$\left(3\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]\left(-\frac{1}{6}(11+2m)\,\text{AppellF1}\left[\frac{3}{2},-2(1+m),12+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right.\right.$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]-\frac{1}{3}(1+m)\,\text{AppellF1}\left[\frac{3}{2},1-2(1+m),11+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,\right.$$

$$\left.\left.-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]\right)\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)^{2(1+m)}$$

$$\left.\left(\frac{1}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2}\right)^{11+2m}\right)\Big/\left(3\,\text{AppellF1}\left[\frac{1}{2},-2(1+m),11+2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]-\right.$$

$$2\left(2(1+m)\,\text{AppellF1}\left[\frac{3}{2},-1-2m,11+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+\right.$$

$$\left.\left.(11+2m)\,\text{AppellF1}\left[\frac{3}{2},-2(1+m),2(6+m),\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)-$$

$$\left(3(1+m)\,\text{AppellF1}\left[\frac{1}{2},-2(1+m),11+2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right.$$

$$\left.\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)^{-1+2(1+m)}\left(\frac{1}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2}\right)^{11+2m}\right)\Big/$$

$$\left(3\,\text{AppellF1}\left[\frac{1}{2},-2(1+m),11+2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]-\right.$$

$$2\,\Big(2\,(1+m)\,\text{AppellF1}\Big[\frac{3}{2},\,-1-2\,m,\,11+2\,m,\,\frac{5}{2},\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\,+$$

$$(11+2\,m)\,\text{AppellF1}\Big[\frac{3}{2},\,-2\,(1+m),\,2\,(6+m),\,\frac{5}{2},\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)\,-$$

$$\Big(3\,(11+2\,m)\,\text{AppellF1}\Big[\frac{1}{2},\,-2\,(1+m),\,11+2\,m,\,\frac{3}{2},\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2$$

$$\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\,\Big(1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)^{2\,(1+m)}\,\left(\frac{1}{1+\text{Tan}\big[\frac{1}{4}\big(-e+\frac{\pi}{2}-f\,x\big)\big]^2}\right)^{12+2\,m}\Big)\Big/$$

$$\Big(2\,\Big(3\,\text{AppellF1}\Big[\frac{1}{2},\,-2\,(1+m),\,11+2\,m,\,\frac{3}{2},\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\,-$$

$$2\,\Big(2\,(1+m)\,\text{AppellF1}\Big[\frac{3}{2},\,-1-2\,m,\,11+2\,m,\,\frac{5}{2},\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\,+\,(11+2\,m)$$

$$\text{AppellF1}\Big[\frac{3}{2},\,-2\,(1+m),\,2\,(6+m),\,\frac{5}{2},\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)\Big)\,+$$

$$\Big(12\,m\,\text{AppellF1}\Big[\frac{1}{2},\,-2\,(1+m),\,2\,(4+m),\,\frac{3}{2},\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2$$

$$\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\,\Big(1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)^{2\,(1+m)}\,\left(\frac{1}{1+\text{Tan}\big[\frac{1}{4}\big(-e+\frac{\pi}{2}-f\,x\big)\big]^2}\right)^{2\,m}\,\Big(1+\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)^{-1+2\,m-2\,(4+m)}\Big)\Big/$$

$$\Big(3\,\text{AppellF1}\Big[\frac{1}{2},\,-2\,(1+m),\,2\,(4+m),\,\frac{3}{2},\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\,-$$

$$4\,\Big((1+m)\,\text{AppellF1}\Big[\frac{3}{2},\,-1-2\,m,\,8+2\,m,\,\frac{5}{2},\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\,+$$

$$(4+m)\,\text{AppellF1}\Big[\frac{3}{2},\,-2\,(1+m),\,9+2\,m,\,\frac{5}{2},\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)\,-$$

$$\Big(6\,(2\,m-2\,(4+m))\,\text{AppellF1}\Big[\frac{1}{2},\,-2\,(1+m),\,2\,(4+m),\,\frac{3}{2},\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2$$

$$\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\,\Big(1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)^{2\,(1+m)}\,\left(\frac{1}{1+\text{Tan}\big[\frac{1}{4}\big(-e+\frac{\pi}{2}-f\,x\big)\big]^2}\right)^{2\,m}\,\Big(1+\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)^{-1+2\,m-2\,(4+m)}\Big)\Big/$$

$$\Big(3\,\text{AppellF1}\Big[\frac{1}{2},\,-2\,(1+m),\,2\,(4+m),\,\frac{3}{2},\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\,-$$

$$4\left((1+m)\,\text{AppellF1}\left[\frac{3}{2},-1-2m,8+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$\left.(4+m)\,\text{AppellF1}\left[\frac{3}{2},-2(1+m),9+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)-$$

$$\Bigg(3\,\text{AppellF1}\left[\frac{1}{2},-2(1+m),2(4+m),\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2$$

$$\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{2(1+m)}\left(\frac{1}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}\right)^{2m}\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{2m-2(4+m)}\Bigg)\Big/$$

$$\Bigg(3\,\text{AppellF1}\left[\frac{1}{2},-2(1+m),2(4+m),\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]-$$

$$4\left((1+m)\,\text{AppellF1}\left[\frac{3}{2},-1-2m,8+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$\left.(4+m)\,\text{AppellF1}\left[\frac{3}{2},-2(1+m),9+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)-$$

$$\Bigg(12\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\left(-\frac{1}{3}(4+m)\,\text{AppellF1}\left[\frac{3}{2},-2(1+m),1+2(4+m),\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right.$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{1}{3}(1+m)\,\text{AppellF1}\left[\frac{3}{2},1-2(1+m),2(4+m),\frac{5}{2},\right.$$

$$\left.\left.\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)$$

$$\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{2(1+m)}\left(\frac{1}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}\right)^{2m}\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{2m-2(4+m)}\Bigg)\Big/$$

$$\Bigg(3\,\text{AppellF1}\left[\frac{1}{2},-2(1+m),2(4+m),\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]-$$

$$4\left((1+m)\,\text{AppellF1}\left[\frac{3}{2},-1-2m,8+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$\left.(4+m)\,\text{AppellF1}\left[\frac{3}{2},-2(1+m),9+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)+$$

$$\Bigg(12(1+m)\,\text{AppellF1}\left[\frac{1}{2},-2(1+m),2(4+m),\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2$$

$$\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\left(1-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{-1+2\,(1+m)}\left(\frac{1}{1+\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}\right)^{2\,m}\left(1+\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{2\,m-2\,(4+m)}\Bigg/$$

$$\Bigg(3\,\mathrm{AppellF1}\left[\frac{1}{2},-2\,(1+m),2\,(4+m),\frac{3}{2},\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]-$$

$$4\left((1+m)\,\mathrm{AppellF1}\left[\frac{3}{2},-1-2\,m,8+2\,m,\frac{5}{2},\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.$$

$$\left.(4+m)\,\mathrm{AppellF1}\left[\frac{3}{2},-2\,(1+m),9+2\,m,\frac{5}{2},\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Bigg)+$$

$$\Bigg(12\,m\,\mathrm{AppellF1}\left[\frac{1}{2},-2\,(1+m),2\,(5+m),\frac{3}{2},\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\mathrm{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2$$

$$\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\left(1-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{2\,(1+m)}\left(\frac{1}{1+\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}\right)^{2\,m}\left(1+\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{-1+2\,m-2\,(5+m)}\Bigg)\Bigg/$$

$$\Bigg(3\,\mathrm{AppellF1}\left[\frac{1}{2},-2\,(1+m),2\,(5+m),\frac{3}{2},\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]-$$

$$4\left((1+m)\,\mathrm{AppellF1}\left[\frac{3}{2},-1-2\,m,2\,(5+m),\frac{5}{2},\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.$$

$$\left.(5+m)\,\mathrm{AppellF1}\left[\frac{3}{2},-2\,(1+m),11+2\,m,\frac{5}{2},\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Bigg)-$$

$$\Bigg(6\,(2\,m-2\,(5+m))\,\mathrm{AppellF1}\left[\frac{1}{2},-2\,(1+m),2\,(5+m),\frac{3}{2},\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\mathrm{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2$$

$$\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\left(1-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{2\,(1+m)}\left(\frac{1}{1+\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}\right)^{2\,m}\left(1+\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{-1+2\,m-2\,(5+m)}\Bigg)\Bigg/$$

$$\Bigg(3\,\mathrm{AppellF1}\left[\frac{1}{2},-2\,(1+m),2\,(5+m),\frac{3}{2},\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]-$$

$$4\left((1+m)\,\mathrm{AppellF1}\left[\frac{3}{2},-1-2\,m,2\,(5+m),\frac{5}{2},\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.$$

$$\left.(5+m)\,\mathrm{AppellF1}\left[\frac{3}{2},-2\,(1+m),11+2\,m,\frac{5}{2},\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Bigg)-$$

$$\Bigg(3\,\mathrm{AppellF1}\left[\frac{1}{2},-2\,(1+m),2\,(5+m),\frac{3}{2},\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\mathrm{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2$$

$$\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{2(1+m)}\left(\frac{1}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}\right)^{2m}\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{2m-2(5+m)}\Bigg)\Bigg/$$

$$\Bigg(3\,\text{AppellF1}\left[\frac{1}{2},-2(1+m),2(5+m),\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]-$$

$$4\Bigg((1+m)\,\text{AppellF1}\left[\frac{3}{2},-1-2m,2(5+m),\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$(5+m)\,\text{AppellF1}\left[\frac{3}{2},-2(1+m),11+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\Bigg)\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)-$$

$$\Bigg(12\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\Bigg(-\frac{1}{3}(5+m)\,\text{AppellF1}\left[\frac{3}{2},-2(1+m),1+2(5+m),\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{1}{3}(1+m)\,\text{AppellF1}\left[\frac{3}{2},1-2(1+m),2(5+m),\frac{5}{2},\right.$$

$$\left.\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\Bigg)$$

$$\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{2(1+m)}\left(\frac{1}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}\right)^{2m}\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{2m-2(5+m)}\Bigg)\Bigg/$$

$$\Bigg(3\,\text{AppellF1}\left[\frac{1}{2},-2(1+m),2(5+m),\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]-$$

$$4\Bigg((1+m)\,\text{AppellF1}\left[\frac{3}{2},-1-2m,2(5+m),\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$(5+m)\,\text{AppellF1}\left[\frac{3}{2},-2(1+m),11+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\Bigg)\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)+$$

$$\Bigg(12(1+m)\,\text{AppellF1}\left[\frac{1}{2},-2(1+m),2(5+m),\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{-1+2(1+m)}\left(\frac{1}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}\right)^{2m}\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{2m-2(5+m)}\Bigg)\Bigg/$$

$$\Bigg(3\,\text{AppellF1}\left[\frac{1}{2},-2(1+m),2(5+m),\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]-$$

$$4\Bigg((1+m)\,\text{AppellF1}\left[\frac{3}{2},-1-2m,2(5+m),\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$(5+m)\,\text{AppellF1}\left[\frac{3}{2},-2(1+m),11+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\Bigg)-$$

$$\Bigg(3\,\text{AppellF1}\left[\frac{1}{2},-2(1+m),7+2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]$$

$$\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)^{2(1+m)}\left(\frac{1}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2}\right)^{7+2m}$$

$$\Bigg(-\Bigg(2(1+m)\,\text{AppellF1}\left[\frac{3}{2},-1-2m,7+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+(7+2m)\,\text{AppellF1}\left[\frac{3}{2},-2(1+m),\right.$$

$$\left.2(4+m),\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\Bigg)\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]+$$

$$3\Bigg(-\frac{1}{6}(7+2m)\,\text{AppellF1}\left[\frac{3}{2},-2(1+m),8+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]-\frac{1}{3}(1+m)\,\text{AppellF1}\left[\frac{3}{2},1-2(1+m),7+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]\Bigg)-2\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\Bigg(2(1+m)\Bigg(-\frac{3}{10}(7+2m)\,\text{AppellF1}\left[\frac{5}{2},-1-2m,\right.$$

$$\left.8+2m,\frac{7}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]+$$

$$\frac{3}{10}(-1-2m)\,\text{AppellF1}\left[\frac{5}{2},-2m,7+2m,\frac{7}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]\Bigg)+(7+2m)\Bigg(-\frac{3}{5}(4+m)\,\text{AppellF1}\left[\frac{5}{2},-2(1+m),1+2(4+m),\frac{7}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,\right.$$

$$\left.-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]-\frac{3}{5}(1+m)\,\text{AppellF1}\left[\frac{5}{2},1-2(1+m),\right.$$

$$\left.2(4+m),\frac{7}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]\Bigg)\Bigg)\Bigg)\Bigg)\Bigg/$$

$$\Bigg(3\,\text{AppellF1}\left[\frac{1}{2},-2(1+m),7+2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]-$$

$$2\Bigg(2(1+m)\,\text{AppellF1}\left[\frac{3}{2},-1-2m,7+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+(7+2m)$$

$$\left.\text{AppellF1}\left[\frac{3}{2},-2(1+m),2(4+m),\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\Bigg)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)^2-$$

$$\left(18\,\text{AppellF1}\left[\frac{1}{2},-2\,(1+m),9+2\,m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\right.$$

$$\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{2\,(1+m)}\left(\frac{1}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}\right)^{9+2\,m}$$

$$\left(-\left(2\,(1+m)\,\text{AppellF1}\left[\frac{3}{2},-1-2\,m,9+2\,m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+(9+2\,m)\,\text{AppellF1}\left[\frac{3}{2},-2\,(1+m),\right.\right.\right.$$

$$\left.\left.2\,(5+m),\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]+$$

$$3\left(-\frac{1}{6}\,(9+2\,m)\,\text{AppellF1}\left[\frac{3}{2},-2\,(1+m),10+2\,m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right.$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-\frac{1}{3}\,(1+m)\,\text{AppellF1}\left[\frac{3}{2},1-2\,(1+m),9+2\,m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]$$

$$\left.\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\right)-2\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\left(2\,(1+m)\left(-\frac{3}{10}\,(9+2\,m)\,\text{AppellF1}\left[\frac{5}{2},-1-2\,m,\right.\right.\right.$$

$$10+2\,m,\frac{7}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]+$$

$$\frac{3}{10}\,(-1-2\,m)\,\text{AppellF1}\left[\frac{5}{2},-2\,m,9+2\,m,\frac{7}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2$$

$$\left.\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\right)+(9+2\,m)\left(-\frac{3}{5}\,(5+m)\,\text{AppellF1}\left[\frac{5}{2},-2\,(1+m),1+2\,(5+m),\frac{7}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\right.\right.$$

$$-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-\frac{3}{5}\,(1+m)\,\text{AppellF1}\left[\frac{5}{2},1-2\,(1+m),\right.$$

$$\left.\left.\left.\left.\left.2\,(5+m),\frac{7}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\right)\right)\right)\right)\Big/$$

$$\left(3\,\text{AppellF1}\left[\frac{1}{2},-2\,(1+m),9+2\,m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]-\right.$$

$$2\left(2\,(1+m)\,\text{AppellF1}\left[\frac{3}{2},-1-2\,m,9+2\,m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+(9+2\,m)\right.$$

$$\left.\left.\text{AppellF1}\left[\frac{3}{2},-2\,(1+m),2\,(5+m),\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^2-$$

$$\left(3\,\text{AppellF1}\left[\frac{1}{2},-2\,(1+m),11+2\,m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\right.$$

$$\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{2(1+m)}\left(\frac{1}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}\right)^{11+2m}$$

$$\Bigg(-\Bigg(2(1+m)\,\text{AppellF1}\left[\frac{3}{2},-1-2m,11+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+(11+2m)\,\text{AppellF1}\Big[\frac{3}{2},-2(1+m),$$

$$2(6+m),\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\Bigg)\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]+$$

$$3\Bigg(-\frac{1}{6}(11+2m)\,\text{AppellF1}\left[\frac{3}{2},-2(1+m),12+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{1}{3}(1+m)\,\text{AppellF1}\left[\frac{3}{2},1-2(1+m),11+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\Bigg)-2\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg(2(1+m)\Bigg(-\frac{3}{10}(11+2m)\,\text{AppellF1}\Big[\frac{5}{2},-1-2m,$$

$$12+2m,\frac{7}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]+$$

$$\frac{3}{10}(-1-2m)\,\text{AppellF1}\left[\frac{5}{2},-2m,11+2m,\frac{7}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\Bigg)+(11+2m)\Bigg(-\frac{3}{5}(6+m)\,\text{AppellF1}\Big[\frac{5}{2},-2(1+m),1+2(6+m),\frac{7}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,$$

$$-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{3}{5}(1+m)\,\text{AppellF1}\Big[\frac{5}{2},1-2(1+m),$$

$$2(6+m),\frac{7}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\Bigg)\Bigg)\Bigg)\Bigg/$$

$$\Bigg(3\,\text{AppellF1}\left[\frac{1}{2},-2(1+m),11+2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]-$$

$$2\Bigg(2(1+m)\,\text{AppellF1}\left[\frac{3}{2},-1-2m,11+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+(11+2m)$$

$$\text{AppellF1}\left[\frac{3}{2},-2(1+m),2(6+m),\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\Bigg)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)^2+$$

$$\Bigg(12\,\text{AppellF1}\left[\frac{1}{2},-2(1+m),2(4+m),\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]$$

$$\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{2(1+m)}\left(\frac{1}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}\right)^{2m}\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{2m-2(4+m)}$$

$$\Big(-2\Big((1+m)\,\text{AppellF1}\Big[\frac{3}{2},-1-2m,8+2m,\frac{5}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]+(4+m)\,\text{AppellF1}\Big[\frac{3}{2},-2(1+m),$$

$$9+2m,\frac{5}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\Big)\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]+$$

$$3\Big(-\frac{1}{3}(4+m)\,\text{AppellF1}\Big[\frac{3}{2},-2(1+m),1+2(4+m),\frac{5}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2$$

$$\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]-\frac{1}{3}(1+m)\,\text{AppellF1}\Big[\frac{3}{2},1-2(1+m),2(4+m),\frac{5}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]$$

$$\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]\Big)-4\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big((1+m)\Big(-\frac{3}{10}(8+2m)\,\text{AppellF1}\Big[\frac{5}{2},-1-2m,$$

$$9+2m,\frac{7}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]+$$

$$\frac{3}{10}(-1-2m)\,\text{AppellF1}\Big[\frac{5}{2},-2m,8+2m,\frac{7}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2$$

$$\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]\Big)+(4+m)\Big(-\frac{3}{10}(9+2m)\,\text{AppellF1}\Big[\frac{5}{2},-2(1+m),10+2m,\frac{7}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,$$

$$-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]-\frac{3}{5}(1+m)\,\text{AppellF1}\Big[\frac{5}{2},1-2(1+m),$$

$$9+2m,\frac{7}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]\Big)\Big)\Big)\Big)\Big/$$

$$\Big(3\,\text{AppellF1}\Big[\frac{1}{2},-2(1+m),2(4+m),\frac{3}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]-$$

$$4\Big((1+m)\,\text{AppellF1}\Big[\frac{3}{2},-1-2m,8+2m,\frac{5}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]+(4+m)$$

$$\text{AppellF1}\Big[\frac{3}{2},-2(1+m),9+2m,\frac{5}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big)^2+$$

$$\Big(12\,\text{AppellF1}\Big[\frac{1}{2},-2(1+m),2(5+m),\frac{3}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]$$

$$\Big(1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big)^{2(1+m)}\Big(\frac{1}{1+\text{Tan}\big[\frac{1}{4}\big(-e+\frac{\pi}{2}-f x\big)\big]^2}\Big)^{2m}\Big(1+\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big)^{2m-2(5+m)}$$

$$\Big(-2\Big((1+m)\,\text{AppellF1}\Big[\frac{3}{2},-1-2m,2(5+m),\frac{5}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]+(5+m)\,\text{AppellF1}\Big[\frac{3}{2},$$

$$-2(1+m),11+2m,\frac{5}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\Big)\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]+$$

$$3\left(-\frac{1}{3}(5+m)\,\text{AppellF1}\left[\frac{3}{2},-2(1+m),1+2(5+m),\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right.$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{1}{3}(1+m)\,\text{AppellF1}\left[\frac{3}{2},1-2(1+m),2(5+m),\frac{5}{2},\right.$$

$$\left.\left.\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)-$$

$$4\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\left((1+m)\left(-\frac{3}{5}(5+m)\,\text{AppellF1}\left[\frac{5}{2},-1-2m,1+2(5+m),\frac{7}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\right.\right.\right.$$

$$\left.-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]+\frac{3}{10}(-1-2m)\,\text{AppellF1}\left[\frac{5}{2},-2m,2(5+m),\right.$$

$$\left.\left.\frac{7}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)+(5+m)$$

$$\left(-\frac{3}{10}(11+2m)\,\text{AppellF1}\left[\frac{5}{2},-2(1+m),12+2m,\frac{7}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right.$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{3}{5}(1+m)\,\text{AppellF1}\left[\frac{5}{2},1-2(1+m),11+2m,\frac{7}{2},\right.$$

$$\left.\left.\left.\left.\left.\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)\right)\right)\right)\Big/$$

$$\left(3\,\text{AppellF1}\left[\frac{1}{2},-2(1+m),2(5+m),\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]-\right.$$

$$4\left((1+m)\,\text{AppellF1}\left[\frac{3}{2},-1-2m,2(5+m),\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+(5+m)\right.$$

$$\left.\left.\left.\left.\text{AppellF1}\left[\frac{3}{2},-2(1+m),11+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^2\right)\right)\right)$$

- **Problem 67: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int \text{Cos}[e+f x]^2\,(a+a\,\text{Sin}[e+f x])^m\,(c-c\,\text{Sin}[e+f x])^2\,dx$$

Optimal (type 5, 86 leaves, 4 steps):

$$-\frac{1}{7 f}2^{\frac{3}{2}+m}a^3c^2\,\text{Cos}[e+f x]^7\,\text{Hypergeometric2F1}\left[\frac{7}{2},-\frac{1}{2}-m,\frac{9}{2},\frac{1}{2}(1-\text{Sin}[e+f x])\right](1+\text{Sin}[e+f x])^{-\frac{1}{2}-m}(a+a\,\text{Sin}[e+f x])^{-3+m}$$

Result (type 6, 13077 leaves):

$$-\left(\left(12288\,c^2\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{-2m}(a+a\,\text{Sin}[e+f x])^m\right.\right.$$

$$\left(\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2m}\text{Cos}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]^{8}-4\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2m}\text{Cos}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]^{7}\text{Sin}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]+\right.$$

$$4\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2m}\text{Cos}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]^{6}\text{Sin}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]^{2}+4\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2m}\text{Cos}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]^{5}$$

$$\text{Sin}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]^{3}-10\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2m}\text{Cos}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]^{4}\text{Sin}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]^{4}+4\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2m}$$

$$\text{Cos}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]^{3}\text{Sin}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]^{5}+4\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2m}\text{Cos}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]^{2}\text{Sin}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]^{6}-$$

$$\left.4\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2m}\text{Cos}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]\text{Sin}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]^{7}+\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2m}\text{Sin}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]^{8}\right)$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2}\right)^{2(1+m)}\left(\frac{1}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2}}\right)^{9+2m}$$

$$\left(\left(3\,\text{AppellF1}\left[\frac{1}{2},-2(1+m),7+2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2},-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2}\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2}\right)^{2}\right)\right/$$

$$\left(-3\,\text{AppellF1}\left[\frac{1}{2},-2(1+m),7+2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2},-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2}\right]+\right.$$

$$2\left(2(1+m)\,\text{AppellF1}\left[\frac{3}{2},-1-2m,7+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2},-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2}\right]+\right.$$

$$\left.\left.(7+2m)\,\text{AppellF1}\left[\frac{3}{2},-2(1+m),2(4+m),\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2},-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2}\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2}\right)-$$

$$\text{AppellF1}\left[\frac{1}{2},-2(1+m),9+2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2},-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2}\right]\Big/$$

$$\left(3\,\text{AppellF1}\left[\frac{1}{2},-2(1+m),9+2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2},-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2}\right]-\right.$$

$$2\left(2(1+m)\,\text{AppellF1}\left[\frac{3}{2},-1-2m,9+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2},-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2}\right]+\right.$$

$$\left.\left.(9+2m)\,\text{AppellF1}\left[\frac{3}{2},-2(1+m),2(5+m),\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2},-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2}\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2}\right)+$$

$$\left(\text{AppellF1}\left[\frac{1}{2},-2(1+m),2(3+m),\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2},-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2}\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2}\right)^{3}\right)\Big/$$

$$\left(3\,\text{AppellF1}\left[\frac{1}{2},-2(1+m),2(3+m),\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2},-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2}\right]-\right.$$

$$4\left((1+m)\,\text{AppellF1}\left[\frac{3}{2},-1-2m,6+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2},-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2}\right]+\right.$$

$$(3+m)\,\text{AppellF1}\left[\frac{3}{2},\,-2\,(1+m),\,7+2\,m,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\Big)\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big)\,+$$

$$\Big(3\,\text{AppellF1}\left[\frac{1}{2},\,-2\,(1+m),\,2\,(4+m),\,\frac{3}{2},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\Big)\Big/$$

$$\Big(3\,\text{AppellF1}\left[\frac{1}{2},\,-2\,(1+m),\,2\,(4+m),\,\frac{3}{2},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]-$$

$$4\,\Big((1+m)\,\text{AppellF1}\left[\frac{3}{2},\,-1-2\,m,\,8+2\,m,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+$$

$$(4+m)\,\text{AppellF1}\left[\frac{3}{2},\,-2\,(1+m),\,9+2\,m,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\Big)\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big)\Big)\Big)\Big/$$

$$\Big(f\,\Big(3072\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{2\,(1+m)}\left(\frac{1}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}\right)^{9+2\,m}$$

$$\Big(\Big(3\,\text{AppellF1}\left[\frac{1}{2},\,-2\,(1+m),\,7+2\,m,\,\frac{3}{2},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^2\Big)\Big/$$

$$\Big(-3\,\text{AppellF1}\left[\frac{1}{2},\,-2\,(1+m),\,7+2\,m,\,\frac{3}{2},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+$$

$$2\,\Big(2\,(1+m)\,\text{AppellF1}\left[\frac{3}{2},\,-1-2\,m,\,7+2\,m,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+$$

$$(7+2\,m)\,\text{AppellF1}\left[\frac{3}{2},\,-2\,(1+m),\,2\,(4+m),\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\Big)\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big)-$$

$$\text{AppellF1}\left[\frac{1}{2},\,-2\,(1+m),\,9+2\,m,\,\frac{3}{2},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\Big/$$

$$\Big(3\,\text{AppellF1}\left[\frac{1}{2},\,-2\,(1+m),\,9+2\,m,\,\frac{3}{2},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]-$$

$$2\,\Big(2\,(1+m)\,\text{AppellF1}\left[\frac{3}{2},\,-1-2\,m,\,9+2\,m,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+$$

$$(9+2\,m)\,\text{AppellF1}\left[\frac{3}{2},\,-2\,(1+m),\,2\,(5+m),\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\Big)\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big)+$$

$$\Big(\text{AppellF1}\left[\frac{1}{2},\,-2\,(1+m),\,2\,(3+m),\,\frac{3}{2},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^3\Big)\Big/$$

$$\Big(3\,\text{AppellF1}\left[\frac{1}{2},\,-2\,(1+m),\,2\,(3+m),\,\frac{3}{2},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]-$$

$$4\,\Big((1+m)\,\text{AppellF1}\left[\frac{3}{2},\,-1-2\,m,\,6+2\,m,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+$$

$$(3+m)\,\text{AppellF1}\left[\frac{3}{2},-2(1+m),7+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)+$$

$$\Bigg(3\,\text{AppellF1}\left[\frac{1}{2},-2(1+m),2(4+m),\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\Bigg)\Big/$$

$$\Bigg(3\,\text{AppellF1}\left[\frac{1}{2},-2(1+m),2(4+m),\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]-$$

$$4\Bigg((1+m)\,\text{AppellF1}\left[\frac{3}{2},-1-2m,8+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$(4+m)\,\text{AppellF1}\left[\frac{3}{2},-2(1+m),9+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\Bigg)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)\Bigg)-$$

$$12\,288\,(1+m)\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{-1+2(1+m)}\left(\frac{1}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}\right)^{9+2m}$$

$$\Bigg(\Bigg(3\,\text{AppellF1}\left[\frac{1}{2},-2(1+m),7+2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^2\Bigg)\Big/$$

$$\Bigg(-3\,\text{AppellF1}\left[\frac{1}{2},-2(1+m),7+2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$2\Bigg(2(1+m)\,\text{AppellF1}\left[\frac{3}{2},-1-2m,7+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$(7+2m)\,\text{AppellF1}\left[\frac{3}{2},-2(1+m),2(4+m),\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\Bigg)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)-$$

$$\text{AppellF1}\left[\frac{1}{2},-2(1+m),9+2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\Big/$$

$$\Bigg(3\,\text{AppellF1}\left[\frac{1}{2},-2(1+m),9+2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]-$$

$$2\Bigg(2(1+m)\,\text{AppellF1}\left[\frac{3}{2},-1-2m,9+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$(9+2m)\,\text{AppellF1}\left[\frac{3}{2},-2(1+m),2(5+m),\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\Bigg)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)+$$

$$\Bigg(\text{AppellF1}\left[\frac{1}{2},-2(1+m),2(3+m),\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^3\Bigg)\Big/$$

$$\Bigg(3\,\text{AppellF1}\left[\frac{1}{2},-2(1+m),2(3+m),\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]-$$

$$4\Bigg((1+m)\,\text{AppellF1}\left[\frac{3}{2},-1-2m,6+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$(3+m)\ \text{AppellF1}\left[\frac{3}{2},\ -2\ (1+m),\ 7+2\ m,\ \frac{5}{2},\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\ x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\ x\right)\right]^2\right])\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\ x\right)\right]^2)\ +$$

$$(3\ \text{AppellF1}\left[\frac{1}{2},\ -2\ (1+m),\ 2\ (4+m),\ \frac{3}{2},\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\ x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\ x\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\ x\right)\right]^2\right))\ /$$

$$(3\ \text{AppellF1}\left[\frac{1}{2},\ -2\ (1+m),\ 2\ (4+m),\ \frac{3}{2},\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\ x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\ x\right)\right]^2\right]\ -$$

$$4\ ((1+m)\ \text{AppellF1}\left[\frac{3}{2},\ -1-2\ m,\ 8+2\ m,\ \frac{5}{2},\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\ x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\ x\right)\right]^2\right]\ +$$

$$(4+m)\ \text{AppellF1}\left[\frac{3}{2},\ -2\ (1+m),\ 9+2\ m,\ \frac{5}{2},\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\ x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\ x\right)\right]^2\right])\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\ x\right)\right]^2))\ -$$

$$6144\ (9+2\ m)\ \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\ x\right)\right]^2\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\ x\right)\right]^2\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\ x\right)\right]^2\right)^{2\ (1+m)}\left(\frac{1}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\ x\right)\right]^2}\right)^{10+2\ m}$$

$$((3\ \text{AppellF1}\left[\frac{1}{2},\ -2\ (1+m),\ 7+2\ m,\ \frac{3}{2},\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\ x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\ x\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\ x\right)\right]^2\right)^2)\ /$$

$$(-3\ \text{AppellF1}\left[\frac{1}{2},\ -2\ (1+m),\ 7+2\ m,\ \frac{3}{2},\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\ x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\ x\right)\right]^2\right]\ +$$

$$2\ (2\ (1+m)\ \text{AppellF1}\left[\frac{3}{2},\ -1-2\ m,\ 7+2\ m,\ \frac{5}{2},\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\ x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\ x\right)\right]^2\right]\ +$$

$$(7+2\ m)\ \text{AppellF1}\left[\frac{3}{2},\ -2\ (1+m),\ 2\ (4+m),\ \frac{5}{2},\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\ x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\ x\right)\right]^2\right])\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\ x\right)\right]^2)\ -$$

$$\text{AppellF1}\left[\frac{1}{2},\ -2\ (1+m),\ 9+2\ m,\ \frac{3}{2},\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\ x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\ x\right)\right]^2\right]\ /$$

$$(3\ \text{AppellF1}\left[\frac{1}{2},\ -2\ (1+m),\ 9+2\ m,\ \frac{3}{2},\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\ x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\ x\right)\right]^2\right]\ -$$

$$2\ (2\ (1+m)\ \text{AppellF1}\left[\frac{3}{2},\ -1-2\ m,\ 9+2\ m,\ \frac{5}{2},\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\ x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\ x\right)\right]^2\right]\ +$$

$$(9+2\ m)\ \text{AppellF1}\left[\frac{3}{2},\ -2\ (1+m),\ 2\ (5+m),\ \frac{5}{2},\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\ x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\ x\right)\right]^2\right])\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\ x\right)\right]^2)\ +$$

$$(\text{AppellF1}\left[\frac{1}{2},\ -2\ (1+m),\ 2\ (3+m),\ \frac{3}{2},\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\ x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\ x\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\ x\right)\right]^2\right)^3)\ /$$

$$(3\ \text{AppellF1}\left[\frac{1}{2},\ -2\ (1+m),\ 2\ (3+m),\ \frac{3}{2},\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\ x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\ x\right)\right]^2\right]\ -$$

$$4\ ((1+m)\ \text{AppellF1}\left[\frac{3}{2},\ -1-2\ m,\ 6+2\ m,\ \frac{5}{2},\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\ x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\ x\right)\right]^2\right]\ +$$

$$(3+m)\,\text{AppellF1}\Big[\frac{3}{2},-2(1+m),7+2m,\frac{5}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big)+$$

$$\Big(3\,\text{AppellF1}\Big[\frac{1}{2},-2(1+m),2(4+m),\frac{3}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\Big(1+\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big)\Big)\Big/$$

$$\Big(3\,\text{AppellF1}\Big[\frac{1}{2},-2(1+m),2(4+m),\frac{3}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]-$$

$$4\Big((1+m)\,\text{AppellF1}\Big[\frac{3}{2},-1-2m,8+2m,\frac{5}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]+$$

$$(4+m)\,\text{AppellF1}\Big[\frac{3}{2},-2(1+m),9+2m,\frac{5}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big)\Big)+$$

$$12288\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]\Big(1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big)^{2(1+m)}\left(\frac{1}{1+\text{Tan}\big[\frac{1}{4}\big(-e+\frac{\pi}{2}-f x\big)\big]^2}\right)^{9+2m}$$

$$\Big(\Big(3\,\text{AppellF1}\Big[\frac{1}{2},-2(1+m),7+2m,\frac{3}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]$$

$$\Big(1+\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big)\Big)\Big/\Big(-3\,\text{AppellF1}\Big[\frac{1}{2},-2(1+m),7+2m,\frac{3}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]+$$

$$2\Big(2(1+m)\,\text{AppellF1}\Big[\frac{3}{2},-1-2m,7+2m,\frac{5}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]+$$

$$(7+2m)\,\text{AppellF1}\Big[\frac{3}{2},-2(1+m),2(4+m),\frac{5}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big)+$$

$$\Big(3\Big(-\frac{1}{6}(7+2m)\,\text{AppellF1}\Big[\frac{3}{2},-2(1+m),8+2m,\frac{5}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]$$

$$\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]-\frac{1}{3}(1+m)\,\text{AppellF1}\Big[\frac{3}{2},1-2(1+m),7+2m,\frac{5}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,$$

$$-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]\Big)\Big)\Big(1+\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big)^2\Big)\Big/$$

$$\Big(-3\,\text{AppellF1}\Big[\frac{1}{2},-2(1+m),7+2m,\frac{3}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]+$$

$$2\Big(2(1+m)\,\text{AppellF1}\Big[\frac{3}{2},-1-2m,7+2m,\frac{5}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]+$$

$$(7+2m)\,\text{AppellF1}\Big[\frac{3}{2},-2(1+m),2(4+m),\frac{5}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big)-$$

$$\Big(-\frac{1}{6}(9+2m)\,\text{AppellF1}\Big[\frac{3}{2},-2(1+m),10+2m,\frac{5}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{1}{3}(1+m)\,\text{AppellF1}\left[\frac{3}{2},1-2(1+m),9+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\Big)\Big)\Big/\Big(3\,\text{AppellF1}\left[\frac{1}{2},-2(1+m),9+2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\right.$$

$$\left.-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]-2\Big(2(1+m)\,\text{AppellF1}\left[\frac{3}{2},-1-2m,9+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$(9+2m)\,\text{AppellF1}\left[\frac{3}{2},-2(1+m),2(5+m),\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\Big)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big)+$$

$$\Big(3\,\text{AppellF1}\left[\frac{1}{2},-2(1+m),2(3+m),\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^2\Big)\Big/\Big(2\Big(3\,\text{AppellF1}\left[\frac{1}{2},-2(1+m),2(3+m),\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\right.$$

$$\left.-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]-4\Big((1+m)\,\text{AppellF1}\left[\frac{3}{2},-1-2m,6+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$(3+m)\,\text{AppellF1}\left[\frac{3}{2},-2(1+m),7+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\Big)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big)\Big)+$$

$$\Big(\Big(-\frac{1}{3}(3+m)\,\text{AppellF1}\left[\frac{3}{2},-2(1+m),1+2(3+m),\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{1}{3}(1+m)\,\text{AppellF1}\left[\frac{3}{2},1-2(1+m),2(3+m),\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\right.$$

$$\left.-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\Big)\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^3\Big)\Big/$$

$$\Big(3\,\text{AppellF1}\left[\frac{1}{2},-2(1+m),2(3+m),\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]-$$

$$4\Big((1+m)\,\text{AppellF1}\left[\frac{3}{2},-1-2m,6+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$(3+m)\,\text{AppellF1}\left[\frac{3}{2},-2(1+m),7+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\Big)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big)+$$

$$\Big(3\,\text{AppellF1}\left[\frac{1}{2},-2(1+m),2(4+m),\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\Big)\Big/\Big(2\Big(3\,\text{AppellF1}\left[\frac{1}{2},-2(1+m),2(4+m),\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]-4$$

$$\Big((1+m)\,\text{AppellF1}\left[\frac{3}{2},-1-2m,8+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$(4+m)\,\text{AppellF1}\left[\frac{3}{2},-2(1+m),9+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\Big)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big)\Big)+$$

$$\Bigg(3\Bigg(-\frac{1}{3}(4+m)\,\text{AppellF1}\Big[\frac{3}{2},-2(1+m),1+2(4+m),\frac{5}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]$$

$$\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]-\frac{1}{3}(1+m)\,\text{AppellF1}\Big[\frac{3}{2},1-2(1+m),2(4+m),\frac{5}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,$$

$$-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\Bigg)\Bigg(1+\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Bigg)\Bigg)\Big/$$

$$\Bigg(3\,\text{AppellF1}\Big[\frac{1}{2},-2(1+m),2(4+m),\frac{3}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]-$$

$$4\Bigg((1+m)\,\text{AppellF1}\Big[\frac{3}{2},-1-2m,8+2m,\frac{5}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+$$

$$(4+m)\,\text{AppellF1}\Big[\frac{3}{2},-2(1+m),9+2m,\frac{5}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\Bigg)\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Bigg)-$$

$$\Bigg(3\,\text{AppellF1}\Big[\frac{1}{2},-2(1+m),7+2m,\frac{3}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\Bigg(1+\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Bigg)^2$$

$$\Bigg(\Bigg(2(1+m)\,\text{AppellF1}\Big[\frac{3}{2},-1-2m,7+2m,\frac{5}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+(7+2m)\,\text{AppellF1}\Big[\frac{3}{2},-2(1+m),$$

$$2(4+m),\frac{5}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\Bigg)\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]-3$$

$$\Bigg(-\frac{1}{6}(7+2m)\,\text{AppellF1}\Big[\frac{3}{2},-2(1+m),8+2m,\frac{5}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2$$

$$\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]-\frac{1}{3}(1+m)\,\text{AppellF1}\Big[\frac{3}{2},1-2(1+m),7+2m,\frac{5}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]$$

$$\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\Bigg)+2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Bigg(2(1+m)\Bigg(-\frac{3}{10}(7+2m)\,\text{AppellF1}\Big[\frac{5}{2},-1-2m,$$

$$8+2m,\frac{7}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]+$$

$$\frac{3}{10}(-1-2m)\,\text{AppellF1}\Big[\frac{5}{2},-2m,7+2m,\frac{7}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2$$

$$\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\Bigg)+(7+2m)\Bigg(-\frac{3}{5}(4+m)\,\text{AppellF1}\Big[\frac{5}{2},-2(1+m),1+2(4+m),\frac{7}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,$$

$$-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]-\frac{3}{5}(1+m)\,\text{AppellF1}\Big[\frac{5}{2},1-2(1+m),$$

$$2(4+m),\frac{7}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\Bigg)\Bigg)\Bigg)\Bigg)\Big/$$

$$\Bigg(-3\,\text{AppellF1}\Big[\frac{1}{2},-2(1+m),7+2m,\frac{3}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+2$$

$$\left(2\,(1+m)\,\text{AppellF1}\left[\frac{3}{2},-1-2m,7+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+(7+2m)\right.$$
$$\left.\text{AppellF1}\left[\frac{3}{2},-2\,(1+m),2\,(4+m),\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\Bigg)^2+$$
$$\left(\text{AppellF1}\left[\frac{1}{2},-2\,(1+m),9+2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right.$$
$$\left(-\left(2\,(1+m)\,\text{AppellF1}\left[\frac{3}{2},-1-2m,9+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+\right.\right.$$
$$\left.(9+2m)\,\text{AppellF1}\left[\frac{3}{2},-2\,(1+m),2\,(5+m),\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right)\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2$$
$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]+3\left(-\frac{1}{6}\,(9+2m)\,\text{AppellF1}\left[\frac{3}{2},-2\,(1+m),10+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,\right.\right.$$
$$\left.-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]-\frac{1}{3}\,(1+m)\,\text{AppellF1}\left[\frac{3}{2},1-2\,(1+m),\right.$$
$$\left.\left.9+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]\right)-2$$
$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\left(2\,(1+m)\left(-\frac{3}{10}\,(9+2m)\,\text{AppellF1}\left[\frac{5}{2},-1-2m,10+2m,\frac{7}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,\right.\right.\right.$$
$$\left.-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]+\frac{3}{10}\,(-1-2m)\,\text{AppellF1}\left[\frac{5}{2},-2m,\right.$$
$$\left.\left.9+2m,\frac{7}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]\right)+$$
$$(9+2m)\left(-\frac{3}{5}\,(5+m)\,\text{AppellF1}\left[\frac{5}{2},-2\,(1+m),1+2\,(5+m),\frac{7}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right.$$
$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]-\frac{3}{5}\,(1+m)\,\text{AppellF1}\left[\frac{5}{2},1-2\,(1+m),2\,(5+m),\frac{7}{2},\right.$$
$$\left.\left.\left.\left.\left.\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]\right)\right)\right)\right)\Big/$$
$$\left(3\,\text{AppellF1}\left[\frac{1}{2},-2\,(1+m),9+2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]-2\right.$$
$$\left(2\,(1+m)\,\text{AppellF1}\left[\frac{3}{2},-1-2m,9+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+(9+2m)\right.$$
$$\left.\text{AppellF1}\left[\frac{3}{2},-2\,(1+m),2\,(5+m),\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\Bigg)^2-$$
$$\left(\text{AppellF1}\left[\frac{1}{2},-2\,(1+m),2\,(3+m),\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)^3\right.$$

$$\Big(-2\,\Big((1+m)\,\text{AppellF1}\Big[\frac{3}{2},-1-2m,6+2m,\frac{5}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]+$$

$$(3+m)\,\text{AppellF1}\Big[\frac{3}{2},-2(1+m),7+2m,\frac{5}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\Big)\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2$$

$$\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]+3\,\Big(-\frac{1}{3}(3+m)\,\text{AppellF1}\Big[\frac{3}{2},-2(1+m),1+2(3+m),\frac{5}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,$$

$$-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]-\frac{1}{3}(1+m)\,\text{AppellF1}\Big[\frac{3}{2},1-2(1+m),$$

$$2(3+m),\frac{5}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]\Big)-4$$

$$\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\,\Big((1+m)\,\Big(-\frac{3}{10}(6+2m)\,\text{AppellF1}\Big[\frac{5}{2},-1-2m,7+2m,\frac{7}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,$$

$$-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]+\frac{3}{10}(-1-2m)\,\text{AppellF1}\Big[\frac{5}{2},-2m,$$

$$6+2m,\frac{7}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]\Big)+$$

$$(3+m)\,\Big(-\frac{3}{10}(7+2m)\,\text{AppellF1}\Big[\frac{5}{2},-2(1+m),8+2m,\frac{7}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]$$

$$\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]-\frac{3}{5}(1+m)\,\text{AppellF1}\Big[\frac{5}{2},1-2(1+m),7+2m,\frac{7}{2},$$

$$\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]\Big)\Big)\Big)\Big)\Big/$$

$$\Big(3\,\text{AppellF1}\Big[\frac{1}{2},-2(1+m),2(3+m),\frac{3}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]-4$$

$$\Big((1+m)\,\text{AppellF1}\Big[\frac{3}{2},-1-2m,6+2m,\frac{5}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]+$$

$$(3+m)\,\text{AppellF1}\Big[\frac{3}{2},-2(1+m),7+2m,\frac{5}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big)^2-$$

$$\Big(3\,\text{AppellF1}\Big[\frac{1}{2},-2(1+m),2(4+m),\frac{3}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\,\Big(1+\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big)$$

$$\Big(-2\,\Big((1+m)\,\text{AppellF1}\Big[\frac{3}{2},-1-2m,8+2m,\frac{5}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]+$$

$$(4+m)\,\text{AppellF1}\Big[\frac{3}{2},-2(1+m),9+2m,\frac{5}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\Big)\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2$$

$$\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]+3\,\Big(-\frac{1}{3}(4+m)\,\text{AppellF1}\Big[\frac{3}{2},-2(1+m),1+2(4+m),\frac{5}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,$$

$$-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\ \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{1}{3}(1+m)\ \text{AppellF1}\Big[\frac{3}{2},\ 1-2(1+m),$$

$$2(4+m),\ \frac{5}{2},\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\ \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\Big)-4$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big((1+m)\Big(-\frac{3}{10}(8+2m)\ \text{AppellF1}\Big[\frac{5}{2},\ -1-2m,\ 9+2m,\ \frac{7}{2},\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,$$

$$-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\ \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]+\frac{3}{10}(-1-2m)\ \text{AppellF1}\Big[\frac{5}{2},\ -2m,$$

$$8+2m,\ \frac{7}{2},\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\ \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\Big)+$$

$$(4+m)\Big(-\frac{3}{10}(9+2m)\ \text{AppellF1}\Big[\frac{5}{2},\ -2(1+m),\ 10+2m,\ \frac{7}{2},\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{3}{5}(1+m)\ \text{AppellF1}\Big[\frac{5}{2},\ 1-2(1+m),\ 9+2m,\ \frac{7}{2},$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\ \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\Big)\Big)\Big)\Big)\Big)\Big/$$

$$\Big(3\ \text{AppellF1}\Big[\frac{1}{2},\ -2(1+m),\ 2(4+m),\ \frac{3}{2},\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]-4$$

$$\Big((1+m)\ \text{AppellF1}\Big[\frac{3}{2},\ -1-2m,\ 8+2m,\ \frac{5}{2},\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]+$$

$$(4+m)\ \text{AppellF1}\Big[\frac{3}{2},\ -2(1+m),\ 9+2m,\ \frac{5}{2},\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\Big)\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big)^2\Big)\Big)\Big)\Big)$$

- **Problem 68: Attempted integration timed out after 120 seconds.**

$$\int \text{Cos}[e+f x]^2\,(a+a\,\text{Sin}[e+f x])^m\,(c-c\,\text{Sin}[e+f x])\,dx$$

Optimal (type 5, 84 leaves, 4 steps):

$$-\frac{1}{5 f}2^{\frac{3}{2}+m}a^2 c\,\text{Cos}[e+f x]^5\,\text{Hypergeometric2F1}\Big[\frac{5}{2},\ -\frac{1}{2}-m,\ \frac{7}{2},\ \frac{1}{2}(1-\text{Sin}[e+f x])\Big]\,(1+\text{Sin}[e+f x])^{-\frac{1}{2}-m}\,(a+a\,\text{Sin}[e+f x])^{-2+m}$$

Result (type 1, 1 leaves):

???

- **Problem 69: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int \text{Cos}[e+f x]^2\,(a+a\,\text{Sin}[e+f x])^m\,dx$$

Optimal (type 5, 81 leaves, 3 steps):

$$-\frac{1}{3 f}2^{\frac{3}{2}+m} a \text{Cos}[e+f x]^3 \text{Hypergeometric2F1}\left[\frac{3}{2},-\frac{1}{2}-m,\frac{5}{2},\frac{1}{2}(1-\text{Sin}[e+f x])\right](1+\text{Sin}[e+f x])^{-\frac{1}{2}-m}(a+a \text{Sin}[e+f x])^{-1+m}$$

Result (type 6, 6167 leaves):

$$-\Bigg(\Bigg(192 \left(\text{Cos}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{5+2 m} \text{Cos}[e+f x]^2 (a+a \text{Sin}[e+f x])^m \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]$$

$$\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{2(1+m)}\Bigg(-\Bigg(\text{AppellF1}\left[\frac{1}{2},-2(1+m),5+2 m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\Big/$$

$$\Bigg(3 \text{AppellF1}\left[\frac{1}{2},-2(1+m),5+2 m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]-$$

$$2\Bigg(2(1+m) \text{AppellF1}\left[\frac{3}{2},-1-2 m,5+2 m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+(5+2 m)$$

$$\text{AppellF1}\left[\frac{3}{2},-2(1+m),2(3+m),\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\Bigg) \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)\Bigg)+$$

$$\Bigg(\text{AppellF1}\left[\frac{1}{2},-2(1+m),2(2+m),\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right] \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)\Big/$$

$$\Bigg(3 \text{AppellF1}\left[\frac{1}{2},-2(1+m),2(2+m),\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]-$$

$$4\Bigg((1+m) \text{AppellF1}\left[\frac{3}{2},-1-2 m,4+2 m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$(2+m) \text{AppellF1}\left[\frac{3}{2},-2(1+m),5+2 m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\Bigg) \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)\Bigg)\Bigg)\Big/$$

$$\Bigg(f\Bigg(48 \text{Cos}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^8\left(\text{Cos}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{2 m}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{2(1+m)}$$

$$\Bigg(-\Bigg(\text{AppellF1}\left[\frac{1}{2},-2(1+m),5+2 m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\Big/$$

$$\Bigg(3 \text{AppellF1}\left[\frac{1}{2},-2(1+m),5+2 m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]-2$$

$$\Bigg(2(1+m) \text{AppellF1}\left[\frac{3}{2},-1-2 m,5+2 m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+(5+2 m)$$

$$\text{AppellF1}\left[\frac{3}{2},-2(1+m),2(3+m),\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\Bigg) \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)\Bigg)+$$

$$\Bigg(\text{AppellF1}\left[\frac{1}{2},-2(1+m),2(2+m),\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right] \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)\Big/$$

$$\Bigg(3 \text{AppellF1}\left[\frac{1}{2},-2(1+m),2(2+m),\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]-$$

$$4\left((1+m)\,\text{AppellF1}\left[\frac{3}{2},-1-2m,4+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+\right.$$

$$\left.(2+m)\,\text{AppellF1}\left[\frac{3}{2},-2(1+m),5+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\Bigg)\Bigg)-$$

$$96\,(5+2m)\left(\text{Cos}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)^{4+2m}\text{Sin}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)^{2(1+m)}$$

$$\left(-\left(\text{AppellF1}\left[\frac{1}{2},-2(1+m),5+2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right/\right.$$

$$\left(3\,\text{AppellF1}\left[\frac{1}{2},-2(1+m),5+2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]-2\right.$$

$$\left(2(1+m)\,\text{AppellF1}\left[\frac{3}{2},-1-2m,5+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+(5+2m)\right.$$

$$\left.\text{AppellF1}\left[\frac{3}{2},-2(1+m),2(3+m),\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\Bigg)\Bigg)+$$

$$\left(\text{AppellF1}\left[\frac{1}{2},-2(1+m),2(2+m),\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)\Big/$$

$$\left(3\,\text{AppellF1}\left[\frac{1}{2},-2(1+m),2(2+m),\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]-\right.$$

$$4\left((1+m)\,\text{AppellF1}\left[\frac{3}{2},-1-2m,4+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+\right.$$

$$\left.(2+m)\,\text{AppellF1}\left[\frac{3}{2},-2(1+m),5+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\Bigg)\Bigg)-$$

$$192\,(1+m)\,\text{Cos}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^6\left(\text{Cos}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)^{2m}\text{Sin}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)^{-1+2(1+m)}$$

$$\left(-\left(\text{AppellF1}\left[\frac{1}{2},-2(1+m),5+2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right/\right.$$

$$\left(3\,\text{AppellF1}\left[\frac{1}{2},-2(1+m),5+2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]-2\right.$$

$$\left(2(1+m)\,\text{AppellF1}\left[\frac{3}{2},-1-2m,5+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+(5+2m)\right.$$

$$\left.\text{AppellF1}\left[\frac{3}{2},-2(1+m),2(3+m),\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\Bigg)\Bigg)+$$

$$\left(\text{AppellF1}\left[\frac{1}{2},-2(1+m),2(2+m),\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)\Big/$$

$$\left(3\,\text{AppellF1}\left[\frac{1}{2},-2(1+m),2(2+m),\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]-\right.$$

$$4\left((1+m)\,\text{AppellF1}\left[\frac{3}{2},-1-2m,4+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$\left.(2+m)\,\text{AppellF1}\left[\frac{3}{2},-2(1+m),5+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big)\Big)+$$

$$192\left(\text{Cos}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{5+2m}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{2(1+m)}$$

$$\left(-\left(\left(-\frac{1}{6}(5+2m)\,\text{AppellF1}\left[\frac{3}{2},-2(1+m),6+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right.\right.\right.$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{1}{3}(1+m)\,\text{AppellF1}\left[\frac{3}{2},1-2(1+m),5+2m,\frac{5}{2},\right.$$

$$\left.\left.\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)\Big/$$

$$\left(3\,\text{AppellF1}\left[\frac{1}{2},-2(1+m),5+2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]-2\right.$$

$$\left(2(1+m)\,\text{AppellF1}\left[\frac{3}{2},-1-2m,5+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+(5+2m)\right.$$

$$\left.\left.\text{AppellF1}\left[\frac{3}{2},-2(1+m),2(3+m),\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)+$$

$$\left(\text{AppellF1}\left[\frac{1}{2},-2(1+m),2(2+m),\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right.$$

$$\left.\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)\Big/\left(2\left(3\,\text{AppellF1}\left[\frac{1}{2},-2(1+m),2(2+m),\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]-4\right.\right.$$

$$\left((1+m)\,\text{AppellF1}\left[\frac{3}{2},-1-2m,4+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$\left.\left.(2+m)\,\text{AppellF1}\left[\frac{3}{2},-2(1+m),5+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)+$$

$$\left(\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\left(-\frac{1}{3}(2+m)\,\text{AppellF1}\left[\frac{3}{2},-2(1+m),1+2(2+m),\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right.\right.$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{1}{3}(1+m)\,\text{AppellF1}\left[\frac{3}{2},1-2(1+m),2(2+m),\frac{5}{2},\right.$$

$$\left.\left.\left.\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)\right)\Big/$$

$$\left(3\,\text{AppellF1}\left[\frac{1}{2},-2(1+m),2(2+m),\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]-\right.$$

$$4\left((1+m)\,\text{AppellF1}\left[\frac{3}{2},-1-2m,4+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$(2+m)\,\text{AppellF1}\left[\frac{3}{2},-2(1+m),5+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\Big)\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big)+$$

$$\Big(\text{AppellF1}\left[\frac{1}{2},-2(1+m),5+2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]$$

$$\Big(-\Big(2(1+m)\,\text{AppellF1}\left[\frac{3}{2},-1-2m,5+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$(5+2m)\,\text{AppellF1}\left[\frac{3}{2},-2(1+m),2(3+m),\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\Big)\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]+3\Big(-\frac{1}{6}(5+2m)\,\text{AppellF1}\left[\frac{3}{2},-2(1+m),6+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{1}{3}(1+m)\,\text{AppellF1}\Big[\frac{3}{2},1-2(1+m),5+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,$$

$$-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\Big)\Big)-2\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2$$

$$\Big(2(1+m)\Big(-\frac{3}{10}(5+2m)\,\text{AppellF1}\left[\frac{5}{2},-1-2m,6+2m,\frac{7}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]+\frac{3}{10}(-1-2m)\,\text{AppellF1}\Big[\frac{5}{2},-2m,5+2m,\frac{7}{2},$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\Big)+$$

$$(5+2m)\Big(-\frac{3}{5}(3+m)\,\text{AppellF1}\left[\frac{5}{2},-2(1+m),1+2(3+m),\frac{7}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{3}{5}(1+m)\,\text{AppellF1}\Big[\frac{5}{2},1-2(1+m),2(3+m),\frac{7}{2},$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\Big)\Big)\Big)\Big)\Big/$$

$$\Big(3\,\text{AppellF1}\left[\frac{1}{2},-2(1+m),5+2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]-2$$

$$\Big(2(1+m)\,\text{AppellF1}\left[\frac{3}{2},-1-2m,5+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+(5+2m)$$

$$\text{AppellF1}\left[\frac{3}{2},-2(1+m),2(3+m),\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\Big)\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big)^2-$$

$$\Big(\text{AppellF1}\left[\frac{1}{2},-2(1+m),2(2+m),\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2$$

$$\Big(-2\Big((1+m)\,\text{AppellF1}\left[\frac{3}{2},-1-2m,4+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$(2+m)\,\text{AppellF1}\left[\frac{3}{2},\,-2\,(1+m),\,5+2\,m,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]+3\left(-\frac{1}{3}\,(2+m)\,\text{AppellF1}\left[\frac{3}{2},\,-2\,(1+m),\,1+2\,(2+m),\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\right.\right.$$

$$\left.-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-\frac{1}{3}\,(1+m)\,\text{AppellF1}\left[\frac{3}{2},\,1-2\,(1+m),\right.$$

$$\left.\left.2\,(2+m),\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\right)-4$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\left((1+m)\left(-\frac{3}{10}\,(4+2\,m)\,\text{AppellF1}\left[\frac{5}{2},\,-1-2\,m,\,5+2\,m,\,\frac{7}{2},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\right.\right.\right.$$

$$\left.-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]+\frac{3}{10}\,(-1-2\,m)\,\text{AppellF1}\left[\frac{5}{2},\,-2\,m,\right.$$

$$\left.\left.4+2\,m,\,\frac{7}{2},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\right)+$$

$$(2+m)\left(-\frac{3}{10}\,(5+2\,m)\,\text{AppellF1}\left[\frac{5}{2},\,-2\,(1+m),\,6+2\,m,\,\frac{7}{2},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right.$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-\frac{3}{5}\,(1+m)\,\text{AppellF1}\left[\frac{5}{2},\,1-2\,(1+m),\,5+2\,m,\,\frac{7}{2},\right.$$

$$\left.\left.\left.\left.\left.\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\right)\right)\right)\right)\right)\Big/$$

$$\left(3\,\text{AppellF1}\left[\frac{1}{2},\,-2\,(1+m),\,2\,(2+m),\,\frac{3}{2},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]-4\right.$$

$$\left((1+m)\,\text{AppellF1}\left[\frac{3}{2},\,-1-2\,m,\,4+2\,m,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.$$

$$\left.\left.\left.\left.\left.(2+m)\,\text{AppellF1}\left[\frac{3}{2},\,-2\,(1+m),\,5+2\,m,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^2\right)\right)\right)\right)$$

- **Problem 70: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int\frac{\text{Cos}[e+f\,x]^2\,(a+a\,\text{Sin}[e+f\,x])^m}{c-c\,\text{Sin}[e+f\,x]}\,dx$$

Optimal (type 5, 77 leaves, 3 steps):

$$-\frac{1}{c\,f}2^{\frac{3}{2}+m}\,\text{Cos}[e+f\,x]\,\text{Hypergeometric2F1}\left[\frac{1}{2},\,-\frac{1}{2}-m,\,\frac{3}{2},\,\frac{1}{2}\,(1-\text{Sin}[e+f\,x])\right]\,(1+\text{Sin}[e+f\,x])^{-\frac{1}{2}-m}\,(a+a\,\text{Sin}[e+f\,x])^m$$

Result (type 6, 6494 leaves):

$$-\frac{1}{f\,(c-c\,\text{Sin}[e+f\,x])}\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{-2\,m}\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^2\,(a+a\,\text{Sin}[e+f\,x])^m$$

$$\Bigg(-\frac{1}{2}\,\mathrm{i}\,\Bigg(-\frac{1}{1+m}4^{-m}\,e^{-\mathrm{i}\left(-e+\frac{\pi}{2}-f\,x\right)}\left(1+e^{\mathrm{i}\left(-e+\frac{\pi}{2}-f\,x\right)}\right)^{-2m}\left(e^{-\frac{1}{2}\mathrm{i}\left(-e+\frac{\pi}{2}-f\,x\right)}\left(1+e^{\mathrm{i}\left(-e+\frac{\pi}{2}-f\,x\right)}\right)\right)^{2m}\text{Hypergeometric2F1}\Big[-1-m,\,-2m,\,-m,\,-e^{\mathrm{i}\left(-e+\frac{\pi}{2}-f\,x\right)}\Big]-\frac{1}{-1+m}$$

$$4^{-m}\,e^{\mathrm{i}\left(-e+\frac{\pi}{2}-f\,x\right)}\left(1+e^{\mathrm{i}\left(-e+\frac{\pi}{2}-f\,x\right)}\right)^{-2m}\left(e^{-\frac{1}{2}\mathrm{i}\left(-e+\frac{\pi}{2}-f\,x\right)}\left(1+e^{\mathrm{i}\left(-e+\frac{\pi}{2}-f\,x\right)}\right)\right)^{2m}\text{Hypergeometric2F1}\Big[1-m,\,-2m,\,2-m,\,-e^{\mathrm{i}\left(-e+\frac{\pi}{2}-f\,x\right)}\Big]\Bigg)-$$

$$\Bigg(2\,\text{Cos}\Big[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^{3+2m}\text{Hypergeometric2F1}\Big[\frac{1}{2},\,\frac{1}{2}(3+2m),\,\frac{1}{2}(5+2m),\,\text{Cos}\Big[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]\,\text{Sin}\Big[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]\Bigg)\Big/$$

$$\Bigg((3+2m)\sqrt{\text{Sin}\Big[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2}\Bigg)+$$

$$\Bigg(8\left(\text{Cos}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\right)^{3+2m}\text{Cos}\Big[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^{2m}\text{Sin}\Big[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]\left(1-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\right)^{2m}$$

$$\Bigg(\Bigg(3\,\text{AppellF1}\Big[\frac{1}{2},\,-2m,\,2+2m,\,\frac{3}{2},\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Bigg)\Big/$$

$$\Bigg(3\,\text{AppellF1}\Big[\frac{1}{2},\,-2m,\,2+2m,\,\frac{3}{2},\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]-$$

$$4\Bigg(m\,\text{AppellF1}\Big[\frac{3}{2},\,1-2m,\,2+2m,\,\frac{5}{2},\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]+$$

$$(1+m)\,\text{AppellF1}\Big[\frac{3}{2},\,-2m,\,3+2m,\,\frac{5}{2},\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]\Bigg)\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Bigg)-\text{AppellF1}\Big[$$

$$\frac{1}{2},\,-2m,\,3+2m,\,\frac{3}{2},\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]\Big/\Bigg(\text{AppellF1}\Big[\frac{1}{2},\,-2m,\,3+2m,\,\frac{3}{2},\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,$$

$$-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]-\frac{2}{3}\Bigg(2m\,\text{AppellF1}\Big[\frac{3}{2},\,1-2m,\,3+2m,\,\frac{5}{2},\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]+$$

$$(3+2m)\,\text{AppellF1}\Big[\frac{3}{2},\,-2m,\,4+2m,\,\frac{5}{2},\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]\Bigg)\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Bigg)\Bigg)\Bigg)\Big/$$

$$\Bigg(2\,\text{Cos}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^4\left(\text{Cos}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\right)^{2m}\left(1-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\right)^{2m}$$

$$\Bigg(\Bigg(3\,\text{AppellF1}\Big[\frac{1}{2},\,-2m,\,2+2m,\,\frac{3}{2},\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Bigg)\Big/$$

$$\Bigg(3\,\text{AppellF1}\Big[\frac{1}{2},\,-2m,\,2+2m,\,\frac{3}{2},\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]-$$

$$4\Bigg(m\,\text{AppellF1}\Big[\frac{3}{2},\,1-2m,\,2+2m,\,\frac{5}{2},\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]+(1+m)\,\text{AppellF1}\Big[\frac{3}{2},\,-2m,$$

$$3+2 m,\ \frac{5}{2},\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2]\Big)\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big)-\text{AppellF1}[\frac{1}{2},\ -2 m,\ 3+2 m,$$

$$\frac{3}{2},\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2]\Big/\ \Big(\text{AppellF1}[\frac{1}{2},\ -2 m,\ 3+2 m,\ \frac{3}{2},\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,$$

$$-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2]-\frac{2}{3}\Big(2 m\, \text{AppellF1}[\frac{3}{2},\ 1-2 m,\ 3+2 m,\ \frac{5}{2},\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2]+$$

$$(3+2 m)\ \text{AppellF1}[\frac{3}{2},\ -2 m,\ 4+2 m,\ \frac{5}{2},\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2]\Big)\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big)\Big)-$$

$$4\ (3+2 m)\ \left(\text{Cos}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{2+2 m}\ \text{Sin}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\ \left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{2 m}$$

$$\Big(\Big(3\ \text{AppellF1}[\frac{1}{2},\ -2 m,\ 2+2 m,\ \frac{3}{2},\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2]\ \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big)\Big/$$

$$\Big(3\ \text{AppellF1}[\frac{1}{2},\ -2 m,\ 2+2 m,\ \frac{3}{2},\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2]-$$

$$4\ \Big(m\, \text{AppellF1}[\frac{3}{2},\ 1-2 m,\ 2+2 m,\ \frac{5}{2},\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2]+(1+m)\ \text{AppellF1}[\frac{3}{2},\ -2 m,$$

$$3+2 m,\ \frac{5}{2},\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2]\Big)\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big)-\text{AppellF1}[\frac{1}{2},\ -2 m,\ 3+2 m,$$

$$\frac{3}{2},\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2]\Big/\ \Big(\text{AppellF1}[\frac{1}{2},\ -2 m,\ 3+2 m,\ \frac{3}{2},\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,$$

$$-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2]-\frac{2}{3}\Big(2 m\, \text{AppellF1}[\frac{3}{2},\ 1-2 m,\ 3+2 m,\ \frac{5}{2},\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2]+$$

$$(3+2 m)\ \text{AppellF1}[\frac{3}{2},\ -2 m,\ 4+2 m,\ \frac{5}{2},\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2]\Big)\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big)\Big)-$$

$$8 m\ \left(\text{Cos}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{1+2 m}\ \text{Sin}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\ \left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{-1+2 m}$$

$$\Big(\Big(3\ \text{AppellF1}[\frac{1}{2},\ -2 m,\ 2+2 m,\ \frac{3}{2},\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2]\ \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big)\Big/$$

$$\Big(3\ \text{AppellF1}[\frac{1}{2},\ -2 m,\ 2+2 m,\ \frac{3}{2},\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2]-$$

$$4\ \Big(m\, \text{AppellF1}[\frac{3}{2},\ 1-2 m,\ 2+2 m,\ \frac{5}{2},\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2]+$$

$$(1+m)\ \text{AppellF1}[\frac{3}{2},\ -2 m,\ 3+2 m,\ \frac{5}{2},\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2]\Big)\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big)-$$

$$\text{AppellF1}[\frac{1}{2},\ -2 m,\ 3+2 m,\ \frac{3}{2},\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2]\Big/$$

$$\Bigg(\text{AppellF1}\Big[\frac{1}{2}, -2\,m, 3+2\,m, \frac{3}{2}, \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2, -\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big] -$$

$$\frac{2}{3}\Bigg(2\,m\,\text{AppellF1}\Big[\frac{3}{2}, 1-2\,m, 3+2\,m, \frac{5}{2}, \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2, -\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big] +$$

$$(3+2\,m)\,\text{AppellF1}\Big[\frac{3}{2}, -2\,m, 4+2\,m, \frac{5}{2}, \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2, -\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\Bigg)\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Bigg)\Bigg) +$$

$$8\left(\text{Cos}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\right)^{3+2\,m}\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\left(1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\right)^{2\,m}$$

$$\Bigg(\Bigg(3\,\text{AppellF1}\Big[\frac{1}{2}, -2\,m, 2+2\,m, \frac{3}{2}, \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2, -\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\Bigg)\Bigg/$$

$$\Bigg(2\,\Bigg(3\,\text{AppellF1}\Big[\frac{1}{2}, -2\,m, 2+2\,m, \frac{3}{2}, \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2, -\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big] -$$

$$4\,\Bigg(m\,\text{AppellF1}\Big[\frac{3}{2}, 1-2\,m, 2+2\,m, \frac{5}{2}, \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2, -\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big] +$$

$$(1+m)\,\text{AppellF1}\Big[\frac{3}{2}, -2\,m, 3+2\,m, \frac{5}{2}, \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2, -\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\Bigg)\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Bigg)\Bigg) +$$

$$\Bigg(3\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Bigg(-\frac{1}{3}\,m\,\text{AppellF1}\Big[\frac{3}{2}, 1-2\,m, 2+2\,m, \frac{5}{2}, \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2, -\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]$$

$$\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big] - \frac{1}{6}\,(2+2\,m)\,\text{AppellF1}\Big[\frac{3}{2}, -2\,m, 3+2\,m, \frac{5}{2},$$

$$\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2, -\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\Bigg)\Bigg)\Bigg/$$

$$\Bigg(3\,\text{AppellF1}\Big[\frac{1}{2}, -2\,m, 2+2\,m, \frac{3}{2}, \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2, -\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big] -$$

$$4\,\Bigg(m\,\text{AppellF1}\Big[\frac{3}{2}, 1-2\,m, 2+2\,m, \frac{5}{2}, \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2, -\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big] +$$

$$(1+m)\,\text{AppellF1}\Big[\frac{3}{2}, -2\,m, 3+2\,m, \frac{5}{2}, \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2, -\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\Bigg)\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Bigg) -$$

$$\Bigg(-\frac{1}{3}\,m\,\text{AppellF1}\Big[\frac{3}{2}, 1-2\,m, 3+2\,m, \frac{5}{2}, \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2, -\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\,\text{Tan}\Big[$$

$$\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big] - \frac{1}{6}\,(3+2\,m)\,\text{AppellF1}\Big[\frac{3}{2}, -2\,m, 4+2\,m, \frac{5}{2}, \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2, -\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]$$

$$\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\Bigg)\Bigg/\Bigg(\text{AppellF1}\Big[\frac{1}{2}, -2\,m, 3+2\,m, \frac{3}{2}, \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,$$

$$-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big] - \frac{2}{3}\Bigg(2\,m\,\text{AppellF1}\Big[\frac{3}{2}, 1-2\,m, 3+2\,m, \frac{5}{2}, \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2, -\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big] +$$

$$(3+2m)\,\text{AppellF1}\left[\frac{3}{2},-2m,4+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\Bigg)-$$

$$\Bigg(3\,\text{AppellF1}\left[\frac{1}{2},-2m,2+2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2$$

$$\Bigg(-2\Bigg(m\,\text{AppellF1}\left[\frac{3}{2},1-2m,2+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+(1+m)\,\text{AppellF1}\left[\frac{3}{2},-2m,\right.$$

$$\left.3+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\Bigg)\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]+$$

$$3\Bigg(-\frac{1}{3}m\,\text{AppellF1}\left[\frac{3}{2},1-2m,2+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]-\frac{1}{6}(2+2m)\,\text{AppellF1}\left[\frac{3}{2},-2m,3+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]\Bigg)-4\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\Bigg(m\Bigg(-\frac{3}{10}(2+2m)\,\text{AppellF1}\left[\frac{5}{2},1-2m,3+2m,\right.$$

$$\left.\frac{7}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]+\frac{3}{10}(1-2m)$$

$$\text{AppellF1}\left[\frac{5}{2},2-2m,2+2m,\frac{7}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]\Bigg)+(1+m)\Bigg(-\frac{3}{5}m\,\text{AppellF1}\left[\frac{5}{2},1-2m,3+2m,\frac{7}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,\right.$$

$$\left.-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]-\frac{3}{10}(3+2m)\,\text{AppellF1}\left[\frac{5}{2},-2m,4+2m,\right.$$

$$\left.\frac{7}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]\Bigg)\Bigg)\Bigg)\Bigg)\Bigg/$$

$$\Bigg(3\,\text{AppellF1}\left[\frac{1}{2},-2m,2+2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]-4\Bigg(m\,\text{AppellF1}\left[\frac{3}{2},\right.$$

$$\left.1-2m,2+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+$$

$$(1+m)\,\text{AppellF1}\left[\frac{3}{2},-2m,3+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\Bigg)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\Bigg)^2+$$

$$\Bigg(\text{AppellF1}\left[\frac{1}{2},-2m,3+2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\Bigg(-\frac{1}{3}m\,\text{AppellF1}\left[\frac{3}{2},1-2m,\right.$$

$$\left.3+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]-$$

$$\frac{1}{6}(3+2m)\,\text{AppellF1}\left[\frac{3}{2},-2m,4+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{1}{3}\left(2 m \,\text{AppellF1}\left[\frac{3}{2},1-2 m,3+2 m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$
$$\left.(3+2 m)\,\text{AppellF1}\left[\frac{3}{2},-2 m,4+2 m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2$$
$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{2}{3}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\left(2 m\left(-\frac{3}{10}(3+2 m)\,\text{AppellF1}\left[\frac{5}{2},1-2 m,4+2 m,\frac{7}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\right.\right.\right.$$
$$\left.-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]+\frac{3}{10}(1-2 m)\,\text{AppellF1}\left[\frac{5}{2},2-2 m,3+2 m,\right.$$
$$\left.\left.\frac{7}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)+(3+2 m)$$
$$\left(-\frac{3}{5}m\,\text{AppellF1}\left[\frac{5}{2},1-2 m,4+2 m,\frac{7}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right.$$
$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{3}{10}(4+2 m)\,\text{AppellF1}\left[\frac{5}{2},-2 m,5+2 m,\frac{7}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]$$
$$\left.\left.\left.\left.\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)\right)\right)\right)\Big/\left(\text{AppellF1}\left[\frac{1}{2},-2 m,3+2 m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\right.\right.$$
$$\left.-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]-\frac{2}{3}\left(2 m\,\text{AppellF1}\left[\frac{3}{2},1-2 m,3+2 m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$
$$\left.\left.\left.(3+2 m)\,\text{AppellF1}\left[\frac{3}{2},-2 m,4+2 m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^2\right)\right)$$

Problem 71: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{\text{Cos}[e+f x]^2\,(a+a\,\text{Sin}[e+f x])^m}{(c-c\,\text{Sin}[e+f x])^2}\,dx$$

Optimal (type 5, 81 leaves, 4 steps):

$$\frac{1}{a c^2 f}2^{\frac{3}{2}+m}\,\text{Hypergeometric2F1}\left[-\frac{1}{2},-\frac{1}{2}-m,\frac{1}{2},\frac{1}{2}(1-\text{Sin}[e+f x])\right]\text{Sec}[e+f x]\,(1+\text{Sin}[e+f x])^{-\frac{1}{2}-m}\,(a+a\,\text{Sin}[e+f x])^{1+m}$$

Result (type 6, 6360 leaves):

$$-\left(\left(\left(\left(\text{Cos}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{2 m}\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{-2 m}\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\right.\right.\right.$$
$$\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^4(a+a\,\text{Sin}[e+f x])^m\left(\frac{\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2 m}\text{Cos}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]^2}{\left(\text{Cos}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]-\text{Sin}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]\right)^2}+\right.$$

$$\frac{2\,\mathrm{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2 m}\mathrm{Cos}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]\mathrm{Sin}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]}{\left(\mathrm{Cos}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]-\mathrm{Sin}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]\right)^2}+\frac{\mathrm{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2 m}\mathrm{Sin}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]^2}{\left(\mathrm{Cos}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]-\mathrm{Sin}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]\right)^2}\Bigg)$$

$$\left(1-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{2(1+m)}\Bigg(-\Bigg(\mathrm{AppellF1}\left[-\frac{1}{2},-2(1+m),2 m,\frac{1}{2},\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\Bigg/$$

$$\Bigg(\mathrm{AppellF1}\left[-\frac{1}{2},-2(1+m),2 m,\frac{1}{2},\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]-$$

$$4\Bigg((1+m)\,\mathrm{AppellF1}\left[\frac{1}{2},-1-2 m,2 m,\frac{3}{2},\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+m$$

$$\mathrm{AppellF1}\left[\frac{1}{2},-2(1+m),1+2 m,\frac{3}{2},\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\Bigg)\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)\Bigg)+$$

$$\Bigg(3\,\mathrm{AppellF1}\left[\frac{1}{2},-2(1+m),1+2 m,\frac{3}{2},\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\mathrm{Sin}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)\Bigg/$$

$$\Bigg(-3\,\mathrm{AppellF1}\left[\frac{1}{2},-2(1+m),1+2 m,\frac{3}{2},\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$2\Bigg(2(1+m)\,\mathrm{AppellF1}\left[\frac{3}{2},-1-2 m,1+2 m,\frac{5}{2},\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$(1+2 m)\,\mathrm{AppellF1}\left[\frac{3}{2},-2(1+m),2(1+m),\frac{5}{2},\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\Bigg)\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)\Bigg)\Bigg)\Bigg/$$

$$\Bigg(f\,(c-c\,\mathrm{Sin}[e+f x])^2\Bigg(-m\left(\mathrm{Cos}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{2 m}\left(1-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{2(1+m)}\Bigg(-\Bigg(\mathrm{AppellF1}\Bigg[-\frac{1}{2},-2(1+m),2 m,$$

$$\frac{1}{2},\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg]\Bigg/\Bigg(\mathrm{AppellF1}\Bigg[-\frac{1}{2},-2(1+m),2 m,\frac{1}{2},\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,$$

$$-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg]-4\Bigg((1+m)\,\mathrm{AppellF1}\left[\frac{1}{2},-1-2 m,2 m,\frac{3}{2},\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$m\,\mathrm{AppellF1}\left[\frac{1}{2},-2(1+m),1+2 m,\frac{3}{2},\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\Bigg)\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)\Bigg)+$$

$$\Bigg(3\,\mathrm{AppellF1}\left[\frac{1}{2},-2(1+m),1+2 m,\frac{3}{2},\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\mathrm{Sin}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)\Bigg/$$

$$\Bigg(-3\,\mathrm{AppellF1}\left[\frac{1}{2},-2(1+m),1+2 m,\frac{3}{2},\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$2\Bigg(2(1+m)\,\mathrm{AppellF1}\left[\frac{3}{2},-1-2 m,1+2 m,\frac{5}{2},\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$(1+2 m)\,\mathrm{AppellF1}\left[\frac{3}{2},-2(1+m),2(1+m),\frac{5}{2},\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\Bigg)\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)-$$

$$\frac{1}{4}\Big(\text{Cos}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big)^{2 m}\,\text{Csc}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\,\Big(1-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big)^{2(1+m)}$$

$$\Big(-\Big(\text{AppellF1}\Big[-\frac{1}{2},-2(1+m),2 m,\frac{1}{2},\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big]\Big/$$

$$\Big(\text{AppellF1}\Big[-\frac{1}{2},-2(1+m),2 m,\frac{1}{2},\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big]-4$$

$$\Big((1+m)\,\text{AppellF1}\Big[\frac{1}{2},-1-2 m,2 m,\frac{3}{2},\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big]+$$

$$m\,\text{AppellF1}\Big[\frac{1}{2},-2(1+m),1+2 m,\frac{3}{2},\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big)\Big)+$$

$$\Big(3\,\text{AppellF1}\Big[\frac{1}{2},-2(1+m),1+2 m,\frac{3}{2},\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big]\,\text{Sin}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big)\Big/$$

$$\Big(-3\,\text{AppellF1}\Big[\frac{1}{2},-2(1+m),1+2 m,\frac{3}{2},\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big]+$$

$$2\Big(2(1+m)\,\text{AppellF1}\Big[\frac{3}{2},-1-2 m,1+2 m,\frac{5}{2},\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big]+$$

$$(1+2 m)\,\text{AppellF1}\Big[\frac{3}{2},-2(1+m),2(1+m),\frac{5}{2},\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big)\Big)-$$

$$(1+m)\,\Big(\text{Cos}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big)^{-1+2 m}\,\Big(1-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big)^{-1+2(1+m)}\,\Big(-\Big(\text{AppellF1}\Big[-\frac{1}{2},-2(1+m),2 m,\frac{1}{2},$$

$$\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big]\Big/\Big(\text{AppellF1}\Big[-\frac{1}{2},-2(1+m),2 m,\frac{1}{2},\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2,$$

$$-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big]-4\Big((1+m)\,\text{AppellF1}\Big[\frac{1}{2},-1-2 m,2 m,\frac{3}{2},\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big]+$$

$$m\,\text{AppellF1}\Big[\frac{1}{2},-2(1+m),1+2 m,\frac{3}{2},\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big)\Big)+$$

$$\Big(3\,\text{AppellF1}\Big[\frac{1}{2},-2(1+m),1+2 m,\frac{3}{2},\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big]\,\text{Sin}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big)\Big/$$

$$\Big(-3\,\text{AppellF1}\Big[\frac{1}{2},-2(1+m),1+2 m,\frac{3}{2},\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big]+$$

$$2\Big(2(1+m)\,\text{AppellF1}\Big[\frac{3}{2},-1-2 m,1+2 m,\frac{5}{2},\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big]+$$

$$(1+2 m)\,\text{AppellF1}\Big[\frac{3}{2},-2(1+m),2(1+m),\frac{5}{2},\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big)\Big)+$$

$$\Big(\text{Cos}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big)^{2 m}\,\text{Cot}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]\,\Big(1-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big)^{2(1+m)}$$

$$\Bigg(-\Bigg(\Bigg(m\,\text{AppellF1}\Big[\frac{1}{2},-2(1+m),1+2m,\frac{3}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2$$

$$\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]+(1+m)\,\text{AppellF1}\Big[\frac{1}{2},1-2(1+m),2m,\frac{3}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]$$

$$\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]\Bigg)\Bigg/\Bigg(\text{AppellF1}\Big[-\frac{1}{2},-2(1+m),2m,\frac{1}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,$$

$$-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]-4\Bigg((1+m)\,\text{AppellF1}\Big[\frac{1}{2},-1-2m,2m,\frac{3}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]+$$

$$m\,\text{AppellF1}\Big[\frac{1}{2},-2(1+m),1+2m,\frac{3}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\Bigg)\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Bigg)\Bigg)+$$

$$\Bigg(3\,\text{AppellF1}\Big[\frac{1}{2},-2(1+m),1+2m,\frac{3}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\,\text{Cos}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]$$

$$\text{Sin}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]\Bigg)\Bigg/\Bigg(2\Bigg(-3\,\text{AppellF1}\Big[\frac{1}{2},-2(1+m),1+2m,\frac{3}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]+2$$

$$\Bigg(2(1+m)\,\text{AppellF1}\Big[\frac{3}{2},-1-2m,1+2m,\frac{5}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]+(1+2m)$$

$$\text{AppellF1}\Big[\frac{3}{2},-2(1+m),2(1+m),\frac{5}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\Bigg)\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Bigg)\Bigg)+$$

$$\Bigg(3\,\text{Sin}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Bigg(-\frac{1}{6}(1+2m)\,\text{AppellF1}\Big[\frac{3}{2},-2(1+m),2+2m,\frac{5}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]$$

$$\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]-\frac{1}{3}(1+m)\,\text{AppellF1}\Big[\frac{3}{2},1-2(1+m),1+2m,\frac{5}{2},$$

$$\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]\Bigg)\Bigg)\Bigg/$$

$$\Bigg(-3\,\text{AppellF1}\Big[\frac{1}{2},-2(1+m),1+2m,\frac{3}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]+$$

$$2\Bigg(2(1+m)\,\text{AppellF1}\Big[\frac{3}{2},-1-2m,1+2m,\frac{5}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]+$$

$$(1+2m)\,\text{AppellF1}\Big[\frac{3}{2},-2(1+m),2(1+m),\frac{5}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\Bigg)\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Bigg)+$$

$$\Bigg(\text{AppellF1}\Big[-\frac{1}{2},-2(1+m),2m,\frac{1}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\Bigg(m\,\text{AppellF1}\Big[\frac{1}{2},-2(1+m),$$

$$1+2m,\frac{3}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]-2$$

$$\Bigg((1+m)\,\text{AppellF1}\Big[\frac{1}{2},-1-2m,2m,\frac{3}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]+m\,\text{AppellF1}\Big[\frac{1}{2},-2(1+m),$$

$$1+2 m,\ \frac{3}{2},\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\Big)\ \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]+(1+m)$$

$$\text{AppellF1}\Big[\frac{1}{2},\ 1-2(1+m),\ 2 m,\ \frac{3}{2},\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\ \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-4\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \Big((1+m)\ \Big(-\frac{1}{3} m\, \text{AppellF1}\Big[\frac{3}{2},\ -1-2 m,\ 1+2 m,\ \frac{5}{2},\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,$$

$$-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\ \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]+\frac{1}{6}(-1-2 m)\ \text{AppellF1}\Big[\frac{3}{2},\ -2 m,$$

$$2 m,\ \frac{5}{2},\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\ \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\Big)+$$

$$m\ \Big(-\frac{1}{6}(1+2 m)\ \text{AppellF1}\Big[\frac{3}{2},\ -2(1+m),\ 2+2 m,\ \frac{5}{2},\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{1}{3}(1+m)\ \text{AppellF1}\Big[\frac{3}{2},\ 1-2(1+m),\ 1+2 m,\ \frac{5}{2},$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\ \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\Big]\Big)\Big)\Big)\Big)\Big/$$

$$\Big(\text{AppellF1}\Big[-\frac{1}{2},\ -2(1+m),\ 2 m,\ \frac{1}{2},\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]-4\ \Big((1+m)\ \text{AppellF1}\Big[$$

$$\frac{1}{2},\ -1-2 m,\ 2 m,\ \frac{3}{2},\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]+$$

$$m\, \text{AppellF1}\Big[\frac{1}{2},\ -2(1+m),\ 1+2 m,\ \frac{3}{2},\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\Big)\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big)^2-$$

$$\Big(3\, \text{AppellF1}\Big[\frac{1}{2},\ -2(1+m),\ 1+2 m,\ \frac{3}{2},\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\ \text{Sin}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2$$

$$\Big(\Big(2(1+m)\ \text{AppellF1}\Big[\frac{3}{2},\ -1-2 m,\ 1+2 m,\ \frac{5}{2},\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]+$$

$$(1+2 m)\ \text{AppellF1}\Big[\frac{3}{2},\ -2(1+m),\ 2(1+m),\ \frac{5}{2},\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\Big)\ \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-3\ \Big(-\frac{1}{6}(1+2 m)\ \text{AppellF1}\Big[\frac{3}{2},\ -2(1+m),\ 2+2 m,\ \frac{5}{2},\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{1}{3}(1+m)\ \text{AppellF1}\Big[\frac{3}{2},\ 1-2(1+m),\ 1+2 m,\ \frac{5}{2},\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,$$

$$-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\ \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\Big)+2\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2$$

$$\Big(2(1+m)\ \Big(-\frac{3}{10}(1+2 m)\ \text{AppellF1}\Big[\frac{5}{2},\ -1-2 m,\ 2+2 m,\ \frac{7}{2},\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]+\frac{3}{10}(-1-2 m)\,\text{AppellF1}\left[\frac{5}{2},-2 m,1+2 m,\frac{7}{2},\right.$$

$$\left.\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right] \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\Bigg)+$$

$$(1+2 m)\left(-\frac{3}{5}(1+m)\,\text{AppellF1}\left[\frac{5}{2},-2(1+m),1+2(1+m),\frac{7}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right.$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{3}{5}(1+m)\,\text{AppellF1}\left[\frac{5}{2},1-2(1+m),2(1+m),\frac{7}{2},\right.$$

$$\left.\left.\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right] \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)\Bigg)\Bigg)\Bigg)\Bigg)\Bigg/$$

$$\left(-3\,\text{AppellF1}\left[\frac{1}{2},-2(1+m),1+2 m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+2\right.$$

$$\left(2(1+m)\,\text{AppellF1}\left[\frac{3}{2},-1-2 m,1+2 m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+(1+2 m)\right.$$

$$\left.\left.\text{AppellF1}\left[\frac{3}{2},-2(1+m),2(1+m),\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right) \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^2\Bigg)\Bigg)\Bigg)$$

Problem 72: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{\text{Cos}[e+f x]^2 (a+a \text{Sin}[e+f x])^m}{(c-c \text{Sin}[e+f x])^3}\, dx$$

Optimal (type 5, 86 leaves, 4 steps):

$$\frac{1}{3 a^2 c^3 f} 2^{\frac{3}{2}+m}\,\text{Hypergeometric2F1}\left[-\frac{3}{2},-\frac{1}{2}-m,-\frac{1}{2},\frac{1}{2}(1-\text{Sin}[e+f x])\right] \text{Sec}[e+f x]^3 (1+\text{Sin}[e+f x])^{-\frac{1}{2}-m} (a+a \text{Sin}[e+f x])^{2+m}$$

Result (type 6, 6298 leaves):

$$-\left(\left(\left(\left(\text{Cos}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{2 m} \text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{-2 m} \text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^3\right.\right.\right.\right.$$

$$\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^6 (a+a \text{Sin}[e+f x])^m \left(\frac{\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2 m} \text{Cos}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]^2}{\left(\text{Cos}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]-\text{Sin}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]\right)^4}+\right.$$

$$\left.\frac{2\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2 m} \text{Cos}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right] \text{Sin}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]}{\left(\text{Cos}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]-\text{Sin}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]\right)^4}+\frac{\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2 m} \text{Sin}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]^2}{\left(\text{Cos}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]-\text{Sin}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]\right)^4}\right)$$

$$\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{2(1+m)} \left(-\left(\text{AppellF1}\left[-\frac{3}{2},-2(1+m),2 m,-\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\Bigg/\right.\right.$$

$$\left(\text{AppellF1}\left[-\frac{3}{2},-2(1+m),2m,-\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+\right.$$
$$4\left((1+m)\,\text{AppellF1}\left[-\frac{1}{2},-1-2m,2m,\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+m\right.$$
$$\left.\left.\text{AppellF1}\left[-\frac{1}{2},-2(1+m),1+2m,\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)-$$
$$\left(3\,\text{AppellF1}\left[-\frac{1}{2},-2(1+m),2m,\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)\Big/$$
$$\left(\text{AppellF1}\left[-\frac{1}{2},-2(1+m),2m,\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]-\right.$$
$$4\left((1+m)\,\text{AppellF1}\left[\frac{1}{2},-1-2m,2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+\right.$$
$$\left.\left.\left.m\,\text{AppellF1}\left[\frac{1}{2},-2(1+m),1+2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)\right)\Big/$$
$$\left(24f\,(c-c\,\text{Sin}[e+fx])^3\left(-\frac{1}{24}m\left(\text{Cos}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)^{2m}\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)^{2(1+m)}\right.\right.$$
$$\left(-\left(\text{AppellF1}\left[-\frac{3}{2},-2(1+m),2m,-\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\Big/\right.\right.$$
$$\left(\text{AppellF1}\left[-\frac{3}{2},-2(1+m),2m,-\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+4\right.$$
$$\left((1+m)\,\text{AppellF1}\left[-\frac{1}{2},-1-2m,2m,\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+\right.$$
$$\left.\left.m\,\text{AppellF1}\left[-\frac{1}{2},-2(1+m),1+2m,\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)-$$
$$\left(3\,\text{AppellF1}\left[-\frac{1}{2},-2(1+m),2m,\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)\Big/$$
$$\left(\text{AppellF1}\left[-\frac{1}{2},-2(1+m),2m,\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]-\right.$$
$$4\left((1+m)\,\text{AppellF1}\left[\frac{1}{2},-1-2m,2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+\right.$$
$$\left.\left.m\,\text{AppellF1}\left[\frac{1}{2},-2(1+m),1+2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)-$$
$$\frac{1}{32}\left(\text{Cos}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)^{2m}\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Csc}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)^{2(1+m)}$$

$$\left(-\left(\text{AppellF1}\left[-\frac{3}{2},\,-2\,(1+m),\,2\,m,\,-\frac{1}{2},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right/\right.$$

$$\left(\text{AppellF1}\left[-\frac{3}{2},\,-2\,(1+m),\,2\,m,\,-\frac{1}{2},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+4\right.$$

$$\left((1+m)\,\text{AppellF1}\left[-\frac{1}{2},\,-1-2\,m,\,2\,m,\,\frac{1}{2},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.$$

$$\left.\left.m\,\text{AppellF1}\left[-\frac{1}{2},\,-2\,(1+m),\,1+2\,m,\,\frac{1}{2},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\right)-$$

$$\left(3\,\text{AppellF1}\left[-\frac{1}{2},\,-2\,(1+m),\,2\,m,\,\frac{1}{2},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\Big/$$

$$\left(\text{AppellF1}\left[-\frac{1}{2},\,-2\,(1+m),\,2\,m,\,\frac{1}{2},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]-\right.$$

$$4\left((1+m)\,\text{AppellF1}\left[\frac{1}{2},\,-1-2\,m,\,2\,m,\,\frac{3}{2},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.$$

$$\left.\left.\left.m\,\text{AppellF1}\left[\frac{1}{2},\,-2\,(1+m),\,1+2\,m,\,\frac{3}{2},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\right)-$$

$$\frac{1}{24}\,(1+m)\left(\text{Cos}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{2\,m}\text{Csc}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{-1+2\,(1+m)}$$

$$\left(-\left(\text{AppellF1}\left[-\frac{3}{2},\,-2\,(1+m),\,2\,m,\,-\frac{1}{2},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right/\right.$$

$$\left(\text{AppellF1}\left[-\frac{3}{2},\,-2\,(1+m),\,2\,m,\,-\frac{1}{2},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+4\right.$$

$$\left((1+m)\,\text{AppellF1}\left[-\frac{1}{2},\,-1-2\,m,\,2\,m,\,\frac{1}{2},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.$$

$$\left.\left.m\,\text{AppellF1}\left[-\frac{1}{2},\,-2\,(1+m),\,1+2\,m,\,\frac{1}{2},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\right)-$$

$$\left(3\,\text{AppellF1}\left[-\frac{1}{2},\,-2\,(1+m),\,2\,m,\,\frac{1}{2},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\Big/$$

$$\left(\text{AppellF1}\left[-\frac{1}{2},\,-2\,(1+m),\,2\,m,\,\frac{1}{2},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]-\right.$$

$$4\left((1+m)\,\text{AppellF1}\left[\frac{1}{2},\,-1-2\,m,\,2\,m,\,\frac{3}{2},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.$$

$$\left.\left.\left.m\,\text{AppellF1}\left[\frac{1}{2},\,-2\,(1+m),\,1+2\,m,\,\frac{3}{2},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\right)+$$

$$\frac{1}{24}\left(\text{Cos}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{2\,m}\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^3\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{2\,(1+m)}$$

$$\Bigg(-\Bigg(\Bigg(-3\,m\,\text{AppellF1}\Big[-\frac{1}{2},\,-2\,(1+m),\,1+2\,m,\,\frac{1}{2},\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2$$

$$\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]-3\,(1+m)\,\text{AppellF1}\Big[-\frac{1}{2},\,1-2\,(1+m),\,2\,m,\,\frac{1}{2},\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]$$

$$\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\Bigg)\Bigg/\Bigg(\text{AppellF1}\Big[-\frac{3}{2},\,-2\,(1+m),\,2\,m,\,-\frac{1}{2},\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,$$

$$-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+4\,\Bigg((1+m)\,\text{AppellF1}\Big[-\frac{1}{2},\,-1-2\,m,\,2\,m,\,\frac{1}{2},\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+$$

$$m\,\text{AppellF1}\Big[-\frac{1}{2},\,-2\,(1+m),\,1+2\,m,\,\frac{1}{2},\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\Bigg)\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Bigg)-$$

$$\Bigg(3\,\text{AppellF1}\Big[-\frac{1}{2},\,-2\,(1+m),\,2\,m,\,\frac{1}{2},\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2$$

$$\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\Bigg)\Bigg/\Bigg(2\,\Bigg(\text{AppellF1}\Big[-\frac{1}{2},\,-2\,(1+m),\,2\,m,\,\frac{1}{2},\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]-4$$

$$\Bigg((1+m)\,\text{AppellF1}\Big[\frac{1}{2},\,-1-2\,m,\,2\,m,\,\frac{3}{2},\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+$$

$$m\,\text{AppellF1}\Big[\frac{1}{2},\,-2\,(1+m),\,1+2\,m,\,\frac{3}{2},\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\Bigg)\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Bigg)\Bigg)-$$

$$\Bigg(3\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\,\Bigg(m\,\text{AppellF1}\Big[\frac{1}{2},\,-2\,(1+m),\,1+2\,m,\,\frac{3}{2},\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]$$

$$\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]+(1+m)\,\text{AppellF1}\Big[\frac{1}{2},\,1-2\,(1+m),\,2\,m,\,\frac{3}{2},$$

$$\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\Bigg)\Bigg)\Bigg/$$

$$\Bigg(\text{AppellF1}\Big[-\frac{1}{2},\,-2\,(1+m),\,2\,m,\,\frac{1}{2},\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]-$$

$$4\,\Bigg((1+m)\,\text{AppellF1}\Big[\frac{1}{2},\,-1-2\,m,\,2\,m,\,\frac{3}{2},\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+$$

$$m\,\text{AppellF1}\Big[\frac{1}{2},\,-2\,(1+m),\,1+2\,m,\,\frac{3}{2},\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\Bigg)\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Bigg)+$$

$$\Bigg(\text{AppellF1}\Big[-\frac{3}{2},\,-2\,(1+m),\,2\,m,\,-\frac{1}{2},\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]$$

$$\Bigg(-3\,m\,\text{AppellF1}\Big[-\frac{1}{2},\,-2\,(1+m),\,1+2\,m,\,\frac{1}{2},\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2$$

$$\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]+2\,\Bigg((1+m)\,\text{AppellF1}\Big[-\frac{1}{2},\,-1-2\,m,\,2\,m,\,\frac{1}{2},\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+$$

$$m\,\text{AppellF1}\left[-\frac{1}{2},-2(1+m),1+2m,\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right)\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2$$
$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]-3(1+m)\,\text{AppellF1}\left[-\frac{1}{2},1-2(1+m),2m,\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]$$
$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]+4\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\left((1+m)\left(m\,\text{AppellF1}\left[\frac{1}{2},-1-2m,1+2m,\right.\right.\right.$$
$$\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]-$$
$$\frac{1}{2}(-1-2m)\,\text{AppellF1}\left[\frac{1}{2},-2m,2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2$$
$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]\right)+m\left(\frac{1}{2}(1+2m)\,\text{AppellF1}\left[\frac{1}{2},-2(1+m),2+2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,\right.\right.$$
$$-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]+(1+m)\,\text{AppellF1}\left[\frac{1}{2},1-2(1+m),\right.$$
$$1+2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]\left.\left.\left.\right)\right)\right)\Big/$$
$$\left(\text{AppellF1}\left[-\frac{3}{2},-2(1+m),2m,-\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+4\right.$$
$$\left((1+m)\,\text{AppellF1}\left[-\frac{1}{2},-1-2m,2m,\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+\right.$$
$$m\,\text{AppellF1}\left[-\frac{1}{2},-2(1+m),1+2m,\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\Big)^2+$$
$$\left(3\,\text{AppellF1}\left[-\frac{1}{2},-2(1+m),2m,\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right.$$
$$\left(m\,\text{AppellF1}\left[\frac{1}{2},-2(1+m),1+2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right.$$
$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]-2\left((1+m)\,\text{AppellF1}\left[\frac{1}{2},-1-2m,2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+\right.$$
$$m\,\text{AppellF1}\left[\frac{1}{2},-2(1+m),1+2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right)\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2$$
$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]+(1+m)\,\text{AppellF1}\left[\frac{1}{2},1-2(1+m),2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]$$
$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]-4\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\left((1+m)\left(-\frac{1}{3}m\,\text{AppellF1}\left[\frac{3}{2},-1-2m,1+2m,\right.\right.\right.$$
$$\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]+$$

$$\frac{1}{6}(-1-2m)\,\text{AppellF1}\left[\frac{3}{2},-2m,2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2$$
$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]\Bigg)+m\Bigg(-\frac{1}{6}(1+2m)\,\text{AppellF1}\left[\frac{3}{2},-2(1+m),2+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,\right.$$
$$\left.-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]-\frac{1}{3}(1+m)\,\text{AppellF1}\left[\frac{3}{2},1-2(1+m),\right.$$
$$\left.1+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]\Bigg)\Bigg)\Bigg)\Bigg)\Bigg/$$
$$\Bigg(\text{AppellF1}\left[-\frac{1}{2},-2(1+m),2m,\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]-4\Bigg((1+m)\,\text{AppellF1}\Bigg[$$
$$\frac{1}{2},-1-2m,2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\Bigg]+$$
$$m\,\text{AppellF1}\left[\frac{1}{2},-2(1+m),1+2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\Bigg)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\Bigg)^2\Bigg)\Bigg)\Bigg)$$

- **Problem 73: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int \text{Cos}[e+fx]^2\,(a+a\,\text{Sin}[e+fx])^m\,(c-c\,\text{Sin}[e+fx])^{5/2}\,dx$$

Optimal (type 3, 244 leaves, 5 steps) :

$$\frac{768\,c^3\,\text{Cos}[e+fx]\,(a+a\,\text{Sin}[e+fx])^{1+m}}{a\,f\,(7+2m)\,(9+2m)\,\left(15+16m+4m^2\right)\sqrt{c-c\,\text{Sin}[e+fx]}}+\frac{192\,c^2\,\text{Cos}[e+fx]\,(a+a\,\text{Sin}[e+fx])^{1+m}\sqrt{c-c\,\text{Sin}[e+fx]}}{a\,f\,(9+2m)\,\left(35+24m+4m^2\right)}+$$
$$\frac{24\,c\,\text{Cos}[e+fx]\,(a+a\,\text{Sin}[e+fx])^{1+m}\,(c-c\,\text{Sin}[e+fx])^{3/2}}{a\,f\,\left(63+32m+4m^2\right)}+\frac{2\,\text{Cos}[e+fx]\,(a+a\,\text{Sin}[e+fx])^{1+m}\,(c-c\,\text{Sin}[e+fx])^{5/2}}{a\,f\,(9+2m)}$$

Result (type 3, 695 leaves) :

$$\frac{1}{f\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^5}$$

$$(a(1+\text{Sin}[e+f x]))^m (c-c\,\text{Sin}[e+f x])^{5/2}\left(\frac{\left(2205+590 m+108 m^2+8 m^3\right)\left(\left(\frac{3}{8}+\frac{3 i}{8}\right)\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\left(\frac{3}{8}-\frac{3 i}{8}\right)\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)}{(3+2 m)(5+2 m)(7+2 m)(9+2 m)}+\right.$$

$$\frac{\left(2205+590 m+108 m^2+8 m^3\right)\left(\left(\frac{3}{8}-\frac{3 i}{8}\right)\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\left(\frac{3}{8}+\frac{3 i}{8}\right)\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)}{(3+2 m)(5+2 m)(7+2 m)(9+2 m)}+$$

$$\frac{\left(191 m+48 m^2+4 m^3\right)\left((1-i)\text{Cos}\left[\frac{3}{2}(e+f x)\right]-(1+i)\text{Sin}\left[\frac{3}{2}(e+f x)\right]\right)}{(3+2 m)(5+2 m)(7+2 m)(9+2 m)}+$$

$$\frac{\left(191 m+48 m^2+4 m^3\right)\left((1+i)\text{Cos}\left[\frac{3}{2}(e+f x)\right]-(1-i)\text{Sin}\left[\frac{3}{2}(e+f x)\right]\right)}{(3+2 m)(5+2 m)(7+2 m)(9+2 m)}+$$

$$\frac{(21+2 m)\left(\left(\frac{3}{2}+\frac{3 i}{2}\right)\text{Cos}\left[\frac{5}{2}(e+f x)\right]+\left(\frac{3}{2}-\frac{3 i}{2}\right)\text{Sin}\left[\frac{5}{2}(e+f x)\right]\right)}{(5+2 m)(7+2 m)(9+2 m)}+\frac{(21+2 m)\left(\left(\frac{3}{2}-\frac{3 i}{2}\right)\text{Cos}\left[\frac{5}{2}(e+f x)\right]+\left(\frac{3}{2}+\frac{3 i}{2}\right)\text{Sin}\left[\frac{5}{2}(e+f x)\right]\right)}{(5+2 m)(7+2 m)(9+2 m)}+$$

$$\frac{(15+2 m)\left(\left(\frac{3}{16}-\frac{3 i}{16}\right)\text{Cos}\left[\frac{7}{2}(e+f x)\right]-\left(\frac{3}{16}+\frac{3 i}{16}\right)\text{Sin}\left[\frac{7}{2}(e+f x)\right]\right)}{(7+2 m)(9+2 m)}+\frac{(15+2 m)\left(\left(\frac{3}{16}+\frac{3 i}{16}\right)\text{Cos}\left[\frac{7}{2}(e+f x)\right]-\left(\frac{3}{16}-\frac{3 i}{16}\right)\text{Sin}\left[\frac{7}{2}(e+f x)\right]\right)}{(7+2 m)(9+2 m)}+$$

$$\left.\frac{\left(-\frac{1}{16}+\frac{i}{16}\right)\text{Cos}\left[\frac{9}{2}(e+f x)\right]-\left(\frac{1}{16}+\frac{i}{16}\right)\text{Sin}\left[\frac{9}{2}(e+f x)\right]}{9+2 m}+\frac{\left(-\frac{1}{16}-\frac{i}{16}\right)\text{Cos}\left[\frac{9}{2}(e+f x)\right]-\left(\frac{1}{16}-\frac{i}{16}\right)\text{Sin}\left[\frac{9}{2}(e+f x)\right]}{9+2 m}\right)$$

- **Problem 77: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int\frac{\text{Cos}[e+f x]^2 (a+a\,\text{Sin}[e+f x])^m}{(c-c\,\text{Sin}[e+f x])^{3/2}}\,dx$$

Optimal (type 5, 76 leaves, 4 steps):

$$\frac{\text{Cos}[e+f x]\,\text{Hypergeometric2F1}\left[1,\frac{3}{2}+m,\frac{5}{2}+m,\frac{1}{2}(1+\text{Sin}[e+f x])\right](a+a\,\text{Sin}[e+f x])^{1+m}}{a c f (3+2 m)\sqrt{c-c\,\text{Sin}[e+f x]}}$$

Result (type 6, 3587 leaves):

$$\left(2\sqrt{2}(2+m)\,\text{AppellF1}\left[3+2 m,2+2 m,1,4+2 m,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right),1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^3\right.$$

$$\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^3(a+a\,\text{Sin}[e+f x])^m\left(\frac{\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2 m}\text{Cos}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]^2}{\text{Cos}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]-\text{Sin}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]}+\right.$$

$$\frac{2\,\mathrm{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2\,m}\mathrm{Cos}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f\,x\right)\right]\mathrm{Sin}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f\,x\right)\right]}{\mathrm{Cos}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f\,x\right)\right]-\mathrm{Sin}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f\,x\right)\right]}+\frac{\mathrm{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2\,m}\mathrm{Sin}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f\,x\right)\right]^{2}}{\mathrm{Cos}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f\,x\right)\right]-\mathrm{Sin}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f\,x\right)\right]}\Bigg)\Bigg)\Big/$$

$$\Bigg(f\,(3+2\,m)\,\Bigg(2\,(2+m)\,\mathrm{AppellF1}\Big[3+2\,m,\,2+2\,m,\,1,\,4+2\,m,\,\frac{1}{2}\left(1-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}\right),\,1-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}\Big]\,\mathrm{Cos}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}+$$

$$\Bigg(\mathrm{AppellF1}\Big[4+2\,m,\,2+2\,m,\,2,\,5+2\,m,\,\frac{1}{2}\left(1-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}\right),\,1-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}\Big]+$$

$$(1+m)\,\mathrm{AppellF1}\Big[4+2\,m,\,3+2\,m,\,1,\,5+2\,m,\,\frac{1}{2}\left(1-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}\right),\,1-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}\Big]\Bigg)\,\mathrm{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\Bigg)\Bigg)$$

$$(c-c\,\mathrm{Sin}[e+f\,x])^{3/2}\,\Bigg(\Bigg(\sqrt{2}\,(2+m)\,\mathrm{AppellF1}\Big[3+2\,m,\,2+2\,m,\,1,\,4+2\,m,\,\frac{1}{2}\left(1-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}\right),\,1-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}\Big]$$

$$\mathrm{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{3+2\,m}\mathrm{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\mathrm{Csc}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}\Bigg)\Big/$$

$$\Bigg((3+2\,m)\,\Bigg(2\,(2+m)\,\mathrm{AppellF1}\Big[3+2\,m,\,2+2\,m,\,1,\,4+2\,m,\,\frac{1}{2}\left(1-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}\right),\,1-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}\Big]$$

$$\mathrm{Cos}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}+\Bigg(\mathrm{AppellF1}\Big[4+2\,m,\,2+2\,m,\,2,\,5+2\,m,\,\frac{1}{2}\left(1-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}\right),\,1-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}\Big]+$$

$$(1+m)\,\mathrm{AppellF1}\Big[4+2\,m,\,3+2\,m,\,1,\,5+2\,m,\,\frac{1}{2}\left(1-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}\right),\,1-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}\Big]\Bigg)\,\mathrm{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\Bigg)\Bigg)+$$

$$\Bigg(\sqrt{2}\,(2+m)\,\mathrm{AppellF1}\Big[3+2\,m,\,2+2\,m,\,1,\,4+2\,m,\,\frac{1}{2}\left(1-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}\right),\,1-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}\Big]$$

$$\mathrm{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2+2\,m}\mathrm{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}\mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\Bigg)\Big/$$

$$\Bigg(2\,(2+m)\,\mathrm{AppellF1}\Big[3+2\,m,\,2+2\,m,\,1,\,4+2\,m,\,\frac{1}{2}\left(1-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}\right),\,1-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}\Big]\,\mathrm{Cos}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}+$$

$$\Bigg(\mathrm{AppellF1}\Big[4+2\,m,\,2+2\,m,\,2,\,5+2\,m,\,\frac{1}{2}\left(1-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}\right),\,1-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}\Big]+$$

$$(1+m)\,\mathrm{AppellF1}\Big[4+2\,m,\,3+2\,m,\,1,\,5+2\,m,\,\frac{1}{2}\left(1-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}\right),\,1-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}\Big]\Bigg)\,\mathrm{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\Bigg)-$$

$$\Bigg(2\,\sqrt{2}\,(2+m)\,\mathrm{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{3+2\,m}\mathrm{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}\Bigg(-\frac{1}{2\,(4+2\,m)}(3+2\,m)\,\mathrm{AppellF1}\Big[4+2\,m,\,2+2\,m,\,2,\,5+2\,m,$$

$$\frac{1}{2}\left(1-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}\right),\,1-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}\Big]\,\mathrm{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-\frac{1}{4\,(4+2\,m)}$$

$$(2+2\,m)\,(3+2\,m)\,\mathrm{AppellF1}\Big[4+2\,m,\,3+2\,m,\,1,\,5+2\,m,\,\frac{1}{2}\left(1-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}\right),\,1-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}\Big]$$

$$\operatorname{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\Bigg)\Bigg)\Bigg)\Bigg/$$

$$\Bigg((3+2m)\left(2(2+m)\,\text{AppellF1}\left[3+2m,2+2m,1,4+2m,\frac{1}{2}\left(1-\operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right),1-\operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right.$$

$$\operatorname{Cos}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2+\Bigg(\text{AppellF1}\left[4+2m,2+2m,2,5+2m,\frac{1}{2}\left(1-\operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right),1-\operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$(1+m)\,\text{AppellF1}\left[4+2m,3+2m,1,5+2m,\frac{1}{2}\left(1-\operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right),1-\operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\Bigg)\operatorname{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\Bigg)\Bigg)+$$

$$\Bigg(2\sqrt{2}\,(2+m)\,\text{AppellF1}\left[3+2m,2+2m,1,4+2m,\frac{1}{2}\left(1-\operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right),1-\operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]$$

$$\operatorname{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{3+2m}\operatorname{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2$$

$$\Bigg(-(2+m)\,\text{AppellF1}\left[3+2m,2+2m,1,4+2m,\frac{1}{2}\left(1-\operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right),1-\operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\operatorname{Cos}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]$$

$$\operatorname{Sin}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{1}{2}\Bigg(\text{AppellF1}\left[4+2m,2+2m,2,5+2m,\frac{1}{2}\left(1-\operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right),1-\operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$(1+m)\,\text{AppellF1}\left[4+2m,3+2m,1,5+2m,\frac{1}{2}\left(1-\operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right),1-\operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\Bigg)\operatorname{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]+$$

$$2(2+m)\operatorname{Cos}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg(-\frac{1}{2(4+2m)}(3+2m)\,\text{AppellF1}\left[4+2m,2+2m,2,5+2m,\frac{1}{2}\left(1-\operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right),\right.$$

$$\left.1-\operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\operatorname{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{1}{4(4+2m)}(2+2m)(3+2m)\,\text{AppellF1}\Big[4+2m,3+$$

$$2m,1,5+2m,\frac{1}{2}\left(1-\operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right),1-\operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\operatorname{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\Bigg)+$$

$$\operatorname{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\Bigg(-\frac{1}{5+2m}(4+2m)\,\text{AppellF1}\left[5+2m,2+2m,3,6+2m,\frac{1}{2}\left(1-\operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right),\right.$$

$$\left.1-\operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\operatorname{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{1}{4(5+2m)}(2+2m)(4+2m)\,\text{AppellF1}\Big[5+2m,3+$$

$$2m,2,6+2m,\frac{1}{2}\left(1-\operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right),1-\operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\operatorname{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]+$$

$$(1+m)\Bigg(-\frac{1}{2(5+2m)}(4+2m)\,\text{AppellF1}\left[5+2m,3+2m,2,6+2m,\frac{1}{2}\left(1-\operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right),1-\operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]$$

$$\operatorname{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{1}{4(5+2m)}(3+2m)(4+2m)\,\text{AppellF1}\Big[5+2m,4+2m,1,6+2m,$$

$$\frac{1}{2}\left(1-\operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right),1-\operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\operatorname{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\Bigg)\Bigg)\Bigg)\Bigg)\Bigg/$$

$$\left((3+2m)\left(2(2+m)\,\text{AppellF1}\left[3+2m,2+2m,1,4+2m,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right),1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right.\right.$$
$$\text{Cos}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2+\left(\text{AppellF1}\left[4+2m,2+2m,2,5+2m,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right),1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+(1+m)\right.$$
$$\left.\left.\left.\text{AppellF1}\left[4+2m,3+2m,1,5+2m,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right),1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right)\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)\right)\right)$$

- **Problem 78: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int\frac{\text{Cos}[e+fx]^2\,(a+a\,\text{Sin}[e+fx])^m}{(c-c\,\text{Sin}[e+fx])^{5/2}}\,dx$$

Optimal (type 5, 79 leaves, 4 steps):

$$\frac{\text{Cos}[e+fx]\,\text{Hypergeometric2F1}\left[2,\frac{3}{2}+m,\frac{5}{2}+m,\frac{1}{2}(1+\text{Sin}[e+fx])\right](a+a\,\text{Sin}[e+fx])^{1+m}}{2\,a\,c^2\,f\,(3+2m)\sqrt{c-c\,\text{Sin}[e+fx]}}$$

Result (type 6, 7834 leaves):

$$-\left(\left(\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-fx\right)\right]^{-2m}\left(\text{Cos}\left[\frac{1}{2}(e+fx)\right]-\text{Sin}\left[\frac{1}{2}(e+fx)\right]\right)^5(a+a\,\text{Sin}[e+fx])^m\right.\right.$$
$$\left(\frac{\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-fx\right)\right]^{2m}\text{Cos}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+fx\right)\right]^2}{\left(\text{Cos}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+fx\right)\right]-\text{Sin}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+fx\right)\right]\right)^3}+\frac{2\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-fx\right)\right]^{2m}\text{Cos}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+fx\right)\right]\text{Sin}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+fx\right)\right]}{\left(\text{Cos}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+fx\right)\right]-\text{Sin}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+fx\right)\right]\right)^3}+\right.$$
$$\left.\frac{\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-fx\right)\right]^{2m}\text{Sin}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+fx\right)\right]^2}{\left(\text{Cos}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+fx\right)\right]-\text{Sin}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+fx\right)\right]\right)^3}\right)\left(\frac{1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2}\right)^{2m}$$
$$\left(-\text{AppellF1}\left[1,-2m,2m,2,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\Big/\left(-m\left(\text{AppellF1}\left[2,1-2m,2m,3,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,\right.\right.\right.\right.$$
$$\left.\left.-\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+\text{AppellF1}\left[2,-2m,1+2m,3,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right)+$$
$$\left.\text{AppellF1}\left[1,-2m,2m,2,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)+$$
$$\left(\text{AppellF1}\left[1,-2m,2m,2,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)\Big/$$
$$\left(\text{AppellF1}\left[1,-2m,2m,2,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]-\right.$$
$$m\left(\text{AppellF1}\left[2,1-2m,2m,3,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+\right.$$

$$\text{AppellF1}\left[2,\,-2\,m,\,1+2\,m,\,3,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)+$$

$$\left(4\,(1+m)\,\text{AppellF1}\left[1+2\,m,\,2\,m,\,1,\,2+2\,m,\,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right.$$

$$\left.\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\left(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\right)\Big/$$

$$\left((1+2\,m)\left(-2\,(1+m)\,\text{AppellF1}\left[1+2\,m,\,2\,m,\,1,\,2+2\,m,\,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.\right.$$

$$\left(\text{AppellF1}\left[2+2\,m,\,2\,m,\,2,\,3+2\,m,\,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+m\,\text{AppellF1}\left[2+2\,m,\,1+2\,m,\right.\right.$$

$$\left.\left.\left.\left.1,\,3+2\,m,\,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\left(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\right)\right)\right)\Big/\left(4\sqrt{2}\,f\right.$$

$$(c-c\,\text{Sin}[e+f\,x])^{5/2}\left(\frac{1}{2\sqrt{2}}\,m\left(\frac{1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}\right)^{-1+2\,m}\left(-\frac{\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)}{2\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^2}-\right.\right.$$

$$\left.\frac{\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]}{2\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)}\right)\left(-\text{AppellF1}\left[1,\,-2\,m,\,2\,m,\,2,\,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\Big/\right.$$

$$\left(-m\left(\text{AppellF1}\left[2,\,1-2\,m,\,2\,m,\,3,\,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.\right.$$

$$\left.\text{AppellF1}\left[2,\,-2\,m,\,1+2\,m,\,3,\,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)+$$

$$\left.\text{AppellF1}\left[1,\,-2\,m,\,2\,m,\,2,\,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)+$$

$$\left(\text{AppellF1}\left[1,\,-2\,m,\,2\,m,\,2,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\Big/$$

$$\left(\text{AppellF1}\left[1,\,-2\,m,\,2\,m,\,2,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]-\right.$$

$$m\left(\text{AppellF1}\left[2,\,1-2\,m,\,2\,m,\,3,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\text{AppellF1}\left[2,\,-2\,m,\,1+2\,m,\,3,\right.\right.$$

$$\left.\left.\left.\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)+\left(4\,(1+m)\,\text{AppellF1}\left[1+2\,m,\,2\,m,\,1,\,2+2\,m,\,\frac{1}{2}-\right.\right.$$

$$\left.\left.\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\left(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\right)\Big/$$

$$\left((1+2\,m)\left(-2\,(1+m)\,\text{AppellF1}\left[1+2\,m,\,2\,m,\,1,\,2+2\,m,\,\frac{1}{2}-\frac{1}{2}\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.\right.$$

$$\left(\text{AppellF1}\left[2+2\,m,\,2\,m,\,2,\,3+2\,m,\,\frac{1}{2}-\frac{1}{2}\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+m\,\text{AppellF1}\left[2+2\,m,\right.\right.$$

$$\left.\left.\left.\left.1+2\,m,\,1,\,3+2\,m,\,\frac{1}{2}-\frac{1}{2}\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\left(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\right)\right)\right)+$$

$$\frac{1}{4\sqrt{2}}\left(\frac{1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}\right)^{2\,m}\left(-\left(\frac{1}{2}\,m\,\text{AppellF1}\left[2,\,1-2\,m,\,2\,m,\,3,\,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\,\text{Cot}\left[\frac{1}{4}\right.\right.\right.$$

$$\left.\left(-e+\frac{\pi}{2}-f\,x\right)\right]\,\text{Csc}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2+\frac{1}{2}\,m\,\text{AppellF1}\left[2,\,-2\,m,\,1+2\,m,\,3,\,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]$$

$$\left.\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\,\text{Csc}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\Big/\left(-m\left(\text{AppellF1}\left[2,\,1-2\,m,\,2\,m,\,3,\,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\right.\right.\right.$$

$$\left.\left.-\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\text{AppellF1}\left[2,\,-2\,m,\,1+2\,m,\,3,\,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)+$$

$$\left.\text{AppellF1}\left[1,\,-2\,m,\,2\,m,\,2,\,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)+$$

$$\left(\text{AppellF1}\left[1,\,-2\,m,\,2\,m,\,2,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\right)\Big/$$

$$\left(2\left(\text{AppellF1}\left[1,\,-2\,m,\,2\,m,\,2,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]-\right.\right.$$

$$m\left(\text{AppellF1}\left[2,\,1-2\,m,\,2\,m,\,3,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.$$

$$\left.\left.\left.\text{AppellF1}\left[2,\,-2\,m,\,1+2\,m,\,3,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\right)+$$

$$\left(\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\left(-\frac{1}{2}\,m\,\text{AppellF1}\left[2,\,1-2\,m,\,2\,m,\,3,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right.\right.$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-\frac{1}{2}\,m\,\text{AppellF1}\left[2,\,-2\,m,\,1+2\,m,\,3,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]$$

$$\left.\left.\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\right)\right)\Big/\left(\text{AppellF1}\left[1,\,-2\,m,\,2\,m,\,2,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\right.\right.$$

$$\left.-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]-m\left(\text{AppellF1}\left[2,\,1-2\,m,\,2\,m,\,3,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.$$

$$\left.\left.\text{AppellF1}\left[2,\,-2\,m,\,1+2\,m,\,3,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)+$$

$$(\text{AppellF1}[1,-2m,2m,2,\text{Cot}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2,-\text{Cot}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2]\,(-m\,(\tfrac{4}{3}m\,\text{AppellF1}[3,1-2m,1+2m,4,$$

$$\text{Cot}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2,-\text{Cot}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2]\,\text{Cot}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]\,\text{Csc}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2-\tfrac{1}{3}(1-2m)\,\text{AppellF1}[$$

$$3,2-2m,2m,4,\text{Cot}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2,-\text{Cot}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2]\,\text{Cot}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]\,\text{Csc}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2+$$

$$\tfrac{1}{3}(1+2m)\,\text{AppellF1}[3,-2m,2+2m,4,\text{Cot}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2,-\text{Cot}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2]\,\text{Cot}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]$$

$$\text{Csc}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2)+\tfrac{1}{2}\text{AppellF1}[1,-2m,2m,2,\text{Cot}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2,-\text{Cot}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2]$$

$$\text{Sec}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2\,\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]+(\tfrac{1}{2}m\,\text{AppellF1}[2,1-2m,2m,3,\text{Cot}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2,$$

$$-\text{Cot}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2]\,\text{Cot}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]\,\text{Csc}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2+\tfrac{1}{2}m\,\text{AppellF1}[2,-2m,1+2m,3,\text{Cot}[\tfrac{1}{4}(-e+$$

$$\tfrac{\pi}{2}-f x)]^2,-\text{Cot}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2]\,\text{Cot}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]\,\text{Csc}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2)\,\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2))\Big/$$

$$(-m\,(\text{AppellF1}[2,1-2m,2m,3,\text{Cot}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2,-\text{Cot}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2]+\text{AppellF1}[2,-2m,$$

$$1+2m,3,\text{Cot}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2,-\text{Cot}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2])+$$

$$\text{AppellF1}[1,-2m,2m,2,\text{Cot}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2,-\text{Cot}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2]\,\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2)^2-$$

$$(\text{AppellF1}[1,-2m,2m,2,\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2,-\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2]\,\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2\,(-\tfrac{1}{2}m$$

$$\text{AppellF1}[2,1-2m,2m,3,\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2,-\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2]\,\text{Sec}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2\,\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]-$$

$$\tfrac{1}{2}m\,\text{AppellF1}[2,-2m,1+2m,3,\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2,-\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2]\,\text{Sec}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2$$

$$\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]-\tfrac{1}{2}m\,(\text{AppellF1}[2,1-2m,2m,3,\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2,-\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2]+\text{AppellF1}[2,$$

$$-2m,1+2m,3,\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2,-\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2])\,\text{Sec}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2\,\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]-$$

$$m\,\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2\,(-\tfrac{4}{3}m\,\text{AppellF1}[3,1-2m,1+2m,4,\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2,-\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2]$$

$$\text{Sec}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2\,\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]+\tfrac{1}{3}(1-2m)\,\text{AppellF1}[3,2-2m,2m,4,\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2,$$

$$-\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2]\ \text{Sec}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2\ \text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]-\frac{1}{3}(1+2m)\ \text{AppellF1}[3,-2m,2+2m,$$

$$4,\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2,-\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2]\ \text{Sec}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2\ \text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]]))\Big/$$

$$(\text{AppellF1}[1,-2m,2m,2,\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2,-\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2]-m\ (\text{AppellF1}[2,1-2m,2m,$$

$$3,\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2,-\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2]+\text{AppellF1}[2,-2m,1+2m,$$

$$3,\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2,-\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2])\ \text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2)^2+$$

$$(2(1+m)\ \text{AppellF1}[1+2m,2m,1,2+2m,\frac{1}{2}-\frac{1}{2}\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2,1-\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2]$$

$$\text{Csc}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]\ \text{Sec}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)])\Big/$$

$$((1+2m)\ (-2(1+m)\ \text{AppellF1}[1+2m,2m,1,2+2m,\frac{1}{2}-\frac{1}{2}\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2,1-\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2]+$$

$$(\text{AppellF1}[2+2m,2m,2,3+2m,\frac{1}{2}-\frac{1}{2}\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2,1-\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2]+m\ \text{AppellF1}[2+2m,$$

$$1+2m,1,3+2m,\frac{1}{2}-\frac{1}{2}\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2,1-\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2])\ (-1+\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2)))-$$

$$(2(1+m)\ \text{AppellF1}[1+2m,2m,1,2+2m,\frac{1}{2}-\frac{1}{2}\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2,1-\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2]$$

$$\text{Cot}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]\ \text{Csc}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2\ (-1+\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2))\Big/$$

$$((1+2m)\ (-2(1+m)\ \text{AppellF1}[1+2m,2m,1,2+2m,\frac{1}{2}-\frac{1}{2}\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2,1-\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2]+$$

$$(\text{AppellF1}[2+2m,2m,2,3+2m,\frac{1}{2}-\frac{1}{2}\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2,1-\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2]+m\ \text{AppellF1}[2+2m,$$

$$1+2m,1,3+2m,\frac{1}{2}-\frac{1}{2}\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2,1-\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2])\ (-1+\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2)))+$$

$$(4(1+m)\ \text{Cot}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2\ (-\frac{1}{2(2+2m)}(1+2m)\ \text{AppellF1}[2+2m,2m,2,3+2m,\frac{1}{2}-\frac{1}{2}\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2,$$

$$1-\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2]\ \text{Sec}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2\ \text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]-\frac{1}{2(2+2m)}$$

$$m(1+2m)\ \text{AppellF1}[2+2m,1+2m,1,3+2m,\frac{1}{2}-\frac{1}{2}\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2,1-\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2]$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\Big]\Big)\ \Big(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big)\Big)\Big/$$

$$\Big((1+2 m)\ \Big(-2\ (1+m)\ \text{AppellF1}\Big[1+2 m,\ 2 m,\ 1,\ 2+2 m,\ \frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\ 1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]+$$

$$\Big(\text{AppellF1}\Big[2+2 m,\ 2 m,\ 2,\ 3+2 m,\ \frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\ 1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]+m\,\text{AppellF1}\Big[2+2 m,$$

$$1+2 m,\ 1,\ 3+2 m,\ \frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\ 1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\Big)\ \Big(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big)\Big)\Big)-$$

$$\Big(4\ (1+m)\ \text{AppellF1}\Big[1+2 m,\ 2 m,\ 1,\ 2+2 m,\ \frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\ 1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\ \text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2$$

$$\Big(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big)\ \Big(\frac{1}{2}\Big(\text{AppellF1}\Big[2+2 m,\ 2 m,\ 2,\ 3+2 m,\ \frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\ 1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]+$$

$$m\,\text{AppellF1}\Big[2+2 m,\ 1+2 m,\ 1,\ 3+2 m,\ \frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\ 1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\Big)\ \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-2\ (1+m)\ \Big(-\frac{1}{2\ (2+2 m)}(1+2 m)\ \text{AppellF1}\Big[2+2 m,\ 2 m,\ 2,\ 3+2 m,\ \frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\ 1-$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\ \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{1}{2\ (2+2 m)}m\ (1+2 m)\ \text{AppellF1}\Big[2+2 m,\ 1+2 m,$$

$$1,\ 3+2 m,\ \frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\ 1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\ \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\Big)+$$

$$\Big(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big)\ \Big(-\frac{1}{3+2 m}(2+2 m)\ \text{AppellF1}\Big[3+2 m,\ 2 m,\ 3,\ 4+2 m,\ \frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\ 1-$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\ \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{1}{2\ (3+2 m)}m\ (2+2 m)\ \text{AppellF1}\Big[3+2 m,\ 1+2 m,$$

$$2,\ 4+2 m,\ \frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\ 1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\ \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]+$$

$$m\ \Big(-\frac{1}{2\ (3+2 m)}(2+2 m)\ \text{AppellF1}\Big[3+2 m,\ 1+2 m,\ 2,\ 4+2 m,\ \frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\ 1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{1}{4\ (3+2 m)}(1+2 m)\ (2+2 m)\ \text{AppellF1}\Big[3+2 m,\ 2+2 m,\ 1,\ 4+2 m,$$

$$\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\ 1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\ \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\Big)\Big)\Big)\Big)\Big)\Big/$$

$$\Big((1+2 m)\ \Big(-2\ (1+m)\ \text{AppellF1}\Big[1+2 m,\ 2 m,\ 1,\ 2+2 m,\ \frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\ 1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]+$$

$$\Big(\text{AppellF1}\Big[2+2 m,\ 2 m,\ 2,\ 3+2 m,\ \frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\ 1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]+m\,\text{AppellF1}\Big[2+2 m,\ 1+2 m,$$

$$1,\ 3+2m,\ \frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\ 1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\left(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^2\Big)\Big)\Big)\Big)\Big)$$

- **Problem 83: Result more than twice size of optimal antiderivative.**

$$\int \text{Cos}[e+f x]^2\ (a+a\,\text{Sin}[e+f x])^m\ (c-c\,\text{Sin}[e+f x])^{-3-m}\,dx$$

Optimal (type 3, 54 leaves, 2 steps):

$$\frac{\text{Cos}[e+f x]\ (a+a\,\text{Sin}[e+f x])^{1+m}\ (c-c\,\text{Sin}[e+f x])^{-2-m}}{a\,c\,f\,(3+2m)}$$

Result (type 3, 109 leaves):

$$\frac{1}{c^3 f\,(3+2m)}2^{-m}\,\text{Cos}\left[\frac{1}{4}(2e+\pi+2 f x)\right]^{-3-2m}\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^{2m}$$
$$(a\,(1+\text{Sin}[e+f x]))^m\ (c-c\,\text{Sin}[e+f x])^{-m}\ \text{Sin}\left[\frac{1}{4}(2e+\pi+2 f x)\right]^3$$

- **Problem 84: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int \text{Cos}[e+f x]^2\ (a+a\,\text{Sin}[e+f x])^m\ (c-c\,\text{Sin}[e+f x])^{-2-m}\,dx$$

Optimal (type 5, 113 leaves, 5 steps):

$$\frac{1}{f\,(3+2m)}2^{-\frac{1}{2}-m}\,\text{Cos}[e+f x]^3\,\text{Hypergeometric2F1}\left[\frac{1}{2}(3+2m),\ \frac{1}{2}(3+2m),\ \frac{1}{2}(5+2m),\ \frac{1}{2}(1+\text{Sin}[e+f x])\right]$$
$$(1-\text{Sin}[e+f x])^{\frac{1}{2}+m}\ (a+a\,\text{Sin}[e+f x])^m\ (c-c\,\text{Sin}[e+f x])^{-2-m}$$

Result (type 6, 5056 leaves):

$$-\Bigg(\Bigg(\Bigg(2^{-m}\left(\text{Cos}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{2m}\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{-2m}\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]$$
$$\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{-2m}\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^{-2(-2-m)}\ (a+a\,\text{Sin}[e+f x])^m\ (c-c\,\text{Sin}[e+f x])^{-2-m}$$
$$\Bigg(\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2m}\text{Cos}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]^2\left(\text{Cos}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]-\text{Sin}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]\right)^{-2-2m}+$$
$$2\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2m}\text{Cos}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]\left(\text{Cos}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]-\text{Sin}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]\right)^{-2-2m}\text{Sin}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]+$$
$$\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2m}\left(\text{Cos}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]-\text{Sin}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]\right)^{-2-2m}\text{Sin}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]^2\Bigg)$$

$$\Bigg(-\frac{\text{Hypergeometric2F1}\left[-\frac{1}{2}-m,\,-2\,(1+m),\,\frac{1}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]}{1+2\,m}+\Bigg((-3+2\,m)\,\text{AppellF1}\Big[\frac{1}{2}-m,\,-2\,(1+m),\,1,$$

$$\frac{3}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]\,\text{Sin}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{2\,(1+m)}\Bigg)\Big/$$

$$\Bigg((-1+2\,m)\,\Bigg((-3+2\,m)\,\text{AppellF1}\left[\frac{1}{2}-m,\,-2\,(1+m),\,1,\,\frac{3}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+$$

$$2\,\Bigg(2\,(1+m)\,\text{AppellF1}\left[\frac{3}{2}-m,\,-1-2\,m,\,1,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\text{AppellF1}\Big[$$

$$\frac{3}{2}-m,\,-2\,(1+m),\,2,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]\Bigg)\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Bigg)\Bigg)\Bigg)\Bigg)\Big/$$

$$\Bigg(f\,\Bigg(-2^{-m}\,m\,\left(\text{Cos}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{2\,m}\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{-1-2\,m}$$

$$\Bigg(-\frac{\text{Hypergeometric2F1}\left[-\frac{1}{2}-m,\,-2\,(1+m),\,\frac{1}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]}{1+2\,m}+$$

$$\Bigg((-3+2\,m)\,\text{AppellF1}\left[\frac{1}{2}-m,\,-2\,(1+m),\,1,\,\frac{3}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\,\text{Sin}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2$$

$$\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{2\,(1+m)}\Bigg)\Big/\Bigg((-1+2\,m)\,\Bigg((-3+2\,m)\,\text{AppellF1}\Big[\frac{1}{2}-m,\,-2\,(1+m),\,1,\,\frac{3}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,$$

$$-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]+2\,\Bigg(2\,(1+m)\,\text{AppellF1}\left[\frac{3}{2}-m,\,-1-2\,m,\,1,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+$$

$$\text{AppellF1}\left[\frac{3}{2}-m,\,-2\,(1+m),\,2,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\Bigg)\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Bigg)\Bigg)\Bigg)-$$

$$2^{-m}\,m\,\left(\text{Cos}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{2\,m}\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{-2\,m}\,\Bigg(-\frac{\text{Hypergeometric2F1}\left[-\frac{1}{2}-m,\,-2\,(1+m),\,\frac{1}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]}{1+2\,m}+$$

$$\Bigg((-3+2\,m)\,\text{AppellF1}\left[\frac{1}{2}-m,\,-2\,(1+m),\,1,\,\frac{3}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\,\text{Sin}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2$$

$$\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{2\,(1+m)}\Bigg)\Big/\Bigg((-1+2\,m)\,\Bigg((-3+2\,m)\,\text{AppellF1}\Big[\frac{1}{2}-m,\,-2\,(1+m),\,1,\,\frac{3}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,$$

$$-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]+2\,\Bigg(2\,(1+m)\,\text{AppellF1}\left[\frac{3}{2}-m,\,-1-2\,m,\,1,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+$$

$$\text{AppellF1}\left[\frac{3}{2}-m,\,-2\,(1+m),\,2,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big)\Big)\Big)-$$

$$2^{-2-m}\left(\text{Cos}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{2\,m}\,\text{Csc}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{-2\,m}$$

$$\Bigg(-\frac{\text{Hypergeometric2F1}\left[-\frac{1}{2}-m,\,-2\,(1+m),\,\frac{1}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]}{1+2\,m}+\Bigg((-3+2\,m)\,\text{AppellF1}\Big[\frac{1}{2}-m,\,-2\,(1+m),\,1,\,\frac{3}{2}-m,$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]\,\text{Sin}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{2\,(1+m)}\Bigg)\Big/$$

$$\Bigg((-1+2\,m)\,\Bigg((-3+2\,m)\,\text{AppellF1}\left[\frac{1}{2}-m,\,-2\,(1+m),\,1,\,\frac{3}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+2$$

$$\Bigg(2\,(1+m)\,\text{AppellF1}\left[\frac{3}{2}-m,\,-1-2\,m,\,1,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\text{AppellF1}\Big[\frac{3}{2}-m,\,-2\,(1+m),$$

$$2,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]\Bigg)\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Bigg)\Bigg)\Bigg)+2^{-m}\left(\text{Cos}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{2\,m}$$

$$\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{-2\,m}\Bigg(\Bigg((-3+2\,m)\,\text{AppellF1}\Big[\frac{1}{2}-m,\,-2\,(1+m),\,1,\,\frac{3}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,$$

$$-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]\,\text{Cos}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\,\text{Sin}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{2\,(1+m)}\Bigg)\Big/$$

$$\Bigg(2\,(-1+2\,m)\,\Bigg((-3+2\,m)\,\text{AppellF1}\left[\frac{1}{2}-m,\,-2\,(1+m),\,1,\,\frac{3}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+2$$

$$\Bigg(2\,(1+m)\,\text{AppellF1}\left[\frac{3}{2}-m,\,-1-2\,m,\,1,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+$$

$$\text{AppellF1}\left[\frac{3}{2}-m,\,-2\,(1+m),\,2,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\Bigg)\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Bigg)\Bigg)+$$

$$\Bigg((-3+2\,m)\,\text{Sin}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Bigg(-\frac{1}{2\left(\frac{3}{2}-m\right)}\left(\frac{1}{2}-m\right)\text{AppellF1}\Big[\frac{3}{2}-m,\,-2\,(1+m),\,2,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,$$

$$-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-\frac{1}{\frac{3}{2}-m}\left(\frac{1}{2}-m\right)(1+m)\,\text{AppellF1}\Big[\frac{3}{2}-m,\,1-2\,(1+m),$$

$$1,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\Bigg)$$

$$\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{2(1+m)}\Bigg)\Bigg/\left((-1+2 m)\left((-3+2 m)\,\text{AppellF1}\left[\frac{1}{2}-m,-2(1+m),1,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\right.\right.\right.$$

$$\left.-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+2\left(2(1+m)\,\text{AppellF1}\left[\frac{3}{2}-m,-1-2 m,1,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$\left.\left.\text{AppellF1}\left[\frac{3}{2}-m,-2(1+m),2,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\right)-$$

$$\left((1+m)(-3+2 m)\,\text{AppellF1}\left[\frac{1}{2}-m,-2(1+m),1,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right.$$

$$\left.\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^3\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{-1+2(1+m)}\right)\Bigg/$$

$$\left((-1+2 m)\left((-3+2 m)\,\text{AppellF1}\left[\frac{1}{2}-m,-2(1+m),1,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+2\right.\right.$$

$$\left(2(1+m)\,\text{AppellF1}\left[\frac{3}{2}-m,-1-2 m,1,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$\left.\left.\left.\text{AppellF1}\left[\frac{3}{2}-m,-2(1+m),2,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\right)-$$

$$\frac{1}{2(1+2 m)}\left(-\frac{1}{2}-m\right)\text{Csc}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\left(-\text{Hypergeometric2F1}\left[-\frac{1}{2}-m,-2(1+m),\frac{1}{2}-\right.\right.$$

$$\left.\left.m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{2(1+m)}\right)-$$

$$\left((-3+2 m)\,\text{AppellF1}\left[\frac{1}{2}-m,-2(1+m),1,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Sin}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right.$$

$$\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{2(1+m)}\left(\left(2(1+m)\,\text{AppellF1}\left[\frac{3}{2}-m,-1-2 m,1,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\right.\right.\right.$$

$$\left.\left.-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\text{AppellF1}\left[\frac{3}{2}-m,-2(1+m),2,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]+(-3+2 m)\left(-\frac{1}{2\left(\frac{3}{2}-m\right)}\left(\frac{1}{2}-m\right)\text{AppellF1}\left[\frac{3}{2}-m,-2(1+m),2,\right.\right.$$

$$\left.\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{1}{\frac{3}{2}-m}$$

$$\left(\frac{1}{2}-m\right)(1+m)\,\text{AppellF1}\left[\frac{3}{2}-m,1-2(1+m),1,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\Bigg)+2\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg(-\frac{1}{\frac{5}{2}-m}\left(\frac{3}{2}-m\right)\text{AppellF1}\Big[\frac{5}{2}-m,\,-2\,(1+m),\,3,$$

$$\frac{7}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{1}{\frac{5}{2}-m}\left(\frac{3}{2}-m\right)$$

$$(1+m)\,\text{AppellF1}\Big[\frac{5}{2}-m,\,1-2\,(1+m),\,2,\,\frac{7}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]+2\,(1+m)\,\Bigg(-\frac{1}{2\left(\frac{5}{2}-m\right)}\left(\frac{3}{2}-m\right)\text{AppellF1}\Big[\frac{5}{2}-m,\,-1-2\,m,\,2,\,\frac{7}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,$$

$$-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]+\frac{1}{2\left(\frac{5}{2}-m\right)}(-1-2\,m)\,\left(\frac{3}{2}-m\right)\text{AppellF1}\Big[\frac{5}{2}-m,$$

$$-2\,m,\,1,\,\frac{7}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\Bigg)\Bigg)\Bigg)\Bigg)\Bigg)\Bigg/$$

$$\Bigg((-1+2\,m)\,\Bigg((-3+2\,m)\,\text{AppellF1}\Big[\frac{1}{2}-m,\,-2\,(1+m),\,1,\,\frac{3}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]+$$

$$2\,\Bigg(2\,(1+m)\,\text{AppellF1}\Big[\frac{3}{2}-m,\,-1-2\,m,\,1,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]+$$

$$\text{AppellF1}\Big[\frac{3}{2}-m,\,-2\,(1+m),\,2,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\Bigg)\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)^2\Bigg)\Bigg)\Bigg)\Bigg)\Bigg)$$

- **Problem 85: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int \text{Cos}[e+f x]^2\,(a+a\,\text{Sin}[e+f x])^m\,(c-c\,\text{Sin}[e+f x])^{-1-m}\,dx$$

Optimal (type 5, 114 leaves, 5 steps):

$$\frac{1}{f\,(3+2\,m)}2^{\frac{1}{2}-m}\,c\,\text{Cos}[e+f x]^3\,\text{Hypergeometric2F1}\Big[\frac{1}{2}\,(1+2\,m),\,\frac{1}{2}\,(3+2\,m),\,\frac{1}{2}\,(5+2\,m),\,\frac{1}{2}\,(1+\text{Sin}[e+f x])\Big]$$

$$(1-\text{Sin}[e+f x])^{\frac{1}{2}+m}\,(a+a\,\text{Sin}[e+f x])^m\,(c-c\,\text{Sin}[e+f x])^{-2-m}$$

Result (type 6, 11 925 leaves):

$$-\Bigg(\Bigg(\Bigg(8^{1-m}\,(-3+2\,m)\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{-2\,m}\left(\text{Cos}\left[\frac{1}{2}\,(e+f x)\right]-\text{Sin}\left[\frac{1}{2}\,(e+f x)\right]\right)^{-2\,(-1-m)}\,(a+a\,\text{Sin}[e+f x])^m\,(c-c\,\text{Sin}[e+f x])^{-1-m}$$

$$\left(\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2\,m}\text{Cos}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]^2\left(\text{Cos}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]-\text{Sin}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]\right)\right)^{-2\,m}+$$

$$2\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2\,m}\text{Cos}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f\,x\right)\right]\left(\text{Cos}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f\,x\right)\right]-\text{Sin}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f\,x\right)\right]\right)^{-2\,m}\text{Sin}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f\,x\right)\right]+$$
$$\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2\,m}\left(\text{Cos}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f\,x\right)\right]-\text{Sin}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f\,x\right)\right]\right)^{-2\,m}\text{Sin}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f\,x\right)\right]^{2}\Bigg)$$
$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\left(\frac{\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}}\right)^{-2\,m}\left(\frac{1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}}\right)^{2\,m}$$
$$\Bigg(-\Bigg(\Bigg(\text{AppellF1}\left[\frac{1}{2}-m,\,-2\,m,\,1,\,\frac{3}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2},\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}\right)^{2}\Bigg)\Big/$$
$$\Bigg((-3+2\,m)\,\text{AppellF1}\left[\frac{1}{2}-m,\,-2\,m,\,1,\,\frac{3}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2},\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}\right]+$$
$$2\,\Bigg(2\,m\,\text{AppellF1}\left[\frac{3}{2}-m,\,1-2\,m,\,1,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2},\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}\right]+\text{AppellF1}\Big[$$
$$\frac{3}{2}-m,\,-2\,m,\,2,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2},\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}\Big]\Bigg)\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}\Bigg)\Bigg)+$$
$$\Bigg(4\,\text{AppellF1}\left[\frac{1}{2}-m,\,-2\,m,\,2,\,\frac{3}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2},\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}\right)\Bigg)\Big/$$
$$\Bigg((-3+2\,m)\,\text{AppellF1}\left[\frac{1}{2}-m,\,-2\,m,\,2,\,\frac{3}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2},\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}\right]+$$
$$4\,\Bigg(m\,\text{AppellF1}\left[\frac{3}{2}-m,\,1-2\,m,\,2,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2},\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}\right]+$$
$$\text{AppellF1}\left[\frac{3}{2}-m,\,-2\,m,\,3,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2},\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}\right]\Bigg)\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}\Bigg)-$$
$$\Bigg(4\,\text{AppellF1}\left[\frac{1}{2}-m,\,-2\,m,\,3,\,\frac{3}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2},\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}\right]\Bigg)\Big/$$
$$\Bigg((-3+2\,m)\,\text{AppellF1}\left[\frac{1}{2}-m,\,-2\,m,\,3,\,\frac{3}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2},\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}\right]+$$
$$2\,\Bigg(2\,m\,\text{AppellF1}\left[\frac{3}{2}-m,\,1-2\,m,\,3,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2},\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}\right]+$$
$$3\,\text{AppellF1}\left[\frac{3}{2}-m,\,-2\,m,\,4,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2},\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}\right]\Bigg)\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}\Bigg)\Bigg)\Big/$$
$$\Bigg(f\,(-1+2\,m)\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}\right)^{3}\Bigg(-\frac{1}{(-1+2\,m)\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}\right)^{4}}\,3\times 2^{2-3\,m}\,(-3+2\,m)\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \left(\frac{\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}\right)^{-2 m} \left(\frac{1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}\right)^{2 m}$$

$$\Bigg(-\bigg(\Big(\text{AppellF1}\Big[\frac{1}{2}-m,\,-2 m,\,1,\,\frac{3}{2}-m,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\,\Big(1+\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big)^2\Big)\Big/$$

$$\Big((-3+2 m)\,\text{AppellF1}\Big[\frac{1}{2}-m,\,-2 m,\,1,\,\frac{3}{2}-m,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]+$$

$$2\,\Big(2 m\,\text{AppellF1}\Big[\frac{3}{2}-m,\,1-2 m,\,1,\,\frac{5}{2}-m,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]+$$

$$\text{AppellF1}\Big[\frac{3}{2}-m,\,-2 m,\,2,\,\frac{5}{2}-m,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big)\bigg)+$$

$$\Big(4\,\text{AppellF1}\Big[\frac{1}{2}-m,\,-2 m,\,2,\,\frac{3}{2}-m,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\,\Big(1+\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big)\Big)\Big/$$

$$\Big((-3+2 m)\,\text{AppellF1}\Big[\frac{1}{2}-m,\,-2 m,\,2,\,\frac{3}{2}-m,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]+4$$

$$\Big(m\,\text{AppellF1}\Big[\frac{3}{2}-m,\,1-2 m,\,2,\,\frac{5}{2}-m,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]+\text{AppellF1}\Big[\frac{3}{2}-m,\,-2 m,\,3,\,\frac{5}{2}-m,$$

$$\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big)-\Big(4\,\text{AppellF1}\Big[\frac{1}{2}-m,\,-2 m,\,3,\,\frac{3}{2}-m,$$

$$\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\Big)\Big/\Big((-3+2 m)\,\text{AppellF1}\Big[\frac{1}{2}-m,\,-2 m,\,3,\,\frac{3}{2}-m,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,$$

$$-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]+2\,\Big(2 m\,\text{AppellF1}\Big[\frac{3}{2}-m,\,1-2 m,\,3,\,\frac{5}{2}-m,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]+$$

$$3\,\text{AppellF1}\Big[\frac{3}{2}-m,\,-2 m,\,4,\,\frac{5}{2}-m,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big)\Bigg)+$$

$$\frac{1}{(-1+2 m)\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^3}\,2^{1-3 m}\,(-3+2 m)\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\left(\frac{\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}\right)^{-2 m}$$

$$\left(\frac{1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}\right)^{2 m}$$

$$\Bigg(-\bigg(\Big(\text{AppellF1}\Big[\frac{1}{2}-m,\,-2 m,\,1,\,\frac{3}{2}-m,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\,\Big(1+\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big)^2\Big)\Big/$$

$$\Big((-3+2 m)\,\text{AppellF1}\Big[\frac{1}{2}-m,\,-2 m,\,1,\,\frac{3}{2}-m,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]+$$

$$2\,\Bigg(2\,m\,\text{AppellF1}\left[\frac{3}{2}-m,\,1-2\,m,\,1,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+$$

$$\text{AppellF1}\left[\frac{3}{2}-m,\,-2\,m,\,2,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\Bigg)\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Bigg)+$$

$$\Bigg(4\,\text{AppellF1}\left[\frac{1}{2}-m,\,-2\,m,\,2,\,\frac{3}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\Bigg)\Big/$$

$$\Bigg((-3+2\,m)\,\text{AppellF1}\left[\frac{1}{2}-m,\,-2\,m,\,2,\,\frac{3}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+$$

$$4\,\Bigg(m\,\text{AppellF1}\left[\frac{3}{2}-m,\,1-2\,m,\,2,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+$$

$$\text{AppellF1}\left[\frac{3}{2}-m,\,-2\,m,\,3,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\Bigg)\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Bigg)-$$

$$\Bigg(4\,\text{AppellF1}\left[\frac{1}{2}-m,\,-2\,m,\,3,\,\frac{3}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\Bigg)\Big/$$

$$\Bigg((-3+2\,m)\,\text{AppellF1}\left[\frac{1}{2}-m,\,-2\,m,\,3,\,\frac{3}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+$$

$$2\,\Bigg(2\,m\,\text{AppellF1}\left[\frac{3}{2}-m,\,1-2\,m,\,3,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+$$

$$3\,\text{AppellF1}\left[\frac{3}{2}-m,\,-2\,m,\,4,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\Bigg)\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Bigg)\Bigg)-$$

$$\frac{1}{(-1+2\,m)\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^3}\,2^{4-3\,m}\,m\,(-3+2\,m)\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\left(\frac{\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}\right)^{-1-2\,m}$$

$$\left(\frac{1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}\right)^{2\,m}\left(-\frac{\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{2\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^2}+\frac{\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{4\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)}\right)$$

$$\Bigg(-\Bigg(\Bigg(\text{AppellF1}\left[\frac{1}{2}-m,\,-2\,m,\,1,\,\frac{3}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^2\Bigg)\Big/$$

$$\Bigg((-3+2\,m)\,\text{AppellF1}\left[\frac{1}{2}-m,\,-2\,m,\,1,\,\frac{3}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+$$

$$2\,\Bigg(2\,m\,\text{AppellF1}\left[\frac{3}{2}-m,\,1-2\,m,\,1,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+$$

$$\text{AppellF1}\left[\frac{3}{2}-m,\,-2\,m,\,2,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\Bigg)\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Bigg)+$$

$$\left(4\,\text{AppellF1}\left[\frac{1}{2}-m,-2m,2,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\right)\Big/$$

$$\left((-3+2m)\,\text{AppellF1}\left[\frac{1}{2}-m,-2m,2,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$4\left(m\,\text{AppellF1}\left[\frac{3}{2}-m,1-2m,2,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$\left.\left.\text{AppellF1}\left[\frac{3}{2}-m,-2m,3,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)-$$

$$\left(4\,\text{AppellF1}\left[\frac{1}{2}-m,-2m,3,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\Big/$$

$$\left((-3+2m)\,\text{AppellF1}\left[\frac{1}{2}-m,-2m,3,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$2\left(2m\,\text{AppellF1}\left[\frac{3}{2}-m,1-2m,3,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$\left.\left.3\,\text{AppellF1}\left[\frac{3}{2}-m,-2m,4,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\right)+$$

$$\frac{1}{(-1+2m)\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^3}\,2^{4-3m}\,m\,(-3+2m)\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\left(\frac{\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}\right)^{-2m}$$

$$\left(\frac{1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}\right)^{-1+2m}$$

$$\left(-\frac{\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)}{2\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^2}-\frac{\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]}{2\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)}\right)$$

$$\left(-\left(\left(\text{AppellF1}\left[\frac{1}{2}-m,-2m,1,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^2\right)\Big/\right.\right.$$

$$\left((-3+2m)\,\text{AppellF1}\left[\frac{1}{2}-m,-2m,1,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$2\left(2m\,\text{AppellF1}\left[\frac{3}{2}-m,1-2m,1,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$\left.\left.\text{AppellF1}\left[\frac{3}{2}-m,-2m,2,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\right)+$$

$$\left(4\,\text{AppellF1}\left[\frac{1}{2}-m,-2m,2,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\right)\Big/$$

$$\left((-3+2m)\,\text{AppellF1}\left[\frac{1}{2}-m,-2m,2,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+\right.$$

$$4\left(m\,\text{AppellF1}\left[\frac{3}{2}-m,1-2m,2,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+\right.$$

$$\left.\left.\text{AppellF1}\left[\frac{3}{2}-m,-2m,3,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)-$$

$$\left(4\,\text{AppellF1}\left[\frac{1}{2}-m,-2m,3,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right)\Big/$$

$$\left((-3+2m)\,\text{AppellF1}\left[\frac{1}{2}-m,-2m,3,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+\right.$$

$$2\left(2m\,\text{AppellF1}\left[\frac{3}{2}-m,1-2m,3,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+\right.$$

$$\left.\left.3\,\text{AppellF1}\left[\frac{3}{2}-m,-2m,4,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)\right)+$$

$$\frac{1}{(-1+2m)\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)^3}\,8^{1-m}(-3+2m)\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]\left(\frac{\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2}\right)^{-2m}$$

$$\left(\frac{1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2}\right)^{2m}$$

$$\left(-\left(\left(\text{AppellF1}\left[\frac{1}{2}-m,-2m,1,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right.\right.\right.$$

$$\left.\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)\right)\Big/\left((-3+2m)\,\text{AppellF1}\left[\frac{1}{2}-m,-2m,1,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,\right.\right.$$

$$-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\Big]+2\left(2m\,\text{AppellF1}\left[\frac{3}{2}-m,1-2m,1,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+\right.$$

$$\left.\left.\left.\text{AppellF1}\left[\frac{3}{2}-m,-2m,2,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)\right)-$$

$$\left(\left(-\frac{1}{\frac{3}{2}-m}\left(\frac{1}{2}-m\right)m\,\text{AppellF1}\left[\frac{3}{2}-m,1-2m,1,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right.\right.$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]-\frac{1}{2\left(\frac{3}{2}-m\right)}\left(\frac{1}{2}-m\right)\text{AppellF1}\left[\frac{3}{2}-m,-2m,2,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,\right.$$

$$-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]\ \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\Bigg)\ \left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^2\Bigg)\Big/$$

$$\Bigg((-3+2\,m)\ \text{AppellF1}\left[\frac{1}{2}-m,\ -2\,m,\ 1,\ \frac{3}{2}-m,\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+$$

$$2\ \Bigg(2\,m\ \text{AppellF1}\left[\frac{3}{2}-m,\ 1-2\,m,\ 1,\ \frac{5}{2}-m,\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+$$

$$\text{AppellF1}\left[\frac{3}{2}-m,\ -2\,m,\ 2,\ \frac{5}{2}-m,\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\Bigg)\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Bigg)+$$

$$\Bigg(2\ \text{AppellF1}\left[\frac{1}{2}-m,\ -2\,m,\ 2,\ \frac{3}{2}-m,\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\ \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\Bigg)\Big/\ \Bigg((-3+2\,m)\ \text{AppellF1}\left[\frac{1}{2}-m,\ -2\,m,\ 2,\ \frac{3}{2}-m,\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+$$

$$4\ \Bigg(m\ \text{AppellF1}\left[\frac{3}{2}-m,\ 1-2\,m,\ 2,\ \frac{5}{2}-m,\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+$$

$$\text{AppellF1}\left[\frac{3}{2}-m,\ -2\,m,\ 3,\ \frac{5}{2}-m,\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\Bigg)\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Bigg)+$$

$$\Bigg(4\ \Bigg(-\frac{1}{\frac{3}{2}-m}\left(\frac{1}{2}-m\right)\ m\ \text{AppellF1}\left[\frac{3}{2}-m,\ 1-2\,m,\ 2,\ \frac{5}{2}-m,\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-\frac{1}{\frac{3}{2}-m}\left(\frac{1}{2}-m\right)\ \text{AppellF1}\Big[\frac{3}{2}-m,\ -2\,m,\ 3,\ \frac{5}{2}-m,\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,$$

$$-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]\ \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\Bigg)\ \left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\Bigg)\Big/$$

$$\Bigg((-3+2\,m)\ \text{AppellF1}\left[\frac{1}{2}-m,\ -2\,m,\ 2,\ \frac{3}{2}-m,\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+$$

$$4\ \Bigg(m\ \text{AppellF1}\left[\frac{3}{2}-m,\ 1-2\,m,\ 2,\ \frac{5}{2}-m,\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+$$

$$\text{AppellF1}\left[\frac{3}{2}-m,\ -2\,m,\ 3,\ \frac{5}{2}-m,\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\Bigg)\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Bigg)-$$

$$\Bigg(4\ \Bigg(-\frac{1}{\frac{3}{2}-m}\left(\frac{1}{2}-m\right)\ m\ \text{AppellF1}\left[\frac{3}{2}-m,\ 1-2\,m,\ 3,\ \frac{5}{2}-m,\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-\frac{1}{2\left(\frac{3}{2}-m\right)}3\ \left(\frac{1}{2}-m\right)\ \text{AppellF1}\Big[\frac{3}{2}-m,\ -2\,m,\ 4,\ \frac{5}{2}-m,$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\ \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\Bigg)\Bigg)\Bigg/$$

$$\Bigg((-3+2\,m)\ \text{AppellF1}\left[\frac{1}{2}-m,\ -2\,m,\ 3,\ \frac{3}{2}-m,\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+$$

$$2\,\Bigg(2\,m\ \text{AppellF1}\left[\frac{3}{2}-m,\ 1-2\,m,\ 3,\ \frac{5}{2}-m,\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+$$

$$3\ \text{AppellF1}\left[\frac{3}{2}-m,\ -2\,m,\ 4,\ \frac{5}{2}-m,\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\Bigg)\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Bigg)+$$

$$\Bigg(\text{AppellF1}\left[\frac{1}{2}-m,\ -2\,m,\ 1,\ \frac{3}{2}-m,\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\ \left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^2$$

$$\Bigg(\Bigg(2\,m\ \text{AppellF1}\left[\frac{3}{2}-m,\ 1-2\,m,\ 1,\ \frac{5}{2}-m,\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\text{AppellF1}\left[\frac{3}{2}-m,\ -2\,m,\right.$$

$$\left.2,\ \frac{5}{2}-m,\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\Bigg)\ \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]+$$

$$(-3+2\,m)\ \Bigg(-\frac{1}{\frac{3}{2}-m}\left(\frac{1}{2}-m\right)\,m\ \text{AppellF1}\left[\frac{3}{2}-m,\ 1-2\,m,\ 1,\ \frac{5}{2}-m,\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-\frac{1}{2\left(\frac{3}{2}-m\right)}\left(\frac{1}{2}-m\right)\ \text{AppellF1}\left[\frac{3}{2}-m,\ -2\,m,\ 2,\ \frac{5}{2}-m,\right.$$

$$\left.\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\ \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\Bigg)+$$

$$2\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\ \Bigg(-\frac{1}{\frac{5}{2}-m}\left(\frac{3}{2}-m\right)\,m\ \text{AppellF1}\left[\frac{5}{2}-m,\ 1-2\,m,\ 2,\ \frac{7}{2}-m,\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\right.$$

$$\left.-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\ \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-\frac{1}{\frac{5}{2}-m}\left(\frac{3}{2}-m\right)\ \text{AppellF1}\left[\frac{5}{2}-m,\ -2\,m,\right.$$

$$\left.3,\ \frac{7}{2}-m,\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\ \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]+$$

$$2\,m\ \Bigg(-\frac{1}{2\left(\frac{5}{2}-m\right)}\left(\frac{3}{2}-m\right)\ \text{AppellF1}\left[\frac{5}{2}-m,\ 1-2\,m,\ 2,\ \frac{7}{2}-m,\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]+\frac{1}{2\left(\frac{5}{2}-m\right)}(1-2\,m)\ \left(\frac{3}{2}-m\right)\ \text{AppellF1}\left[\frac{5}{2}-m,\ 2-2\,m,\ 1,\ \frac{7}{2}-m,\right.$$

$$\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\ \text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\ \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\Big)\Big)\Big)\Big)\Big)\Big/$$

$$\Big(\Big((-3+2\,m)\ \text{AppellF1}\Big[\frac{1}{2}-m,\ -2\,m,\ 1,\ \frac{3}{2}-m,\ \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+$$

$$2\,\Big(2\,m\,\text{AppellF1}\Big[\frac{3}{2}-m,\ 1-2\,m,\ 1,\ \frac{5}{2}-m,\ \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+$$

$$\text{AppellF1}\Big[\frac{3}{2}-m,\ -2\,m,\ 2,\ \frac{5}{2}-m,\ \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\Big)\ \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)^2-$$

$$\Big(4\,\text{AppellF1}\Big[\frac{1}{2}-m,\ -2\,m,\ 2,\ \frac{3}{2}-m,\ \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\ \Big(1+\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)$$

$$\Big(2\,\Big(m\,\text{AppellF1}\Big[\frac{3}{2}-m,\ 1-2\,m,\ 2,\ \frac{5}{2}-m,\ \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+\text{AppellF1}\Big[\frac{3}{2}-m,\ -2\,m,\ 3,$$

$$\frac{5}{2}-m,\ \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\Big)\ \text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\ \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]+(-3+2\,m)$$

$$\Big(-\frac{1}{\frac{3}{2}-m}\Big(\frac{1}{2}-m\Big)\,m\,\text{AppellF1}\Big[\frac{3}{2}-m,\ 1-2\,m,\ 2,\ \frac{5}{2}-m,\ \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\ \text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2$$

$$\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]-\frac{1}{\frac{3}{2}-m}\Big(\frac{1}{2}-m\Big)\ \text{AppellF1}\Big[\frac{3}{2}-m,\ -2\,m,\ 3,\ \frac{5}{2}-m,\ \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]$$

$$\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\ \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\Big)+4\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\ \Big(-\frac{1}{\frac{5}{2}-m}\Big(\frac{3}{2}-m\Big)\,m\,\text{AppellF1}\Big[\frac{5}{2}-m,\ 1-2\,m,$$

$$3,\ \frac{7}{2}-m,\ \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\ \text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\ \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]-\frac{1}{2\,\big(\frac{5}{2}-m\big)}$$

$$3\,\Big(\frac{3}{2}-m\Big)\ \text{AppellF1}\Big[\frac{5}{2}-m,\ -2\,m,\ 4,\ \frac{7}{2}-m,\ \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\ \text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\ \text{Tan}\Big[\frac{1}{4}$$

$$\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]+m\,\Big(-\frac{1}{\frac{5}{2}-m}\Big(\frac{3}{2}-m\Big)\ \text{AppellF1}\Big[\frac{5}{2}-m,\ 1-2\,m,\ 3,\ \frac{7}{2}-m,\ \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]$$

$$\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\ \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]+\frac{1}{2\,\big(\frac{5}{2}-m\big)}(1-2\,m)\ \Big(\frac{3}{2}-m\Big)\ \text{AppellF1}\Big[\frac{5}{2}-m,\ 2-2\,m,\ 2,\ \frac{7}{2}-m,$$

$$\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\ \text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\ \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\Big)\Big)\Big)\Big)\Big)\Big/$$

$$\Big(\big((-3+2m)\,\text{AppellF1}\Big[\frac{1}{2}-m,\,-2m,\,2,\,\frac{3}{2}-m,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]+$$

$$4\,\Big(m\,\text{AppellF1}\Big[\frac{3}{2}-m,\,1-2m,\,2,\,\frac{5}{2}-m,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]+$$

$$\text{AppellF1}\Big[\frac{3}{2}-m,\,-2m,\,3,\,\frac{5}{2}-m,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\big)^2+$$

$$\Big(4\,\text{AppellF1}\Big[\frac{1}{2}-m,\,-2m,\,3,\,\frac{3}{2}-m,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]$$

$$\Big(\Big(2m\,\text{AppellF1}\Big[\frac{3}{2}-m,\,1-2m,\,3,\,\frac{5}{2}-m,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]+3\,\text{AppellF1}\Big[\frac{3}{2}-m,\,-2m,$$

$$4,\,\frac{5}{2}-m,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\Big)\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]+$$

$$(-3+2m)\,\Big(-\frac{1}{\frac{3}{2}-m}\Big(\frac{1}{2}-m\Big)\,m\,\text{AppellF1}\Big[\frac{3}{2}-m,\,1-2m,\,3,\,\frac{5}{2}-m,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]$$

$$\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]-\frac{1}{2\,\big(\frac{3}{2}-m\big)}3\,\Big(\frac{1}{2}-m\Big)\,\text{AppellF1}\Big[\frac{3}{2}-m,\,-2m,\,4,\,\frac{5}{2}-m,$$

$$\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]\Big)+$$

$$2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\,\Big(2m\,\Big(-\frac{1}{2\,\big(\frac{5}{2}-m\big)}3\,\Big(\frac{3}{2}-m\Big)\,\text{AppellF1}\Big[\frac{5}{2}-m,\,1-2m,\,4,\,\frac{7}{2}-m,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,$$

$$-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]+\frac{1}{2\,\big(\frac{5}{2}-m\big)}(1-2m)\,\Big(\frac{3}{2}-m\Big)\,\text{AppellF1}\Big[\frac{5}{2}-m,$$

$$2-2m,\,3,\,\frac{7}{2}-m,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]\Big)+$$

$$3\,\Big(-\frac{1}{\frac{5}{2}-m}\Big(\frac{3}{2}-m\Big)\,m\,\text{AppellF1}\Big[\frac{5}{2}-m,\,1-2m,\,4,\,\frac{7}{2}-m,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]$$

$$\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]-\frac{1}{\frac{5}{2}-m}2\,\Big(\frac{3}{2}-m\Big)\,\text{AppellF1}\Big[\frac{5}{2}-m,\,-2m,\,5,\,\frac{7}{2}-m,$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big] \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\Bigg)\Bigg)\Bigg)\Bigg)\Bigg/$$

$$\Bigg(\left(-3+2 m\right) \text{AppellF1}\left[\frac{1}{2}-m, -2 m, 3, \frac{3}{2}-m, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$2\Bigg(2 m \text{AppellF1}\left[\frac{3}{2}-m, 1-2 m, 3, \frac{5}{2}-m, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$3 \text{AppellF1}\left[\frac{3}{2}-m, -2 m, 4, \frac{5}{2}-m, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\Bigg) \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)^2\Bigg)\Bigg)\Bigg)\Bigg)$$

- **Problem 86: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int \text{Cos}[e+f x]^2 \left(a+a \text{Sin}[e+f x]\right)^m \left(c-c \text{Sin}[e+f x]\right)^{-m} dx$$

Optimal (type 5, 116 leaves, 5 steps):

$$\frac{1}{f\left(3+2 m\right)} 2^{\frac{3}{2}-m} c^2 \text{Cos}[e+f x]^3 \text{Hypergeometric2F1}\left[\frac{1}{2}\left(-1+2 m\right), \frac{1}{2}\left(3+2 m\right), \frac{1}{2}\left(5+2 m\right), \frac{1}{2}\left(1+\text{Sin}[e+f x]\right)\right]$$
$$\left(1-\text{Sin}[e+f x]\right)^{\frac{1}{2}+m} \left(a+a \text{Sin}[e+f x]\right)^m \left(c-c \text{Sin}[e+f x]\right)^{-2-m}$$

Result (type 6, 15 277 leaves):

$$-\Bigg(\Bigg(8^{2-m}\left(-3+2 m\right) \text{Cos}[e+f x]^2 \left(\text{Cos}\left[\frac{1}{2}\left(e+f x\right)\right]-\text{Sin}\left[\frac{1}{2}\left(e+f x\right)\right]\right)^{2 m} \left(a+a \text{Sin}[e+f x]\right)^m \left(c-c \text{Sin}[e+f x]\right)^{-m}$$

$$\left(\text{Cos}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]-\text{Sin}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]\right)^{-2 m} \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right] \left(\frac{\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}\right)^{-2 m} \left(\frac{1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}\right)^{2 m}$$

$$\Bigg(-\Bigg(\Bigg(\text{AppellF1}\left[\frac{1}{2}-m, -2 m, 2, \frac{3}{2}-m, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right] \left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^3\Bigg)\Bigg/$$

$$\Bigg(\left(-3+2 m\right) \text{AppellF1}\left[\frac{1}{2}-m, -2 m, 2, \frac{3}{2}-m, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$4\Bigg(m \text{AppellF1}\left[\frac{3}{2}-m, 1-2 m, 2, \frac{5}{2}-m, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\text{AppellF1}\Big[$$

$$\frac{3}{2}-m, -2 m, 3, \frac{5}{2}-m, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\Bigg) \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)\Bigg)+$$

$$\Bigg(5 \text{AppellF1}\left[\frac{1}{2}-m, -2 m, 3, \frac{3}{2}-m, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right] \left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^2\Bigg)\Bigg/$$

$$\left((-3+2 m)\,\text{AppellF1}\left[\frac{1}{2}-m,-2 m,3,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$2\left(2 m\,\text{AppellF1}\left[\frac{3}{2}-m,1-2 m,3,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$\left.\left.3\,\text{AppellF1}\left[\frac{3}{2}-m,-2 m,4,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)-$$

$$\left(8\,\text{AppellF1}\left[\frac{1}{2}-m,-2 m,4,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\right)\Big/$$

$$\left((-3+2 m)\,\text{AppellF1}\left[\frac{1}{2}-m,-2 m,4,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$4\left(m\,\text{AppellF1}\left[\frac{3}{2}-m,1-2 m,4,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$\left.\left.2\,\text{AppellF1}\left[\frac{3}{2}-m,-2 m,5,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)+$$

$$\left(4\,\text{AppellF1}\left[\frac{1}{2}-m,-2 m,5,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\Big/$$

$$\left((-3+2 m)\,\text{AppellF1}\left[\frac{1}{2}-m,-2 m,5,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$2\left(2 m\,\text{AppellF1}\left[\frac{3}{2}-m,1-2 m,5,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$\left.\left.\left.\left.5\,\text{AppellF1}\left[\frac{3}{2}-m,-2 m,6,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\right)\right)\Big/$$

$$\left(f\,(-1+2 m)\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^5\left(-\frac{1}{(-1+2 m)\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^6}\,5\times 2^{5-3 m}\,(-3+2 m)\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right.\right.$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\left(\frac{\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}\right)^{-2 m}\left(\frac{1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}\right)^{2 m}$$

$$\left(-\left(\left(\text{AppellF1}\left[\frac{1}{2}-m,-2 m,2,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^3\right)\Big/\right.\right.$$

$$\left((-3+2 m)\,\text{AppellF1}\left[\frac{1}{2}-m,-2 m,2,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$4\left(m\,\text{AppellF1}\left[\frac{3}{2}-m,1-2 m,2,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$\text{AppellF1}\left[\frac{3}{2}-m,\,-2m,\,3,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\right)+$$

$$\left(5\,\text{AppellF1}\left[\frac{1}{2}-m,\,-2m,\,3,\,\frac{3}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^2\right)\Big/$$

$$\left((-3+2m)\,\text{AppellF1}\left[\frac{1}{2}-m,\,-2m,\,3,\,\frac{3}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+2\right.$$

$$\left(2m\,\text{AppellF1}\left[\frac{3}{2}-m,\,1-2m,\,3,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$\left.\left.3\,\text{AppellF1}\left[\frac{3}{2}-m,\,-2m,\,4,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)-$$

$$\left(8\,\text{AppellF1}\left[\frac{1}{2}-m,\,-2m,\,4,\,\frac{3}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\right)\Big/$$

$$\left((-3+2m)\,\text{AppellF1}\left[\frac{1}{2}-m,\,-2m,\,4,\,\frac{3}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+4\right.$$

$$\left(m\,\text{AppellF1}\left[\frac{3}{2}-m,\,1-2m,\,4,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$\left.\left.2\,\text{AppellF1}\left[\frac{3}{2}-m,\,-2m,\,5,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)+$$

$$\left(4\,\text{AppellF1}\left[\frac{1}{2}-m,\,-2m,\,5,\,\frac{3}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\Big/$$

$$\left((-3+2m)\,\text{AppellF1}\left[\frac{1}{2}-m,\,-2m,\,5,\,\frac{3}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+2\right.$$

$$\left(2m\,\text{AppellF1}\left[\frac{3}{2}-m,\,1-2m,\,5,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$\left.\left.5\,\text{AppellF1}\left[\frac{3}{2}-m,\,-2m,\,6,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\right)+$$

$$\frac{1}{(-1+2m)\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^5}\,2^{4-3m}\,(-3+2m)\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\left(\frac{\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}\right)^{-2m}$$

$$\left(\frac{1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}\right)^{2m}$$

$$\left(-\left(\left(\text{AppellF1}\left[\frac{1}{2}-m,\,-2m,\,2,\,\frac{3}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^3\right)\Big/\right.\right.$$

$$\left((-3+2m)\,\text{AppellF1}\left[\frac{1}{2}-m,\,-2m,\,2,\,\frac{3}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$4\left(m\,\text{AppellF1}\left[\frac{3}{2}-m,\,1-2m,\,2,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$\left.\left.\text{AppellF1}\left[\frac{3}{2}-m,\,-2m,\,3,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\right)+$$

$$\left(5\,\text{AppellF1}\left[\frac{1}{2}-m,\,-2m,\,3,\,\frac{3}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^2\right)\Big/$$

$$\left((-3+2m)\,\text{AppellF1}\left[\frac{1}{2}-m,\,-2m,\,3,\,\frac{3}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$2\left(2m\,\text{AppellF1}\left[\frac{3}{2}-m,\,1-2m,\,3,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$\left.\left.3\,\text{AppellF1}\left[\frac{3}{2}-m,\,-2m,\,4,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)-$$

$$\left(8\,\text{AppellF1}\left[\frac{1}{2}-m,\,-2m,\,4,\,\frac{3}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\right)\Big/$$

$$\left((-3+2m)\,\text{AppellF1}\left[\frac{1}{2}-m,\,-2m,\,4,\,\frac{3}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$4\left(m\,\text{AppellF1}\left[\frac{3}{2}-m,\,1-2m,\,4,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$\left.\left.2\,\text{AppellF1}\left[\frac{3}{2}-m,\,-2m,\,5,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)+$$

$$\left(4\,\text{AppellF1}\left[\frac{1}{2}-m,\,-2m,\,5,\,\frac{3}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\Big/$$

$$\left((-3+2m)\,\text{AppellF1}\left[\frac{1}{2}-m,\,-2m,\,5,\,\frac{3}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$2\left(2m\,\text{AppellF1}\left[\frac{3}{2}-m,\,1-2m,\,5,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$\left.\left.5\,\text{AppellF1}\left[\frac{3}{2}-m,\,-2m,\,6,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\right)-$$

$$\frac{1}{(-1+2m)\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^5}\,2^{7-3m}\,m\,(-3+2m)\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\left(\frac{\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}\right)^{-1-2m}$$

$$\left(\frac{1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}\right)^{2m}\left(-\frac{\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{2\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^2}+\frac{\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{4\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)}\right)$$

$$\left(-\left(\left(\text{AppellF1}\left[\frac{1}{2}-m,-2m,2,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^3\right)\right/\right.$$

$$\left((-3+2m)\,\text{AppellF1}\left[\frac{1}{2}-m,-2m,2,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$4\left(m\,\text{AppellF1}\left[\frac{3}{2}-m,1-2m,2,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$\left.\left.\text{AppellF1}\left[\frac{3}{2}-m,-2m,3,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\right)+$$

$$\left(5\,\text{AppellF1}\left[\frac{1}{2}-m,-2m,3,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^2\right)\Big/$$

$$\left((-3+2m)\,\text{AppellF1}\left[\frac{1}{2}-m,-2m,3,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$2\left(2m\,\text{AppellF1}\left[\frac{3}{2}-m,1-2m,3,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$\left.\left.3\,\text{AppellF1}\left[\frac{3}{2}-m,-2m,4,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)-$$

$$\left(8\,\text{AppellF1}\left[\frac{1}{2}-m,-2m,4,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\right)\Big/$$

$$\left((-3+2m)\,\text{AppellF1}\left[\frac{1}{2}-m,-2m,4,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$4\left(m\,\text{AppellF1}\left[\frac{3}{2}-m,1-2m,4,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$\left.\left.2\,\text{AppellF1}\left[\frac{3}{2}-m,-2m,5,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)+$$

$$\left(4\,\text{AppellF1}\left[\frac{1}{2}-m,-2m,5,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\Big/$$

$$\left((-3+2m)\,\text{AppellF1}\left[\frac{1}{2}-m,-2m,5,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$2\left(2m\,\text{AppellF1}\left[\frac{3}{2}-m,1-2m,5,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$\left.\left.5\,\text{AppellF1}\left[\frac{3}{2}-m,-2m,6,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)+$$

$$\frac{1}{(-1+2m)\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^5} 2^{7-3m} m (-3+2m)\, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right] \left(\frac{\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}\right)^{-2m}$$

$$\left(\frac{1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}\right)^{-1+2m}$$

$$\left(-\frac{\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right] \left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)}{2\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^2}-\frac{\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]}{2\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)}\right)$$

$$\Bigg(-\bigg(\Big(\text{AppellF1}\left[\frac{1}{2}-m,-2m,2,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right] \left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^3\Big) \Big/$$

$$\Big((-3+2m)\,\text{AppellF1}\left[\frac{1}{2}-m,-2m,2,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$4\Big(m\,\text{AppellF1}\left[\frac{3}{2}-m,1-2m,2,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$\text{AppellF1}\left[\frac{3}{2}-m,-2m,3,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\Big)\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big)\bigg)+$$

$$\Big(5\,\text{AppellF1}\left[\frac{1}{2}-m,-2m,3,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^2\Big)\Big/$$

$$\Big((-3+2m)\,\text{AppellF1}\left[\frac{1}{2}-m,-2m,3,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$2\Big(2m\,\text{AppellF1}\left[\frac{3}{2}-m,1-2m,3,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$3\,\text{AppellF1}\left[\frac{3}{2}-m,-2m,4,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\Big)\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big)-$$

$$\Big(8\,\text{AppellF1}\left[\frac{1}{2}-m,-2m,4,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\Big)\Big/$$

$$\Big((-3+2m)\,\text{AppellF1}\left[\frac{1}{2}-m,-2m,4,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$4\Big(m\,\text{AppellF1}\left[\frac{3}{2}-m,1-2m,4,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$2\,\text{AppellF1}\left[\frac{3}{2}-m,-2m,5,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\Big)\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big)+$$

$$\Big(4\,\text{AppellF1}\left[\frac{1}{2}-m,-2m,5,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\Big)\Big/$$

$$\left((-3+2m)\,\text{AppellF1}\left[\frac{1}{2}-m,\,-2m,\,5,\,\frac{3}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$2\left(2m\,\text{AppellF1}\left[\frac{3}{2}-m,\,1-2m,\,5,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$\left.\left.5\,\text{AppellF1}\left[\frac{3}{2}-m,\,-2m,\,6,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\right)+$$

$$\frac{1}{(-1+2m)\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^5}\,8^{2-m}\,(-3+2m)\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\left(\frac{\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}\right)^{-2m}$$

$$\left(\frac{1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}\right)^{2m}$$

$$\left(-\left(\left(3\,\text{AppellF1}\left[\frac{1}{2}-m,\,-2m,\,2,\,\frac{3}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\right.\right.\right.$$

$$\left.\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^2\right)\Big/\left(2\left((-3+2m)\,\text{AppellF1}\left[\frac{1}{2}-m,\,-2m,\,2,\,\frac{3}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\right.\right.\right.$$

$$\left.-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+4\left(m\,\text{AppellF1}\left[\frac{3}{2}-m,\,1-2m,\,2,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$\left.\left.\left.\left.\text{AppellF1}\left[\frac{3}{2}-m,\,-2m,\,3,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\right)\right)-$$

$$\left(\left(-\frac{1}{\frac{3}{2}-m}\left(\frac{1}{2}-m\right)m\,\text{AppellF1}\left[\frac{3}{2}-m,\,1-2m,\,2,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right.\right.$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{1}{\frac{3}{2}-m}\left(\frac{1}{2}-m\right)\text{AppellF1}\left[\frac{3}{2}-m,\,-2m,\,3,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\right.$$

$$\left.\left.-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^3\right)\Big/$$

$$\left((-3+2m)\,\text{AppellF1}\left[\frac{1}{2}-m,\,-2m,\,2,\,\frac{3}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$4\left(m\,\text{AppellF1}\left[\frac{3}{2}-m,\,1-2m,\,2,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$\left.\text{AppellF1}\left[\frac{3}{2}-m,\,-2m,\,3,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)+$$

$$\left(5\,\text{AppellF1}\left[\frac{1}{2}-m,-2m,3,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right.$$

$$\left.\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)\right)\Big/\left((-3+2m)\,\text{AppellF1}\left[\frac{1}{2}-m,-2m,3,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,\right.\right.$$

$$\left.-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+2\left(2m\,\text{AppellF1}\left[\frac{3}{2}-m,1-2m,3,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+\right.$$

$$\left.\left.3\,\text{AppellF1}\left[\frac{3}{2}-m,-2m,4,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)+$$

$$\left(5\left(-\frac{1}{\frac{3}{2}-m}\left(\frac{1}{2}-m\right)m\,\text{AppellF1}\left[\frac{3}{2}-m,1-2m,3,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right.\right.$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]-\frac{1}{2\left(\frac{3}{2}-m\right)}3\left(\frac{1}{2}-m\right)\text{AppellF1}\left[\frac{3}{2}-m,-2m,4,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,\right.$$

$$\left.\left.\left.-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]\right)\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)^2\right)\Big/$$

$$\left((-3+2m)\,\text{AppellF1}\left[\frac{1}{2}-m,-2m,3,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+\right.$$

$$2\left(2m\,\text{AppellF1}\left[\frac{3}{2}-m,1-2m,3,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+\right.$$

$$\left.\left.3\,\text{AppellF1}\left[\frac{3}{2}-m,-2m,4,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)-$$

$$\left(4\,\text{AppellF1}\left[\frac{1}{2}-m,-2m,4,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right.$$

$$\left.\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]\right)\Big/\left((-3+2m)\,\text{AppellF1}\left[\frac{1}{2}-m,-2m,4,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+\right.$$

$$4\left(m\,\text{AppellF1}\left[\frac{3}{2}-m,1-2m,4,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+\right.$$

$$\left.\left.2\,\text{AppellF1}\left[\frac{3}{2}-m,-2m,5,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)-$$

$$\left(8\left(-\frac{1}{\frac{3}{2}-m}\left(\frac{1}{2}-m\right)m\,\text{AppellF1}\left[\frac{3}{2}-m,1-2m,4,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right.\right.$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]-\frac{1}{\frac{3}{2}-m}2\left(\frac{1}{2}-m\right)\text{AppellF1}\left[\frac{3}{2}-m,-2m,5,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,\right.$$

$$-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\,\mathrm{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\Bigg)\left(1+\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\Bigg)\Big/$$

$$\Bigg((-3+2m)\,\mathrm{AppellF1}\left[\frac{1}{2}-m,-2m,4,\frac{3}{2}-m,\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$4\Bigg(m\,\mathrm{AppellF1}\left[\frac{3}{2}-m,1-2m,4,\frac{5}{2}-m,\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$2\,\mathrm{AppellF1}\left[\frac{3}{2}-m,-2m,5,\frac{5}{2}-m,\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\Bigg)\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)+$$

$$\Bigg(4\Bigg(-\frac{1}{\frac{3}{2}-m}\left(\frac{1}{2}-m\right)m\,\mathrm{AppellF1}\left[\frac{3}{2}-m,1-2m,5,\frac{5}{2}-m,\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]$$

$$\mathrm{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{1}{2\left(\frac{3}{2}-m\right)}5\left(\frac{1}{2}-m\right)\mathrm{AppellF1}\left[\frac{3}{2}-m,-2m,6,\frac{5}{2}-m,\right.$$

$$\left.\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\mathrm{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\Bigg)\Bigg)\Big/$$

$$\Bigg((-3+2m)\,\mathrm{AppellF1}\left[\frac{1}{2}-m,-2m,5,\frac{3}{2}-m,\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$2\Bigg(2m\,\mathrm{AppellF1}\left[\frac{3}{2}-m,1-2m,5,\frac{5}{2}-m,\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$5\,\mathrm{AppellF1}\left[\frac{3}{2}-m,-2m,6,\frac{5}{2}-m,\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\Bigg)\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)+$$

$$\Bigg(\mathrm{AppellF1}\left[\frac{1}{2}-m,-2m,2,\frac{3}{2}-m,\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\left(1+\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^3$$

$$\Bigg(2\Bigg(m\,\mathrm{AppellF1}\left[\frac{3}{2}-m,1-2m,2,\frac{5}{2}-m,\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\mathrm{AppellF1}\left[\frac{3}{2}-m,-2m,3,\right.$$

$$\left.\frac{5}{2}-m,\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\Bigg)\mathrm{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]+(-3+2m)$$

$$\Bigg(-\frac{1}{\frac{3}{2}-m}\left(\frac{1}{2}-m\right)m\,\mathrm{AppellF1}\left[\frac{3}{2}-m,1-2m,2,\frac{5}{2}-m,\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\mathrm{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2$$

$$\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{1}{\frac{3}{2}-m}\left(\frac{1}{2}-m\right)\mathrm{AppellF1}\left[\frac{3}{2}-m,-2m,3,\frac{5}{2}-m,\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]$$

$$\mathrm{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2 \mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\Bigg) + 4\,\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2 \Bigg(-\frac{1}{\frac{5}{2}-m}\left(\frac{3}{2}-m\right) m\,\mathrm{AppellF1}\Big[\frac{5}{2}-m,\ 1-2\,m,$$

$$3,\ \frac{7}{2}-m,\ \mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]\ \mathrm{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2 \mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right] - \frac{1}{2\left(\frac{5}{2}-m\right)}$$

$$3\left(\frac{3}{2}-m\right) \mathrm{AppellF1}\Big[\frac{5}{2}-m,\ -2\,m,\ 4,\ \frac{7}{2}-m,\ \mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]\ \mathrm{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2 \mathrm{Tan}\Big[\frac{1}{4}$$

$$\left(-e+\frac{\pi}{2}-f\,x\right)\Big] + m\Bigg(-\frac{1}{\frac{5}{2}-m}\left(\frac{3}{2}-m\right) \mathrm{AppellF1}\Big[\frac{5}{2}-m,\ 1-2\,m,\ 3,\ \frac{7}{2}-m,\ \mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]$$

$$\mathrm{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2 \mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right] + \frac{1}{2\left(\frac{5}{2}-m\right)}(1-2\,m)\left(\frac{3}{2}-m\right) \mathrm{AppellF1}\Big[\frac{5}{2}-m,\ 2-2\,m,\ 2,\ \frac{7}{2}-m,$$

$$\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]\ \mathrm{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2 \mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\Bigg)\Bigg)\Bigg)\Bigg)\Bigg/$$

$$\Bigg((-3+2\,m)\,\mathrm{AppellF1}\Big[\frac{1}{2}-m,\ -2\,m,\ 2,\ \frac{3}{2}-m,\ \mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big] +$$

$$4\Bigg(m\,\mathrm{AppellF1}\Big[\frac{3}{2}-m,\ 1-2\,m,\ 2,\ \frac{5}{2}-m,\ \mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big] +$$

$$\mathrm{AppellF1}\Big[\frac{3}{2}-m,\ -2\,m,\ 3,\ \frac{5}{2}-m,\ \mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]\Bigg) \mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Bigg)^2 -$$

$$\Bigg(5\,\mathrm{AppellF1}\Big[\frac{1}{2}-m,\ -2\,m,\ 3,\ \frac{3}{2}-m,\ \mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]\left(1+\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^2$$

$$\Bigg(\Bigg(2\,m\,\mathrm{AppellF1}\Big[\frac{3}{2}-m,\ 1-2\,m,\ 3,\ \frac{5}{2}-m,\ \mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big] + 3\,\mathrm{AppellF1}\Big[\frac{3}{2}-m,\ -2\,m,$$

$$4,\ \frac{5}{2}-m,\ \mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]\Bigg)\ \mathrm{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2 \mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right] +$$

$$(-3+2\,m)\Bigg(-\frac{1}{\frac{3}{2}-m}\left(\frac{1}{2}-m\right) m\,\mathrm{AppellF1}\Big[\frac{3}{2}-m,\ 1-2\,m,\ 3,\ \frac{5}{2}-m,\ \mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]$$

$$\mathrm{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2 \mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right] - \frac{1}{2\left(\frac{3}{2}-m\right)}3\left(\frac{1}{2}-m\right) \mathrm{AppellF1}\Big[\frac{3}{2}-m,\ -2\,m,\ 4,\ \frac{5}{2}-m,$$

$$\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]\ \mathrm{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2 \mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\Bigg) +$$

$$2\,\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2\,(2\,m\,(-\frac{1}{2(\frac{5}{2}-m)}3\,(\frac{3}{2}-m)\,\text{AppellF1}[\frac{5}{2}-m,1-2m,4,\frac{7}{2}-m,\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2,$$

$$-\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2]\,\text{Sec}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2\,\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]+\frac{1}{2(\frac{5}{2}-m)}(1-2m)\,(\frac{3}{2}-m)\,\text{AppellF1}[\frac{5}{2}-m,$$

$$2-2m,3,\frac{7}{2}-m,\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2,-\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2]\,\text{Sec}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2\,\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)])+$$

$$3\,(-\frac{1}{\frac{5}{2}-m}(\frac{3}{2}-m)\,m\,\text{AppellF1}[\frac{5}{2}-m,1-2m,4,\frac{7}{2}-m,\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2,-\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2]$$

$$\text{Sec}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2\,\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]-\frac{1}{\frac{5}{2}-m}2\,(\frac{3}{2}-m)\,\text{AppellF1}[\frac{5}{2}-m,-2m,5,\frac{7}{2}-m,$$

$$\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2,-\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2]\,\text{Sec}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2\,\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]))))\Big/$$

$$((-3+2m)\,\text{AppellF1}[\frac{1}{2}-m,-2m,3,\frac{3}{2}-m,\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2,-\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2]+$$

$$2\,(2\,m\,\text{AppellF1}[\frac{3}{2}-m,1-2m,3,\frac{5}{2}-m,\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2,-\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2]+$$

$$3\,\text{AppellF1}[\frac{3}{2}-m,-2m,4,\frac{5}{2}-m,\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2,-\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2])\,\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2)^2+$$

$$(8\,\text{AppellF1}[\frac{1}{2}-m,-2m,4,\frac{3}{2}-m,\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2,-\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2]\,(1+\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2)$$

$$(2\,(m\,\text{AppellF1}[\frac{3}{2}-m,1-2m,4,\frac{5}{2}-m,\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2,-\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2]+2\,\text{AppellF1}[\frac{3}{2}-m,-2m,$$

$$5,\frac{5}{2}-m,\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2,-\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2])\,\text{Sec}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2\,\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]+$$

$$(-3+2m)\,(-\frac{1}{\frac{3}{2}-m}(\frac{1}{2}-m)\,m\,\text{AppellF1}[\frac{3}{2}-m,1-2m,4,\frac{5}{2}-m,\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2,-\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2]$$

$$\text{Sec}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2\,\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]-\frac{1}{\frac{3}{2}-m}2\,(\frac{1}{2}-m)\,\text{AppellF1}[\frac{3}{2}-m,-2m,5,\frac{5}{2}-m,\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2,$$

$$-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\Big]\Big)+4\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2$$

$$\Big(m\,\Big(-\frac{1}{\frac{5}{2}-m}2\left(\frac{3}{2}-m\right)\text{AppellF1}\Big[\frac{5}{2}-m,\,1-2m,\,5,\,\frac{7}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]+\frac{1}{2\left(\frac{5}{2}-m\right)}(1-2m)\left(\frac{3}{2}-m\right)\text{AppellF1}\Big[\frac{5}{2}-m,\,2-2m,\,4,$$

$$\frac{7}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\Big)+$$

$$2\,\Big(-\frac{1}{\frac{5}{2}-m}\left(\frac{3}{2}-m\right)m\,\text{AppellF1}\Big[\frac{5}{2}-m,\,1-2m,\,5,\,\frac{7}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{1}{2\left(\frac{5}{2}-m\right)}5\left(\frac{3}{2}-m\right)\text{AppellF1}\Big[\frac{5}{2}-m,\,-2m,\,6,\,\frac{7}{2}-m,$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\Big)\Big)\Big)\Big)\Big)\Big/$$

$$\Big((-3+2m)\,\text{AppellF1}\Big[\frac{1}{2}-m,\,-2m,\,4,\,\frac{3}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]+$$

$$4\,\Big(m\,\text{AppellF1}\Big[\frac{3}{2}-m,\,1-2m,\,4,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]+$$

$$2\,\text{AppellF1}\Big[\frac{3}{2}-m,\,-2m,\,5,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\Big)\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big)^2-$$

$$\Big(4\,\text{AppellF1}\Big[\frac{1}{2}-m,\,-2m,\,5,\,\frac{3}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]$$

$$\Big(\Big(2m\,\text{AppellF1}\Big[\frac{3}{2}-m,\,1-2m,\,5,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]+5\,\text{AppellF1}\Big[\frac{3}{2}-m,\,-2m,$$

$$6,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\Big)\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]+$$

$$(-3+2m)\,\Big(-\frac{1}{\frac{3}{2}-m}\left(\frac{1}{2}-m\right)m\,\text{AppellF1}\Big[\frac{3}{2}-m,\,1-2m,\,5,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{1}{2\left(\frac{3}{2}-m\right)}5\left(\frac{1}{2}-m\right)\text{AppellF1}\left[\frac{3}{2}-m,-2m,6,\frac{5}{2}-m,\right.$$

$$\left.\left.\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)+$$

$$2\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\left(2m\left(-\frac{1}{2\left(\frac{5}{2}-m\right)}5\left(\frac{3}{2}-m\right)\text{AppellF1}\left[\frac{5}{2}-m,1-2m,6,\frac{7}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\right.\right.\right.$$

$$\left.-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]+\frac{1}{2\left(\frac{5}{2}-m\right)}(1-2m)\left(\frac{3}{2}-m\right)\text{AppellF1}\left[\frac{5}{2}-m,\right.$$

$$\left.\left.2-2m,5,\frac{7}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)+$$

$$5\left(-\frac{1}{\frac{5}{2}-m}\left(\frac{3}{2}-m\right)m\,\text{AppellF1}\left[\frac{5}{2}-m,1-2m,6,\frac{7}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right.$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{1}{\frac{5}{2}-m}3\left(\frac{3}{2}-m\right)\text{AppellF1}\left[\frac{5}{2}-m,-2m,7,\frac{7}{2}-m,\right.$$

$$\left.\left.\left.\left.\left.\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)\right)\right)\right)\Big/$$

$$\left((-3+2m)\,\text{AppellF1}\left[\frac{1}{2}-m,-2m,5,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$2\left(2m\,\text{AppellF1}\left[\frac{3}{2}-m,1-2m,5,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$\left.\left.\left.\left.\left.5\,\text{AppellF1}\left[\frac{3}{2}-m,-2m,6,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^2\right)\right)\right)\right)$$

- **Problem 87: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int \text{Cos}[e+f x]^2\,(a+a\,\text{Sin}[e+f x])^m\,(c-c\,\text{Sin}[e+f x])^{1-m}\,dx$$

Optimal (type 5, 116 leaves, 5 steps):

$$\frac{1}{f(3+2m)}2^{\frac{5}{2}-m}c^3\,\text{Cos}[e+f x]^3\,\text{Hypergeometric2F1}\left[\frac{1}{2}(-3+2m),\frac{1}{2}(3+2m),\frac{1}{2}(5+2m),\frac{1}{2}(1+\text{Sin}[e+f x])\right]$$

$$(1-\text{Sin}[e+f x])^{\frac{1}{2}+m}\,(a+a\,\text{Sin}[e+f x])^m\,(c-c\,\text{Sin}[e+f x])^{-2-m}$$

Result (type 6, 19668 leaves):

$$-\left(\left(8^{3-m}\,(-3+2m)\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{-2m}\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^{-2(1-m)}(a+a\,\text{Sin}[e+f x])^{m}\,(c-c\,\text{Sin}[e+f x])^{1-m}\right.\right.$$

$$\left(\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2m}\text{Cos}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]^{6}\left(\text{Cos}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]-\text{Sin}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]\right)^{-2m}-\right.$$

$$2\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2m}\text{Cos}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]^{5}\left(\text{Cos}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]-\text{Sin}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]\right)^{-2m}\text{Sin}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]-$$

$$\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2m}\text{Cos}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]^{4}\left(\text{Cos}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]-\text{Sin}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]\right)^{-2m}\text{Sin}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]^{2}+$$

$$4\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2m}\text{Cos}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]^{3}\left(\text{Cos}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]-\text{Sin}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]\right)^{-2m}\text{Sin}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]^{3}-$$

$$\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2m}\text{Cos}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]^{2}\left(\text{Cos}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]-\text{Sin}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]\right)^{-2m}\text{Sin}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]^{4}-$$

$$2\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2m}\text{Cos}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]\left(\text{Cos}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]-\text{Sin}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]\right)^{-2m}\text{Sin}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]^{5}+$$

$$\left.\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2m}\left(\text{Cos}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]-\text{Sin}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]\right)^{-2m}\text{Sin}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]^{6}\right)$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\left(\frac{\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2}}\right)^{-2m}\left(\frac{1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2}}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2}}\right)^{2m}$$

$$\left(-\left(\left(\text{AppellF1}\left[\frac{1}{2}-m,-2m,3,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2},-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2}\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2}\right)^{4}\right)\right/\right.$$

$$\left((-3+2m)\,\text{AppellF1}\left[\frac{1}{2}-m,-2m,3,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2},-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2}\right]+\right.$$

$$2\left(2m\,\text{AppellF1}\left[\frac{3}{2}-m,1-2m,3,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2},-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2}\right]+3\right.$$

$$\left.\left.\left.\text{AppellF1}\left[\frac{3}{2}-m,-2m,4,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2},-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2}\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2}\right)\right)+$$

$$\left(6\,\text{AppellF1}\left[\frac{1}{2}-m,-2m,4,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2},-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2}\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2}\right)^{3}\right)\Big/$$

$$\left((-3+2m)\,\text{AppellF1}\left[\frac{1}{2}-m,-2m,4,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2},-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2}\right]+\right.$$

$$4\left(m\,\text{AppellF1}\left[\frac{3}{2}-m,1-2m,4,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2},-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2}\right]+\right.$$

$$2\,\text{AppellF1}\left[\frac{3}{2}-m,-2m,5,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)-$$

$$\left(13\,\text{AppellF1}\left[\frac{1}{2}-m,-2m,5,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^2\right)\Big/$$

$$\left((-3+2m)\,\text{AppellF1}\left[\frac{1}{2}-m,-2m,5,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$2\left(2m\,\text{AppellF1}\left[\frac{3}{2}-m,1-2m,5,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$5\,\text{AppellF1}\left[\frac{3}{2}-m,-2m,6,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)+$$

$$\left(12\,\text{AppellF1}\left[\frac{1}{2}-m,-2m,6,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\right)\Big/$$

$$\left((-3+2m)\,\text{AppellF1}\left[\frac{1}{2}-m,-2m,6,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$4\left(m\,\text{AppellF1}\left[\frac{3}{2}-m,1-2m,6,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$3\,\text{AppellF1}\left[\frac{3}{2}-m,-2m,7,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)-$$

$$\left(4\,\text{AppellF1}\left[\frac{1}{2}-m,-2m,7,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\Big/$$

$$\left((-3+2m)\,\text{AppellF1}\left[\frac{1}{2}-m,-2m,7,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$2\left(2m\,\text{AppellF1}\left[\frac{3}{2}-m,1-2m,7,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$7\,\text{AppellF1}\left[\frac{3}{2}-m,-2m,8,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\right)\right)\Big/$$

$$\left(f\,(-1+2m)\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^7\left(-\frac{1}{(-1+2m)\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^8}\,7\times 2^{8-3m}\,(-3+2m)\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right.\right.$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\left(\frac{\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}\right)^{-2m}\left(\frac{1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}\right)^{2m}$$

$$\left(-\left(\left(\text{AppellF1}\left[\frac{1}{2}-m,-2m,3,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^4\right)\Big/\right.\right.$$

$$\left((-3+2m)\,\text{AppellF1}\left[\frac{1}{2}-m,-2m,3,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$2\left(2m\,\text{AppellF1}\left[\frac{3}{2}-m,1-2m,3,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$\left.\left.3\,\text{AppellF1}\left[\frac{3}{2}-m,-2m,4,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\right)+$$

$$\left(6\,\text{AppellF1}\left[\frac{1}{2}-m,-2m,4,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^3\right)\Big/$$

$$\left((-3+2m)\,\text{AppellF1}\left[\frac{1}{2}-m,-2m,4,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+4\right.$$

$$\left(m\,\text{AppellF1}\left[\frac{3}{2}-m,1-2m,4,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$\left.\left.2\,\text{AppellF1}\left[\frac{3}{2}-m,-2m,5,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)-$$

$$\left(13\,\text{AppellF1}\left[\frac{1}{2}-m,-2m,5,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^2\right)\Big/$$

$$\left((-3+2m)\,\text{AppellF1}\left[\frac{1}{2}-m,-2m,5,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+2\right.$$

$$\left(2m\,\text{AppellF1}\left[\frac{3}{2}-m,1-2m,5,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$\left.\left.5\,\text{AppellF1}\left[\frac{3}{2}-m,-2m,6,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)+$$

$$\left(12\,\text{AppellF1}\left[\frac{1}{2}-m,-2m,6,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\right)\Big/$$

$$\left((-3+2m)\,\text{AppellF1}\left[\frac{1}{2}-m,-2m,6,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+4\right.$$

$$\left(m\,\text{AppellF1}\left[\frac{3}{2}-m,1-2m,6,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$\left.\left.3\,\text{AppellF1}\left[\frac{3}{2}-m,-2m,7,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)-$$

$$\left(4\,\text{AppellF1}\left[\frac{1}{2}-m,-2m,7,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\Big/$$

$$\left((-3+2m)\,\text{AppellF1}\left[\frac{1}{2}-m,-2m,7,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+2\right.$$

$$\left(2m\,\text{AppellF1}\left[\frac{3}{2}-m,1-2m,7,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$7\,\text{AppellF1}\left[\frac{3}{2}-m,\,-2m,\,8,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\Bigg)\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)\Bigg)+$$

$$\frac{1}{(-1+2m)\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^7}\,2^{7-3m}\,(-3+2m)\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\left(\frac{\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}\right)^{-2m}$$

$$\left(\frac{1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}\right)^{2m}$$

$$\Bigg(-\Bigg(\Bigg(\text{AppellF1}\left[\frac{1}{2}-m,\,-2m,\,3,\,\frac{3}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^4\Bigg)\Big/$$

$$\Bigg((-3+2m)\,\text{AppellF1}\left[\frac{1}{2}-m,\,-2m,\,3,\,\frac{3}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$2\Bigg(2m\,\text{AppellF1}\left[\frac{3}{2}-m,\,1-2m,\,3,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$3\,\text{AppellF1}\left[\frac{3}{2}-m,\,-2m,\,4,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\Bigg)\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)\Bigg)+$$

$$\Bigg(6\,\text{AppellF1}\left[\frac{1}{2}-m,\,-2m,\,4,\,\frac{3}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^3\Bigg)\Big/$$

$$\Bigg((-3+2m)\,\text{AppellF1}\left[\frac{1}{2}-m,\,-2m,\,4,\,\frac{3}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$4\Bigg(m\,\text{AppellF1}\left[\frac{3}{2}-m,\,1-2m,\,4,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$2\,\text{AppellF1}\left[\frac{3}{2}-m,\,-2m,\,5,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\Bigg)\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)-$$

$$\Bigg(13\,\text{AppellF1}\left[\frac{1}{2}-m,\,-2m,\,5,\,\frac{3}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^2\Bigg)\Big/$$

$$\Bigg((-3+2m)\,\text{AppellF1}\left[\frac{1}{2}-m,\,-2m,\,5,\,\frac{3}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$2\Bigg(2m\,\text{AppellF1}\left[\frac{3}{2}-m,\,1-2m,\,5,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$5\,\text{AppellF1}\left[\frac{3}{2}-m,\,-2m,\,6,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\Bigg)\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)+$$

$$\Bigg(12\,\text{AppellF1}\left[\frac{1}{2}-m,\,-2m,\,6,\,\frac{3}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\Bigg)\Big/$$

$$\Big((-3+2m)\,\text{AppellF1}\Big[\frac{1}{2}-m,\,-2m,\,6,\,\frac{3}{2}-m,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]+$$

$$4\,\Big(m\,\text{AppellF1}\Big[\frac{3}{2}-m,\,1-2m,\,6,\,\frac{5}{2}-m,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]+$$

$$3\,\text{AppellF1}\Big[\frac{3}{2}-m,\,-2m,\,7,\,\frac{5}{2}-m,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big)-$$

$$\Big(4\,\text{AppellF1}\Big[\frac{1}{2}-m,\,-2m,\,7,\,\frac{3}{2}-m,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\Big)\Big/$$

$$\Big((-3+2m)\,\text{AppellF1}\Big[\frac{1}{2}-m,\,-2m,\,7,\,\frac{3}{2}-m,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]+$$

$$2\,\Big(2m\,\text{AppellF1}\Big[\frac{3}{2}-m,\,1-2m,\,7,\,\frac{5}{2}-m,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]+$$

$$7\,\text{AppellF1}\Big[\frac{3}{2}-m,\,-2m,\,8,\,\frac{5}{2}-m,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big)\Big)-$$

$$\frac{1}{(-1+2m)\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^7}\,2^{10-3m}\,m\,(-3+2m)\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]\left(\frac{\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}\right)^{-1-2m}$$

$$\left(\frac{1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}\right)^{2m}\left(-\frac{\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{2\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^2}+\frac{\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{4\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)}\right)$$

$$\Big(-\Big(\Big(\text{AppellF1}\Big[\frac{1}{2}-m,\,-2m,\,3,\,\frac{3}{2}-m,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\,\Big(1+\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big)^4\Big)\Big/$$

$$\Big((-3+2m)\,\text{AppellF1}\Big[\frac{1}{2}-m,\,-2m,\,3,\,\frac{3}{2}-m,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]+$$

$$2\,\Big(2m\,\text{AppellF1}\Big[\frac{3}{2}-m,\,1-2m,\,3,\,\frac{5}{2}-m,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]+$$

$$3\,\text{AppellF1}\Big[\frac{3}{2}-m,\,-2m,\,4,\,\frac{5}{2}-m,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big)\Big)+$$

$$\Big(6\,\text{AppellF1}\Big[\frac{1}{2}-m,\,-2m,\,4,\,\frac{3}{2}-m,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\,\Big(1+\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big)^3\Big)\Big/$$

$$\Big((-3+2m)\,\text{AppellF1}\Big[\frac{1}{2}-m,\,-2m,\,4,\,\frac{3}{2}-m,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]+$$

$$4\,\Big(m\,\text{AppellF1}\Big[\frac{3}{2}-m,\,1-2m,\,4,\,\frac{5}{2}-m,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]+$$

$$2\,\text{AppellF1}\left[\frac{3}{2}-m,\,-2m,\,5,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)-$$

$$\left(13\,\text{AppellF1}\left[\frac{1}{2}-m,\,-2m,\,5,\,\frac{3}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^2\right)\Big/$$

$$\Bigg((-3+2m)\,\text{AppellF1}\left[\frac{1}{2}-m,\,-2m,\,5,\,\frac{3}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$2\,\Bigg(2\,m\,\text{AppellF1}\left[\frac{3}{2}-m,\,1-2m,\,5,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$5\,\text{AppellF1}\left[\frac{3}{2}-m,\,-2m,\,6,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\Bigg)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)+$$

$$\left(12\,\text{AppellF1}\left[\frac{1}{2}-m,\,-2m,\,6,\,\frac{3}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\right)\Big/$$

$$\Bigg((-3+2m)\,\text{AppellF1}\left[\frac{1}{2}-m,\,-2m,\,6,\,\frac{3}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$4\,\Bigg(m\,\text{AppellF1}\left[\frac{3}{2}-m,\,1-2m,\,6,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$3\,\text{AppellF1}\left[\frac{3}{2}-m,\,-2m,\,7,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\Bigg)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)-$$

$$\left(4\,\text{AppellF1}\left[\frac{1}{2}-m,\,-2m,\,7,\,\frac{3}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\Big/$$

$$\Bigg((-3+2m)\,\text{AppellF1}\left[\frac{1}{2}-m,\,-2m,\,7,\,\frac{3}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$2\,\Bigg(2\,m\,\text{AppellF1}\left[\frac{3}{2}-m,\,1-2m,\,7,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$7\,\text{AppellF1}\left[\frac{3}{2}-m,\,-2m,\,8,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\Bigg)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)\Bigg)+$$

$$\frac{1}{(-1+2m)\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^7}\,2^{10-3m}\,m\,(-3+2m)\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\left(\frac{\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}\right)^{-2m}$$

$$\left(\frac{1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}\right)^{-1+2m}$$

$$\left(-\frac{\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)}{2\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^2}-\frac{\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]}{2\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)}\right)$$

$$\Bigg(-\Bigg(\Bigg(\text{AppellF1}\left[\frac{1}{2}-m,\,-2\,m,\,3,\,\frac{3}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^4\Bigg)\Bigg/$$

$$\Bigg((-3+2\,m)\,\text{AppellF1}\left[\frac{1}{2}-m,\,-2\,m,\,3,\,\frac{3}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+$$

$$2\,\Bigg(2\,m\,\text{AppellF1}\left[\frac{3}{2}-m,\,1-2\,m,\,3,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+$$

$$3\,\text{AppellF1}\left[\frac{3}{2}-m,\,-2\,m,\,4,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\Bigg)\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Bigg)\Bigg)+$$

$$\Bigg(6\,\text{AppellF1}\left[\frac{1}{2}-m,\,-2\,m,\,4,\,\frac{3}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^3\Bigg)\Bigg/$$

$$\Bigg((-3+2\,m)\,\text{AppellF1}\left[\frac{1}{2}-m,\,-2\,m,\,4,\,\frac{3}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+$$

$$4\,\Bigg(m\,\text{AppellF1}\left[\frac{3}{2}-m,\,1-2\,m,\,4,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+$$

$$2\,\text{AppellF1}\left[\frac{3}{2}-m,\,-2\,m,\,5,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\Bigg)\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Bigg)-$$

$$\Bigg(13\,\text{AppellF1}\left[\frac{1}{2}-m,\,-2\,m,\,5,\,\frac{3}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^2\Bigg)\Bigg/$$

$$\Bigg((-3+2\,m)\,\text{AppellF1}\left[\frac{1}{2}-m,\,-2\,m,\,5,\,\frac{3}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+$$

$$2\,\Bigg(2\,m\,\text{AppellF1}\left[\frac{3}{2}-m,\,1-2\,m,\,5,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+$$

$$5\,\text{AppellF1}\left[\frac{3}{2}-m,\,-2\,m,\,6,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\Bigg)\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Bigg)+$$

$$\Bigg(12\,\text{AppellF1}\left[\frac{1}{2}-m,\,-2\,m,\,6,\,\frac{3}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\Bigg)\Bigg/$$

$$\Bigg((-3+2\,m)\,\text{AppellF1}\left[\frac{1}{2}-m,\,-2\,m,\,6,\,\frac{3}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+$$

$$4\,\Bigg(m\,\text{AppellF1}\left[\frac{3}{2}-m,\,1-2\,m,\,6,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+$$

$$3\,\text{AppellF1}\left[\frac{3}{2}-m,\,-2\,m,\,7,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\Bigg)\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Bigg)-$$

$$\Bigg(4\,\text{AppellF1}\left[\frac{1}{2}-m,\,-2\,m,\,7,\,\frac{3}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\Bigg)\Bigg/$$

$$\Bigg((-3+2\,m)\,\text{AppellF1}\left[\frac{1}{2}-m,\,-2\,m,\,7,\,\frac{3}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+$$

$$2\left(2\,m\,\text{AppellF1}\left[\frac{3}{2}-m,\,1-2\,m,\,7,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.$$

$$\left.7\,\text{AppellF1}\left[\frac{3}{2}-m,\,-2\,m,\,8,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Bigg)\Bigg)+$$

$$\frac{1}{(-1+2\,m)\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^7}\,8^{3-m}\,(-3+2\,m)\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\left(\frac{\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}\right)^{-2\,m}$$

$$\left(\frac{1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}\right)^{2\,m}$$

$$\Bigg(-\Bigg(\Bigg(2\,\text{AppellF1}\left[\frac{1}{2}-m,\,-2\,m,\,3,\,\frac{3}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^3\Bigg)\Big/\Bigg((-3+2\,m)\,\text{AppellF1}\left[\frac{1}{2}-m,\,-2\,m,\,3,\,\frac{3}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\right.$$

$$\left.-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+2\left(2\,m\,\text{AppellF1}\left[\frac{3}{2}-m,\,1-2\,m,\,3,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.$$

$$\left.3\,\text{AppellF1}\left[\frac{3}{2}-m,\,-2\,m,\,4,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Bigg)\Bigg)-$$

$$\Bigg(\Bigg(-\frac{1}{\frac{3}{2}-m}\left(\frac{1}{2}-m\right)m\,\text{AppellF1}\left[\frac{3}{2}-m,\,1-2\,m,\,3,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-\frac{1}{2\left(\frac{3}{2}-m\right)}3\left(\frac{1}{2}-m\right)\text{AppellF1}\left[\frac{3}{2}-m,\,-2\,m,\,4,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\right.$$

$$\left.-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\Bigg)\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^4\Bigg)\Big/$$

$$\Bigg((-3+2\,m)\,\text{AppellF1}\left[\frac{1}{2}-m,\,-2\,m,\,3,\,\frac{3}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+$$

$$2\left(2\,m\,\text{AppellF1}\left[\frac{3}{2}-m,\,1-2\,m,\,3,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.$$

$$\left.3\,\text{AppellF1}\left[\frac{3}{2}-m,\,-2\,m,\,4,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Bigg)+$$

$$\Bigg(9\,\text{AppellF1}\left[\frac{1}{2}-m,\,-2\,m,\,4,\,\frac{3}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^2\Bigg)\Bigg/\Bigg((-3+2\,m)\,\text{AppellF1}\left[\frac{1}{2}-m,\,-2\,m,\,4,\,\frac{3}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\right.$$

$$\left.-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+4\,\Bigg(m\,\text{AppellF1}\left[\frac{3}{2}-m,\,1-2\,m,\,4,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+$$

$$2\,\text{AppellF1}\left[\frac{3}{2}-m,\,-2\,m,\,5,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\Bigg)\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Bigg)+$$

$$\Bigg(6\,\Bigg(-\frac{1}{\frac{3}{2}-m}\left(\frac{1}{2}-m\right)m\,\text{AppellF1}\left[\frac{3}{2}-m,\,1-2\,m,\,4,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-\frac{1}{\frac{3}{2}-m}2\left(\frac{1}{2}-m\right)\text{AppellF1}\left[\frac{3}{2}-m,\,-2\,m,\,5,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\right.$$

$$\left.-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\Bigg)\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^3\Bigg)\Bigg/$$

$$\Bigg((-3+2\,m)\,\text{AppellF1}\left[\frac{1}{2}-m,\,-2\,m,\,4,\,\frac{3}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+$$

$$4\,\Bigg(m\,\text{AppellF1}\left[\frac{3}{2}-m,\,1-2\,m,\,4,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+$$

$$2\,\text{AppellF1}\left[\frac{3}{2}-m,\,-2\,m,\,5,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\Bigg)\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Bigg)-$$

$$\Bigg(13\,\text{AppellF1}\left[\frac{1}{2}-m,\,-2\,m,\,5,\,\frac{3}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\Bigg)\Bigg/\Bigg((-3+2\,m)\,\text{AppellF1}\left[\frac{1}{2}-m,\,-2\,m,\,5,\,\frac{3}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\right.$$

$$\left.-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+2\,\Bigg(2\,m\,\text{AppellF1}\left[\frac{3}{2}-m,\,1-2\,m,\,5,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+$$

$$5\,\text{AppellF1}\left[\frac{3}{2}-m,\,-2\,m,\,6,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\Bigg)\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Bigg)-$$

$$\Bigg(13\,\Bigg(-\frac{1}{\frac{3}{2}-m}\left(\frac{1}{2}-m\right)m\,\text{AppellF1}\left[\frac{3}{2}-m,\,1-2\,m,\,5,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-\frac{1}{2\left(\frac{3}{2}-m\right)}5\left(\frac{1}{2}-m\right)\text{AppellF1}\left[\frac{3}{2}-m,\,-2\,m,\,6,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\right.$$

$$\left.-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\Bigg)\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^2\Bigg)\Bigg/$$

$$\Big((-3+2\,m)\,\text{AppellF1}\Big[\frac{1}{2}-m,\,-2\,m,\,5,\,\frac{3}{2}-m,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+$$

$$2\,\Big(2\,m\,\text{AppellF1}\Big[\frac{3}{2}-m,\,1-2\,m,\,5,\,\frac{5}{2}-m,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+$$

$$5\,\text{AppellF1}\Big[\frac{3}{2}-m,\,-2\,m,\,6,\,\frac{5}{2}-m,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)+$$

$$\Big(6\,\text{AppellF1}\Big[\frac{1}{2}-m,\,-2\,m,\,6,\,\frac{3}{2}-m,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2$$

$$\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\Big)\Big/\Big((-3+2\,m)\,\text{AppellF1}\Big[\frac{1}{2}-m,\,-2\,m,\,6,\,\frac{3}{2}-m,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+$$

$$4\,\Big(m\,\text{AppellF1}\Big[\frac{3}{2}-m,\,1-2\,m,\,6,\,\frac{5}{2}-m,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+$$

$$3\,\text{AppellF1}\Big[\frac{3}{2}-m,\,-2\,m,\,7,\,\frac{5}{2}-m,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)+$$

$$\Big(12\,\Big(-\frac{1}{\frac{3}{2}-m}\Big(\frac{1}{2}-m\Big)\,m\,\text{AppellF1}\Big[\frac{3}{2}-m,\,1-2\,m,\,6,\,\frac{5}{2}-m,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]$$

$$\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]-\frac{1}{\frac{3}{2}-m}3\,\Big(\frac{1}{2}-m\Big)\,\text{AppellF1}\Big[\frac{3}{2}-m,\,-2\,m,\,7,\,\frac{5}{2}-m,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,$$

$$-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\Big)\,\Big(1+\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)\Big)\Big/$$

$$\Big((-3+2\,m)\,\text{AppellF1}\Big[\frac{1}{2}-m,\,-2\,m,\,6,\,\frac{3}{2}-m,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+$$

$$4\,\Big(m\,\text{AppellF1}\Big[\frac{3}{2}-m,\,1-2\,m,\,6,\,\frac{5}{2}-m,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+$$

$$3\,\text{AppellF1}\Big[\frac{3}{2}-m,\,-2\,m,\,7,\,\frac{5}{2}-m,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)-$$

$$\Big(4\,\Big(-\frac{1}{\frac{3}{2}-m}\Big(\frac{1}{2}-m\Big)\,m\,\text{AppellF1}\Big[\frac{3}{2}-m,\,1-2\,m,\,7,\,\frac{5}{2}-m,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]$$

$$\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]-\frac{1}{2\,\left(\frac{3}{2}-m\right)}7\,\Big(\frac{1}{2}-m\Big)\,\text{AppellF1}\Big[\frac{3}{2}-m,\,-2\,m,\,8,\,\frac{5}{2}-m,$$

$$\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\Big)\Big)\Big/$$

$$\left((-3+2m)\,\text{AppellF1}\left[\frac{1}{2}-m,-2m,7,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+\right.$$

$$2\left(2m\,\text{AppellF1}\left[\frac{3}{2}-m,1-2m,7,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+\right.$$

$$\left.\left.7\,\text{AppellF1}\left[\frac{3}{2}-m,-2m,8,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)+$$

$$\left(\text{AppellF1}\left[\frac{1}{2}-m,-2m,3,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)^4\right.$$

$$\left(\left(2m\,\text{AppellF1}\left[\frac{3}{2}-m,1-2m,3,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+3\,\text{AppellF1}\left[\frac{3}{2}-m,-2m,\right.\right.\right.$$

$$\left.\left.4,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right)\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]+$$

$$(-3+2m)\left(-\frac{1}{\frac{3}{2}-m}\left(\frac{1}{2}-m\right)m\,\text{AppellF1}\left[\frac{3}{2}-m,1-2m,3,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right.$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]-\frac{1}{2\left(\frac{3}{2}-m\right)}3\left(\frac{1}{2}-m\right)\text{AppellF1}\left[\frac{3}{2}-m,-2m,4,\frac{5}{2}-m,\right.$$

$$\left.\left.\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]\right)+$$

$$2\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\left(2m\left(-\frac{1}{2\left(\frac{5}{2}-m\right)}3\left(\frac{3}{2}-m\right)\text{AppellF1}\left[\frac{5}{2}-m,1-2m,4,\frac{7}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,\right.\right.\right.$$

$$\left.-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]+\frac{1}{2\left(\frac{5}{2}-m\right)}(1-2m)\left(\frac{3}{2}-m\right)\text{AppellF1}\left[\frac{5}{2}-m,\right.$$

$$\left.\left.2-2m,3,\frac{7}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]\right)+$$

$$3\left(-\frac{1}{\frac{5}{2}-m}\left(\frac{3}{2}-m\right)m\,\text{AppellF1}\left[\frac{5}{2}-m,1-2m,4,\frac{7}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right.$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]-\frac{1}{\frac{5}{2}-m}2\left(\frac{3}{2}-m\right)\text{AppellF1}\left[\frac{5}{2}-m,-2m,5,\frac{7}{2}-m,\right.$$

$$\left.\left.\left.\left.\left.\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]\right)\right)\right)\right)\right)\Big/$$

$$\left((-3+2\,m)\,\text{AppellF1}\left[\frac{1}{2}-m,\,-2\,m,\,3,\,\frac{3}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.$$

$$2\left(2\,m\,\text{AppellF1}\left[\frac{3}{2}-m,\,1-2\,m,\,3,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.$$

$$\left.\left.3\,\text{AppellF1}\left[\frac{3}{2}-m,\,-2\,m,\,4,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^2-$$

$$\left(6\,\text{AppellF1}\left[\frac{1}{2}-m,\,-2\,m,\,4,\,\frac{3}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^3\right.$$

$$\left(2\left(m\,\text{AppellF1}\left[\frac{3}{2}-m,\,1-2\,m,\,4,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+2\,\text{AppellF1}\left[\frac{3}{2}-m,\,-2\,m,\right.\right.\right.$$

$$\left.\left.5,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]+$$

$$(-3+2\,m)\left(-\frac{1}{\frac{3}{2}-m}\left(\frac{1}{2}-m\right)m\,\text{AppellF1}\left[\frac{3}{2}-m,\,1-2\,m,\,4,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right.$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-\frac{1}{\frac{3}{2}-m}2\left(\frac{1}{2}-m\right)\text{AppellF1}\left[\frac{3}{2}-m,\,-2\,m,\,5,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\right.$$

$$\left.\left.-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\right)+4\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2$$

$$\left(m\left(-\frac{1}{\frac{5}{2}-m}2\left(\frac{3}{2}-m\right)\text{AppellF1}\left[\frac{5}{2}-m,\,1-2\,m,\,5,\,\frac{7}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right.\right.$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]+\frac{1}{2\left(\frac{5}{2}-m\right)}(1-2\,m)\left(\frac{3}{2}-m\right)\text{AppellF1}\left[\frac{5}{2}-m,\,2-2\,m,\,4,\right.$$

$$\left.\left.\frac{7}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\right)+$$

$$2\left(-\frac{1}{\frac{5}{2}-m}\left(\frac{3}{2}-m\right)m\,\text{AppellF1}\left[\frac{5}{2}-m,\,1-2\,m,\,5,\,\frac{7}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right.$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-\frac{1}{2\left(\frac{5}{2}-m\right)}5\left(\frac{3}{2}-m\right)\text{AppellF1}\left[\frac{5}{2}-m,\,-2\,m,\,6,\,\frac{7}{2}-m,\right.$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right] \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\Bigg)\Bigg)\Bigg)\Bigg)\Bigg) \Big/$$

$$\Bigg((-3+2 m) \text{AppellF1}\left[\frac{1}{2}-m, -2 m, 4, \frac{3}{2}-m, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right] +$$

$$4 \Bigg(m \text{AppellF1}\left[\frac{3}{2}-m, 1-2 m, 4, \frac{5}{2}-m, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right] +$$

$$2 \text{AppellF1}\left[\frac{3}{2}-m, -2 m, 5, \frac{5}{2}-m, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\Bigg) \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)^2 +$$

$$\Bigg(13 \text{AppellF1}\left[\frac{1}{2}-m, -2 m, 5, \frac{3}{2}-m, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right] \left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^2$$

$$\Bigg(\Bigg(2 m \text{AppellF1}\left[\frac{3}{2}-m, 1-2 m, 5, \frac{5}{2}-m, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right] + 5 \text{AppellF1}\left[\frac{3}{2}-m, -2 m,\right.$$

$$\left.6, \frac{5}{2}-m, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\Bigg) \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right] +$$

$$(-3+2 m) \Bigg(-\frac{1}{\frac{3}{2}-m}\left(\frac{1}{2}-m\right) m \text{AppellF1}\left[\frac{3}{2}-m, 1-2 m, 5, \frac{5}{2}-m, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right] - \frac{1}{2\left(\frac{3}{2}-m\right)} 5 \left(\frac{1}{2}-m\right) \text{AppellF1}\left[\frac{3}{2}-m, -2 m, 6, \frac{5}{2}-m,\right.$$

$$\left.\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right] \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\Bigg) +$$

$$2 \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \Bigg(2 m \Bigg(-\frac{1}{2\left(\frac{5}{2}-m\right)} 5 \left(\frac{3}{2}-m\right) \text{AppellF1}\left[\frac{5}{2}-m, 1-2 m, 6, \frac{7}{2}-m, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\right.$$

$$\left.-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right] \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right] + \frac{1}{2\left(\frac{5}{2}-m\right)} (1-2 m) \left(\frac{3}{2}-m\right) \text{AppellF1}\left[\frac{5}{2}-m,\right.$$

$$\left.2-2 m, 5, \frac{7}{2}-m, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right] \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\Bigg) +$$

$$5 \Bigg(-\frac{1}{\frac{5}{2}-m}\left(\frac{3}{2}-m\right) m \text{AppellF1}\left[\frac{5}{2}-m, 1-2 m, 6, \frac{7}{2}-m, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]$$

$$\mathrm{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{1}{\frac{5}{2}-m}3\left(\frac{3}{2}-m\right)\mathrm{AppellF1}\left[\frac{5}{2}-m,-2m,7,\frac{7}{2}-m,\right.$$

$$\left.\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\mathrm{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\Bigg)\Bigg)\Bigg)\Bigg)\Bigg/$$

$$\Bigg((-3+2m)\,\mathrm{AppellF1}\left[\frac{1}{2}-m,-2m,5,\frac{3}{2}-m,\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$2\Bigg(2m\,\mathrm{AppellF1}\left[\frac{3}{2}-m,1-2m,5,\frac{5}{2}-m,\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$5\,\mathrm{AppellF1}\left[\frac{3}{2}-m,-2m,6,\frac{5}{2}-m,\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\Bigg)\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)^2-$$

$$\Bigg(12\,\mathrm{AppellF1}\left[\frac{1}{2}-m,-2m,6,\frac{3}{2}-m,\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\left(1+\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)$$

$$\Bigg(2\Bigg(m\,\mathrm{AppellF1}\left[\frac{3}{2}-m,1-2m,6,\frac{5}{2}-m,\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+3\,\mathrm{AppellF1}\left[\frac{3}{2}-m,-2m,\right.$$

$$\left.7,\frac{5}{2}-m,\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\Bigg)\mathrm{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]+$$

$$(-3+2m)\left(-\frac{1}{\frac{3}{2}-m}\left(\frac{1}{2}-m\right)m\,\mathrm{AppellF1}\left[\frac{3}{2}-m,1-2m,6,\frac{5}{2}-m,\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right.$$

$$\mathrm{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{1}{\frac{3}{2}-m}3\left(\frac{1}{2}-m\right)\mathrm{AppellF1}\left[\frac{3}{2}-m,-2m,7,\frac{5}{2}-m,\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\right.$$

$$\left.\left.-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\mathrm{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)+4\,\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2$$

$$\Bigg(m\left(-\frac{1}{\frac{5}{2}-m}3\left(\frac{3}{2}-m\right)\mathrm{AppellF1}\left[\frac{5}{2}-m,1-2m,7,\frac{7}{2}-m,\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right.$$

$$\mathrm{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]+\frac{1}{2\left(\frac{5}{2}-m\right)}(1-2m)\left(\frac{3}{2}-m\right)\mathrm{AppellF1}\left[\frac{5}{2}-m,2-2m,6,\right.$$

$$\left.\left.\frac{7}{2}-m,\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\mathrm{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)+$$

$$3\left(-\frac{1}{\frac{5}{2}-m}\left(\frac{3}{2}-m\right)m\,\text{AppellF1}\left[\frac{5}{2}-m,1-2m,7,\frac{7}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right.$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]-\frac{1}{2\left(\frac{5}{2}-m\right)}7\left(\frac{3}{2}-m\right)\text{AppellF1}\left[\frac{5}{2}-m,-2m,8,\frac{7}{2}-m,\right.$$

$$\left.\left.\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]\right)\Bigg)\Bigg)\Bigg)\Bigg/$$

$$\left((-3+2m)\,\text{AppellF1}\left[\frac{1}{2}-m,-2m,6,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+\right.$$

$$4\left(m\,\text{AppellF1}\left[\frac{3}{2}-m,1-2m,6,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+\right.$$

$$\left.\left.3\,\text{AppellF1}\left[\frac{3}{2}-m,-2m,7,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)^2+$$

$$\left(4\,\text{AppellF1}\left[\frac{1}{2}-m,-2m,7,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right.$$

$$\left(\left(2m\,\text{AppellF1}\left[\frac{3}{2}-m,1-2m,7,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+7\,\text{AppellF1}\left[\frac{3}{2}-m,-2m,\right.\right.\right.$$

$$\left.\left.8,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right)\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]+$$

$$(-3+2m)\left(-\frac{1}{\frac{3}{2}-m}\left(\frac{1}{2}-m\right)m\,\text{AppellF1}\left[\frac{3}{2}-m,1-2m,7,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right.$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]-\frac{1}{2\left(\frac{3}{2}-m\right)}7\left(\frac{1}{2}-m\right)\text{AppellF1}\left[\frac{3}{2}-m,-2m,8,\frac{5}{2}-m,\right.$$

$$\left.\left.\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]\right)+$$

$$2\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\left(2m\left(-\frac{1}{2\left(\frac{5}{2}-m\right)}7\left(\frac{3}{2}-m\right)\text{AppellF1}\left[\frac{5}{2}-m,1-2m,8,\frac{7}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,\right.\right.\right.$$

$$\left.-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]+\frac{1}{2\left(\frac{5}{2}-m\right)}(1-2m)\left(\frac{3}{2}-m\right)\text{AppellF1}\left[\frac{5}{2}-m,\right.$$

$$2-2m,\ 7,\ \frac{7}{2}-m,\ \mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\ -\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\ \mathrm{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\ \mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\Bigg)+$$

$$7\left(-\frac{1}{\frac{5}{2}-m}\left(\frac{3}{2}-m\right)m\,\mathrm{AppellF1}\left[\frac{5}{2}-m,\ 1-2m,\ 8,\ \frac{7}{2}-m,\ \mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\ -\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right.$$

$$\mathrm{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\ \mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{1}{\frac{5}{2}-m}4\left(\frac{3}{2}-m\right)\mathrm{AppellF1}\Big[\frac{5}{2}-m,\ -2m,\ 9,\ \frac{7}{2}-m,$$

$$\left.\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\ -\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\ \mathrm{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\ \mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)\Bigg)\Bigg)\Bigg)\Bigg/$$

$$\Bigg((-3+2m)\,\mathrm{AppellF1}\left[\frac{1}{2}-m,\ -2m,\ 7,\ \frac{3}{2}-m,\ \mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\ -\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$2\Bigg(2m\,\mathrm{AppellF1}\left[\frac{3}{2}-m,\ 1-2m,\ 7,\ \frac{5}{2}-m,\ \mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\ -\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$7\,\mathrm{AppellF1}\left[\frac{3}{2}-m,\ -2m,\ 8,\ \frac{5}{2}-m,\ \mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\ -\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\Bigg)\ \mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)\Bigg)\Bigg)\Bigg)$$

- **Problem 88: Result unnecessarily involves higher level functions.**

$$\int (g\,\mathrm{Cos}[e+f x])^{3/2}\sqrt{a+a\,\mathrm{Sin}[e+f x]}\ (c-c\,\mathrm{Sin}[e+f x])^{7/2}\,dx$$

Optimal (type 4, 343 leaves, 8 steps):

$$\frac{2 a c^4 (g\,\mathrm{Cos}[e+f x])^{5/2}}{3 f g\sqrt{a+a\,\mathrm{Sin}[e+f x]}\ \sqrt{c-c\,\mathrm{Sin}[e+f x]}}+\frac{2 a c^4 g\sqrt{\mathrm{Cos}[e+f x]}\ \sqrt{g\,\mathrm{Cos}[e+f x]}\ \mathrm{EllipticE}\left[\frac{1}{2}(e+f x),\ 2\right]}{f\sqrt{a+a\,\mathrm{Sin}[e+f x]}\ \sqrt{c-c\,\mathrm{Sin}[e+f x]}}+$$
$$\frac{2 a c^3 (g\,\mathrm{Cos}[e+f x])^{5/2}\sqrt{c-c\,\mathrm{Sin}[e+f x]}}{7 f g\sqrt{a+a\,\mathrm{Sin}[e+f x]}}+\frac{10 a c^2 (g\,\mathrm{Cos}[e+f x])^{5/2}(c-c\,\mathrm{Sin}[e+f x])^{3/2}}{77 f g\sqrt{a+a\,\mathrm{Sin}[e+f x]}}+$$
$$\frac{2 a c (g\,\mathrm{Cos}[e+f x])^{5/2}(c-c\,\mathrm{Sin}[e+f x])^{5/2}}{33 f g\sqrt{a+a\,\mathrm{Sin}[e+f x]}}-\frac{2 a (g\,\mathrm{Cos}[e+f x])^{5/2}(c-c\,\mathrm{Sin}[e+f x])^{7/2}}{11 f g\sqrt{a+a\,\mathrm{Sin}[e+f x]}}$$

Result (type 5, 673 leaves):

$$-\Bigg((2-2i)\,c^4\,e^{-\frac{3}{2}i(e+fx)}\left(-i+e^{i(e+fx)}\right)(g\,\text{Cos}[e+fx])^{3/2}\left(1+e^{2i(e+fx)}+\left(-1+e^{2ie}\right)\sqrt{1+e^{2i(e+fx)}}\ \text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2i(e+fx)}\right]\right)\sqrt{a\,(1+\text{Sin}[e+fx])}\Bigg)\Big/$$

$$\left(\left(-1+e^{2ie}\right)\sqrt{i\,c\,e^{-i(e+fx)}\left(-i+e^{i(e+fx)}\right)^2}\ \sqrt{e^{-i(e+fx)}\left(1+e^{2i(e+fx)}\right)}\ f\,\text{Cos}[e+fx]^{3/2}\left(\text{Cos}\left[\frac{e}{2}+\frac{fx}{2}\right]+\text{Sin}\left[\frac{e}{2}+\frac{fx}{2}\right]\right)\right)+$$

$$\frac{1}{\text{Cos}\left[\frac{e}{2}+\frac{fx}{2}\right]+\text{Sin}\left[\frac{e}{2}+\frac{fx}{2}\right]}(g\,\text{Cos}[e+fx])^{3/2}\,\text{Sec}[e+fx]$$

$$\Bigg(\frac{58c^3\text{Cos}\left[\frac{fx}{2}\right]\left(\text{Cos}\left[\frac{e}{2}\right]+\text{Sin}\left[\frac{e}{2}\right]\right)}{77f}-\frac{3c^3\text{Cos}\left[\frac{3fx}{2}\right]\left(\text{Cos}\left[\frac{3e}{2}\right]-\text{Sin}\left[\frac{3e}{2}\right]\right)}{308f}+\frac{145c^3\text{Cos}\left[\frac{5fx}{2}\right]\left(\text{Cos}\left[\frac{5e}{2}\right]+\text{Sin}\left[\frac{5e}{2}\right]\right)}{924f}+$$

$$\frac{19c^3\text{Cos}\left[\frac{7fx}{2}\right]\left(\text{Cos}\left[\frac{7e}{2}\right]-\text{Sin}\left[\frac{7e}{2}\right]\right)}{264f}-\frac{c^3\text{Cos}\left[\frac{9fx}{2}\right]\left(\text{Cos}\left[\frac{9e}{2}\right]+\text{Sin}\left[\frac{9e}{2}\right]\right)}{88f}+\frac{58c^3\left(\text{Cos}\left[\frac{e}{2}\right]-\text{Sin}\left[\frac{e}{2}\right]\right)\text{Sin}\left[\frac{fx}{2}\right]}{77f}+$$

$$\frac{3c^3\left(\text{Cos}\left[\frac{3e}{2}\right]+\text{Sin}\left[\frac{3e}{2}\right]\right)\text{Sin}\left[\frac{3fx}{2}\right]}{308f}+\frac{145c^3\left(\text{Cos}\left[\frac{5e}{2}\right]-\text{Sin}\left[\frac{5e}{2}\right]\right)\text{Sin}\left[\frac{5fx}{2}\right]}{924f}-\frac{19c^3\left(\text{Cos}\left[\frac{7e}{2}\right]+\text{Sin}\left[\frac{7e}{2}\right]\right)\text{Sin}\left[\frac{7fx}{2}\right]}{264f}-$$

$$\frac{c^3\left(\text{Cos}\left[\frac{9e}{2}\right]-\text{Sin}\left[\frac{9e}{2}\right]\right)\text{Sin}\left[\frac{9fx}{2}\right]}{88f}-\frac{2c^3\text{Cot}[e]}{f\left(\text{Cos}\left[\frac{e}{2}+\frac{fx}{2}\right]-\text{Sin}\left[\frac{e}{2}+\frac{fx}{2}\right]\right)}\Bigg)\sqrt{a\,(1+\text{Sin}[e+fx])}\ \sqrt{c-c\,\text{Sin}[e+fx]}$$

Problem 89: Result unnecessarily involves higher level functions.

$$\int(g\,\text{Cos}[e+fx])^{3/2}\sqrt{a+a\,\text{Sin}[e+fx]}\ (c-c\,\text{Sin}[e+fx])^{5/2}\,dx$$

Optimal (type 4, 290 leaves, 7 steps):

$$\frac{22ac^3(g\,\text{Cos}[e+fx])^{5/2}}{45fg\sqrt{a+a\,\text{Sin}[e+fx]}\ \sqrt{c-c\,\text{Sin}[e+fx]}}+\frac{22ac^3g\sqrt{\text{Cos}[e+fx]}\ \sqrt{g\,\text{Cos}[e+fx]}\ \text{EllipticE}\left[\frac{1}{2}(e+fx),2\right]}{15f\sqrt{a+a\,\text{Sin}[e+fx]}\ \sqrt{c-c\,\text{Sin}[e+fx]}}+$$

$$\frac{22ac^2(g\,\text{Cos}[e+fx])^{5/2}\sqrt{c-c\,\text{Sin}[e+fx]}}{105fg\sqrt{a+a\,\text{Sin}[e+fx]}}+\frac{2ac\,(g\,\text{Cos}[e+fx])^{5/2}(c-c\,\text{Sin}[e+fx])^{3/2}}{21fg\sqrt{a+a\,\text{Sin}[e+fx]}}-\frac{2a\,(g\,\text{Cos}[e+fx])^{5/2}(c-c\,\text{Sin}[e+fx])^{5/2}}{9fg\sqrt{a+a\,\text{Sin}[e+fx]}}$$

Result (type 5, 205 leaves):

$$\Bigg(c^3g^2\left(\text{Cos}\left[\frac{1}{2}(e+fx)\right]-\text{Sin}\left[\frac{1}{2}(e+fx)\right]\right)\sqrt{a\,(1+\text{Sin}[e+fx])}\ \Bigg(3696\,i\,e^{-i(e+fx)}\sqrt{1+e^{2i(e+fx)}}\ \text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2i(e+fx)}\right]+$$

$$4\,\text{Cos}[e+fx]\,(-924\,i+\text{Cos}[e+fx]\,(180+180\,\text{Cos}[2(e+fx)]+273\,\text{Sin}[e+fx]-35\,\text{Sin}[3(e+fx)]))\Bigg)\Bigg)\Big/$$

$$\left(2520f\sqrt{g\,\text{Cos}[e+fx]}\left(\text{Cos}\left[\frac{1}{2}(e+fx)\right]+\text{Sin}\left[\frac{1}{2}(e+fx)\right]\right)\sqrt{c-c\,\text{Sin}[e+fx]}\right)$$

Problem 90: Result unnecessarily involves higher level functions.

$$\int (g \cos[e+f x])^{3/2} \sqrt{a+a \sin[e+f x]} \, (c-c \sin[e+f x])^{3/2} \, dx$$

Optimal (type 4, 235 leaves, 6 steps):

$$\frac{2 a c^2 (g \cos[e+f x])^{5/2}}{5 f g \sqrt{a+a \sin[e+f x]} \sqrt{c-c \sin[e+f x]}} + \frac{6 a c^2 g \sqrt{\cos[e+f x]} \sqrt{g \cos[e+f x]} \, \text{EllipticE}\left[\frac{1}{2} (e+f x), 2\right]}{5 f \sqrt{a+a \sin[e+f x]} \sqrt{c-c \sin[e+f x]}} + \frac{6 a c (g \cos[e+f x])^{5/2} \sqrt{c-c \sin[e+f x]}}{35 f g \sqrt{a+a \sin[e+f x]}} - \frac{2 a (g \cos[e+f x])^{5/2} (c-c \sin[e+f x])^{3/2}}{7 f g \sqrt{a+a \sin[e+f x]}}$$

Result (type 5, 147 leaves):

$$\frac{1}{140 f (g \cos[e+f x])^{3/2}} c g^3 \sqrt{a (1+\sin[e+f x])} \sqrt{c-c \sin[e+f x]} \left(168 i e^{-i (e+f x)} \sqrt{1+e^{2 i (e+f x)}} \, \text{Hypergeometric2F1}\left[-\frac{1}{4}, \frac{1}{2}, \frac{3}{4}, -e^{2 i (e+f x)}\right] + 4 \cos[e+f x] (-42 i + \cos[e+f x] (5+5 \cos[2 (e+f x)] + 14 \sin[e+f x]))\right)$$

Problem 91: Result unnecessarily involves higher level functions.

$$\int (g \cos[e+f x])^{3/2} \sqrt{a+a \sin[e+f x]} \sqrt{c-c \sin[e+f x]} \, dx$$

Optimal (type 4, 178 leaves, 5 steps):

$$\frac{2 a c (g \cos[e+f x])^{5/2}}{5 f g \sqrt{a+a \sin[e+f x]} \sqrt{c-c \sin[e+f x]}} + \frac{6 a c g \sqrt{\cos[e+f x]} \sqrt{g \cos[e+f x]} \, \text{EllipticE}\left[\frac{1}{2} (e+f x), 2\right]}{5 f \sqrt{a+a \sin[e+f x]} \sqrt{c-c \sin[e+f x]}} - \frac{2 a (g \cos[e+f x])^{5/2} \sqrt{c-c \sin[e+f x]}}{5 f g \sqrt{a+a \sin[e+f x]}}$$

Result (type 5, 249 leaves):

$$\frac{1}{40 f} (g \cos[e+f x])^{3/2} \csc\left[\frac{e}{2}\right] \sec\left[\frac{e}{2}\right] \sec[e+f x]^3 \sqrt{a (1+\sin[e+f x])} \sqrt{c-c \sin[e+f x]} \Big(-11 \cos[f x] - 13 \cos[2 e+f x] + \cos[2 e+3 f x] - \cos[4 e+3 f x] + 12 \, \text{Hypergeometric2F1}\left[-\frac{1}{4}, \frac{1}{2}, \frac{3}{4}, -e^{2 i f x} (\cos[e] + i \sin[e])^2\right] (\cos[f x] - i \sin[f x]) \sqrt{1+\cos[2 (e+f x)] + i \sin[2 (e+f x)]} + 4 \, \text{Hypergeometric2F1}\left[\frac{1}{2}, \frac{3}{4}, \frac{7}{4}, -e^{2 i f x} (\cos[e] + i \sin[e])^2\right] (\cos[f x] + i \sin[f x]) \sqrt{1+\cos[2 (e+f x)] + i \sin[2 (e+f x)]}\Big)$$

- **Problem 92: Result unnecessarily involves higher level functions.**

$$\int \frac{(g \operatorname{Cos}[e+f x])^{3/2} \sqrt{a+a \operatorname{Sin}[e+f x]}}{\sqrt{c-c \operatorname{Sin}[e+f x]}} \, dx$$

Optimal (type 4, 122 leaves, 4 steps):

$$-\frac{2 a (g \operatorname{Cos}[e+f x])^{5/2}}{3 f g \sqrt{a+a \operatorname{Sin}[e+f x]} \sqrt{c-c \operatorname{Sin}[e+f x]}}+\frac{2 a g \sqrt{\operatorname{Cos}[e+f x]} \sqrt{g \operatorname{Cos}[e+f x]} \operatorname{EllipticE}\left[\frac{1}{2} (e+f x), 2\right]}{f \sqrt{a+a \operatorname{Sin}[e+f x]} \sqrt{c-c \operatorname{Sin}[e+f x]}}$$

Result (type 5, 147 leaves):

$$-\left(g \sqrt{g \operatorname{Cos}[e+f x]} \left(1+6 i \operatorname{Cos}[e+f x]+\operatorname{Cos}[2 (e+f x)]-6 i e^{-i (e+f x)} \sqrt{1+e^{2 i (e+f x)}} \operatorname{Hypergeometric2F1}\left[-\frac{1}{4}, \frac{1}{2}, \frac{3}{4}, -e^{2 i (e+f x)}\right]\right) \sqrt{a (1+\operatorname{Sin}[e+f x])}\right) \Big/ \left(3 f \left(\operatorname{Cos}\left[\frac{1}{2} (e+f x)\right]+\operatorname{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^2 \sqrt{c-c \operatorname{Sin}[e+f x]}\right)$$

- **Problem 93: Result unnecessarily involves higher level functions.**

$$\int \frac{(g \operatorname{Cos}[e+f x])^{3/2} \sqrt{a+a \operatorname{Sin}[e+f x]}}{(c-c \operatorname{Sin}[e+f x])^{3/2}} \, dx$$

Optimal (type 4, 123 leaves, 4 steps):

$$\frac{4 a (g \operatorname{Cos}[e+f x])^{5/2}}{f g \sqrt{a+a \operatorname{Sin}[e+f x]} (c-c \operatorname{Sin}[e+f x])^{3/2}}-\frac{6 a g \sqrt{\operatorname{Cos}[e+f x]} \sqrt{g \operatorname{Cos}[e+f x]} \operatorname{EllipticE}\left[\frac{1}{2} (e+f x), 2\right]}{c f \sqrt{a+a \operatorname{Sin}[e+f x]} \sqrt{c-c \operatorname{Sin}[e+f x]}}$$

Result (type 5, 184 leaves):

$$\left(2 i g \sqrt{g \operatorname{Cos}[e+f x]} \left(\operatorname{Cos}\left[\frac{1}{2} (e+f x)\right]-\operatorname{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^2 \sqrt{a (1+\operatorname{Sin}[e+f x])} \left(-3 \operatorname{Cos}[e+f x]+3 e^{-i (e+f x)} \sqrt{1+e^{2 i (e+f x)}} \operatorname{Hypergeometric2F1}\left[-\frac{1}{4}, \frac{1}{2}, \frac{3}{4}, -e^{2 i (e+f x)}\right]+2 i (1+\operatorname{Sin}[e+f x])\right)\right) \Big/ \left(c f \left(\operatorname{Cos}\left[\frac{1}{2} (e+f x)\right]+\operatorname{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^2 (-1+\operatorname{Sin}[e+f x]) \sqrt{c-c \operatorname{Sin}[e+f x]}\right)$$

- **Problem 94: Result unnecessarily involves higher level functions.**

$$\int \frac{(g \operatorname{Cos}[e+f x])^{3/2} \sqrt{a+a \operatorname{Sin}[e+f x]}}{(c-c \operatorname{Sin}[e+f x])^{5/2}} \, dx$$

Optimal (type 4, 182 leaves, 5 steps):

$$\frac{4\,a\,(g\,\text{Cos}[e+f\,x])^{5/2}}{5\,f\,g\,\sqrt{a+a\,\text{Sin}[e+f\,x]}\,\,(c-c\,\text{Sin}[e+f\,x])^{5/2}}-$$

$$\frac{6\,a\,(g\,\text{Cos}[e+f\,x])^{5/2}}{5\,c\,f\,g\,\sqrt{a+a\,\text{Sin}[e+f\,x]}\,\,(c-c\,\text{Sin}[e+f\,x])^{3/2}}+\frac{6\,a\,g\,\sqrt{\text{Cos}[e+f\,x]}\,\,\sqrt{g\,\text{Cos}[e+f\,x]}\,\,\text{EllipticE}\left[\frac{1}{2}\,(e+f\,x),\,2\right]}{5\,c^2\,f\,\sqrt{a+a\,\text{Sin}[e+f\,x]}\,\,\sqrt{c-c\,\text{Sin}[e+f\,x]}}$$

Result (type 5, 194 leaves) :

$$\left(e^{-\frac{3}{2}\,i\,(e+f\,x)}\,g^3\,\left(-3-i\,e^{i\,(e+f\,x)}+e^{2\,i\,(e+f\,x)}-5\,i\,e^{3\,i\,(e+f\,x)}-3\,\left(-i+e^{i\,(e+f\,x)}\right)^2\,\sqrt{1+e^{2\,i\,(e+f\,x)}}\,\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\,\frac{1}{2},\,\frac{3}{4},\,-e^{2\,i\,(e+f\,x)}\right]\right)\right.$$
$$\left.\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]-i\,\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)\,\sqrt{a\,(1+\text{Sin}[e+f\,x])}\right)\Big/\left(5\,c^2\,f\,(g\,\text{Cos}[e+f\,x])^{3/2}\,\sqrt{c-c\,\text{Sin}[e+f\,x]}\right)$$

Problem 95: Result unnecessarily involves higher level functions.

$$\int\frac{(g\,\text{Cos}[e+f\,x])^{3/2}\,\sqrt{a+a\,\text{Sin}[e+f\,x]}}{(c-c\,\text{Sin}[e+f\,x])^{7/2}}\,dx$$

Optimal (type 4, 237 leaves, 6 steps) :

$$\frac{4\,a\,(g\,\text{Cos}[e+f\,x])^{5/2}}{9\,f\,g\,\sqrt{a+a\,\text{Sin}[e+f\,x]}\,\,(c-c\,\text{Sin}[e+f\,x])^{7/2}}-\frac{2\,a\,(g\,\text{Cos}[e+f\,x])^{5/2}}{15\,c\,f\,g\,\sqrt{a+a\,\text{Sin}[e+f\,x]}\,\,(c-c\,\text{Sin}[e+f\,x])^{5/2}}-$$

$$\frac{2\,a\,(g\,\text{Cos}[e+f\,x])^{5/2}}{15\,c^2\,f\,g\,\sqrt{a+a\,\text{Sin}[e+f\,x]}\,\,(c-c\,\text{Sin}[e+f\,x])^{3/2}}+\frac{2\,a\,g\,\sqrt{\text{Cos}[e+f\,x]}\,\,\sqrt{g\,\text{Cos}[e+f\,x]}\,\,\text{EllipticE}\left[\frac{1}{2}\,(e+f\,x),\,2\right]}{15\,c^3\,f\,\sqrt{a+a\,\text{Sin}[e+f\,x]}\,\,\sqrt{c-c\,\text{Sin}[e+f\,x]}}$$

Result (type 5, 237 leaves) :

$$\left(g^2\,(\text{Cos}[e+f\,x]-i\,\text{Sin}[e+f\,x])\,\sqrt{a\,(1+\text{Sin}[e+f\,x])}\,\,\left(7\,i+8\,\text{Cos}[e+f\,x]-13\,i\,\text{Cos}[2\,(e+f\,x)]-\right.\right.$$
$$\left.\left.\frac{3}{2}\,i\,e^{-2\,i\,(e+f\,x)}\,\left(-i+e^{i\,(e+f\,x)}\right)^4\,\sqrt{1+e^{2\,i\,(e+f\,x)}}\,\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\,\frac{1}{2},\,\frac{3}{4},\,-e^{2\,i\,(e+f\,x)}\right]+20\,i\,\text{Sin}[e+f\,x]+16\,\text{Sin}[2\,(e+f\,x)]\right)\right)\Big/$$
$$\left(45\,c^3\,f\,\sqrt{g\,\text{Cos}[e+f\,x]}\,\,\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^3\,\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)\,\sqrt{c-c\,\text{Sin}[e+f\,x]}\right)$$

Problem 96: Result unnecessarily involves higher level functions.

$$\int\frac{(g\,\text{Cos}[e+f\,x])^{3/2}\,\sqrt{a+a\,\text{Sin}[e+f\,x]}}{(c-c\,\text{Sin}[e+f\,x])^{9/2}}\,dx$$

Optimal (type 4, 292 leaves, 7 steps) :

$$\frac{4\,a\,(g\,\text{Cos}[e+f\,x])^{5/2}}{13\,f\,g\,\sqrt{a+a\,\text{Sin}[e+f\,x]}\,\,(c-c\,\text{Sin}[e+f\,x])^{9/2}}-\frac{2\,a\,(g\,\text{Cos}[e+f\,x])^{5/2}}{39\,c\,f\,g\,\sqrt{a+a\,\text{Sin}[e+f\,x]}\,\,(c-c\,\text{Sin}[e+f\,x])^{7/2}}-\frac{2\,a\,(g\,\text{Cos}[e+f\,x])^{5/2}}{65\,c^2\,f\,g\,\sqrt{a+a\,\text{Sin}[e+f\,x]}\,\,(c-c\,\text{Sin}[e+f\,x])^{5/2}}-\frac{2\,a\,(g\,\text{Cos}[e+f\,x])^{5/2}}{65\,c^3\,f\,g\,\sqrt{a+a\,\text{Sin}[e+f\,x]}\,\,(c-c\,\text{Sin}[e+f\,x])^{3/2}}+\frac{2\,a\,g\,\sqrt{\text{Cos}[e+f\,x]}\,\,\sqrt{g\,\text{Cos}[e+f\,x]}\,\,\text{EllipticE}\left[\frac{1}{2}\,(e+f\,x),\,2\right]}{65\,c^4\,f\,\sqrt{a+a\,\text{Sin}[e+f\,x]}\,\,\sqrt{c-c\,\text{Sin}[e+f\,x]}}$$

Result (type 5, 255 leaves):

$$\left(g^2\,(\text{Cos}[e+f\,x]-i\,\text{Sin}[e+f\,x])\,\sqrt{a\,(1+\text{Sin}[e+f\,x])}\,\left(54\,i+75\,\text{Cos}[e+f\,x]-66\,i\,\text{Cos}[2\,(e+f\,x)]+\text{Cos}[3\,(e+f\,x)]+\frac{3}{2}\,e^{-3\,i\,(e+f\,x)}\,\left(-i+e^{i\,(e+f\,x)}\right)^6\,\sqrt{1+e^{2\,i\,(e+f\,x)}}\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\,\frac{1}{2},\,\frac{3}{4},\,-e^{2\,i\,(e+f\,x)}\right]+118\,i\,\text{Sin}[e+f\,x]+84\,\text{Sin}[2\,(e+f\,x)]-2\,i\,\text{Sin}[3\,(e+f\,x)]\right)\right)\Big/\left(390\,c^4\,f\,\sqrt{g\,\text{Cos}[e+f\,x]}\,\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^5\,\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)\,\sqrt{c-c\,\text{Sin}[e+f\,x]}\right)$$

Problem 99: Result unnecessarily involves higher level functions.

$$\int (g\,\text{Cos}[e+f\,x])^{3/2}\,(a+a\,\text{Sin}[e+f\,x])^{3/2}\,\sqrt{c-c\,\text{Sin}[e+f\,x]}\,dx$$

Optimal (type 4, 235 leaves, 6 steps):

$$-\frac{2\,a^2\,c\,(g\,\text{Cos}[e+f\,x])^{5/2}}{5\,f\,g\,\sqrt{a+a\,\text{Sin}[e+f\,x]}\,\,\sqrt{c-c\,\text{Sin}[e+f\,x]}}+\frac{6\,a^2\,c\,g\,\sqrt{\text{Cos}[e+f\,x]}\,\,\sqrt{g\,\text{Cos}[e+f\,x]}\,\,\text{EllipticE}\left[\frac{1}{2}\,(e+f\,x),\,2\right]}{5\,f\,\sqrt{a+a\,\text{Sin}[e+f\,x]}\,\,\sqrt{c-c\,\text{Sin}[e+f\,x]}}-\frac{6\,a\,c\,(g\,\text{Cos}[e+f\,x])^{5/2}\,\sqrt{a+a\,\text{Sin}[e+f\,x]}}{35\,f\,g\,\sqrt{c-c\,\text{Sin}[e+f\,x]}}+\frac{2\,c\,(g\,\text{Cos}[e+f\,x])^{5/2}\,(a+a\,\text{Sin}[e+f\,x])^{3/2}}{7\,f\,g\,\sqrt{c-c\,\text{Sin}[e+f\,x]}}$$

Result (type 5, 195 leaves):

$$\left(a^2\,g^2\,\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)\,\sqrt{c-c\,\text{Sin}[e+f\,x]}\,\left(168\,i\,e^{-i\,(e+f\,x)}\,\sqrt{1+e^{2\,i\,(e+f\,x)}}\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\,\frac{1}{2},\,\frac{3}{4},\,-e^{2\,i\,(e+f\,x)}\right]+4\,\text{Cos}[e+f\,x]\,(-42\,i+\text{Cos}[e+f\,x]\,(-5-5\,\text{Cos}[2\,(e+f\,x)]+14\,\text{Sin}[e+f\,x]))\right)\right)\Big/\left(140\,f\,\sqrt{g\,\text{Cos}[e+f\,x]}\,\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)\,\sqrt{a\,(1+\text{Sin}[e+f\,x])}\right)$$

Problem 108: Result unnecessarily involves higher level functions.

$$\int (g\,\mathrm{Cos}[e+f\,x])^{3/2}\,(a+a\,\mathrm{Sin}[e+f\,x])^{5/2}\,\sqrt{c-c\,\mathrm{Sin}[e+f\,x]}\,dx$$

Optimal (type 4, 290 leaves, 7 steps):

$$-\frac{22\,a^3\,c\,(g\,\mathrm{Cos}[e+f\,x])^{5/2}}{45\,f\,g\,\sqrt{a+a\,\mathrm{Sin}[e+f\,x]}\,\sqrt{c-c\,\mathrm{Sin}[e+f\,x]}}+\frac{22\,a^3\,c\,g\,\sqrt{\mathrm{Cos}[e+f\,x]}\,\sqrt{g\,\mathrm{Cos}[e+f\,x]}\,\mathrm{EllipticE}\left[\frac{1}{2}\,(e+f\,x),2\right]}{15\,f\,\sqrt{a+a\,\mathrm{Sin}[e+f\,x]}\,\sqrt{c-c\,\mathrm{Sin}[e+f\,x]}}-\frac{22\,a^2\,c\,(g\,\mathrm{Cos}[e+f\,x])^{5/2}\,\sqrt{a+a\,\mathrm{Sin}[e+f\,x]}}{105\,f\,g\,\sqrt{c-c\,\mathrm{Sin}[e+f\,x]}}-\frac{2\,a\,c\,(g\,\mathrm{Cos}[e+f\,x])^{5/2}\,(a+a\,\mathrm{Sin}[e+f\,x])^{3/2}}{21\,f\,g\,\sqrt{c-c\,\mathrm{Sin}[e+f\,x]}}+\frac{2\,c\,(g\,\mathrm{Cos}[e+f\,x])^{5/2}\,(a+a\,\mathrm{Sin}[e+f\,x])^{5/2}}{9\,f\,g\,\sqrt{c-c\,\mathrm{Sin}[e+f\,x]}}$$

Result (type 5, 182 leaves):

$$-\left(a^3\,g\,\sqrt{g\,\mathrm{Cos}[e+f\,x]}\,\sqrt{c-c\,\mathrm{Sin}[e+f\,x]}\,\left(-3696\,i\,e^{-i\,(e+f\,x)}\,\sqrt{1+e^{2\,i\,(e+f\,x)}}\,\mathrm{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2\,i\,(e+f\,x)}\right]+4\,\mathrm{Cos}[e+f\,x]\,(924\,i+\mathrm{Cos}[e+f\,x]\,(180+180\,\mathrm{Cos}[2\,(e+f\,x)]-273\,\mathrm{Sin}[e+f\,x]+35\,\mathrm{Sin}[3\,(e+f\,x)]))\right)\right)\Big/\left(2520\,f\,\left(\mathrm{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^2\,\sqrt{a\,(1+\mathrm{Sin}[e+f\,x])}\right)$$

Problem 118: Result unnecessarily involves higher level functions.

$$\int (g\,\mathrm{Cos}[e+f\,x])^{3/2}\,(a+a\,\mathrm{Sin}[e+f\,x])^{7/2}\,\sqrt{c-c\,\mathrm{Sin}[e+f\,x]}\,dx$$

Optimal (type 4, 343 leaves, 8 steps):

$$-\frac{2\,a^4\,c\,(g\,\mathrm{Cos}[e+f\,x])^{5/2}}{3\,f\,g\,\sqrt{a+a\,\mathrm{Sin}[e+f\,x]}\,\sqrt{c-c\,\mathrm{Sin}[e+f\,x]}}+\frac{2\,a^4\,c\,g\,\sqrt{\mathrm{Cos}[e+f\,x]}\,\sqrt{g\,\mathrm{Cos}[e+f\,x]}\,\mathrm{EllipticE}\left[\frac{1}{2}\,(e+f\,x),2\right]}{f\,\sqrt{a+a\,\mathrm{Sin}[e+f\,x]}\,\sqrt{c-c\,\mathrm{Sin}[e+f\,x]}}-\frac{2\,a^3\,c\,(g\,\mathrm{Cos}[e+f\,x])^{5/2}\,\sqrt{a+a\,\mathrm{Sin}[e+f\,x]}}{7\,f\,g\,\sqrt{c-c\,\mathrm{Sin}[e+f\,x]}}-\frac{10\,a^2\,c\,(g\,\mathrm{Cos}[e+f\,x])^{5/2}\,(a+a\,\mathrm{Sin}[e+f\,x])^{3/2}}{77\,f\,g\,\sqrt{c-c\,\mathrm{Sin}[e+f\,x]}}-\frac{2\,a\,c\,(g\,\mathrm{Cos}[e+f\,x])^{5/2}\,(a+a\,\mathrm{Sin}[e+f\,x])^{5/2}}{33\,f\,g\,\sqrt{c-c\,\mathrm{Sin}[e+f\,x]}}+\frac{2\,c\,(g\,\mathrm{Cos}[e+f\,x])^{5/2}\,(a+a\,\mathrm{Sin}[e+f\,x])^{7/2}}{11\,f\,g\,\sqrt{c-c\,\mathrm{Sin}[e+f\,x]}}$$

Result (type 5, 676 leaves):

$$\left((2+2\,i)\,a^4\,e^{-\frac{3}{2}\,i\,(e+f\,x)}\,\left(i+e^{i\,(e+f\,x)}\right)\,(g\,\text{Cos}[e+f\,x])^{3/2}\right.$$
$$\left(1+e^{2\,i\,(e+f\,x)}+\left(-1+e^{2\,i\,e}\right)\,\sqrt{1+e^{2\,i\,(e+f\,x)}}\;\text{Hypergeometric2F1}\left[-\frac{1}{4},\,\frac{1}{2},\,\frac{3}{4},\,-e^{2\,i\,(e+f\,x)}\right]\right)\,\sqrt{c-c\,\text{Sin}[e+f\,x]}\Bigg)\Bigg/$$
$$\left(\left(-1+e^{2\,i\,e}\right)\,\sqrt{-i\,a\,e^{-i\,(e+f\,x)}\,\left(i+e^{i\,(e+f\,x)}\right)^2}\,\sqrt{e^{-i\,(e+f\,x)}\,\left(1+e^{2\,i\,(e+f\,x)}\right)}\;f\,\text{Cos}[e+f\,x]^{3/2}\,\left(\text{Cos}\left[\frac{e}{2}+\frac{f\,x}{2}\right]-\text{Sin}\left[\frac{e}{2}+\frac{f\,x}{2}\right]\right)\right)+$$
$$\frac{1}{\text{Cos}\left[\frac{e}{2}+\frac{f\,x}{2}\right]-\text{Sin}\left[\frac{e}{2}+\frac{f\,x}{2}\right]}\,(g\,\text{Cos}[e+f\,x])^{3/2}\,\text{Sec}[e+f\,x]$$
$$\left(-\frac{58\,a^3\,\text{Cos}\left[\frac{f\,x}{2}\right]\,\left(\text{Cos}\left[\frac{e}{2}\right]-\text{Sin}\left[\frac{e}{2}\right]\right)}{77\,f}+\frac{3\,a^3\,\text{Cos}\left[\frac{3\,f\,x}{2}\right]\,\left(\text{Cos}\left[\frac{3\,e}{2}\right]+\text{Sin}\left[\frac{3\,e}{2}\right]\right)}{308\,f}-\frac{145\,a^3\,\text{Cos}\left[\frac{5\,f\,x}{2}\right]\,\left(\text{Cos}\left[\frac{5\,e}{2}\right]-\text{Sin}\left[\frac{5\,e}{2}\right]\right)}{924\,f}-\right.$$
$$\frac{19\,a^3\,\text{Cos}\left[\frac{7\,f\,x}{2}\right]\,\left(\text{Cos}\left[\frac{7\,e}{2}\right]+\text{Sin}\left[\frac{7\,e}{2}\right]\right)}{264\,f}+\frac{a^3\,\text{Cos}\left[\frac{9\,f\,x}{2}\right]\,\left(\text{Cos}\left[\frac{9\,e}{2}\right]-\text{Sin}\left[\frac{9\,e}{2}\right]\right)}{88\,f}+\frac{58\,a^3\,\left(\text{Cos}\left[\frac{e}{2}\right]+\text{Sin}\left[\frac{e}{2}\right]\right)\,\text{Sin}\left[\frac{f\,x}{2}\right]}{77\,f}+$$
$$\frac{3\,a^3\,\left(\text{Cos}\left[\frac{3\,e}{2}\right]-\text{Sin}\left[\frac{3\,e}{2}\right]\right)\,\text{Sin}\left[\frac{3\,f\,x}{2}\right]}{308\,f}+\frac{145\,a^3\,\left(\text{Cos}\left[\frac{5\,e}{2}\right]+\text{Sin}\left[\frac{5\,e}{2}\right]\right)\,\text{Sin}\left[\frac{5\,f\,x}{2}\right]}{924\,f}-\frac{19\,a^3\,\left(\text{Cos}\left[\frac{7\,e}{2}\right]-\text{Sin}\left[\frac{7\,e}{2}\right]\right)\,\text{Sin}\left[\frac{7\,f\,x}{2}\right]}{264\,f}-$$
$$\left.\frac{a^3\,\left(\text{Cos}\left[\frac{9\,e}{2}\right]+\text{Sin}\left[\frac{9\,e}{2}\right]\right)\,\text{Sin}\left[\frac{9\,f\,x}{2}\right]}{88\,f}-\frac{2\,a^3\,\text{Cot}[e]}{f\,\left(\text{Cos}\left[\frac{e}{2}+\frac{f\,x}{2}\right]+\text{Sin}\left[\frac{e}{2}+\frac{f\,x}{2}\right]\right)}\right)\,\sqrt{a+a\,\text{Sin}[e+f\,x]}\;\sqrt{c-c\,\text{Sin}[e+f\,x]}$$

- **Problem 129: Result unnecessarily involves higher level functions.**

$$\int \frac{(g\,\text{Cos}[e+f\,x])^{3/2}\,\sqrt{c-c\,\text{Sin}[e+f\,x]}}{\sqrt{a+a\,\text{Sin}[e+f\,x]}}\,dx$$

Optimal (type 4, 122 leaves, 4 steps):

$$\frac{2\,c\,(g\,\text{Cos}[e+f\,x])^{5/2}}{3\,f\,g\,\sqrt{a+a\,\text{Sin}[e+f\,x]}\;\sqrt{c-c\,\text{Sin}[e+f\,x]}}+\frac{2\,c\,g\,\sqrt{\text{Cos}[e+f\,x]}\;\sqrt{g\,\text{Cos}[e+f\,x]}\;\text{EllipticE}\left[\frac{1}{2}\,(e+f\,x),\,2\right]}{f\,\sqrt{a+a\,\text{Sin}[e+f\,x]}\;\sqrt{c-c\,\text{Sin}[e+f\,x]}}$$

Result (type 5, 149 leaves):

$$\left(g\,\sqrt{g\,\text{Cos}[e+f\,x]}\,\left(1-6\,i\,\text{Cos}[e+f\,x]+\text{Cos}[2\,(e+f\,x)]+6\,i\,e^{-i\,(e+f\,x)}\,\sqrt{1+e^{2\,i\,(e+f\,x)}}\;\text{Hypergeometric2F1}\left[-\frac{1}{4},\,\frac{1}{2},\,\frac{3}{4},\,-e^{2\,i\,(e+f\,x)}\right]\right)\right.$$
$$\left.\sqrt{c-c\,\text{Sin}[e+f\,x]}\right)\Bigg/\left(3\,f\,\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^2\,\sqrt{a\,(1+\text{Sin}[e+f\,x])}\right)$$

- **Problem 137: Result unnecessarily involves higher level functions.**

$$\int \frac{(g\,\text{Cos}[e+f\,x])^{3/2}\,\sqrt{c-c\,\text{Sin}[e+f\,x]}}{(a+a\,\text{Sin}[e+f\,x])^{3/2}}\,dx$$

Optimal (type 4, 123 leaves, 4 steps):

$$-\frac{4 c (g \text{Cos}[e+f x])^{5/2}}{f g (a+a \text{Sin}[e+f x])^{3/2} \sqrt{c-c \text{Sin}[e+f x]}}-\frac{6 c g \sqrt{\text{Cos}[e+f x]} \sqrt{g \text{Cos}[e+f x]} \text{EllipticE}\left[\frac{1}{2} (e+f x),2\right]}{a f \sqrt{a+a \text{Sin}[e+f x]} \sqrt{c-c \text{Sin}[e+f x]}}$$

Result (type 5, 170 leaves):

$$\left(2 g \sqrt{g \text{Cos}[e+f x]} \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]+\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^2 \left(-2+3 i \text{Cos}[e+f x]-3 i e^{-i (e+f x)} \sqrt{1+e^{2 i (e+f x)}} \text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2 i (e+f x)}\right]+2 \text{Sin}[e+f x]\right) \sqrt{c-c \text{Sin}[e+f x]}\right)\Big/ \left(f \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]-\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^2 (a (1+\text{Sin}[e+f x]))^{3/2}\right)$$

- **Problem 146: Result unnecessarily involves higher level functions.**

$$\int \frac{(g \text{Cos}[e+f x])^{3/2} \sqrt{c-c \text{Sin}[e+f x]}}{(a+a \text{Sin}[e+f x])^{5/2}} \, dx$$

Optimal (type 4, 182 leaves, 5 steps):

$$-\frac{4 c (g \text{Cos}[e+f x])^{5/2}}{5 f g (a+a \text{Sin}[e+f x])^{5/2} \sqrt{c-c \text{Sin}[e+f x]}}+\frac{6 c (g \text{Cos}[e+f x])^{5/2}}{5 a f g (a+a \text{Sin}[e+f x])^{3/2} \sqrt{c-c \text{Sin}[e+f x]}}+\frac{6 c g \sqrt{\text{Cos}[e+f x]} \sqrt{g \text{Cos}[e+f x]} \text{EllipticE}\left[\frac{1}{2} (e+f x),2\right]}{5 a^2 f \sqrt{a+a \text{Sin}[e+f x]} \sqrt{c-c \text{Sin}[e+f x]}}$$

Result (type 5, 194 leaves):

$$-\left(e^{-\frac{3}{2} i (e+f x)} g^3 \left(-3+i e^{i (e+f x)}+e^{2 i (e+f x)}+5 i e^{3 i (e+f x)}-3 \left(i+e^{i (e+f x)}\right)^2 \sqrt{1+e^{2 i (e+f x)}} \text{Hypergeometric2F1}\left[-\frac{1}{4},\frac{1}{2},\frac{3}{4},-e^{2 i (e+f x)}\right]\right) \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]-i \text{Sin}\left[\frac{1}{2} (e+f x)\right]\right) \sqrt{c-c \text{Sin}[e+f x]}\right)\Big/ \left(5 a^2 f (g \text{Cos}[e+f x])^{3/2} \sqrt{a (1+\text{Sin}[e+f x])}\right)$$

- **Problem 152: Attempted integration timed out after 120 seconds.**

$$\int (g \text{Cos}[e+f x])^{3/2} (a+a \text{Sin}[e+f x])^m (c-c \text{Sin}[e+f x])^3 \, dx$$

Optimal (type 5, 93 leaves, 4 steps):

$$-\frac{1}{17 f g^7} 2^{\frac{9}{4}+m} a^4 c^3 (g \text{Cos}[e+f x])^{17/2} \text{Hypergeometric2F1}\left[\frac{17}{4},-\frac{1}{4}-m,\frac{21}{4},\frac{1}{2} (1-\text{Sin}[e+f x])\right] (1+\text{Sin}[e+f x])^{-\frac{1}{4}-m} (a+a \text{Sin}[e+f x])^{-4+m}$$

Result (type 1, 1 leaves):

???

Problem 153: Attempted integration timed out after 120 seconds.

$$\int (g \operatorname{Cos}[e+f x])^{3/2} (a+a \operatorname{Sin}[e+f x])^m (c-c \operatorname{Sin}[e+f x])^2 \, dx$$

Optimal (type 5, 93 leaves, 4 steps):

$$-\frac{1}{13 f g^5} 2^{\frac{9}{4}+m} a^3 c^2 (g \operatorname{Cos}[e+f x])^{13/2} \operatorname{Hypergeometric2F1}\left[\frac{13}{4}, -\frac{1}{4}-m, \frac{17}{4}, \frac{1}{2} (1-\operatorname{Sin}[e+f x])\right] (1+\operatorname{Sin}[e+f x])^{-\frac{1}{4}-m} (a+a \operatorname{Sin}[e+f x])^{-3+m}$$

Result (type 1, 1 leaves):

???

Problem 154: Attempted integration timed out after 120 seconds.

$$\int (g \operatorname{Cos}[e+f x])^{3/2} (a+a \operatorname{Sin}[e+f x])^m (c-c \operatorname{Sin}[e+f x]) \, dx$$

Optimal (type 5, 91 leaves, 4 steps):

$$-\frac{1}{9 f g^3} 2^{\frac{9}{4}+m} a^2 c (g \operatorname{Cos}[e+f x])^{9/2} \operatorname{Hypergeometric2F1}\left[\frac{9}{4}, -\frac{1}{4}-m, \frac{13}{4}, \frac{1}{2} (1-\operatorname{Sin}[e+f x])\right] (1+\operatorname{Sin}[e+f x])^{-\frac{1}{4}-m} (a+a \operatorname{Sin}[e+f x])^{-2+m}$$

Result (type 1, 1 leaves):

???

Problem 155: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int (g \operatorname{Cos}[e+f x])^{3/2} (a+a \operatorname{Sin}[e+f x])^m \, dx$$

Optimal (type 5, 88 leaves, 3 steps):

$$-\frac{1}{5 f g} 2^{\frac{9}{4}+m} a (g \operatorname{Cos}[e+f x])^{5/2} \operatorname{Hypergeometric2F1}\left[\frac{5}{4}, -\frac{1}{4}-m, \frac{9}{4}, \frac{1}{2} (1-\operatorname{Sin}[e+f x])\right] (1+\operatorname{Sin}[e+f x])^{-\frac{1}{4}-m} (a+a \operatorname{Sin}[e+f x])^{-1+m}$$

Result (type 6, 13 703 leaves):

$$\Bigg(64 \operatorname{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{-2 m} (g \operatorname{Cos}[e+f x])^{3/2} (a+a \operatorname{Sin}[e+f x])^m$$

$$\left(\operatorname{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2 m} \operatorname{Cos}[e+f x]^{7/2}+\operatorname{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2 m} \operatorname{Cos}[e+f x]^{3/2} \operatorname{Sin}[e+f x]^2\right)$$

$$\left(1-\operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{2 m} \left(\frac{1}{1+\operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}\right)^{3+2 m} \sqrt{\frac{\operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-\operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^3}{\left(1+\operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^2}}$$

$$\left(\left(25 \operatorname{AppellF1}\left[\frac{1}{4}, -\frac{1}{2}-2 m, 3+2 m, \frac{5}{4}, \operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right] \left(1+\operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\right)\right/$$

$$\left(-5\,\text{AppellF1}\left[\frac{1}{4},-\frac{1}{2}-2m,3+2m,\frac{5}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$2\left((6+4m)\,\text{AppellF1}\left[\frac{5}{4},-\frac{1}{2}-2m,4+2m,\frac{9}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$\left.\left.(1+4m)\,\text{AppellF1}\left[\frac{5}{4},\frac{1}{2}-2m,3+2m,\frac{9}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)+$$

$$\left(25\,\text{AppellF1}\left[\frac{1}{4},-\frac{1}{2}-2m,4+2m,\frac{5}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\Big/$$

$$\left(5\,\text{AppellF1}\left[\frac{1}{4},-\frac{1}{2}-2m,4+2m,\frac{5}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]-\right.$$

$$2\left(4(2+m)\,\text{AppellF1}\left[\frac{5}{4},-\frac{1}{2}-2m,5+2m,\frac{9}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$\left.\left.(1+4m)\,\text{AppellF1}\left[\frac{5}{4},\frac{1}{2}-2m,4+2m,\frac{9}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)+$$

$$9\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\left(-\left(\left(\text{AppellF1}\left[\frac{5}{4},-\frac{1}{2}-2m,3+2m,\frac{9}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right.\right.\right.$$

$$\left.\left.\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\right)\Big/\left(-9\,\text{AppellF1}\left[\frac{5}{4},-\frac{1}{2}-2m,3+2m,\frac{9}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$2\left((6+4m)\,\text{AppellF1}\left[\frac{9}{4},-\frac{1}{2}-2m,4+2m,\frac{13}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$\left.\left.\left.(1+4m)\,\text{AppellF1}\left[\frac{9}{4},\frac{1}{2}-2m,3+2m,\frac{13}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\right)+$$

$$\text{AppellF1}\left[\frac{5}{4},-\frac{1}{2}-2m,4+2m,\frac{9}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\Big/$$

$$\left(-9\,\text{AppellF1}\left[\frac{5}{4},-\frac{1}{2}-2m,4+2m,\frac{9}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$2\left(4(2+m)\,\text{AppellF1}\left[\frac{9}{4},-\frac{1}{2}-2m,5+2m,\frac{13}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$\left.\left.\left.(1+4m)\,\text{AppellF1}\left[\frac{9}{4},\frac{1}{2}-2m,4+2m,\frac{13}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\right)\right)\Big/$$

$$\left(5\, f \cos[e+f x]^{3/2} \left(\frac{64}{5}\, m \operatorname{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\left(1-\operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{-1+2 m}\right.\right.$$

$$\left(\frac{1}{1+\operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}\right)^{3+2 m} \sqrt{\frac{\operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-\operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^3}{\left(1+\operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^2}}$$

$$\left(\left(25 \operatorname{AppellF1}\left[\frac{1}{4},-\frac{1}{2}-2 m, 3+2 m, \frac{5}{4}, \operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\left(1+\operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\right) \Big/\right.$$

$$\left(-5 \operatorname{AppellF1}\left[\frac{1}{4},-\frac{1}{2}-2 m, 3+2 m, \frac{5}{4}, \operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$2\left((6+4 m) \operatorname{AppellF1}\left[\frac{5}{4},-\frac{1}{2}-2 m, 4+2 m, \frac{9}{4}, \operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$\left.\left.(1+4 m) \operatorname{AppellF1}\left[\frac{5}{4}, \frac{1}{2}-2 m, 3+2 m, \frac{9}{4}, \operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right) \operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)+$$

$$\left(25 \operatorname{AppellF1}\left[\frac{1}{4},-\frac{1}{2}-2 m, 4+2 m, \frac{5}{4}, \operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right) \Big/$$

$$\left(5 \operatorname{AppellF1}\left[\frac{1}{4},-\frac{1}{2}-2 m, 4+2 m, \frac{5}{4}, \operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]-\right.$$

$$2\left(4(2+m) \operatorname{AppellF1}\left[\frac{5}{4},-\frac{1}{2}-2 m, 5+2 m, \frac{9}{4}, \operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$\left.\left.(1+4 m) \operatorname{AppellF1}\left[\frac{5}{4}, \frac{1}{2}-2 m, 4+2 m, \frac{9}{4}, \operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right) \operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)+$$

$$9 \operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\left(-\left(\left(\operatorname{AppellF1}\left[\frac{5}{4},-\frac{1}{2}-2 m, 3+2 m, \frac{9}{4}, \operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right.\right.\right.$$

$$\left.\left(1+\operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\right) \Big/\left(-9 \operatorname{AppellF1}\left[\frac{5}{4},-\frac{1}{2}-2 m, 3+2 m, \frac{9}{4}, \operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$2\left((6+4 m) \operatorname{AppellF1}\left[\frac{9}{4},-\frac{1}{2}-2 m, 4+2 m, \frac{13}{4}, \operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+(1+4 m) \operatorname{AppellF1}\left[\frac{9}{4}, \frac{1}{2}-\right.\right.$$

$$\left.\left.\left.2 m, 3+2 m, \frac{13}{4}, \operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right) \operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\right)+\operatorname{AppellF1}\left[\frac{5}{4},-\frac{1}{2}-2 m,\right.$$

$$\left.4+2 m, \frac{9}{4}, \operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right] \Big/\left(-9 \operatorname{AppellF1}\left[\frac{5}{4},-\frac{1}{2}-2 m, 4+2 m, \frac{9}{4}, \operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\right.\right.$$

$$-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+2\left(4(2+m)\,\text{AppellF1}\left[\frac{9}{4},-\frac{1}{2}-2m,5+2m,\frac{13}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$\left.(1+4m)\,\text{AppellF1}\left[\frac{9}{4},\frac{1}{2}-2m,4+2m,\frac{13}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)\Bigg)\Bigg)+$$

$$\frac{32}{5}(3+2m)\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{2m}\left(\frac{1}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}\right)^{4+2m}$$

$$\sqrt{\frac{\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^3}{\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^2}}$$

$$\Bigg(\Bigg(25\,\text{AppellF1}\left[\frac{1}{4},-\frac{1}{2}-2m,3+2m,\frac{5}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\Bigg)\Bigg/$$

$$\Bigg(-5\,\text{AppellF1}\left[\frac{1}{4},-\frac{1}{2}-2m,3+2m,\frac{5}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$2\left((6+4m)\,\text{AppellF1}\left[\frac{5}{4},-\frac{1}{2}-2m,4+2m,\frac{9}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$\left.(1+4m)\,\text{AppellF1}\left[\frac{5}{4},\frac{1}{2}-2m,3+2m,\frac{9}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)+$$

$$\Bigg(25\,\text{AppellF1}\left[\frac{1}{4},-\frac{1}{2}-2m,4+2m,\frac{5}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\Bigg)\Bigg/$$

$$\Bigg(5\,\text{AppellF1}\left[\frac{1}{4},-\frac{1}{2}-2m,4+2m,\frac{5}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]-$$

$$2\left(4(2+m)\,\text{AppellF1}\left[\frac{5}{4},-\frac{1}{2}-2m,5+2m,\frac{9}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$\left.(1+4m)\,\text{AppellF1}\left[\frac{5}{4},\frac{1}{2}-2m,4+2m,\frac{9}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)+$$

$$9\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg(-\Bigg(\Bigg(\text{AppellF1}\left[\frac{5}{4},-\frac{1}{2}-2m,3+2m,\frac{9}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]$$

$$\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\Bigg)\Bigg/\Bigg(-9\,\text{AppellF1}\left[\frac{5}{4},-\frac{1}{2}-2m,3+2m,\frac{9}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$2\left((6+4m)\,\text{AppellF1}\left[\frac{9}{4},-\frac{1}{2}-2m,4+2m,\frac{13}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$\left.(1+4m)\,\text{AppellF1}\left[\frac{9}{4},\frac{1}{2}-2m,3+2m,\frac{13}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)\Bigg)+$$

$$\text{AppellF1}\Big[\frac{5}{4},-\frac{1}{2}-2m,4+2m,\frac{9}{4},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-fx\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-fx\Big)\Big]^2\Big]\Big/$$

$$\Big(-9\,\text{AppellF1}\Big[\frac{5}{4},-\frac{1}{2}-2m,4+2m,\frac{9}{4},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-fx\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-fx\Big)\Big]^2\Big]+$$

$$2\Big(4(2+m)\,\text{AppellF1}\Big[\frac{9}{4},-\frac{1}{2}-2m,5+2m,\frac{13}{4},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-fx\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-fx\Big)\Big]^2\Big]+$$

$$(1+4m)\,\text{AppellF1}\Big[\frac{9}{4},\frac{1}{2}-2m,4+2m,\frac{13}{4},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-fx\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-fx\Big)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-fx\Big)\Big]^2\Big)\Big)\Big)-$$

$$\frac{1}{5\sqrt{\frac{\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^3}{\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)^2}}}\,32\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)^{2m}\left(\frac{1}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2}\right)^{3+2m}$$

$$\Big(\frac{\frac{1}{4}\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2-\frac{3}{4}\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2}{\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)^2}-$$

$$\frac{\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]\left(\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^3\right)}{\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)^3}\Big)$$

$$\Big(\Big(25\,\text{AppellF1}\Big[\frac{1}{4},-\frac{1}{2}-2m,3+2m,\frac{5}{4},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-fx\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-fx\Big)\Big]^2\Big]\Big(1+\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-fx\Big)\Big]^2\Big)\Big)\Big/$$

$$\Big(-5\,\text{AppellF1}\Big[\frac{1}{4},-\frac{1}{2}-2m,3+2m,\frac{5}{4},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-fx\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-fx\Big)\Big]^2\Big]+$$

$$2\Big((6+4m)\,\text{AppellF1}\Big[\frac{5}{4},-\frac{1}{2}-2m,4+2m,\frac{9}{4},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-fx\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-fx\Big)\Big]^2\Big]+(1+4m)$$

$$\text{AppellF1}\Big[\frac{5}{4},\frac{1}{2}-2m,3+2m,\frac{9}{4},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-fx\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-fx\Big)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-fx\Big)\Big]^2\Big)+$$

$$\Big(25\,\text{AppellF1}\Big[\frac{1}{4},-\frac{1}{2}-2m,4+2m,\frac{5}{4},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-fx\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-fx\Big)\Big]^2\Big]\Big)\Big/$$

$$\Big(5\,\text{AppellF1}\Big[\frac{1}{4},-\frac{1}{2}-2m,4+2m,\frac{5}{4},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-fx\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-fx\Big)\Big]^2\Big]-$$

$$2\Big(4(2+m)\,\text{AppellF1}\Big[\frac{5}{4},-\frac{1}{2}-2m,5+2m,\frac{9}{4},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-fx\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-fx\Big)\Big]^2\Big]+(1+4m)$$

$$\text{AppellF1}\Big[\frac{5}{4},\frac{1}{2}-2m,4+2m,\frac{9}{4},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-fx\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-fx\Big)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-fx\Big)\Big]^2\Big)+$$

$$9\,\text{Tan}\Big[\tfrac{1}{4}\big(-e+\tfrac{\pi}{2}-f\,x\big)\Big]^2\,\Bigg(-\Bigg(\bigg(\text{AppellF1}\Big[\tfrac{5}{4},\,-\tfrac{1}{2}-2\,m,\,3+2\,m,\,\tfrac{9}{4},\,\text{Tan}\Big[\tfrac{1}{4}\big(-e+\tfrac{\pi}{2}-f\,x\big)\Big]^2,\,-\text{Tan}\Big[\tfrac{1}{4}\big(-e+\tfrac{\pi}{2}-f\,x\big)\Big]^2\Big]$$

$$\Big(1+\text{Tan}\Big[\tfrac{1}{4}\big(-e+\tfrac{\pi}{2}-f\,x\big)\Big]^2\Big)\bigg)\Big/\,\bigg(-9\,\text{AppellF1}\Big[\tfrac{5}{4},\,-\tfrac{1}{2}-2\,m,\,3+2\,m,\,\tfrac{9}{4},\,\text{Tan}\Big[\tfrac{1}{4}\big(-e+\tfrac{\pi}{2}-f\,x\big)\Big]^2,\,-\text{Tan}\Big[\tfrac{1}{4}\big(-e+\tfrac{\pi}{2}-f\,x\big)\Big]^2\Big]+$$

$$2\,\bigg((6+4\,m)\,\text{AppellF1}\Big[\tfrac{9}{4},\,-\tfrac{1}{2}-2\,m,\,4+2\,m,\,\tfrac{13}{4},\,\text{Tan}\Big[\tfrac{1}{4}\big(-e+\tfrac{\pi}{2}-f\,x\big)\Big]^2,\,-\text{Tan}\Big[\tfrac{1}{4}\big(-e+\tfrac{\pi}{2}-f\,x\big)\Big]^2\Big]+$$

$$(1+4\,m)\,\text{AppellF1}\Big[\tfrac{9}{4},\,\tfrac{1}{2}-2\,m,\,3+2\,m,\,\tfrac{13}{4},\,\text{Tan}\Big[\tfrac{1}{4}\big(-e+\tfrac{\pi}{2}-f\,x\big)\Big]^2,\,-\text{Tan}\Big[\tfrac{1}{4}\big(-e+\tfrac{\pi}{2}-f\,x\big)\Big]^2\Big]\bigg)\,\text{Tan}\Big[\tfrac{1}{4}\big(-e+\tfrac{\pi}{2}-f\,x\big)\Big]^2\bigg)\Bigg)+$$

$$\text{AppellF1}\Big[\tfrac{5}{4},\,-\tfrac{1}{2}-2\,m,\,4+2\,m,\,\tfrac{9}{4},\,\text{Tan}\Big[\tfrac{1}{4}\big(-e+\tfrac{\pi}{2}-f\,x\big)\Big]^2,\,-\text{Tan}\Big[\tfrac{1}{4}\big(-e+\tfrac{\pi}{2}-f\,x\big)\Big]^2\Big]\Big/$$

$$\bigg(-9\,\text{AppellF1}\Big[\tfrac{5}{4},\,-\tfrac{1}{2}-2\,m,\,4+2\,m,\,\tfrac{9}{4},\,\text{Tan}\Big[\tfrac{1}{4}\big(-e+\tfrac{\pi}{2}-f\,x\big)\Big]^2,\,-\text{Tan}\Big[\tfrac{1}{4}\big(-e+\tfrac{\pi}{2}-f\,x\big)\Big]^2\Big]+2$$

$$\bigg(4\,(2+m)\,\text{AppellF1}\Big[\tfrac{9}{4},\,-\tfrac{1}{2}-2\,m,\,5+2\,m,\,\tfrac{13}{4},\,\text{Tan}\Big[\tfrac{1}{4}\big(-e+\tfrac{\pi}{2}-f\,x\big)\Big]^2,\,-\text{Tan}\Big[\tfrac{1}{4}\big(-e+\tfrac{\pi}{2}-f\,x\big)\Big]^2\Big]+$$

$$(1+4\,m)\,\text{AppellF1}\Big[\tfrac{9}{4},\,\tfrac{1}{2}-2\,m,\,4+2\,m,\,\tfrac{13}{4},\,\text{Tan}\Big[\tfrac{1}{4}\big(-e+\tfrac{\pi}{2}-f\,x\big)\Big]^2,\,-\text{Tan}\Big[\tfrac{1}{4}\big(-e+\tfrac{\pi}{2}-f\,x\big)\Big]^2\Big]\bigg)\,\text{Tan}\Big[\tfrac{1}{4}\big(-e+\tfrac{\pi}{2}-f\,x\big)\Big]^2\bigg)\Bigg)\Bigg)-$$

$$\frac{64}{5}\,\Big(1-\text{Tan}\Big[\tfrac{1}{4}\big(-e+\tfrac{\pi}{2}-f\,x\big)\Big]^2\Big)^{2\,m}\,\left(\frac{1}{1+\text{Tan}\big[\frac{1}{4}\big(-e+\frac{\pi}{2}-f\,x\big)\big]^2}\right)^{3+2\,m}\,\sqrt{\frac{\text{Tan}\big[\frac{1}{4}\big(-e+\frac{\pi}{2}-f\,x\big)\big]-\text{Tan}\big[\frac{1}{4}\big(-e+\frac{\pi}{2}-f\,x\big)\big]^3}{\Big(1+\text{Tan}\big[\frac{1}{4}\big(-e+\frac{\pi}{2}-f\,x\big)\big]^2\Big)^2}}$$

$$\Bigg(\bigg(25\,\text{AppellF1}\Big[\tfrac{1}{4},\,-\tfrac{1}{2}-2\,m,\,3+2\,m,\,\tfrac{5}{4},\,\text{Tan}\Big[\tfrac{1}{4}\big(-e+\tfrac{\pi}{2}-f\,x\big)\Big]^2,\,-\text{Tan}\Big[\tfrac{1}{4}\big(-e+\tfrac{\pi}{2}-f\,x\big)\Big]^2\Big]\,\text{Sec}\Big[\tfrac{1}{4}\big(-e+\tfrac{\pi}{2}-f\,x\big)\Big]^2\,\text{Tan}\Big[\tfrac{1}{4}\big(-e+\tfrac{\pi}{2}-f\,x\big)\Big]\bigg)\Big/$$

$$\bigg(2\,\bigg(-5\,\text{AppellF1}\Big[\tfrac{1}{4},\,-\tfrac{1}{2}-2\,m,\,3+2\,m,\,\tfrac{5}{4},\,\text{Tan}\Big[\tfrac{1}{4}\big(-e+\tfrac{\pi}{2}-f\,x\big)\Big]^2,\,-\text{Tan}\Big[\tfrac{1}{4}\big(-e+\tfrac{\pi}{2}-f\,x\big)\Big]^2\Big]+$$

$$2\,\bigg((6+4\,m)\,\text{AppellF1}\Big[\tfrac{5}{4},\,-\tfrac{1}{2}-2\,m,\,4+2\,m,\,\tfrac{9}{4},\,\text{Tan}\Big[\tfrac{1}{4}\big(-e+\tfrac{\pi}{2}-f\,x\big)\Big]^2,\,-\text{Tan}\Big[\tfrac{1}{4}\big(-e+\tfrac{\pi}{2}-f\,x\big)\Big]^2\Big]+$$

$$(1+4\,m)\,\text{AppellF1}\Big[\tfrac{5}{4},\,\tfrac{1}{2}-2\,m,\,3+2\,m,\,\tfrac{9}{4},\,\text{Tan}\Big[\tfrac{1}{4}\big(-e+\tfrac{\pi}{2}-f\,x\big)\Big]^2,\,-\text{Tan}\Big[\tfrac{1}{4}\big(-e+\tfrac{\pi}{2}-f\,x\big)\Big]^2\Big]\bigg)\,\text{Tan}\Big[\tfrac{1}{4}\big(-e+\tfrac{\pi}{2}-f\,x\big)\Big]^2\bigg)\bigg)+$$

$$\bigg(25\,\bigg(-\frac{1}{10}\,(3+2\,m)\,\text{AppellF1}\Big[\tfrac{5}{4},\,-\tfrac{1}{2}-2\,m,\,4+2\,m,\,\tfrac{9}{4},\,\text{Tan}\Big[\tfrac{1}{4}\big(-e+\tfrac{\pi}{2}-f\,x\big)\Big]^2,\,-\text{Tan}\Big[\tfrac{1}{4}\big(-e+\tfrac{\pi}{2}-f\,x\big)\Big]^2\Big]\,\text{Sec}\Big[\tfrac{1}{4}\big(-e+\tfrac{\pi}{2}-f\,x\big)\Big]^2$$

$$\text{Tan}\Big[\tfrac{1}{4}\big(-e+\tfrac{\pi}{2}-f\,x\big)\Big]+\frac{1}{10}\,\Big(-\frac{1}{2}-2\,m\Big)\,\text{AppellF1}\Big[\tfrac{5}{4},\,\tfrac{1}{2}-2\,m,\,3+2\,m,\,\tfrac{9}{4},\,\text{Tan}\Big[\tfrac{1}{4}\big(-e+\tfrac{\pi}{2}-f\,x\big)\Big]^2,\,-\text{Tan}\Big[\tfrac{1}{4}\big(-e+\tfrac{\pi}{2}-f\,x\big)\Big]^2\Big]$$

$$\text{Sec}\Big[\tfrac{1}{4}\big(-e+\tfrac{\pi}{2}-f\,x\big)\Big]^2\,\text{Tan}\Big[\tfrac{1}{4}\big(-e+\tfrac{\pi}{2}-f\,x\big)\Big]\bigg)\,\Big(1+\text{Tan}\Big[\tfrac{1}{4}\big(-e+\tfrac{\pi}{2}-f\,x\big)\Big]^2\Big)\bigg)\Big/$$

$$\bigg(-5\,\text{AppellF1}\Big[\tfrac{1}{4},\,-\tfrac{1}{2}-2\,m,\,3+2\,m,\,\tfrac{5}{4},\,\text{Tan}\Big[\tfrac{1}{4}\big(-e+\tfrac{\pi}{2}-f\,x\big)\Big]^2,\,-\text{Tan}\Big[\tfrac{1}{4}\big(-e+\tfrac{\pi}{2}-f\,x\big)\Big]^2\Big]+$$

$$2\ ((6+4m)\ \text{AppellF1}\left[\frac{5}{4},-\frac{1}{2}-2m,4+2m,\frac{9}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$(1+4m)\ \text{AppellF1}\left[\frac{5}{4},\frac{1}{2}-2m,3+2m,\frac{9}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right])\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2)+$$

$$(25\ (-\frac{1}{10}\ (4+2m)\ \text{AppellF1}\left[\frac{5}{4},-\frac{1}{2}-2m,5+2m,\frac{9}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]+\frac{1}{10}\left(-\frac{1}{2}-2m\right)\text{AppellF1}[\frac{5}{4},\frac{1}{2}-2m,4+2m,\frac{9}{4},$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2]\ \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]))\Big/$$

$$(5\ \text{AppellF1}\left[\frac{1}{4},-\frac{1}{2}-2m,4+2m,\frac{5}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]-$$

$$2\ (4\ (2+m)\ \text{AppellF1}\left[\frac{5}{4},-\frac{1}{2}-2m,5+2m,\frac{9}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+(1+4m)\ \text{AppellF1}[\frac{5}{4},\frac{1}{2}-2m,$$

$$4+2m,\frac{9}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2])\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2)+\frac{9}{2}\ \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\ (-(((\text{AppellF1}\left[\frac{5}{4},-\frac{1}{2}-2m,3+2m,\frac{9}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]$$

$$\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)))\Big/\ (-9\ \text{AppellF1}\left[\frac{5}{4},-\frac{1}{2}-2m,3+2m,\frac{9}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$2\ ((6+4m)\ \text{AppellF1}\left[\frac{9}{4},-\frac{1}{2}-2m,4+2m,\frac{13}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$(1+4m)\ \text{AppellF1}\left[\frac{9}{4},\frac{1}{2}-2m,3+2m,\frac{13}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right])\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2))+$$

$$\text{AppellF1}\left[\frac{5}{4},-\frac{1}{2}-2m,4+2m,\frac{9}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\Big/$$

$$(-9\ \text{AppellF1}\left[\frac{5}{4},-\frac{1}{2}-2m,4+2m,\frac{9}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$2\ (4\ (2+m)\ \text{AppellF1}\left[\frac{9}{4},-\frac{1}{2}-2m,5+2m,\frac{13}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$(1+4m)\ \text{AppellF1}\left[\frac{9}{4},\frac{1}{2}-2m,4+2m,\frac{13}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right])\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2))-$$

$$(25\ \text{AppellF1}\left[\frac{1}{4},-\frac{1}{2}-2m,3+2m,\frac{5}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)$$

$$(((6+4m)\ \text{AppellF1}\left[\frac{5}{4},-\frac{1}{2}-2m,4+2m,\frac{9}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+(1+4m)\ \text{AppellF1}[\frac{5}{4},$$

$$\frac{1}{2}-2m,\ 3+2m,\ \frac{9}{4},\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]\Big)\ \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-$$

$$5\Big(-\frac{1}{10}(3+2m)\ \text{AppellF1}\Big[\frac{5}{4},\ -\frac{1}{2}-2m,\ 4+2m,\ \frac{9}{4},\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]\ \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]+\frac{1}{10}\left(-\frac{1}{2}-2m\right)\text{AppellF1}\Big[\frac{5}{4},\ \frac{1}{2}-2m,\ 3+2m,\ \frac{9}{4},\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\Big)\Big)+2\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big((6+4m)\Big(-\frac{5}{18}(4+2m)\ \text{AppellF1}\Big[\frac{9}{4},\ -\frac{1}{2}-2m,$$

$$5+2m,\ \frac{13}{4},\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]\ \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]+$$

$$\frac{5}{18}\left(-\frac{1}{2}-2m\right)\text{AppellF1}\Big[\frac{9}{4},\ \frac{1}{2}-2m,\ 4+2m,\ \frac{13}{4},\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]\ \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\Big)+(1+4m)\Big(-\frac{5}{18}(3+2m)\ \text{AppellF1}\Big[\frac{9}{4},\ \frac{1}{2}-2m,\ 4+2m,\ \frac{13}{4},\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,$$

$$-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]\ \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]+\frac{5}{18}\left(\frac{1}{2}-2m\right)\text{AppellF1}\Big[\frac{9}{4},\ \frac{3}{2}-2m,$$

$$3+2m,\ \frac{13}{4},\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]\ \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\Big)\Big)\Big)\Big)\Big/$$

$$\Big(-5\,\text{AppellF1}\Big[\frac{1}{4},\ -\frac{1}{2}-2m,\ 3+2m,\ \frac{5}{4},\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]+$$

$$2\Big((6+4m)\ \text{AppellF1}\Big[\frac{5}{4},\ -\frac{1}{2}-2m,\ 4+2m,\ \frac{9}{4},\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]+$$

$$(1+4m)\ \text{AppellF1}\Big[\frac{5}{4},\ \frac{1}{2}-2m,\ 3+2m,\ \frac{9}{4},\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]\Big)\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big)^2-$$

$$\Big(25\,\text{AppellF1}\Big[\frac{1}{4},\ -\frac{1}{2}-2m,\ 4+2m,\ \frac{5}{4},\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]$$

$$\Big(-\Big(4(2+m)\ \text{AppellF1}\Big[\frac{5}{4},\ -\frac{1}{2}-2m,\ 5+2m,\ \frac{9}{4},\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]+(1+4m)\ \text{AppellF1}\Big[\frac{5}{4},$$

$$\frac{1}{2}-2m,\ 4+2m,\ \frac{9}{4},\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]\Big)\ \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]+$$

$$5\Big(-\frac{1}{10}(4+2m)\ \text{AppellF1}\Big[\frac{5}{4},\ -\frac{1}{2}-2m,\ 5+2m,\ \frac{9}{4},\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]+\frac{1}{10}\left(-\frac{1}{2}-2m\right)\text{AppellF1}\Big[\frac{5}{4},\ \frac{1}{2}-2m,\ 4+2m,\ \frac{9}{4},$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]\ \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\Big)-$$

$$2\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \Bigg(4\,(2+m)\,\Bigg(-\frac{5}{18}\,(5+2m)\,\text{AppellF1}\Bigg[\frac{9}{4},\,-\frac{1}{2}-2m,\,6+2m,\,\frac{13}{4},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,$$

$$-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg]\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]+\frac{5}{18}\left(-\frac{1}{2}-2m\right)\text{AppellF1}\Bigg[\frac{9}{4},\,\frac{1}{2}-2m,$$

$$5+2m,\,\frac{13}{4},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg]\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\Bigg)+$$

$$(1+4m)\,\Bigg(-\frac{5}{18}\,(4+2m)\,\text{AppellF1}\Bigg[\frac{9}{4},\,\frac{1}{2}-2m,\,5+2m,\,\frac{13}{4},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg]$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]+\frac{5}{18}\left(\frac{1}{2}-2m\right)\text{AppellF1}\Bigg[\frac{9}{4},\,\frac{3}{2}-2m,\,4+2m,\,\frac{13}{4},$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg]\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\Bigg)\Bigg)\Bigg)\Bigg)\Bigg/$$

$$\Bigg(5\,\text{AppellF1}\Bigg[\frac{1}{4},\,-\frac{1}{2}-2m,\,4+2m,\,\frac{5}{4},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg]-2\,\Bigg(4\,(2+m)\,\text{AppellF1}\Bigg[\frac{5}{4},$$

$$-\frac{1}{2}-2m,\,5+2m,\,\frac{9}{4},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg]+(1+4m)\,\text{AppellF1}\Bigg[\frac{5}{4},\,\frac{1}{2}-2m,\,4+2m,$$

$$\frac{9}{4},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg]\Bigg)\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)^2+9\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2$$

$$\Bigg(-\Bigg(\Bigg(\text{AppellF1}\Bigg[\frac{5}{4},\,-\frac{1}{2}-2m,\,3+2m,\,\frac{9}{4},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg]\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\Bigg)\Bigg)\Bigg/\Bigg(2\,\Bigg(-9\,\text{AppellF1}\Bigg[\frac{5}{4},\,-\frac{1}{2}-2m,\,3+2m,\,\frac{9}{4},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg]+$$

$$2\,\Bigg((6+4m)\,\text{AppellF1}\Bigg[\frac{9}{4},\,-\frac{1}{2}-2m,\,4+2m,\,\frac{13}{4},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg]+(1+4m)$$

$$\text{AppellF1}\Bigg[\frac{9}{4},\,\frac{1}{2}-2m,\,3+2m,\,\frac{13}{4},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg]\Bigg)\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)\Bigg)-$$

$$\Bigg(\Bigg(-\frac{5}{18}\,(3+2m)\,\text{AppellF1}\Bigg[\frac{9}{4},\,-\frac{1}{2}-2m,\,4+2m,\,\frac{13}{4},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg]$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]+\frac{5}{18}\left(-\frac{1}{2}-2m\right)\text{AppellF1}\Bigg[\frac{9}{4},\,\frac{1}{2}-2m,\,3+2m,\,\frac{13}{4},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,$$

$$-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg]\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\Bigg)\,\Bigg(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)\Bigg)\Bigg/$$

$$\Bigg(-9\,\text{AppellF1}\Bigg[\frac{5}{4},\,-\frac{1}{2}-2m,\,3+2m,\,\frac{9}{4},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg]+$$

$$2\,\Bigg((6+4m)\,\text{AppellF1}\Bigg[\frac{9}{4},\,-\frac{1}{2}-2m,\,4+2m,\,\frac{13}{4},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg]+$$

$$(1+4\,m)\ \text{AppellF1}\left[\frac{9}{4},\ \frac{1}{2}-2\,m,\ 3+2\,m,\ \frac{13}{4},\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\Bigg)\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Bigg)+$$

$$\Bigg(-\frac{5}{18}\ (4+2\,m)\ \text{AppellF1}\left[\frac{9}{4},\ -\frac{1}{2}-2\,m,\ 5+2\,m,\ \frac{13}{4},\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\ \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]+\frac{5}{18}\left(-\frac{1}{2}-2\,m\right)\ \text{AppellF1}\left[\frac{9}{4},\ \frac{1}{2}-2\,m,\ 4+2\,m,\ \frac{13}{4},\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\Bigg)\Bigg)\Big/\ \Bigg(-9\ \text{AppellF1}\left[\frac{5}{4},\ -\frac{1}{2}-2\,m,\ 4+2\,m,\ \frac{9}{4},\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\right.$$

$$\left.-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+2\ \Bigg(4\ (2+m)\ \text{AppellF1}\left[\frac{9}{4},\ -\frac{1}{2}-2\,m,\ 5+2\,m,\ \frac{13}{4},\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+$$

$$(1+4\,m)\ \text{AppellF1}\left[\frac{9}{4},\ \frac{1}{2}-2\,m,\ 4+2\,m,\ \frac{13}{4},\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\Bigg)\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Bigg)+$$

$$\Bigg(\text{AppellF1}\left[\frac{5}{4},\ -\frac{1}{2}-2\,m,\ 3+2\,m,\ \frac{9}{4},\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\ \left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)$$

$$\Bigg(\Bigg((6+4\,m)\ \text{AppellF1}\left[\frac{9}{4},\ -\frac{1}{2}-2\,m,\ 4+2\,m,\ \frac{13}{4},\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+(1+4\,m)\ \text{AppellF1}\left[\frac{9}{4},\right.$$

$$\left.\frac{1}{2}-2\,m,\ 3+2\,m,\ \frac{13}{4},\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\Bigg)\ \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-$$

$$9\ \Bigg(-\frac{5}{18}\ (3+2\,m)\ \text{AppellF1}\left[\frac{9}{4},\ -\frac{1}{2}-2\,m,\ 4+2\,m,\ \frac{13}{4},\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]+\frac{5}{18}\left(-\frac{1}{2}-2\,m\right)\ \text{AppellF1}\left[\frac{9}{4},\ \frac{1}{2}-2\,m,\ 3+2\,m,\ \frac{13}{4},\right.$$

$$\left.\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\ \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\Bigg)+$$

$$2\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\ \Bigg((6+4\,m)\ \Bigg(-\frac{9}{26}\ (4+2\,m)\ \text{AppellF1}\left[\frac{13}{4},\ -\frac{1}{2}-2\,m,\ 5+2\,m,\ \frac{17}{4},\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\right.$$

$$\left.-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\ \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]+\frac{9}{26}\left(-\frac{1}{2}-2\,m\right)\ \text{AppellF1}\left[\frac{13}{4},\ \frac{1}{2}-2\,m,\right.$$

$$\left.4+2\,m,\ \frac{17}{4},\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\ \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\Bigg)+$$

$$(1+4\,m)\ \Bigg(-\frac{9}{26}\ (3+2\,m)\ \text{AppellF1}\left[\frac{13}{4},\ \frac{1}{2}-2\,m,\ 4+2\,m,\ \frac{17}{4},\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]+\frac{9}{26}\left(\frac{1}{2}-2\,m\right)\ \text{AppellF1}\left[\frac{13}{4},\ \frac{3}{2}-2\,m,\ 3+2\,m,\ \frac{17}{4},\right.$$

$$\left.\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\ \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\Bigg)\Bigg)\Bigg)\Bigg)\Bigg)\Big/$$

$$\Big(-9\,\text{AppellF1}\Big[\frac{5}{4},-\frac{1}{2}-2m,3+2m,\frac{9}{4},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]+$$

$$2\Big((6+4m)\,\text{AppellF1}\Big[\frac{9}{4},-\frac{1}{2}-2m,4+2m,\frac{13}{4},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]+$$

$$(1+4m)\,\text{AppellF1}\Big[\frac{9}{4},\frac{1}{2}-2m,3+2m,\frac{13}{4},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big)^2-$$

$$\Big(\text{AppellF1}\Big[\frac{5}{4},-\frac{1}{2}-2m,4+2m,\frac{9}{4},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]$$

$$\Big(\Big(4(2+m)\,\text{AppellF1}\Big[\frac{9}{4},-\frac{1}{2}-2m,5+2m,\frac{13}{4},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]+(1+4m)\,\text{AppellF1}\Big[\frac{9}{4},$$

$$\frac{1}{2}-2m,4+2m,\frac{13}{4},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\Big)\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]-$$

$$9\Big(-\frac{5}{18}(4+2m)\,\text{AppellF1}\Big[\frac{9}{4},-\frac{1}{2}-2m,5+2m,\frac{13}{4},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]$$

$$\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]+\frac{5}{18}\Big(-\frac{1}{2}-2m\Big)\,\text{AppellF1}\Big[\frac{9}{4},\frac{1}{2}-2m,4+2m,\frac{13}{4},$$

$$\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]\Big)+$$

$$2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big(4(2+m)\Big(-\frac{9}{26}(5+2m)\,\text{AppellF1}\Big[\frac{13}{4},-\frac{1}{2}-2m,6+2m,\frac{17}{4},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,$$

$$-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]+\frac{9}{26}\Big(-\frac{1}{2}-2m\Big)\,\text{AppellF1}\Big[\frac{13}{4},\frac{1}{2}-2m,$$

$$5+2m,\frac{17}{4},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]\Big)+$$

$$(1+4m)\Big(-\frac{9}{26}(4+2m)\,\text{AppellF1}\Big[\frac{13}{4},\frac{1}{2}-2m,5+2m,\frac{17}{4},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]$$

$$\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]+\frac{9}{26}\Big(\frac{1}{2}-2m\Big)\,\text{AppellF1}\Big[\frac{13}{4},\frac{3}{2}-2m,4+2m,\frac{17}{4},$$

$$\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]\Big)\Big)\Big)\Big)\Big)\Big/$$

$$\Big(-9\,\text{AppellF1}\Big[\frac{5}{4},-\frac{1}{2}-2m,4+2m,\frac{9}{4},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]+$$

$$2\Big(4(2+m)\,\text{AppellF1}\Big[\frac{9}{4},-\frac{1}{2}-2m,5+2m,\frac{13}{4},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]+(1+4m)$$

$$\text{AppellF1}\left[\frac{9}{4},\ \frac{1}{2}-2m,\ 4+2m,\ \frac{13}{4},\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right)\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\Big)^2\Big)\Big)\Big)\Big)$$

- **Problem 156: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int \frac{(g\,\text{Cos}[e+fx])^{3/2}\,(a+a\,\text{Sin}[e+fx])^m}{c-c\,\text{Sin}[e+fx]}\,dx$$

Optimal (type 5, 84 leaves, 4 steps):

$$-\frac{1}{c\,f}2^{\frac{9}{4}+m}\,g\,\sqrt{g\,\text{Cos}[e+fx]}\ \text{Hypergeometric2F1}\left[\frac{1}{4},\ -\frac{1}{4}-m,\ \frac{5}{4},\ \frac{1}{2}\,(1-\text{Sin}[e+fx])\right]\,(1+\text{Sin}[e+fx])^{-\frac{1}{4}-m}\,(a+a\,\text{Sin}[e+fx])^m$$

Result (type 6, 9339 leaves):

$$-\frac{1}{f\,\text{Cos}[e+fx]^{3/2}\,(c-c\,\text{Sin}[e+fx])}\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-fx\right)\right]^{-2m}\,(g\,\text{Cos}[e+fx])^{3/2}\left(\text{Cos}\left[\frac{1}{2}\,(e+fx)\right]-\text{Sin}\left[\frac{1}{2}\,(e+fx)\right]\right)^2$$

$$(a+a\,\text{Sin}[e+fx])^m\ \Big(-\Big(\Big(10\sqrt{2}\ \text{AppellF1}\left[\frac{1}{4},\ -\frac{3}{2}-2m,\ 2+2m,\ \frac{5}{4},\ \text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,\ -\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]$$

$$\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-fx\right)\right]^{2+4m}\ \text{Cos}[e+fx]\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\Big)\Big/\left(\left(\text{Cos}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+fx\right)\right]-\text{Sin}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+fx\right)\right]\right)\right)$$

$$\Big(-8\,(1+m)\ \text{AppellF1}\left[\frac{5}{4},\ -\frac{3}{2}-2m,\ 3+2m,\ \frac{9}{4},\ \text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,\ -\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]-$$

$$2\,(3+4m)\ \text{AppellF1}\left[\frac{5}{4},\ -\frac{1}{2}-2m,\ 2+2m,\ \frac{9}{4},\ \text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,\ -\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+$$

$$5\,\text{AppellF1}\left[\frac{1}{4},\ -\frac{3}{2}-2m,\ 2+2m,\ \frac{5}{4},\ \text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,\ -\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\Big)$$

$$\Big(-\Big(\Big(5\,\text{AppellF1}\left[\frac{1}{4},\ -\frac{3}{2}-2m,\ 2+2m,\ \frac{5}{4},\ \text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,\ -\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\ \text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-fx\right)\right]^{1+2m}\sqrt{\text{Cos}[e+fx]}$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]\Big)\Big/\Big(-8\,(1+m)\ \text{AppellF1}\left[\frac{5}{4},\ -\frac{3}{2}-2m,\ 3+2m,\ \frac{9}{4},\ \text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,\ -\text{Cot}\Big[\right.$$

$$\left.\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\Big]^2\right]-2\,(3+4m)\ \text{AppellF1}\left[\frac{5}{4},\ -\frac{1}{2}-2m,\ 2+2m,\ \frac{9}{4},\ \text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,\ -\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+$$

$$5\,\text{AppellF1}\left[\frac{1}{4},\ -\frac{3}{2}-2m,\ 2+2m,\ \frac{5}{4},\ \text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,\ -\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\Big)\Big)-$$

$$\Big(10\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-fx\right)\right]^{1+2m}\sqrt{\text{Cos}[e+fx]}\ \Big(\frac{1}{10}\,(2+2m)\ \text{AppellF1}\Big[\frac{5}{4},\ -\frac{3}{2}-2m,\ 3+2m,\ \frac{9}{4},\ \text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,$$

$$-\text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\ \text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\ \text{Csc}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2-\frac{1}{10}\Big(-\frac{3}{2}-2\,m\Big)\ \text{AppellF1}\Big[\frac{5}{4},\ -\frac{1}{2}-2\,m,\ 2+2\,m,\ \frac{9}{4},$$

$$\text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\ -\text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\ \text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\ \text{Csc}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)\ \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)\Big/$$

$$\Big(-8\,(1+m)\ \text{AppellF1}\Big[\frac{5}{4},\ -\frac{3}{2}-2\,m,\ 3+2\,m,\ \frac{9}{4},\ \text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\ -\text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]-2\,(3+4\,m)$$

$$\text{AppellF1}\Big[\frac{5}{4},\ -\frac{1}{2}-2\,m,\ 2+2\,m,\ \frac{9}{4},\ \text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\ -\text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+5$$

$$\text{AppellF1}\Big[\frac{1}{4},\ -\frac{3}{2}-2\,m,\ 2+2\,m,\ \frac{5}{4},\ \text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\ -\text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\ \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)+$$

$$\Big(5\,(1+2\,m)\ \text{AppellF1}\Big[\frac{1}{4},\ -\frac{3}{2}-2\,m,\ 2+2\,m,\ \frac{5}{4},\ \text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\ -\text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]$$

$$\text{Cos}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^{2\,m}\sqrt{\text{Cos}[e+f\,x]}\ \text{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\ \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)\Big/$$

$$\Big(-8\,(1+m)\ \text{AppellF1}\Big[\frac{5}{4},\ -\frac{3}{2}-2\,m,\ 3+2\,m,\ \frac{9}{4},\ \text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\ -\text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]-2\,(3+4\,m)$$

$$\text{AppellF1}\Big[\frac{5}{4},\ -\frac{1}{2}-2\,m,\ 2+2\,m,\ \frac{9}{4},\ \text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\ -\text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+5\,\text{AppellF1}\Big[\frac{1}{4},\ -\frac{3}{2}-2\,m,\ 2+2\,m,$$

$$\frac{5}{4},\ \text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\ -\text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\ \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)-\Big(5\,\text{AppellF1}\Big[\frac{1}{4},\ -\frac{3}{2}-2\,m,\ 2+2\,m,\ \frac{5}{4},$$

$$\text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\ -\text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\ \text{Cos}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^{1+2\,m}\ \text{Sin}[e+f\,x]\ \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)\Big/$$

$$\Big(\sqrt{\text{Cos}[e+f\,x]}\ \Big(-8\,(1+m)\ \text{AppellF1}\Big[\frac{5}{4},\ -\frac{3}{2}-2\,m,\ 3+2\,m,\ \frac{9}{4},\ \text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\ -\text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]-$$

$$2\,(3+4\,m)\ \text{AppellF1}\Big[\frac{5}{4},\ -\frac{1}{2}-2\,m,\ 2+2\,m,\ \frac{9}{4},\ \text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\ -\text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+$$

$$5\,\text{AppellF1}\Big[\frac{1}{4},\ -\frac{3}{2}-2\,m,\ 2+2\,m,\ \frac{5}{4},\ \text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\ -\text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\ \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)\Big)+$$

$$\Big(10\,\text{AppellF1}\Big[\frac{1}{4},\ -\frac{3}{2}-2\,m,\ 2+2\,m,\ \frac{5}{4},\ \text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\ -\text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\ \text{Cos}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^{1+2\,m}$$

$$\sqrt{\text{Cos}[e+f\,x]}\ \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\ \Big(-8\,(1+m)\ \Big(\frac{5}{18}\,(3+2\,m)\ \text{AppellF1}\Big[\frac{9}{4},\ -\frac{3}{2}-2\,m,\ 4+2\,m,\ \frac{13}{4},\ \text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,$$

$$-\text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\ \text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\ \text{Csc}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2-\frac{5}{18}\Big(-\frac{3}{2}-2\,m\Big)\ \text{AppellF1}\Big[\frac{9}{4},\ -\frac{1}{2}-2\,m,$$

$$3+2\,m,\ \frac{13}{4},\ \text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\ -\text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\ \text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\ \text{Csc}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)-$$

$$2\,(3+4\,m)\,\Big(\frac{5}{18}\,(2+2\,m)\,\text{AppellF1}\Big[\frac{9}{4},\,-\frac{1}{2}-2\,m,\,3+2\,m,\,\frac{13}{4},\,\text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]$$

$$\text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\,\text{Csc}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2-\frac{5}{18}\Big(-\frac{1}{2}-2\,m\Big)\,\text{AppellF1}\Big[\frac{9}{4},\,\frac{1}{2}-2\,m,\,2+2\,m,\,\frac{13}{4},$$

$$\text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\,\text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\,\text{Csc}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)+$$

$$\frac{5}{2}\,\text{AppellF1}\Big[\frac{1}{4},\,-\frac{3}{2}-2\,m,\,2+2\,m,\,\frac{5}{4},\,\text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2$$

$$\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]+5\,\Big(\frac{1}{10}\,(2+2\,m)\,\text{AppellF1}\Big[\frac{5}{4},\,-\frac{3}{2}-2\,m,\,3+2\,m,\,\frac{9}{4},\,\text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]$$

$$\text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\,\text{Csc}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2-\frac{1}{10}\Big(-\frac{3}{2}-2\,m\Big)\,\text{AppellF1}\Big[\frac{5}{4},\,-\frac{1}{2}-2\,m,\,2+2\,m,\,\frac{9}{4},\,\text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,$$

$$-\text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\,\text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\,\text{Csc}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)\Big)\Big/$$

$$\Big(-8\,(1+m)\,\text{AppellF1}\Big[\frac{5}{4},\,-\frac{3}{2}-2\,m,\,3+2\,m,\,\frac{9}{4},\,\text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]-$$

$$2\,(3+4\,m)\,\text{AppellF1}\Big[\frac{5}{4},\,-\frac{1}{2}-2\,m,\,2+2\,m,\,\frac{9}{4},\,\text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+$$

$$5\,\text{AppellF1}\Big[\frac{1}{4},\,-\frac{3}{2}-2\,m,\,2+2\,m,\,\frac{5}{4},\,\text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)^2\Big)\Big)\Big)+$$

$$\Big(7\,\sqrt{2}\,\text{AppellF1}\Big[\frac{3}{4},\,-\frac{1}{2}-2\,m,\,2+2\,m,\,\frac{7}{4},\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]$$

$$\text{Cos}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^{4\,m}$$

$$\text{Cos}[e+f\,x]$$

$$\text{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)\Big/$$

$$\Big(\Big(\text{Cos}\Big[\frac{\pi}{4}+\frac{1}{2}\Big(e-\frac{\pi}{2}+f\,x\Big)\Big]-\text{Sin}\Big[\frac{\pi}{4}+\frac{1}{2}\Big(e-\frac{\pi}{2}+f\,x\Big)\Big]\Big)$$

$$\Big(21\,\text{AppellF1}\Big[\frac{3}{4},\,-\frac{1}{2}-2\,m,\,2+2\,m,\,\frac{7}{4},\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]-$$

$$6\,\Big(4\,(1+m)\,\text{AppellF1}\Big[\frac{7}{4},\,-\frac{1}{2}-2\,m,\,3+2\,m,\,\frac{11}{4},\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+$$

$$(1+4\,m)\,\text{AppellF1}\Big[\frac{7}{4},\,\frac{1}{2}-2\,m,\,2+2\,m,\,\frac{11}{4},\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)$$

$$\left(\left(7\,\text{AppellF1}\left[\frac{3}{4},-\frac{1}{2}-2m,2+2m,\frac{7}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-fx\right)\right]^{1+2m}\sqrt{\text{Cos}[e+fx]}\right)\Big/\right.$$

$$\left(21\,\text{AppellF1}\left[\frac{3}{4},-\frac{1}{2}-2m,2+2m,\frac{7}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]-\right.$$

$$6\left(4(1+m)\,\text{AppellF1}\left[\frac{7}{4},-\frac{1}{2}-2m,3+2m,\frac{11}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+\right.$$

$$\left.\left.(1+4m)\,\text{AppellF1}\left[\frac{7}{4},\frac{1}{2}-2m,2+2m,\frac{11}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)-$$

$$\left(14\,m\,\text{AppellF1}\left[\frac{3}{4},-\frac{1}{2}-2m,2+2m,\frac{7}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-fx\right)\right]^{-1+2m}\sqrt{\text{Cos}[e+fx]}\right.$$

$$\left.\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)\Big/\left(21\,\text{AppellF1}\left[\frac{3}{4},-\frac{1}{2}-2m,2+2m,\frac{7}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]-\right.$$

$$6\left(4(1+m)\,\text{AppellF1}\left[\frac{7}{4},-\frac{1}{2}-2m,3+2m,\frac{11}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+\right.$$

$$\left.\left.(1+4m)\,\text{AppellF1}\left[\frac{7}{4},\frac{1}{2}-2m,2+2m,\frac{11}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)+$$

$$\left(7\,\text{AppellF1}\left[\frac{3}{4},-\frac{1}{2}-2m,2+2m,\frac{7}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-fx\right)\right]^{2m}\right.$$

$$\left.\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-fx\right)\right]\text{Sin}[e+fx]\right)\Big/$$

$$\left(\sqrt{\text{Cos}[e+fx]}\left(21\,\text{AppellF1}\left[\frac{3}{4},-\frac{1}{2}-2m,2+2m,\frac{7}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]-6\right.\right.$$

$$\left(4(1+m)\,\text{AppellF1}\left[\frac{7}{4},-\frac{1}{2}-2m,3+2m,\frac{11}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+\right.$$

$$\left.\left.\left.(1+4m)\,\text{AppellF1}\left[\frac{7}{4},\frac{1}{2}-2m,2+2m,\frac{11}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)\right)+$$

$$\left(14\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-fx\right)\right]^{2m}\sqrt{\text{Cos}[e+fx]}\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-fx\right)\right]\left(-\frac{3}{14}(2+2m)\,\text{AppellF1}\left[\frac{7}{4},-\frac{1}{2}-2m,3+2m,\frac{11}{4},\right.\right.\right.$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\Big]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]+\frac{3}{14}\left(-\frac{1}{2}-2m\right)\text{AppellF1}\Big[\frac{7}{4},$$

$$\left.\left.\frac{1}{2}-2m,2+2m,\frac{11}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]\right)\right)\Big/$$

$$\left(21\,\text{AppellF1}\left[\frac{3}{4},-\frac{1}{2}-2m,2+2m,\frac{7}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]-\right.$$

$$6\left(4(1+m)\,\text{AppellF1}\left[\frac{7}{4},-\frac{1}{2}-2m,3+2m,\frac{11}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+\right.$$

$$(1+4\,m)\ \text{AppellF1}\Big[\frac{7}{4},\ \frac{1}{2}-2\,m,\ 2+2\,m,\ \frac{11}{4},\ \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\Big)\ \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)-$$

$$\Big(14\,\text{AppellF1}\Big[\frac{3}{4},\ -\frac{1}{2}-2\,m,\ 2+2\,m,\ \frac{7}{4},\ \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\ \text{Cos}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^{2\,m}\sqrt{\text{Cos}[e+f\,x]}$$

$$\text{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\ \Big(-3\ \Big(4\,(1+m)\ \text{AppellF1}\Big[\frac{7}{4},\ -\frac{1}{2}-2\,m,\ 3+2\,m,\ \frac{11}{4},\ \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+$$

$$(1+4\,m)\ \text{AppellF1}\Big[\frac{7}{4},\ \frac{1}{2}-2\,m,\ 2+2\,m,\ \frac{11}{4},\ \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\Big)\ \text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2$$

$$\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]+21\ \Big(-\frac{3}{14}\,(2+2\,m)\ \text{AppellF1}\Big[\frac{7}{4},\ -\frac{1}{2}-2\,m,\ 3+2\,m,\ \frac{11}{4},\ \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,$$

$$-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\ \text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\ \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]+\frac{3}{14}\Big(-\frac{1}{2}-2\,m\Big)\ \text{AppellF1}\Big[\frac{7}{4},\ \frac{1}{2}-2\,m,$$

$$2+2\,m,\ \frac{11}{4},\ \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\ \text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\ \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\Big)-6$$

$$\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\ \Big(4\,(1+m)\ \Big(-\frac{7}{22}\,(3+2\,m)\ \text{AppellF1}\Big[\frac{11}{4},\ -\frac{1}{2}-2\,m,\ 4+2\,m,\ \frac{15}{4},\ \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,$$

$$-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\ \text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\ \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]+\frac{7}{22}\Big(-\frac{1}{2}-2\,m\Big)\ \text{AppellF1}\Big[\frac{11}{4},\ \frac{1}{2}-2\,m,$$

$$3+2\,m,\ \frac{15}{4},\ \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\ \text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\ \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\Big)+$$

$$(1+4\,m)\ \Big(-\frac{7}{22}\,(2+2\,m)\ \text{AppellF1}\Big[\frac{11}{4},\ \frac{1}{2}-2\,m,\ 3+2\,m,\ \frac{15}{4},\ \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]$$

$$\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\ \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]+\frac{7}{22}\Big(\frac{1}{2}-2\,m\Big)\ \text{AppellF1}\Big[\frac{11}{4},\ \frac{3}{2}-2\,m,\ 2+2\,m,\ \frac{15}{4},$$

$$\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\ \text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\ \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\Big)\Big)\Big)\Big)\Big)\Big/$$

$$\Big(21\,\text{AppellF1}\Big[\frac{3}{4},\ -\frac{1}{2}-2\,m,\ 2+2\,m,\ \frac{7}{4},\ \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]-6$$

$$\Big(4\,(1+m)\ \text{AppellF1}\Big[\frac{7}{4},\ -\frac{1}{2}-2\,m,\ 3+2\,m,\ \frac{11}{4},\ \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+$$

$$(1+4\,m)\ \text{AppellF1}\Big[\frac{7}{4},\ \frac{1}{2}-2\,m,\ 2+2\,m,\ \frac{11}{4},\ \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\Big)\ \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)^2\Big)\Big)-$$

$$\Big(7\sqrt{2}\ \text{AppellF1}\Big[\frac{3}{4},\ -\frac{1}{2}-2\,m,\ 2+2\,m,\ \frac{7}{4},\ \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]$$

$$\text{Cos}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^{4\,m}$$

$$\text{Cos}[e+f x]\ \text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big) \Big/$$

$$\left(\left(\text{Cos}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]-\text{Sin}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]\right)\right.$$

$$\left(-21\,\text{AppellF1}\left[\frac{3}{4},-\frac{1}{2}-2m,2+2m,\frac{7}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$6\left(4(1+m)\,\text{AppellF1}\left[\frac{7}{4},-\frac{1}{2}-2m,3+2m,\frac{11}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$\left.\left.(1+4m)\,\text{AppellF1}\left[\frac{7}{4},\frac{1}{2}-2m,2+2m,\frac{11}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)$$

$$\left(\left(7\,\text{AppellF1}\left[\frac{3}{4},-\frac{1}{2}-2m,2+2m,\frac{7}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{1+2m}\sqrt{\text{Cos}[e+f x]}\right)\Big/\right.$$

$$\left(-21\,\text{AppellF1}\left[\frac{3}{4},-\frac{1}{2}-2m,2+2m,\frac{7}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$6\left(4(1+m)\,\text{AppellF1}\left[\frac{7}{4},-\frac{1}{2}-2m,3+2m,\frac{11}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$\left.\left.(1+4m)\,\text{AppellF1}\left[\frac{7}{4},\frac{1}{2}-2m,2+2m,\frac{11}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)-$$

$$\left(14\,m\,\text{AppellF1}\left[\frac{3}{4},-\frac{1}{2}-2m,2+2m,\frac{7}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right.$$

$$\left.\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{-1+2m}\sqrt{\text{Cos}[e+f x]}\ \text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\Big/$$

$$\left(-21\,\text{AppellF1}\left[\frac{3}{4},-\frac{1}{2}-2m,2+2m,\frac{7}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$6\left(4(1+m)\,\text{AppellF1}\left[\frac{7}{4},-\frac{1}{2}-2m,3+2m,\frac{11}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$\left.\left.(1+4m)\,\text{AppellF1}\left[\frac{7}{4},\frac{1}{2}-2m,2+2m,\frac{11}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)+$$

$$\left(7\,\text{AppellF1}\left[\frac{3}{4},-\frac{1}{2}-2m,2+2m,\frac{7}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2m}\right.$$

$$\left.\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\text{Sin}[e+f x]\right)\Big/$$

$$\left(\sqrt{\text{Cos}[e+f x]}\left(-21\,\text{AppellF1}\left[\frac{3}{4},-\frac{1}{2}-2m,2+2m,\frac{7}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+6\right.\right.$$

$$\left(4\ (1+m)\ \text{AppellF1}\left[\frac{7}{4},\ -\frac{1}{2}-2m,\ 3+2m,\ \frac{11}{4},\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$\left.(1+4m)\ \text{AppellF1}\left[\frac{7}{4},\ \frac{1}{2}-2m,\ 2+2m,\ \frac{11}{4},\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big)\Big)+$$

$$\Big(14\ \text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2m}\sqrt{\text{Cos}[e+f x]}\ \text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\ \Big(-\frac{3}{14}\ (2+2m)\ \text{AppellF1}\Big[\frac{7}{4},\ -\frac{1}{2}-2m,\ 3+2m,\ \frac{11}{4},$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\ \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]+\frac{3}{14}\left(-\frac{1}{2}-2m\right)\ \text{AppellF1}\Big[\frac{7}{4},$$

$$\frac{1}{2}-2m,\ 2+2m,\ \frac{11}{4},\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\ \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\Big)\Big)\Big/$$

$$\Big(-21\ \text{AppellF1}\left[\frac{3}{4},\ -\frac{1}{2}-2m,\ 2+2m,\ \frac{7}{4},\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$6\ \Big(4\ (1+m)\ \text{AppellF1}\left[\frac{7}{4},\ -\frac{1}{2}-2m,\ 3+2m,\ \frac{11}{4},\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$(1+4m)\ \text{AppellF1}\left[\frac{7}{4},\ \frac{1}{2}-2m,\ 2+2m,\ \frac{11}{4},\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\Big)\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big)-$$

$$\Big(14\ \text{AppellF1}\left[\frac{3}{4},\ -\frac{1}{2}-2m,\ 2+2m,\ \frac{7}{4},\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\ \text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2m}\sqrt{\text{Cos}[e+f x]}$$

$$\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\ \Big(3\ \Big(4\ (1+m)\ \text{AppellF1}\left[\frac{7}{4},\ -\frac{1}{2}-2m,\ 3+2m,\ \frac{11}{4},\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$(1+4m)\ \text{AppellF1}\left[\frac{7}{4},\ \frac{1}{2}-2m,\ 2+2m,\ \frac{11}{4},\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\Big)\ \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-21\ \Big(-\frac{3}{14}\ (2+2m)\ \text{AppellF1}\Big[\frac{7}{4},\ -\frac{1}{2}-2m,\ 3+2m,\ \frac{11}{4},\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,$$

$$-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\ \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]+\frac{3}{14}\left(-\frac{1}{2}-2m\right)\ \text{AppellF1}\Big[\frac{7}{4},\ \frac{1}{2}-2m,$$

$$2+2m,\ \frac{11}{4},\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\ \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\Big)+6$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\ \Big(4\ (1+m)\ \Big(-\frac{7}{22}\ (3+2m)\ \text{AppellF1}\Big[\frac{11}{4},\ -\frac{1}{2}-2m,\ 4+2m,\ \frac{15}{4},\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,$$

$$-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\ \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]+\frac{7}{22}\left(-\frac{1}{2}-2m\right)\ \text{AppellF1}\Big[\frac{11}{4},\ \frac{1}{2}-2m,$$

$$3+2m,\ \frac{15}{4},\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\ \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\Big)+$$

$$(1+4m)\ \Big(-\frac{7}{22}\ (2+2m)\ \text{AppellF1}\left[\frac{11}{4},\ \frac{1}{2}-2m,\ 3+2m,\ \frac{15}{4},\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]+\frac{7}{22}\left(\frac{1}{2}-2 m\right) \text{AppellF1}\left[\frac{11}{4},\frac{3}{2}-2 m,2+2 m,\frac{15}{4},\right.$$
$$\left.\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right] \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\Bigg)\Bigg)\Bigg)\Bigg)\Bigg/$$
$$\left(-21 \text{AppellF1}\left[\frac{3}{4},-\frac{1}{2}-2 m,2+2 m,\frac{7}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+6\right.$$
$$\left(4 (1+m) \text{AppellF1}\left[\frac{7}{4},-\frac{1}{2}-2 m,3+2 m,\frac{11}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$
$$\left.\left.(1+4 m) \text{AppellF1}\left[\frac{7}{4},\frac{1}{2}-2 m,2+2 m,\frac{11}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right) \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^2\Bigg)\Bigg)\Bigg)$$

- **Problem 157: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int \frac{(g \text{Cos}[e+f x])^{3/2} (a+a \text{Sin}[e+f x])^m}{(c-c \text{Sin}[e+f x])^2} \, dx$$

Optimal (type 5, 93 leaves, 4 steps):

$$\frac{1}{3 a c^2 f (g \text{Cos}[e+f x])^{3/2}} 2^{\frac{9}{4}+m} g^3 \text{Hypergeometric2F1}\left[-\frac{3}{4},-\frac{1}{4}-m,\frac{1}{4},\frac{1}{2}(1-\text{Sin}[e+f x])\right] (1+\text{Sin}[e+f x])^{-\frac{1}{4}-m} (a+a \text{Sin}[e+f x])^{1+m}$$

Result (type 6, 13626 leaves):

$$-\frac{1}{f \text{Cos}[e+f x]^{3/2} (c-c \text{Sin}[e+f x])^2} \text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{-2 m} (g \text{Cos}[e+f x])^{3/2} \left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^4$$
$$(a+a \text{Sin}[e+f x])^m \left(\left(3 \text{AppellF1}\left[-\frac{1}{4},-\frac{1}{2}-2 m,2 m,\frac{3}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right.\right.$$
$$\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{4 m} \text{Cos}[e+f x] \text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right] \text{Csc}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\Bigg)\Bigg/$$
$$\left(2 \sqrt{2} \left(8 m \text{AppellF1}\left[\frac{3}{4},-\frac{1}{2}-2 m,1+2 m,\frac{7}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.\right.$$
$$(2+8 m) \text{AppellF1}\left[\frac{3}{4},\frac{1}{2}-2 m,2 m,\frac{7}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]-3 \text{AppellF1}\left[-\frac{1}{4},-\frac{1}{2}-2 m,2 m,\frac{3}{4},\right.$$
$$\left.\left.\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right] \text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right) \left(\text{Cos}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]-\text{Sin}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]\right)^3$$
$$\left(-\left(\left(3 \text{AppellF1}\left[-\frac{1}{4},-\frac{1}{2}-2 m,2 m,\frac{3}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right] \text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2 m} \sqrt{\text{Cos}[e+f x]}\right.\right.\right.$$
$$\left.\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Csc}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\Bigg/\left(4\left(8 m \text{AppellF1}\left[\frac{3}{4},-\frac{1}{2}-2 m,1+2 m,\frac{7}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\right.\right.\right.$$

$$-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+(2+8\,m)\,\text{AppellF1}\Big[\frac{3}{4},\frac{1}{2}-2\,m,2\,m,\frac{7}{4},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]-$$

$$3\,\text{AppellF1}\Big[-\frac{1}{4},-\frac{1}{2}-2\,m,2\,m,\frac{3}{4},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\,\text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)\Big)\Big)-$$

$$\Big(3\,\text{AppellF1}\Big[-\frac{1}{4},-\frac{1}{2}-2\,m,2\,m,\frac{3}{4},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\,\text{Cos}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^{2\,m}\sqrt{\text{Cos}[e+f\,x]}$$

$$\text{Csc}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^4\Big)\Big/\Big(8\Big(8\,m\,\text{AppellF1}\Big[\frac{3}{4},-\frac{1}{2}-2\,m,1+2\,m,\frac{7}{4},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+$$

$$(2+8\,m)\,\text{AppellF1}\Big[\frac{3}{4},\frac{1}{2}-2\,m,2\,m,\frac{7}{4},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]-3$$

$$\text{AppellF1}\Big[-\frac{1}{4},-\frac{1}{2}-2\,m,2\,m,\frac{3}{4},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\,\text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)\Big)-$$

$$\Big(3\,m\,\text{AppellF1}\Big[-\frac{1}{4},-\frac{1}{2}-2\,m,2\,m,\frac{3}{4},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\,\text{Cos}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^{-1+2\,m}$$

$$\sqrt{\text{Cos}[e+f\,x]}\,\text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\,\text{Csc}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\,\text{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\Big)\Big/$$

$$\Big(2\Big(8\,m\,\text{AppellF1}\Big[\frac{3}{4},-\frac{1}{2}-2\,m,1+2\,m,\frac{7}{4},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+(2+8\,m)$$

$$\text{AppellF1}\Big[\frac{3}{4},\frac{1}{2}-2\,m,2\,m,\frac{7}{4},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]-3$$

$$\text{AppellF1}\Big[-\frac{1}{4},-\frac{1}{2}-2\,m,2\,m,\frac{3}{4},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\,\text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)\Big)+$$

$$\Big(3\,\text{AppellF1}\Big[-\frac{1}{4},-\frac{1}{2}-2\,m,2\,m,\frac{3}{4},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\,\text{Cos}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^{2\,m}$$

$$\text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\,\text{Csc}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\,\text{Sin}[e+f\,x]\Big)\Big/$$

$$\Big(4\sqrt{\text{Cos}[e+f\,x]}\Big(8\,m\,\text{AppellF1}\Big[\frac{3}{4},-\frac{1}{2}-2\,m,1+2\,m,\frac{7}{4},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+$$

$$(2+8\,m)\,\text{AppellF1}\Big[\frac{3}{4},\frac{1}{2}-2\,m,2\,m,\frac{7}{4},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]-3$$

$$\text{AppellF1}\Big[-\frac{1}{4},-\frac{1}{2}-2\,m,2\,m,\frac{3}{4},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\,\text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)\Big)+$$

$$\Big(3\,\text{Cos}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^{2\,m}\sqrt{\text{Cos}[e+f\,x]}\,\text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\,\text{Csc}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big(\frac{1}{3}\,m\,\text{AppellF1}\Big[\frac{3}{4},-\frac{1}{2}-2\,m,1+2\,m,$$

$$\frac{7}{4},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]-\frac{1}{6}\Big(-\frac{1}{2}-2\,m\Big)\,\text{AppellF1}\Big[$$

$$\frac{3}{4},\ \frac{1}{2}-2\,m,\ 2\,m,\ \frac{7}{4},\ \text{Tan}[\frac{1}{4}(-e+\frac{\pi}{2}-f\,x)]^2,\ -\text{Tan}[\frac{1}{4}(-e+\frac{\pi}{2}-f\,x)]^2]\ \text{Sec}[\frac{1}{4}(-e+\frac{\pi}{2}-f\,x)]^2\ \text{Tan}[\frac{1}{4}(-e+\frac{\pi}{2}-f\,x)]]))\Big/$$

$$(2\,(8\,m\,\text{AppellF1}[\frac{3}{4},\ -\frac{1}{2}-2\,m,\ 1+2\,m,\ \frac{7}{4},\ \text{Tan}[\frac{1}{4}(-e+\frac{\pi}{2}-f\,x)]^2,\ -\text{Tan}[\frac{1}{4}(-e+\frac{\pi}{2}-f\,x)]^2]+(2+8\,m)$$

$$\text{AppellF1}[\frac{3}{4},\ \frac{1}{2}-2\,m,\ 2\,m,\ \frac{7}{4},\ \text{Tan}[\frac{1}{4}(-e+\frac{\pi}{2}-f\,x)]^2,\ -\text{Tan}[\frac{1}{4}(-e+\frac{\pi}{2}-f\,x)]^2]-3$$

$$\text{AppellF1}[-\frac{1}{4},\ -\frac{1}{2}-2\,m,\ 2\,m,\ \frac{3}{4},\ \text{Tan}[\frac{1}{4}(-e+\frac{\pi}{2}-f\,x)]^2,\ -\text{Tan}[\frac{1}{4}(-e+\frac{\pi}{2}-f\,x)]^2]\ \text{Cot}[\frac{1}{4}(-e+\frac{\pi}{2}-f\,x)]^2))-$$

$$(3\,\text{AppellF1}[-\frac{1}{4},\ -\frac{1}{2}-2\,m,\ 2\,m,\ \frac{3}{4},\ \text{Tan}[\frac{1}{4}(-e+\frac{\pi}{2}-f\,x)]^2,\ -\text{Tan}[\frac{1}{4}(-e+\frac{\pi}{2}-f\,x)]^2]\ \text{Cos}[\frac{1}{2}(-e+\frac{\pi}{2}-f\,x)]^{2\,m}\ \sqrt{\text{Cos}[e+f\,x]}\ \text{Cot}[$$

$$\frac{1}{4}(-e+\frac{\pi}{2}-f\,x)]\ \text{Csc}[\frac{1}{4}(-e+\frac{\pi}{2}-f\,x)]^2\ (\frac{3}{2}\,\text{AppellF1}[-\frac{1}{4},\ -\frac{1}{2}-2\,m,\ 2\,m,\ \frac{3}{4},\ \text{Tan}[\frac{1}{4}(-e+\frac{\pi}{2}-f\,x)]^2,\ -\text{Tan}[\frac{1}{4}(-e+\frac{\pi}{2}-f\,x)]^2]$$

$$\text{Cot}[\frac{1}{4}(-e+\frac{\pi}{2}-f\,x)]\ \text{Csc}[\frac{1}{4}(-e+\frac{\pi}{2}-f\,x)]^2-3\,\text{Cot}[\frac{1}{4}(-e+\frac{\pi}{2}-f\,x)]^2\ (\frac{1}{3}\,m\,\text{AppellF1}[\frac{3}{4},\ -\frac{1}{2}-2\,m,\ 1+2\,m,\ \frac{7}{4},$$

$$\text{Tan}[\frac{1}{4}(-e+\frac{\pi}{2}-f\,x)]^2,\ -\text{Tan}[\frac{1}{4}(-e+\frac{\pi}{2}-f\,x)]^2]\ \text{Sec}[\frac{1}{4}(-e+\frac{\pi}{2}-f\,x)]^2\ \text{Tan}[\frac{1}{4}(-e+\frac{\pi}{2}-f\,x)]-\frac{1}{6}(-\frac{1}{2}-2\,m)\ \text{AppellF1}[$$

$$\frac{3}{4},\ \frac{1}{2}-2\,m,\ 2\,m,\ \frac{7}{4},\ \text{Tan}[\frac{1}{4}(-e+\frac{\pi}{2}-f\,x)]^2,\ -\text{Tan}[\frac{1}{4}(-e+\frac{\pi}{2}-f\,x)]^2]\ \text{Sec}[\frac{1}{4}(-e+\frac{\pi}{2}-f\,x)]^2\ \text{Tan}[\frac{1}{4}(-e+\frac{\pi}{2}-f\,x)]])+8\,m$$

$$(-\frac{3}{14}(1+2\,m)\ \text{AppellF1}[\frac{7}{4},\ -\frac{1}{2}-2\,m,\ 2+2\,m,\ \frac{11}{4},\ \text{Tan}[\frac{1}{4}(-e+\frac{\pi}{2}-f\,x)]^2,\ -\text{Tan}[\frac{1}{4}(-e+\frac{\pi}{2}-f\,x)]^2]\ \text{Sec}[\frac{1}{4}(-e+\frac{\pi}{2}-f\,x)]^2$$

$$\text{Tan}[\frac{1}{4}(-e+\frac{\pi}{2}-f\,x)]+\frac{3}{14}(-\frac{1}{2}-2\,m)\ \text{AppellF1}[\frac{7}{4},\ \frac{1}{2}-2\,m,\ 1+2\,m,\ \frac{11}{4},\ \text{Tan}[\frac{1}{4}(-e+\frac{\pi}{2}-f\,x)]^2,\ -\text{Tan}[\frac{1}{4}(-e+\frac{\pi}{2}-f\,x)]^2]$$

$$\text{Sec}[\frac{1}{4}(-e+\frac{\pi}{2}-f\,x)]^2\ \text{Tan}[\frac{1}{4}(-e+\frac{\pi}{2}-f\,x)]])+(2+8\,m)\ (-\frac{3}{7}\,m\,\text{AppellF1}[\frac{7}{4},\ \frac{1}{2}-2\,m,\ 1+2\,m,\ \frac{11}{4},\ \text{Tan}[\frac{1}{4}(-e+\frac{\pi}{2}-f\,x)]^2,$$

$$-\text{Tan}[\frac{1}{4}(-e+\frac{\pi}{2}-f\,x)]^2]\ \text{Sec}[\frac{1}{4}(-e+\frac{\pi}{2}-f\,x)]^2\ \text{Tan}[\frac{1}{4}(-e+\frac{\pi}{2}-f\,x)]+\frac{3}{14}(\frac{1}{2}-2\,m)\ \text{AppellF1}[\frac{7}{4},\ \frac{3}{2}-2\,m,$$

$$2\,m,\ \frac{11}{4},\ \text{Tan}[\frac{1}{4}(-e+\frac{\pi}{2}-f\,x)]^2,\ -\text{Tan}[\frac{1}{4}(-e+\frac{\pi}{2}-f\,x)]^2]\ \text{Sec}[\frac{1}{4}(-e+\frac{\pi}{2}-f\,x)]^2\ \text{Tan}[\frac{1}{4}(-e+\frac{\pi}{2}-f\,x)]])))\Big/$$

$$(2\,(8\,m\,\text{AppellF1}[\frac{3}{4},\ -\frac{1}{2}-2\,m,\ 1+2\,m,\ \frac{7}{4},\ \text{Tan}[\frac{1}{4}(-e+\frac{\pi}{2}-f\,x)]^2,\ -\text{Tan}[\frac{1}{4}(-e+\frac{\pi}{2}-f\,x)]^2]+(2+8\,m)$$

$$\text{AppellF1}[\frac{3}{4},\ \frac{1}{2}-2\,m,\ 2\,m,\ \frac{7}{4},\ \text{Tan}[\frac{1}{4}(-e+\frac{\pi}{2}-f\,x)]^2,\ -\text{Tan}[\frac{1}{4}(-e+\frac{\pi}{2}-f\,x)]^2]-$$

$$3\,\text{AppellF1}[-\frac{1}{4},\ -\frac{1}{2}-2\,m,\ 2\,m,\ \frac{3}{4},\ \text{Tan}[\frac{1}{4}(-e+\frac{\pi}{2}-f\,x)]^2,\ -\text{Tan}[\frac{1}{4}(-e+\frac{\pi}{2}-f\,x)]^2]\ \text{Cot}[\frac{1}{4}(-e+\frac{\pi}{2}-f\,x)]^2)^2))+$$

$$(3\,\text{AppellF1}[-\frac{1}{4},\ -\frac{1}{2}-2\,m,\ 2\,m,\ \frac{3}{4},\ \text{Tan}[\frac{1}{4}(-e+\frac{\pi}{2}-f\,x)]^2,\ -\text{Tan}[\frac{1}{4}(-e+\frac{\pi}{2}-f\,x)]^2]\ \text{Cos}[\frac{1}{2}(-e+\frac{\pi}{2}-f\,x)]^{4\,m}$$

$$\text{Cos}[e+f x]$$
$$\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]$$
$$\text{Csc}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2$$
$$\left.\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)\bigg/$$

$$\left(2\sqrt{2}\left(8\,m\,\text{AppellF1}\left[\frac{3}{4},-\frac{1}{2}-2m,1+2m,\frac{7}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.\right.$$
$$(2+8m)\,\text{AppellF1}\left[\frac{3}{4},\frac{1}{2}-2m,2m,\frac{7}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]-$$
$$\left.3\,\text{AppellF1}\left[-\frac{1}{4},-\frac{1}{2}-2m,2m,\frac{3}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)$$
$$\left(\text{Cos}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]-\text{Sin}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]\right)^3$$
$$\left(\left(3\,\text{AppellF1}\left[-\frac{1}{4},-\frac{1}{2}-2m,2m,\frac{3}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right.\right.$$
$$\left.\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2m}\sqrt{\text{Cos}[e+f x]}\,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Csc}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\bigg/$$
$$\left(4\left(8\,m\,\text{AppellF1}\left[\frac{3}{4},-\frac{1}{2}-2m,1+2m,\frac{7}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+(2+8m)\right.\right.$$
$$\text{AppellF1}\left[\frac{3}{4},\frac{1}{2}-2m,2m,\frac{7}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]-3$$
$$\left.\left.\text{AppellF1}\left[-\frac{1}{4},-\frac{1}{2}-2m,2m,\frac{3}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\right)+$$
$$\left(3\,\text{AppellF1}\left[-\frac{1}{4},-\frac{1}{2}-2m,2m,\frac{3}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2m}\sqrt{\text{Cos}[e+f x]}\right.$$
$$\left.\text{Csc}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^4\right)\bigg/\left(8\left(8\,m\,\text{AppellF1}\left[\frac{3}{4},-\frac{1}{2}-2m,1+2m,\frac{7}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.\right.$$
$$(2+8m)\,\text{AppellF1}\left[\frac{3}{4},\frac{1}{2}-2m,2m,\frac{7}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]-3$$
$$\left.\left.\text{AppellF1}\left[-\frac{1}{4},-\frac{1}{2}-2m,2m,\frac{3}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\right)+$$
$$\left(3\,m\,\text{AppellF1}\left[-\frac{1}{4},-\frac{1}{2}-2m,2m,\frac{3}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{-1+2m}\right.$$
$$\left.\sqrt{\text{Cos}[e+f x]}\,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\text{Csc}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)\bigg/$$

$$\left(2\left(8\,m\,\text{AppellF1}\left[\frac{3}{4},-\frac{1}{2}-2m,1+2m,\frac{7}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+(2+8m)\right.\right.$$

$$\text{AppellF1}\left[\frac{3}{4},\frac{1}{2}-2m,2m,\frac{7}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]-3$$

$$\left.\left.\text{AppellF1}\left[-\frac{1}{4},-\frac{1}{2}-2m,2m,\frac{3}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\right)-$$

$$\left(3\,\text{AppellF1}\left[-\frac{1}{4},-\frac{1}{2}-2m,2m,\frac{3}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2m}\right.$$

$$\left.\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\text{Csc}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Sin}[e+f x]\right)\Big/$$

$$\left(4\sqrt{\text{Cos}[e+f x]}\left(8\,m\,\text{AppellF1}\left[\frac{3}{4},-\frac{1}{2}-2m,1+2m,\frac{7}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.\right.$$

$$(2+8m)\,\text{AppellF1}\left[\frac{3}{4},\frac{1}{2}-2m,2m,\frac{7}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]-3$$

$$\left.\left.\text{AppellF1}\left[-\frac{1}{4},-\frac{1}{2}-2m,2m,\frac{3}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\right)-$$

$$\left(3\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2m}\sqrt{\text{Cos}[e+f x]}\,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\text{Csc}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\left(\frac{1}{3}m\,\text{AppellF1}\left[\frac{3}{4},-\frac{1}{2}-2m,1+2m,\right.\right.\right.$$

$$\frac{7}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{1}{6}\left(-\frac{1}{2}-2m\right)\text{AppellF1}\Big[$$

$$\left.\left.\frac{3}{4},\frac{1}{2}-2m,2m,\frac{7}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)\right)\Big/$$

$$\left(2\left(8\,m\,\text{AppellF1}\left[\frac{3}{4},-\frac{1}{2}-2m,1+2m,\frac{7}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+(2+8m)\right.\right.$$

$$\text{AppellF1}\left[\frac{3}{4},\frac{1}{2}-2m,2m,\frac{7}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]-3$$

$$\left.\left.\text{AppellF1}\left[-\frac{1}{4},-\frac{1}{2}-2m,2m,\frac{3}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\right)+$$

$$\left(3\,\text{AppellF1}\left[-\frac{1}{4},-\frac{1}{2}-2m,2m,\frac{3}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2m}\sqrt{\text{Cos}[e+f x]}\,\text{Cot}\Big[\right.$$

$$\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]\text{Csc}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\left(\frac{3}{2}\text{AppellF1}\left[-\frac{1}{4},-\frac{1}{2}-2m,2m,\frac{3}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right.$$

$$\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\text{Csc}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2-3\,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\left(\frac{1}{3}m\,\text{AppellF1}\left[\frac{3}{4},-\frac{1}{2}-2m,1+2m,\frac{7}{4},\right.\right.$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{1}{6}\left(-\frac{1}{2}-2m\right)\text{AppellF1}\Big[$$

$$\frac{3}{4},\ \frac{1}{2}-2\,m,\ 2\,m,\ \frac{7}{4},\ \text{Tan}[\frac{1}{4}(-e+\frac{\pi}{2}-f\,x)]^2,\ -\text{Tan}[\frac{1}{4}(-e+\frac{\pi}{2}-f\,x)]^2]\ \text{Sec}[\frac{1}{4}(-e+\frac{\pi}{2}-f\,x)]^2\ \text{Tan}[\frac{1}{4}(-e+\frac{\pi}{2}-f\,x)])+8\,m$$

$$(-\frac{3}{14}(1+2\,m)\ \text{AppellF1}[\frac{7}{4},\ -\frac{1}{2}-2\,m,\ 2+2\,m,\ \frac{11}{4},\ \text{Tan}[\frac{1}{4}(-e+\frac{\pi}{2}-f\,x)]^2,\ -\text{Tan}[\frac{1}{4}(-e+\frac{\pi}{2}-f\,x)]^2]\ \text{Sec}[\frac{1}{4}(-e+\frac{\pi}{2}-f\,x)]^2$$

$$\text{Tan}[\frac{1}{4}(-e+\frac{\pi}{2}-f\,x)]+\frac{3}{14}(-\frac{1}{2}-2\,m)\ \text{AppellF1}[\frac{7}{4},\ \frac{1}{2}-2\,m,\ 1+2\,m,\ \frac{11}{4},\ \text{Tan}[\frac{1}{4}(-e+\frac{\pi}{2}-f\,x)]^2,\ -\text{Tan}[\frac{1}{4}(-e+\frac{\pi}{2}-f\,x)]^2]$$

$$\text{Sec}[\frac{1}{4}(-e+\frac{\pi}{2}-f\,x)]^2\ \text{Tan}[\frac{1}{4}(-e+\frac{\pi}{2}-f\,x)])+(2+8\,m)\ (-\frac{3}{7}\,m\ \text{AppellF1}[\frac{7}{4},\ \frac{1}{2}-2\,m,\ 1+2\,m,\ \frac{11}{4},\ \text{Tan}[\frac{1}{4}(-e+\frac{\pi}{2}-f\,x)]^2,$$

$$-\text{Tan}[\frac{1}{4}(-e+\frac{\pi}{2}-f\,x)]^2]\ \text{Sec}[\frac{1}{4}(-e+\frac{\pi}{2}-f\,x)]^2\ \text{Tan}[\frac{1}{4}(-e+\frac{\pi}{2}-f\,x)]+\frac{3}{14}(\frac{1}{2}-2\,m)\ \text{AppellF1}[\frac{7}{4},\ \frac{3}{2}-2\,m,$$

$$2\,m,\ \frac{11}{4},\ \text{Tan}[\frac{1}{4}(-e+\frac{\pi}{2}-f\,x)]^2,\ -\text{Tan}[\frac{1}{4}(-e+\frac{\pi}{2}-f\,x)]^2]\ \text{Sec}[\frac{1}{4}(-e+\frac{\pi}{2}-f\,x)]^2\ \text{Tan}[\frac{1}{4}(-e+\frac{\pi}{2}-f\,x)]))))\Big/$$

$$(2\ (8\,m\ \text{AppellF1}[\frac{3}{4},\ -\frac{1}{2}-2\,m,\ 1+2\,m,\ \frac{7}{4},\ \text{Tan}[\frac{1}{4}(-e+\frac{\pi}{2}-f\,x)]^2,\ -\text{Tan}[\frac{1}{4}(-e+\frac{\pi}{2}-f\,x)]^2]+(2+8\,m)$$

$$\text{AppellF1}[\frac{3}{4},\ \frac{1}{2}-2\,m,\ 2\,m,\ \frac{7}{4},\ \text{Tan}[\frac{1}{4}(-e+\frac{\pi}{2}-f\,x)]^2,\ -\text{Tan}[\frac{1}{4}(-e+\frac{\pi}{2}-f\,x)]^2]-$$

$$3\ \text{AppellF1}[-\frac{1}{4},\ -\frac{1}{2}-2\,m,\ 2\,m,\ \frac{3}{4},\ \text{Tan}[\frac{1}{4}(-e+\frac{\pi}{2}-f\,x)]^2,\ -\text{Tan}[\frac{1}{4}(-e+\frac{\pi}{2}-f\,x)]^2]\ \text{Cot}[\frac{1}{4}(-e+\frac{\pi}{2}-f\,x)]^2)^2)))-$$

$$((\text{Cos}[\frac{1}{4}(-e+\frac{\pi}{2}-f\,x)]^2)^{-1+2\,m}\ \text{Cos}[\frac{1}{2}(-e+\frac{\pi}{2}-f\,x)]^{1+2\,m}\ \sqrt{\text{Cos}[e+f\,x]}$$

$$\sqrt{\text{Cos}[\frac{1}{4}(-e+\frac{\pi}{2}-f\,x)]\ (-\text{Sin}[\frac{1}{4}(-e+\frac{\pi}{2}-f\,x)]+\text{Sin}[\frac{3}{4}(-e+\frac{\pi}{2}-f\,x)])}$$

$$(1-\text{Tan}[\frac{1}{4}(-e+\frac{\pi}{2}-f\,x)]^2)^{2\,m}$$

$$((\text{AppellF1}[-\frac{3}{4},\ -\frac{1}{2}-2\,m,\ 2\,m,\ \frac{1}{4},\ \text{Tan}[\frac{1}{4}(-e+\frac{\pi}{2}-f\,x)]^2,\ -\text{Tan}[\frac{1}{4}(-e+\frac{\pi}{2}-f\,x)]^2]\ \text{Cot}[\frac{1}{4}(-e+\frac{\pi}{2}-f\,x)]^2)\Big/$$

$$(\text{AppellF1}[-\frac{3}{4},\ -\frac{1}{2}-2\,m,\ 2\,m,\ \frac{1}{4},\ \text{Tan}[\frac{1}{4}(-e+\frac{\pi}{2}-f\,x)]^2,\ -\text{Tan}[\frac{1}{4}(-e+\frac{\pi}{2}-f\,x)]^2]-$$

$$2\ (4\,m\ \text{AppellF1}[\frac{1}{4},\ -\frac{1}{2}-2\,m,\ 1+2\,m,\ \frac{5}{4},\ \text{Tan}[\frac{1}{4}(-e+\frac{\pi}{2}-f\,x)]^2,\ -\text{Tan}[\frac{1}{4}(-e+\frac{\pi}{2}-f\,x)]^2]+$$

$$(1+4\,m)\ \text{AppellF1}[\frac{1}{4},\ \frac{1}{2}-2\,m,\ 2\,m,\ \frac{5}{4},\ \text{Tan}[\frac{1}{4}(-e+\frac{\pi}{2}-f\,x)]^2,\ -\text{Tan}[\frac{1}{4}(-e+\frac{\pi}{2}-f\,x)]^2])\ \text{Tan}[\frac{1}{4}(-e+\frac{\pi}{2}-f\,x)]^2)+$$

$$(15\ \text{AppellF1}[\frac{1}{4},\ -\frac{1}{2}-2\,m,\ 2\,m,\ \frac{5}{4},\ \text{Tan}[\frac{1}{4}(-e+\frac{\pi}{2}-f\,x)]^2,\ -\text{Tan}[\frac{1}{4}(-e+\frac{\pi}{2}-f\,x)]^2])\Big/$$

$$\left(5\,\text{AppellF1}\left[\frac{1}{4},-\frac{1}{2}-2m,2m,\frac{5}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]-\right.$$

$$2\left(4m\,\text{AppellF1}\left[\frac{5}{4},-\frac{1}{2}-2m,1+2m,\frac{9}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+\right.$$

$$\left.\left.(1+4m)\,\text{AppellF1}\left[\frac{5}{4},\frac{1}{2}-2m,2m,\frac{9}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)\right)\Big/$$

$$\left(6\left(\text{Cos}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+fx\right)\right]-\text{Sin}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+fx\right)\right]\right)^3\left(\frac{1}{12\sqrt{2}}(-1+2m)\,\text{Cos}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]\left(\text{Cos}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)^{-2+2m}\right.\right.$$

$$\text{Sin}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]\sqrt{\text{Cos}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]\left(-\text{Sin}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]+\text{Sin}\left[\frac{3}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]\right)}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)^{2m}$$

$$\left(\left(\text{AppellF1}\left[-\frac{3}{4},-\frac{1}{2}-2m,2m,\frac{1}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)\Big/\right.$$

$$\left(\text{AppellF1}\left[-\frac{3}{4},-\frac{1}{2}-2m,2m,\frac{1}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]-\right.$$

$$2\left(4m\,\text{AppellF1}\left[\frac{1}{4},-\frac{1}{2}-2m,1+2m,\frac{5}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+\right.$$

$$\left.\left.(1+4m)\,\text{AppellF1}\left[\frac{1}{4},\frac{1}{2}-2m,2m,\frac{5}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)+$$

$$\left(15\,\text{AppellF1}\left[\frac{1}{4},-\frac{1}{2}-2m,2m,\frac{5}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right)\Big/$$

$$\left(5\,\text{AppellF1}\left[\frac{1}{4},-\frac{1}{2}-2m,2m,\frac{5}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]-\right.$$

$$2\left(4m\,\text{AppellF1}\left[\frac{5}{4},-\frac{1}{2}-2m,1+2m,\frac{9}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+\right.$$

$$\left.\left.(1+4m)\,\text{AppellF1}\left[\frac{5}{4},\frac{1}{2}-2m,2m,\frac{9}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)\right)-$$

$$\left(\left(\left(\text{Cos}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)^{-1+2m}\left(\text{Cos}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]\left(-\frac{1}{4}\text{Cos}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]+\frac{3}{4}\text{Cos}\left[\frac{3}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]\right)-\frac{1}{4}\right.\right.\right.$$

$$\left.\left.\text{Sin}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]\left(-\text{Sin}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]+\text{Sin}\left[\frac{3}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]\right)\right)\right)\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)^{2m}$$

$$\left(\left(\text{AppellF1}\left[-\frac{3}{4},-\frac{1}{2}-2m,2m,\frac{1}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)\Big/\right.$$

$$\left(\text{AppellF1}\left[-\frac{3}{4},-\frac{1}{2}-2\,m,2\,m,\frac{1}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]-\right.$$

$$2\left(4\,m\,\text{AppellF1}\left[\frac{1}{4},-\frac{1}{2}-2\,m,1+2\,m,\frac{5}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.$$

$$\left.\left.(1+4\,m)\,\text{AppellF1}\left[\frac{1}{4},\frac{1}{2}-2\,m,2\,m,\frac{5}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)+$$

$$\left(15\,\text{AppellF1}\left[\frac{1}{4},-\frac{1}{2}-2\,m,2\,m,\frac{5}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\Big/$$

$$\left(5\,\text{AppellF1}\left[\frac{1}{4},-\frac{1}{2}-2\,m,2\,m,\frac{5}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]-\right.$$

$$2\left(4\,m\,\text{AppellF1}\left[\frac{5}{4},-\frac{1}{2}-2\,m,1+2\,m,\frac{9}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.$$

$$\left.\left.\left.(1+4\,m)\,\text{AppellF1}\left[\frac{5}{4},\frac{1}{2}-2\,m,2\,m,\frac{9}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\right)\right)\Big/$$

$$\left(12\sqrt{2}\,\sqrt{\text{Cos}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\left(-\text{Sin}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]+\text{Sin}\left[\frac{3}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\right)}\right)+\frac{1}{6\sqrt{2}}\,m\left(\text{Cos}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{2\,m}$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\sqrt{\text{Cos}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\left(-\text{Sin}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]+\text{Sin}\left[\frac{3}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\right)}\;\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]$$

$$\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{-1+2\,m}\left(\left(\text{AppellF1}\left[-\frac{3}{4},-\frac{1}{2}-2\,m,2\,m,\frac{1}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right.\right.$$

$$\left.\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\Big/\left(\text{AppellF1}\left[-\frac{3}{4},-\frac{1}{2}-2\,m,2\,m,\frac{1}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]-\right.$$

$$2\left(4\,m\,\text{AppellF1}\left[\frac{1}{4},-\frac{1}{2}-2\,m,1+2\,m,\frac{5}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.$$

$$\left.\left.(1+4\,m)\,\text{AppellF1}\left[\frac{1}{4},\frac{1}{2}-2\,m,2\,m,\frac{5}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)+$$

$$\left(15\,\text{AppellF1}\left[\frac{1}{4},-\frac{1}{2}-2\,m,2\,m,\frac{5}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\Big/$$

$$\left(5\,\text{AppellF1}\left[\frac{1}{4},-\frac{1}{2}-2\,m,2\,m,\frac{5}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]-\right.$$

$$2\left(4\,m\,\text{AppellF1}\left[\frac{5}{4},-\frac{1}{2}-2\,m,1+2\,m,\frac{9}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.$$

$$\left.\left.(1+4\,m)\,\text{AppellF1}\left[\frac{5}{4},\frac{1}{2}-2\,m,2\,m,\frac{9}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)-$$

$$\frac{1}{6\sqrt{2}}\left(\text{Cos}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{-1+2m}\sqrt{\text{Cos}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\left(-\text{Sin}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]+\text{Sin}\left[\frac{3}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)}$$

$$\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{2m}$$

$$\Bigg(-\Bigg(\Bigg(\text{AppellF1}\left[-\frac{3}{4},-\frac{1}{2}-2m,2m,\frac{1}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]$$

$$\text{Csc}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)\Bigg/\Bigg(2\Bigg(\text{AppellF1}\left[-\frac{3}{4},-\frac{1}{2}-2m,2m,\frac{1}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]-$$

$$2\Bigg(4m\,\text{AppellF1}\left[\frac{1}{4},-\frac{1}{2}-2m,1+2m,\frac{5}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+(1+4m)$$

$$\text{AppellF1}\left[\frac{1}{4},\frac{1}{2}-2m,2m,\frac{5}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\Bigg)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)\Bigg)\Bigg)+$$

$$\Bigg(\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg(3m\,\text{AppellF1}\left[\frac{1}{4},-\frac{1}{2}-2m,1+2m,\frac{5}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{3}{2}\left(-\frac{1}{2}-2m\right)\text{AppellF1}\Bigg[\frac{1}{4},\frac{1}{2}-2m,2m,\frac{5}{4},$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\Bigg)\Bigg)\Bigg/$$

$$\Bigg(\text{AppellF1}\left[-\frac{3}{4},-\frac{1}{2}-2m,2m,\frac{1}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]-$$

$$2\Bigg(4m\,\text{AppellF1}\left[\frac{1}{4},-\frac{1}{2}-2m,1+2m,\frac{5}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$(1+4m)\,\text{AppellF1}\left[\frac{1}{4},\frac{1}{2}-2m,2m,\frac{5}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\Bigg)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)+$$

$$\Bigg(15\Bigg(-\frac{1}{5}m\,\text{AppellF1}\left[\frac{5}{4},-\frac{1}{2}-2m,1+2m,\frac{9}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]+\frac{1}{10}\left(-\frac{1}{2}-2m\right)\text{AppellF1}\left[\frac{5}{4},\frac{1}{2}-2m,2m,\frac{9}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\Bigg)\Bigg)\Bigg/\Bigg(5\,\text{AppellF1}\Bigg[\frac{1}{4},-\frac{1}{2}-2m,2m,\frac{5}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,$$

$$-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg]-2\Bigg(4m\,\text{AppellF1}\left[\frac{5}{4},-\frac{1}{2}-2m,1+2m,\frac{9}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$(1+4m)\,\text{AppellF1}\left[\frac{5}{4},\frac{1}{2}-2m,2m,\frac{9}{4},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\Bigg)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)-$$

$$(\text{AppellF1}[-\frac{3}{4}, -\frac{1}{2}-2m, 2m, \frac{1}{4}, \text{Tan}[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)]^2, -\text{Tan}[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)]^2]\ \text{Cot}[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)]^2$$

$$(3\,m\,\text{AppellF1}[\frac{1}{4}, -\frac{1}{2}-2m, 1+2m, \frac{5}{4}, \text{Tan}[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)]^2, -\text{Tan}[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)]^2]$$

$$\text{Sec}[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)]^2\ \text{Tan}[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)] - \frac{3}{2}\left(-\frac{1}{2}-2m\right)\text{AppellF1}[\frac{1}{4}, \frac{1}{2}-2m, 2m, \frac{5}{4},$$

$$\text{Tan}[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)]^2, -\text{Tan}[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)]^2]\ \text{Sec}[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)]^2\ \text{Tan}[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)] -$$

$$(4\,m\,\text{AppellF1}[\frac{1}{4}, -\frac{1}{2}-2m, 1+2m, \frac{5}{4}, \text{Tan}[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)]^2, -\text{Tan}[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)]^2] + (1+4m)\ \text{AppellF1}[\frac{1}{4},$$

$$\frac{1}{2}-2m, 2m, \frac{5}{4}, \text{Tan}[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)]^2, -\text{Tan}[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)]^2])\ \text{Sec}[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)]^2\ \text{Tan}[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)] -$$

$$2\,\text{Tan}[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)]^2\ (4\,m\ (-\frac{1}{10}(1+2m)\ \text{AppellF1}[\frac{5}{4}, -\frac{1}{2}-2m, 2+2m, \frac{9}{4}, \text{Tan}[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)]^2,$$

$$-\text{Tan}[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)]^2]\ \text{Sec}[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)]^2\ \text{Tan}[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)] + \frac{1}{10}\left(-\frac{1}{2}-2m\right)\text{AppellF1}[\frac{5}{4}, \frac{1}{2}-2m,$$

$$1+2m, \frac{9}{4}, \text{Tan}[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)]^2, -\text{Tan}[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)]^2]\ \text{Sec}[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)]^2\ \text{Tan}[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)]) +$$

$$(1+4m)\ (-\frac{1}{5}m\,\text{AppellF1}[\frac{5}{4}, \frac{1}{2}-2m, 1+2m, \frac{9}{4}, \text{Tan}[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)]^2, -\text{Tan}[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)]^2]$$

$$\text{Sec}[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)]^2\ \text{Tan}[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)] + \frac{1}{10}\left(\frac{1}{2}-2m\right)\text{AppellF1}[\frac{5}{4}, \frac{3}{2}-2m, 2m, \frac{9}{4},$$

$$\text{Tan}[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)]^2, -\text{Tan}[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)]^2]\ \text{Sec}[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)]^2\ \text{Tan}[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)])))))\Big/$$

$$(\text{AppellF1}[-\frac{3}{4}, -\frac{1}{2}-2m, 2m, \frac{1}{4}, \text{Tan}[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)]^2, -\text{Tan}[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)]^2] - 2\ (4\,m\,\text{AppellF1}[\frac{1}{4},$$

$$-\frac{1}{2}-2m, 1+2m, \frac{5}{4}, \text{Tan}[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)]^2, -\text{Tan}[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)]^2] + (1+4m)$$

$$\text{AppellF1}[\frac{1}{4}, \frac{1}{2}-2m, 2m, \frac{5}{4}, \text{Tan}[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)]^2, -\text{Tan}[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)]^2])\ \text{Tan}[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)]^2)^2 -$$

$$(15\,\text{AppellF1}[\frac{1}{4}, -\frac{1}{2}-2m, 2m, \frac{5}{4}, \text{Tan}[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)]^2, -\text{Tan}[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)]^2]$$

$$(-(4\,m\,\text{AppellF1}[\frac{5}{4}, -\frac{1}{2}-2m, 1+2m, \frac{9}{4}, \text{Tan}[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)]^2, -\text{Tan}[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)]^2] + (1+4m)\ \text{AppellF1}[\frac{5}{4}, \frac{1}{2}-2m,$$

$$2m, \frac{9}{4}, \text{Tan}[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)]^2, -\text{Tan}[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)]^2])\ \text{Sec}[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)]^2\ \text{Tan}[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)] +$$

$$5\left(-\frac{1}{5}\,m\,\text{AppellF1}\left[\frac{5}{4},-\frac{1}{2}-2m,1+2m,\frac{9}{4},\tan\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\tan\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right.$$

$$\sec\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\tan\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]+\frac{1}{10}\left(-\frac{1}{2}-2m\right)\text{AppellF1}\left[\frac{5}{4},\frac{1}{2}-2m,2m,\frac{9}{4},\right.$$

$$\left.\left.\tan\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\tan\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\sec\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\tan\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)-$$

$$2\tan\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\left(4m\left(-\frac{5}{18}(1+2m)\,\text{AppellF1}\left[\frac{9}{4},-\frac{1}{2}-2m,2+2m,\frac{13}{4},\tan\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\right.\right.\right.$$

$$\left.-\tan\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\sec\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\tan\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]+\frac{5}{18}\left(-\frac{1}{2}-2m\right)\text{AppellF1}\left[\frac{9}{4},\frac{1}{2}-2m,\right.$$

$$\left.\left.1+2m,\frac{13}{4},\tan\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\tan\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\sec\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\tan\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)+$$

$$(1+4m)\left(-\frac{5}{9}\,m\,\text{AppellF1}\left[\frac{9}{4},\frac{1}{2}-2m,1+2m,\frac{13}{4},\tan\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\tan\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right.$$

$$\sec\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\tan\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]+\frac{5}{18}\left(\frac{1}{2}-2m\right)\text{AppellF1}\left[\frac{9}{4},\frac{3}{2}-2m,2m,\frac{13}{4},\right.$$

$$\left.\left.\left.\left.\left.\tan\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\tan\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\sec\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\tan\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)\right)\right)\right)\right)\Big/$$

$$\left(5\,\text{AppellF1}\left[\frac{1}{4},-\frac{1}{2}-2m,2m,\frac{5}{4},\tan\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\tan\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]-2\left(4m\,\text{AppellF1}\left[\frac{5}{4},\right.\right.\right.$$

$$\left.-\frac{1}{2}-2m,1+2m,\frac{9}{4},\tan\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\tan\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+(1+4m)$$

$$\left.\left.\left.\left.\text{AppellF1}\left[\frac{5}{4},\frac{1}{2}-2m,2m,\frac{9}{4},\tan\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\tan\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\tan\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^2\right)\right)\right)$$

- **Problem 158: Attempted integration timed out after 120 seconds.**

$$\int\frac{(g\cos[e+f x])^{3/2}\,(a+a\sin[e+f x])^m}{(c-c\sin[e+f x])^3}\,dx$$

Optimal (type 5, 93 leaves, 4 steps):

$$\left(2^{\frac{9}{4}+m}\,g^5\,\text{Hypergeometric2F1}\left[-\frac{7}{4},-\frac{1}{4}-m,-\frac{3}{4},\frac{1}{2}(1-\sin[e+f x])\right](1+\sin[e+f x])^{-\frac{1}{4}-m}(a+a\sin[e+f x])^{2+m}\right)\Big/\left(7\,a^2\,c^3\,f\,(g\cos[e+f x])^{7/2}\right)$$

Result (type 1, 1 leaves):

???

Problem 159: Attempted integration timed out after 120 seconds.

$$\int (g\,\text{Cos}[e+f\,x])^{3/2}\,(a+a\,\text{Sin}[e+f\,x])^m\,(c-c\,\text{Sin}[e+f\,x])^{5/2}\,dx$$

Optimal (type 5, 114 leaves, 4 steps):

$$-\frac{1}{15\,f\,g^6}2^{\frac{9}{4}+m}\,a^3\,c^2\,(g\,\text{Cos}[e+f\,x])^{15/2}\,\text{Hypergeometric2F1}\left[\frac{15}{4},\,-\frac{1}{4}-m,\,\frac{19}{4},\,\frac{1}{2}\,(1-\text{Sin}[e+f\,x])\right]$$
$$\text{Sec}[e+f\,x]\,(1+\text{Sin}[e+f\,x])^{-\frac{1}{4}-m}\,(a+a\,\text{Sin}[e+f\,x])^{-3+m}\,\sqrt{c-c\,\text{Sin}[e+f\,x]}$$

Result (type 1, 1 leaves):

???

Problem 160: Attempted integration timed out after 120 seconds.

$$\int (g\,\text{Cos}[e+f\,x])^{3/2}\,(a+a\,\text{Sin}[e+f\,x])^m\,(c-c\,\text{Sin}[e+f\,x])^{3/2}\,dx$$

Optimal (type 5, 112 leaves, 4 steps):

$$-\frac{1}{11\,f\,g^4}2^{\frac{9}{4}+m}\,a^2\,c\,(g\,\text{Cos}[e+f\,x])^{11/2}\,\text{Hypergeometric2F1}\left[\frac{11}{4},\,-\frac{1}{4}-m,\,\frac{15}{4},\,\frac{1}{2}\,(1-\text{Sin}[e+f\,x])\right]$$
$$\text{Sec}[e+f\,x]\,(1+\text{Sin}[e+f\,x])^{-\frac{1}{4}-m}\,(a+a\,\text{Sin}[e+f\,x])^{-2+m}\,\sqrt{c-c\,\text{Sin}[e+f\,x]}$$

Result (type 1, 1 leaves):

???

Problem 161: Attempted integration timed out after 120 seconds.

$$\int (g\,\text{Cos}[e+f\,x])^{3/2}\,(a+a\,\text{Sin}[e+f\,x])^m\,\sqrt{c-c\,\text{Sin}[e+f\,x]}\,dx$$

Optimal (type 5, 109 leaves, 4 steps):

$$-\frac{1}{7\,f\,g^2}2^{\frac{9}{4}+m}\,a\,(g\,\text{Cos}[e+f\,x])^{7/2}\,\text{Hypergeometric2F1}\left[\frac{7}{4},\,-\frac{1}{4}-m,\,\frac{11}{4},\,\frac{1}{2}\,(1-\text{Sin}[e+f\,x])\right]$$
$$\text{Sec}[e+f\,x]\,(1+\text{Sin}[e+f\,x])^{-\frac{1}{4}-m}\,(a+a\,\text{Sin}[e+f\,x])^{-1+m}\,\sqrt{c-c\,\text{Sin}[e+f\,x]}$$

Result (type 1, 1 leaves):

???

Problem 162: Attempted integration timed out after 120 seconds.

$$\int \frac{(g\,\text{Cos}[e+f\,x])^{3/2}\,(a+a\,\text{Sin}[e+f\,x])^m}{\sqrt{c-c\,\text{Sin}[e+f\,x]}}\,dx$$

Optimal (type 5, 106 leaves, 4 steps):

$$-\frac{1}{3 f \sqrt{c-c \operatorname{Sin}[e+f x]}} 2^{\frac{9}{4}+m} a \operatorname{Cos}[e+f x] (g \operatorname{Cos}[e+f x])^{3/2} \text{Hypergeometric2F1}\left[\frac{3}{4},-\frac{1}{4}-m,\frac{7}{4},\frac{1}{2}(1-\operatorname{Sin}[e+f x])\right](1+\operatorname{Sin}[e+f x])^{-\frac{1}{4}-m}(a+a \operatorname{Sin}[e+f x])^{-1+m}$$

Result (type 1, 1 leaves) :

???

Problem 163: Attempted integration timed out after 120 seconds.

$$\int \frac{(g \operatorname{Cos}[e+f x])^{3/2} (a+a \operatorname{Sin}[e+f x])^m}{(c-c \operatorname{Sin}[e+f x])^{3/2}} \, dx$$

Optimal (type 5, 106 leaves, 4 steps) :

$$\left(2^{\frac{9}{4}+m} g^2 \operatorname{Cos}[e+f x] \text{Hypergeometric2F1}\left[-\frac{1}{4},-\frac{1}{4}-m,\frac{3}{4},\frac{1}{2}(1-\operatorname{Sin}[e+f x])\right](1+\operatorname{Sin}[e+f x])^{-\frac{1}{4}-m}(a+a \operatorname{Sin}[e+f x])^m\right) \Big/ \left(c f \sqrt{g \operatorname{Cos}[e+f x]} \sqrt{c-c \operatorname{Sin}[e+f x]}\right)$$

Result (type 1, 1 leaves) :

???

Problem 164: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{(g \operatorname{Cos}[e+f x])^{3/2} (a+a \operatorname{Sin}[e+f x])^m}{(c-c \operatorname{Sin}[e+f x])^{5/2}} \, dx$$

Optimal (type 5, 114 leaves, 4 steps) :

$$\left(2^{\frac{9}{4}+m} g^4 \operatorname{Cos}[e+f x] \text{Hypergeometric2F1}\left[-\frac{5}{4},-\frac{1}{4}-m,-\frac{1}{4},\frac{1}{2}(1-\operatorname{Sin}[e+f x])\right](1+\operatorname{Sin}[e+f x])^{-\frac{1}{4}-m}(a+a \operatorname{Sin}[e+f x])^{1+m}\right) \Big/ \left(5 a c^2 f (g \operatorname{Cos}[e+f x])^{5/2} \sqrt{c-c \operatorname{Sin}[e+f x]}\right)$$

Result (type 6, 20 476 leaves) : Display of huge result suppressed!

Problem 165: Attempted integration timed out after 120 seconds.

$$\int \frac{(g \operatorname{Cos}[e+f x])^{3/2} (a+a \operatorname{Sin}[e+f x])^m}{\sqrt{c-c \operatorname{Sin}[e+f x]}} \, dx$$

Optimal (type 5, 106 leaves, 4 steps) :

$$-\frac{1}{3 f \sqrt{c-c \operatorname{Sin}[e+f x]}} 2^{\frac{9}{4}+m} a \operatorname{Cos}[e+f x] (g \operatorname{Cos}[e+f x])^{3/2} \text{Hypergeometric2F1}\left[\frac{3}{4},-\frac{1}{4}-m,\frac{7}{4},\frac{1}{2}(1-\operatorname{Sin}[e+f x])\right](1+\operatorname{Sin}[e+f x])^{-\frac{1}{4}-m}(a+a \operatorname{Sin}[e+f x])^{-1+m}$$

Result (type 1, 1 leaves):

???

Problem 166: Attempted integration timed out after 120 seconds.

$$\int \frac{(g \operatorname{Cos}[e+f x])^{3/2} (c+c \operatorname{Sin}[e+f x])^m}{\sqrt{a-a \operatorname{Sin}[e+f x]}} \, dx$$

Optimal (type 5, 106 leaves, 4 steps):

$$-\frac{1}{3 f \sqrt{a-a \operatorname{Sin}[e+f x]}} 2^{\frac{9}{4}+m} c \operatorname{Cos}[e+f x] (g \operatorname{Cos}[e+f x])^{3/2} \operatorname{Hypergeometric2F1}\left[\frac{3}{4}, -\frac{1}{4}-m, \frac{7}{4}, \frac{1}{2} (1-\operatorname{Sin}[e+f x])\right] (1+\operatorname{Sin}[e+f x])^{-\frac{1}{4}-m} (c+c \operatorname{Sin}[e+f x])^{-1+m}$$

Result (type 1, 1 leaves):

???

Problem 167: Result more than twice size of optimal antiderivative.

$$\int (g \operatorname{Cos}[e+f x])^{3/2} (a+a \operatorname{Sin}[e+f x])^m (c-c \operatorname{Sin}[e+f x])^{-3-m} \, dx$$

Optimal (type 5, 123 leaves, 4 steps):

$$\frac{1}{c^2 f g (5+4 m)} 2^{-\frac{3}{4}-m} (g \operatorname{Cos}[e+f x])^{5/2} \operatorname{Hypergeometric2F1}\left[\frac{1}{4} (5+4 m), \frac{1}{4} (11+4 m), \frac{1}{4} (9+4 m), \frac{1}{2} (1+\operatorname{Sin}[e+f x])\right] (1-\operatorname{Sin}[e+f x])^{-\frac{1}{4}+m} (a+a \operatorname{Sin}[e+f x])^m (c-c \operatorname{Sin}[e+f x])^{-1-m}$$

Result (type 5, 2502 leaves):

$$\left(2^{-4-m} \left(\operatorname{Cos}\left[\frac{1}{4} \left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{-1+2 m} \sqrt{\operatorname{Cos}[e+f x]} (g \operatorname{Cos}[e+f x])^{3/2} \right.$$
$$\left(\left(-3+8 m+16 m^2\right) \operatorname{Cot}\left[\frac{1}{4} \left(-e+\frac{\pi}{2}-f x\right)\right]^4 \operatorname{Hypergeometric2F1}\left[-\frac{3}{2}-2 m, -\frac{7}{4}-m, -\frac{3}{4}-m, \operatorname{Tan}\left[\frac{1}{4} \left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$
$$(7+4 m) \left(2 (-1+4 m) \operatorname{Cot}\left[\frac{1}{4} \left(-e+\frac{\pi}{2}-f x\right)\right]^2 \operatorname{Hypergeometric2F1}\left[-\frac{3}{2}-2 m, -\frac{3}{4}-m, \frac{1}{4}-m, \operatorname{Tan}\left[\frac{1}{4} \left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$
$$\left.\left.(3+4 m) \operatorname{Hypergeometric2F1}\left[-\frac{3}{2}-2 m, \frac{1}{4}-m, \frac{5}{4}-m, \operatorname{Tan}\left[\frac{1}{4} \left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\right)$$
$$\operatorname{Sin}\left[\frac{1}{2} \left(-e+\frac{\pi}{2}-f x\right)\right]^{-2 m} \left(\operatorname{Cos}\left[\frac{1}{2} (e+f x)\right]-\operatorname{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^{-2 (-3-m)} (a+a \operatorname{Sin}[e+f x])^m (c-c \operatorname{Sin}[e+f x])^{-3-m}$$
$$\left.\left(\operatorname{Cos}\left[\frac{\pi}{4}+\frac{1}{2} \left(e-\frac{\pi}{2}+f x\right)\right]-\operatorname{Sin}\left[\frac{\pi}{4}+\frac{1}{2} \left(e-\frac{\pi}{2}+f x\right)\right]\right)^{-6-2 m}\right) \Big/$$

$$\left(f\,(-1+4m)\,(3+4m)\,(7+4m)\,\sqrt{1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}\right.$$

$$\left(-\frac{1}{(-1+4m)\,(3+4m)\,(7+4m)\,\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{3/2}}\,2^{-6-m}\left(\text{Cos}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{-1+2m}\sqrt{\text{Cos}[e+f x]}\right.$$

$$\left(\left(-3+8m+16m^2\right)\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^4\text{Hypergeometric2F1}\left[-\frac{3}{2}-2m,-\frac{7}{4}-m,-\frac{3}{4}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$(7+4m)\left(2\,(-1+4m)\,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Hypergeometric2F1}\left[-\frac{3}{2}-2m,-\frac{3}{4}-m,\frac{1}{4}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$\left.\left.(3+4m)\,\text{Hypergeometric2F1}\left[-\frac{3}{2}-2m,\frac{1}{4}-m,\frac{5}{4}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\right)\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2$$

$$\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{-2m}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]+\frac{1}{(-1+4m)\,(3+4m)\,(7+4m)\,\sqrt{1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}}$$

$$2^{-4-m}\,m\left(\text{Cos}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{-1+2m}\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\sqrt{\text{Cos}[e+f x]}$$

$$\left(\left(-3+8m+16m^2\right)\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^4\text{Hypergeometric2F1}\left[-\frac{3}{2}-2m,-\frac{7}{4}-m,-\frac{3}{4}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$(7+4m)\left(2\,(-1+4m)\,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Hypergeometric2F1}\left[-\frac{3}{2}-2m,-\frac{3}{4}-m,\frac{1}{4}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$\left.\left.(3+4m)\,\text{Hypergeometric2F1}\left[-\frac{3}{2}-2m,\frac{1}{4}-m,\frac{5}{4}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\right)\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{-1-2m}+$$

$$\frac{1}{(-1+4m)\,(3+4m)\,(7+4m)\,\sqrt{1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}}\,2^{-5-m}\,(-1+2m)\,\text{Cos}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\left(\text{Cos}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{-2+2m}$$

$$\sqrt{\text{Cos}[e+f x]}\,\left(\left(-3+8m+16m^2\right)\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^4\text{Hypergeometric2F1}\left[-\frac{3}{2}-2m,-\frac{7}{4}-m,-\frac{3}{4}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$(7+4m)\left(2\,(-1+4m)\,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Hypergeometric2F1}\left[-\frac{3}{2}-2m,-\frac{3}{4}-m,\frac{1}{4}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$(3+4\,m)\ \text{Hypergeometric2F1}\left[-\frac{3}{2}-2\,m,\ \frac{1}{4}-m,\ \frac{5}{4}-m,\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\Big)\Big)\Big)\ \text{Sin}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\ \text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{-2\,m}-$$

$$\Big(2^{-5-m}\left(\text{Cos}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{-1+2\,m}\Big(\left(-3+8\,m+16\,m^2\right)\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\ \text{Hypergeometric2F1}\Big[-\frac{3}{2}-2\,m,\ -\frac{7}{4}-m,\ -\frac{3}{4}-m,$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]+(7+4\,m)\ \Big(2\,(-1+4\,m)\ \text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\ \text{Hypergeometric2F1}\Big[-\frac{3}{2}-2\,m,\ -\frac{3}{4}-m,\ \frac{1}{4}-$$

$$m,\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]+(3+4\,m)\ \text{Hypergeometric2F1}\left[-\frac{3}{2}-2\,m,\ \frac{1}{4}-m,\ \frac{5}{4}-m,\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\Big)\Big)$$

$$\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{-2\,m}\ \text{Sin}[e+f\,x]\Big)\Big/\left((-1+4\,m)\ (3+4\,m)\ (7+4\,m)\ \sqrt{\text{Cos}[e+f\,x]}\ \sqrt{1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}\right)-$$

$$\frac{1}{(-1+4\,m)\ (3+4\,m)\ (7+4\,m)\ \sqrt{1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}}\ 2^{-4-m}\left(\text{Cos}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{-1+2\,m}\sqrt{\text{Cos}[e+f\,x]}\ \text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{-2\,m}$$

$$\Big(-\left(-3+8\,m+16\,m^2\right)\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^3\text{Csc}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\ \text{Hypergeometric2F1}\left[-\frac{3}{2}-2\,m,\ -\frac{7}{4}-m,\ -\frac{3}{4}-m,\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+$$

$$\frac{1}{2}\left(-\frac{7}{4}-m\right)\left(-3+8\,m+16\,m^2\right)\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^3\text{Csc}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2$$

$$\left(-\text{Hypergeometric2F1}\left[-\frac{3}{2}-2\,m,\ -\frac{7}{4}-m,\ -\frac{3}{4}-m,\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{\frac{3}{2}+2\,m}\right)+(7+4\,m)$$

$$\Big(-(-1+4\,m)\ \text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\text{Csc}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\ \text{Hypergeometric2F1}\left[-\frac{3}{2}-2\,m,\ -\frac{3}{4}-m,\ \frac{1}{4}-m,\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+$$

$$\left(-\frac{3}{4}-m\right)(-1+4\,m)\ \text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\text{Csc}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big(-\text{Hypergeometric2F1}\Big[-\frac{3}{2}-2\,m,\ -\frac{3}{4}-m,\ \frac{1}{4}-m,$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]+\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{\frac{3}{2}+2\,m}\Big)+\frac{1}{2}\left(\frac{1}{4}-m\right)(3+4\,m)\ \text{Csc}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]$$

$$\left(-\text{Hypergeometric2F1}\left[-\frac{3}{2}-2\,m,\ \frac{1}{4}-m,\ \frac{5}{4}-m,\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{\frac{3}{2}+2\,m}\right)\Big)\Big)\Big)$$

- **Problem 169: Attempted integration timed out after 120 seconds.**

$$\int (g\,\mathrm{Cos}[e+f\,x])^{3/2}\,(a+a\,\mathrm{Sin}[e+f\,x])^m\,(c-c\,\mathrm{Sin}[e+f\,x])^{-1-m}\,dx$$

Optimal (type 5, 120 leaves, 4 steps):

$$\frac{1}{f\,g\,(5+4\,m)}2^{\frac{5}{4}-m}\,(g\,\mathrm{Cos}[e+f\,x])^{5/2}\,\mathrm{Hypergeometric2F1}\Big[\frac{1}{4}\,(3+4\,m),\,\frac{1}{4}\,(5+4\,m),\,\frac{1}{4}\,(9+4\,m),\,\frac{1}{2}\,(1+\mathrm{Sin}[e+f\,x])\Big]$$
$$(1-\mathrm{Sin}[e+f\,x])^{-\frac{1}{4}+m}\,(a+a\,\mathrm{Sin}[e+f\,x])^m\,(c-c\,\mathrm{Sin}[e+f\,x])^{-1-m}$$

Result (type 1, 1 leaves):

???

Problem 170: Unable to integrate problem.

$$\int (g\,\mathrm{Cos}[e+f\,x])^{3/2}\,(a+a\,\mathrm{Sin}[e+f\,x])^m\,(c-c\,\mathrm{Sin}[e+f\,x])^{-m}\,dx$$

Optimal (type 5, 121 leaves, 4 steps):

$$\frac{1}{f\,g\,(5+4\,m)}2^{\frac{9}{4}-m}\,c\,(g\,\mathrm{Cos}[e+f\,x])^{5/2}\,\mathrm{Hypergeometric2F1}\Big[\frac{1}{4}\,(-1+4\,m),\,\frac{1}{4}\,(5+4\,m),\,\frac{1}{4}\,(9+4\,m),\,\frac{1}{2}\,(1+\mathrm{Sin}[e+f\,x])\Big]$$
$$(1-\mathrm{Sin}[e+f\,x])^{-\frac{1}{4}+m}\,(a+a\,\mathrm{Sin}[e+f\,x])^m\,(c-c\,\mathrm{Sin}[e+f\,x])^{-1-m}$$

Result (type 8, 42 leaves):

$$\int (g\,\mathrm{Cos}[e+f\,x])^{3/2}\,(a+a\,\mathrm{Sin}[e+f\,x])^m\,(c-c\,\mathrm{Sin}[e+f\,x])^{-m}\,dx$$

Problem 171: Attempted integration timed out after 120 seconds.

$$\int (g\,\mathrm{Cos}[e+f\,x])^{3/2}\,(a+a\,\mathrm{Sin}[e+f\,x])^m\,(c-c\,\mathrm{Sin}[e+f\,x])^{1-m}\,dx$$

Optimal (type 5, 123 leaves, 4 steps):

$$\frac{1}{f\,g\,(5+4\,m)}2^{\frac{13}{4}-m}\,c^2\,(g\,\mathrm{Cos}[e+f\,x])^{5/2}\,\mathrm{Hypergeometric2F1}\Big[\frac{1}{4}\,(-5+4\,m),\,\frac{1}{4}\,(5+4\,m),\,\frac{1}{4}\,(9+4\,m),\,\frac{1}{2}\,(1+\mathrm{Sin}[e+f\,x])\Big]$$
$$(1-\mathrm{Sin}[e+f\,x])^{-\frac{1}{4}+m}\,(a+a\,\mathrm{Sin}[e+f\,x])^m\,(c-c\,\mathrm{Sin}[e+f\,x])^{-1-m}$$

Result (type 1, 1 leaves):

???

Problem 172: Attempted integration timed out after 120 seconds.

$$\int (g\,\mathrm{Cos}[e+f\,x])^{3/2}\,(a+a\,\mathrm{Sin}[e+f\,x])^m\,(c-c\,\mathrm{Sin}[e+f\,x])^{2-m}\,dx$$

Optimal (type 5, 123 leaves, 4 steps):

$$\frac{1}{f g (5+4 m)} 2^{\frac{17}{4}-m} c^3 (g \,\text{Cos}[e+f x])^{5/2} \,\text{Hypergeometric2F1}\left[\frac{1}{4}(-9+4 m), \frac{1}{4}(5+4 m), \frac{1}{4}(9+4 m), \frac{1}{2}(1+\text{Sin}[e+f x])\right] (1-\text{Sin}[e+f x])^{-\frac{1}{4}+m} (a+a \,\text{Sin}[e+f x])^m (c-c \,\text{Sin}[e+f x])^{-1-m}$$

Result (type 1, 1 leaves) :

???

- **Problem 174: Attempted integration timed out after 120 seconds.**

$$\int (g \,\text{Cos}[e+f x])^{1-2 m} (a+a \,\text{Sin}[e+f x])^m (c-c \,\text{Sin}[e+f x])^{-1+m} \,dx$$

Optimal (type 3, 57 leaves, 4 steps) :

$$-\frac{g (g \,\text{Cos}[e+f x])^{-2 m} \,\text{Log}[1-\text{Sin}[e+f x]] (a+a \,\text{Sin}[e+f x])^m (c-c \,\text{Sin}[e+f x])^m}{c f}$$

Result (type 1, 1 leaves) :

???

- **Problem 175: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int (g \,\text{Cos}[e+f x])^{5-2 m} (a+a \,\text{Sin}[e+f x])^m (c-c \,\text{Sin}[e+f x])^n \,dx$$

Optimal (type 3, 203 leaves, 3 steps) :

$$-\frac{8 a^3 (g \,\text{Cos}[e+f x])^{6-2 m} (a+a \,\text{Sin}[e+f x])^{-3+m} (c-c \,\text{Sin}[e+f x])^n}{f g (3-m+n) (4-m+n) (5-m+n)} - \frac{4 a^2 (g \,\text{Cos}[e+f x])^{6-2 m} (a+a \,\text{Sin}[e+f x])^{-2+m} (c-c \,\text{Sin}[e+f x])^n}{f g (4-m+n) (5-m+n)} - \frac{a (g \,\text{Cos}[e+f x])^{6-2 m} (a+a \,\text{Sin}[e+f x])^{-1+m} (c-c \,\text{Sin}[e+f x])^n}{f g (5-m+n)}$$

Result (type 3, 1513 leaves) :

$$\frac{1}{f} \text{Cos}[e+f x]^{-5+2 n} (g \,\text{Cos}[e+f x])^{5-2 m} (a (1+\text{Sin}[e+f x]))^m (c-c \,\text{Sin}[e+f x])^{n-\frac{n (\text{Log}[a (1+\text{Sin}[e+f x])]+\text{Log}[c-c \,\text{Sin}[e+f x]])}{\text{Log}[c-c \,\text{Sin}[e+f x]]}}$$
$$\left(\frac{e^{n (-2 \,\text{Log}[\text{Cos}[e+f x]]+\text{Log}[a (1+\text{Sin}[e+f x])]+\text{Log}[c-c \,\text{Sin}[e+f x]])} \left(256-41 m+3 m^2+41 n-6 m n+3 n^2\right)}{8 (-5+m-n) (-4+m-n) (-3+m-n)} + \right.$$
$$\left(\left(300-23 m+m^2+23 n-2 m n+n^2\right) \left(-\frac{1}{16} i e^{n (-2 \,\text{Log}[\text{Cos}[e+f x]]+\text{Log}[a (1+\text{Sin}[e+f x])]+\text{Log}[c-c \,\text{Sin}[e+f x]])} \text{Cos}[e+f x] - \right.\right.$$
$$\left.\left.\frac{1}{16} e^{n (-2 \,\text{Log}[\text{Cos}[e+f x]]+\text{Log}[a (1+\text{Sin}[e+f x])]+\text{Log}[c-c \,\text{Sin}[e+f x]])} \text{Sin}[e+f x]\right)\right) \Big/ ((-5+m-n) (-4+m-n) (-3+m-n)) +$$
$$\left(\left(300-23 m+m^2+23 n-2 m n+n^2\right) \left(\frac{1}{16} i e^{n (-2 \,\text{Log}[\text{Cos}[e+f x]]+\text{Log}[a (1+\text{Sin}[e+f x])]+\text{Log}[c-c \,\text{Sin}[e+f x]])} \text{Cos}[e+f x] - \right.\right.$$

$$\frac{1}{16} e^{n\,(-2\,\text{Log}[\text{Cos}[e+f x]]+\text{Log}[a\,(1+\text{Sin}[e+f x])]+\text{Log}[c-c\,\text{Sin}[e+f x]])}\,\text{Sin}[e+f x]\Big)\Big)\Big/\,((-5+m-n)\,(-4+m-n)\,(-3+m-n))\,+$$

$$\Big(\left(-11\,m+m^2+11\,n-2\,m\,n+n^2\right)\Big(\frac{1}{4} e^{n\,(-2\,\text{Log}[\text{Cos}[e+f x]]+\text{Log}[a\,(1+\text{Sin}[e+f x])]+\text{Log}[c-c\,\text{Sin}[e+f x]])}\,\text{Cos}[2\,(e+f x)]\,-$$

$$\frac{1}{4}\,i\,e^{n\,(-2\,\text{Log}[\text{Cos}[e+f x]]+\text{Log}[a\,(1+\text{Sin}[e+f x])]+\text{Log}[c-c\,\text{Sin}[e+f x]])}\,\text{Sin}[2\,(e+f x)]\Big)\Big)\Big/\,((-5+m-n)\,(-4+m-n)\,(-3+m-n))\,+$$

$$\Big(\left(-11\,m+m^2+11\,n-2\,m\,n+n^2\right)\Big(\frac{1}{4} e^{n\,(-2\,\text{Log}[\text{Cos}[e+f x]]+\text{Log}[a\,(1+\text{Sin}[e+f x])]+\text{Log}[c-c\,\text{Sin}[e+f x]])}\,\text{Cos}[2\,(e+f x)]\,+$$

$$\frac{1}{4}\,i\,e^{n\,(-2\,\text{Log}[\text{Cos}[e+f x]]+\text{Log}[a\,(1+\text{Sin}[e+f x])]+\text{Log}[c-c\,\text{Sin}[e+f x]])}\,\text{Sin}[2\,(e+f x)]\Big)\Big)\Big/\,((-5+m-n)\,(-4+m-n)\,(-3+m-n))\,+$$

$$\Big(\left(100-53\,m+3\,m^2+53\,n-6\,m\,n+3\,n^2\right)\Big(-\frac{1}{32}\,i\,e^{n\,(-2\,\text{Log}[\text{Cos}[e+f x]]+\text{Log}[a\,(1+\text{Sin}[e+f x])]+\text{Log}[c-c\,\text{Sin}[e+f x]])}\,\text{Cos}[3\,(e+f x)]\,-$$

$$\frac{1}{32} e^{n\,(-2\,\text{Log}[\text{Cos}[e+f x]]+\text{Log}[a\,(1+\text{Sin}[e+f x])]+\text{Log}[c-c\,\text{Sin}[e+f x]])}\,\text{Sin}[3\,(e+f x)]\Big)\Big)\Big/\,((-5+m-n)\,(-4+m-n)\,(-3+m-n))\,+$$

$$\Big(\left(100-53\,m+3\,m^2+53\,n-6\,m\,n+3\,n^2\right)\Big(\frac{1}{32}\,i\,e^{n\,(-2\,\text{Log}[\text{Cos}[e+f x]]+\text{Log}[a\,(1+\text{Sin}[e+f x])]+\text{Log}[c-c\,\text{Sin}[e+f x]])}\,\text{Cos}[3\,(e+f x)]\,-$$

$$\frac{1}{32} e^{n\,(-2\,\text{Log}[\text{Cos}[e+f x]]+\text{Log}[a\,(1+\text{Sin}[e+f x])]+\text{Log}[c-c\,\text{Sin}[e+f x]])}\,\text{Sin}[3\,(e+f x)]\Big)\Big)\Big/\,((-5+m-n)\,(-4+m-n)\,(-3+m-n))\,+$$

$$\frac{1}{(-5+m-n)\,(-4+m-n)}(m-n)\Big(\frac{1}{16} e^{n\,(-2\,\text{Log}[\text{Cos}[e+f x]]+\text{Log}[a\,(1+\text{Sin}[e+f x])]+\text{Log}[c-c\,\text{Sin}[e+f x]])}\,\text{Cos}[4\,(e+f x)]\,-$$

$$\frac{1}{16}\,i\,e^{n\,(-2\,\text{Log}[\text{Cos}[e+f x]]+\text{Log}[a\,(1+\text{Sin}[e+f x])]+\text{Log}[c-c\,\text{Sin}[e+f x]])}\,\text{Sin}[4\,(e+f x)]\Big)\,+$$

$$\frac{1}{(-5+m-n)\,(-4+m-n)}(m-n)\Big(\frac{1}{16} e^{n\,(-2\,\text{Log}[\text{Cos}[e+f x]]+\text{Log}[a\,(1+\text{Sin}[e+f x])]+\text{Log}[c-c\,\text{Sin}[e+f x]])}\,\text{Cos}[4\,(e+f x)]\,+$$

$$\frac{1}{16}\,i\,e^{n\,(-2\,\text{Log}[\text{Cos}[e+f x]]+\text{Log}[a\,(1+\text{Sin}[e+f x])]+\text{Log}[c-c\,\text{Sin}[e+f x]])}\,\text{Sin}[4\,(e+f x)]\Big)\,+$$

$$\frac{1}{-5+m-n}\Big(-\frac{1}{32}\,i\,e^{n\,(-2\,\text{Log}[\text{Cos}[e+f x]]+\text{Log}[a\,(1+\text{Sin}[e+f x])]+\text{Log}[c-c\,\text{Sin}[e+f x]])}\,\text{Cos}[5\,(e+f x)]\,-$$

$$\frac{1}{32} e^{n\,(-2\,\text{Log}[\text{Cos}[e+f x]]+\text{Log}[a\,(1+\text{Sin}[e+f x])]+\text{Log}[c-c\,\text{Sin}[e+f x]])}\,\text{Sin}[5\,(e+f x)]\Big)\,+$$

$$\frac{1}{-5+m-n}\Big(\frac{1}{32}\,i\,e^{n\,(-2\,\text{Log}[\text{Cos}[e+f x]]+\text{Log}[a\,(1+\text{Sin}[e+f x])]+\text{Log}[c-c\,\text{Sin}[e+f x]])}\,\text{Cos}[5\,(e+f x)]\,-$$

$$\frac{1}{32} e^{n\,(-2\,\text{Log}[\text{Cos}[e+f x]]+\text{Log}[a\,(1+\text{Sin}[e+f x])]+\text{Log}[c-c\,\text{Sin}[e+f x]])}\,\text{Sin}[5\,(e+f x)]\Big)\Big)$$

- **Problem 178: Attempted integration timed out after 120 seconds.**

$$\int (g \cos[e+f x])^{-1-2 m} (a+a \sin[e+f x])^m (c-c \sin[e+f x])^n \, dx$$

Optimal (type 5, 81 leaves, 4 steps):

$$\frac{1}{2 f g (m-n)} (g \cos[e+f x])^{-2 m} \text{Hypergeometric2F1}\left[1, -m+n, 1-m+n, \frac{1}{2} (1-\sin[e+f x])\right] (a+a \sin[e+f x])^m (c-c \sin[e+f x])^n$$

Result (type 1, 1 leaves):

???

Problem 179: Attempted integration timed out after 120 seconds.

$$\int (g \cos[e+f x])^{-3-2 m} (a+a \sin[e+f x])^m (c-c \sin[e+f x])^n \, dx$$

Optimal (type 5, 85 leaves, 4 steps):

$$\frac{1}{4 f g^3 (1+m-n)} c (g \cos[e+f x])^{-2 m} \text{Hypergeometric2F1}\left[2, -1-m+n, -m+n, \frac{1}{2} (1-\sin[e+f x])\right] (a+a \sin[e+f x])^m (c-c \sin[e+f x])^{-1+n}$$

Result (type 1, 1 leaves):

???

Problem 180: Attempted integration timed out after 120 seconds.

$$\int (g \cos[e+f x])^{-5-2 m} (a+a \sin[e+f x])^m (c-c \sin[e+f x])^n \, dx$$

Optimal (type 5, 88 leaves, 4 steps):

$$\frac{1}{8 f g^5 (2+m-n)} c^2 (g \cos[e+f x])^{-2 m} \text{Hypergeometric2F1}\left[3, -2-m+n, -1-m+n, \frac{1}{2} (1-\sin[e+f x])\right] (a+a \sin[e+f x])^m (c-c \sin[e+f x])^{-2+n}$$

Result (type 1, 1 leaves):

???

Problem 182: Attempted integration timed out after 120 seconds.

$$\int (g \cos[e+f x])^{-1-m-n} (a+a \sin[e+f x])^m (c-c \sin[e+f x])^{3+n} \, dx$$

Optimal (type 5, 134 leaves, 4 steps):

$$\frac{1}{f g (m-n)} 2^{3-\frac{m}{2}+\frac{n}{2}} c^3 (g \cos[e+f x])^{-m-n} \text{Hypergeometric2F1}\left[\frac{1}{2} (-4+m-n), \frac{m-n}{2}, \frac{1}{2} (2+m-n), \frac{1}{2} (1+\sin[e+f x])\right] (1-\sin[e+f x])^{\frac{m-n}{2}} (a+a \sin[e+f x])^m (c-c \sin[e+f x])^n$$

Result (type 1, 1 leaves):

???

Problem 183: Attempted integration timed out after 120 seconds.

$$\int (g\,\text{Cos}[e+f\,x])^{-1-m-n}\,(a+a\,\text{Sin}[e+f\,x])^m\,(c-c\,\text{Sin}[e+f\,x])^{2+n}\,dx$$

Optimal (type 5, 134 leaves, 4 steps):

$$\frac{1}{f\,g\,(m-n)}2^{2-\frac{m}{2}+\frac{n}{2}}\,c^2\,(g\,\text{Cos}[e+f\,x])^{-m-n}\,\text{Hypergeometric2F1}\left[\frac{1}{2}\,(-2+m-n),\,\frac{m-n}{2},\,\frac{1}{2}\,(2+m-n),\,\frac{1}{2}\,(1+\text{Sin}[e+f\,x])\right]\,(1-\text{Sin}[e+f\,x])^{\frac{m-n}{2}}\,(a+a\,\text{Sin}[e+f\,x])^m\,(c-c\,\text{Sin}[e+f\,x])^n$$

Result (type 1, 1 leaves):

???

Problem 184: Attempted integration timed out after 120 seconds.

$$\int (g\,\text{Cos}[e+f\,x])^{-1-m-n}\,(a+a\,\text{Sin}[e+f\,x])^m\,(c-c\,\text{Sin}[e+f\,x])^{1+n}\,dx$$

Optimal (type 5, 131 leaves, 4 steps):

$$\frac{1}{f\,g\,(m-n)}2^{1-\frac{m}{2}+\frac{n}{2}}\,c\,(g\,\text{Cos}[e+f\,x])^{-m-n}\,\text{Hypergeometric2F1}\left[\frac{m-n}{2},\,\frac{m-n}{2},\,\frac{1}{2}\,(2+m-n),\,\frac{1}{2}\,(1+\text{Sin}[e+f\,x])\right]\,(1-\text{Sin}[e+f\,x])^{\frac{m-n}{2}}\,(a+a\,\text{Sin}[e+f\,x])^m\,(c-c\,\text{Sin}[e+f\,x])^n$$

Result (type 1, 1 leaves):

???

Problem 187: Result more than twice size of optimal antiderivative.

$$\int (g\,\text{Cos}[e+f\,x])^{-1-m-n}\,(a+a\,\text{Sin}[e+f\,x])^m\,(c-c\,\text{Sin}[e+f\,x])^{-2+n}\,dx$$

Optimal (type 3, 204 leaves, 3 steps):

$$\frac{(g\,\text{Cos}[e+f\,x])^{-m-n}\,(a+a\,\text{Sin}[e+f\,x])^m\,(c-c\,\text{Sin}[e+f\,x])^{-2+n}}{f\,g\,(4+m-n)}+\frac{2\,(g\,\text{Cos}[e+f\,x])^{-m-n}\,(a+a\,\text{Sin}[e+f\,x])^m\,(c-c\,\text{Sin}[e+f\,x])^{-1+n}}{c\,f\,g\,(2+m-n)\,(4+m-n)}+\frac{2\,(g\,\text{Cos}[e+f\,x])^{-m-n}\,(a+a\,\text{Sin}[e+f\,x])^m\,(c-c\,\text{Sin}[e+f\,x])^n}{c^2\,f\,g\,(m-n)\,(2+m-n)\,(4+m-n)}$$

Result (type 3, 2259 leaves):

$$\Bigg(2^{-2-m+2\,n}\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2\,m}\,\text{Cos}[e+f\,x]\,(g\,\text{Cos}[e+f\,x])^{-1-m-n}$$
$$\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\left(\text{Cos}\left[\frac{1}{8}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\left(-\text{Sin}\left[\frac{1}{8}\left(-e+\frac{\pi}{2}-f\,x\right)\right]+\text{Sin}\left[\frac{3}{8}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\right)\right)^{2\,n}$$
$$\left(\text{Cos}\left[\frac{1}{8}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\left(-\text{Sin}\left[\frac{1}{8}\left(-e+\frac{\pi}{2}-f\,x\right)\right]+\text{Sin}\left[\frac{3}{8}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-\text{Sin}\left[\frac{5}{8}\left(-e+\frac{\pi}{2}-f\,x\right)\right]+\text{Sin}\left[\frac{7}{8}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\right)\right)^{-m-n}$$

$$\left(\text{Cos}\left[\frac{1}{2}(e+fx)\right]-\text{Sin}\left[\frac{1}{2}(e+fx)\right]\right)^{-2(-2+n)}(a+a\,\text{Sin}[e+fx])^m(c-c\,\text{Sin}[e+fx])^{-2+n}$$

$$\left(3+4m+m^2-4n-2mn+n^2+\text{Cos}\left[2\left(-e+\frac{\pi}{2}-fx\right)\right]-2(2+m-n)\text{Sin}[e+fx]\right)\left(\text{Cos}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+fx\right)\right]-\text{Sin}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+fx\right)\right]\right)^{-5+2n}\Bigg/$$

$$\Bigg(f(m-n)(2+m-n)(4+m-n)\Bigg(-\frac{1}{(m-n)(2+m-n)(4+m-n)}$$

$$2^{-2-m+2n}\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-fx\right)\right]^{2m}\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-fx\right)\right]^4\left(\text{Cos}\left[\frac{1}{8}\left(-e+\frac{\pi}{2}-fx\right)\right]\left(-\text{Sin}\left[\frac{1}{8}\left(-e+\frac{\pi}{2}-fx\right)\right]+\text{Sin}\left[\frac{3}{8}\left(-e+\frac{\pi}{2}-fx\right)\right]\right)\right)^{2n}$$

$$\left(\text{Cos}\left[\frac{1}{8}\left(-e+\frac{\pi}{2}-fx\right)\right]\left(-\text{Sin}\left[\frac{1}{8}\left(-e+\frac{\pi}{2}-fx\right)\right]+\text{Sin}\left[\frac{3}{8}\left(-e+\frac{\pi}{2}-fx\right)\right]-\text{Sin}\left[\frac{5}{8}\left(-e+\frac{\pi}{2}-fx\right)\right]+\text{Sin}\left[\frac{7}{8}\left(-e+\frac{\pi}{2}-fx\right)\right]\right)\right)^{-m-n}$$

$$\left(2(2+m-n)\text{Cos}[e+fx]-2\,\text{Sin}\left[2\left(-e+\frac{\pi}{2}-fx\right)\right]\right)+\frac{1}{(m-n)(2+m-n)(4+m-n)}$$

$$2^{-2-m+2n}m\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-fx\right)\right]^{-1+2m}\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-fx\right)\right]^3\left(\text{Cos}\left[\frac{1}{8}\left(-e+\frac{\pi}{2}-fx\right)\right]\left(-\text{Sin}\left[\frac{1}{8}\left(-e+\frac{\pi}{2}-fx\right)\right]+\text{Sin}\left[\frac{3}{8}\left(-e+\frac{\pi}{2}-fx\right)\right]\right)\right)^{2n}$$

$$\left(\text{Cos}\left[\frac{1}{8}\left(-e+\frac{\pi}{2}-fx\right)\right]\left(-\text{Sin}\left[\frac{1}{8}\left(-e+\frac{\pi}{2}-fx\right)\right]+\text{Sin}\left[\frac{3}{8}\left(-e+\frac{\pi}{2}-fx\right)\right]-\text{Sin}\left[\frac{5}{8}\left(-e+\frac{\pi}{2}-fx\right)\right]+\text{Sin}\left[\frac{7}{8}\left(-e+\frac{\pi}{2}-fx\right)\right]\right)\right)^{-m-n}$$

$$\left(3+4m+m^2-4n-2mn+n^2+\text{Cos}\left[2\left(-e+\frac{\pi}{2}-fx\right)\right]-2(2+m-n)\text{Sin}[e+fx]\right)+\frac{1}{(m-n)(2+m-n)(4+m-n)}$$

$$2^{-1-m+2n}\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-fx\right)\right]^{1+2m}\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-fx\right)\right]^5\left(\text{Cos}\left[\frac{1}{8}\left(-e+\frac{\pi}{2}-fx\right)\right]\left(-\text{Sin}\left[\frac{1}{8}\left(-e+\frac{\pi}{2}-fx\right)\right]+\text{Sin}\left[\frac{3}{8}\left(-e+\frac{\pi}{2}-fx\right)\right]\right)\right)^{2n}$$

$$\left(\text{Cos}\left[\frac{1}{8}\left(-e+\frac{\pi}{2}-fx\right)\right]\left(-\text{Sin}\left[\frac{1}{8}\left(-e+\frac{\pi}{2}-fx\right)\right]+\text{Sin}\left[\frac{3}{8}\left(-e+\frac{\pi}{2}-fx\right)\right]-\text{Sin}\left[\frac{5}{8}\left(-e+\frac{\pi}{2}-fx\right)\right]+\text{Sin}\left[\frac{7}{8}\left(-e+\frac{\pi}{2}-fx\right)\right]\right)\right)^{-m-n}$$

$$\left(3+4m+m^2-4n-2mn+n^2+\text{Cos}\left[2\left(-e+\frac{\pi}{2}-fx\right)\right]-2(2+m-n)\text{Sin}[e+fx]\right)-\frac{1}{(m-n)(2+m-n)(4+m-n)}$$

$$2^{-1-m+2n}n\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-fx\right)\right]^{2m}\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-fx\right)\right]^4\left(\text{Cos}\left[\frac{1}{8}\left(-e+\frac{\pi}{2}-fx\right)\right]\left(-\text{Sin}\left[\frac{1}{8}\left(-e+\frac{\pi}{2}-fx\right)\right]+\text{Sin}\left[\frac{3}{8}\left(-e+\frac{\pi}{2}-fx\right)\right]\right)\right)^{-1+2n}$$

$$\left(\text{Cos}\left[\frac{1}{8}\left(-e+\frac{\pi}{2}-fx\right)\right]\left(-\frac{1}{8}\text{Cos}\left[\frac{1}{8}\left(-e+\frac{\pi}{2}-fx\right)\right]+\frac{3}{8}\text{Cos}\left[\frac{3}{8}\left(-e+\frac{\pi}{2}-fx\right)\right]\right)-\right.$$

$$\left.\frac{1}{8}\text{Sin}\left[\frac{1}{8}\left(-e+\frac{\pi}{2}-fx\right)\right]\left(-\text{Sin}\left[\frac{1}{8}\left(-e+\frac{\pi}{2}-fx\right)\right]+\text{Sin}\left[\frac{3}{8}\left(-e+\frac{\pi}{2}-fx\right)\right]\right)\right)$$

$$\left(\text{Cos}\left[\frac{1}{8}\left(-e+\frac{\pi}{2}-fx\right)\right]\left(-\text{Sin}\left[\frac{1}{8}\left(-e+\frac{\pi}{2}-fx\right)\right]+\text{Sin}\left[\frac{3}{8}\left(-e+\frac{\pi}{2}-fx\right)\right]-\text{Sin}\left[\frac{5}{8}\left(-e+\frac{\pi}{2}-fx\right)\right]+\text{Sin}\left[\frac{7}{8}\left(-e+\frac{\pi}{2}-fx\right)\right]\right)\right)^{-m-n}$$

$$\left(3+4m+m^2-4n-2mn+n^2+\text{Cos}\left[2\left(-e+\frac{\pi}{2}-fx\right)\right]-2(2+m-n)\text{Sin}[e+fx]\right)-\frac{1}{(m-n)(2+m-n)(4+m-n)}$$

$$2^{-2-m+2n}(-m-n)\operatorname{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2m}\operatorname{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{4}\left(\operatorname{Cos}\left[\frac{1}{8}\left(-e+\frac{\pi}{2}-f x\right)\right]\left(-\operatorname{Sin}\left[\frac{1}{8}\left(-e+\frac{\pi}{2}-f x\right)\right]+\operatorname{Sin}\left[\frac{3}{8}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)\right)^{2n}$$
$$\left(\operatorname{Cos}\left[\frac{1}{8}\left(-e+\frac{\pi}{2}-f x\right)\right]\left(-\operatorname{Sin}\left[\frac{1}{8}\left(-e+\frac{\pi}{2}-f x\right)\right]+\operatorname{Sin}\left[\frac{3}{8}\left(-e+\frac{\pi}{2}-f x\right)\right]-\operatorname{Sin}\left[\frac{5}{8}\left(-e+\frac{\pi}{2}-f x\right)\right]+\operatorname{Sin}\left[\frac{7}{8}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)\right)^{-1-m-n}$$
$$\left(\operatorname{Cos}\left[\frac{1}{8}\left(-e+\frac{\pi}{2}-f x\right)\right]\left(-\frac{1}{8}\operatorname{Cos}\left[\frac{1}{8}\left(-e+\frac{\pi}{2}-f x\right)\right]+\frac{3}{8}\operatorname{Cos}\left[\frac{3}{8}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{5}{8}\operatorname{Cos}\left[\frac{5}{8}\left(-e+\frac{\pi}{2}-f x\right)\right]+\frac{7}{8}\operatorname{Cos}\left[\frac{7}{8}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)-\right.$$
$$\left.\frac{1}{8}\operatorname{Sin}\left[\frac{1}{8}\left(-e+\frac{\pi}{2}-f x\right)\right]\left(-\operatorname{Sin}\left[\frac{1}{8}\left(-e+\frac{\pi}{2}-f x\right)\right]+\operatorname{Sin}\left[\frac{3}{8}\left(-e+\frac{\pi}{2}-f x\right)\right]-\operatorname{Sin}\left[\frac{5}{8}\left(-e+\frac{\pi}{2}-f x\right)\right]+\operatorname{Sin}\left[\frac{7}{8}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)\right)$$
$$\left(3+4m+m^2-4n-2mn+n^2+\operatorname{Cos}\left[2\left(-e+\frac{\pi}{2}-f x\right)\right]-2(2+m-n)\operatorname{Sin}[e+f x]\right)\right)\left(\operatorname{Cos}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]+\operatorname{Sin}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]\right)\right)$$

- **Problem 188: Result more than twice size of optimal antiderivative.**

$$\int (g\operatorname{Cos}[e+f x])^{-1-m-n}(a+a\operatorname{Sin}[e+f x])^{m}(c-c\operatorname{Sin}[e+f x])^{-3+n}\,dx$$

Optimal (type 3, 290 leaves, 4 steps):

$$\frac{(g\operatorname{Cos}[e+f x])^{-m-n}(a+a\operatorname{Sin}[e+f x])^{m}(c-c\operatorname{Sin}[e+f x])^{-3+n}}{f g(6+m-n)}+\frac{3(g\operatorname{Cos}[e+f x])^{-m-n}(a+a\operatorname{Sin}[e+f x])^{m}(c-c\operatorname{Sin}[e+f x])^{-2+n}}{c f g(4+m-n)(6+m-n)}+$$
$$\frac{6(g\operatorname{Cos}[e+f x])^{-m-n}(a+a\operatorname{Sin}[e+f x])^{m}(c-c\operatorname{Sin}[e+f x])^{-1+n}}{c^2 f g(2+m-n)(4+m-n)(6+m-n)}+\frac{6(g\operatorname{Cos}[e+f x])^{-m-n}(a+a\operatorname{Sin}[e+f x])^{m}(c-c\operatorname{Sin}[e+f x])^{n}}{c^3 f g(m-n)(2+m-n)(4+m-n)(6+m-n)}$$

Result (type 3, 2681 leaves):

$$-\left(\left(2^{-4-m+2n}\operatorname{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2m}\operatorname{Cos}[e+f x](g\operatorname{Cos}[e+f x])^{-1-m-n}\right.\right.$$
$$\operatorname{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{6}\left(\operatorname{Cos}\left[\frac{1}{8}\left(-e+\frac{\pi}{2}-f x\right)\right]\left(-\operatorname{Sin}\left[\frac{1}{8}\left(-e+\frac{\pi}{2}-f x\right)\right]+\operatorname{Sin}\left[\frac{3}{8}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)\right)^{2n}$$
$$\left(\operatorname{Cos}\left[\frac{1}{8}\left(-e+\frac{\pi}{2}-f x\right)\right]\left(-\operatorname{Sin}\left[\frac{1}{8}\left(-e+\frac{\pi}{2}-f x\right)\right]+\operatorname{Sin}\left[\frac{3}{8}\left(-e+\frac{\pi}{2}-f x\right)\right]-\operatorname{Sin}\left[\frac{5}{8}\left(-e+\frac{\pi}{2}-f x\right)\right]+\operatorname{Sin}\left[\frac{7}{8}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)\right)^{-m-n}$$
$$\left(\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]-\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^{-2(-3+n)}(a+a\operatorname{Sin}[e+f x])^{m}(c-c\operatorname{Sin}[e+f x])^{-3+n}$$
$$\left(-30-46m-18m^2-2m^3+46n+36mn+6m^2n-18n^2-6mn^2+2n^3-6(3+m-n)\operatorname{Cos}\left[2\left(-e+\frac{\pi}{2}-f x\right)\right]+3\operatorname{Cos}\left[3\left(-e+\frac{\pi}{2}-f x\right)\right]+\right.$$
$$\left.\left.3\left(15+2m^2-4m(-3+n)-12n+2n^2\right)\operatorname{Sin}[e+f x]\right)\left(\operatorname{Cos}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]-\operatorname{Sin}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]\right)^{-7+2n}\right)\Big/$$
$$\left(f(m-n)(2+m-n)(4+m-n)(6+m-n)\left(\frac{1}{(m-n)(2+m-n)(4+m-n)(6+m-n)}2^{-4-m+2n}\operatorname{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2m}\right.\right.$$
$$\operatorname{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{6}\left(\operatorname{Cos}\left[\frac{1}{8}\left(-e+\frac{\pi}{2}-f x\right)\right]\left(-\operatorname{Sin}\left[\frac{1}{8}\left(-e+\frac{\pi}{2}-f x\right)\right]+\operatorname{Sin}\left[\frac{3}{8}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)\right)^{2n}$$

$$\Big(\text{Cos}\Big[\frac{1}{8}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\Big(-\text{Sin}\Big[\frac{1}{8}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]+\text{Sin}\Big[\frac{3}{8}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]-\text{Sin}\Big[\frac{5}{8}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]+\text{Sin}\Big[\frac{7}{8}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\Big)\Big)^{-m-n}$$

$$\Big(-3\,(15+2\,m^2-4\,m\,(-3+n)-12\,n+2\,n^2)\,\text{Cos}[e+f\,x]+12\,(3+m-n)\,\text{Sin}\Big[2\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]-9\,\text{Sin}\Big[3\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\Big)-$$

$$\frac{1}{(m-n)\,(2+m-n)\,(4+m-n)\,(6+m-n)}\,2^{-4-m+2\,n}\,m\,\text{Cos}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^{-1+2\,m}\,\text{Csc}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^{5}$$

$$\Big(\text{Cos}\Big[\frac{1}{8}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\Big(-\text{Sin}\Big[\frac{1}{8}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]+\text{Sin}\Big[\frac{3}{8}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\Big)\Big)^{2\,n}$$

$$\Big(\text{Cos}\Big[\frac{1}{8}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\Big(-\text{Sin}\Big[\frac{1}{8}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]+\text{Sin}\Big[\frac{3}{8}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]-\text{Sin}\Big[\frac{5}{8}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]+\text{Sin}\Big[\frac{7}{8}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\Big)\Big)^{-m-n}$$

$$\Big(-30-46\,m-18\,m^2-2\,m^3+46\,n+36\,m\,n+6\,m^2\,n-18\,n^2-6\,m\,n^2+2\,n^3-6\,(3+m-n)\,\text{Cos}\Big[2\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]+$$

$$3\,\text{Cos}\Big[3\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]+3\,(15+2\,m^2-4\,m\,(-3+n)-12\,n+2\,n^2)\,\text{Sin}[e+f\,x]\Big)-\frac{1}{(m-n)\,(2+m-n)\,(4+m-n)\,(6+m-n)}$$

$$3\times 2^{-4-m+2\,n}\,\text{Cos}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^{1+2\,m}\,\text{Csc}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^{7}\Big(\text{Cos}\Big[\frac{1}{8}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\Big(-\text{Sin}\Big[\frac{1}{8}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]+\text{Sin}\Big[\frac{3}{8}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\Big)\Big)^{2\,n}$$

$$\Big(\text{Cos}\Big[\frac{1}{8}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\Big(-\text{Sin}\Big[\frac{1}{8}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]+\text{Sin}\Big[\frac{3}{8}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]-\text{Sin}\Big[\frac{5}{8}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]+\text{Sin}\Big[\frac{7}{8}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\Big)\Big)^{-m-n}$$

$$\Big(-30-46\,m-18\,m^2-2\,m^3+46\,n+36\,m\,n+6\,m^2\,n-18\,n^2-6\,m\,n^2+2\,n^3-6\,(3+m-n)\,\text{Cos}\Big[2\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]+3\,\text{Cos}\Big[3\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]+$$

$$3\,(15+2\,m^2-4\,m\,(-3+n)-12\,n+2\,n^2)\,\text{Sin}[e+f\,x]\Big)+\frac{1}{(m-n)\,(2+m-n)\,(4+m-n)\,(6+m-n)}\,2^{-3-m+2\,n}\,n\,\text{Cos}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^{2\,m}$$

$$\text{Csc}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^{6}\Big(\text{Cos}\Big[\frac{1}{8}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\Big(-\text{Sin}\Big[\frac{1}{8}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]+\text{Sin}\Big[\frac{3}{8}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\Big)\Big)^{-1+2\,n}\Big(\text{Cos}\Big[\frac{1}{8}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]$$

$$\Big(-\frac{1}{8}\text{Cos}\Big[\frac{1}{8}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]+\frac{3}{8}\text{Cos}\Big[\frac{3}{8}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\Big)-\frac{1}{8}\text{Sin}\Big[\frac{1}{8}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\Big(-\text{Sin}\Big[\frac{1}{8}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]+\text{Sin}\Big[\frac{3}{8}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\Big)\Big)$$

$$\Big(\text{Cos}\Big[\frac{1}{8}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\Big(-\text{Sin}\Big[\frac{1}{8}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]+\text{Sin}\Big[\frac{3}{8}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]-\text{Sin}\Big[\frac{5}{8}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]+\text{Sin}\Big[\frac{7}{8}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\Big)\Big)^{-m-n}$$

$$\Big(-30-46\,m-18\,m^2-2\,m^3+46\,n+36\,m\,n+6\,m^2\,n-18\,n^2-6\,m\,n^2+2\,n^3-6\,(3+m-n)\,\text{Cos}\Big[2\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]+3\,\text{Cos}\Big[3\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]+$$

$$3\,(15+2\,m^2-4\,m\,(-3+n)-12\,n+2\,n^2)\,\text{Sin}[e+f\,x]\Big)+\frac{1}{(m-n)\,(2+m-n)\,(4+m-n)\,(6+m-n)}\,2^{-4-m+2\,n}\,(-m-n)$$

$$\text{Cos}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^{2\,m}\,\text{Csc}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^{6}\Big(\text{Cos}\Big[\frac{1}{8}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\Big(-\text{Sin}\Big[\frac{1}{8}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]+\text{Sin}\Big[\frac{3}{8}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\Big)\Big)^{2\,n}$$

$$\Big(\text{Cos}\Big[\frac{1}{8}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\Big(-\text{Sin}\Big[\frac{1}{8}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]+\text{Sin}\Big[\frac{3}{8}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]-\text{Sin}\Big[\frac{5}{8}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]+\text{Sin}\Big[\frac{7}{8}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\Big)\Big)^{-1-m-n}$$

$$\left(\text{Cos}\left[\frac{1}{8}\left(-e+\frac{\pi}{2}-f x\right)\right]\left(-\frac{1}{8}\text{Cos}\left[\frac{1}{8}\left(-e+\frac{\pi}{2}-f x\right)\right]+\frac{3}{8}\text{Cos}\left[\frac{3}{8}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{5}{8}\text{Cos}\left[\frac{5}{8}\left(-e+\frac{\pi}{2}-f x\right)\right]+\frac{7}{8}\text{Cos}\left[\frac{7}{8}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)-\right.$$
$$\left.\frac{1}{8}\text{Sin}\left[\frac{1}{8}\left(-e+\frac{\pi}{2}-f x\right)\right]\left(-\text{Sin}\left[\frac{1}{8}\left(-e+\frac{\pi}{2}-f x\right)\right]+\text{Sin}\left[\frac{3}{8}\left(-e+\frac{\pi}{2}-f x\right)\right]-\text{Sin}\left[\frac{5}{8}\left(-e+\frac{\pi}{2}-f x\right)\right]+\text{Sin}\left[\frac{7}{8}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)\right)$$
$$\left(-30-46 m-18 m^2-2 m^3+46 n+36 m n+6 m^2 n-18 n^2-6 m n^2+2 n^3-6 (3+m-n)\text{Cos}\left[2\left(-e+\frac{\pi}{2}-f x\right)\right]+3\text{Cos}\left[3\left(-e+\frac{\pi}{2}-f x\right)\right]+\right.$$
$$\left.\left.3\left(15+2 m^2-4 m(-3+n)-12 n+2 n^2\right)\text{Sin}[e+f x]\right)\right)\left(\text{Cos}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]+\text{Sin}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]\right)\right)\right)$$

- **Problem 212: Result more than twice size of optimal antiderivative.**

$$\int \text{Cot}[c+d x]\,\text{Csc}[c+d x]^3\,(a+a\,\text{Sin}[c+d x])^3\,dx$$

Optimal (type 3, 65 leaves, 4 steps):

$$-\frac{3 a^3\text{Csc}[c+d x]}{d}-\frac{3 a^3\text{Csc}[c+d x]^2}{2 d}-\frac{a^3\text{Csc}[c+d x]^3}{3 d}+\frac{a^3\text{Log}[\text{Sin}[c+d x]]}{d}$$

Result (type 3, 146 leaves):

$$a^3\left(-\frac{19\text{Cot}\left[\frac{1}{2}(c+d x)\right]}{12 d}-\frac{3\text{Csc}\left[\frac{1}{2}(c+d x)\right]^2}{8 d}-\frac{\text{Cot}\left[\frac{1}{2}(c+d x)\right]\text{Csc}\left[\frac{1}{2}(c+d x)\right]^2}{24 d}+\right.$$
$$\left.\frac{\text{Log}[\text{Sin}[c+d x]]}{d}-\frac{3\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2}{8 d}-\frac{19\text{Tan}\left[\frac{1}{2}(c+d x)\right]}{12 d}-\frac{\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]}{24 d}\right)$$

- **Problem 230: Result more than twice size of optimal antiderivative.**

$$\int \frac{\text{Cot}[c+d x]\,\text{Csc}[c+d x]^2}{a+a\,\text{Sin}[c+d x]}\,dx$$

Optimal (type 3, 63 leaves, 4 steps):

$$\frac{\text{Csc}[c+d x]}{a d}-\frac{\text{Csc}[c+d x]^2}{2 a d}+\frac{\text{Log}[\text{Sin}[c+d x]]}{a d}-\frac{\text{Log}[1+\text{Sin}[c+d x]]}{a d}$$

Result (type 3, 127 leaves):

$$\frac{1}{8 a d(1+\text{Sin}[c+d x])}\left(\text{Csc}\left[\frac{1}{2}(c+d x)\right]+\text{Sec}\left[\frac{1}{2}(c+d x)\right]\right)^2\left(-1-2\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]+\right.$$
$$\left.\text{Cos}[2(c+d x)]\left(2\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]-\text{Log}[\text{Sin}[c+d x]]\right)+\text{Log}[\text{Sin}[c+d x]]+2\text{Sin}[c+d x]\right)$$

- **Problem 235: Result more than twice size of optimal antiderivative.**

$$\int \frac{\text{Cos}[c+d\,x]\,\text{Sin}[c+d\,x]}{(a+a\,\text{Sin}[c+d\,x])^2}\,dx$$

Optimal (type 3, 37 leaves, 4 steps):

$$\frac{\text{Log}[1+\text{Sin}[c+d\,x]]}{a^2\,d}+\frac{1}{d\,\left(a^2+a^2\,\text{Sin}[c+d\,x]\right)}$$

Result (type 3, 88 leaves):

$$\frac{1}{d\,(a+a\,\text{Sin}[c+d\,x])^2}\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2\left(1+2\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2\right)$$

- **Problem 236: Result more than twice size of optimal antiderivative.**

$$\int \frac{\text{Cot}[c+d\,x]}{(a+a\,\text{Sin}[c+d\,x])^2}\,dx$$

Optimal (type 3, 52 leaves, 3 steps):

$$\frac{\text{Log}[\text{Sin}[c+d\,x]]}{a^2\,d}-\frac{\text{Log}[1+\text{Sin}[c+d\,x]]}{a^2\,d}+\frac{1}{d\,\left(a^2+a^2\,\text{Sin}[c+d\,x]\right)}$$

Result (type 3, 112 leaves):

$$\frac{1}{a^2\,d\,(1+\text{Sin}[c+d\,x])^2}\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2\left(1-2\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]+\right.$$
$$\left.\text{Log}[\text{Sin}[c+d\,x]]+\left(-2\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]+\text{Log}[\text{Sin}[c+d\,x]]\right)\text{Sin}[c+d\,x]\right)$$

- **Problem 238: Result more than twice size of optimal antiderivative.**

$$\int \frac{\text{Cot}[c+d\,x]\,\text{Csc}[c+d\,x]^2}{(a+a\,\text{Sin}[c+d\,x])^2}\,dx$$

Optimal (type 3, 85 leaves, 4 steps):

$$\frac{2\,\text{Csc}[c+d\,x]}{a^2\,d}-\frac{\text{Csc}[c+d\,x]^2}{2\,a^2\,d}+\frac{3\,\text{Log}[\text{Sin}[c+d\,x]]}{a^2\,d}-\frac{3\,\text{Log}[1+\text{Sin}[c+d\,x]]}{a^2\,d}+\frac{1}{d\,\left(a^2+a^2\,\text{Sin}[c+d\,x]\right)}$$

Result (type 3, 214 leaves):

$$\frac{1}{16\,a^2\,d\,(1+\text{Sin}[c+d\,x])^2}\left(\text{Csc}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2$$
$$\left(4-12\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]+6\,\text{Cos}[2\,(c+d\,x)]\left(-1+2\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]-\text{Log}[\text{Sin}[c+d\,x]]\right)+\right.$$
$$6\,\text{Log}[\text{Sin}[c+d\,x]]+\left(6-18\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]+9\,\text{Log}[\text{Sin}[c+d\,x]]\right)\text{Sin}[c+d\,x]+$$
$$\left.6\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\text{Sin}[3\,(c+d\,x)]-3\,\text{Log}[\text{Sin}[c+d\,x]]\,\text{Sin}[3\,(c+d\,x)]\right)$$

- **Problem 239: Result more than twice size of optimal antiderivative.**

$$\int\frac{\text{Cot}[c+d\,x]\,\text{Csc}[c+d\,x]^3}{(a+a\,\text{Sin}[c+d\,x])^2}\,dx$$

Optimal (type 3, 101 leaves, 4 steps):

$$-\frac{3\,\text{Csc}[c+d\,x]}{a^2\,d}+\frac{\text{Csc}[c+d\,x]^2}{a^2\,d}-\frac{\text{Csc}[c+d\,x]^3}{3\,a^2\,d}-\frac{4\,\text{Log}[\text{Sin}[c+d\,x]]}{a^2\,d}+\frac{4\,\text{Log}[1+\text{Sin}[c+d\,x]]}{a^2\,d}-\frac{1}{d\,\left(a^2+a^2\,\text{Sin}[c+d\,x]\right)}$$

Result (type 3, 298 leaves):

$$-\frac{1}{48\,a^2\,d\,(1+\text{Sin}[c+d\,x])^2}\text{Csc}\left[\frac{1}{2}\,(c+d\,x)\right]\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]\left(\text{Csc}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2$$
$$\left(8-18\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]+6\,\text{Cos}[2\,(c+d\,x)]\left(-1+4\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]-2\,\text{Log}[\text{Sin}[c+d\,x]]\right)+\right.$$
$$9\,\text{Log}[\text{Sin}[c+d\,x]]+\text{Cos}[4\,(c+d\,x)]\left(-6\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]+3\,\text{Log}[\text{Sin}[c+d\,x]]\right)+$$
$$14\,\text{Sin}[c+d\,x]-36\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\text{Sin}[c+d\,x]+18\,\text{Log}[\text{Sin}[c+d\,x]]\,\text{Sin}[c+d\,x]-$$
$$\left.6\,\text{Sin}[3\,(c+d\,x)]+12\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\text{Sin}[3\,(c+d\,x)]-6\,\text{Log}[\text{Sin}[c+d\,x]]\,\text{Sin}[3\,(c+d\,x)]\right)$$

- **Problem 240: Result more than twice size of optimal antiderivative.**

$$\int\frac{\text{Cos}[c+d\,x]\,\text{Sin}[c+d\,x]^5}{(a+a\,\text{Sin}[c+d\,x])^3}\,dx$$

Optimal (type 3, 111 leaves, 4 steps):

$$-\frac{10\,\text{Log}[1+\text{Sin}[c+d\,x]]}{a^3\,d}+\frac{6\,\text{Sin}[c+d\,x]}{a^3\,d}-\frac{3\,\text{Sin}[c+d\,x]^2}{2\,a^3\,d}+\frac{\text{Sin}[c+d\,x]^3}{3\,a^3\,d}+\frac{1}{2\,a\,d\,(a+a\,\text{Sin}[c+d\,x])^2}-\frac{5}{d\,\left(a^3+a^3\,\text{Sin}[c+d\,x]\right)}$$

Result (type 3, 450 leaves):

$$\frac{1}{32}\left(\frac{24\,\mathrm{Cos}[2\,c]\,\mathrm{Cos}[2\,d\,x]}{a^3\,d}-\frac{448\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]+\mathrm{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right]}{a^3\,d}+x\left(\frac{224\,\mathrm{Cos}\left[\frac{c}{2}\right]}{a^3\left(\mathrm{Cos}\left[\frac{c}{2}\right]+\mathrm{Sin}\left[\frac{c}{2}\right]\right)}-\frac{224\left(\mathrm{Cos}\left[\frac{c}{2}\right]-\mathrm{Sin}\left[\frac{c}{2}\right]\right)}{a^3\left(\mathrm{Cos}\left[\frac{c}{2}\right]+\mathrm{Sin}\left[\frac{c}{2}\right]\right)}-\frac{224\,\mathrm{Sin}\left[\frac{c}{2}\right]}{a^3\left(\mathrm{Cos}\left[\frac{c}{2}\right]+\mathrm{Sin}\left[\frac{c}{2}\right]\right)}\right)+\frac{168\,\mathrm{Cos}[d\,x]\,\mathrm{Sin}[c]}{a^3\,d}-\frac{8\,\mathrm{Cos}[3\,d\,x]\,\mathrm{Sin}[3\,c]}{3\,a^3\,d}+\frac{168\,\mathrm{Cos}[c]\,\mathrm{Sin}[d\,x]}{a^3\,d}-\frac{24\,\mathrm{Sin}[2\,c]\,\mathrm{Sin}[2\,d\,x]}{a^3\,d}-\frac{8\,\mathrm{Cos}[3\,c]\,\mathrm{Sin}[3\,d\,x]}{3\,a^3\,d}+\frac{3}{a^3\,d\left(\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]+\mathrm{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right)^4}-\frac{70}{a^3\,d\left(\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]+\mathrm{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right)^2}\right)-\frac{1}{4\,a^3\,d}\left(24\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]-4\,\mathrm{Cos}[d\,x]\,\mathrm{Sin}[c]-4\,\mathrm{Cos}[c]\,\mathrm{Sin}[d\,x]-\frac{1}{\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4}+\frac{10}{\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2}\right)+\frac{5\,(-1-2\,\mathrm{Sin}[c+d\,x])}{32\,a^3\,d\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4}$$

- **Problem 246: Result more than twice size of optimal antiderivative.**

$$\int\frac{\mathrm{Cot}[c+d\,x]\,\mathrm{Csc}[c+d\,x]}{(a+a\,\mathrm{Sin}[c+d\,x])^3}\,dx$$

Optimal (type 3, 90 leaves, 4 steps):

$$-\frac{\mathrm{Csc}[c+d\,x]}{a^3\,d}-\frac{3\,\mathrm{Log}[\mathrm{Sin}[c+d\,x]]}{a^3\,d}+\frac{3\,\mathrm{Log}[1+\mathrm{Sin}[c+d\,x]]}{a^3\,d}-\frac{1}{2\,a\,d\,(a+a\,\mathrm{Sin}[c+d\,x])^2}-\frac{2}{d\left(a^3+a^3\,\mathrm{Sin}[c+d\,x]\right)}$$

Result (type 3, 218 leaves):

$$\frac{1}{2\,d\,(a+a\,\mathrm{Sin}[c+d\,x])^3}\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2\left(-1-4\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2-\mathrm{Cot}\left[\frac{1}{2}(c+d\,x)\right]\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4+12\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4-6\,\mathrm{Log}[\mathrm{Sin}[c+d\,x]]\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4-\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)$$

- **Problem 247: Result more than twice size of optimal antiderivative.**

$$\int\frac{\mathrm{Cot}[c+d\,x]\,\mathrm{Csc}[c+d\,x]^2}{(a+a\,\mathrm{Sin}[c+d\,x])^3}\,dx$$

Optimal (type 3, 108 leaves, 4 steps):

$$\frac{3\,\text{Csc}[c+d\,x]}{a^3\,d}-\frac{\text{Csc}[c+d\,x]^2}{2\,a^3\,d}+\frac{6\,\text{Log}[\text{Sin}[c+d\,x]]}{a^3\,d}-\frac{6\,\text{Log}[1+\text{Sin}[c+d\,x]]}{a^3\,d}+\frac{1}{2\,a\,d\,(a+a\,\text{Sin}[c+d\,x])^2}+\frac{3}{d\,(a^3+a^3\,\text{Sin}[c+d\,x])}$$

Result (type 3, 275 leaves):

$$\frac{1}{8\,a^3\,d\,(1+\text{Sin}[c+d\,x])^3}\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2\left(4-\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right)^4\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]^2+24\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2+\right.$$
$$12\,\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4-96\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]$$
$$\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4+48\,\text{Log}[\text{Sin}[c+d\,x]]\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4+$$
$$\left.12\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]-\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]^2\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)^4\right)$$

- **Problem 248: Result more than twice size of optimal antiderivative.**

$$\int\frac{\text{Cot}[c+d\,x]\,\text{Csc}[c+d\,x]^3}{(a+a\,\text{Sin}[c+d\,x])^3}\,dx$$

Optimal (type 3, 126 leaves, 4 steps):

$$-\frac{6\,\text{Csc}[c+d\,x]}{a^3\,d}+\frac{3\,\text{Csc}[c+d\,x]^2}{2\,a^3\,d}-\frac{\text{Csc}[c+d\,x]^3}{3\,a^3\,d}-\frac{10\,\text{Log}[\text{Sin}[c+d\,x]]}{a^3\,d}+$$
$$\frac{10\,\text{Log}[1+\text{Sin}[c+d\,x]]}{a^3\,d}-\frac{1}{2\,a\,d\,(a+a\,\text{Sin}[c+d\,x])^2}-\frac{4}{d\,(a^3+a^3\,\text{Sin}[c+d\,x])}$$

Result (type 3, 335 leaves):

$$\frac{1}{24 a^3 d (1+\text{Sin}[c+d x])^3}\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2$$
$$\left(-12-\text{Cos}\left[\frac{1}{2}(c+d x)\right]\left(1+\text{Cot}\left[\frac{1}{2}(c+d x)\right]\right)^4 \text{Sin}\left[\frac{1}{2}(c+d x)\right]+9\left(1+\text{Cot}\left[\frac{1}{2}(c+d x)\right]\right)^4 \text{Sin}\left[\frac{1}{2}(c+d x)\right]^2-\right.$$
$$96\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2-74 \text{Cot}\left[\frac{1}{2}(c+d x)\right]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^4+$$
$$480 \text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^4-$$
$$240 \text{Log}[\text{Sin}[c+d x]]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^4-74\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^4 \text{Tan}\left[\frac{1}{2}(c+d x)\right]+$$
$$\left.9 \text{Cos}\left[\frac{1}{2}(c+d x)\right]^2\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right)^4-\frac{1}{2} \text{Sin}[c+d x]\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right)^4\right)$$

Problem 255: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Cot}[c+d x] \text{Csc}[c+d x]}{(a+a \text{Sin}[c+d x])^4} \, dx$$

Optimal (type 3, 111 leaves, 4 steps):

$$-\frac{\text{Csc}[c+d x]}{a^4 d}-\frac{4 \text{Log}[\text{Sin}[c+d x]]}{a^4 d}+\frac{4 \text{Log}[1+\text{Sin}[c+d x]]}{a^4 d}-\frac{1}{3 a d (a+a \text{Sin}[c+d x])^3}-\frac{1}{d \left(a^2+a^2 \text{Sin}[c+d x]\right)^2}-\frac{3}{d \left(a^4+a^4 \text{Sin}[c+d x]\right)}$$

Result (type 3, 243 leaves):

$$\frac{1}{6 d (a+a \text{Sin}[c+d x])^4}$$
$$\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2\left(-2-6\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2-18\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^4-\right.$$
$$3 \text{Cot}\left[\frac{1}{2}(c+d x)\right]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^6+48 \text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^6-$$
$$\left.24 \text{Log}[\text{Sin}[c+d x]]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^6-3\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^6 \text{Tan}\left[\frac{1}{2}(c+d x)\right]\right)$$

Problem 256: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Cot}[c+d x] \text{Csc}[c+d x]^2}{(a+a \text{Sin}[c+d x])^4} \, dx$$

Optimal (type 3, 131 leaves, 4 steps):

$$\frac{4\,\text{Csc}[c+d\,x]}{a^4\,d}-\frac{\text{Csc}[c+d\,x]^2}{2\,a^4\,d}+\frac{10\,\text{Log}[\text{Sin}[c+d\,x]]}{a^4\,d}-\frac{10\,\text{Log}[1+\text{Sin}[c+d\,x]]}{a^4\,d}+\frac{1}{3\,a\,d\,(a+a\,\text{Sin}[c+d\,x])^3}+\frac{3}{2\,d\,\left(a^2+a^2\,\text{Sin}[c+d\,x]\right)^2}+\frac{6}{d\,\left(a^4+a^4\,\text{Sin}[c+d\,x]\right)}$$

Result (type 3, 300 leaves):

$$\frac{1}{24\,a^4\,d\,(1+\text{Sin}[c+d\,x])^4}\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2 \left(8-3\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right)^6\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]^4+36\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2+144\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4+48\,\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^6-480\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^6+240\,\text{Log}[\text{Sin}[c+d\,x]]\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^6+48\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^6\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]-3\,\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]^4\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)^6\right)$$

Problem 257: Result more than twice size of optimal antiderivative.

$$\int \text{Cot}[c+d\,x]\,\sqrt{a+a\,\text{Sin}[c+d\,x]}\,dx$$

Optimal (type 3, 51 leaves, 4 steps):

$$-\frac{2\,\sqrt{a}\,\text{ArcTanh}\left[\frac{\sqrt{a+a\,\text{Sin}[c+d\,x]}}{\sqrt{a}}\right]}{d}+\frac{2\,\sqrt{a+a\,\text{Sin}[c+d\,x]}}{d}$$

Result (type 3, 118 leaves):

$$\left(\left(2\,\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Log}\left[1-\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]-\text{Log}\left[1+\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]+2\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)\sqrt{a\,(1+\text{Sin}[c+d\,x])}\right)\Big/\left(d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)\right)$$

Problem 258: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d\,x]\,\text{Sin}[c+d\,x]^n\,(a+a\,\text{Sin}[c+d\,x])^4\,dx$$

Optimal (type 3, 114 leaves, 3 steps):

$$\frac{a^4\,\text{Sin}[c+d\,x]^{1+n}}{d\,(1+n)}+\frac{4\,a^4\,\text{Sin}[c+d\,x]^{2+n}}{d\,(2+n)}+\frac{6\,a^4\,\text{Sin}[c+d\,x]^{3+n}}{d\,(3+n)}+\frac{4\,a^4\,\text{Sin}[c+d\,x]^{4+n}}{d\,(4+n)}+\frac{a^4\,\text{Sin}[c+d\,x]^{5+n}}{d\,(5+n)}$$

Result (type 3, 457 leaves):

$$\frac{1}{d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^8} \text{Sin}[c+d x]^n (a+a\,\text{Sin}[c+d x])^4 \left(\frac{22+7 n}{2 (2+n) (4+n)}+\frac{\left(315+300 n+49 n^2\right)\left(-\frac{1}{16} i\,\text{Cos}[c+d x]+\frac{1}{16}\text{Sin}[c+d x]\right)}{(1+n)(3+n)(5+n)}+\frac{\left(315+300 n+49 n^2\right)\left(\frac{1}{16} i\,\text{Cos}[c+d x]+\frac{1}{16}\text{Sin}[c+d x]\right)}{(1+n)(3+n)(5+n)}+\frac{(3+n)(-2\,\text{Cos}[2(c+d x)]-2 i\,\text{Sin}[2(c+d x)])}{(2+n)(4+n)}+\frac{(3+n)(-2\,\text{Cos}[2(c+d x)]+2 i\,\text{Sin}[2(c+d x)])}{(2+n)(4+n)}+\frac{(135+29 n)\left(-\frac{1}{32} i\,\text{Cos}[3(c+d x)]-\frac{1}{32}\text{Sin}[3(c+d x)]\right)}{(3+n)(5+n)}+\frac{(135+29 n)\left(\frac{1}{32} i\,\text{Cos}[3(c+d x)]-\frac{1}{32}\text{Sin}[3(c+d x)]\right)}{(3+n)(5+n)}+\frac{\frac{1}{4}\text{Cos}[4(c+d x)]-\frac{1}{4} i\,\text{Sin}[4(c+d x)]}{4+n}+\frac{\frac{1}{4}\text{Cos}[4(c+d x)]+\frac{1}{4} i\,\text{Sin}[4(c+d x)]}{4+n}+\frac{-\frac{1}{32} i\,\text{Cos}[5(c+d x)]+\frac{1}{32}\text{Sin}[5(c+d x)]}{5+n}+\frac{\frac{1}{32} i\,\text{Cos}[5(c+d x)]+\frac{1}{32}\text{Sin}[5(c+d x)]}{5+n}\right)$$

- **Problem 259: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int \text{Cos}[c+d x]\,\text{Sin}[c+d x]^n (a+a\,\text{Sin}[c+d x])^3\,dx$$

Optimal (type 3, 91 leaves, 3 steps):

$$\frac{a^3\,\text{Sin}[c+d x]^{1+n}}{d(1+n)}+\frac{3 a^3\,\text{Sin}[c+d x]^{2+n}}{d(2+n)}+\frac{3 a^3\,\text{Sin}[c+d x]^{3+n}}{d(3+n)}+\frac{a^3\,\text{Sin}[c+d x]^{4+n}}{d(4+n)}$$

Result (type 3, 363 leaves):

$$\frac{1}{d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^6} \text{Sin}[c+d x]^n (a+a\,\text{Sin}[c+d x])^3 \left(\frac{3(18+5 n)}{8(2+n)(4+n)}+\frac{(21+13 n)\left(-\frac{1}{8} i\,\text{Cos}[c+d x]+\frac{1}{8}\text{Sin}[c+d x]\right)}{(1+n)(3+n)}+\frac{(21+13 n)\left(\frac{1}{8} i\,\text{Cos}[c+d x]+\frac{1}{8}\text{Sin}[c+d x]\right)}{(1+n)(3+n)}+\frac{(-7-2 n)\left(\frac{1}{2}\text{Cos}[2(c+d x)]-\frac{1}{2} i\,\text{Sin}[2(c+d x)]\right)}{(2+n)(4+n)}+\frac{(-7-2 n)\left(\frac{1}{2}\text{Cos}[2(c+d x)]+\frac{1}{2} i\,\text{Sin}[2(c+d x)]\right)}{(2+n)(4+n)}+\frac{-\frac{3}{8} i\,\text{Cos}[3(c+d x)]-\frac{3}{8}\text{Sin}[3(c+d x)]}{3+n}+\frac{\frac{3}{8} i\,\text{Cos}[3(c+d x)]-\frac{3}{8}\text{Sin}[3(c+d x)]}{3+n}+\frac{\frac{1}{16}\text{Cos}[4(c+d x)]-\frac{1}{16} i\,\text{Sin}[4(c+d x)]}{4+n}+\frac{\frac{1}{16}\text{Cos}[4(c+d x)]+\frac{1}{16} i\,\text{Sin}[4(c+d x)]}{4+n}\right)$$

Problem 262: Unable to integrate problem.

$$\int \frac{\text{Cos}[c+d\,x]\ \text{Sin}[c+d\,x]^n}{a+a\,\text{Sin}[c+d\,x]}\,dx$$

Optimal (type 5, 38 leaves, 2 steps):

$$\frac{\text{Hypergeometric2F1}[1,\ 1+n,\ 2+n,\ -\text{Sin}[c+d\,x]]\ \text{Sin}[c+d\,x]^{1+n}}{a\,d\,(1+n)}$$

Result (type 8, 29 leaves):

$$\int \frac{\text{Cos}[c+d\,x]\ \text{Sin}[c+d\,x]^n}{a+a\,\text{Sin}[c+d\,x]}\,dx$$

Problem 263: Unable to integrate problem.

$$\int \frac{\text{Cos}[c+d\,x]\ \text{Sin}[c+d\,x]^n}{(a+a\,\text{Sin}[c+d\,x])^2}\,dx$$

Optimal (type 5, 38 leaves, 2 steps):

$$\frac{\text{Hypergeometric2F1}[2,\ 1+n,\ 2+n,\ -\text{Sin}[c+d\,x]]\ \text{Sin}[c+d\,x]^{1+n}}{a^2\,d\,(1+n)}$$

Result (type 8, 29 leaves):

$$\int \frac{\text{Cos}[c+d\,x]\ \text{Sin}[c+d\,x]^n}{(a+a\,\text{Sin}[c+d\,x])^2}\,dx$$

Problem 264: Unable to integrate problem.

$$\int \frac{\text{Cos}[c+d\,x]\ \text{Sin}[c+d\,x]^n}{(a+a\,\text{Sin}[c+d\,x])^3}\,dx$$

Optimal (type 5, 38 leaves, 2 steps):

$$\frac{\text{Hypergeometric2F1}[3,\ 1+n,\ 2+n,\ -\text{Sin}[c+d\,x]]\ \text{Sin}[c+d\,x]^{1+n}}{a^3\,d\,(1+n)}$$

Result (type 8, 29 leaves):

$$\int \frac{\text{Cos}[c+d\,x]\ \text{Sin}[c+d\,x]^n}{(a+a\,\text{Sin}[c+d\,x])^3}\,dx$$

Problem 265: Unable to integrate problem.

$$\int \frac{\text{Cos}[c+d\,x]\ \text{Sin}[c+d\,x]^n}{(a+a\,\text{Sin}[c+d\,x])^4}\,dx$$

Optimal (type 5, 38 leaves, 2 steps):

$$\frac{\text{Hypergeometric2F1}[4,\ 1+n,\ 2+n,\ -\text{Sin}[c+d\,x]]\ \text{Sin}[c+d\,x]^{1+n}}{a^4\,d\,(1+n)}$$

Result (type 8, 29 leaves):

$$\int\frac{\text{Cos}[c+d\,x]\ \text{Sin}[c+d\,x]^n}{(a+a\,\text{Sin}[c+d\,x])^4}\,dx$$

Problem 282: Result more than twice size of optimal antiderivative.

$$\int\text{Cot}[c+d\,x]^2\,\text{Csc}[c+d\,x]^3\,(a+a\,\text{Sin}[c+d\,x])^2\,dx$$

Optimal (type 3, 82 leaves, 9 steps):

$$\frac{5\,a^2\,\text{ArcTanh}[\text{Cos}[c+d\,x]]}{8\,d}-\frac{2\,a^2\,\text{Cot}[c+d\,x]^3}{3\,d}-\frac{3\,a^2\,\text{Cot}[c+d\,x]\,\text{Csc}[c+d\,x]}{8\,d}-\frac{a^2\,\text{Cot}[c+d\,x]\,\text{Csc}[c+d\,x]^3}{4\,d}$$

Result (type 3, 209 leaves):

$$a^2\left(\frac{\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]}{3\,d}-\frac{3\,\text{Csc}\left[\frac{1}{2}(c+d\,x)\right]^2}{32\,d}-\frac{\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\text{Csc}\left[\frac{1}{2}(c+d\,x)\right]^2}{12\,d}-\frac{\text{Csc}\left[\frac{1}{2}(c+d\,x)\right]^4}{64\,d}+\frac{5\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]\right]}{8\,d}-\frac{5\,\text{Log}\left[\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]}{8\,d}+\frac{3\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2}{32\,d}+\frac{\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^4}{64\,d}-\frac{\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{3\,d}+\frac{\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{12\,d}\right)$$

Problem 292: Result more than twice size of optimal antiderivative.

$$\int\text{Cot}[c+d\,x]^2\,\text{Csc}[c+d\,x]^4\,(a+a\,\text{Sin}[c+d\,x])^3\,dx$$

Optimal (type 3, 100 leaves, 12 steps):

$$\frac{7\,a^3\,\text{ArcTanh}[\text{Cos}[c+d\,x]]}{8\,d}-\frac{4\,a^3\,\text{Cot}[c+d\,x]^3}{3\,d}-\frac{a^3\,\text{Cot}[c+d\,x]^5}{5\,d}-\frac{a^3\,\text{Cot}[c+d\,x]\,\text{Csc}[c+d\,x]}{8\,d}-\frac{3\,a^3\,\text{Cot}[c+d\,x]\,\text{Csc}[c+d\,x]^3}{4\,d}$$

Result (type 3, 267 leaves):

$$a^3\left(\frac{17\,\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]}{30\,d}-\frac{\text{Csc}\left[\frac{1}{2}(c+d\,x)\right]^2}{32\,d}-\frac{59\,\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\text{Csc}\left[\frac{1}{2}(c+d\,x)\right]^2}{480\,d}-\frac{3\,\text{Csc}\left[\frac{1}{2}(c+d\,x)\right]^4}{64\,d}-\frac{\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\text{Csc}\left[\frac{1}{2}(c+d\,x)\right]^4}{160\,d}+\frac{7\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]\right]}{8\,d}-\frac{7\,\text{Log}\left[\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]}{8\,d}+\frac{\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2}{32\,d}+\frac{3\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^4}{64\,d}-\frac{17\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{30\,d}+\frac{59\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{480\,d}+\frac{\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^4\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{160\,d}\right)$$

Problem 293: Result more than twice size of optimal antiderivative.

$$\int \text{Cot}[c+d x]^2 \text{Csc}[c+d x]^5 (a+a \text{Sin}[c+d x])^3 \, dx$$

Optimal (type 3, 124 leaves, 14 steps):

$$\frac{7 a^3 \text{ArcTanh}[\text{Cos}[c+d x]]}{16 d}-\frac{4 a^3 \text{Cot}[c+d x]^3}{3 d}-\frac{3 a^3 \text{Cot}[c+d x]^5}{5 d}+\frac{7 a^3 \text{Cot}[c+d x] \text{Csc}[c+d x]}{16 d}-\frac{17 a^3 \text{Cot}[c+d x] \text{Csc}[c+d x]^3}{24 d}-\frac{a^3 \text{Cot}[c+d x] \text{Csc}[c+d x]^5}{6 d}$$

Result (type 3, 252 leaves):

$$-\frac{1}{1920 d \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^6} a^3 \left(\text{Csc}\left[\frac{1}{2} (c+d x)\right]^6 (18+5 \text{Csc}[c+d x])+\text{Csc}\left[\frac{1}{2} (c+d x)\right]^4 (34+90 \text{Csc}[c+d x])-2 \text{Csc}\left[\frac{1}{2} (c+d x)\right]^2 (176+105 \text{Csc}[c+d x])- 840 \text{Csc}[c+d x] \left(\text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]\right]-\text{Log}\left[\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right]\right)+(97+159 \text{Cos}[c+d x]+44 \text{Cos}[2 (c+d x)]) \text{Sec}\left[\frac{1}{2} (c+d x)\right]^6+ 840 \text{Csc}[c+d x]^3 \text{Sin}\left[\frac{1}{2} (c+d x)\right]^2-1440 \text{Csc}[c+d x]^5 \text{Sin}\left[\frac{1}{2} (c+d x)\right]^4-320 \text{Csc}[c+d x]^7 \text{Sin}\left[\frac{1}{2} (c+d x)\right]^6\right) \text{Sin}[c+d x] (1+\text{Sin}[c+d x])^3$$

Problem 297: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Cos}[c+d x]^2 \text{Sin}[c+d x]^4}{a+a \text{Sin}[c+d x]} \, dx$$

Optimal (type 3, 104 leaves, 6 steps):

$$\frac{3 x}{8 a}+\frac{\text{Cos}[c+d x]}{a d}-\frac{2 \text{Cos}[c+d x]^3}{3 a d}+\frac{\text{Cos}[c+d x]^5}{5 a d}-\frac{3 \text{Cos}[c+d x] \text{Sin}[c+d x]}{8 a d}-\frac{\text{Cos}[c+d x] \text{Sin}[c+d x]^3}{4 a d}$$

Result (type 3, 281 leaves):

$$\frac{1}{480} \left(\frac{180 x}{a}+\frac{300 \text{Cos}[c] \text{Cos}[d x]}{a d}-\frac{50 \text{Cos}[3 c] \text{Cos}[3 d x]}{a d}+\frac{6 \text{Cos}[5 c] \text{Cos}[5 d x]}{a d}-\frac{120 \text{Cos}[2 d x] \text{Sin}[2 c]}{a d}+ \frac{15 \text{Cos}[4 d x] \text{Sin}[4 c]}{a d}-\frac{300 \text{Sin}[c] \text{Sin}[d x]}{a d}-\frac{120 \text{Cos}[2 c] \text{Sin}[2 d x]}{a d}+\frac{50 \text{Sin}[3 c] \text{Sin}[3 d x]}{a d}+\frac{15 \text{Cos}[4 c] \text{Sin}[4 d x]}{a d}- \frac{6 \text{Sin}[5 c] \text{Sin}[5 d x]}{a d}-\frac{60 \text{Sin}\left[\frac{d x}{2}\right]}{a d \left(\text{Cos}\left[\frac{c}{2}\right]+\text{Sin}\left[\frac{c}{2}\right]\right) \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)}+\frac{30 \text{Sin}[c+d x]}{a d (1+\text{Sin}[c+d x])}+\frac{60 \text{Sin}\left[\frac{1}{2} (c+d x)\right]^2}{d (a+a \text{Sin}[c+d x])}\right)$$

Problem 298: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Cos}[c+d x]^2 \,\text{Sin}[c+d x]^3}{a+a \,\text{Sin}[c+d x]} \, dx$$

Optimal (type 3, 87 leaves, 6 steps):

$$-\frac{3 x}{8 a}-\frac{\text{Cos}[c+d x]}{a d}+\frac{\text{Cos}[c+d x]^3}{3 a d}+\frac{3 \,\text{Cos}[c+d x] \,\text{Sin}[c+d x]}{8 a d}+\frac{\text{Cos}[c+d x] \,\text{Sin}[c+d x]^3}{4 a d}$$

Result (type 3, 271 leaves):

$$\frac{1}{192 a d \left(\text{Cos}\left[\frac{c}{2}\right]+\text{Sin}\left[\frac{c}{2}\right]\right)} \left(24 (c-3 d x) \,\text{Cos}\left[\frac{c}{2}\right]-72 \,\text{Cos}\left[\frac{c}{2}+d x\right]-72 \,\text{Cos}\left[\frac{3 c}{2}+d x\right]+24 \,\text{Cos}\left[\frac{3 c}{2}+2 d x\right]-24 \,\text{Cos}\left[\frac{5 c}{2}+2 d x\right]+8 \,\text{Cos}\left[\frac{5 c}{2}+3 d x\right]+8 \,\text{Cos}\left[\frac{7 c}{2}+3 d x\right]-3 \,\text{Cos}\left[\frac{7 c}{2}+4 d x\right]+3 \,\text{Cos}\left[\frac{9 c}{2}+4 d x\right]-48 \,\text{Sin}\left[\frac{c}{2}\right]+24 c \,\text{Sin}\left[\frac{c}{2}\right]-72 d x \,\text{Sin}\left[\frac{c}{2}\right]+72 \,\text{Sin}\left[\frac{c}{2}+d x\right]-72 \,\text{Sin}\left[\frac{3 c}{2}+d x\right]+24 \,\text{Sin}\left[\frac{3 c}{2}+2 d x\right]+24 \,\text{Sin}\left[\frac{5 c}{2}+2 d x\right]-8 \,\text{Sin}\left[\frac{5 c}{2}+3 d x\right]+8 \,\text{Sin}\left[\frac{7 c}{2}+3 d x\right]-3 \,\text{Sin}\left[\frac{7 c}{2}+4 d x\right]-3 \,\text{Sin}\left[\frac{9 c}{2}+4 d x\right]\right)$$

Problem 300: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Cos}[c+d x]^2 \,\text{Sin}[c+d x]}{a+a \,\text{Sin}[c+d x]} \, dx$$

Optimal (type 3, 45 leaves, 4 steps):

$$-\frac{x}{2 a}-\frac{\text{Cos}[c+d x]}{a d}+\frac{\text{Cos}[c+d x] \,\text{Sin}[c+d x]}{2 a d}$$

Result (type 3, 161 leaves):

$$\frac{1}{8 a d \left(\text{Cos}\left[\frac{c}{2}\right]+\text{Sin}\left[\frac{c}{2}\right]\right)} \left(2 (c-2 d x) \,\text{Cos}\left[\frac{c}{2}\right]-4 \,\text{Cos}\left[\frac{c}{2}+d x\right]-4 \,\text{Cos}\left[\frac{3 c}{2}+d x\right]+\text{Cos}\left[\frac{3 c}{2}+2 d x\right]-\text{Cos}\left[\frac{5 c}{2}+2 d x\right]-4 \,\text{Sin}\left[\frac{c}{2}\right]+2 c \,\text{Sin}\left[\frac{c}{2}\right]-4 d x \,\text{Sin}\left[\frac{c}{2}\right]+4 \,\text{Sin}\left[\frac{c}{2}+d x\right]-4 \,\text{Sin}\left[\frac{3 c}{2}+d x\right]+\text{Sin}\left[\frac{3 c}{2}+2 d x\right]+\text{Sin}\left[\frac{5 c}{2}+2 d x\right]\right)$$

Problem 302: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Cot}[c+d x]^2}{a+a \,\text{Sin}[c+d x]} \, dx$$

Optimal (type 3, 29 leaves, 4 steps):

$$\frac{\text{ArcTanh}[\text{Cos}[c+d x]]}{a d}-\frac{\text{Cot}[c+d x]}{a d}$$

Result (type 3, 69 leaves):

$$-\frac{1}{2\,a\,d}\text{Csc}\left[\frac{1}{2}(c+d\,x)\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]\left(\text{Cos}[c+d\,x]+\left(-\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]\right]+\text{Log}\left[\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]\right)\text{Sin}[c+d\,x]\right)$$

- **Problem 308: Result more than twice size of optimal antiderivative.**

$$\int\frac{\text{Cos}[c+d\,x]^2\,\text{Sin}[c+d\,x]^3}{(a+a\,\text{Sin}[c+d\,x])^2}\,dx$$

Optimal (type 3, 83 leaves, 9 steps):

$$\frac{3\,x}{a^2}+\frac{3\,\text{Cos}[c+d\,x]}{a^2\,d}-\frac{\text{Cos}[c+d\,x]^3}{3\,a^2\,d}-\frac{\text{Cos}[c+d\,x]\,\text{Sin}[c+d\,x]}{a^2\,d}+\frac{2\,\text{Cos}[c+d\,x]}{a^2\,d\,(1+\text{Sin}[c+d\,x])}$$

Result (type 3, 183 leaves):

$$\left((2+72\,d\,x)\,\text{Cos}\left[\frac{d\,x}{2}\right]+31\,\text{Cos}\left[c+\frac{d\,x}{2}\right]+27\,\text{Cos}\left[c+\frac{3\,d\,x}{2}\right]+5\,\text{Cos}\left[3\,c+\frac{5\,d\,x}{2}\right]-\text{Cos}\left[3\,c+\frac{7\,d\,x}{2}\right]-\right.$$
$$\left.131\,\text{Sin}\left[\frac{d\,x}{2}\right]+2\,\text{Sin}\left[c+\frac{d\,x}{2}\right]+72\,d\,x\,\text{Sin}\left[c+\frac{d\,x}{2}\right]+27\,\text{Sin}\left[2\,c+\frac{3\,d\,x}{2}\right]-5\,\text{Sin}\left[2\,c+\frac{5\,d\,x}{2}\right]-\text{Sin}\left[4\,c+\frac{7\,d\,x}{2}\right]\right)\Big/$$
$$\left(24\,a^2\,d\left(\text{Cos}\left[\frac{c}{2}\right]+\text{Sin}\left[\frac{c}{2}\right]\right)\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)\right)$$

- **Problem 310: Result more than twice size of optimal antiderivative.**

$$\int\frac{\text{Cos}[c+d\,x]^2\,\text{Sin}[c+d\,x]}{(a+a\,\text{Sin}[c+d\,x])^2}\,dx$$

Optimal (type 3, 47 leaves, 3 steps):

$$\frac{2\,x}{a^2}+\frac{\text{Cos}[c+d\,x]}{a^2\,d}+\frac{2\,\text{Cos}[c+d\,x]}{d\left(a^2+a^2\,\text{Sin}[c+d\,x]\right)}$$

Result (type 3, 129 leaves):

$$\left((1+12\,d\,x)\,\text{Cos}\left[\frac{d\,x}{2}\right]+2\,\text{Cos}\left[c+\frac{d\,x}{2}\right]+3\,\text{Cos}\left[c+\frac{3\,d\,x}{2}\right]-28\,\text{Sin}\left[\frac{d\,x}{2}\right]+\text{Sin}\left[c+\frac{d\,x}{2}\right]+12\,d\,x\,\text{Sin}\left[c+\frac{d\,x}{2}\right]+3\,\text{Sin}\left[2\,c+\frac{3\,d\,x}{2}\right]\right)\Big/$$
$$\left(6\,a^2\,d\left(\text{Cos}\left[\frac{c}{2}\right]+\text{Sin}\left[\frac{c}{2}\right]\right)\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)\right)$$

- **Problem 311: Result more than twice size of optimal antiderivative.**

$$\int\frac{\text{Cos}[c+d\,x]\,\text{Cot}[c+d\,x]}{(a+a\,\text{Sin}[c+d\,x])^2}\,dx$$

Optimal (type 3, 40 leaves, 5 steps):

$$-\frac{\text{ArcTanh}[\text{Cos}[c+d\,x]]}{a^2\,d}+\frac{2\,\text{Cos}[c+d\,x]}{a^2\,d\,(1+\text{Sin}[c+d\,x])}$$

Result (type 3, 115 leaves):

$$-\frac{1}{a^2 d (1+\text{Sin}[c+d x])^2}\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3$$
$$\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]\left(\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right]-\text{Log}\left[\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]\right)+\left(4+\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right]-\text{Log}\left[\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]\right)\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)$$

- **Problem 312: Result more than twice size of optimal antiderivative.**

$$\int \frac{\text{Cot}[c+d x]^2}{(a+a\,\text{Sin}[c+d x])^2}\,dx$$

Optimal (type 3, 54 leaves, 7 steps):

$$\frac{2\,\text{ArcTanh}[\text{Cos}[c+d x]]}{a^2 d}-\frac{\text{Cot}[c+d x]}{a^2 d}-\frac{2\,\text{Cot}[c+d x]}{a^2 d (1+\text{Csc}[c+d x])}$$

Result (type 3, 216 leaves):

$$-\frac{1}{4 a^2 d (1+\text{Sin}[c+d x])^2}\text{Csc}\left[\frac{1}{2}(c+d x)\right]\text{Sec}\left[\frac{1}{2}(c+d x)\right]$$
$$\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3\left(\text{Cos}\left[\frac{3}{2}(c+d x)\right]\left(5+2\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right]-2\,\text{Log}\left[\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]\right)+\right.$$
$$\text{Cos}\left[\frac{1}{2}(c+d x)\right]\left(-3-2\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right]+2\,\text{Log}\left[\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]\right)+2\left(-2\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right]+\right.$$
$$\left.\left.2\,\text{Log}\left[\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]+\text{Cos}[c+d x]\left(1-2\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right]+2\,\text{Log}\left[\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]\right)\right)\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)$$

- **Problem 313: Result more than twice size of optimal antiderivative.**

$$\int \frac{\text{Cot}[c+d x]^2\,\text{Csc}[c+d x]}{(a+a\,\text{Sin}[c+d x])^2}\,dx$$

Optimal (type 3, 78 leaves, 9 steps):

$$-\frac{5\,\text{ArcTanh}[\text{Cos}[c+d x]]}{2 a^2 d}+\frac{2\,\text{Cot}[c+d x]}{a^2 d}-\frac{\text{Cot}[c+d x]\,\text{Csc}[c+d x]}{2 a^2 d}+\frac{2\,\text{Cos}[c+d x]}{a^2 d (1+\text{Sin}[c+d x])}$$

Result (type 3, 364 leaves):

$$-\frac{4\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3}{d\,(a+a\,\text{Sin}[c+d x])^2}+$$

$$\frac{\text{Cot}\left[\frac{1}{2}(c+d x)\right]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^4}{d\,(a+a\,\text{Sin}[c+d x])^2}-\frac{\text{Csc}\left[\frac{1}{2}(c+d x)\right]^2\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^4}{8\,d\,(a+a\,\text{Sin}[c+d x])^2}-$$

$$\frac{5\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^4}{2\,d\,(a+a\,\text{Sin}[c+d x])^2}+\frac{5\,\text{Log}\left[\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^4}{2\,d\,(a+a\,\text{Sin}[c+d x])^2}+$$

$$\frac{\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^4}{8\,d\,(a+a\,\text{Sin}[c+d x])^2}-\frac{\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^4\text{Tan}\left[\frac{1}{2}(c+d x)\right]}{d\,(a+a\,\text{Sin}[c+d x])^2}$$

Problem 314: Result more than twice size of optimal antiderivative.

$$\int\frac{\text{Cot}[c+d x]^2\,\text{Csc}[c+d x]^2}{(a+a\,\text{Sin}[c+d x])^2}\,dx$$

Optimal (type 3, 91 leaves, 11 steps):

$$\frac{3\,\text{ArcTanh}[\text{Cos}[c+d x]]}{a^2\,d}-\frac{3\,\text{Cot}[c+d x]}{a^2\,d}-\frac{\text{Cot}[c+d x]^3}{3\,a^2\,d}+\frac{\text{Cot}[c+d x]\,\text{Csc}[c+d x]}{a^2\,d}-\frac{2\,\text{Cos}[c+d x]}{a^2\,d\,(1+\text{Sin}[c+d x])}$$

Result (type 3, 472 leaves):

$$\frac{1}{192\,a^2\,d\,(1+\text{Sin}[c+d x])^2}$$
$$\left(\text{Csc}\left[\frac{1}{2}(c+d x)\right]+\text{Sec}\left[\frac{1}{2}(c+d x)\right]\right)^3\left(-10\,\text{Cos}\left[\frac{5}{2}(c+d x)\right]+20\,\text{Cos}\left[\frac{7}{2}(c+d x)\right]-9\,\text{Cos}\left[\frac{5}{2}(c+d x)\right]\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right]+\right.$$
$$9\,\text{Cos}\left[\frac{7}{2}(c+d x)\right]\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right]+3\,\text{Cos}\left[\frac{1}{2}(c+d x)\right]\left(8+9\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right]-9\,\text{Log}\left[\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]\right)-$$
$$3\,\text{Cos}\left[\frac{3}{2}(c+d x)\right]\left(14+9\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right]-9\,\text{Log}\left[\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]\right)+9\,\text{Cos}\left[\frac{5}{2}(c+d x)\right]\text{Log}\left[\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]-$$
$$9\,\text{Cos}\left[\frac{7}{2}(c+d x)\right]\text{Log}\left[\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]+12\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]+27\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right]\text{Sin}\left[\frac{1}{2}(c+d x)\right]-$$
$$27\,\text{Log}\left[\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]\text{Sin}\left[\frac{1}{2}(c+d x)\right]-6\,\text{Sin}\left[\frac{3}{2}(c+d x)\right]+27\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right]\text{Sin}\left[\frac{3}{2}(c+d x)\right]-$$
$$27\,\text{Log}\left[\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]\text{Sin}\left[\frac{3}{2}(c+d x)\right]-2\,\text{Sin}\left[\frac{5}{2}(c+d x)\right]-9\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right]\text{Sin}\left[\frac{5}{2}(c+d x)\right]+9\,\text{Log}\left[\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]$$
$$\left.\text{Sin}\left[\frac{5}{2}(c+d x)\right]+8\,\text{Sin}\left[\frac{7}{2}(c+d x)\right]-9\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right]\text{Sin}\left[\frac{7}{2}(c+d x)\right]+9\,\text{Log}\left[\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]\text{Sin}\left[\frac{7}{2}(c+d x)\right]\right)$$

Problem 315: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Cos}[c+d x]^2 \,\text{Sin}[c+d x]^3}{(a+a\,\text{Sin}[c+d x])^3}\,dx$$

Optimal (type 3, 97 leaves, 9 steps):

$$-\frac{11 x}{2 a^3}-\frac{3\,\text{Cos}[c+d x]}{a^3 d}+\frac{\text{Cos}[c+d x]\,\text{Sin}[c+d x]}{2 a^3 d}+\frac{2\,\text{Cos}[c+d x]}{3 a^3 d\,(1+\text{Sin}[c+d x])^2}-\frac{19\,\text{Cos}[c+d x]}{3 a^3 d\,(1+\text{Sin}[c+d x])}$$

Result (type 3, 235 leaves):

$$\frac{1}{240 a^3 d\left(\text{Cos}\left[\frac{c}{2}\right]+\text{Sin}\left[\frac{c}{2}\right]\right)\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3}$$
$$\left((9-1980 d x)\,\text{Cos}\left[\frac{d x}{2}\right]+1326\,\text{Cos}\left[c+\frac{d x}{2}\right]-2012\,\text{Cos}\left[c+\frac{3 d x}{2}\right]-3\,\text{Cos}\left[2 c+\frac{3 d x}{2}\right]+660 d x\,\text{Cos}\left[2 c+\frac{3 d x}{2}\right]+\right.$$
$$135\,\text{Cos}\left[3 c+\frac{5 d x}{2}\right]-15\,\text{Cos}\left[3 c+\frac{7 d x}{2}\right]+3216\,\text{Sin}\left[\frac{d x}{2}\right]+9\,\text{Sin}\left[c+\frac{d x}{2}\right]-1980 d x\,\text{Sin}\left[c+\frac{d x}{2}\right]+$$
$$\left.3\,\text{Sin}\left[c+\frac{3 d x}{2}\right]-660 d x\,\text{Sin}\left[c+\frac{3 d x}{2}\right]-498\,\text{Sin}\left[2 c+\frac{3 d x}{2}\right]-135\,\text{Sin}\left[2 c+\frac{5 d x}{2}\right]-15\,\text{Sin}\left[4 c+\frac{7 d x}{2}\right]\right)$$

Problem 317: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Cos}[c+d x]^2 \,\text{Sin}[c+d x]}{(a+a\,\text{Sin}[c+d x])^3}\,dx$$

Optimal (type 3, 61 leaves, 3 steps):

$$-\frac{x}{a^3}-\frac{7\,\text{Cos}[c+d x]}{3 a^3 d\,(1+\text{Sin}[c+d x])}+\frac{2\,\text{Cos}[c+d x]}{3 a d\,(a+a\,\text{Sin}[c+d x])^2}$$

Result (type 3, 183 leaves):

$$\left((9-180 d x)\,\text{Cos}\left[\frac{d x}{2}\right]+351\,\text{Cos}\left[c+\frac{d x}{2}\right]-277\,\text{Cos}\left[c+\frac{3 d x}{2}\right]-3\,\text{Cos}\left[2 c+\frac{3 d x}{2}\right]+60 d x\,\text{Cos}\left[2 c+\frac{3 d x}{2}\right]+\right.$$
$$\left.471\,\text{Sin}\left[\frac{d x}{2}\right]+9\,\text{Sin}\left[c+\frac{d x}{2}\right]-180 d x\,\text{Sin}\left[c+\frac{d x}{2}\right]+3\,\text{Sin}\left[c+\frac{3 d x}{2}\right]-60 d x\,\text{Sin}\left[c+\frac{3 d x}{2}\right]-3\,\text{Sin}\left[2 c+\frac{3 d x}{2}\right]\right)\Big/$$
$$\left(120 a^3 d\left(\text{Cos}\left[\frac{c}{2}\right]+\text{Sin}\left[\frac{c}{2}\right]\right)\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3\right)$$

Problem 318: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Cos}[c+d x]\,\text{Cot}[c+d x]}{(a+a\,\text{Sin}[c+d x])^3}\,dx$$

Optimal (type 3, 68 leaves, 7 steps):

$$-\frac{\text{ArcTanh}[\text{Cos}[c+d x]]}{a^3 d}+\frac{2 \text{Cos}[c+d x]}{3 a^3 d (1+\text{Sin}[c+d x])^2}+\frac{5 \text{Cos}[c+d x]}{3 a^3 d (1+\text{Sin}[c+d x])}$$

Result (type 3, 185 leaves):

$$\frac{1}{3 d (a+a \text{Sin}[c+d x])^3}\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3$$
$$\left(-4 \text{Sin}\left[\frac{1}{2}(c+d x)\right]+2\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)-10 \text{Sin}\left[\frac{1}{2}(c+d x)\right]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2-\right.$$
$$\left.3 \text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3+3 \text{Log}\left[\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3\right)$$

Problem 319: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Cot}[c+d x]^2}{(a+a \text{Sin}[c+d x])^3} \, dx$$

Optimal (type 3, 82 leaves, 10 steps):

$$\frac{3 \text{ArcTanh}[\text{Cos}[c+d x]]}{a^3 d}-\frac{\text{Cot}[c+d x]}{a^3 d}+\frac{2 \text{Cot}[c+d x]}{3 a^3 d (1+\text{Csc}[c+d x])^2}-\frac{13 \text{Cot}[c+d x]}{3 a^3 d (1+\text{Csc}[c+d x])}$$

Result (type 3, 255 leaves):

$$\frac{1}{6 d (a+a \text{Sin}[c+d x])^3}\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3$$
$$\left(8 \text{Sin}\left[\frac{1}{2}(c+d x)\right]-4\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)+44 \text{Sin}\left[\frac{1}{2}(c+d x)\right]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2-\right.$$
$$3 \text{Cot}\left[\frac{1}{2}(c+d x)\right]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3+18 \text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3-$$
$$\left.18 \text{Log}\left[\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3+3\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3 \text{Tan}\left[\frac{1}{2}(c+d x)\right]\right)$$

Problem 320: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Cot}[c+d x]^2 \text{Csc}[c+d x]}{(a+a \text{Sin}[c+d x])^3} \, dx$$

Optimal (type 3, 106 leaves, 11 steps):

$$-\frac{11 \text{ArcTanh}[\text{Cos}[c+d x]]}{2 a^3 d}+\frac{3 \text{Cot}[c+d x]}{a^3 d}-\frac{\text{Cot}[c+d x] \text{Csc}[c+d x]}{2 a^3 d}+\frac{2 \text{Cos}[c+d x]}{3 a^3 d (1+\text{Sin}[c+d x])^2}+\frac{17 \text{Cos}[c+d x]}{3 a^3 d (1+\text{Sin}[c+d x])}$$

Result (type 3, 465 leaves):

$$-\frac{4\,\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^3}{3\,d\,(a+a\,\mathrm{Sin}[c+d\,x])^3}+\frac{2\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4}{3\,d\,(a+a\,\mathrm{Sin}[c+d\,x])^3}-\frac{34\,\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^5}{3\,d\,(a+a\,\mathrm{Sin}[c+d\,x])^3}+\frac{3\,\mathrm{Cot}\left[\frac{1}{2}(c+d\,x)\right]\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^6}{2\,d\,(a+a\,\mathrm{Sin}[c+d\,x])^3}-\frac{\mathrm{Csc}\left[\frac{1}{2}(c+d\,x)\right]^2\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^6}{8\,d\,(a+a\,\mathrm{Sin}[c+d\,x])^3}-\frac{11\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]\right]\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^6}{2\,d\,(a+a\,\mathrm{Sin}[c+d\,x])^3}+\frac{11\,\mathrm{Log}\left[\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^6}{2\,d\,(a+a\,\mathrm{Sin}[c+d\,x])^3}+\frac{\mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^6}{8\,d\,(a+a\,\mathrm{Sin}[c+d\,x])^3}-\frac{3\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^6\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{2\,d\,(a+a\,\mathrm{Sin}[c+d\,x])^3}$$

- **Problem 326: Result more than twice size of optimal antiderivative.**

$$\int \mathrm{Cot}[c+d\,x]^2\sqrt{a+a\,\mathrm{Sin}[c+d\,x]}\,dx$$

Optimal (type 3, 89 leaves, 4 steps):

$$-\frac{\sqrt{a}\,\mathrm{ArcTanh}\left[\frac{\sqrt{a}\,\mathrm{Cos}[c+d\,x]}{\sqrt{a+a\,\mathrm{Sin}[c+d\,x]}}\right]}{d}+\frac{3\,a\,\mathrm{Cos}[c+d\,x]}{d\sqrt{a+a\,\mathrm{Sin}[c+d\,x]}}-\frac{\mathrm{Cot}[c+d\,x]\sqrt{a+a\,\mathrm{Sin}[c+d\,x]}}{d}$$

Result (type 3, 206 leaves):

$$\left(\mathrm{Csc}\left[\frac{1}{2}(c+d\,x)\right]^4\sqrt{a\,(1+\mathrm{Sin}[c+d\,x])}\left(-4\,\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+2\,\mathrm{Cos}\left[\frac{3}{2}(c+d\,x)\right]+4\,\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]-\mathrm{Log}\left[1+\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]\mathrm{Sin}[c+d\,x]+\mathrm{Log}\left[1-\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]\mathrm{Sin}[c+d\,x]+2\,\mathrm{Sin}\left[\frac{3}{2}(c+d\,x)\right]\right)\right)\Big/\left(d\left(1+\mathrm{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right)\left(\mathrm{Csc}\left[\frac{1}{4}(c+d\,x)\right]-\mathrm{Sec}\left[\frac{1}{4}(c+d\,x)\right]\right)\left(\mathrm{Csc}\left[\frac{1}{4}(c+d\,x)\right]+\mathrm{Sec}\left[\frac{1}{4}(c+d\,x)\right]\right)\right)$$

- **Problem 327: Result more than twice size of optimal antiderivative.**

$$\int \mathrm{Cot}[c+d\,x]^2\,\mathrm{Csc}[c+d\,x]\sqrt{a+a\,\mathrm{Sin}[c+d\,x]}\,dx$$

Optimal (type 3, 101 leaves, 5 steps):

$$\frac{5\sqrt{a}\,\mathrm{ArcTanh}\left[\frac{\sqrt{a}\,\mathrm{Cos}[c+d\,x]}{\sqrt{a+a\,\mathrm{Sin}[c+d\,x]}}\right]}{4\,d}-\frac{a\,\mathrm{Cot}[c+d\,x]}{4\,d\sqrt{a+a\,\mathrm{Sin}[c+d\,x]}}-\frac{\mathrm{Cot}[c+d\,x]\,\mathrm{Csc}[c+d\,x]\sqrt{a+a\,\mathrm{Sin}[c+d\,x]}}{2\,d}$$

Result (type 3, 249 leaves):

$$-\frac{1}{4 d \left(1+\text{Cot}\left[\frac{1}{2} (c+d x)\right]\right) \left(\text{Csc}\left[\frac{1}{4} (c+d x)\right]^2-\text{Sec}\left[\frac{1}{4} (c+d x)\right]^2\right)^2}\text{Csc}\left[\frac{1}{2} (c+d x)\right]^7 \sqrt{a (1+\text{Sin}[c+d x])} \left(2 \text{Cos}\left[\frac{1}{2} (c+d x)\right]+6 \text{Cos}\left[\frac{3}{2} (c+d x)\right]-5 \text{Log}\left[1+\text{Cos}\left[\frac{1}{2} (c+d x)\right]-\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right]+5 \text{Cos}[2 (c+d x)] \text{Log}\left[1+\text{Cos}\left[\frac{1}{2} (c+d x)\right]-\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right]+5 \text{Log}\left[1-\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right]-5 \text{Cos}[2 (c+d x)] \text{Log}\left[1-\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right]-2 \text{Sin}\left[\frac{1}{2} (c+d x)\right]+6 \text{Sin}\left[\frac{3}{2} (c+d x)\right]\right)$$

- **Problem 328: Result more than twice size of optimal antiderivative.**

$$\int \text{Cot}[c+d x]^2 \text{Csc}[c+d x]^2 \sqrt{a+a \text{Sin}[c+d x]} \, dx$$

Optimal (type 3, 137 leaves, 6 steps):

$$\frac{3 \sqrt{a} \text{ ArcTanh}\left[\frac{\sqrt{a} \text{ Cos}[c+d x]}{\sqrt{a+a \text{Sin}[c+d x]}}\right]}{8 d}+\frac{3 a \text{Cot}[c+d x]}{8 d \sqrt{a+a \text{Sin}[c+d x]}}-\frac{a \text{Cot}[c+d x] \text{Csc}[c+d x]}{12 d \sqrt{a+a \text{Sin}[c+d x]}}-\frac{\text{Cot}[c+d x] \text{Csc}[c+d x]^2 \sqrt{a+a \text{Sin}[c+d x]}}{3 d}$$

Result (type 3, 285 leaves):

$$-\frac{1}{24 d \left(1+\text{Cot}\left[\frac{1}{2} (c+d x)\right]\right) \left(\text{Csc}\left[\frac{1}{4} (c+d x)\right]^2-\text{Sec}\left[\frac{1}{4} (c+d x)\right]^2\right)^3}\text{Csc}\left[\frac{1}{2} (c+d x)\right]^{10} \sqrt{a (1+\text{Sin}[c+d x])} \left(-12 \text{Cos}\left[\frac{1}{2} (c+d x)\right]+58 \text{Cos}\left[\frac{3}{2} (c+d x)\right]+18 \text{Cos}\left[\frac{5}{2} (c+d x)\right]+12 \text{Sin}\left[\frac{1}{2} (c+d x)\right]-27 \text{Log}\left[1+\text{Cos}\left[\frac{1}{2} (c+d x)\right]-\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right] \text{Sin}[c+d x]+27 \text{Log}\left[1-\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right] \text{Sin}[c+d x]+58 \text{Sin}\left[\frac{3}{2} (c+d x)\right]-18 \text{Sin}\left[\frac{5}{2} (c+d x)\right]+9 \text{Log}\left[1+\text{Cos}\left[\frac{1}{2} (c+d x)\right]-\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right] \text{Sin}[3 (c+d x)]-9 \text{Log}\left[1-\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right] \text{Sin}[3 (c+d x)]\right)$$

- **Problem 334: Result more than twice size of optimal antiderivative.**

$$\int \text{Cot}[c+d x]^2 \text{Csc}[c+d x] (a+a \text{Sin}[c+d x])^{3/2} \, dx$$

Optimal (type 3, 131 leaves, 6 steps):

$$\frac{a^{3/2} \text{ ArcTanh}\left[\frac{\sqrt{a} \text{ Cos}[c+d x]}{\sqrt{a+a \text{Sin}[c+d x]}}\right]}{4 d}+\frac{13 a^2 \text{Cos}[c+d x]}{4 d \sqrt{a+a \text{Sin}[c+d x]}}-\frac{3 a \text{Cot}[c+d x] \sqrt{a+a \text{Sin}[c+d x]}}{4 d}-\frac{\text{Cot}[c+d x] \text{Csc}[c+d x] (a+a \text{Sin}[c+d x])^{3/2}}{2 d}$$

Result (type 3, 271 leaves):

$$-\frac{1}{4\,d\,\left(1+\text{Cot}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\,\left(\text{Csc}\left[\frac{1}{4}\,(c+d\,x)\right]^2-\text{Sec}\left[\frac{1}{4}\,(c+d\,x)\right]^2\right)^2}\,a\,\text{Csc}\left[\frac{1}{2}\,(c+d\,x)\right]^7\,\sqrt{a\,(1+\text{Sin}[c+d\,x])}\,\left(-22\,\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+22\,\text{Cos}\left[\frac{3}{2}\,(c+d\,x)\right]+8\,\text{Cos}\left[\frac{5}{2}\,(c+d\,x)\right]-\text{Log}\left[1+\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]+\text{Cos}[2\,(c+d\,x)]\,\text{Log}\left[1+\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]+\text{Log}\left[1-\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]-\text{Cos}[2\,(c+d\,x)]\,\text{Log}\left[1-\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]+22\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]+22\,\text{Sin}\left[\frac{3}{2}\,(c+d\,x)\right]-8\,\text{Sin}\left[\frac{5}{2}\,(c+d\,x)\right]\right)$$

- **Problem 335: Result more than twice size of optimal antiderivative.**

$$\int \text{Cot}[c+d\,x]^2\,\text{Csc}[c+d\,x]^2\,(a+a\,\text{Sin}[c+d\,x])^{3/2}\,dx$$

Optimal (type 3, 139 leaves, 6 steps):

$$\frac{13\,a^{3/2}\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\text{Cos}[c+d\,x]}{\sqrt{a+a\,\text{Sin}[c+d\,x]}}\right]}{8\,d}+\frac{5\,a^2\,\text{Cot}[c+d\,x]}{24\,d\,\sqrt{a+a\,\text{Sin}[c+d\,x]}}-\frac{a\,\text{Cot}[c+d\,x]\,\text{Csc}[c+d\,x]\,\sqrt{a+a\,\text{Sin}[c+d\,x]}}{4\,d}-\frac{\text{Cot}[c+d\,x]\,\text{Csc}[c+d\,x]^2\,(a+a\,\text{Sin}[c+d\,x])^{3/2}}{3\,d}$$

Result (type 3, 286 leaves):

$$-\frac{1}{24\,d\,\left(1+\text{Cot}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\,\left(\text{Csc}\left[\frac{1}{4}\,(c+d\,x)\right]^2-\text{Sec}\left[\frac{1}{4}\,(c+d\,x)\right]^2\right)^3}\,a\,\text{Csc}\left[\frac{1}{2}\,(c+d\,x)\right]^{10}\,\sqrt{a\,(1+\text{Sin}[c+d\,x])}\,\left(12\,\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+70\,\text{Cos}\left[\frac{3}{2}\,(c+d\,x)\right]-18\,\text{Cos}\left[\frac{5}{2}\,(c+d\,x)\right]-12\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]-117\,\text{Log}\left[1+\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\,\text{Sin}[c+d\,x]+117\,\text{Log}\left[1-\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\,\text{Sin}[c+d\,x]+70\,\text{Sin}\left[\frac{3}{2}\,(c+d\,x)\right]+18\,\text{Sin}\left[\frac{5}{2}\,(c+d\,x)\right]+39\,\text{Log}\left[1+\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\,\text{Sin}[3\,(c+d\,x)]-39\,\text{Log}\left[1-\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\,\text{Sin}[3\,(c+d\,x)]\right)$$

- **Problem 340: Result more than twice size of optimal antiderivative.**

$$\int \frac{\text{Cot}[c+d\,x]^2}{\sqrt{a+a\,\text{Sin}[c+d\,x]}}\,dx$$

Optimal (type 3, 62 leaves, 4 steps):

$$\frac{\text{ArcTanh}\left[\frac{\sqrt{a}\,\text{Cos}[c+d\,x]}{\sqrt{a+a\,\text{Sin}[c+d\,x]}}\right]}{\sqrt{a}\,d}-\frac{\text{Cot}[c+d\,x]}{d\,\sqrt{a+a\,\text{Sin}[c+d\,x]}}$$

Result (type 3, 138 leaves):

$$\frac{1}{8\,d\,\sqrt{a\,(1+\mathrm{Sin}[c+d\,x])}}\,\mathrm{Csc}\left[\frac{1}{4}\,(c+d\,x)\right]\,\mathrm{Sec}\left[\frac{1}{4}\,(c+d\,x)\right]\,\left(-2\,\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+2\,\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]+\left(\mathrm{Log}\left[1+\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]-\mathrm{Log}\left[1-\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\right)\,\mathrm{Sin}[c+d\,x]\right)\,\left(1+\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right)$$

- **Problem 341: Result more than twice size of optimal antiderivative.**

$$\int \frac{\mathrm{Cot}[c+d\,x]^2\,\mathrm{Csc}[c+d\,x]}{\sqrt{a+a\,\mathrm{Sin}[c+d\,x]}}\,dx$$

Optimal (type 3, 100 leaves, 5 steps):

$$\frac{\mathrm{ArcTanh}\left[\frac{\sqrt{a}\,\mathrm{Cos}[c+d\,x]}{\sqrt{a+a\,\mathrm{Sin}[c+d\,x]}}\right]}{4\,\sqrt{a}\,d}+\frac{\mathrm{Cot}[c+d\,x]}{4\,d\,\sqrt{a+a\,\mathrm{Sin}[c+d\,x]}}-\frac{\mathrm{Cot}[c+d\,x]\,\mathrm{Csc}[c+d\,x]}{2\,d\,\sqrt{a+a\,\mathrm{Sin}[c+d\,x]}}$$

Result (type 3, 272 leaves):

$$\frac{1}{32\,d\,\sqrt{a\,(1+\mathrm{Sin}[c+d\,x])}}\left(\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\left(-8+4\,\mathrm{Cot}\left[\frac{1}{4}\,(c+d\,x)\right]-\mathrm{Csc}\left[\frac{1}{4}\,(c+d\,x)\right]^2+4\,\mathrm{Log}\left[1+\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]-4\,\mathrm{Log}\left[1-\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]+\mathrm{Sec}\left[\frac{1}{4}\,(c+d\,x)\right]^2+\frac{2}{\left(\mathrm{Cos}\left[\frac{1}{4}\,(c+d\,x)\right]-\mathrm{Sin}\left[\frac{1}{4}\,(c+d\,x)\right]\right)^2}-\frac{8\,\mathrm{Sin}\left[\frac{1}{4}\,(c+d\,x)\right]}{\mathrm{Cos}\left[\frac{1}{4}\,(c+d\,x)\right]-\mathrm{Sin}\left[\frac{1}{4}\,(c+d\,x)\right]}-\frac{2}{\left(\mathrm{Cos}\left[\frac{1}{4}\,(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{4}\,(c+d\,x)\right]\right)^2}+\frac{8\,\mathrm{Sin}\left[\frac{1}{4}\,(c+d\,x)\right]}{\mathrm{Cos}\left[\frac{1}{4}\,(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{4}\,(c+d\,x)\right]}+4\,\mathrm{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]\right)$$

- **Problem 342: Result more than twice size of optimal antiderivative.**

$$\int \frac{\mathrm{Cot}[c+d\,x]^2\,\mathrm{Csc}[c+d\,x]^2}{\sqrt{a+a\,\mathrm{Sin}[c+d\,x]}}\,dx$$

Optimal (type 3, 135 leaves, 6 steps):

$$\frac{\mathrm{ArcTanh}\left[\frac{\sqrt{a}\,\mathrm{Cos}[c+d\,x]}{\sqrt{a+a\,\mathrm{Sin}[c+d\,x]}}\right]}{8\,\sqrt{a}\,d}+\frac{\mathrm{Cot}[c+d\,x]}{8\,d\,\sqrt{a+a\,\mathrm{Sin}[c+d\,x]}}+\frac{\mathrm{Cot}[c+d\,x]\,\mathrm{Csc}[c+d\,x]}{12\,d\,\sqrt{a+a\,\mathrm{Sin}[c+d\,x]}}-\frac{\mathrm{Cot}[c+d\,x]\,\mathrm{Csc}[c+d\,x]^2}{3\,d\,\sqrt{a+a\,\mathrm{Sin}[c+d\,x]}}$$

Result (type 3, 292 leaves):

$$\frac{1}{24\,d\left(\text{Csc}\left[\frac{1}{4}(c+d\,x)\right]^2-\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\right)^3\sqrt{a\,(1+\text{Sin}[c+d\,x])}}\text{Csc}\left[\frac{1}{2}(c+d\,x)\right]^9\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)$$
$$\left(-60\,\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+2\,\text{Cos}\left[\frac{3}{2}(c+d\,x)\right]-6\,\text{Cos}\left[\frac{5}{2}(c+d\,x)\right]+60\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]+9\,\text{Log}\left[1+\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]\text{Sin}[c+d\,x]-\right.$$
$$9\,\text{Log}\left[1-\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]\text{Sin}[c+d\,x]+2\,\text{Sin}\left[\frac{3}{2}(c+d\,x)\right]+6\,\text{Sin}\left[\frac{5}{2}(c+d\,x)\right]-$$
$$\left.3\,\text{Log}\left[1+\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]\text{Sin}[3\,(c+d\,x)]+3\,\text{Log}\left[1-\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]\text{Sin}[3\,(c+d\,x)]\right)$$

- **Problem 343: Result unnecessarily involves imaginary or complex numbers.**

$$\int\frac{\text{Cos}[c+d\,x]^2\,\text{Sin}[c+d\,x]^3}{(a+a\,\text{Sin}[c+d\,x])^{3/2}}\,dx$$

Optimal (type 3, 184 leaves, 8 steps):

$$\frac{2\sqrt{2}\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\text{Cos}[c+d\,x]}{\sqrt{2}\,\sqrt{a+a\,\text{Sin}[c+d\,x]}}\right]}{a^{3/2}\,d}-\frac{344\,\text{Cos}[c+d\,x]}{105\,a\,d\,\sqrt{a+a\,\text{Sin}[c+d\,x]}}-$$
$$\frac{16\,\text{Cos}[c+d\,x]\,\text{Sin}[c+d\,x]^2}{35\,a\,d\,\sqrt{a+a\,\text{Sin}[c+d\,x]}}+\frac{2\,\text{Cos}[c+d\,x]\,\text{Sin}[c+d\,x]^3}{7\,a\,d\,\sqrt{a+a\,\text{Sin}[c+d\,x]}}+\frac{76\,\text{Cos}[c+d\,x]\,\sqrt{a+a\,\text{Sin}[c+d\,x]}}{105\,a^2\,d}$$

Result (type 3, 201 leaves):

$$\frac{1}{420\,a^2\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)}$$
$$\sqrt{a\,(1+\text{Sin}[c+d\,x])}\left((1680+1680\,i)\,(-1)^{3/4}\,\text{ArcTanh}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{3/4}\,\text{Sec}\left[\frac{d\,x}{4}\right]\left(\text{Cos}\left[\frac{1}{4}(2\,c+d\,x)\right]-\text{Sin}\left[\frac{1}{4}(2\,c+d\,x)\right]\right)\right]-\right.$$
$$1365\,\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+245\,\text{Cos}\left[\frac{3}{2}(c+d\,x)\right]+63\,\text{Cos}\left[\frac{5}{2}(c+d\,x)\right]-15\,\text{Cos}\left[\frac{7}{2}(c+d\,x)\right]+$$
$$\left.1365\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]+245\,\text{Sin}\left[\frac{3}{2}(c+d\,x)\right]-63\,\text{Sin}\left[\frac{5}{2}(c+d\,x)\right]-15\,\text{Sin}\left[\frac{7}{2}(c+d\,x)\right]\right)$$

- **Problem 344: Result unnecessarily involves imaginary or complex numbers.**

$$\int\frac{\text{Cos}[c+d\,x]^2\,\text{Sin}[c+d\,x]^2}{(a+a\,\text{Sin}[c+d\,x])^{3/2}}\,dx$$

Optimal (type 3, 140 leaves, 5 steps):

$$-\frac{2\sqrt{2}\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\text{Cos}[c+d\,x]}{\sqrt{2}\,\sqrt{a+a\,\text{Sin}[c+d\,x]}}\right]}{a^{3/2}\,d}+\frac{18\,\text{Cos}[c+d\,x]}{5\,a\,d\,\sqrt{a+a\,\text{Sin}[c+d\,x]}}-\frac{2\,\text{Cos}[c+d\,x]^3}{5\,a\,d\,\sqrt{a+a\,\text{Sin}[c+d\,x]}}-\frac{4\,\text{Cos}[c+d\,x]\,\sqrt{a+a\,\text{Sin}[c+d\,x]}}{5\,a^2\,d}$$

Result (type 3, 150 leaves):

$$\left(\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3\left((40+40 i)(-1)^{3/4}\text{ArcTanh}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{3/4}\left(-1+\text{Tan}\left[\frac{1}{4}(c+d x)\right]\right)\right]+30\,\text{Cos}\left[\frac{1}{2}(c+d x)\right]-5\,\text{Cos}\left[\frac{3}{2}(c+d x)\right]-\text{Cos}\left[\frac{5}{2}(c+d x)\right]-30\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]-5\,\text{Sin}\left[\frac{3}{2}(c+d x)\right]+\text{Sin}\left[\frac{5}{2}(c+d x)\right]\right)\right)\Big/\left(10\,d\,(a\,(1+\text{Sin}[c+d x]))^{3/2}\right)$$

- **Problem 345: Result unnecessarily involves imaginary or complex numbers.**

$$\int\frac{\text{Cos}[c+d x]^2\,\text{Sin}[c+d x]}{(a+a\,\text{Sin}[c+d x])^{3/2}}\,dx$$

Optimal (type 3, 108 leaves, 4 steps):

$$\frac{2\sqrt{2}\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\text{Cos}[c+d x]}{\sqrt{2}\,\sqrt{a+a\,\text{Sin}[c+d x]}}\right]}{a^{3/2}\,d}-\frac{10\,\text{Cos}[c+d x]}{3\,a\,d\,\sqrt{a+a\,\text{Sin}[c+d x]}}+\frac{2\,\text{Cos}[c+d x]\,\sqrt{a+a\,\text{Sin}[c+d x]}}{3\,a^2\,d}$$

Result (type 3, 149 leaves):

$$\left(\sqrt{a\,(1+\text{Sin}[c+d x])}\left((12+12 i)(-1)^{3/4}\text{ArcTanh}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{3/4}\,\text{Sec}\left[\frac{d x}{4}\right]\left(\text{Cos}\left[\frac{1}{4}(2 c+d x)\right]-\text{Sin}\left[\frac{1}{4}(2 c+d x)\right]\right)\right]-9\,\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Cos}\left[\frac{3}{2}(c+d x)\right]+9\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{3}{2}(c+d x)\right]\right)\right)\Big/\left(3\,a^2\,d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)\right)$$

- **Problem 346: Result unnecessarily involves imaginary or complex numbers.**

$$\int\frac{\text{Cos}[c+d x]\,\text{Cot}[c+d x]}{(a+a\,\text{Sin}[c+d x])^{3/2}}\,dx$$

Optimal (type 3, 85 leaves, 6 steps):

$$-\frac{2\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\text{Cos}[c+d x]}{\sqrt{a+a\,\text{Sin}[c+d x]}}\right]}{a^{3/2}\,d}+\frac{2\sqrt{2}\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\text{Cos}[c+d x]}{\sqrt{2}\,\sqrt{a+a\,\text{Sin}[c+d x]}}\right]}{a^{3/2}\,d}$$

Result (type 3, 130 leaves):

$$-\frac{1}{d\,(a\,(1+\text{Sin}[c+d x]))^{3/2}}\left((4+4 i)(-1)^{3/4}\text{ArcTanh}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{3/4}\left(-1+\text{Tan}\left[\frac{1}{4}(c+d x)\right]\right)\right]+\text{Log}\left[1+\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]-\text{Log}\left[1-\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]\right)\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3$$

- **Problem 347: Result unnecessarily involves imaginary or complex numbers.**

$$\int\frac{\text{Cot}[c+d x]^2}{(a+a\,\text{Sin}[c+d x])^{3/2}}\,dx$$

Optimal (type 3, 113 leaves, 6 steps):

$$\frac{3\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\text{Cos}[c+d\,x]}{\sqrt{a+a\,\text{Sin}[c+d\,x]}}\right]}{a^{3/2}\,d}-\frac{2\,\sqrt{2}\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\text{Cos}[c+d\,x]}{\sqrt{2}\,\sqrt{a+a\,\text{Sin}[c+d\,x]}}\right]}{a^{3/2}\,d}-\frac{\text{Cot}[c+d\,x]}{a\,d\,\sqrt{a+a\,\text{Sin}[c+d\,x]}}$$

Result (type 3, 206 leaves) :

$$\frac{1}{4\,d\,(a\,(1+\text{Sin}[c+d\,x]))^{3/2}}\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^3\left((16+16\,i)\,(-1)^{3/4}\,\text{ArcTanh}\left[\left(\frac{1}{2}+\frac{i}{2}\right)\,(-1)^{3/4}\left(-1+\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]\right)\right]-\text{Cot}\left[\frac{1}{4}\,(c+d\,x)\right]+ 2\left(3\,\text{Log}\left[1+\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]-3\,\text{Log}\left[1-\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]+ \text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Csc}[c+d\,x]\,\text{Sin}\left[\frac{1}{4}\,(c+d\,x)\right]^2-\text{Csc}[c+d\,x]\,\text{Sin}\left[\frac{1}{4}\,(c+d\,x)\right]\,\text{Sin}\left[\frac{3}{4}\,(c+d\,x)\right]\right)\right)$$

- **Problem 348: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int\frac{\text{Cot}[c+d\,x]^2\,\text{Csc}[c+d\,x]}{(a+a\,\text{Sin}[c+d\,x])^{3/2}}\,dx$$

Optimal (type 3, 153 leaves, 8 steps) :

$$-\frac{11\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\text{Cos}[c+d\,x]}{\sqrt{a+a\,\text{Sin}[c+d\,x]}}\right]}{4\,a^{3/2}\,d}+\frac{2\,\sqrt{2}\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\text{Cos}[c+d\,x]}{\sqrt{2}\,\sqrt{a+a\,\text{Sin}[c+d\,x]}}\right]}{a^{3/2}\,d}+\frac{5\,\text{Cot}[c+d\,x]}{4\,a\,d\,\sqrt{a+a\,\text{Sin}[c+d\,x]}}-\frac{\text{Cot}[c+d\,x]\,\text{Csc}[c+d\,x]}{2\,a\,d\,\sqrt{a+a\,\text{Sin}[c+d\,x]}}$$

Result (type 3, 791 leaves) :

$$-\frac{3\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3}{4 d (a(1+\text{Sin}[c+d x]))^{3/2}}+\frac{1}{d(a(1+\text{Sin}[c+d x]))^{3/2}}$$

$$(4+4 i)(-1)^{3/4}\text{ArcTanh}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{3/4}\text{Sec}\left[\frac{1}{4}(c+d x)\right]\left(\text{Cos}\left[\frac{1}{4}(c+d x)\right]-\text{Sin}\left[\frac{1}{4}(c+d x)\right]\right)\right]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3+$$

$$\frac{3\,\text{Cot}\left[\frac{1}{4}(c+d x)\right]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3}{8 d (a(1+\text{Sin}[c+d x]))^{3/2}}-\frac{\text{Csc}\left[\frac{1}{4}(c+d x)\right]^2\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3}{32 d (a(1+\text{Sin}[c+d x]))^{3/2}}-$$

$$\frac{11\,\text{Log}\left[1+\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3}{8 d (a(1+\text{Sin}[c+d x]))^{3/2}}+$$

$$\frac{11\,\text{Log}\left[1-\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3}{8 d (a(1+\text{Sin}[c+d x]))^{3/2}}+$$

$$\frac{\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3}{32 d (a(1+\text{Sin}[c+d x]))^{3/2}}+\frac{\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3}{16 d\left(\text{Cos}\left[\frac{1}{4}(c+d x)\right]-\text{Sin}\left[\frac{1}{4}(c+d x)\right]\right)^2(a(1+\text{Sin}[c+d x]))^{3/2}}-$$

$$\frac{3\,\text{Sin}\left[\frac{1}{4}(c+d x)\right]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3}{4 d\left(\text{Cos}\left[\frac{1}{4}(c+d x)\right]-\text{Sin}\left[\frac{1}{4}(c+d x)\right]\right)(a(1+\text{Sin}[c+d x]))^{3/2}}-\frac{\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3}{16 d\left(\text{Cos}\left[\frac{1}{4}(c+d x)\right]+\text{Sin}\left[\frac{1}{4}(c+d x)\right]\right)^2(a(1+\text{Sin}[c+d x]))^{3/2}}+$$

$$\frac{3\,\text{Sin}\left[\frac{1}{4}(c+d x)\right]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3}{4 d\left(\text{Cos}\left[\frac{1}{4}(c+d x)\right]+\text{Sin}\left[\frac{1}{4}(c+d x)\right]\right)(a(1+\text{Sin}[c+d x]))^{3/2}}+\frac{3\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3\text{Tan}\left[\frac{1}{4}(c+d x)\right]}{8 d (a(1+\text{Sin}[c+d x]))^{3/2}}$$

- **Problem 349: Result unnecessarily involves imaginary or complex numbers.**

$$\int \frac{\text{Cot}[c+d x]^2\,\text{Csc}[c+d x]^2}{(a+a\,\text{Sin}[c+d x])^{3/2}}\,dx$$

Optimal (type 3, 191 leaves, 9 steps):

$$\frac{23\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\text{Cos}[c+d x]}{\sqrt{a+a\,\text{Sin}[c+d x]}}\right]}{8 a^{3/2} d}-\frac{2\sqrt{2}\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\text{Cos}[c+d x]}{\sqrt{2}\sqrt{a+a\,\text{Sin}[c+d x]}}\right]}{a^{3/2} d}-\frac{9\,\text{Cot}[c+d x]}{8 a d\sqrt{a+a\,\text{Sin}[c+d x]}}+\frac{7\,\text{Cot}[c+d x]\,\text{Csc}[c+d x]}{12 a d\sqrt{a+a\,\text{Sin}[c+d x]}}-\frac{\text{Cot}[c+d x]\,\text{Csc}[c+d x]^2}{3 a d\sqrt{a+a\,\text{Sin}[c+d x]}}$$

Result (type 3, 332 leaves):

$$\frac{1}{192\,d\,(a\,(1+\text{Sin}[c+d\,x]))^{3/2}}\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^3$$
$$\left((768+768\,i)\,(-1)^{3/4}\,\text{ArcTanh}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{3/4}\left(-1+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]\right)\right]-\frac{1}{\left(\text{Csc}\left[\frac{1}{4}(c+d\,x)\right]^2-\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\right)^3}\,8\,\text{Csc}\left[\frac{1}{2}(c+d\,x)\right]^9\right.$$
$$\left(228\,\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-110\,\text{Cos}\left[\frac{3}{2}(c+d\,x)\right]-54\,\text{Cos}\left[\frac{5}{2}(c+d\,x)\right]-228\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]-207\,\text{Log}\left[1+\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]\right.$$
$$\text{Sin}[c+d\,x]+207\,\text{Log}\left[1-\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]\text{Sin}[c+d\,x]-110\,\text{Sin}\left[\frac{3}{2}(c+d\,x)\right]+54\,\text{Sin}\left[\frac{5}{2}(c+d\,x)\right]+$$
$$\left.\left.69\,\text{Log}\left[1+\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]\text{Sin}[3\,(c+d\,x)]-69\,\text{Log}\left[1-\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]\text{Sin}[3\,(c+d\,x)]\right)\right)$$

- **Problem 376: Result more than twice size of optimal antiderivative.**

$$\int \text{Cot}[c+d\,x]^4\,\text{Csc}[c+d\,x]^4\,(a+a\,\text{Sin}[c+d\,x])\,dx$$

Optimal (type 3, 114 leaves, 8 steps):

$$-\frac{a\,\text{ArcTanh}[\text{Cos}[c+d\,x]]}{16\,d}-\frac{a\,\text{Cot}[c+d\,x]^5}{5\,d}-\frac{a\,\text{Cot}[c+d\,x]^7}{7\,d}-\frac{a\,\text{Cot}[c+d\,x]\,\text{Csc}[c+d\,x]}{16\,d}+\frac{a\,\text{Cot}[c+d\,x]\,\text{Csc}[c+d\,x]^3}{8\,d}-\frac{a\,\text{Cot}[c+d\,x]^3\,\text{Csc}[c+d\,x]^3}{6\,d}$$

Result (type 3, 239 leaves):

$$-\frac{2\,a\,\text{Cot}[c+d\,x]}{35\,d}-\frac{a\,\text{Csc}\left[\frac{1}{2}(c+d\,x)\right]^2}{64\,d}+\frac{a\,\text{Csc}\left[\frac{1}{2}(c+d\,x)\right]^4}{64\,d}-\frac{a\,\text{Csc}\left[\frac{1}{2}(c+d\,x)\right]^6}{384\,d}-\frac{a\,\text{Cot}[c+d\,x]\,\text{Csc}[c+d\,x]^2}{35\,d}+\frac{8\,a\,\text{Cot}[c+d\,x]\,\text{Csc}[c+d\,x]^4}{35\,d}-$$
$$\frac{a\,\text{Cot}[c+d\,x]\,\text{Csc}[c+d\,x]^6}{7\,d}-\frac{a\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]\right]}{16\,d}+\frac{a\,\text{Log}\left[\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]}{16\,d}+\frac{a\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2}{64\,d}-\frac{a\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^4}{64\,d}+\frac{a\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^6}{384\,d}$$

- **Problem 377: Result more than twice size of optimal antiderivative.**

$$\int \text{Cot}[c+d\,x]^4\,\text{Csc}[c+d\,x]^5\,(a+a\,\text{Sin}[c+d\,x])\,dx$$

Optimal (type 3, 136 leaves, 9 steps):

$$-\frac{3\,a\,\text{ArcTanh}[\text{Cos}[c+d\,x]]}{128\,d}-\frac{a\,\text{Cot}[c+d\,x]^5}{5\,d}-\frac{a\,\text{Cot}[c+d\,x]^7}{7\,d}-\frac{3\,a\,\text{Cot}[c+d\,x]\,\text{Csc}[c+d\,x]}{128\,d}-\frac{a\,\text{Cot}[c+d\,x]\,\text{Csc}[c+d\,x]^3}{64\,d}+\frac{a\,\text{Cot}[c+d\,x]\,\text{Csc}[c+d\,x]^5}{16\,d}-\frac{a\,\text{Cot}[c+d\,x]^3\,\text{Csc}[c+d\,x]^5}{8\,d}$$

Result (type 3, 279 leaves):

$$-\frac{2 a \operatorname{Cot}[c+d x]}{35 d}-\frac{3 a \operatorname{Csc}\left[\frac{1}{2}(c+d x)\right]^2}{512 d}+\frac{a \operatorname{Csc}\left[\frac{1}{2}(c+d x)\right]^4}{1024 d}+\frac{a \operatorname{Csc}\left[\frac{1}{2}(c+d x)\right]^6}{512 d}-\frac{a \operatorname{Csc}\left[\frac{1}{2}(c+d x)\right]^8}{2048 d}-\frac{a \operatorname{Cot}[c+d x] \operatorname{Csc}[c+d x]^2}{35 d}+\frac{8 a \operatorname{Cot}[c+d x] \operatorname{Csc}[c+d x]^4}{35 d}-\frac{a \operatorname{Cot}[c+d x] \operatorname{Csc}[c+d x]^6}{7 d}-\frac{3 a \operatorname{Log}\left[\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]\right]}{128 d}+\frac{3 a \operatorname{Log}\left[\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right]}{128 d}+\frac{3 a \operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^2}{512 d}-\frac{a \operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^4}{1024 d}-\frac{a \operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^6}{512 d}+\frac{a \operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^8}{2048 d}$$

- **Problem 388: Result more than twice size of optimal antiderivative.**

$$\int \operatorname{Cot}[c+d x]^4 \operatorname{Csc}[c+d x]^3 (a+a \operatorname{Sin}[c+d x])^2 \, dx$$

Optimal (type 3, 132 leaves, 11 steps):

$$-\frac{7 a^2 \operatorname{ArcTanh}[\operatorname{Cos}[c+d x]]}{16 d}-\frac{2 a^2 \operatorname{Cot}[c+d x]^5}{5 d}+\frac{5 a^2 \operatorname{Cot}[c+d x] \operatorname{Csc}[c+d x]}{16 d}-\frac{a^2 \operatorname{Cot}[c+d x]^3 \operatorname{Csc}[c+d x]}{4 d}+\frac{a^2 \operatorname{Cot}[c+d x] \operatorname{Csc}[c+d x]^3}{8 d}-\frac{a^2 \operatorname{Cot}[c+d x]^3 \operatorname{Csc}[c+d x]^3}{6 d}$$

Result (type 3, 267 leaves):

$$a^2 \left(-\frac{\operatorname{Cot}\left[\frac{1}{2}(c+d x)\right]}{5 d}+\frac{9 \operatorname{Csc}\left[\frac{1}{2}(c+d x)\right]^2}{64 d}+\frac{7 \operatorname{Cot}\left[\frac{1}{2}(c+d x)\right] \operatorname{Csc}\left[\frac{1}{2}(c+d x)\right]^2}{80 d}-\frac{\operatorname{Cot}\left[\frac{1}{2}(c+d x)\right] \operatorname{Csc}\left[\frac{1}{2}(c+d x)\right]^4}{80 d}-\frac{\operatorname{Csc}\left[\frac{1}{2}(c+d x)\right]^6}{384 d}-\frac{7 \operatorname{Log}\left[\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]\right]}{16 d}+\frac{7 \operatorname{Log}\left[\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right]}{16 d}-\frac{9 \operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^2}{64 d}+\frac{\operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^6}{384 d}+\frac{\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]}{5 d}-\frac{7 \operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]}{80 d}+\frac{\operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^4 \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]}{80 d}\right)$$

- **Problem 398: Result more than twice size of optimal antiderivative.**

$$\int \operatorname{Cos}[c+d x] \operatorname{Cot}[c+d x]^3 (a+a \operatorname{Sin}[c+d x])^3 \, dx$$

Optimal (type 3, 137 leaves, 15 steps):

$$-\frac{33 a^3 x}{8}-\frac{3 a^3 \operatorname{ArcTanh}[\operatorname{Cos}[c+d x]]}{2 d}+\frac{2 a^3 \operatorname{Cos}[c+d x]}{d}+\frac{a^3 \operatorname{Cos}[c+d x]^3}{d}-\frac{3 a^3 \operatorname{Cot}[c+d x]}{d}-\frac{a^3 \operatorname{Cot}[c+d x] \operatorname{Csc}[c+d x]}{2 d}-\frac{7 a^3 \operatorname{Cos}[c+d x] \operatorname{Sin}[c+d x]}{8 d}-\frac{a^3 \operatorname{Cos}[c+d x] \operatorname{Sin}[c+d x]^3}{4 d}$$

Result (type 3, 564 leaves):

$$-\frac{33\,(c+d x)\,(a+a\,\text{Sin}[c+d x])^3}{8 d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^6}+\frac{11\,\text{Cos}[c+d x]\,(a+a\,\text{Sin}[c+d x])^3}{4 d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^6}+$$

$$\frac{\text{Cos}[3(c+d x)]\,(a+a\,\text{Sin}[c+d x])^3}{4 d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^6}-\frac{3\,\text{Cot}\left[\frac{1}{2}(c+d x)\right](a+a\,\text{Sin}[c+d x])^3}{2 d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^6}-\frac{\text{Csc}\left[\frac{1}{2}(c+d x)\right]^2(a+a\,\text{Sin}[c+d x])^3}{8 d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^6}-$$

$$\frac{3\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right](a+a\,\text{Sin}[c+d x])^3}{2 d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^6}+\frac{3\,\text{Log}\left[\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right](a+a\,\text{Sin}[c+d x])^3}{2 d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^6}+\frac{\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2(a+a\,\text{Sin}[c+d x])^3}{8 d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^6}-$$

$$\frac{(a+a\,\text{Sin}[c+d x])^3\,\text{Sin}[2(c+d x)]}{2 d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^6}+\frac{(a+a\,\text{Sin}[c+d x])^3\,\text{Sin}[4(c+d x)]}{32 d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^6}+\frac{3\,(a+a\,\text{Sin}[c+d x])^3\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]}{2 d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^6}$$

- **Problem 403: Result more than twice size of optimal antiderivative.**

$$\int \text{Cot}[c+d x]^4\,\text{Csc}[c+d x]^4\,(a+a\,\text{Sin}[c+d x])^3\,dx$$

Optimal (type 3, 150 leaves, 14 steps):

$$-\frac{9 a^3\,\text{ArcTanh}[\text{Cos}[c+d x]]}{16 d}-\frac{4 a^3\,\text{Cot}[c+d x]^5}{5 d}-\frac{a^3\,\text{Cot}[c+d x]^7}{7 d}+\frac{3 a^3\,\text{Cot}[c+d x]\,\text{Csc}[c+d x]}{16 d}-$$
$$\frac{a^3\,\text{Cot}[c+d x]^3\,\text{Csc}[c+d x]}{4 d}+\frac{3 a^3\,\text{Cot}[c+d x]\,\text{Csc}[c+d x]^3}{8 d}-\frac{a^3\,\text{Cot}[c+d x]^3\,\text{Csc}[c+d x]^3}{2 d}$$

Result (type 3, 363 leaves):

$$a^3\left(-\frac{23\,\text{Cot}\left[\frac{1}{2}(c+d x)\right]}{70 d}+\frac{7\,\text{Csc}\left[\frac{1}{2}(c+d x)\right]^2}{64 d}+\frac{297\,\text{Cot}\left[\frac{1}{2}(c+d x)\right]\text{Csc}\left[\frac{1}{2}(c+d x)\right]^2}{2240 d}+\frac{\text{Csc}\left[\frac{1}{2}(c+d x)\right]^4}{32 d}-\right.$$
$$\frac{31\,\text{Cot}\left[\frac{1}{2}(c+d x)\right]\text{Csc}\left[\frac{1}{2}(c+d x)\right]^4}{2240 d}-\frac{\text{Csc}\left[\frac{1}{2}(c+d x)\right]^6}{128 d}-\frac{\text{Cot}\left[\frac{1}{2}(c+d x)\right]\text{Csc}\left[\frac{1}{2}(c+d x)\right]^6}{896 d}-\frac{9\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right]}{16 d}+$$
$$\frac{9\,\text{Log}\left[\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]}{16 d}-\frac{7\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2}{64 d}-\frac{\text{Sec}\left[\frac{1}{2}(c+d x)\right]^4}{32 d}+\frac{\text{Sec}\left[\frac{1}{2}(c+d x)\right]^6}{128 d}+\frac{23\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]}{70 d}-$$
$$\left.\frac{297\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]}{2240 d}+\frac{31\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^4\text{Tan}\left[\frac{1}{2}(c+d x)\right]}{2240 d}+\frac{\text{Sec}\left[\frac{1}{2}(c+d x)\right]^6\text{Tan}\left[\frac{1}{2}(c+d x)\right]}{896 d}\right)$$

- **Problem 404: Result more than twice size of optimal antiderivative.**

$$\int \text{Cot}[c+d x]^4\,\text{Csc}[c+d x]^5\,(a+a\,\text{Sin}[c+d x])^3\,dx$$

Optimal (type 3, 176 leaves, 16 steps):

$$-\frac{27 a^3 \operatorname{ArcTanh}[\operatorname{Cos}[c+d x]]}{128 d}-\frac{4 a^3 \operatorname{Cot}[c+d x]^5}{5 d}-\frac{3 a^3 \operatorname{Cot}[c+d x]^7}{7 d}-\frac{27 a^3 \operatorname{Cot}[c+d x] \operatorname{Csc}[c+d x]}{128 d}+\frac{23 a^3 \operatorname{Cot}[c+d x] \operatorname{Csc}[c+d x]^3}{64 d}-\frac{a^3 \operatorname{Cot}[c+d x]^3 \operatorname{Csc}[c+d x]^3}{2 d}+\frac{a^3 \operatorname{Cot}[c+d x] \operatorname{Csc}[c+d x]^5}{16 d}-\frac{a^3 \operatorname{Cot}[c+d x]^3 \operatorname{Csc}[c+d x]^5}{8 d}$$

Result (type 3, 1027 leaves):

$$-\frac{13 \operatorname{Cot}\left[\frac{1}{2}(c+d x)\right](a+a \operatorname{Sin}[c+d x])^3}{70 d\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^6}-\frac{27 \operatorname{Csc}\left[\frac{1}{2}(c+d x)\right]^2(a+a \operatorname{Sin}[c+d x])^3}{512 d\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^6}+\frac{107 \operatorname{Cot}\left[\frac{1}{2}(c+d x)\right] \operatorname{Csc}\left[\frac{1}{2}(c+d x)\right]^2(a+a \operatorname{Sin}[c+d x])^3}{2240 d\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^6}+\frac{49 \operatorname{Csc}\left[\frac{1}{2}(c+d x)\right]^4(a+a \operatorname{Sin}[c+d x])^3}{1024 d\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^6}+\frac{19 \operatorname{Cot}\left[\frac{1}{2}(c+d x)\right] \operatorname{Csc}\left[\frac{1}{2}(c+d x)\right]^4(a+a \operatorname{Sin}[c+d x])^3}{2240 d\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^6}-\frac{3 \operatorname{Csc}\left[\frac{1}{2}(c+d x)\right]^6(a+a \operatorname{Sin}[c+d x])^3}{512 d\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^6}-\frac{3 \operatorname{Cot}\left[\frac{1}{2}(c+d x)\right] \operatorname{Csc}\left[\frac{1}{2}(c+d x)\right]^6(a+a \operatorname{Sin}[c+d x])^3}{896 d\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^6}-\frac{\operatorname{Csc}\left[\frac{1}{2}(c+d x)\right]^8(a+a \operatorname{Sin}[c+d x])^3}{2048 d\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^6}-\frac{27 \operatorname{Log}\left[\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]\right](a+a \operatorname{Sin}[c+d x])^3}{128 d\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^6}+\frac{27 \operatorname{Log}\left[\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right](a+a \operatorname{Sin}[c+d x])^3}{128 d\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^6}+\frac{27 \operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^2(a+a \operatorname{Sin}[c+d x])^3}{512 d\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^6}-\frac{49 \operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^4(a+a \operatorname{Sin}[c+d x])^3}{1024 d\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^6}+\frac{3 \operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^6(a+a \operatorname{Sin}[c+d x])^3}{512 d\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^6}+\frac{\operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^8(a+a \operatorname{Sin}[c+d x])^3}{2048 d\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^6}+\frac{13(a+a \operatorname{Sin}[c+d x])^3 \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]}{70 d\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^6}-\frac{107 \operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^2(a+a \operatorname{Sin}[c+d x])^3 \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]}{2240 d\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^6}-\frac{19 \operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^4(a+a \operatorname{Sin}[c+d x])^3 \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]}{2240 d\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^6}+\frac{3 \operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^6(a+a \operatorname{Sin}[c+d x])^3 \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]}{896 d\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^6}$$

- **Problem 410: Result more than twice size of optimal antiderivative.**

$$\int \frac{\operatorname{Cos}[c+d x]^4 \operatorname{Sin}[c+d x]^3}{a+a \operatorname{Sin}[c+d x]} \, dx$$

Optimal (type 3, 117 leaves, 8 steps):

$$-\frac{x}{16 a}-\frac{\operatorname{Cos}[c+d x]^3}{3 a d}+\frac{\operatorname{Cos}[c+d x]^5}{5 a d}-\frac{\operatorname{Cos}[c+d x] \operatorname{Sin}[c+d x]}{16 a d}+\frac{\operatorname{Cos}[c+d x]^3 \operatorname{Sin}[c+d x]}{8 a d}+\frac{\operatorname{Cos}[c+d x]^3 \operatorname{Sin}[c+d x]^3}{6 a d}$$

Result (type 3, 377 leaves):

$$\frac{1}{1920\,a\,d\,\left(\text{Cos}\left[\frac{c}{2}\right]+\text{Sin}\left[\frac{c}{2}\right]\right)}\left(30\,(3\,c-4\,d\,x)\,\text{Cos}\left[\frac{c}{2}\right]-120\,\text{Cos}\left[\frac{c}{2}+d\,x\right]-120\,\text{Cos}\left[\frac{3\,c}{2}+d\,x\right]+15\,\text{Cos}\left[\frac{3\,c}{2}+2\,d\,x\right]-15\,\text{Cos}\left[\frac{5\,c}{2}+2\,d\,x\right]-20\,\text{Cos}\left[\frac{5\,c}{2}+3\,d\,x\right]-20\,\text{Cos}\left[\frac{7\,c}{2}+3\,d\,x\right]+15\,\text{Cos}\left[\frac{7\,c}{2}+4\,d\,x\right]-15\,\text{Cos}\left[\frac{9\,c}{2}+4\,d\,x\right]+12\,\text{Cos}\left[\frac{9\,c}{2}+5\,d\,x\right]+12\,\text{Cos}\left[\frac{11\,c}{2}+5\,d\,x\right]-5\,\text{Cos}\left[\frac{11\,c}{2}+6\,d\,x\right]+5\,\text{Cos}\left[\frac{13\,c}{2}+6\,d\,x\right]-180\,\text{Sin}\left[\frac{c}{2}\right]+90\,c\,\text{Sin}\left[\frac{c}{2}\right]-120\,d\,x\,\text{Sin}\left[\frac{c}{2}\right]+120\,\text{Sin}\left[\frac{c}{2}+d\,x\right]-120\,\text{Sin}\left[\frac{3\,c}{2}+d\,x\right]+15\,\text{Sin}\left[\frac{3\,c}{2}+2\,d\,x\right]+15\,\text{Sin}\left[\frac{5\,c}{2}+2\,d\,x\right]+20\,\text{Sin}\left[\frac{5\,c}{2}+3\,d\,x\right]-20\,\text{Sin}\left[\frac{7\,c}{2}+3\,d\,x\right]+15\,\text{Sin}\left[\frac{7\,c}{2}+4\,d\,x\right]+15\,\text{Sin}\left[\frac{9\,c}{2}+4\,d\,x\right]-12\,\text{Sin}\left[\frac{9\,c}{2}+5\,d\,x\right]+12\,\text{Sin}\left[\frac{11\,c}{2}+5\,d\,x\right]-5\,\text{Sin}\left[\frac{11\,c}{2}+6\,d\,x\right]-5\,\text{Sin}\left[\frac{13\,c}{2}+6\,d\,x\right]\right)$$

- **Problem 411: Result more than twice size of optimal antiderivative.**

$$\int\frac{\text{Cos}[c+d\,x]^4\,\text{Sin}[c+d\,x]^2}{a+a\,\text{Sin}[c+d\,x]}\,dx$$

Optimal (type 3, 91 leaves, 7 steps):

$$\frac{x}{8\,a}+\frac{\text{Cos}[c+d\,x]^3}{3\,a\,d}-\frac{\text{Cos}[c+d\,x]^5}{5\,a\,d}+\frac{\text{Cos}[c+d\,x]\,\text{Sin}[c+d\,x]}{8\,a\,d}-\frac{\text{Cos}[c+d\,x]^3\,\text{Sin}[c+d\,x]}{4\,a\,d}$$

Result (type 3, 258 leaves):

$$\frac{1}{960\,a\,d\,\left(\text{Cos}\left[\frac{c}{2}\right]+\text{Sin}\left[\frac{c}{2}\right]\right)}\left(120\,d\,x\,\text{Cos}\left[\frac{c}{2}\right]+60\,\text{Cos}\left[\frac{c}{2}+d\,x\right]+60\,\text{Cos}\left[\frac{3\,c}{2}+d\,x\right]+10\,\text{Cos}\left[\frac{5\,c}{2}+3\,d\,x\right]+10\,\text{Cos}\left[\frac{7\,c}{2}+3\,d\,x\right]-15\,\text{Cos}\left[\frac{7\,c}{2}+4\,d\,x\right]+15\,\text{Cos}\left[\frac{9\,c}{2}+4\,d\,x\right]-6\,\text{Cos}\left[\frac{9\,c}{2}+5\,d\,x\right]-6\,\text{Cos}\left[\frac{11\,c}{2}+5\,d\,x\right]+120\,\text{Sin}\left[\frac{c}{2}\right]+120\,d\,x\,\text{Sin}\left[\frac{c}{2}\right]-60\,\text{Sin}\left[\frac{c}{2}+d\,x\right]+60\,\text{Sin}\left[\frac{3\,c}{2}+d\,x\right]-10\,\text{Sin}\left[\frac{5\,c}{2}+3\,d\,x\right]+10\,\text{Sin}\left[\frac{7\,c}{2}+3\,d\,x\right]-15\,\text{Sin}\left[\frac{7\,c}{2}+4\,d\,x\right]-15\,\text{Sin}\left[\frac{9\,c}{2}+4\,d\,x\right]+6\,\text{Sin}\left[\frac{9\,c}{2}+5\,d\,x\right]-6\,\text{Sin}\left[\frac{11\,c}{2}+5\,d\,x\right]\right)$$

- **Problem 412: Result more than twice size of optimal antiderivative.**

$$\int\frac{\text{Cos}[c+d\,x]^4\,\text{Sin}[c+d\,x]}{a+a\,\text{Sin}[c+d\,x]}\,dx$$

Optimal (type 3, 73 leaves, 6 steps):

$$-\frac{x}{8\,a}-\frac{\text{Cos}[c+d\,x]^3}{3\,a\,d}-\frac{\text{Cos}[c+d\,x]\,\text{Sin}[c+d\,x]}{8\,a\,d}+\frac{\text{Cos}[c+d\,x]^3\,\text{Sin}[c+d\,x]}{4\,a\,d}$$

Result (type 3, 219 leaves):

$$-\left(-24\,(c-d\,x)\,\mathrm{Cos}\left[\frac{c}{2}\right]+24\,\mathrm{Cos}\left[\frac{c}{2}+d\,x\right]+24\,\mathrm{Cos}\left[\frac{3\,c}{2}+d\,x\right]+8\,\mathrm{Cos}\left[\frac{5\,c}{2}+3\,d\,x\right]+8\,\mathrm{Cos}\left[\frac{7\,c}{2}+3\,d\,x\right]-3\,\mathrm{Cos}\left[\frac{7\,c}{2}+4\,d\,x\right]+3\,\mathrm{Cos}\left[\frac{9\,c}{2}+4\,d\,x\right]+48\,\mathrm{Sin}\left[\frac{c}{2}\right]-24\,c\,\mathrm{Sin}\left[\frac{c}{2}\right]+24\,d\,x\,\mathrm{Sin}\left[\frac{c}{2}\right]-24\,\mathrm{Sin}\left[\frac{c}{2}+d\,x\right]+24\,\mathrm{Sin}\left[\frac{3\,c}{2}+d\,x\right]-8\,\mathrm{Sin}\left[\frac{5\,c}{2}+3\,d\,x\right]+8\,\mathrm{Sin}\left[\frac{7\,c}{2}+3\,d\,x\right]-3\,\mathrm{Sin}\left[\frac{7\,c}{2}+4\,d\,x\right]-3\,\mathrm{Sin}\left[\frac{9\,c}{2}+4\,d\,x\right]\right)\Big/\left(192\,a\,d\,\left(\mathrm{Cos}\left[\frac{c}{2}\right]+\mathrm{Sin}\left[\frac{c}{2}\right]\right)\right)$$

- **Problem 416: Result more than twice size of optimal antiderivative.**

$$\int\frac{\mathrm{Cot}[c+d\,x]^4}{a+a\,\mathrm{Sin}[c+d\,x]}\,dx$$

Optimal (type 3, 58 leaves, 5 steps):

$$-\frac{\mathrm{ArcTanh}[\mathrm{Cos}[c+d\,x]]}{2\,a\,d}-\frac{\mathrm{Cot}[c+d\,x]^3}{3\,a\,d}+\frac{\mathrm{Cot}[c+d\,x]\,\mathrm{Csc}[c+d\,x]}{2\,a\,d}$$

Result (type 3, 124 leaves):

$$-\frac{1}{96\,a\,d\,(1+\mathrm{Sin}[c+d\,x])}\mathrm{Csc}\left[\frac{1}{2}\,(c+d\,x)\right]\,\mathrm{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]\,\left(\mathrm{Csc}\left[\frac{1}{2}\,(c+d\,x)\right]+\mathrm{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2\left(\mathrm{Cos}[3\,(c+d\,x)]+\mathrm{Cos}[c+d\,x]\,(3-6\,\mathrm{Sin}[c+d\,x])+6\,\left(\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]\right]-\mathrm{Log}\left[\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\right)\,\mathrm{Sin}[c+d\,x]^3\right)$$

- **Problem 420: Result more than twice size of optimal antiderivative.**

$$\int\frac{\mathrm{Cos}[c+d\,x]^4\,\mathrm{Sin}[c+d\,x]^5}{(a+a\,\mathrm{Sin}[c+d\,x])^2}\,dx$$

Optimal (type 3, 147 leaves, 11 steps):

$$-\frac{5\,x}{8\,a^2}-\frac{2\,\mathrm{Cos}[c+d\,x]}{a^2\,d}+\frac{5\,\mathrm{Cos}[c+d\,x]^3}{3\,a^2\,d}-\frac{4\,\mathrm{Cos}[c+d\,x]^5}{5\,a^2\,d}+\frac{\mathrm{Cos}[c+d\,x]^7}{7\,a^2\,d}+\frac{5\,\mathrm{Cos}[c+d\,x]\,\mathrm{Sin}[c+d\,x]}{8\,a^2\,d}+\frac{5\,\mathrm{Cos}[c+d\,x]\,\mathrm{Sin}[c+d\,x]^3}{12\,a^2\,d}+\frac{\mathrm{Cos}[c+d\,x]\,\mathrm{Sin}[c+d\,x]^5}{3\,a^2\,d}$$

Result (type 3, 414 leaves):

$$\frac{1}{13440\,a^2\,d\,\left(\mathrm{Cos}\left[\frac{c}{2}\right]+\mathrm{Sin}\left[\frac{c}{2}\right]\right)}\left(-8400\,d\,x\,\mathrm{Cos}\left[\frac{c}{2}\right]-7875\,\mathrm{Cos}\left[\frac{c}{2}+d\,x\right]-7875\,\mathrm{Cos}\left[\frac{3\,c}{2}+d\,x\right]+3150\,\mathrm{Cos}\left[\frac{3\,c}{2}+2\,d\,x\right]-3150\,\mathrm{Cos}\left[\frac{5\,c}{2}+2\,d\,x\right]+1435\,\mathrm{Cos}\left[\frac{5\,c}{2}+3\,d\,x\right]+1435\,\mathrm{Cos}\left[\frac{7\,c}{2}+3\,d\,x\right]-630\,\mathrm{Cos}\left[\frac{7\,c}{2}+4\,d\,x\right]+630\,\mathrm{Cos}\left[\frac{9\,c}{2}+4\,d\,x\right]-231\,\mathrm{Cos}\left[\frac{9\,c}{2}+5\,d\,x\right]-231\,\mathrm{Cos}\left[\frac{11\,c}{2}+5\,d\,x\right]+70\,\mathrm{Cos}\left[\frac{11\,c}{2}+6\,d\,x\right]-70\,\mathrm{Cos}\left[\frac{13\,c}{2}+6\,d\,x\right]+15\,\mathrm{Cos}\left[\frac{13\,c}{2}+7\,d\,x\right]+15\,\mathrm{Cos}\left[\frac{15\,c}{2}+7\,d\,x\right]+420\,\mathrm{Sin}\left[\frac{c}{2}\right]-8400\,d\,x\,\mathrm{Sin}\left[\frac{c}{2}\right]+7875\,\mathrm{Sin}\left[\frac{c}{2}+d\,x\right]-7875\,\mathrm{Sin}\left[\frac{3\,c}{2}+d\,x\right]+3150\,\mathrm{Sin}\left[\frac{3\,c}{2}+2\,d\,x\right]+3150\,\mathrm{Sin}\left[\frac{5\,c}{2}+2\,d\,x\right]-1435\,\mathrm{Sin}\left[\frac{5\,c}{2}+3\,d\,x\right]+1435\,\mathrm{Sin}\left[\frac{7\,c}{2}+3\,d\,x\right]-630\,\mathrm{Sin}\left[\frac{7\,c}{2}+4\,d\,x\right]-630\,\mathrm{Sin}\left[\frac{9\,c}{2}+4\,d\,x\right]+231\,\mathrm{Sin}\left[\frac{9\,c}{2}+5\,d\,x\right]-231\,\mathrm{Sin}\left[\frac{11\,c}{2}+5\,d\,x\right]+70\,\mathrm{Sin}\left[\frac{11\,c}{2}+6\,d\,x\right]+70\,\mathrm{Sin}\left[\frac{13\,c}{2}+6\,d\,x\right]-15\,\mathrm{Sin}\left[\frac{13\,c}{2}+7\,d\,x\right]+15\,\mathrm{Sin}\left[\frac{15\,c}{2}+7\,d\,x\right]\right)$$

- **Problem 422: Result more than twice size of optimal antiderivative.**

$$\int \frac{\mathrm{Cos}[c+d\,x]^4\,\mathrm{Sin}[c+d\,x]^3}{(a+a\,\mathrm{Sin}[c+d\,x])^2}\,dx$$

Optimal (type 3, 102 leaves, 10 steps):

$$-\frac{3\,x}{4\,a^2}-\frac{2\,\mathrm{Cos}[c+d\,x]}{a^2\,d}+\frac{\mathrm{Cos}[c+d\,x]^3}{a^2\,d}-\frac{\mathrm{Cos}[c+d\,x]^5}{5\,a^2\,d}+\frac{3\,\mathrm{Cos}[c+d\,x]\,\mathrm{Sin}[c+d\,x]}{4\,a^2\,d}+\frac{\mathrm{Cos}[c+d\,x]\,\mathrm{Sin}[c+d\,x]^3}{2\,a^2\,d}$$

Result (type 3, 304 leaves):

$$-\frac{1}{160\,a^2\,d\,\left(\mathrm{Cos}\left[\frac{c}{2}\right]+\mathrm{Sin}\left[\frac{c}{2}\right]\right)}\left(120\,d\,x\,\mathrm{Cos}\left[\frac{c}{2}\right]+110\,\mathrm{Cos}\left[\frac{c}{2}+d\,x\right]+110\,\mathrm{Cos}\left[\frac{3\,c}{2}+d\,x\right]-40\,\mathrm{Cos}\left[\frac{3\,c}{2}+2\,d\,x\right]+40\,\mathrm{Cos}\left[\frac{5\,c}{2}+2\,d\,x\right]-15\,\mathrm{Cos}\left[\frac{5\,c}{2}+3\,d\,x\right]-15\,\mathrm{Cos}\left[\frac{7\,c}{2}+3\,d\,x\right]+5\,\mathrm{Cos}\left[\frac{7\,c}{2}+4\,d\,x\right]-5\,\mathrm{Cos}\left[\frac{9\,c}{2}+4\,d\,x\right]+\mathrm{Cos}\left[\frac{9\,c}{2}+5\,d\,x\right]+\mathrm{Cos}\left[\frac{11\,c}{2}+5\,d\,x\right]-10\,\mathrm{Sin}\left[\frac{c}{2}\right]+120\,d\,x\,\mathrm{Sin}\left[\frac{c}{2}\right]-110\,\mathrm{Sin}\left[\frac{c}{2}+d\,x\right]+110\,\mathrm{Sin}\left[\frac{3\,c}{2}+d\,x\right]-40\,\mathrm{Sin}\left[\frac{3\,c}{2}+2\,d\,x\right]-40\,\mathrm{Sin}\left[\frac{5\,c}{2}+2\,d\,x\right]+15\,\mathrm{Sin}\left[\frac{5\,c}{2}+3\,d\,x\right]-15\,\mathrm{Sin}\left[\frac{7\,c}{2}+3\,d\,x\right]+5\,\mathrm{Sin}\left[\frac{7\,c}{2}+4\,d\,x\right]+5\,\mathrm{Sin}\left[\frac{9\,c}{2}+4\,d\,x\right]-\mathrm{Sin}\left[\frac{9\,c}{2}+5\,d\,x\right]+\mathrm{Sin}\left[\frac{11\,c}{2}+5\,d\,x\right]\right)$$

- **Problem 423: Result more than twice size of optimal antiderivative.**

$$\int \frac{\mathrm{Cos}[c+d\,x]^4\,\mathrm{Sin}[c+d\,x]^2}{(a+a\,\mathrm{Sin}[c+d\,x])^2}\,dx$$

Optimal (type 3, 87 leaves, 10 steps):

$$\frac{7x}{8a^2}+\frac{2\,\text{Cos}[c+dx]}{a^2 d}-\frac{2\,\text{Cos}[c+dx]^3}{3a^2 d}-\frac{7\,\text{Cos}[c+dx]\,\text{Sin}[c+dx]}{8a^2 d}-\frac{\text{Cos}[c+dx]\,\text{Sin}[c+dx]^3}{4a^2 d}$$

Result (type 3, 258 leaves) :

$$\frac{1}{192a^2 d\left(\text{Cos}\left[\frac{c}{2}\right]+\text{Sin}\left[\frac{c}{2}\right]\right)}\left(168\,d\,x\,\text{Cos}\left[\frac{c}{2}\right]+144\,\text{Cos}\left[\frac{c}{2}+dx\right]+144\,\text{Cos}\left[\frac{3c}{2}+dx\right]-48\,\text{Cos}\left[\frac{3c}{2}+2dx\right]+48\,\text{Cos}\left[\frac{5c}{2}+2dx\right]-16\,\text{Cos}\left[\frac{5c}{2}+3dx\right]-16\,\text{Cos}\left[\frac{7c}{2}+3dx\right]+3\,\text{Cos}\left[\frac{7c}{2}+4dx\right]-3\,\text{Cos}\left[\frac{9c}{2}+4dx\right]+8\,\text{Sin}\left[\frac{c}{2}\right]+168\,d\,x\,\text{Sin}\left[\frac{c}{2}\right]-144\,\text{Sin}\left[\frac{c}{2}+dx\right]+144\,\text{Sin}\left[\frac{3c}{2}+dx\right]-48\,\text{Sin}\left[\frac{3c}{2}+2dx\right]-48\,\text{Sin}\left[\frac{5c}{2}+2dx\right]+16\,\text{Sin}\left[\frac{5c}{2}+3dx\right]-16\,\text{Sin}\left[\frac{7c}{2}+3dx\right]+3\,\text{Sin}\left[\frac{7c}{2}+4dx\right]+3\,\text{Sin}\left[\frac{9c}{2}+4dx\right]\right)$$

- **Problem 424: Result more than twice size of optimal antiderivative.**

$$\int \frac{\text{Cos}[c+dx]^4\,\text{Sin}[c+dx]}{(a+a\,\text{Sin}[c+dx])^2}\,dx$$

Optimal (type 3, 70 leaves, 4 steps) :

$$-\frac{x}{a^2}-\frac{2\,\text{Cos}[c+dx]^3}{3a^2 d}-\frac{\text{Cos}[c+dx]\,\text{Sin}[c+dx]}{a^2 d}-\frac{\text{Cos}[c+dx]^5}{d\,(a+a\,\text{Sin}[c+dx])^2}$$

Result (type 3, 200 leaves) :

$$\frac{1}{24a^2 d\left(\text{Cos}\left[\frac{c}{2}\right]+\text{Sin}\left[\frac{c}{2}\right]\right)}\left(-24\,d\,x\,\text{Cos}\left[\frac{c}{2}\right]-21\,\text{Cos}\left[\frac{c}{2}+dx\right]-21\,\text{Cos}\left[\frac{3c}{2}+dx\right]+6\,\text{Cos}\left[\frac{3c}{2}+2dx\right]-6\,\text{Cos}\left[\frac{5c}{2}+2dx\right]+\text{Cos}\left[\frac{5c}{2}+3dx\right]+\text{Cos}\left[\frac{7c}{2}+3dx\right]+4\,\text{Sin}\left[\frac{c}{2}\right]-24\,d\,x\,\text{Sin}\left[\frac{c}{2}\right]+21\,\text{Sin}\left[\frac{c}{2}+dx\right]-21\,\text{Sin}\left[\frac{3c}{2}+dx\right]+6\,\text{Sin}\left[\frac{3c}{2}+2dx\right]+6\,\text{Sin}\left[\frac{5c}{2}+2dx\right]-\text{Sin}\left[\frac{5c}{2}+3dx\right]+\text{Sin}\left[\frac{7c}{2}+3dx\right]\right)$$

- **Problem 426: Result more than twice size of optimal antiderivative.**

$$\int \frac{\text{Cos}[c+dx]^2\,\text{Cot}[c+dx]^2}{(a+a\,\text{Sin}[c+dx])^2}\,dx$$

Optimal (type 3, 35 leaves, 6 steps) :

$$\frac{x}{a^2}+\frac{2\,\text{ArcTanh}[\text{Cos}[c+dx]]}{a^2 d}-\frac{\text{Cot}[c+dx]}{a^2 d}$$

Result (type 3, 98 leaves) :

$$\frac{1}{2\,d\,(a+a\,\mathrm{Sin}[c+d\,x])^2}\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4\left(2\,(c+d\,x)-\mathrm{Cot}\left[\frac{1}{2}(c+d\,x)\right]+4\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]\right]-4\,\mathrm{Log}\left[\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]+\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)$$

- **Problem 433: Result more than twice size of optimal antiderivative.**

$$\int\frac{\mathrm{Cos}[c+d\,x]^4\,\mathrm{Sin}[c+d\,x]^2}{(a+a\,\mathrm{Sin}[c+d\,x])^3}\,dx$$

Optimal (type 3, 87 leaves, 9 steps):

$$-\frac{11\,x}{2\,a^3}-\frac{5\,\mathrm{Cos}[c+d\,x]}{a^3\,d}+\frac{\mathrm{Cos}[c+d\,x]^3}{3\,a^3\,d}+\frac{3\,\mathrm{Cos}[c+d\,x]\,\mathrm{Sin}[c+d\,x]}{2\,a^3\,d}-\frac{4\,\mathrm{Cos}[c+d\,x]}{a^3\,d\,(1+\mathrm{Sin}[c+d\,x])}$$

Result (type 3, 181 leaves):

$$\left((1-660\,d\,x)\,\mathrm{Cos}\left[\frac{d\,x}{2}\right]-286\,\mathrm{Cos}\left[c+\frac{d\,x}{2}\right]-240\,\mathrm{Cos}\left[c+\frac{3\,d\,x}{2}\right]-40\,\mathrm{Cos}\left[3\,c+\frac{5\,d\,x}{2}\right]+5\,\mathrm{Cos}\left[3\,c+\frac{7\,d\,x}{2}\right]+1244\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]+\mathrm{Sin}\left[c+\frac{d\,x}{2}\right]-660\,d\,x\,\mathrm{Sin}\left[c+\frac{d\,x}{2}\right]-240\,\mathrm{Sin}\left[2\,c+\frac{3\,d\,x}{2}\right]+40\,\mathrm{Sin}\left[2\,c+\frac{5\,d\,x}{2}\right]+5\,\mathrm{Sin}\left[4\,c+\frac{7\,d\,x}{2}\right]\right)\Big/\left(120\,a^3\,d\left(\mathrm{Cos}\left[\frac{c}{2}\right]+\mathrm{Sin}\left[\frac{c}{2}\right]\right)\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)\right)$$

- **Problem 435: Result more than twice size of optimal antiderivative.**

$$\int\frac{\mathrm{Cos}[c+d\,x]^3\,\mathrm{Cot}[c+d\,x]}{(a+a\,\mathrm{Sin}[c+d\,x])^3}\,dx$$

Optimal (type 3, 45 leaves, 5 steps):

$$\frac{x}{a^3}-\frac{\mathrm{ArcTanh}[\mathrm{Cos}[c+d\,x]]}{a^3\,d}+\frac{4\,\mathrm{Cos}[c+d\,x]}{a^3\,d\,(1+\mathrm{Sin}[c+d\,x])}$$

Result (type 3, 122 leaves):

$$\frac{1}{a^3\,d\,(1+\mathrm{Sin}[c+d\,x])^3}\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^5\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]\left(c+d\,x-\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]\right]+\mathrm{Log}\left[\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]\right)+\left(-8+c+d\,x-\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]\right]+\mathrm{Log}\left[\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]\right)\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)$$

- **Problem 436: Result more than twice size of optimal antiderivative.**

$$\int\frac{\mathrm{Cos}[c+d\,x]^2\,\mathrm{Cot}[c+d\,x]^2}{(a+a\,\mathrm{Sin}[c+d\,x])^3}\,dx$$

Optimal (type 3, 54 leaves, 7 steps):

$$\frac{3\,\text{ArcTanh}[\text{Cos}[c+d\,x]]}{a^3\,d}-\frac{\text{Cot}[c+d\,x]}{a^3\,d}-\frac{4\,\text{Cos}[c+d\,x]}{a^3\,d\,(1+\text{Sin}[c+d\,x])}$$

Result (type 3, 156 leaves) :

$$-\frac{1}{2\,a^3\,d\,(1+\text{Sin}[c+d\,x])^3}\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]\left(-17+\text{Cot}\left[\frac{1}{2}\,(c+d\,x)\right]^2-6\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]\right]+6\,\text{Log}\left[\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]+\text{Cot}\left[\frac{1}{2}\,(c+d\,x)\right]\left(1-6\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]\right]+6\,\text{Log}\left[\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\right)\right)-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^5\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]$$

Problem 437: Result more than twice size of optimal antiderivative.

$$\int\frac{\text{Cos}[c+d\,x]\,\text{Cot}[c+d\,x]^3}{(a+a\,\text{Sin}[c+d\,x])^3}\,dx$$

Optimal (type 3, 78 leaves, 9 steps) :

$$-\frac{9\,\text{ArcTanh}[\text{Cos}[c+d\,x]]}{2\,a^3\,d}+\frac{3\,\text{Cot}[c+d\,x]}{a^3\,d}-\frac{\text{Cot}[c+d\,x]\,\text{Csc}[c+d\,x]}{2\,a^3\,d}+\frac{4\,\text{Cos}[c+d\,x]}{a^3\,d\,(1+\text{Sin}[c+d\,x])}$$

Result (type 3, 369 leaves) :

$$-\frac{8\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^5}{d\,(a+a\,\text{Sin}[c+d\,x])^3}+\frac{3\,\text{Cot}\left[\frac{1}{2}\,(c+d\,x)\right]\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^6}{2\,d\,(a+a\,\text{Sin}[c+d\,x])^3}-\frac{\text{Csc}\left[\frac{1}{2}\,(c+d\,x)\right]^2\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^6}{8\,d\,(a+a\,\text{Sin}[c+d\,x])^3}-\frac{9\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^6}{2\,d\,(a+a\,\text{Sin}[c+d\,x])^3}+\frac{9\,\text{Log}\left[\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^6}{2\,d\,(a+a\,\text{Sin}[c+d\,x])^3}+\frac{\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^6}{8\,d\,(a+a\,\text{Sin}[c+d\,x])^3}-\frac{3\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^6\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]}{2\,d\,(a+a\,\text{Sin}[c+d\,x])^3}$$

Problem 438: Result more than twice size of optimal antiderivative.

$$\int\frac{\text{Cot}[c+d\,x]^4}{(a+a\,\text{Sin}[c+d\,x])^3}\,dx$$

Optimal (type 3, 96 leaves, 11 steps) :

$$\frac{11\,\text{ArcTanh}[\text{Cos}[c+d\,x]]}{2\,a^3\,d}-\frac{5\,\text{Cot}[c+d\,x]}{a^3\,d}-\frac{\text{Cot}[c+d\,x]^3}{3\,a^3\,d}+\frac{3\,\text{Cot}[c+d\,x]\,\text{Csc}[c+d\,x]}{2\,a^3\,d}-\frac{4\,\text{Cot}[c+d\,x]}{a^3\,d\,(1+\text{Csc}[c+d\,x])}$$

Result (type 3, 497 leaves) :

$$\frac{8\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^5}{d\,(a+a\,\text{Sin}[c+d x])^3}-$$

$$\frac{7\,\text{Cot}\left[\frac{1}{2}(c+d x)\right]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^6}{3\,d\,(a+a\,\text{Sin}[c+d x])^3}+\frac{3\,\text{Csc}\left[\frac{1}{2}(c+d x)\right]^2\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^6}{8\,d\,(a+a\,\text{Sin}[c+d x])^3}-$$

$$\frac{\text{Cot}\left[\frac{1}{2}(c+d x)\right]\text{Csc}\left[\frac{1}{2}(c+d x)\right]^2\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^6}{24\,d\,(a+a\,\text{Sin}[c+d x])^3}+\frac{11\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^6}{2\,d\,(a+a\,\text{Sin}[c+d x])^3}-$$

$$\frac{11\,\text{Log}\left[\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^6}{2\,d\,(a+a\,\text{Sin}[c+d x])^3}-\frac{3\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^6}{8\,d\,(a+a\,\text{Sin}[c+d x])^3}+$$

$$\frac{7\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^6\text{Tan}\left[\frac{1}{2}(c+d x)\right]}{3\,d\,(a+a\,\text{Sin}[c+d x])^3}+\frac{\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^6\text{Tan}\left[\frac{1}{2}(c+d x)\right]}{24\,d\,(a+a\,\text{Sin}[c+d x])^3}$$

- **Problem 439: Result more than twice size of optimal antiderivative.**

$$\int\frac{\text{Cot}[c+d x]^4\,\text{Csc}[c+d x]}{(a+a\,\text{Sin}[c+d x])^3}\,dx$$

Optimal (type 3, 117 leaves, 14 steps):

$$-\frac{51\,\text{ArcTanh}[\text{Cos}[c+d x]]}{8\,a^3\,d}+\frac{7\,\text{Cot}[c+d x]}{a^3\,d}+\frac{\text{Cot}[c+d x]^3}{a^3\,d}-\frac{19\,\text{Cot}[c+d x]\,\text{Csc}[c+d x]}{8\,a^3\,d}-\frac{\text{Cot}[c+d x]\,\text{Csc}[c+d x]^3}{4\,a^3\,d}+\frac{4\,\text{Cos}[c+d x]}{a^3\,d\,(1+\text{Sin}[c+d x])}$$

Result (type 3, 601 leaves):

$$-\frac{8\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^5}{d\,(a+a\,\text{Sin}[c+d x])^3}+$$

$$\frac{3\,\text{Cot}\left[\frac{1}{2}(c+d x)\right]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^6}{d\,(a+a\,\text{Sin}[c+d x])^3}-\frac{19\,\text{Csc}\left[\frac{1}{2}(c+d x)\right]^2\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^6}{32\,d\,(a+a\,\text{Sin}[c+d x])^3}+$$

$$\frac{\text{Cot}\left[\frac{1}{2}(c+d x)\right]\text{Csc}\left[\frac{1}{2}(c+d x)\right]^2\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^6}{8\,d\,(a+a\,\text{Sin}[c+d x])^3}-\frac{\text{Csc}\left[\frac{1}{2}(c+d x)\right]^4\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^6}{64\,d\,(a+a\,\text{Sin}[c+d x])^3}-$$

$$\frac{51\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^6}{8\,d\,(a+a\,\text{Sin}[c+d x])^3}+\frac{51\,\text{Log}\left[\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^6}{8\,d\,(a+a\,\text{Sin}[c+d x])^3}+$$

$$\frac{19\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^6}{32\,d\,(a+a\,\text{Sin}[c+d x])^3}+\frac{\text{Sec}\left[\frac{1}{2}(c+d x)\right]^4\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^6}{64\,d\,(a+a\,\text{Sin}[c+d x])^3}-$$

$$\frac{3\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^6\text{Tan}\left[\frac{1}{2}(c+d x)\right]}{d\,(a+a\,\text{Sin}[c+d x])^3}-\frac{\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^6\text{Tan}\left[\frac{1}{2}(c+d x)\right]}{8\,d\,(a+a\,\text{Sin}[c+d x])^3}$$

Problem 440: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Cos}[e+f x]^4 \,\text{Sin}[e+f x]}{(a+a \,\text{Sin}[e+f x])^6} \, dx$$

Optimal (type 3, 58 leaves, 2 steps):

$$\frac{\text{Cos}[e+f x]^5}{7 f (a+a \,\text{Sin}[e+f x])^6}-\frac{6 \,\text{Cos}[e+f x]^5}{35 a f (a+a \,\text{Sin}[e+f x])^5}$$

Result (type 3, 237 leaves):

$$\frac{1}{4620 a^6 f \left(\text{Cos}\left[\frac{e}{2}\right]+\text{Sin}\left[\frac{e}{2}\right]\right) \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]+\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^7}$$
$$\left(35 \,\text{Cos}\left[\frac{f x}{2}\right]+4585 \,\text{Cos}\left[e+\frac{f x}{2}\right]-2982 \,\text{Cos}\left[e+\frac{3 f x}{2}\right]-21 \,\text{Cos}\left[2 e+\frac{3 f x}{2}\right]-7 \,\text{Cos}\left[2 e+\frac{5 f x}{2}\right]-\right.$$
$$1148 \,\text{Cos}\left[3 e+\frac{5 f x}{2}\right]+197 \,\text{Cos}\left[3 e+\frac{7 f x}{2}\right]+\text{Cos}\left[4 e+\frac{7 f x}{2}\right]+2275 \,\text{Sin}\left[\frac{f x}{2}\right]+35 \,\text{Sin}\left[e+\frac{f x}{2}\right]+21 \,\text{Sin}\left[e+\frac{3 f x}{2}\right]+$$
$$\left.1134 \,\text{Sin}\left[2 e+\frac{3 f x}{2}\right]-224 \,\text{Sin}\left[2 e+\frac{5 f x}{2}\right]-7 \,\text{Sin}\left[3 e+\frac{5 f x}{2}\right]-\text{Sin}\left[3 e+\frac{7 f x}{2}\right]+\text{Sin}\left[4 e+\frac{7 f x}{2}\right]\right)$$

Problem 441: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Cos}[e+f x]^4 \,\text{Sin}[e+f x]^2}{(a+a \,\text{Sin}[e+f x])^7} \, dx$$

Optimal (type 3, 89 leaves, 18 steps):

$$-\frac{a \,\text{Cos}[e+f x]^7}{18 f (a+a \,\text{Sin}[e+f x])^8}+\frac{25 \,\text{Cos}[e+f x]^5}{126 a f (a+a \,\text{Sin}[e+f x])^6}-\frac{47 \,\text{Cos}[e+f x]^5}{315 a^2 f (a+a \,\text{Sin}[e+f x])^5}$$

Result (type 3, 293 leaves):

$$\frac{1}{720720 a^7 f \left(\text{Cos}\left[\frac{e}{2}\right]+\text{Sin}\left[\frac{e}{2}\right]\right) \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]+\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^9}$$
$$\left(1890 \,\text{Cos}\left[\frac{f x}{2}\right]+718830 \,\text{Cos}\left[e+\frac{f x}{2}\right]-467208 \,\text{Cos}\left[e+\frac{3 f x}{2}\right]-1260 \,\text{Cos}\left[2 e+\frac{3 f x}{2}\right]-540 \,\text{Cos}\left[2 e+\frac{5 f x}{2}\right]-\right.$$
$$179640 \,\text{Cos}\left[3 e+\frac{5 f x}{2}\right]+30753 \,\text{Cos}\left[3 e+\frac{7 f x}{2}\right]+135 \,\text{Cos}\left[4 e+\frac{7 f x}{2}\right]+15 \,\text{Cos}\left[4 e+\frac{9 f x}{2}\right]-15 \,\text{Cos}\left[5 e+\frac{9 f x}{2}\right]+$$
$$971082 \,\text{Sin}\left[\frac{f x}{2}\right]+1890 \,\text{Sin}\left[e+\frac{f x}{2}\right]+1260 \,\text{Sin}\left[e+\frac{3 f x}{2}\right]+659400 \,\text{Sin}\left[2 e+\frac{3 f x}{2}\right]-303192 \,\text{Sin}\left[2 e+\frac{5 f x}{2}\right]-$$
$$\left.540 \,\text{Sin}\left[3 e+\frac{5 f x}{2}\right]-135 \,\text{Sin}\left[3 e+\frac{7 f x}{2}\right]-89955 \,\text{Sin}\left[4 e+\frac{7 f x}{2}\right]+13427 \,\text{Sin}\left[4 e+\frac{9 f x}{2}\right]+15 \,\text{Sin}\left[5 e+\frac{9 f x}{2}\right]\right)$$

Problem 442: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Cos}[e+f x]^4 \,\text{Sin}[e+f x]^3}{(a+a\,\text{Sin}[e+f x])^8}\,dx$$

Optimal (type 3, 157 leaves, 24 steps):

$$\frac{4\,\text{Cos}[e+f x]}{11\,a^8 f\,(1+\text{Sin}[e+f x])^6}-\frac{52\,\text{Cos}[e+f x]}{33\,a^8 f\,(1+\text{Sin}[e+f x])^5}+\frac{617\,\text{Cos}[e+f x]}{231\,a^8 f\,(1+\text{Sin}[e+f x])^4}-\frac{846\,\text{Cos}[e+f x]}{385\,a^8 f\,(1+\text{Sin}[e+f x])^3}+\frac{1003\,\text{Cos}[e+f x]}{1155\,a^8 f\,(1+\text{Sin}[e+f x])^2}-\frac{152\,\text{Cos}[e+f x]}{1155\,a^8 f\,(1+\text{Sin}[e+f x])}$$

Result (type 3, 343 leaves):

$$\frac{1}{240\,240\,a^8 f\left(\text{Cos}\left[\frac{e}{2}\right]+\text{Sin}\left[\frac{e}{2}\right]\right)\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^{11}}$$
$$\left(462\,\text{Cos}\left[\frac{f x}{2}\right]+486\,024\,\text{Cos}\left[e+\frac{f x}{2}\right]-351\,450\,\text{Cos}\left[e+\frac{3 f x}{2}\right]-330\,\text{Cos}\left[2 e+\frac{3 f x}{2}\right]-165\,\text{Cos}\left[2 e+\frac{5 f x}{2}\right]-180\,015\,\text{Cos}\left[3 e+\frac{5 f x}{2}\right]+\right.$$
$$63\,580\,\text{Cos}\left[3 e+\frac{7 f x}{2}\right]+55\,\text{Cos}\left[4 e+\frac{7 f x}{2}\right]+11\,\text{Cos}\left[4 e+\frac{9 f x}{2}\right]+15\,004\,\text{Cos}\left[5 e+\frac{9 f x}{2}\right]-1975\,\text{Cos}\left[5 e+\frac{11 f x}{2}\right]-\text{Cos}\left[6 e+\frac{11 f x}{2}\right]+$$
$$425\,964\,\text{Sin}\left[\frac{f x}{2}\right]+462\,\text{Sin}\left[e+\frac{f x}{2}\right]+330\,\text{Sin}\left[e+\frac{3 f x}{2}\right]+299\,970\,\text{Sin}\left[2 e+\frac{3 f x}{2}\right]-145\,695\,\text{Sin}\left[2 e+\frac{5 f x}{2}\right]-165\,\text{Sin}\left[3 e+\frac{5 f x}{2}\right]-$$
$$\left.55\,\text{Sin}\left[3 e+\frac{7 f x}{2}\right]-44\,990\,\text{Sin}\left[4 e+\frac{7 f x}{2}\right]+6710\,\text{Sin}\left[4 e+\frac{9 f x}{2}\right]+11\,\text{Sin}\left[5 e+\frac{9 f x}{2}\right]+\text{Sin}\left[5 e+\frac{11 f x}{2}\right]-\text{Sin}\left[6 e+\frac{11 f x}{2}\right]\right)$$

Problem 443: Result more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d x]^4 \,\text{Sin}[c+d x]^2 \sqrt{a+a\,\text{Sin}[c+d x]}\,dx$$

Optimal (type 3, 156 leaves, 5 steps):

$$-\frac{1472\,a^3\,\text{Cos}[c+d x]^5}{45\,045\,d\,(a+a\,\text{Sin}[c+d x])^{5/2}}-\frac{368\,a^2\,\text{Cos}[c+d x]^5}{9009\,d\,(a+a\,\text{Sin}[c+d x])^{3/2}}-\frac{46\,a\,\text{Cos}[c+d x]^5}{1287\,d\,\sqrt{a+a\,\text{Sin}[c+d x]}}+\frac{20\,\text{Cos}[c+d x]^5\sqrt{a+a\,\text{Sin}[c+d x]}}{143\,d}-\frac{2\,\text{Cos}[c+d x]^5\,(a+a\,\text{Sin}[c+d x])^{3/2}}{13\,a\,d}$$

Result (type 3, 619 leaves):

$$\frac{\left(5\,\text{Cos}\left[\frac{3}{2}(c+d\,x)\right]-3\,\text{Cos}\left[\frac{5}{2}(c+d\,x)\right]\right)\sqrt{a\,(1+\text{Sin}[c+d\,x])}}{480\,d\left(\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right)}-\frac{\left(9\,\text{Cos}\left[\frac{7}{2}(c+d\,x)\right]-7\,\text{Cos}\left[\frac{9}{2}(c+d\,x)\right]\right)\sqrt{a\,(1+\text{Sin}[c+d\,x])}}{1008\,d\left(\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right)}-$$

$$\frac{\left(13\,\text{Cos}\left[\frac{11}{2}(c+d\,x)\right]-11\,\text{Cos}\left[\frac{13}{2}(c+d\,x)\right]\right)\sqrt{a\,(1+\text{Sin}[c+d\,x])}}{4576\,d\left(\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right)}+\frac{\left(\frac{2\,\text{Cos}\left[\frac{d\,x}{2}\right]\text{Sin}\left[\frac{c}{2}\right]}{d}+\frac{2\,\text{Cos}\left[\frac{c}{2}\right]\text{Sin}\left[\frac{d\,x}{2}\right]}{d}\right)\sqrt{a\,(1+\text{Sin}[c+d\,x])}}{16\left(\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right)}+$$

$$\frac{\left(-\frac{2\,\text{Cos}\left[\frac{c}{2}\right]\text{Cos}\left[\frac{d\,x}{2}\right]}{d}+\frac{2\,\text{Sin}\left[\frac{c}{2}\right]\text{Sin}\left[\frac{d\,x}{2}\right]}{d}\right)\sqrt{a\,(1+\text{Sin}[c+d\,x])}}{16\left(\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right)}+\frac{\sqrt{a\,(1+\text{Sin}[c+d\,x])}\left(5\,\text{Sin}\left[\frac{3}{2}(c+d\,x)\right]+3\,\text{Sin}\left[\frac{5}{2}(c+d\,x)\right]\right)}{480\,d\left(\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right)}-$$

$$\frac{\sqrt{a\,(1+\text{Sin}[c+d\,x])}\left(9\,\text{Sin}\left[\frac{7}{2}(c+d\,x)\right]+7\,\text{Sin}\left[\frac{9}{2}(c+d\,x)\right]\right)}{1008\,d\left(\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right)}-\frac{\sqrt{a\,(1+\text{Sin}[c+d\,x])}\left(13\,\text{Sin}\left[\frac{11}{2}(c+d\,x)\right]+11\,\text{Sin}\left[\frac{13}{2}(c+d\,x)\right]\right)}{4576\,d\left(\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right)}$$

- **Problem 449: Result more than twice size of optimal antiderivative.**

$$\int \text{Cot}[c+d\,x]^4\,\text{Csc}[c+d\,x]\,\sqrt{a+a\,\text{Sin}[c+d\,x]}\,dx$$

Optimal (type 3, 173 leaves, 9 steps):

$$-\frac{67\sqrt{a}\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\text{Cos}[c+d\,x]}{\sqrt{a+a\,\text{Sin}[c+d\,x]}}\right]}{64\,d}+\frac{61\,a\,\text{Cot}[c+d\,x]}{64\,d\sqrt{a+a\,\text{Sin}[c+d\,x]}}+$$

$$\frac{61\,a\,\text{Cot}[c+d\,x]\,\text{Csc}[c+d\,x]}{96\,d\sqrt{a+a\,\text{Sin}[c+d\,x]}}-\frac{a\,\text{Cot}[c+d\,x]\,\text{Csc}[c+d\,x]^2}{24\,d\sqrt{a+a\,\text{Sin}[c+d\,x]}}-\frac{\text{Cot}[c+d\,x]\,\text{Csc}[c+d\,x]^3\sqrt{a+a\,\text{Sin}[c+d\,x]}}{4\,d}$$

Result (type 3, 367 leaves):

$$-\frac{1}{192\,d\left(1+\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\right)\left(\text{Csc}\left[\frac{1}{4}(c+d\,x)\right]^2-\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\right)^4}$$

$$\text{Csc}\left[\frac{1}{2}(c+d\,x)\right]^{13}\sqrt{a\,(1+\text{Sin}[c+d\,x])}\,\left(442\,\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-162\,\text{Cos}\left[\frac{3}{2}(c+d\,x)\right]+122\,\text{Cos}\left[\frac{5}{2}(c+d\,x)\right]+366\,\text{Cos}\left[\frac{7}{2}(c+d\,x)\right]+\right.$$

$$603\,\text{Log}\left[1+\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]-804\,\text{Cos}[2\,(c+d\,x)]\,\text{Log}\left[1+\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]+$$

$$201\,\text{Cos}[4\,(c+d\,x)]\,\text{Log}\left[1+\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]-603\,\text{Log}\left[1-\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]+$$

$$804\,\text{Cos}[2\,(c+d\,x)]\,\text{Log}\left[1-\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]-201\,\text{Cos}[4\,(c+d\,x)]\,\text{Log}\left[1-\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]-$$

$$\left.442\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]-162\,\text{Sin}\left[\frac{3}{2}(c+d\,x)\right]-122\,\text{Sin}\left[\frac{5}{2}(c+d\,x)\right]+366\,\text{Sin}\left[\frac{7}{2}(c+d\,x)\right]\right)$$

Problem 453: Result more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d x]^4 \,\text{Sin}[c+d x]^2 \,(a+a \,\text{Sin}[c+d x])^{3/2}\, dx$$

Optimal (type 3, 188 leaves, 6 steps):

$$-\frac{256 a^4 \text{Cos}[c+d x]^5}{6435 d (a+a \text{Sin}[c+d x])^{5/2}}-\frac{64 a^3 \text{Cos}[c+d x]^5}{1287 d (a+a \text{Sin}[c+d x])^{3/2}}-\frac{56 a^2 \text{Cos}[c+d x]^5}{1287 d \sqrt{a+a \text{Sin}[c+d x]}}-\frac{14 a \text{Cos}[c+d x]^5 \sqrt{a+a \text{Sin}[c+d x]}}{429 d}+\frac{4 \text{Cos}[c+d x]^5 (a+a \text{Sin}[c+d x])^{3/2}}{39 d}-\frac{2 \text{Cos}[c+d x]^5 (a+a \text{Sin}[c+d x])^{5/2}}{15 a d}$$

Result (type 3, 859 leaves):

$$\frac{a\left(-\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)\sqrt{a(1+\text{Sin}[c+d x])}}{8 d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)}-$$

$$\frac{a\left(3\,\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Cos}\left[\frac{3}{2}(c+d x)\right]-4\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]^3\right)\sqrt{a(1+\text{Sin}[c+d x])}}{48 d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)}+$$

$$\frac{a\sqrt{a(1+\text{Sin}[c+d x])}\left(5\,\text{Cos}\left[\frac{3}{2}(c+d x)\right]-3\,\text{Cos}\left[\frac{5}{2}(c+d x)\right]+5\,\text{Sin}\left[\frac{3}{2}(c+d x)\right]+3\,\text{Sin}\left[\frac{5}{2}(c+d x)\right]\right)}{480 d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)}+$$

$$\left(a\sqrt{a(1+\text{Sin}[c+d x])}\left(105\,\text{Cos}\left[\frac{1}{2}(c+d x)\right]+35\,\text{Cos}\left[\frac{3}{2}(c+d x)\right]-21\,\text{Cos}\left[\frac{5}{2}(c+d x)\right]-15\,\text{Cos}\left[\frac{7}{2}(c+d x)\right]-105\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]+35\,\text{Sin}\left[\frac{3}{2}(c+d x)\right]+21\,\text{Sin}\left[\frac{5}{2}(c+d x)\right]-15\,\text{Sin}\left[\frac{7}{2}(c+d x)\right]\right)\right)\Big/\left(6720 d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)\right)-$$

$$\frac{a\sqrt{a(1+\text{Sin}[c+d x])}\left(9\,\text{Cos}\left[\frac{7}{2}(c+d x)\right]-7\,\text{Cos}\left[\frac{9}{2}(c+d x)\right]+9\,\text{Sin}\left[\frac{7}{2}(c+d x)\right]+7\,\text{Sin}\left[\frac{9}{2}(c+d x)\right]\right)}{1008 d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)}-$$

$$\left(a\sqrt{a(1+\text{Sin}[c+d x])}\left(693\,\text{Cos}\left[\frac{5}{2}(c+d x)\right]+495\,\text{Cos}\left[\frac{7}{2}(c+d x)\right]-385\,\text{Cos}\left[\frac{9}{2}(c+d x)\right]-315\,\text{Cos}\left[\frac{11}{2}(c+d x)\right]-693\,\text{Sin}\left[\frac{5}{2}(c+d x)\right]+495\,\text{Sin}\left[\frac{7}{2}(c+d x)\right]+385\,\text{Sin}\left[\frac{9}{2}(c+d x)\right]-315\,\text{Sin}\left[\frac{11}{2}(c+d x)\right]\right)\right)\Big/\left(110880 d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)\right)-$$

$$\left(a\sqrt{a(1+\text{Sin}[c+d x])}\left(13\,\text{Cos}\left[\frac{11}{2}(c+d x)\right]-11\,\text{Cos}\left[\frac{13}{2}(c+d x)\right]+13\,\text{Sin}\left[\frac{11}{2}(c+d x)\right]+11\,\text{Sin}\left[\frac{13}{2}(c+d x)\right]\right)\right)\Big/\left(4576 d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)\right)-$$

$$\left(a\sqrt{a(1+\text{Sin}[c+d x])}\left(715\,\text{Cos}\left[\frac{9}{2}(c+d x)\right]+585\,\text{Cos}\left[\frac{11}{2}(c+d x)\right]-495\,\text{Cos}\left[\frac{13}{2}(c+d x)\right]-429\,\text{Cos}\left[\frac{15}{2}(c+d x)\right]-715\,\text{Sin}\left[\frac{9}{2}(c+d x)\right]+585\,\text{Sin}\left[\frac{11}{2}(c+d x)\right]+495\,\text{Sin}\left[\frac{13}{2}(c+d x)\right]-429\,\text{Sin}\left[\frac{15}{2}(c+d x)\right]\right)\right)\Big/\left(411840 d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)\right)$$

- **Problem 454: Result more than twice size of optimal antiderivative.**

$$\int \text{Cos}[c+d x]^4\,\text{Sin}[c+d x]\,(a+a\,\text{Sin}[c+d x])^{3/2}\,dx$$

Optimal (type 3, 156 leaves, 5 steps):

$$-\frac{256 a^4\,\text{Cos}[c+d x]^5}{5005 d\,(a+a\,\text{Sin}[c+d x])^{5/2}}-\frac{64 a^3\,\text{Cos}[c+d x]^5}{1001 d\,(a+a\,\text{Sin}[c+d x])^{3/2}}-\frac{8 a^2\,\text{Cos}[c+d x]^5}{143 d\sqrt{a+a\,\text{Sin}[c+d x]}}-\frac{6 a\,\text{Cos}[c+d x]^5\sqrt{a+a\,\text{Sin}[c+d x]}}{143 d}-\frac{2\,\text{Cos}[c+d x]^5\,(a+a\,\text{Sin}[c+d x])^{3/2}}{13 d}$$

Result (type 3, 673 leaves):

$$-\frac{a\left(3\,\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Cos}\left[\frac{3}{2}(c+d x)\right]-4\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]^3\right)\sqrt{a\,(1+\text{Sin}[c+d x])}}{24\,d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)}-$$
$$\left(a\sqrt{a\,(1+\text{Sin}[c+d x])}\left(30\,\text{Cos}\left[\frac{1}{2}(c+d x)\right]+5\,\text{Cos}\left[\frac{3}{2}(c+d x)\right]-3\,\text{Cos}\left[\frac{5}{2}(c+d x)\right]-\right.\right.$$
$$\left.\left.30\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]+5\,\text{Sin}\left[\frac{3}{2}(c+d x)\right]+3\,\text{Sin}\left[\frac{5}{2}(c+d x)\right]\right)\right)\Big/\left(240\,d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)\right)-$$
$$\left(3\,a\sqrt{a\,(1+\text{Sin}[c+d x])}\left(7\,\text{Cos}\left[\frac{5}{2}(c+d x)\right]+5\,\text{Cos}\left[\frac{7}{2}(c+d x)\right]-7\,\text{Sin}\left[\frac{5}{2}(c+d x)\right]+5\,\text{Sin}\left[\frac{7}{2}(c+d x)\right]\right)\right)\Big/$$
$$\left(560\,d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)\right)+$$
$$\left(a\sqrt{a\,(1+\text{Sin}[c+d x])}\left(105\,\text{Cos}\left[\frac{3}{2}(c+d x)\right]-63\,\text{Cos}\left[\frac{5}{2}(c+d x)\right]-45\,\text{Cos}\left[\frac{7}{2}(c+d x)\right]+35\,\text{Cos}\left[\frac{9}{2}(c+d x)\right]+105\,\text{Sin}\left[\frac{3}{2}(c+d x)\right]+\right.\right.$$
$$\left.\left.63\,\text{Sin}\left[\frac{5}{2}(c+d x)\right]-45\,\text{Sin}\left[\frac{7}{2}(c+d x)\right]-35\,\text{Sin}\left[\frac{9}{2}(c+d x)\right]\right)\right)\Big/\left(3360\,d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)\right)-$$
$$\left(a\sqrt{a\,(1+\text{Sin}[c+d x])}\left(11\,\text{Cos}\left[\frac{9}{2}(c+d x)\right]+9\,\text{Cos}\left[\frac{11}{2}(c+d x)\right]-11\,\text{Sin}\left[\frac{9}{2}(c+d x)\right]+9\,\text{Sin}\left[\frac{11}{2}(c+d x)\right]\right)\right)\Big/$$
$$\left(1584\,d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)\right)+$$
$$\left(a\sqrt{a\,(1+\text{Sin}[c+d x])}\left(1287\,\text{Cos}\left[\frac{7}{2}(c+d x)\right]-1001\,\text{Cos}\left[\frac{9}{2}(c+d x)\right]-819\,\text{Cos}\left[\frac{11}{2}(c+d x)\right]+693\,\text{Cos}\left[\frac{13}{2}(c+d x)\right]+1287\,\text{Sin}\left[\frac{7}{2}(c+d x)\right]+\right.\right.$$
$$\left.\left.1001\,\text{Sin}\left[\frac{9}{2}(c+d x)\right]-819\,\text{Sin}\left[\frac{11}{2}(c+d x)\right]-693\,\text{Sin}\left[\frac{13}{2}(c+d x)\right]\right)\right)\Big/\left(288288\,d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)\right)$$

- **Problem 462: Result more than twice size of optimal antiderivative.**

$$\int \text{Cot}[c+d x]^4\,\text{Csc}[c+d x]^4\,(a+a\,\text{Sin}[c+d x])^{3/2}\,dx$$

Optimal (type 3, 291 leaves, 16 steps):

$$-\frac{171\,a^{3/2}\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\text{Cos}[c+d x]}{\sqrt{a+a\,\text{Sin}[c+d x]}}\right]}{1024\,d}-\frac{171\,a^2\,\text{Cot}[c+d x]}{1024\,d\sqrt{a+a\,\text{Sin}[c+d x]}}-\frac{57\,a^2\,\text{Cot}[c+d x]\,\text{Csc}[c+d x]}{512\,d\sqrt{a+a\,\text{Sin}[c+d x]}}+$$
$$\frac{199\,a^2\,\text{Cot}[c+d x]\,\text{Csc}[c+d x]^2}{640\,d\sqrt{a+a\,\text{Sin}[c+d x]}}+\frac{1237\,a^2\,\text{Cot}[c+d x]\,\text{Csc}[c+d x]^3}{2240\,d\sqrt{a+a\,\text{Sin}[c+d x]}}+\frac{9\,a^2\,\text{Cot}[c+d x]\,\text{Csc}[c+d x]^4}{40\,d\sqrt{a+a\,\text{Sin}[c+d x]}}-$$
$$\frac{a\,\text{Cot}[c+d x]\,\text{Csc}[c+d x]^5\sqrt{a+a\,\text{Sin}[c+d x]}}{28\,d}-\frac{\text{Cot}[c+d x]\,\text{Csc}[c+d x]^6\,(a+a\,\text{Sin}[c+d x])^{3/2}}{7\,d}$$

Result (type 3, 2055 leaves) :

$$\frac{3861\,(a\,(1+\text{Sin}[c+d\,x]))^{3/2}}{71680\,d\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^3}-\frac{3861\,\text{Cot}\left[\frac{1}{4}\,(c+d\,x)\right]\,(a\,(1+\text{Sin}[c+d\,x]))^{3/2}}{143360\,d\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^3}-\frac{43\,\text{Csc}\left[\frac{1}{4}\,(c+d\,x)\right]^2\,(a\,(1+\text{Sin}[c+d\,x]))^{3/2}}{8192\,d\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^3}+$$

$$\frac{619\,\text{Cot}\left[\frac{1}{4}\,(c+d\,x)\right]\,\text{Csc}\left[\frac{1}{4}\,(c+d\,x)\right]^2\,(a\,(1+\text{Sin}[c+d\,x]))^{3/2}}{286720\,d\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^3}+\frac{11\,\text{Csc}\left[\frac{1}{4}\,(c+d\,x)\right]^4\,(a\,(1+\text{Sin}[c+d\,x]))^{3/2}}{8192\,d\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^3}+$$

$$\frac{9\,\text{Cot}\left[\frac{1}{4}\,(c+d\,x)\right]\,\text{Csc}\left[\frac{1}{4}\,(c+d\,x)\right]^4\,(a\,(1+\text{Sin}[c+d\,x]))^{3/2}}{143360\,d\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^3}-\frac{\text{Csc}\left[\frac{1}{4}\,(c+d\,x)\right]^6\,(a\,(1+\text{Sin}[c+d\,x]))^{3/2}}{16384\,d\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^3}-$$

$$\frac{\text{Cot}\left[\frac{1}{4}\,(c+d\,x)\right]\,\text{Csc}\left[\frac{1}{4}\,(c+d\,x)\right]^6\,(a\,(1+\text{Sin}[c+d\,x]))^{3/2}}{114688\,d\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^3}-\frac{171\,\text{Log}\left[1+\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\,(a\,(1+\text{Sin}[c+d\,x]))^{3/2}}{2048\,d\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^3}+$$

$$\frac{171\,\text{Log}\left[1-\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\,(a\,(1+\text{Sin}[c+d\,x]))^{3/2}}{2048\,d\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^3}+\frac{43\,\text{Sec}\left[\frac{1}{4}\,(c+d\,x)\right]^2\,(a\,(1+\text{Sin}[c+d\,x]))^{3/2}}{8192\,d\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^3}-$$

$$\frac{11\,\text{Sec}\left[\frac{1}{4}\,(c+d\,x)\right]^4\,(a\,(1+\text{Sin}[c+d\,x]))^{3/2}}{8192\,d\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^3}+\frac{\text{Sec}\left[\frac{1}{4}\,(c+d\,x)\right]^6\,(a\,(1+\text{Sin}[c+d\,x]))^{3/2}}{16384\,d\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^3}+$$

$$\frac{(a\,(1+\text{Sin}[c+d\,x]))^{3/2}}{1792\,d\,\left(\text{Cos}\left[\frac{1}{4}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{4}\,(c+d\,x)\right]\right)^6\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^3}-$$

$$\frac{403\,(a\,(1+\text{Sin}[c+d\,x]))^{3/2}}{71680\,d\,\left(\text{Cos}\left[\frac{1}{4}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{4}\,(c+d\,x)\right]\right)^4\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^3}+$$

$$\frac{443\,(a\,(1+\text{Sin}[c+d\,x]))^{3/2}}{71680\,d\,\left(\text{Cos}\left[\frac{1}{4}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{4}\,(c+d\,x)\right]\right)^2\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^3}+$$

$$\frac{\text{Sin}\left[\frac{1}{4}\,(c+d\,x)\right]\,(a\,(1+\text{Sin}[c+d\,x]))^{3/2}}{7168\,d\,\left(\text{Cos}\left[\frac{1}{4}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{4}\,(c+d\,x)\right]\right)^7\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^3}-$$

$$\frac{9\,\text{Sin}\left[\frac{1}{4}\,(c+d\,x)\right]\,(a\,(1+\text{Sin}[c+d\,x]))^{3/2}}{17920\,d\,\left(\text{Cos}\left[\frac{1}{4}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{4}\,(c+d\,x)\right]\right)^5\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^3}-$$

$$\frac{619\,\text{Sin}\left[\frac{1}{4}\,(c+d\,x)\right]\,(a\,(1+\text{Sin}[c+d\,x]))^{3/2}}{71680\,d\,\left(\text{Cos}\left[\frac{1}{4}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{4}\,(c+d\,x)\right]\right)^3\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^3}+$$

$$\frac{3861\,\text{Sin}\left[\frac{1}{4}(c+d\,x)\right](a(1+\text{Sin}[c+d\,x]))^{3/2}}{71680\,d\left(\text{Cos}\left[\frac{1}{4}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{4}(c+d\,x)\right]\right)\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^3}-$$

$$\frac{\text{Sin}\left[\frac{1}{4}(c+d\,x)\right](a(1+\text{Sin}[c+d\,x]))^{3/2}}{7168\,d\left(\text{Cos}\left[\frac{1}{4}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{4}(c+d\,x)\right]\right)^7\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^3}-$$

$$\frac{3(a(1+\text{Sin}[c+d\,x]))^{3/2}}{7168\,d\left(\text{Cos}\left[\frac{1}{4}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{4}(c+d\,x)\right]\right)^6\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^3}+$$

$$\frac{9\,\text{Sin}\left[\frac{1}{4}(c+d\,x)\right](a(1+\text{Sin}[c+d\,x]))^{3/2}}{17920\,d\left(\text{Cos}\left[\frac{1}{4}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{4}(c+d\,x)\right]\right)^5\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^3}+$$

$$\frac{367(a(1+\text{Sin}[c+d\,x]))^{3/2}}{71680\,d\left(\text{Cos}\left[\frac{1}{4}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{4}(c+d\,x)\right]\right)^4\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^3}+$$

$$\frac{619\,\text{Sin}\left[\frac{1}{4}(c+d\,x)\right](a(1+\text{Sin}[c+d\,x]))^{3/2}}{71680\,d\left(\text{Cos}\left[\frac{1}{4}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{4}(c+d\,x)\right]\right)^3\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^3}-$$

$$\frac{531(a(1+\text{Sin}[c+d\,x]))^{3/2}}{35840\,d\left(\text{Cos}\left[\frac{1}{4}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{4}(c+d\,x)\right]\right)^2\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^3}-$$

$$\frac{3861\,\text{Sin}\left[\frac{1}{4}(c+d\,x)\right](a(1+\text{Sin}[c+d\,x]))^{3/2}}{71680\,d\left(\text{Cos}\left[\frac{1}{4}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{4}(c+d\,x)\right]\right)\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^3}-$$

$$\frac{3861(a(1+\text{Sin}[c+d\,x]))^{3/2}\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]}{143360\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^3}+\frac{619\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2(a(1+\text{Sin}[c+d\,x]))^{3/2}\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]}{286720\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^3}+$$

$$\frac{9\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^4(a(1+\text{Sin}[c+d\,x]))^{3/2}\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]}{143360\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^3}-\frac{\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^6(a(1+\text{Sin}[c+d\,x]))^{3/2}\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]}{114688\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^3}$$

- **Problem 463: Result more than twice size of optimal antiderivative.**

$$\int \text{Cot}[c+d\,x]^4\,\text{Csc}[c+d\,x]^5\,(a+a\,\text{Sin}[c+d\,x])^{3/2}\,dx$$

Optimal (type 3, 329 leaves, 18 steps):

$$-\frac{1587\, a^{3/2}\, \text{ArcTanh}\left[\frac{\sqrt{a}\,\text{Cos}[c+d x]}{\sqrt{a+a\,\text{Sin}[c+d x]}}\right]}{16384\, d}-\frac{1587\, a^2\, \text{Cot}[c+d x]}{16384\, d\, \sqrt{a+a\,\text{Sin}[c+d x]}}-\frac{529\, a^2\, \text{Cot}[c+d x]\, \text{Csc}[c+d x]}{8192\, d\, \sqrt{a+a\,\text{Sin}[c+d x]}}-$$
$$\frac{529\, a^2\, \text{Cot}[c+d x]\, \text{Csc}[c+d x]^2}{10240\, d\, \sqrt{a+a\,\text{Sin}[c+d x]}}+\frac{8653\, a^2\, \text{Cot}[c+d x]\, \text{Csc}[c+d x]^3}{35840\, d\, \sqrt{a+a\,\text{Sin}[c+d x]}}+\frac{1957\, a^2\, \text{Cot}[c+d x]\, \text{Csc}[c+d x]^4}{4480\, d\, \sqrt{a+a\,\text{Sin}[c+d x]}}+$$
$$\frac{83\, a^2\, \text{Cot}[c+d x]\, \text{Csc}[c+d x]^5}{448\, d\, \sqrt{a+a\,\text{Sin}[c+d x]}}-\frac{3\, a\, \text{Cot}[c+d x]\, \text{Csc}[c+d x]^6\, \sqrt{a+a\,\text{Sin}[c+d x]}}{112\, d}-\frac{\text{Cot}[c+d x]\, \text{Csc}[c+d x]^7\, (a+a\,\text{Sin}[c+d x])^{3/2}}{8\, d}$$

Result (type 3, 2303 leaves) :

$$\frac{6053\, (a\, (1+\text{Sin}[c+d x]))^{3/2}}{143360\, d\, \left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3}-\frac{6053\, \text{Cot}\left[\frac{1}{4}(c+d x)\right]\, (a\, (1+\text{Sin}[c+d x]))^{3/2}}{286720\, d\, \left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3}-$$
$$\frac{179\, \text{Csc}\left[\frac{1}{4}(c+d x)\right]^2\, (a\, (1+\text{Sin}[c+d x]))^{3/2}}{131072\, d\, \left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3}+\frac{107\, \text{Cot}\left[\frac{1}{4}(c+d x)\right]\, \text{Csc}\left[\frac{1}{4}(c+d x)\right]^2\, (a\, (1+\text{Sin}[c+d x]))^{3/2}}{573440\, d\, \left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3}+$$
$$\frac{113\, \text{Csc}\left[\frac{1}{4}(c+d x)\right]^4\, (a\, (1+\text{Sin}[c+d x]))^{3/2}}{262144\, d\, \left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3}+\frac{31\, \text{Cot}\left[\frac{1}{4}(c+d x)\right]\, \text{Csc}\left[\frac{1}{4}(c+d x)\right]^4\, (a\, (1+\text{Sin}[c+d x]))^{3/2}}{143360\, d\, \left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3}+$$
$$\frac{\text{Csc}\left[\frac{1}{4}(c+d x)\right]^6\, (a\, (1+\text{Sin}[c+d x]))^{3/2}}{131072\, d\, \left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3}-\frac{3\, \text{Cot}\left[\frac{1}{4}(c+d x)\right]\, \text{Csc}\left[\frac{1}{4}(c+d x)\right]^6\, (a\, (1+\text{Sin}[c+d x]))^{3/2}}{229376\, d\, \left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3}-$$
$$\frac{\text{Csc}\left[\frac{1}{4}(c+d x)\right]^8\, (a\, (1+\text{Sin}[c+d x]))^{3/2}}{524288\, d\, \left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3}-\frac{1587\, \text{Log}\left[1+\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]\, (a\, (1+\text{Sin}[c+d x]))^{3/2}}{32768\, d\, \left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3}+$$
$$\frac{1587\, \text{Log}\left[1-\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]\, (a\, (1+\text{Sin}[c+d x]))^{3/2}}{32768\, d\, \left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3}+\frac{179\, \text{Sec}\left[\frac{1}{4}(c+d x)\right]^2\, (a\, (1+\text{Sin}[c+d x]))^{3/2}}{131072\, d\, \left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3}-$$
$$\frac{113\, \text{Sec}\left[\frac{1}{4}(c+d x)\right]^4\, (a\, (1+\text{Sin}[c+d x]))^{3/2}}{262144\, d\, \left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3}-\frac{\text{Sec}\left[\frac{1}{4}(c+d x)\right]^6\, (a\, (1+\text{Sin}[c+d x]))^{3/2}}{131072\, d\, \left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3}+$$
$$\frac{\text{Sec}\left[\frac{1}{4}(c+d x)\right]^8\, (a\, (1+\text{Sin}[c+d x]))^{3/2}}{524288\, d\, \left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3}+\frac{(a\, (1+\text{Sin}[c+d x]))^{3/2}}{32768\, d\, \left(\text{Cos}\left[\frac{1}{4}(c+d x)\right]-\text{Sin}\left[\frac{1}{4}(c+d x)\right]\right)^8\, \left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3}+$$
$$\frac{5\, (a\, (1+\text{Sin}[c+d x]))^{3/2}}{114688\, d\, \left(\text{Cos}\left[\frac{1}{4}(c+d x)\right]-\text{Sin}\left[\frac{1}{4}(c+d x)\right]\right)^6\, \left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3}-$$

$$\frac{5939\,(a\,(1+\text{Sin}[c+d\,x]))^{3/2}}{2\,293\,760\,d\,\left(\text{Cos}\left[\frac{1}{4}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{4}\,(c+d\,x)\right]\right)^4\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^3}+$$

$$\frac{5409\,(a\,(1+\text{Sin}[c+d\,x]))^{3/2}}{2\,293\,760\,d\,\left(\text{Cos}\left[\frac{1}{4}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{4}\,(c+d\,x)\right]\right)^2\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^3}+$$

$$\frac{3\,\text{Sin}\left[\frac{1}{4}\,(c+d\,x)\right]\,(a\,(1+\text{Sin}[c+d\,x]))^{3/2}}{14\,336\,d\,\left(\text{Cos}\left[\frac{1}{4}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{4}\,(c+d\,x)\right]\right)^7\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^3}-$$

$$\frac{31\,\text{Sin}\left[\frac{1}{4}\,(c+d\,x)\right]\,(a\,(1+\text{Sin}[c+d\,x]))^{3/2}}{17\,920\,d\,\left(\text{Cos}\left[\frac{1}{4}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{4}\,(c+d\,x)\right]\right)^5\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^3}-$$

$$\frac{107\,\text{Sin}\left[\frac{1}{4}\,(c+d\,x)\right]\,(a\,(1+\text{Sin}[c+d\,x]))^{3/2}}{143\,360\,d\,\left(\text{Cos}\left[\frac{1}{4}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{4}\,(c+d\,x)\right]\right)^3\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^3}+$$

$$\frac{6053\,\text{Sin}\left[\frac{1}{4}\,(c+d\,x)\right]\,(a\,(1+\text{Sin}[c+d\,x]))^{3/2}}{143\,360\,d\,\left(\text{Cos}\left[\frac{1}{4}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{4}\,(c+d\,x)\right]\right)\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^3}-$$

$$\frac{(a\,(1+\text{Sin}[c+d\,x]))^{3/2}}{32\,768\,d\,\left(\text{Cos}\left[\frac{1}{4}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{4}\,(c+d\,x)\right]\right)^8\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^3}-$$

$$\frac{3\,\text{Sin}\left[\frac{1}{4}\,(c+d\,x)\right]\,(a\,(1+\text{Sin}[c+d\,x]))^{3/2}}{14\,336\,d\,\left(\text{Cos}\left[\frac{1}{4}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{4}\,(c+d\,x)\right]\right)^7\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^3}+$$

$$\frac{19\,(a\,(1+\text{Sin}[c+d\,x]))^{3/2}}{114\,688\,d\,\left(\text{Cos}\left[\frac{1}{4}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{4}\,(c+d\,x)\right]\right)^6\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^3}+$$

$$\frac{31\,\text{Sin}\left[\frac{1}{4}\,(c+d\,x)\right]\,(a\,(1+\text{Sin}[c+d\,x]))^{3/2}}{17\,920\,d\,\left(\text{Cos}\left[\frac{1}{4}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{4}\,(c+d\,x)\right]\right)^5\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^3}+$$

$$\frac{1971\,(a\,(1+\text{Sin}[c+d\,x]))^{3/2}}{2\,293\,760\,d\,\left(\text{Cos}\left[\frac{1}{4}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{4}\,(c+d\,x)\right]\right)^4\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^3}+$$

$$\frac{107\,\text{Sin}\left[\frac{1}{4}\,(c+d\,x)\right]\,(a\,(1+\text{Sin}[c+d\,x]))^{3/2}}{143\,360\,d\,\left(\text{Cos}\left[\frac{1}{4}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{4}\,(c+d\,x)\right]\right)^3\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^3}-$$

$$\frac{7121\,(a\,(1+\text{Sin}[c+d\,x]))^{3/2}}{2\,293\,760\,d\,\left(\text{Cos}\left[\frac{1}{4}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{4}\,(c+d\,x)\right]\right)^2\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^3}-$$

$$\frac{6053\,\text{Sin}\left[\frac{1}{4}(c+d\,x)\right](a(1+\text{Sin}[c+d\,x]))^{3/2}}{143\,360\,d\left(\text{Cos}\left[\frac{1}{4}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{4}(c+d\,x)\right]\right)\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^3}-$$

$$\frac{6053\,(a(1+\text{Sin}[c+d\,x]))^{3/2}\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]}{286\,720\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^3}+\frac{107\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2(a(1+\text{Sin}[c+d\,x]))^{3/2}\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]}{573\,440\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^3}+$$

$$\frac{31\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^4(a(1+\text{Sin}[c+d\,x]))^{3/2}\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]}{143\,360\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^3}-\frac{3\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^6(a(1+\text{Sin}[c+d\,x]))^{3/2}\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]}{229\,376\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^3}$$

- **Problem 468: Result more than twice size of optimal antiderivative.**

$$\int\frac{\text{Cos}[c+d\,x]\,\text{Cot}[c+d\,x]^3}{\sqrt{a+a\,\text{Sin}[c+d\,x]}}\,dx$$

Optimal (type 3, 125 leaves, 11 steps):

$$\frac{9\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\text{Cos}[c+d\,x]}{\sqrt{a+a\,\text{Sin}[c+d\,x]}}\right]}{4\sqrt{a}\,d}-\frac{2\,\text{Cos}[c+d\,x]}{d\sqrt{a+a\,\text{Sin}[c+d\,x]}}+\frac{\text{Cot}[c+d\,x]}{4\,d\sqrt{a+a\,\text{Sin}[c+d\,x]}}-\frac{\text{Cot}[c+d\,x]\,\text{Csc}[c+d\,x]}{2\,d\sqrt{a+a\,\text{Sin}[c+d\,x]}}$$

Result (type 3, 773 leaves):

$$-\frac{\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]}{4 d \sqrt{a(1+\text{Sin}[c+d x])}}-\frac{2 \text{Cos}\left[\frac{1}{2}(c+d x)\right]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)}{d \sqrt{a(1+\text{Sin}[c+d x])}}+$$

$$\frac{\text{Cot}\left[\frac{1}{4}(c+d x)\right]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)}{8 d \sqrt{a(1+\text{Sin}[c+d x])}}-\frac{\text{Csc}\left[\frac{1}{4}(c+d x)\right]^2\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)}{32 d \sqrt{a(1+\text{Sin}[c+d x])}}+$$

$$\frac{9 \text{Log}\left[1+\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)}{8 d \sqrt{a(1+\text{Sin}[c+d x])}}-$$

$$\frac{9 \text{Log}\left[1-\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)}{8 d \sqrt{a(1+\text{Sin}[c+d x])}}+\frac{\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)}{32 d \sqrt{a(1+\text{Sin}[c+d x])}}+$$

$$\frac{\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]}{16 d\left(\text{Cos}\left[\frac{1}{4}(c+d x)\right]-\text{Sin}\left[\frac{1}{4}(c+d x)\right]\right)^2 \sqrt{a(1+\text{Sin}[c+d x])}}-\frac{\text{Sin}\left[\frac{1}{4}(c+d x)\right]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)}{4 d\left(\text{Cos}\left[\frac{1}{4}(c+d x)\right]-\text{Sin}\left[\frac{1}{4}(c+d x)\right]\right) \sqrt{a(1+\text{Sin}[c+d x])}}-$$

$$\frac{\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]}{16 d\left(\text{Cos}\left[\frac{1}{4}(c+d x)\right]+\text{Sin}\left[\frac{1}{4}(c+d x)\right]\right)^2 \sqrt{a(1+\text{Sin}[c+d x])}}+\frac{\text{Sin}\left[\frac{1}{4}(c+d x)\right]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)}{4 d\left(\text{Cos}\left[\frac{1}{4}(c+d x)\right]+\text{Sin}\left[\frac{1}{4}(c+d x)\right]\right) \sqrt{a(1+\text{Sin}[c+d x])}}+$$

$$\frac{2 \text{Sin}\left[\frac{1}{2}(c+d x)\right]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)}{d \sqrt{a(1+\text{Sin}[c+d x])}}+\frac{\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right) \text{Tan}\left[\frac{1}{4}(c+d x)\right]}{8 d \sqrt{a(1+\text{Sin}[c+d x])}}$$

- **Problem 469: Result more than twice size of optimal antiderivative.**

$$\int \frac{\text{Cot}[c+d x]^4}{\sqrt{a+a \text{Sin}[c+d x]}} \, dx$$

Optimal (type 3, 135 leaves, 11 steps):

$$-\frac{7 \text{ArcTanh}\left[\frac{\sqrt{a} \text{Cos}[c+d x]}{\sqrt{a+a \text{Sin}[c+d x]}}\right]}{8 \sqrt{a} d}+\frac{9 \text{Cot}[c+d x]}{8 d \sqrt{a+a \text{Sin}[c+d x]}}+\frac{\text{Cot}[c+d x] \text{Csc}[c+d x]}{12 d \sqrt{a+a \text{Sin}[c+d x]}}-\frac{\text{Cot}[c+d x] \text{Csc}[c+d x]^2}{3 d \sqrt{a+a \text{Sin}[c+d x]}}$$

Result (type 3, 292 leaves):

$$\frac{1}{24\,d\left(\text{Csc}\left[\frac{1}{4}(c+d\,x)\right]^2-\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\right)^3\sqrt{a\,(1+\text{Sin}[c+d\,x])}}$$
$$\text{Csc}\left[\frac{1}{2}(c+d\,x)\right]^9\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)\left(36\,\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-46\,\text{Cos}\left[\frac{3}{2}(c+d\,x)\right]-\right.$$
$$54\,\text{Cos}\left[\frac{5}{2}(c+d\,x)\right]-36\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]-63\,\text{Log}\left[1+\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]\text{Sin}[c+d\,x]+$$
$$63\,\text{Log}\left[1-\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]\text{Sin}[c+d\,x]-46\,\text{Sin}\left[\frac{3}{2}(c+d\,x)\right]+54\,\text{Sin}\left[\frac{5}{2}(c+d\,x)\right]+$$
$$\left.21\,\text{Log}\left[1+\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]\text{Sin}[3(c+d\,x)]-21\,\text{Log}\left[1-\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]\text{Sin}[3(c+d\,x)]\right)$$

Problem 470: Result more than twice size of optimal antiderivative.

$$\int\frac{\text{Cot}[c+d\,x]^4\,\text{Csc}[c+d\,x]}{\sqrt{a+a\,\text{Sin}[c+d\,x]}}\,dx$$

Optimal (type 3, 170 leaves, 15 steps):

$$-\frac{11\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\text{Cos}[c+d\,x]}{\sqrt{a+a\,\text{Sin}[c+d\,x]}}\right]}{64\sqrt{a}\,d}-\frac{11\,\text{Cot}[c+d\,x]}{64\,d\sqrt{a+a\,\text{Sin}[c+d\,x]}}+\frac{53\,\text{Cot}[c+d\,x]\,\text{Csc}[c+d\,x]}{96\,d\sqrt{a+a\,\text{Sin}[c+d\,x]}}+\frac{\text{Cot}[c+d\,x]\,\text{Csc}[c+d\,x]^2}{24\,d\sqrt{a+a\,\text{Sin}[c+d\,x]}}-\frac{\text{Cot}[c+d\,x]\,\text{Csc}[c+d\,x]^3}{4\,d\sqrt{a+a\,\text{Sin}[c+d\,x]}}$$

Result (type 3, 374 leaves):

$$\frac{1}{192\,d\left(\text{Csc}\left[\frac{1}{4}(c+d\,x)\right]^2-\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\right)^4\sqrt{a\,(1+\text{Sin}[c+d\,x])}}$$
$$\text{Csc}\left[\frac{1}{2}(c+d\,x)\right]^{12}\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)\left(214\,\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-558\,\text{Cos}\left[\frac{3}{2}(c+d\,x)\right]-490\,\text{Cos}\left[\frac{5}{2}(c+d\,x)\right]+\right.$$
$$66\,\text{Cos}\left[\frac{7}{2}(c+d\,x)\right]-99\,\text{Log}\left[1+\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]+132\,\text{Cos}[2(c+d\,x)]\,\text{Log}\left[1+\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]-$$
$$33\,\text{Cos}[4(c+d\,x)]\,\text{Log}\left[1+\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]+99\,\text{Log}\left[1-\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]-$$
$$132\,\text{Cos}[2(c+d\,x)]\,\text{Log}\left[1-\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]+33\,\text{Cos}[4(c+d\,x)]\,\text{Log}\left[1-\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]-$$
$$\left.214\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]-558\,\text{Sin}\left[\frac{3}{2}(c+d\,x)\right]+490\,\text{Sin}\left[\frac{5}{2}(c+d\,x)\right]+66\,\text{Sin}\left[\frac{7}{2}(c+d\,x)\right]\right)$$

Problem 476: Result more than twice size of optimal antiderivative.

$$\int\frac{\text{Cos}[c+d\,x]^2\,\text{Cot}[c+d\,x]^2}{(a+a\,\text{Sin}[c+d\,x])^{3/2}}\,dx$$

Optimal (type 3, 94 leaves, 9 steps):

$$\frac{3\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\text{Cos}[c+d\,x]}{\sqrt{a+a\,\text{Sin}[c+d\,x]}}\right]}{a^{3/2}\,d}-\frac{\text{Cos}[c+d\,x]}{a\,d\,\sqrt{a+a\,\text{Sin}[c+d\,x]}}-\frac{\text{Cot}[c+d\,x]\,\sqrt{a+a\,\text{Sin}[c+d\,x]}}{a^2\,d}$$

Result (type 3, 220 leaves):

$$\left(\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^3\left(2-8\,\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Cot}\left[\frac{1}{4}(c+d\,x)\right]+\right.\right.$$
$$6\,\text{Log}\left[1+\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]-6\,\text{Log}\left[1-\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]+\frac{2\,\text{Sin}\left[\frac{1}{4}(c+d\,x)\right]}{\text{Cos}\left[\frac{1}{4}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{4}(c+d\,x)\right]}-$$
$$\left.\left.\frac{2\,\text{Sin}\left[\frac{1}{4}(c+d\,x)\right]}{\text{Cos}\left[\frac{1}{4}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{4}(c+d\,x)\right]}+8\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]-\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]\right)\right)\Big/\left(4\,d\,(a\,(1+\text{Sin}[c+d\,x]))^{3/2}\right)$$

Problem 477: Result more than twice size of optimal antiderivative.

$$\int\frac{\text{Cos}[c+d\,x]\,\text{Cot}[c+d\,x]^3}{(a+a\,\text{Sin}[c+d\,x])^{3/2}}\,dx$$

Optimal (type 3, 106 leaves, 8 steps):

$$-\frac{3\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\text{Cos}[c+d\,x]}{\sqrt{a+a\,\text{Sin}[c+d\,x]}}\right]}{4\,a^{3/2}\,d}+\frac{7\,\text{Cot}[c+d\,x]}{4\,a\,d\,\sqrt{a+a\,\text{Sin}[c+d\,x]}}-\frac{\text{Cot}[c+d\,x]\,\text{Csc}[c+d\,x]\,\sqrt{a+a\,\text{Sin}[c+d\,x]}}{2\,a^2\,d}$$

Result (type 3, 274 leaves):

$$\frac{1}{32\,d\,(a\,(1+\text{Sin}[c+d\,x]))^{3/2}}$$
$$\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^3\left(-24+12\,\text{Cot}\left[\frac{1}{4}(c+d\,x)\right]-\text{Csc}\left[\frac{1}{4}(c+d\,x)\right]^2-12\,\text{Log}\left[1+\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]+\right.$$
$$12\,\text{Log}\left[1-\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]+\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2+\frac{2}{\left(\text{Cos}\left[\frac{1}{4}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{4}(c+d\,x)\right]\right)^2}-$$
$$\left.\frac{24\,\text{Sin}\left[\frac{1}{4}(c+d\,x)\right]}{\text{Cos}\left[\frac{1}{4}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{4}(c+d\,x)\right]}-\frac{2}{\left(\text{Cos}\left[\frac{1}{4}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{4}(c+d\,x)\right]\right)^2}+\frac{24\,\text{Sin}\left[\frac{1}{4}(c+d\,x)\right]}{\text{Cos}\left[\frac{1}{4}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{4}(c+d\,x)\right]}+12\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]\right)$$

Problem 478: Result more than twice size of optimal antiderivative.

$$\int\frac{\text{Cot}[c+d\,x]^4}{(a+a\,\text{Sin}[c+d\,x])^{3/2}}\,dx$$

Optimal (type 3, 144 leaves, 10 steps):

$$-\frac{\text{ArcTanh}\left[\frac{\sqrt{a}\,\text{Cos}[c+d x]}{\sqrt{a+a\,\text{Sin}[c+d x]}}\right]}{8 a^{3/2} d}-\frac{\text{Cot}[c+d x]}{8 a d \sqrt{a+a\,\text{Sin}[c+d x]}}+\frac{11\,\text{Cot}[c+d x]\,\text{Csc}[c+d x]}{12 a d \sqrt{a+a\,\text{Sin}[c+d x]}}-\frac{\text{Cot}[c+d x]\,\text{Csc}[c+d x]^2 \sqrt{a+a\,\text{Sin}[c+d x]}}{3 a^2 d}$$

Result (type 3, 294 leaves):

$$\frac{1}{24 d \left(\text{Csc}\left[\frac{1}{4}(c+d x)\right]^2-\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2\right)^3 (a (1+\text{Sin}[c+d x]))^{3/2}}$$
$$\text{Csc}\left[\frac{1}{2}(c+d x)\right]^9 \left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3 \left(-132\,\text{Cos}\left[\frac{1}{2}(c+d x)\right]+62\,\text{Cos}\left[\frac{3}{2}(c+d x)\right]+\right.$$
$$6\,\text{Cos}\left[\frac{5}{2}(c+d x)\right]+132\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]-9\,\text{Log}\left[1+\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]\text{Sin}[c+d x]+$$
$$9\,\text{Log}\left[1-\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]\text{Sin}[c+d x]+62\,\text{Sin}\left[\frac{3}{2}(c+d x)\right]-6\,\text{Sin}\left[\frac{5}{2}(c+d x)\right]+$$
$$\left.3\,\text{Log}\left[1+\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]\text{Sin}[3(c+d x)]-3\,\text{Log}\left[1-\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]\text{Sin}[3(c+d x)]\right)$$

- **Problem 479: Result more than twice size of optimal antiderivative.**

$$\int \frac{\text{Cot}[c+d x]^4\,\text{Csc}[c+d x]}{(a+a\,\text{Sin}[c+d x])^{3/2}}\,dx$$

Optimal (type 3, 182 leaves, 12 steps):

$$-\frac{3\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\text{Cos}[c+d x]}{\sqrt{a+a\,\text{Sin}[c+d x]}}\right]}{64 a^{3/2} d}-\frac{3\,\text{Cot}[c+d x]}{64 a d \sqrt{a+a\,\text{Sin}[c+d x]}}-$$
$$\frac{\text{Cot}[c+d x]\,\text{Csc}[c+d x]}{32 a d \sqrt{a+a\,\text{Sin}[c+d x]}}+\frac{5\,\text{Cot}[c+d x]\,\text{Csc}[c+d x]^2}{8 a d \sqrt{a+a\,\text{Sin}[c+d x]}}-\frac{\text{Cot}[c+d x]\,\text{Csc}[c+d x]^3 \sqrt{a+a\,\text{Sin}[c+d x]}}{4 a^2 d}$$

Result (type 3, 376 leaves):

$$-\frac{1}{64\, d \left(\mathrm{Csc}\left[\frac{1}{4}(c+d x)\right]^2-\mathrm{Sec}\left[\frac{1}{4}(c+d x)\right]^2\right)^4 (a (1+\mathrm{Sin}[c+d x]))^{3/2}}$$

$$\mathrm{Csc}\left[\frac{1}{2}(c+d x)\right]^{12}\left(\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3\left(446\,\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]-182\,\mathrm{Cos}\left[\frac{3}{2}(c+d x)\right]-2\,\mathrm{Cos}\left[\frac{5}{2}(c+d x)\right]-\right.$$
$$6\,\mathrm{Cos}\left[\frac{7}{2}(c+d x)\right]+9\,\mathrm{Log}\left[1+\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]-\mathrm{Sin}\left[\frac{1}{2}(c+d x)\right]\right]-12\,\mathrm{Cos}[2 (c+d x)]\,\mathrm{Log}\left[1+\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]-\mathrm{Sin}\left[\frac{1}{2}(c+d x)\right]\right]+$$
$$3\,\mathrm{Cos}[4 (c+d x)]\,\mathrm{Log}\left[1+\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]-\mathrm{Sin}\left[\frac{1}{2}(c+d x)\right]\right]-9\,\mathrm{Log}\left[1-\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d x)\right]\right]+$$
$$12\,\mathrm{Cos}[2 (c+d x)]\,\mathrm{Log}\left[1-\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d x)\right]\right]-3\,\mathrm{Cos}[4 (c+d x)]\,\mathrm{Log}\left[1-\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d x)\right]\right]-$$
$$\left.446\,\mathrm{Sin}\left[\frac{1}{2}(c+d x)\right]-182\,\mathrm{Sin}\left[\frac{3}{2}(c+d x)\right]+2\,\mathrm{Sin}\left[\frac{5}{2}(c+d x)\right]-6\,\mathrm{Sin}\left[\frac{7}{2}(c+d x)\right]\right)$$

- **Problem 481: Result unnecessarily involves imaginary or complex numbers.**

$$\int \frac{\mathrm{Cos}[c+d x]^4\,\mathrm{Sin}[c+d x]^4}{(a+a\,\mathrm{Sin}[c+d x])^{5/2}}\,dx$$

Optimal (type 3, 260 leaves, 18 steps):

$$-\frac{4\sqrt{2}\,\mathrm{ArcTanh}\left[\frac{\sqrt{a}\,\mathrm{Cos}[c+d x]}{\sqrt{2}\,\sqrt{a+a\,\mathrm{Sin}[c+d x]}}\right]}{a^{5/2}\, d}+\frac{4496\,\mathrm{Cos}[c+d x]}{693\, a^2\, d\,\sqrt{a+a\,\mathrm{Sin}[c+d x]}}+\frac{200\,\mathrm{Cos}[c+d x]\,\mathrm{Sin}[c+d x]^2}{231\, a^2\, d\,\sqrt{a+a\,\mathrm{Sin}[c+d x]}}-$$
$$\frac{424\,\mathrm{Cos}[c+d x]\,\mathrm{Sin}[c+d x]^3}{693\, a^2\, d\,\sqrt{a+a\,\mathrm{Sin}[c+d x]}}+\frac{46\,\mathrm{Cos}[c+d x]\,\mathrm{Sin}[c+d x]^4}{99\, a^2\, d\,\sqrt{a+a\,\mathrm{Sin}[c+d x]}}-\frac{2\,\mathrm{Cos}[c+d x]\,\mathrm{Sin}[c+d x]^5}{11\, a^2\, d\,\sqrt{a+a\,\mathrm{Sin}[c+d x]}}-\frac{1048\,\mathrm{Cos}[c+d x]\,\sqrt{a+a\,\mathrm{Sin}[c+d x]}}{693\, a^3\, d}$$

Result (type 3, 224 leaves):

$$\frac{1}{11088\, d\,(a (1+\mathrm{Sin}[c+d x]))^{5/2}}$$
$$\left(\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^5\left((88704+88704\, i)\,(-1)^{3/4}\,\mathrm{ArcTanh}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{3/4}\left(-1+\mathrm{Tan}\left[\frac{1}{4}(c+d x)\right]\right)\right]+73458\,\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]-\right.$$
$$15246\,\mathrm{Cos}\left[\frac{3}{2}(c+d x)\right]-4851\,\mathrm{Cos}\left[\frac{5}{2}(c+d x)\right]+1485\,\mathrm{Cos}\left[\frac{7}{2}(c+d x)\right]+385\,\mathrm{Cos}\left[\frac{9}{2}(c+d x)\right]-63\,\mathrm{Cos}\left[\frac{11}{2}(c+d x)\right]-$$
$$\left.73458\,\mathrm{Sin}\left[\frac{1}{2}(c+d x)\right]-15246\,\mathrm{Sin}\left[\frac{3}{2}(c+d x)\right]+4851\,\mathrm{Sin}\left[\frac{5}{2}(c+d x)\right]+1485\,\mathrm{Sin}\left[\frac{7}{2}(c+d x)\right]-385\,\mathrm{Sin}\left[\frac{9}{2}(c+d x)\right]-63\,\mathrm{Sin}\left[\frac{11}{2}(c+d x)\right]\right)$$

- **Problem 482: Result unnecessarily involves imaginary or complex numbers.**

$$\int \frac{\mathrm{Cos}[c+d x]^4\,\mathrm{Sin}[c+d x]^3}{(a+a\,\mathrm{Sin}[c+d x])^{5/2}}\,dx$$

Optimal (type 3, 222 leaves, 16 steps):

$$\frac{4\sqrt{2}\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\text{Cos}[c+d x]}{\sqrt{2}\,\sqrt{a+a\,\text{Sin}[c+d x]}}\right]}{a^{5/2}\,d}-\frac{2048\,\text{Cos}[c+d x]}{315\,a^2\,d\,\sqrt{a+a\,\text{Sin}[c+d x]}}-\frac{92\,\text{Cos}[c+d x]\,\text{Sin}[c+d x]^2}{105\,a^2\,d\,\sqrt{a+a\,\text{Sin}[c+d x]}}+\frac{38\,\text{Cos}[c+d x]\,\text{Sin}[c+d x]^3}{63\,a^2\,d\,\sqrt{a+a\,\text{Sin}[c+d x]}}-\frac{2\,\text{Cos}[c+d x]\,\text{Sin}[c+d x]^4}{9\,a^2\,d\,\sqrt{a+a\,\text{Sin}[c+d x]}}+\frac{472\,\text{Cos}[c+d x]\,\sqrt{a+a\,\text{Sin}[c+d x]}}{315\,a^3\,d}$$

Result (type 3, 225 leaves):

$$\frac{1}{2520\,a^3\,d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)}\sqrt{a\,(1+\text{Sin}[c+d x])}\,\left((20160+20160\,\mathrm{i})\,(-1)^{3/4}\,\text{ArcTanh}\left[\left(\frac{1}{2}+\frac{\mathrm{i}}{2}\right)(-1)^{3/4}\,\text{Sec}\left[\frac{d x}{4}\right]\left(\text{Cos}\left[\frac{1}{4}(2 c+d x)\right]-\text{Sin}\left[\frac{1}{4}(2 c+d x)\right]\right)\right]-16380\,\text{Cos}\left[\frac{1}{2}(c+d x)\right]+3150\,\text{Cos}\left[\frac{3}{2}(c+d x)\right]+882\,\text{Cos}\left[\frac{5}{2}(c+d x)\right]-225\,\text{Cos}\left[\frac{7}{2}(c+d x)\right]-35\,\text{Cos}\left[\frac{9}{2}(c+d x)\right]+16380\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]+3150\,\text{Sin}\left[\frac{3}{2}(c+d x)\right]-882\,\text{Sin}\left[\frac{5}{2}(c+d x)\right]-225\,\text{Sin}\left[\frac{7}{2}(c+d x)\right]+35\,\text{Sin}\left[\frac{9}{2}(c+d x)\right]\right)$$

- **Problem 483: Result unnecessarily involves imaginary or complex numbers.**

$$\int\frac{\text{Cos}[c+d x]^4\,\text{Sin}[c+d x]^2}{(a+a\,\text{Sin}[c+d x])^{5/2}}\,dx$$

Optimal (type 3, 169 leaves, 6 steps):

$$-\frac{4\sqrt{2}\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\text{Cos}[c+d x]}{\sqrt{2}\,\sqrt{a+a\,\text{Sin}[c+d x]}}\right]}{a^{5/2}\,d}+\frac{4\,\text{Cos}[c+d x]^5}{7\,d\,(a+a\,\text{Sin}[c+d x])^{5/2}}+\frac{2\,\text{Cos}[c+d x]^3}{3\,a\,d\,(a+a\,\text{Sin}[c+d x])^{3/2}}-\frac{2\,\text{Cos}[c+d x]^5}{7\,a\,d\,(a+a\,\text{Sin}[c+d x])^{3/2}}+\frac{4\,\text{Cos}[c+d x]}{a^2\,d\,\sqrt{a+a\,\text{Sin}[c+d x]}}$$

Result (type 3, 201 leaves):

$$-\frac{1}{84\,a^3\,d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)}\sqrt{a\,(1+\text{Sin}[c+d x])}\,\left((672+672\,\mathrm{i})\,(-1)^{3/4}\,\text{ArcTanh}\left[\left(\frac{1}{2}+\frac{\mathrm{i}}{2}\right)(-1)^{3/4}\,\text{Sec}\left[\frac{d x}{4}\right]\left(\text{Cos}\left[\frac{1}{4}(2 c+d x)\right]-\text{Sin}\left[\frac{1}{4}(2 c+d x)\right]\right)\right]-525\,\text{Cos}\left[\frac{1}{2}(c+d x)\right]+91\,\text{Cos}\left[\frac{3}{2}(c+d x)\right]+21\,\text{Cos}\left[\frac{5}{2}(c+d x)\right]-3\,\text{Cos}\left[\frac{7}{2}(c+d x)\right]+525\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]+91\,\text{Sin}\left[\frac{3}{2}(c+d x)\right]-21\,\text{Sin}\left[\frac{5}{2}(c+d x)\right]-3\,\text{Sin}\left[\frac{7}{2}(c+d x)\right]\right)$$

Problem 484: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{\cos[c+d x]^4 \sin[c+d x]}{(a+a \sin[c+d x])^{5/2}} \, dx$$

Optimal (type 3, 137 leaves, 5 steps):

$$\frac{4 \sqrt{2} \operatorname{ArcTanh}\left[\frac{\sqrt{a} \cos[c+d x]}{\sqrt{2} \sqrt{a+a \sin[c+d x]}}\right]}{a^{5/2} d}-\frac{2 \cos[c+d x]^5}{5 d (a+a \sin[c+d x])^{5/2}}-\frac{2 \cos[c+d x]^3}{3 a d (a+a \sin[c+d x])^{3/2}}-\frac{4 \cos[c+d x]}{a^2 d \sqrt{a+a \sin[c+d x]}}$$

Result (type 3, 177 leaves):

$$\left(\sqrt{a (1+\sin[c+d x])} \left((240+240 i) (-1)^{3/4} \operatorname{ArcTanh}\left[\left(\frac{1}{2}+\frac{i}{2}\right) (-1)^{3/4} \operatorname{Sec}\left[\frac{d x}{4}\right] \left(\cos\left[\frac{1}{4} (2 c+d x)\right]-\sin\left[\frac{1}{4} (2 c+d x)\right]\right)\right]- 180 \cos\left[\frac{1}{2} (c+d x)\right]+25 \cos\left[\frac{3}{2} (c+d x)\right]+3 \cos\left[\frac{5}{2} (c+d x)\right]+180 \sin\left[\frac{1}{2} (c+d x)\right]+ 25 \sin\left[\frac{3}{2} (c+d x)\right]-3 \sin\left[\frac{5}{2} (c+d x)\right]\right)\right) \Big/ \left(30 a^3 d \left(\cos\left[\frac{1}{2} (c+d x)\right]+\sin\left[\frac{1}{2} (c+d x)\right]\right)\right)$$

Problem 485: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{\cos[c+d x]^3 \cot[c+d x]}{(a+a \sin[c+d x])^{5/2}} \, dx$$

Optimal (type 3, 113 leaves, 9 steps):

$$-\frac{2 \operatorname{ArcTanh}\left[\frac{\sqrt{a} \cos[c+d x]}{\sqrt{a+a \sin[c+d x]}}\right]}{a^{5/2} d}+\frac{4 \sqrt{2} \operatorname{ArcTanh}\left[\frac{\sqrt{a} \cos[c+d x]}{\sqrt{2} \sqrt{a+a \sin[c+d x]}}\right]}{a^{5/2} d}-\frac{2 \cos[c+d x]}{a^2 d \sqrt{a+a \sin[c+d x]}}$$

Result (type 3, 154 leaves):

$$-\frac{1}{d (a (1+\sin[c+d x]))^{5/2}} \left((8+8 i) (-1)^{3/4} \operatorname{ArcTanh}\left[\left(\frac{1}{2}+\frac{i}{2}\right) (-1)^{3/4} \left(-1+\tan\left[\frac{1}{4} (c+d x)\right]\right)\right]+2 \cos\left[\frac{1}{2} (c+d x)\right]+\operatorname{Log}\left[1+\cos\left[\frac{1}{2} (c+d x)\right]-\sin\left[\frac{1}{2} (c+d x)\right]\right]- \operatorname{Log}\left[1-\cos\left[\frac{1}{2} (c+d x)\right]+\sin\left[\frac{1}{2} (c+d x)\right]\right]-2 \sin\left[\frac{1}{2} (c+d x)\right]\right) \left(\cos\left[\frac{1}{2} (c+d x)\right]+\sin\left[\frac{1}{2} (c+d x)\right]\right)^5$$

Problem 486: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{\cos[c+d x]^2 \cot[c+d x]^2}{(a+a \sin[c+d x])^{5/2}} \, dx$$

Optimal (type 3, 113 leaves, 12 steps):

$$\frac{5\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\text{Cos}[c+d\,x]}{\sqrt{a+a\,\text{Sin}[c+d\,x]}}\right]}{a^{5/2}\,d}-\frac{4\,\sqrt{2}\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\text{Cos}[c+d\,x]}{\sqrt{2}\,\sqrt{a+a\,\text{Sin}[c+d\,x]}}\right]}{a^{5/2}\,d}-\frac{\text{Cot}[c+d\,x]}{a^2\,d\,\sqrt{a+a\,\text{Sin}[c+d\,x]}}$$

Result (type 3, 170 leaves):

$$\left(\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^5\left((32+32\,i)\,(-1)^{3/4}\,\text{ArcTanh}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{3/4}\left(-1+\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]\right)\right]-\text{Cot}\left[\frac{1}{4}(c+d\,x)\right]+10\,\text{Log}\left[1+\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]-10\,\text{Log}\left[1-\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]+2\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]-\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]\right)\right)\Big/\left(4\,d\,(a\,(1+\text{Sin}[c+d\,x]))^{5/2}\right)$$

- **Problem 487: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int\frac{\text{Cos}[c+d\,x]\,\text{Cot}[c+d\,x]^3}{(a+a\,\text{Sin}[c+d\,x])^{5/2}}\,dx$$

Optimal (type 3, 153 leaves, 14 steps):

$$-\frac{23\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\text{Cos}[c+d\,x]}{\sqrt{a+a\,\text{Sin}[c+d\,x]}}\right]}{4\,a^{5/2}\,d}+\frac{4\,\sqrt{2}\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\text{Cos}[c+d\,x]}{\sqrt{2}\,\sqrt{a+a\,\text{Sin}[c+d\,x]}}\right]}{a^{5/2}\,d}+\frac{9\,\text{Cot}[c+d\,x]}{4\,a^2\,d\,\sqrt{a+a\,\text{Sin}[c+d\,x]}}-\frac{\text{Cot}[c+d\,x]\,\text{Csc}[c+d\,x]}{2\,a^2\,d\,\sqrt{a+a\,\text{Sin}[c+d\,x]}}$$

Result (type 3, 791 leaves):

$$-\frac{5\left(\mathrm{Cos}\left[\frac{1}{2}(c+dx)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+dx)\right]\right)^5}{4d(a(1+\mathrm{Sin}[c+dx]))^{5/2}}+\frac{1}{d(a(1+\mathrm{Sin}[c+dx]))^{5/2}}$$

$$(8+8\,i)(-1)^{3/4}\,\mathrm{ArcTanh}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{3/4}\,\mathrm{Sec}\left[\frac{1}{4}(c+dx)\right]\left(\mathrm{Cos}\left[\frac{1}{4}(c+dx)\right]-\mathrm{Sin}\left[\frac{1}{4}(c+dx)\right]\right)\right]\left(\mathrm{Cos}\left[\frac{1}{2}(c+dx)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+dx)\right]\right)^5+$$

$$\frac{5\,\mathrm{Cot}\left[\frac{1}{4}(c+dx)\right]\left(\mathrm{Cos}\left[\frac{1}{2}(c+dx)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+dx)\right]\right)^5}{8d(a(1+\mathrm{Sin}[c+dx]))^{5/2}}-\frac{\mathrm{Csc}\left[\frac{1}{4}(c+dx)\right]^2\left(\mathrm{Cos}\left[\frac{1}{2}(c+dx)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+dx)\right]\right)^5}{32d(a(1+\mathrm{Sin}[c+dx]))^{5/2}}-$$

$$\frac{23\,\mathrm{Log}\left[1+\mathrm{Cos}\left[\frac{1}{2}(c+dx)\right]-\mathrm{Sin}\left[\frac{1}{2}(c+dx)\right]\right]\left(\mathrm{Cos}\left[\frac{1}{2}(c+dx)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+dx)\right]\right)^5}{8d(a(1+\mathrm{Sin}[c+dx]))^{5/2}}+$$

$$\frac{23\,\mathrm{Log}\left[1-\mathrm{Cos}\left[\frac{1}{2}(c+dx)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+dx)\right]\right]\left(\mathrm{Cos}\left[\frac{1}{2}(c+dx)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+dx)\right]\right)^5}{8d(a(1+\mathrm{Sin}[c+dx]))^{5/2}}+$$

$$\frac{\mathrm{Sec}\left[\frac{1}{4}(c+dx)\right]^2\left(\mathrm{Cos}\left[\frac{1}{2}(c+dx)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+dx)\right]\right)^5}{32d(a(1+\mathrm{Sin}[c+dx]))^{5/2}}+\frac{\left(\mathrm{Cos}\left[\frac{1}{2}(c+dx)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+dx)\right]\right)^5}{16d\left(\mathrm{Cos}\left[\frac{1}{4}(c+dx)\right]-\mathrm{Sin}\left[\frac{1}{4}(c+dx)\right]\right)^2(a(1+\mathrm{Sin}[c+dx]))^{5/2}}-$$

$$\frac{5\,\mathrm{Sin}\left[\frac{1}{4}(c+dx)\right]\left(\mathrm{Cos}\left[\frac{1}{2}(c+dx)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+dx)\right]\right)^5}{4d\left(\mathrm{Cos}\left[\frac{1}{4}(c+dx)\right]-\mathrm{Sin}\left[\frac{1}{4}(c+dx)\right]\right)(a(1+\mathrm{Sin}[c+dx]))^{5/2}}-\frac{\left(\mathrm{Cos}\left[\frac{1}{2}(c+dx)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+dx)\right]\right)^5}{16d\left(\mathrm{Cos}\left[\frac{1}{4}(c+dx)\right]+\mathrm{Sin}\left[\frac{1}{4}(c+dx)\right]\right)^2(a(1+\mathrm{Sin}[c+dx]))^{5/2}}+$$

$$\frac{5\,\mathrm{Sin}\left[\frac{1}{4}(c+dx)\right]\left(\mathrm{Cos}\left[\frac{1}{2}(c+dx)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+dx)\right]\right)^5}{4d\left(\mathrm{Cos}\left[\frac{1}{4}(c+dx)\right]+\mathrm{Sin}\left[\frac{1}{4}(c+dx)\right]\right)(a(1+\mathrm{Sin}[c+dx]))^{5/2}}+\frac{5\left(\mathrm{Cos}\left[\frac{1}{2}(c+dx)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+dx)\right]\right)^5\mathrm{Tan}\left[\frac{1}{4}(c+dx)\right]}{8d(a(1+\mathrm{Sin}[c+dx]))^{5/2}}$$

Problem 488: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{\mathrm{Cot}[c+dx]^4}{(a+a\,\mathrm{Sin}[c+dx])^{5/2}}\,dx$$

Optimal (type 3, 191 leaves, 16 steps):

$$\frac{45\,\mathrm{ArcTanh}\left[\frac{\sqrt{a}\,\mathrm{Cos}[c+dx]}{\sqrt{a+a\,\mathrm{Sin}[c+dx]}}\right]}{8a^{5/2}d}-\frac{4\sqrt{2}\,\mathrm{ArcTanh}\left[\frac{\sqrt{a}\,\mathrm{Cos}[c+dx]}{\sqrt{2}\sqrt{a+a\,\mathrm{Sin}[c+dx]}}\right]}{a^{5/2}d}-$$

$$\frac{19\,\mathrm{Cot}[c+dx]}{8a^2d\sqrt{a+a\,\mathrm{Sin}[c+dx]}}+\frac{13\,\mathrm{Cot}[c+dx]\,\mathrm{Csc}[c+dx]}{12a^2d\sqrt{a+a\,\mathrm{Sin}[c+dx]}}-\frac{\mathrm{Cot}[c+dx]\,\mathrm{Csc}[c+dx]^2}{3a^2d\sqrt{a+a\,\mathrm{Sin}[c+dx]}}$$

Result (type 3, 332 leaves):

$$\frac{1}{192\, d\, (a\, (1+\text{Sin}[c+d\, x]))^{5/2}}\left(\text{Cos}\left[\frac{1}{2}(c+d\, x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\, x)\right]\right)^5$$
$$\left((1536+1536\, i)\, (-1)^{3/4}\, \text{ArcTanh}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{3/4}\left(-1+\text{Tan}\left[\frac{1}{4}(c+d\, x)\right]\right)\right]-\frac{1}{\left(\text{Csc}\left[\frac{1}{4}(c+d\, x)\right]^2-\text{Sec}\left[\frac{1}{4}(c+d\, x)\right]^2\right)^3}\, 8\, \text{Csc}\left[\frac{1}{2}(c+d\, x)\right]^9\right.$$
$$\left(396\, \text{Cos}\left[\frac{1}{2}(c+d\, x)\right]-218\, \text{Cos}\left[\frac{3}{2}(c+d\, x)\right]-114\, \text{Cos}\left[\frac{5}{2}(c+d\, x)\right]-396\, \text{Sin}\left[\frac{1}{2}(c+d\, x)\right]-405\, \text{Log}\left[1+\text{Cos}\left[\frac{1}{2}(c+d\, x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\, x)\right]\right]\right.$$
$$\text{Sin}[c+d\, x]+405\, \text{Log}\left[1-\text{Cos}\left[\frac{1}{2}(c+d\, x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\, x)\right]\right]\text{Sin}[c+d\, x]-218\, \text{Sin}\left[\frac{3}{2}(c+d\, x)\right]+114\, \text{Sin}\left[\frac{5}{2}(c+d\, x)\right]+$$
$$\left.\left.135\, \text{Log}\left[1+\text{Cos}\left[\frac{1}{2}(c+d\, x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\, x)\right]\right]\text{Sin}[3\, (c+d\, x)]-135\, \text{Log}\left[1-\text{Cos}\left[\frac{1}{2}(c+d\, x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\, x)\right]\right]\text{Sin}[3\, (c+d\, x)]\right)\right)$$

- **Problem 489: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int \frac{\text{Cot}[c+d\, x]^4\, \text{Csc}[c+d\, x]}{(a+a\, \text{Sin}[c+d\, x])^{5/2}}\, dx$$

Optimal (type 3, 229 leaves, 18 steps):

$$-\frac{363\, \text{ArcTanh}\left[\frac{\sqrt{a}\, \text{Cos}[c+d\, x]}{\sqrt{a+a\, \text{Sin}[c+d\, x]}}\right]}{64\, a^{5/2}\, d}+\frac{4\sqrt{2}\, \text{ArcTanh}\left[\frac{\sqrt{a}\, \text{Cos}[c+d\, x]}{\sqrt{2}\, \sqrt{a+a\, \text{Sin}[c+d\, x]}}\right]}{a^{5/2}\, d}+\frac{149\, \text{Cot}[c+d\, x]}{64\, a^2\, d\, \sqrt{a+a\, \text{Sin}[c+d\, x]}}-$$
$$\frac{107\, \text{Cot}[c+d\, x]\, \text{Csc}[c+d\, x]}{96\, a^2\, d\, \sqrt{a+a\, \text{Sin}[c+d\, x]}}+\frac{17\, \text{Cot}[c+d\, x]\, \text{Csc}[c+d\, x]^2}{24\, a^2\, d\, \sqrt{a+a\, \text{Sin}[c+d\, x]}}-\frac{\text{Cot}[c+d\, x]\, \text{Csc}[c+d\, x]^3}{4\, a^2\, d\, \sqrt{a+a\, \text{Sin}[c+d\, x]}}$$

Result (type 3, 1327 leaves):

$$-\frac{155\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^5}{96 d (a (1+\text{Sin}[c+d x]))^{5/2}}+\frac{1}{d (a (1+\text{Sin}[c+d x]))^{5/2}}$$

$$(8+8 i) (-1)^{3/4} \text{ArcTanh}\left[\left(\frac{1}{2}+\frac{i}{2}\right) (-1)^{3/4} \text{Sec}\left[\frac{1}{4}(c+d x)\right]\left(\text{Cos}\left[\frac{1}{4}(c+d x)\right]-\text{Sin}\left[\frac{1}{4}(c+d x)\right]\right)\right]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^5+$$

$$\frac{155 \text{Cot}\left[\frac{1}{4}(c+d x)\right]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^5}{192 d (a (1+\text{Sin}[c+d x]))^{5/2}}-\frac{51 \text{Csc}\left[\frac{1}{4}(c+d x)\right]^2\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^5}{512 d (a (1+\text{Sin}[c+d x]))^{5/2}}+$$

$$\frac{5 \text{Cot}\left[\frac{1}{4}(c+d x)\right] \text{Csc}\left[\frac{1}{4}(c+d x)\right]^2\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^5}{384 d (a (1+\text{Sin}[c+d x]))^{5/2}}-\frac{\text{Csc}\left[\frac{1}{4}(c+d x)\right]^4\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^5}{1024 d (a (1+\text{Sin}[c+d x]))^{5/2}}-$$

$$\frac{363 \text{Log}\left[1+\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^5}{128 d (a (1+\text{Sin}[c+d x]))^{5/2}}+$$

$$\frac{363 \text{Log}\left[1-\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^5}{128 d (a (1+\text{Sin}[c+d x]))^{5/2}}+$$

$$\frac{51 \text{Sec}\left[\frac{1}{4}(c+d x)\right]^2\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^5}{512 d (a (1+\text{Sin}[c+d x]))^{5/2}}+\frac{\text{Sec}\left[\frac{1}{4}(c+d x)\right]^4\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^5}{1024 d (a (1+\text{Sin}[c+d x]))^{5/2}}+$$

$$\frac{\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^5}{256 d\left(\text{Cos}\left[\frac{1}{4}(c+d x)\right]-\text{Sin}\left[\frac{1}{4}(c+d x)\right]\right)^4 (a (1+\text{Sin}[c+d x]))^{5/2}}+\frac{133\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^5}{768 d\left(\text{Cos}\left[\frac{1}{4}(c+d x)\right]-\text{Sin}\left[\frac{1}{4}(c+d x)\right]\right)^2 (a (1+\text{Sin}[c+d x]))^{5/2}}-$$

$$\frac{5 \text{Sin}\left[\frac{1}{4}(c+d x)\right]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^5}{96 d\left(\text{Cos}\left[\frac{1}{4}(c+d x)\right]-\text{Sin}\left[\frac{1}{4}(c+d x)\right]\right)^3 (a (1+\text{Sin}[c+d x]))^{5/2}}-\frac{155 \text{Sin}\left[\frac{1}{4}(c+d x)\right]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^5}{96 d\left(\text{Cos}\left[\frac{1}{4}(c+d x)\right]-\text{Sin}\left[\frac{1}{4}(c+d x)\right]\right) (a (1+\text{Sin}[c+d x]))^{5/2}}-$$

$$\frac{\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^5}{256 d\left(\text{Cos}\left[\frac{1}{4}(c+d x)\right]+\text{Sin}\left[\frac{1}{4}(c+d x)\right]\right)^4 (a (1+\text{Sin}[c+d x]))^{5/2}}+\frac{5 \text{Sin}\left[\frac{1}{4}(c+d x)\right]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^5}{96 d\left(\text{Cos}\left[\frac{1}{4}(c+d x)\right]+\text{Sin}\left[\frac{1}{4}(c+d x)\right]\right)^3 (a (1+\text{Sin}[c+d x]))^{5/2}}-$$

$$\frac{173\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^5}{768 d\left(\text{Cos}\left[\frac{1}{4}(c+d x)\right]+\text{Sin}\left[\frac{1}{4}(c+d x)\right]\right)^2 (a (1+\text{Sin}[c+d x]))^{5/2}}+\frac{155 \text{Sin}\left[\frac{1}{4}(c+d x)\right]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^5}{96 d\left(\text{Cos}\left[\frac{1}{4}(c+d x)\right]+\text{Sin}\left[\frac{1}{4}(c+d x)\right]\right) (a (1+\text{Sin}[c+d x]))^{5/2}}+$$

$$\frac{155\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^5 \text{Tan}\left[\frac{1}{4}(c+d x)\right]}{192 d (a (1+\text{Sin}[c+d x]))^{5/2}}+\frac{5 \text{Sec}\left[\frac{1}{4}(c+d x)\right]^2\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^5 \text{Tan}\left[\frac{1}{4}(c+d x)\right]}{384 d (a (1+\text{Sin}[c+d x]))^{5/2}}$$

■ Problem 490: Unable to integrate problem.

$$\int \text{Cos}[c+d x]^4 \text{Sin}[c+d x]^n (a+a \text{Sin}[c+d x])^2 \, dx$$

Optimal (type 5, 200 leaves, 5 steps) :

$$\frac{a^2 \text{Cos}[c+d x] \text{Hypergeometric2F1}\left[-\frac{3}{2}, \frac{1+n}{2}, \frac{3+n}{2}, \text{Sin}[c+d x]^2\right] \text{Sin}[c+d x]^{1+n}}{d (1+n) \sqrt{\text{Cos}[c+d x]^2}}+$$

$$\frac{2 a^2 \text{Cos}[c+d x] \text{Hypergeometric2F1}\left[-\frac{3}{2}, \frac{2+n}{2}, \frac{4+n}{2}, \text{Sin}[c+d x]^2\right] \text{Sin}[c+d x]^{2+n}}{d (2+n) \sqrt{\text{Cos}[c+d x]^2}}+$$

$$\frac{a^2 \text{Cos}[c+d x] \text{Hypergeometric2F1}\left[-\frac{3}{2}, \frac{3+n}{2}, \frac{5+n}{2}, \text{Sin}[c+d x]^2\right] \text{Sin}[c+d x]^{3+n}}{d (3+n) \sqrt{\text{Cos}[c+d x]^2}}$$

Result (type 8, 31 leaves) :

$$\int \text{Cos}[c+d x]^4 \text{Sin}[c+d x]^n (a+a \text{Sin}[c+d x])^2 \, dx$$

Problem 491: Unable to integrate problem.

$$\int \text{Cos}[c+d x]^4 \text{Sin}[c+d x]^n (a+a \text{Sin}[c+d x]) \, dx$$

Optimal (type 5, 129 leaves, 3 steps) :

$$\frac{a \text{Cos}[c+d x] \text{Hypergeometric2F1}\left[-\frac{3}{2}, \frac{1+n}{2}, \frac{3+n}{2}, \text{Sin}[c+d x]^2\right] \text{Sin}[c+d x]^{1+n}}{d (1+n) \sqrt{\text{Cos}[c+d x]^2}}+$$

$$\frac{a \text{Cos}[c+d x] \text{Hypergeometric2F1}\left[-\frac{3}{2}, \frac{2+n}{2}, \frac{4+n}{2}, \text{Sin}[c+d x]^2\right] \text{Sin}[c+d x]^{2+n}}{d (2+n) \sqrt{\text{Cos}[c+d x]^2}}$$

Result (type 8, 29 leaves) :

$$\int \text{Cos}[c+d x]^4 \text{Sin}[c+d x]^n (a+a \text{Sin}[c+d x]) \, dx$$

Problem 492: Unable to integrate problem.

$$\int \frac{\text{Cos}[c+d x]^4 \text{Sin}[c+d x]^n}{a+a \text{Sin}[c+d x]} \, dx$$

Optimal (type 5, 134 leaves, 3 steps) :

$$\frac{\text{Cos}[c+d x] \text{Hypergeometric2F1}\left[-\frac{1}{2}, \frac{1+n}{2}, \frac{3+n}{2}, \text{Sin}[c+d x]^2\right] \text{Sin}[c+d x]^{1+n}}{a d (1+n) \sqrt{\text{Cos}[c+d x]^2}}-$$

$$\frac{\text{Cos}[c+d x] \text{Hypergeometric2F1}\left[-\frac{1}{2}, \frac{2+n}{2}, \frac{4+n}{2}, \text{Sin}[c+d x]^2\right] \text{Sin}[c+d x]^{2+n}}{a d (2+n) \sqrt{\text{Cos}[c+d x]^2}}$$

Result (type 9, 23 962 leaves) : Display of huge result suppressed!

Problem 504: Result more than twice size of optimal antiderivative.

$$\int \text{Cot}[c+d x]^5 \,\text{Csc}[c+d x]\,(a+a \,\text{Sin}[c+d x])\, dx$$

Optimal (type 3, 86 leaves, 4 steps) :

$$-\frac{a\,\text{Csc}[c+d x]}{d}+\frac{a\,\text{Csc}[c+d x]^2}{d}+\frac{2\,a\,\text{Csc}[c+d x]^3}{3\,d}-\frac{a\,\text{Csc}[c+d x]^4}{4\,d}-\frac{a\,\text{Csc}[c+d x]^5}{5\,d}+\frac{a\,\text{Log}[\text{Sin}[c+d x]]}{d}$$

Result (type 3, 198 leaves) :

$$-\frac{89\,a\,\text{Cot}\left[\frac{1}{2}(c+d x)\right]}{240\,d}+\frac{31\,a\,\text{Cot}\left[\frac{1}{2}(c+d x)\right]\text{Csc}\left[\frac{1}{2}(c+d x)\right]^2}{480\,d}-\frac{a\,\text{Cot}\left[\frac{1}{2}(c+d x)\right]\text{Csc}\left[\frac{1}{2}(c+d x)\right]^4}{160\,d}+\frac{a\,\text{Csc}[c+d x]^2}{d}-\frac{a\,\text{Csc}[c+d x]^4}{4\,d}+\frac{a\,\text{Log}[\text{Sin}[c+d x]]}{d}-\frac{89\,a\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]}{240\,d}+\frac{31\,a\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]}{480\,d}-\frac{a\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^4\text{Tan}\left[\frac{1}{2}(c+d x)\right]}{160\,d}$$

Problem 505: Result more than twice size of optimal antiderivative.

$$\int \text{Cot}[c+d x]^5 \,\text{Csc}[c+d x]^2\,(a+a \,\text{Sin}[c+d x])\, dx$$

Optimal (type 3, 61 leaves, 6 steps) :

$$-\frac{a\,\text{Cot}[c+d x]^6}{6\,d}-\frac{a\,\text{Csc}[c+d x]}{d}+\frac{2\,a\,\text{Csc}[c+d x]^3}{3\,d}-\frac{a\,\text{Csc}[c+d x]^5}{5\,d}$$

Result (type 3, 173 leaves) :

$$-\frac{89\,a\,\text{Cot}\left[\frac{1}{2}(c+d x)\right]}{240\,d}-\frac{a\,\text{Cot}[c+d x]^6}{6\,d}+\frac{31\,a\,\text{Cot}\left[\frac{1}{2}(c+d x)\right]\text{Csc}\left[\frac{1}{2}(c+d x)\right]^2}{480\,d}-\frac{a\,\text{Cot}\left[\frac{1}{2}(c+d x)\right]\text{Csc}\left[\frac{1}{2}(c+d x)\right]^4}{160\,d}-\frac{89\,a\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]}{240\,d}+\frac{31\,a\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]}{480\,d}-\frac{a\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^4\text{Tan}\left[\frac{1}{2}(c+d x)\right]}{160\,d}$$

Problem 506: Result more than twice size of optimal antiderivative.

$$\int \text{Cot}[c+d x]^5 \,\text{Csc}[c+d x]^3\,(a+a \,\text{Sin}[c+d x])\, dx$$

Optimal (type 3, 65 leaves, 6 steps) :

$$-\frac{a\,\text{Cot}[c+d x]^6}{6\,d}-\frac{a\,\text{Csc}[c+d x]^3}{3\,d}+\frac{2\,a\,\text{Csc}[c+d x]^5}{5\,d}-\frac{a\,\text{Csc}[c+d x]^7}{7\,d}$$

Result (type 3, 233 leaves) :

$$-\frac{103\,a\,\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]}{3360\,d}-\frac{a\,\text{Cot}[c+d\,x]^6}{6\,d}-\frac{103\,a\,\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\text{Csc}\left[\frac{1}{2}(c+d\,x)\right]^2}{6720\,d}+\frac{9\,a\,\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\text{Csc}\left[\frac{1}{2}(c+d\,x)\right]^4}{1120\,d}-\frac{a\,\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\text{Csc}\left[\frac{1}{2}(c+d\,x)\right]^6}{896\,d}-\frac{103\,a\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{3360\,d}-\frac{103\,a\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{6720\,d}+\frac{9\,a\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^4\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{1120\,d}-\frac{a\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^6\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{896\,d}$$

Problem 507: Result more than twice size of optimal antiderivative.

$$\int \text{Cot}[c+d\,x]^5\,\text{Csc}[c+d\,x]^4\,(a+a\,\text{Sin}[c+d\,x])\,dx$$

Optimal (type 3, 81 leaves, 7 steps):

$$-\frac{a\,\text{Cot}[c+d\,x]^6}{6\,d}-\frac{a\,\text{Cot}[c+d\,x]^8}{8\,d}-\frac{a\,\text{Csc}[c+d\,x]^3}{3\,d}+\frac{2\,a\,\text{Csc}[c+d\,x]^5}{5\,d}-\frac{a\,\text{Csc}[c+d\,x]^7}{7\,d}$$

Result (type 3, 265 leaves):

$$-\frac{103\,a\,\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]}{3360\,d}-\frac{103\,a\,\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\text{Csc}\left[\frac{1}{2}(c+d\,x)\right]^2}{6720\,d}+\frac{9\,a\,\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\text{Csc}\left[\frac{1}{2}(c+d\,x)\right]^4}{1120\,d}-\frac{a\,\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\text{Csc}\left[\frac{1}{2}(c+d\,x)\right]^6}{896\,d}-\frac{a\,\text{Csc}[c+d\,x]^4}{4\,d}+\frac{a\,\text{Csc}[c+d\,x]^6}{3\,d}-\frac{a\,\text{Csc}[c+d\,x]^8}{8\,d}-\frac{103\,a\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{3360\,d}-\frac{103\,a\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{6720\,d}+\frac{9\,a\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^4\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{1120\,d}-\frac{a\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^6\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{896\,d}$$

Problem 508: Result more than twice size of optimal antiderivative.

$$\int \text{Cot}[c+d\,x]^5\,\text{Csc}[c+d\,x]^5\,(a+a\,\text{Sin}[c+d\,x])\,dx$$

Optimal (type 3, 81 leaves, 7 steps):

$$-\frac{a\,\text{Cot}[c+d\,x]^6}{6\,d}-\frac{a\,\text{Cot}[c+d\,x]^8}{8\,d}-\frac{a\,\text{Csc}[c+d\,x]^5}{5\,d}+\frac{2\,a\,\text{Csc}[c+d\,x]^7}{7\,d}-\frac{a\,\text{Csc}[c+d\,x]^9}{9\,d}$$

Result (type 3, 325 leaves):

$$-\frac{649\,a\,\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]}{80640\,d}-\frac{649\,a\,\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\text{Csc}\left[\frac{1}{2}(c+d\,x)\right]^2}{161280\,d}-\frac{31\,a\,\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\text{Csc}\left[\frac{1}{2}(c+d\,x)\right]^4}{53760\,d}+\frac{37\,a\,\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\text{Csc}\left[\frac{1}{2}(c+d\,x)\right]^6}{32256\,d}-\frac{a\,\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\text{Csc}\left[\frac{1}{2}(c+d\,x)\right]^8}{4608\,d}-\frac{a\,\text{Csc}[c+d\,x]^4}{4\,d}+\frac{a\,\text{Csc}[c+d\,x]^6}{3\,d}-\frac{a\,\text{Csc}[c+d\,x]^8}{8\,d}-\frac{649\,a\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{80640\,d}-\frac{649\,a\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{161280\,d}-\frac{31\,a\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^4\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{53760\,d}+\frac{37\,a\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^6\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{32256\,d}-\frac{a\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^8\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{4608\,d}$$

Problem 509: Result more than twice size of optimal antiderivative.

$$\int \text{Cot}[c+d\,x]^5\,\text{Csc}[c+d\,x]^6\,(a+a\,\text{Sin}[c+d\,x])\,dx$$

Optimal (type 3, 97 leaves, 4 steps):

$$-\frac{a\,\text{Csc}[c+d\,x]^5}{5\,d}-\frac{a\,\text{Csc}[c+d\,x]^6}{6\,d}+\frac{2\,a\,\text{Csc}[c+d\,x]^7}{7\,d}+\frac{a\,\text{Csc}[c+d\,x]^8}{4\,d}-\frac{a\,\text{Csc}[c+d\,x]^9}{9\,d}-\frac{a\,\text{Csc}[c+d\,x]^{10}}{10\,d}$$

Result (type 3, 325 leaves):

$$-\frac{649\,a\,\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]}{80640\,d}-\frac{649\,a\,\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\text{Csc}\left[\frac{1}{2}(c+d\,x)\right]^2}{161280\,d}-\frac{31\,a\,\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\text{Csc}\left[\frac{1}{2}(c+d\,x)\right]^4}{53760\,d}+\frac{37\,a\,\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\text{Csc}\left[\frac{1}{2}(c+d\,x)\right]^6}{32256\,d}-\frac{a\,\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\text{Csc}\left[\frac{1}{2}(c+d\,x)\right]^8}{4608\,d}-\frac{a\,\text{Csc}[c+d\,x]^6}{6\,d}+\frac{a\,\text{Csc}[c+d\,x]^8}{4\,d}-\frac{a\,\text{Csc}[c+d\,x]^{10}}{10\,d}-\frac{649\,a\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{80640\,d}-\frac{649\,a\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{161280\,d}-\frac{31\,a\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^4\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{53760\,d}+\frac{37\,a\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^6\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{32256\,d}-\frac{a\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^8\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{4608\,d}$$

Problem 510: Result more than twice size of optimal antiderivative.

$$\int \text{Cot}[c+d\,x]^5\,\text{Csc}[c+d\,x]^7\,(a+a\,\text{Sin}[c+d\,x])\,dx$$

Optimal (type 3, 97 leaves, 4 steps):

$$-\frac{a\,\text{Csc}[c+d\,x]^6}{6\,d}-\frac{a\,\text{Csc}[c+d\,x]^7}{7\,d}+\frac{a\,\text{Csc}[c+d\,x]^8}{4\,d}+\frac{2\,a\,\text{Csc}[c+d\,x]^9}{9\,d}-\frac{a\,\text{Csc}[c+d\,x]^{10}}{10\,d}-\frac{a\,\text{Csc}[c+d\,x]^{11}}{11\,d}$$

Result (type 3, 385 leaves):

$$-\frac{1109\,a\,\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]}{354816\,d}-\frac{1109\,a\,\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\text{Csc}\left[\frac{1}{2}(c+d\,x)\right]^2}{709632\,d}-\frac{13\,a\,\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\text{Csc}\left[\frac{1}{2}(c+d\,x)\right]^4}{29568\,d}+$$
$$\frac{173\,a\,\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\text{Csc}\left[\frac{1}{2}(c+d\,x)\right]^6}{1419264\,d}+\frac{17\,a\,\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\text{Csc}\left[\frac{1}{2}(c+d\,x)\right]^8}{101376\,d}-\frac{a\,\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\text{Csc}\left[\frac{1}{2}(c+d\,x)\right]^{10}}{22528\,d}-\frac{a\,\text{Csc}[c+d\,x]^6}{6\,d}+$$
$$\frac{a\,\text{Csc}[c+d\,x]^8}{4\,d}-\frac{a\,\text{Csc}[c+d\,x]^{10}}{10\,d}-\frac{1109\,a\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{354816\,d}-\frac{1109\,a\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{709632\,d}-\frac{13\,a\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^4\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{29568\,d}+$$
$$\frac{173\,a\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^6\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{1419264\,d}+\frac{17\,a\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^8\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{101376\,d}-\frac{a\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^{10}\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{22528\,d}$$

Problem 520: Result more than twice size of optimal antiderivative.

$$\int \text{Cot}[c+d\,x]^5\,\text{Csc}[c+d\,x]^2\,(a+a\,\text{Sin}[c+d\,x])^2\,dx$$

Optimal (type 3, 119 leaves, 4 steps):

$$-\frac{2\,a^2\,\text{Csc}[c+d\,x]}{d}+\frac{a^2\,\text{Csc}[c+d\,x]^2}{2\,d}+\frac{4\,a^2\,\text{Csc}[c+d\,x]^3}{3\,d}+\frac{a^2\,\text{Csc}[c+d\,x]^4}{4\,d}-\frac{2\,a^2\,\text{Csc}[c+d\,x]^5}{5\,d}-\frac{a^2\,\text{Csc}[c+d\,x]^6}{6\,d}+\frac{a^2\,\text{Log}[\text{Sin}[c+d\,x]]}{d}$$

Result (type 3, 280 leaves):

$$a^2\left(-\frac{89\,\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]}{120\,d}+\frac{9\,\text{Csc}\left[\frac{1}{2}(c+d\,x)\right]^2}{64\,d}+\frac{31\,\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\text{Csc}\left[\frac{1}{2}(c+d\,x)\right]^2}{240\,d}+\frac{\text{Csc}\left[\frac{1}{2}(c+d\,x)\right]^4}{128\,d}-\right.$$
$$\frac{\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\text{Csc}\left[\frac{1}{2}(c+d\,x)\right]^4}{80\,d}-\frac{\text{Csc}\left[\frac{1}{2}(c+d\,x)\right]^6}{384\,d}+\frac{\text{Log}[\text{Sin}[c+d\,x]]}{d}+\frac{9\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2}{64\,d}+\frac{\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^4}{128\,d}-$$
$$\left.\frac{\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^6}{384\,d}-\frac{89\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{120\,d}+\frac{31\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{240\,d}-\frac{\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^4\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{80\,d}\right)$$

Problem 529: Result more than twice size of optimal antiderivative.

$$\int \text{Cot}[c+d\,x]^5\,\text{Csc}[c+d\,x]^2\,(a+a\,\text{Sin}[c+d\,x])^3\,dx$$

Optimal (type 3, 133 leaves, 4 steps):

$$-\frac{a^3\,\text{Csc}[c+d\,x]}{d}+\frac{5\,a^3\,\text{Csc}[c+d\,x]^2}{2\,d}+\frac{5\,a^3\,\text{Csc}[c+d\,x]^3}{3\,d}-$$
$$\frac{a^3\,\text{Csc}[c+d\,x]^4}{4\,d}-\frac{3\,a^3\,\text{Csc}[c+d\,x]^5}{5\,d}-\frac{a^3\,\text{Csc}[c+d\,x]^6}{6\,d}+\frac{3\,a^3\,\text{Log}[\text{Sin}[c+d\,x]]}{d}+\frac{a^3\,\text{Sin}[c+d\,x]}{d}$$

Result (type 3, 291 leaves):

$$a^3 \left(-\frac{47 \text{Cot}\left[\frac{1}{2}(c+d x)\right]}{240 d} + \frac{37 \text{Csc}\left[\frac{1}{2}(c+d x)\right]^2}{64 d} + \frac{73 \text{Cot}\left[\frac{1}{2}(c+d x)\right] \text{Csc}\left[\frac{1}{2}(c+d x)\right]^2}{480 d} - \frac{3 \text{Csc}\left[\frac{1}{2}(c+d x)\right]^4}{128 d} - \frac{3 \text{Cot}\left[\frac{1}{2}(c+d x)\right] \text{Csc}\left[\frac{1}{2}(c+d x)\right]^4}{160 d} - \frac{\text{Csc}\left[\frac{1}{2}(c+d x)\right]^6}{384 d} + \frac{3 \text{Log}[\text{Sin}[c+d x]]}{d} + \frac{37 \text{Sec}\left[\frac{1}{2}(c+d x)\right]^2}{64 d} - \frac{3 \text{Sec}\left[\frac{1}{2}(c+d x)\right]^4}{128 d} - \frac{\text{Sec}\left[\frac{1}{2}(c+d x)\right]^6}{384 d} + \frac{\text{Sin}[c+d x]}{d} - \frac{47 \text{Tan}\left[\frac{1}{2}(c+d x)\right]}{240 d} + \frac{73 \text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{2}(c+d x)\right]}{480 d} - \frac{3 \text{Sec}\left[\frac{1}{2}(c+d x)\right]^4 \text{Tan}\left[\frac{1}{2}(c+d x)\right]}{160 d} \right)$$

Problem 530: Result more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d x] \text{Cot}[c+d x]^4 (a+a \text{Sin}[c+d x])^4 \, dx$$

Optimal (type 3, 145 leaves, 4 steps):

$$-\frac{4 a^4 \text{Csc}[c+d x]}{d} - \frac{2 a^4 \text{Csc}[c+d x]^2}{d} - \frac{a^4 \text{Csc}[c+d x]^3}{3 d} - \frac{4 a^4 \text{Log}[\text{Sin}[c+d x]]}{d} - \frac{10 a^4 \text{Sin}[c+d x]}{d} - \frac{2 a^4 \text{Sin}[c+d x]^2}{d} + \frac{4 a^4 \text{Sin}[c+d x]^3}{3 d} + \frac{a^4 \text{Sin}[c+d x]^4}{d} + \frac{a^4 \text{Sin}[c+d x]^5}{5 d}$$

Result (type 3, 636 leaves):

$$\frac{\text{Cos}[2(c+d x)] (a+a \text{Sin}[c+d x])^4}{2 d \left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^8} + \frac{\text{Cos}[4(c+d x)] (a+a \text{Sin}[c+d x])^4}{8 d \left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^8} - \frac{25 \text{Cot}\left[\frac{1}{2}(c+d x)\right] (a+a \text{Sin}[c+d x])^4}{12 d \left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^8} - \frac{\text{Csc}\left[\frac{1}{2}(c+d x)\right]^2 (a+a \text{Sin}[c+d x])^4}{2 d \left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^8} - \frac{\text{Cot}\left[\frac{1}{2}(c+d x)\right] \text{Csc}\left[\frac{1}{2}(c+d x)\right]^2 (a+a \text{Sin}[c+d x])^4}{24 d \left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^8} - \frac{4 \text{Log}[\text{Sin}[c+d x]] (a+a \text{Sin}[c+d x])^4}{d \left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^8} - \frac{\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 (a+a \text{Sin}[c+d x])^4}{2 d \left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^8} - \frac{71 \text{Sin}[c+d x] (a+a \text{Sin}[c+d x])^4}{8 d \left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^8} - \frac{19 (a+a \text{Sin}[c+d x])^4 \text{Sin}[3(c+d x)]}{48 d \left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^8} + \frac{(a+a \text{Sin}[c+d x])^4 \text{Sin}[5(c+d x)]}{80 d \left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^8} - \frac{25 (a+a \text{Sin}[c+d x])^4 \text{Tan}\left[\frac{1}{2}(c+d x)\right]}{12 d \left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^8} - \frac{\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 (a+a \text{Sin}[c+d x])^4 \text{Tan}\left[\frac{1}{2}(c+d x)\right]}{24 d \left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^8}$$

Problem 561: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Cot}[c+d x]^5}{(a+a \text{Sin}[c+d x])^3} \, dx$$

Optimal (type 3, 96 leaves, 3 steps):

$$\frac{4 \text{Csc}[c+d x]}{a^3 d} - \frac{2 \text{Csc}[c+d x]^2}{a^3 d} + \frac{\text{Csc}[c+d x]^3}{a^3 d} - \frac{\text{Csc}[c+d x]^4}{4 a^3 d} + \frac{4 \text{Log}[\text{Sin}[c+d x]]}{a^3 d} - \frac{4 \text{Log}[1+\text{Sin}[c+d x]]}{a^3 d}$$

Result (type 3, 558 leaves):

$$\frac{9\,\mathrm{Cot}\left[\frac{1}{2}(c+d\,x)\right]\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^6}{4\,d\,(a+a\,\mathrm{Sin}[c+d\,x])^3}-\frac{17\,\mathrm{Csc}\left[\frac{1}{2}(c+d\,x)\right]^2\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^6}{32\,d\,(a+a\,\mathrm{Sin}[c+d\,x])^3}+$$
$$\frac{\mathrm{Cot}\left[\frac{1}{2}(c+d\,x)\right]\mathrm{Csc}\left[\frac{1}{2}(c+d\,x)\right]^2\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^6}{8\,d\,(a+a\,\mathrm{Sin}[c+d\,x])^3}-\frac{\mathrm{Csc}\left[\frac{1}{2}(c+d\,x)\right]^4\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^6}{64\,d\,(a+a\,\mathrm{Sin}[c+d\,x])^3}-$$
$$\frac{8\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^6}{d\,(a+a\,\mathrm{Sin}[c+d\,x])^3}+\frac{4\,\mathrm{Log}[\mathrm{Sin}[c+d\,x]]\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^6}{d\,(a+a\,\mathrm{Sin}[c+d\,x])^3}-$$
$$\frac{17\,\mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^6}{32\,d\,(a+a\,\mathrm{Sin}[c+d\,x])^3}-\frac{\mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]^4\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^6}{64\,d\,(a+a\,\mathrm{Sin}[c+d\,x])^3}+$$
$$\frac{9\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^6\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{4\,d\,(a+a\,\mathrm{Sin}[c+d\,x])^3}+\frac{\mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^6\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{8\,d\,(a+a\,\mathrm{Sin}[c+d\,x])^3}$$

- **Problem 563: Result more than twice size of optimal antiderivative.**

$$\int\frac{\mathrm{Cot}[c+d\,x]^5}{(a+a\,\mathrm{Sin}[c+d\,x])^4}\,dx$$

Optimal (type 3, 120 leaves, 3 steps):

$$\frac{12\,\mathrm{Csc}[c+d\,x]}{a^4\,d}-\frac{4\,\mathrm{Csc}[c+d\,x]^2}{a^4\,d}+\frac{4\,\mathrm{Csc}[c+d\,x]^3}{3\,a^4\,d}-\frac{\mathrm{Csc}[c+d\,x]^4}{4\,a^4\,d}+\frac{16\,\mathrm{Log}[\mathrm{Sin}[c+d\,x]]}{a^4\,d}-\frac{16\,\mathrm{Log}[1+\mathrm{Sin}[c+d\,x]]}{a^4\,d}+\frac{4}{d\left(a^4+a^4\,\mathrm{Sin}[c+d\,x]\right)}$$

Result (type 3, 598 leaves):

$$\frac{4\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^6}{d\,(a+a\,\text{Sin}[c+d x])^4}+\frac{19\,\text{Cot}\left[\frac{1}{2}(c+d x)\right]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^8}{3\,d\,(a+a\,\text{Sin}[c+d x])^4}-$$
$$\frac{33\,\text{Csc}\left[\frac{1}{2}(c+d x)\right]^2\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^8}{32\,d\,(a+a\,\text{Sin}[c+d x])^4}+\frac{\text{Cot}\left[\frac{1}{2}(c+d x)\right]\text{Csc}\left[\frac{1}{2}(c+d x)\right]^2\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^8}{6\,d\,(a+a\,\text{Sin}[c+d x])^4}-$$
$$\frac{\text{Csc}\left[\frac{1}{2}(c+d x)\right]^4\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^8}{64\,d\,(a+a\,\text{Sin}[c+d x])^4}-\frac{32\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^8}{d\,(a+a\,\text{Sin}[c+d x])^4}+$$
$$\frac{16\,\text{Log}[\text{Sin}[c+d x]]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^8}{d\,(a+a\,\text{Sin}[c+d x])^4}-\frac{33\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^8}{32\,d\,(a+a\,\text{Sin}[c+d x])^4}-$$
$$\frac{\text{Sec}\left[\frac{1}{2}(c+d x)\right]^4\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^8}{64\,d\,(a+a\,\text{Sin}[c+d x])^4}+\frac{19\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^8\text{Tan}\left[\frac{1}{2}(c+d x)\right]}{3\,d\,(a+a\,\text{Sin}[c+d x])^4}+$$
$$\frac{\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^8\text{Tan}\left[\frac{1}{2}(c+d x)\right]}{6\,d\,(a+a\,\text{Sin}[c+d x])^4}$$

- **Problem 564: Result more than twice size of optimal antiderivative.**

$$\int\frac{\text{Cot}[c+d x]^5\,\text{Csc}[c+d x]}{(a+a\,\text{Sin}[c+d x])^4}\,dx$$

Optimal (type 3, 135 leaves, 4 steps):

$$-\frac{16\,\text{Csc}[c+d x]}{a^4 d}+\frac{6\,\text{Csc}[c+d x]^2}{a^4 d}-\frac{8\,\text{Csc}[c+d x]^3}{3\,a^4 d}+\frac{\text{Csc}[c+d x]^4}{a^4 d}-$$
$$\frac{\text{Csc}[c+d x]^5}{5\,a^4 d}-\frac{20\,\text{Log}[\text{Sin}[c+d x]]}{a^4 d}+\frac{20\,\text{Log}[1+\text{Sin}[c+d x]]}{a^4 d}-\frac{4}{d\left(a^4+a^4\,\text{Sin}[c+d x]\right)}$$

Result (type 3, 726 leaves):

$$-\frac{4\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^6}{d\,(a+a\,\text{Sin}[c+d x])^4}-\frac{2089\,\text{Cot}\left[\frac{1}{2}(c+d x)\right]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^8}{240\,d\,(a+a\,\text{Sin}[c+d x])^4}+$$

$$\frac{13\,\text{Csc}\left[\frac{1}{2}(c+d x)\right]^2\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^8}{8\,d\,(a+a\,\text{Sin}[c+d x])^4}-\frac{169\,\text{Cot}\left[\frac{1}{2}(c+d x)\right]\text{Csc}\left[\frac{1}{2}(c+d x)\right]^2\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^8}{480\,d\,(a+a\,\text{Sin}[c+d x])^4}+$$

$$\frac{\text{Csc}\left[\frac{1}{2}(c+d x)\right]^4\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^8}{16\,d\,(a+a\,\text{Sin}[c+d x])^4}-\frac{\text{Cot}\left[\frac{1}{2}(c+d x)\right]\text{Csc}\left[\frac{1}{2}(c+d x)\right]^4\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^8}{160\,d\,(a+a\,\text{Sin}[c+d x])^4}+$$

$$\frac{40\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^8}{d\,(a+a\,\text{Sin}[c+d x])^4}-\frac{20\,\text{Log}[\text{Sin}[c+d x]]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^8}{d\,(a+a\,\text{Sin}[c+d x])^4}+$$

$$\frac{13\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^8}{8\,d\,(a+a\,\text{Sin}[c+d x])^4}+\frac{\text{Sec}\left[\frac{1}{2}(c+d x)\right]^4\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^8}{16\,d\,(a+a\,\text{Sin}[c+d x])^4}-$$

$$\frac{2089\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^8\text{Tan}\left[\frac{1}{2}(c+d x)\right]}{240\,d\,(a+a\,\text{Sin}[c+d x])^4}-\frac{169\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^8\text{Tan}\left[\frac{1}{2}(c+d x)\right]}{480\,d\,(a+a\,\text{Sin}[c+d x])^4}-$$

$$\frac{\text{Sec}\left[\frac{1}{2}(c+d x)\right]^4\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^8\text{Tan}\left[\frac{1}{2}(c+d x)\right]}{160\,d\,(a+a\,\text{Sin}[c+d x])^4}$$

- **Problem 565: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int \text{Cos}[c+d x]^5\,\text{Sin}[c+d x]^n\,(a+a\,\text{Sin}[c+d x])^3\,dx$$

Optimal (type 3, 181 leaves, 3 steps):

$$\frac{a^3\,\text{Sin}[c+d x]^{1+n}}{d\,(1+n)}+\frac{3\,a^3\,\text{Sin}[c+d x]^{2+n}}{d\,(2+n)}+\frac{a^3\,\text{Sin}[c+d x]^{3+n}}{d\,(3+n)}-$$

$$\frac{5\,a^3\,\text{Sin}[c+d x]^{4+n}}{d\,(4+n)}-\frac{5\,a^3\,\text{Sin}[c+d x]^{5+n}}{d\,(5+n)}+\frac{a^3\,\text{Sin}[c+d x]^{6+n}}{d\,(6+n)}+\frac{3\,a^3\,\text{Sin}[c+d x]^{7+n}}{d\,(7+n)}+\frac{a^3\,\text{Sin}[c+d x]^{8+n}}{d\,(8+n)}$$

Result (type 3, 843 leaves):

$$\frac{1}{d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^6}$$

$$\text{Sin}[c+d x]^n (a+a\,\text{Sin}[c+d x])^3 \left(\frac{18064+5508 n+596 n^2+27 n^3}{128 (2+n) (4+n) (6+n) (8+n)}+\frac{\left(5775+3015 n+329 n^2+17 n^3\right) \left(-\frac{1}{128} i\,\text{Cos}[c+d x]+\frac{1}{128} \text{Sin}[c+d x]\right)}{(1+n) (3+n) (5+n) (7+n)}+\right.$$

$$\frac{\left(5775+3015 n+329 n^2+17 n^3\right) \left(\frac{1}{128} i\,\text{Cos}[c+d x]+\frac{1}{128} \text{Sin}[c+d x]\right)}{(1+n) (3+n) (5+n) (7+n)}+$$

$$\frac{\left(-3168-368 n+38 n^2+3 n^3\right) \left(\frac{1}{64} \text{Cos}[2 (c+d x)]-\frac{1}{64} i\,\text{Sin}[2 (c+d x)]\right)}{(2+n) (4+n) (6+n) (8+n)}+$$

$$\frac{\left(-3168-368 n+38 n^2+3 n^3\right) \left(\frac{1}{64} \text{Cos}[2 (c+d x)]+\frac{1}{64} i\,\text{Sin}[2 (c+d x)]\right)}{(2+n) (4+n) (6+n) (8+n)}+$$

$$\frac{\left(595+304 n+21 n^2\right) \left(-\frac{1}{128} i\,\text{Cos}[3 (c+d x)]+\frac{1}{128} \text{Sin}[3 (c+d x)]\right)}{(3+n) (5+n) (7+n)}+\frac{\left(595+304 n+21 n^2\right) \left(\frac{1}{128} i\,\text{Cos}[3 (c+d x)]+\frac{1}{128} \text{Sin}[3 (c+d x)]\right)}{(3+n) (5+n) (7+n)}+$$

$$\frac{\left(-600-138 n-7 n^2\right) \left(\frac{1}{64} \text{Cos}[4 (c+d x)]-\frac{1}{64} i\,\text{Sin}[4 (c+d x)]\right)}{(4+n) (6+n) (8+n)}+\frac{\left(-600-138 n-7 n^2\right) \left(\frac{1}{64} \text{Cos}[4 (c+d x)]+\frac{1}{64} i\,\text{Sin}[4 (c+d x)]\right)}{(4+n) (6+n) (8+n)}+$$

$$\frac{(-35+n) \left(-\frac{1}{128} i\,\text{Cos}[5 (c+d x)]+\frac{1}{128} \text{Sin}[5 (c+d x)]\right)}{(5+n) (7+n)}+\frac{(-35+n) \left(\frac{1}{128} i\,\text{Cos}[5 (c+d x)]+\frac{1}{128} \text{Sin}[5 (c+d x)]\right)}{(5+n) (7+n)}+$$

$$\frac{(-20-3 n) \left(\frac{1}{64} \text{Cos}[6 (c+d x)]-\frac{1}{64} i\,\text{Sin}[6 (c+d x)]\right)}{(6+n) (8+n)}+\frac{(-20-3 n) \left(\frac{1}{64} \text{Cos}[6 (c+d x)]+\frac{1}{64} i\,\text{Sin}[6 (c+d x)]\right)}{(6+n) (8+n)}+$$

$$\frac{-\frac{3}{128} i\,\text{Cos}[7 (c+d x)]-\frac{3}{128} \text{Sin}[7 (c+d x)]}{7+n}+\frac{\frac{3}{128} i\,\text{Cos}[7 (c+d x)]-\frac{3}{128} \text{Sin}[7 (c+d x)]}{7+n}+$$

$$\left.\frac{\frac{1}{256} \text{Cos}[8 (c+d x)]-\frac{1}{256} i\,\text{Sin}[8 (c+d x)]}{8+n}+\frac{\frac{1}{256} \text{Cos}[8 (c+d x)]+\frac{1}{256} i\,\text{Sin}[8 (c+d x)]}{8+n}\right)$$

- **Problem 566: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int \text{Cos}[c+d x]^5 \,\text{Sin}[c+d x]^n (a+a\,\text{Sin}[c+d x])^2 \, dx$$

Optimal (type 3, 160 leaves, 3 steps):

$$\frac{a^2 \text{Sin}[c+d x]^{1+n}}{d (1+n)}+\frac{2 a^2 \text{Sin}[c+d x]^{2+n}}{d (2+n)}-\frac{a^2 \text{Sin}[c+d x]^{3+n}}{d (3+n)}-\frac{4 a^2 \text{Sin}[c+d x]^{4+n}}{d (4+n)}-\frac{a^2 \text{Sin}[c+d x]^{5+n}}{d (5+n)}+\frac{2 a^2 \text{Sin}[c+d x]^{6+n}}{d (6+n)}+\frac{a^2 \text{Sin}[c+d x]^{7+n}}{d (7+n)}$$

Result (type 3, 705 leaves):

$$\frac{1}{d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^4}$$

$$\text{Sin}[c+d x]^n (a+a\,\text{Sin}[c+d x])^2 \left(\frac{88+14 n+n^2}{8 (2+n) (4+n) (6+n)}+\frac{\left(4725+1853 n+211 n^2+11 n^3\right) \left(-\frac{1}{128} i\,\text{Cos}[c+d x]+\frac{1}{128}\text{Sin}[c+d x]\right)}{(1+n) (3+n) (5+n) (7+n)}+\right.$$

$$\frac{\left(4725+1853 n+211 n^2+11 n^3\right) \left(\frac{1}{128} i\,\text{Cos}[c+d x]+\frac{1}{128}\text{Sin}[c+d x]\right)}{(1+n) (3+n) (5+n) (7+n)}+\frac{\left(-120+6 n+n^2\right) \left(\frac{1}{32}\text{Cos}[2 (c+d x)]-\frac{1}{32} i\,\text{Sin}[2 (c+d x)]\right)}{(2+n) (4+n) (6+n)}+$$

$$\frac{\left(-120+6 n+n^2\right) \left(\frac{1}{32}\text{Cos}[2 (c+d x)]+\frac{1}{32} i\,\text{Sin}[2 (c+d x)]\right)}{(2+n) (4+n) (6+n)}+\frac{\left(665+224 n+15 n^2\right) \left(-\frac{1}{128} i\,\text{Cos}[3 (c+d x)]+\frac{1}{128}\text{Sin}[3 (c+d x)]\right)}{(3+n) (5+n) (7+n)}+$$

$$\frac{\left(665+224 n+15 n^2\right) \left(\frac{1}{128} i\,\text{Cos}[3 (c+d x)]+\frac{1}{128}\text{Sin}[3 (c+d x)]\right)}{(3+n) (5+n) (7+n)}+\frac{(-12-n) \left(\frac{1}{16}\text{Cos}[4 (c+d x)]-\frac{1}{16} i\,\text{Sin}[4 (c+d x)]\right)}{(4+n) (6+n)}+$$

$$\frac{(-12-n) \left(\frac{1}{16}\text{Cos}[4 (c+d x)]+\frac{1}{16} i\,\text{Sin}[4 (c+d x)]\right)}{(4+n) (6+n)}+\frac{(7+3 n) \left(-\frac{1}{128} i\,\text{Cos}[5 (c+d x)]+\frac{1}{128}\text{Sin}[5 (c+d x)]\right)}{(5+n) (7+n)}+$$

$$\frac{(7+3 n) \left(\frac{1}{128} i\,\text{Cos}[5 (c+d x)]+\frac{1}{128}\text{Sin}[5 (c+d x)]\right)}{(5+n) (7+n)}+\frac{-\frac{1}{32}\text{Cos}[6 (c+d x)]-\frac{1}{32} i\,\text{Sin}[6 (c+d x)]}{6+n}+$$

$$\left.\frac{-\frac{1}{32}\text{Cos}[6 (c+d x)]+\frac{1}{32} i\,\text{Sin}[6 (c+d x)]}{6+n}+\frac{-\frac{1}{128} i\,\text{Cos}[7 (c+d x)]-\frac{1}{128}\text{Sin}[7 (c+d x)]}{7+n}+\frac{\frac{1}{128} i\,\text{Cos}[7 (c+d x)]-\frac{1}{128}\text{Sin}[7 (c+d x)]}{7+n}\right)$$

Problem 567: Result more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d x]^5\,\text{Sin}[c+d x]^n (a+a\,\text{Sin}[c+d x])\,dx$$

Optimal (type 3, 123 leaves, 3 steps):

$$\frac{a\,\text{Sin}[c+d x]^{1+n}}{d (1+n)}+\frac{a\,\text{Sin}[c+d x]^{2+n}}{d (2+n)}-\frac{2 a\,\text{Sin}[c+d x]^{3+n}}{d (3+n)}-\frac{2 a\,\text{Sin}[c+d x]^{4+n}}{d (4+n)}+\frac{a\,\text{Sin}[c+d x]^{5+n}}{d (5+n)}+\frac{a\,\text{Sin}[c+d x]^{6+n}}{d (6+n)}$$

Result (type 3, 345 leaves):

$$\frac{1}{16 d (1+n) (2+n) (3+n) (4+n) (5+n) (6+n)}$$

$$a\,\text{Sin}[c+d x]^{1+n} \left(8544+10520 n+4888 n^2+1114 n^3+128 n^4+6 n^5+8 \left(336+692 n+484 n^2+147 n^3+20 n^4+n^5\right) \text{Cos}[2 (c+d x)]+\right.$$
$$2 \left(144+324 n+260 n^2+95 n^3+16 n^4+n^5\right) \text{Cos}[4 (c+d x)]+2640\,\text{Sin}[c+d x]+4468 n\,\text{Sin}[c+d x]+2258 n^2\,\text{Sin}[c+d x]+$$
$$474 n^3\,\text{Sin}[c+d x]+46 n^4\,\text{Sin}[c+d x]+2 n^5\,\text{Sin}[c+d x]+840\,\text{Sin}[3 (c+d x)]+1798 n\,\text{Sin}[3 (c+d x)]+$$
$$1331 n^2\,\text{Sin}[3 (c+d x)]+431 n^3\,\text{Sin}[3 (c+d x)]+61 n^4\,\text{Sin}[3 (c+d x)]+3 n^5\,\text{Sin}[3 (c+d x)]+120\,\text{Sin}[5 (c+d x)]+$$
$$\left.274 n\,\text{Sin}[5 (c+d x)]+225 n^2\,\text{Sin}[5 (c+d x)]+85 n^3\,\text{Sin}[5 (c+d x)]+15 n^4\,\text{Sin}[5 (c+d x)]+n^5\,\text{Sin}[5 (c+d x)]\right)$$

Problem 570: Unable to integrate problem.

$$\int \frac{\text{Cos}[c+d x]^5 \, \text{Sin}[c+d x]^n}{(a+a \, \text{Sin}[c+d x])^3} \, dx$$

Optimal (type 5, 85 leaves, 4 steps):

$$-\frac{3 \, \text{Sin}[c+d x]^{1+n}}{a^3 \, d \, (1+n)} + \frac{4 \, \text{Hypergeometric2F1}[1, 1+n, 2+n, -\text{Sin}[c+d x]] \, \text{Sin}[c+d x]^{1+n}}{a^3 \, d \, (1+n)} + \frac{\text{Sin}[c+d x]^{2+n}}{a^3 \, d \, (2+n)}$$

Result (type 8, 31 leaves):

$$\int \frac{\text{Cos}[c+d x]^5 \, \text{Sin}[c+d x]^n}{(a+a \, \text{Sin}[c+d x])^3} \, dx$$

Problem 571: Unable to integrate problem.

$$\int \frac{\text{Cos}[c+d x]^5 \, \text{Sin}[c+d x]^n}{(a+a \, \text{Sin}[c+d x])^4} \, dx$$

Optimal (type 5, 88 leaves, 4 steps):

$$\frac{\text{Sin}[c+d x]^{1+n}}{a^4 \, d \, (1+n)} - \frac{4 \, \text{Hypergeometric2F1}[1, 1+n, 2+n, -\text{Sin}[c+d x]] \, \text{Sin}[c+d x]^{1+n}}{a^4 \, d} + \frac{4 \, \text{Sin}[c+d x]^{1+n}}{d \left(a^4 + a^4 \, \text{Sin}[c+d x]\right)}$$

Result (type 8, 31 leaves):

$$\int \frac{\text{Cos}[c+d x]^5 \, \text{Sin}[c+d x]^n}{(a+a \, \text{Sin}[c+d x])^4} \, dx$$

Problem 585: Result more than twice size of optimal antiderivative.

$$\int \text{Cot}[c+d x]^6 \, \text{Csc}[c+d x]^4 \, (a+a \, \text{Sin}[c+d x]) \, dx$$

Optimal (type 3, 138 leaves, 9 steps):

$$\frac{5 \, a \, \text{ArcTanh}[\text{Cos}[c+d x]]}{128 \, d} - \frac{a \, \text{Cot}[c+d x]^7}{7 \, d} - \frac{a \, \text{Cot}[c+d x]^9}{9 \, d} + \frac{5 \, a \, \text{Cot}[c+d x] \, \text{Csc}[c+d x]}{128 \, d} - \frac{5 \, a \, \text{Cot}[c+d x] \, \text{Csc}[c+d x]^3}{64 \, d} + \frac{5 \, a \, \text{Cot}[c+d x]^3 \, \text{Csc}[c+d x]^3}{48 \, d} - \frac{a \, \text{Cot}[c+d x]^5 \, \text{Csc}[c+d x]^3}{8 \, d}$$

Result (type 3, 301 leaves):

$$\frac{2 a \cot[c+d x]}{63 d}+\frac{5 a \csc\left[\frac{1}{2}(c+d x)\right]^2}{512 d}-\frac{15 a \csc\left[\frac{1}{2}(c+d x)\right]^4}{1024 d}+\frac{7 a \csc\left[\frac{1}{2}(c+d x)\right]^6}{1536 d}-\frac{a \csc\left[\frac{1}{2}(c+d x)\right]^8}{2048 d}+\frac{a \cot[c+d x] \csc[c+d x]^2}{63 d}-\frac{5 a \cot[c+d x] \csc[c+d x]^4}{21 d}+\frac{19 a \cot[c+d x] \csc[c+d x]^6}{63 d}-\frac{a \cot[c+d x] \csc[c+d x]^8}{9 d}+\frac{5 a \log\left[\cos\left[\frac{1}{2}(c+d x)\right]\right]}{128 d}-\frac{5 a \log\left[\sin\left[\frac{1}{2}(c+d x)\right]\right]}{128 d}-\frac{5 a \sec\left[\frac{1}{2}(c+d x)\right]^2}{512 d}+\frac{15 a \sec\left[\frac{1}{2}(c+d x)\right]^4}{1024 d}-\frac{7 a \sec\left[\frac{1}{2}(c+d x)\right]^6}{1536 d}+\frac{a \sec\left[\frac{1}{2}(c+d x)\right]^8}{2048 d}$$

- **Problem 586: Result more than twice size of optimal antiderivative.**

$$\int \cot[c+d x]^6 \csc[c+d x]^5 (a+a \sin[c+d x]) \, dx$$

Optimal (type 3, 160 leaves, 10 steps):

$$\frac{3 a \operatorname{ArcTanh}[\cos[c+d x]]}{256 d}-\frac{a \cot[c+d x]^7}{7 d}-\frac{a \cot[c+d x]^9}{9 d}+\frac{3 a \cot[c+d x] \csc[c+d x]}{256 d}+\frac{a \cot[c+d x] \csc[c+d x]^3}{128 d}-\frac{a \cot[c+d x] \csc[c+d x]^5}{32 d}+\frac{a \cot[c+d x]^3 \csc[c+d x]^5}{16 d}-\frac{a \cot[c+d x]^5 \csc[c+d x]^5}{10 d}$$

Result (type 3, 341 leaves):

$$\frac{2 a \cot[c+d x]}{63 d}+\frac{3 a \csc\left[\frac{1}{2}(c+d x)\right]^2}{1024 d}-\frac{a \csc\left[\frac{1}{2}(c+d x)\right]^4}{1024 d}-\frac{3 a \csc\left[\frac{1}{2}(c+d x)\right]^6}{2048 d}+\frac{3 a \csc\left[\frac{1}{2}(c+d x)\right]^8}{4096 d}-\frac{a \csc\left[\frac{1}{2}(c+d x)\right]^{10}}{10240 d}+\frac{a \cot[c+d x] \csc[c+d x]^2}{63 d}-\frac{5 a \cot[c+d x] \csc[c+d x]^4}{21 d}+\frac{19 a \cot[c+d x] \csc[c+d x]^6}{63 d}-\frac{a \cot[c+d x] \csc[c+d x]^8}{9 d}+\frac{3 a \log\left[\cos\left[\frac{1}{2}(c+d x)\right]\right]}{256 d}-\frac{3 a \log\left[\sin\left[\frac{1}{2}(c+d x)\right]\right]}{256 d}-\frac{3 a \sec\left[\frac{1}{2}(c+d x)\right]^2}{1024 d}+\frac{a \sec\left[\frac{1}{2}(c+d x)\right]^4}{1024 d}+\frac{3 a \sec\left[\frac{1}{2}(c+d x)\right]^6}{2048 d}-\frac{3 a \sec\left[\frac{1}{2}(c+d x)\right]^8}{4096 d}+\frac{a \sec\left[\frac{1}{2}(c+d x)\right]^{10}}{10240 d}$$

- **Problem 587: Result more than twice size of optimal antiderivative.**

$$\int \cot[c+d x]^6 \csc[c+d x]^6 (a+a \sin[c+d x]) \, dx$$

Optimal (type 3, 176 leaves, 10 steps):

$$\frac{3 a \operatorname{ArcTanh}[\cos[c+d x]]}{256 d}-\frac{a \cot[c+d x]^7}{7 d}-\frac{2 a \cot[c+d x]^9}{9 d}-\frac{a \cot[c+d x]^{11}}{11 d}+\frac{3 a \cot[c+d x] \csc[c+d x]}{256 d}+\frac{a \cot[c+d x] \csc[c+d x]^3}{128 d}-\frac{a \cot[c+d x] \csc[c+d x]^5}{32 d}+\frac{a \cot[c+d x]^3 \csc[c+d x]^5}{16 d}-\frac{a \cot[c+d x]^5 \csc[c+d x]^5}{10 d}$$

Result (type 3, 363 leaves):

$$\frac{8\,a\,\text{Cot}[c+d\,x]}{693\,d}+\frac{3\,a\,\text{Csc}\left[\frac{1}{2}(c+d\,x)\right]^2}{1024\,d}-\frac{a\,\text{Csc}\left[\frac{1}{2}(c+d\,x)\right]^4}{1024\,d}-\frac{3\,a\,\text{Csc}\left[\frac{1}{2}(c+d\,x)\right]^6}{2048\,d}+\frac{3\,a\,\text{Csc}\left[\frac{1}{2}(c+d\,x)\right]^8}{4096\,d}-\frac{a\,\text{Csc}\left[\frac{1}{2}(c+d\,x)\right]^{10}}{10\,240\,d}+\frac{4\,a\,\text{Cot}[c+d\,x]\,\text{Csc}[c+d\,x]^2}{693\,d}+\frac{a\,\text{Cot}[c+d\,x]\,\text{Csc}[c+d\,x]^4}{231\,d}-\frac{113\,a\,\text{Cot}[c+d\,x]\,\text{Csc}[c+d\,x]^6}{693\,d}+\frac{23\,a\,\text{Cot}[c+d\,x]\,\text{Csc}[c+d\,x]^8}{99\,d}-\frac{a\,\text{Cot}[c+d\,x]\,\text{Csc}[c+d\,x]^{10}}{11\,d}+\frac{3\,a\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]\right]}{256\,d}-\frac{3\,a\,\text{Log}\left[\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]}{256\,d}-\frac{3\,a\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2}{1024\,d}+\frac{a\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^4}{1024\,d}+\frac{3\,a\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^6}{2048\,d}-\frac{3\,a\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^8}{4096\,d}+\frac{a\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^{10}}{10\,240\,d}$$

- **Problem 594: Result more than twice size of optimal antiderivative.**

$$\int \text{Cos}[c+d\,x]^3\,\text{Cot}[c+d\,x]^3\,(a+a\,\text{Sin}[c+d\,x])^2\,dx$$

Optimal (type 3, 140 leaves, 16 steps):

$$-\frac{15\,a^2\,x}{4}+\frac{3\,a^2\,\text{ArcTanh}[\text{Cos}[c+d\,x]]}{2\,d}-\frac{a^2\,\text{Cos}[c+d\,x]}{d}+\frac{a^2\,\text{Cos}[c+d\,x]^5}{5\,d}-\frac{2\,a^2\,\text{Cot}[c+d\,x]}{d}-\frac{a^2\,\text{Cot}[c+d\,x]\,\text{Csc}[c+d\,x]}{2\,d}-\frac{9\,a^2\,\text{Cos}[c+d\,x]\,\text{Sin}[c+d\,x]}{4\,d}+\frac{a^2\,\text{Cos}[c+d\,x]\,\text{Sin}[c+d\,x]^3}{2\,d}$$

Result (type 3, 607 leaves):

$$-\frac{15\,(c+d\,x)\,(a+a\,\text{Sin}[c+d\,x])^2}{4\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4}-\frac{7\,\text{Cos}[c+d\,x]\,(a+a\,\text{Sin}[c+d\,x])^2}{8\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4}+\frac{\text{Cos}[3\,(c+d\,x)]\,(a+a\,\text{Sin}[c+d\,x])^2}{16\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4}+\frac{\text{Cos}[5\,(c+d\,x)]\,(a+a\,\text{Sin}[c+d\,x])^2}{80\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4}-\frac{\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\,(a+a\,\text{Sin}[c+d\,x])^2}{d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4}-\frac{\text{Csc}\left[\frac{1}{2}(c+d\,x)\right]^2\,(a+a\,\text{Sin}[c+d\,x])^2}{8\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4}+\frac{3\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]\right]\,(a+a\,\text{Sin}[c+d\,x])^2}{2\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4}-\frac{3\,\text{Log}\left[\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]\,(a+a\,\text{Sin}[c+d\,x])^2}{2\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4}+\frac{\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\,(a+a\,\text{Sin}[c+d\,x])^2}{8\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4}-\frac{(a+a\,\text{Sin}[c+d\,x])^2\,\text{Sin}[2\,(c+d\,x)]}{d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4}-\frac{(a+a\,\text{Sin}[c+d\,x])^2\,\text{Sin}[4\,(c+d\,x)]}{16\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4}+\frac{(a+a\,\text{Sin}[c+d\,x])^2\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4}$$

- **Problem 600: Result more than twice size of optimal antiderivative.**

$$\int \text{Cot}[c+d\,x]^6\,\text{Csc}[c+d\,x]^3\,(a+a\,\text{Sin}[c+d\,x])^2\,dx$$

Optimal (type 3, 182 leaves, 13 steps):

$$\frac{45 a^2 \text{ArcTanh}[\text{Cos}[c+d x]]}{128 d}-\frac{2 a^2 \text{Cot}[c+d x]^7}{7 d}-\frac{35 a^2 \text{Cot}[c+d x] \text{Csc}[c+d x]}{128 d}+\frac{5 a^2 \text{Cot}[c+d x]^3 \text{Csc}[c+d x]}{24 d}-\frac{a^2 \text{Cot}[c+d x]^5 \text{Csc}[c+d x]}{6 d}-\frac{5 a^2 \text{Cot}[c+d x] \text{Csc}[c+d x]^3}{64 d}+\frac{5 a^2 \text{Cot}[c+d x]^3 \text{Csc}[c+d x]^3}{48 d}-\frac{a^2 \text{Cot}[c+d x]^5 \text{Csc}[c+d x]^3}{8 d}$$

Result (type 3, 401 leaves) :

$$a^2 \left(\frac{\text{Cot}\left[\frac{1}{2}(c+d x)\right]}{7 d}-\frac{83 \text{Csc}\left[\frac{1}{2}(c+d x)\right]^2}{512 d}-\frac{19 \text{Cot}\left[\frac{1}{2}(c+d x)\right] \text{Csc}\left[\frac{1}{2}(c+d x)\right]^2}{224 d}+\frac{17 \text{Csc}\left[\frac{1}{2}(c+d x)\right]^4}{1024 d}+\frac{5 \text{Cot}\left[\frac{1}{2}(c+d x)\right] \text{Csc}\left[\frac{1}{2}(c+d x)\right]^4}{224 d}+\frac{\text{Csc}\left[\frac{1}{2}(c+d x)\right]^6}{512 d}-\frac{\text{Cot}\left[\frac{1}{2}(c+d x)\right] \text{Csc}\left[\frac{1}{2}(c+d x)\right]^6}{448 d}-\frac{\text{Csc}\left[\frac{1}{2}(c+d x)\right]^8}{2048 d}+\frac{45 \text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right]}{128 d}-\frac{45 \text{Log}\left[\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]}{128 d}+\frac{83 \text{Sec}\left[\frac{1}{2}(c+d x)\right]^2}{512 d}-\frac{17 \text{Sec}\left[\frac{1}{2}(c+d x)\right]^4}{1024 d}-\frac{\text{Sec}\left[\frac{1}{2}(c+d x)\right]^6}{512 d}+\frac{\text{Sec}\left[\frac{1}{2}(c+d x)\right]^8}{2048 d}-\frac{\text{Tan}\left[\frac{1}{2}(c+d x)\right]}{7 d}+\frac{19 \text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{2}(c+d x)\right]}{224 d}-\frac{5 \text{Sec}\left[\frac{1}{2}(c+d x)\right]^4 \text{Tan}\left[\frac{1}{2}(c+d x)\right]}{224 d}+\frac{\text{Sec}\left[\frac{1}{2}(c+d x)\right]^6 \text{Tan}\left[\frac{1}{2}(c+d x)\right]}{448 d}\right)$$

- **Problem 601: Result more than twice size of optimal antiderivative.**

$$\int \text{Cot}[c+d x]^6 \text{Csc}[c+d x]^4 (a+a \text{Sin}[c+d x])^2 \, dx$$

Optimal (type 3, 152 leaves, 12 steps) :

$$\frac{5 a^2 \text{ArcTanh}[\text{Cos}[c+d x]]}{64 d}-\frac{2 a^2 \text{Cot}[c+d x]^7}{7 d}-\frac{a^2 \text{Cot}[c+d x]^9}{9 d}+\frac{5 a^2 \text{Cot}[c+d x] \text{Csc}[c+d x]}{64 d}-\frac{5 a^2 \text{Cot}[c+d x] \text{Csc}[c+d x]^3}{32 d}+\frac{5 a^2 \text{Cot}[c+d x]^3 \text{Csc}[c+d x]^3}{24 d}-\frac{a^2 \text{Cot}[c+d x]^5 \text{Csc}[c+d x]^3}{4 d}$$

Result (type 3, 313 leaves) :

$$-\frac{1}{1032192\,d}a^2\,\text{Csc}[c+d\,x]^9\left(72576\,\text{Cos}[c+d\,x]+37632\,\text{Cos}[3\,(c+d\,x)]+6912\,\text{Cos}[5\,(c+d\,x)]-1728\,\text{Cos}[7\,(c+d\,x)]-704\,\text{Cos}[9\,(c+d\,x)]-39690\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\text{Sin}[c+d\,x]+39690\,\text{Log}\left[\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\text{Sin}[c+d\,x]+36540\,\text{Sin}[2\,(c+d\,x)]+26460\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\text{Sin}[3\,(c+d\,x)]-26460\,\text{Log}\left[\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\text{Sin}[3\,(c+d\,x)]+20916\,\text{Sin}[4\,(c+d\,x)]-11340\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\text{Sin}[5\,(c+d\,x)]+11340\,\text{Log}\left[\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\text{Sin}[5\,(c+d\,x)]+16044\,\text{Sin}[6\,(c+d\,x)]+2835\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\text{Sin}[7\,(c+d\,x)]-2835\,\text{Log}\left[\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\text{Sin}[7\,(c+d\,x)]+630\,\text{Sin}[8\,(c+d\,x)]-315\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\text{Sin}[9\,(c+d\,x)]+315\,\text{Log}\left[\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\text{Sin}[9\,(c+d\,x)]\right)$$

Problem 611: Result more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d\,x]^3\,\text{Cot}[c+d\,x]^3\,(a+a\,\text{Sin}[c+d\,x])^3\,dx$$

Optimal (type 3, 181 leaves, 17 steps):

$$-\frac{85\,a^3\,x}{16}-\frac{a^3\,\text{ArcTanh}[\text{Cos}[c+d\,x]]}{2\,d}+\frac{a^3\,\text{Cos}[c+d\,x]}{d}+\frac{2\,a^3\,\text{Cos}[c+d\,x]^3}{3\,d}+\frac{3\,a^3\,\text{Cos}[c+d\,x]^5}{5\,d}-\frac{3\,a^3\,\text{Cot}[c+d\,x]}{d}-\frac{a^3\,\text{Cot}[c+d\,x]\,\text{Csc}[c+d\,x]}{2\,d}-\frac{43\,a^3\,\text{Cos}[c+d\,x]\,\text{Sin}[c+d\,x]}{16\,d}+\frac{5\,a^3\,\text{Cos}[c+d\,x]\,\text{Sin}[c+d\,x]^3}{24\,d}+\frac{a^3\,\text{Cos}[c+d\,x]\,\text{Sin}[c+d\,x]^5}{6\,d}$$

Result (type 3, 664 leaves):

$$-\frac{85\,(c+d\,x)\,(a+a\,\text{Sin}[c+d\,x])^3}{16\,d\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^6}+\frac{15\,\text{Cos}[c+d\,x]\,(a+a\,\text{Sin}[c+d\,x])^3}{8\,d\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^6}+\frac{17\,\text{Cos}[3\,(c+d\,x)]\,(a+a\,\text{Sin}[c+d\,x])^3}{48\,d\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^6}+\frac{3\,\text{Cos}[5\,(c+d\,x)]\,(a+a\,\text{Sin}[c+d\,x])^3}{80\,d\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^6}-\frac{3\,\text{Cot}\left[\frac{1}{2}\,(c+d\,x)\right]\,(a+a\,\text{Sin}[c+d\,x])^3}{2\,d\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^6}-\frac{\text{Csc}\left[\frac{1}{2}\,(c+d\,x)\right]^2\,(a+a\,\text{Sin}[c+d\,x])^3}{8\,d\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^6}-\frac{\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\,(a+a\,\text{Sin}[c+d\,x])^3}{2\,d\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^6}+\frac{\text{Log}\left[\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\,(a+a\,\text{Sin}[c+d\,x])^3}{2\,d\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^6}+\frac{\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\,(a+a\,\text{Sin}[c+d\,x])^3}{8\,d\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^6}-\frac{81\,(a+a\,\text{Sin}[c+d\,x])^3\,\text{Sin}[2\,(c+d\,x)]}{64\,d\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^6}-\frac{3\,(a+a\,\text{Sin}[c+d\,x])^3\,\text{Sin}[4\,(c+d\,x)]}{64\,d\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^6}+\frac{(a+a\,\text{Sin}[c+d\,x])^3\,\text{Sin}[6\,(c+d\,x)]}{192\,d\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^6}+\frac{3\,(a+a\,\text{Sin}[c+d\,x])^3\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]}{2\,d\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^6}$$

Problem 618: Result more than twice size of optimal antiderivative.

$$\int \text{Cot}[c+d x]^6 \text{Csc}[c+d x]^4 (a+a \text{Sin}[c+d x])^3 \, dx$$

Optimal (type 3, 200 leaves, 16 steps):

$$\frac{55 a^3 \text{ArcTanh}[\text{Cos}[c+d x]]}{128 d}-\frac{4 a^3 \text{Cot}[c+d x]^7}{7 d}-\frac{a^3 \text{Cot}[c+d x]^9}{9 d}-\frac{25 a^3 \text{Cot}[c+d x] \text{Csc}[c+d x]}{128 d}+\frac{5 a^3 \text{Cot}[c+d x]^3 \text{Csc}[c+d x]}{24 d}-\frac{a^3 \text{Cot}[c+d x]^5 \text{Csc}[c+d x]}{6 d}-\frac{15 a^3 \text{Cot}[c+d x] \text{Csc}[c+d x]^3}{64 d}+\frac{5 a^3 \text{Cot}[c+d x]^3 \text{Csc}[c+d x]^3}{16 d}-\frac{3 a^3 \text{Cot}[c+d x]^5 \text{Csc}[c+d x]^3}{8 d}$$

Result (type 3, 459 leaves):

$$a^3 \left(\frac{29 \text{Cot}\left[\frac{1}{2} (c+d x)\right]}{126 d}-\frac{73 \text{Csc}\left[\frac{1}{2} (c+d x)\right]^2}{512 d}-\frac{4163 \text{Cot}\left[\frac{1}{2} (c+d x)\right] \text{Csc}\left[\frac{1}{2} (c+d x)\right]^2}{32256 d}-\frac{13 \text{Csc}\left[\frac{1}{2} (c+d x)\right]^4}{1024 d}+\frac{319 \text{Cot}\left[\frac{1}{2} (c+d x)\right] \text{Csc}\left[\frac{1}{2} (c+d x)\right]^4}{10752 d}+\frac{17 \text{Csc}\left[\frac{1}{2} (c+d x)\right]^6}{1536 d}-\frac{53 \text{Cot}\left[\frac{1}{2} (c+d x)\right] \text{Csc}\left[\frac{1}{2} (c+d x)\right]^6}{32256 d}-\frac{3 \text{Csc}\left[\frac{1}{2} (c+d x)\right]^8}{2048 d}-\frac{\text{Cot}\left[\frac{1}{2} (c+d x)\right] \text{Csc}\left[\frac{1}{2} (c+d x)\right]^8}{4608 d}+\frac{55 \text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]\right]}{128 d}-\frac{55 \text{Log}\left[\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right]}{128 d}+\frac{73 \text{Sec}\left[\frac{1}{2} (c+d x)\right]^2}{512 d}+\frac{13 \text{Sec}\left[\frac{1}{2} (c+d x)\right]^4}{1024 d}-\frac{17 \text{Sec}\left[\frac{1}{2} (c+d x)\right]^6}{1536 d}+\frac{3 \text{Sec}\left[\frac{1}{2} (c+d x)\right]^8}{2048 d}-\frac{29 \text{Tan}\left[\frac{1}{2} (c+d x)\right]}{126 d}+\frac{4163 \text{Sec}\left[\frac{1}{2} (c+d x)\right]^2 \text{Tan}\left[\frac{1}{2} (c+d x)\right]}{32256 d}-\frac{319 \text{Sec}\left[\frac{1}{2} (c+d x)\right]^4 \text{Tan}\left[\frac{1}{2} (c+d x)\right]}{10752 d}+\frac{53 \text{Sec}\left[\frac{1}{2} (c+d x)\right]^6 \text{Tan}\left[\frac{1}{2} (c+d x)\right]}{32256 d}+\frac{\text{Sec}\left[\frac{1}{2} (c+d x)\right]^8 \text{Tan}\left[\frac{1}{2} (c+d x)\right]}{4608 d}\right)$$

Problem 624: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Cos}[c+d x]^6 \text{Sin}[c+d x]^4}{a+a \text{Sin}[c+d x]} \, dx$$

Optimal (type 3, 159 leaves, 9 steps):

$$\frac{3 x}{128 a}+\frac{\text{Cos}[c+d x]^5}{5 a d}-\frac{2 \text{Cos}[c+d x]^7}{7 a d}+\frac{\text{Cos}[c+d x]^9}{9 a d}+\frac{3 \text{Cos}[c+d x] \text{Sin}[c+d x]}{128 a d}+\frac{\text{Cos}[c+d x]^3 \text{Sin}[c+d x]}{64 a d}-\frac{\text{Cos}[c+d x]^5 \text{Sin}[c+d x]}{16 a d}-\frac{\text{Cos}[c+d x]^5 \text{Sin}[c+d x]^3}{8 a d}$$

Result (type 3, 429 leaves):

$$\frac{1}{645120\,a\,d\,\left(\text{Cos}\left[\frac{c}{2}\right]+\text{Sin}\left[\frac{c}{2}\right]\right)}\left(2520\,(5\,c+6\,d\,x)\,\text{Cos}\left[\frac{c}{2}\right]+7560\,\text{Cos}\left[\frac{c}{2}+d\,x\right]+7560\,\text{Cos}\left[\frac{3\,c}{2}+d\,x\right]+1680\,\text{Cos}\left[\frac{5\,c}{2}+3\,d\,x\right]+1680\,\text{Cos}\left[\frac{7\,c}{2}+3\,d\,x\right]-2520\,\text{Cos}\left[\frac{7\,c}{2}+4\,d\,x\right]+2520\,\text{Cos}\left[\frac{9\,c}{2}+4\,d\,x\right]-1008\,\text{Cos}\left[\frac{9\,c}{2}+5\,d\,x\right]-1008\,\text{Cos}\left[\frac{11\,c}{2}+5\,d\,x\right]-180\,\text{Cos}\left[\frac{13\,c}{2}+7\,d\,x\right]-180\,\text{Cos}\left[\frac{15\,c}{2}+7\,d\,x\right]+315\,\text{Cos}\left[\frac{15\,c}{2}+8\,d\,x\right]-315\,\text{Cos}\left[\frac{17\,c}{2}+8\,d\,x\right]+140\,\text{Cos}\left[\frac{17\,c}{2}+9\,d\,x\right]+140\,\text{Cos}\left[\frac{19\,c}{2}+9\,d\,x\right]+12600\,\text{Sin}\left[\frac{c}{2}\right]+12600\,c\,\text{Sin}\left[\frac{c}{2}\right]+15120\,d\,x\,\text{Sin}\left[\frac{c}{2}\right]-7560\,\text{Sin}\left[\frac{c}{2}+d\,x\right]+7560\,\text{Sin}\left[\frac{3\,c}{2}+d\,x\right]-1680\,\text{Sin}\left[\frac{5\,c}{2}+3\,d\,x\right]+1680\,\text{Sin}\left[\frac{7\,c}{2}+3\,d\,x\right]-2520\,\text{Sin}\left[\frac{7\,c}{2}+4\,d\,x\right]-2520\,\text{Sin}\left[\frac{9\,c}{2}+4\,d\,x\right]+1008\,\text{Sin}\left[\frac{9\,c}{2}+5\,d\,x\right]-1008\,\text{Sin}\left[\frac{11\,c}{2}+5\,d\,x\right]+180\,\text{Sin}\left[\frac{13\,c}{2}+7\,d\,x\right]-180\,\text{Sin}\left[\frac{15\,c}{2}+7\,d\,x\right]+315\,\text{Sin}\left[\frac{15\,c}{2}+8\,d\,x\right]+315\,\text{Sin}\left[\frac{17\,c}{2}+8\,d\,x\right]-140\,\text{Sin}\left[\frac{17\,c}{2}+9\,d\,x\right]+140\,\text{Sin}\left[\frac{19\,c}{2}+9\,d\,x\right]\right)$$

- **Problem 625: Result more than twice size of optimal antiderivative.**

$$\int\frac{\text{Cos}[c+d\,x]^6\,\text{Sin}[c+d\,x]^3}{a+a\,\text{Sin}[c+d\,x]}\,dx$$

Optimal (type 3, 141 leaves, 9 steps):

$$-\frac{3\,x}{128\,a}-\frac{\text{Cos}[c+d\,x]^5}{5\,a\,d}+\frac{\text{Cos}[c+d\,x]^7}{7\,a\,d}-\frac{3\,\text{Cos}[c+d\,x]\,\text{Sin}[c+d\,x]}{128\,a\,d}-\frac{\text{Cos}[c+d\,x]^3\,\text{Sin}[c+d\,x]}{64\,a\,d}+\frac{\text{Cos}[c+d\,x]^5\,\text{Sin}[c+d\,x]}{16\,a\,d}+\frac{\text{Cos}[c+d\,x]^5\,\text{Sin}[c+d\,x]^3}{8\,a\,d}$$

Result (type 3, 375 leaves):

$$\frac{1}{71680\,a\,d\,\left(\text{Cos}\left[\frac{c}{2}\right]+\text{Sin}\left[\frac{c}{2}\right]\right)}\left(1680\,(c-d\,x)\,\text{Cos}\left[\frac{c}{2}\right]-1680\,\text{Cos}\left[\frac{c}{2}+d\,x\right]-1680\,\text{Cos}\left[\frac{3\,c}{2}+d\,x\right]-560\,\text{Cos}\left[\frac{5\,c}{2}+3\,d\,x\right]-560\,\text{Cos}\left[\frac{7\,c}{2}+3\,d\,x\right]+280\,\text{Cos}\left[\frac{7\,c}{2}+4\,d\,x\right]-280\,\text{Cos}\left[\frac{9\,c}{2}+4\,d\,x\right]+112\,\text{Cos}\left[\frac{9\,c}{2}+5\,d\,x\right]+112\,\text{Cos}\left[\frac{11\,c}{2}+5\,d\,x\right]+80\,\text{Cos}\left[\frac{13\,c}{2}+7\,d\,x\right]+80\,\text{Cos}\left[\frac{15\,c}{2}+7\,d\,x\right]-35\,\text{Cos}\left[\frac{15\,c}{2}+8\,d\,x\right]+35\,\text{Cos}\left[\frac{17\,c}{2}+8\,d\,x\right]-3360\,\text{Sin}\left[\frac{c}{2}\right]+1680\,c\,\text{Sin}\left[\frac{c}{2}\right]-1680\,d\,x\,\text{Sin}\left[\frac{c}{2}\right]+1680\,\text{Sin}\left[\frac{c}{2}+d\,x\right]-1680\,\text{Sin}\left[\frac{3\,c}{2}+d\,x\right]+560\,\text{Sin}\left[\frac{5\,c}{2}+3\,d\,x\right]-560\,\text{Sin}\left[\frac{7\,c}{2}+3\,d\,x\right]+280\,\text{Sin}\left[\frac{7\,c}{2}+4\,d\,x\right]+280\,\text{Sin}\left[\frac{9\,c}{2}+4\,d\,x\right]-112\,\text{Sin}\left[\frac{9\,c}{2}+5\,d\,x\right]+112\,\text{Sin}\left[\frac{11\,c}{2}+5\,d\,x\right]-80\,\text{Sin}\left[\frac{13\,c}{2}+7\,d\,x\right]+80\,\text{Sin}\left[\frac{15\,c}{2}+7\,d\,x\right]-35\,\text{Sin}\left[\frac{15\,c}{2}+8\,d\,x\right]-35\,\text{Sin}\left[\frac{17\,c}{2}+8\,d\,x\right]\right)$$

Problem 626: Result more than twice size of optimal antiderivative.

$$\int \frac{\cos[c+d x]^6 \sin[c+d x]^2}{a+a \sin[c+d x]} \, dx$$

Optimal (type 3, 115 leaves, 8 steps):

$$\frac{x}{16 a}+\frac{\cos[c+d x]^5}{5 a d}-\frac{\cos[c+d x]^7}{7 a d}+\frac{\cos[c+d x] \sin[c+d x]}{16 a d}+\frac{\cos[c+d x]^3 \sin[c+d x]}{24 a d}-\frac{\cos[c+d x]^5 \sin[c+d x]}{6 a d}$$

Result (type 3, 414 leaves):

$$\frac{1}{13440 a d \left(\cos\left[\frac{c}{2}\right]+\sin\left[\frac{c}{2}\right]\right)}$$
$$\left(840 d x \cos\left[\frac{c}{2}\right]+315 \cos\left[\frac{c}{2}+d x\right]+315 \cos\left[\frac{3 c}{2}+d x\right]+105 \cos\left[\frac{3 c}{2}+2 d x\right]-105 \cos\left[\frac{5 c}{2}+2 d x\right]+105 \cos\left[\frac{5 c}{2}+3 d x\right]+\right.$$
$$105 \cos\left[\frac{7 c}{2}+3 d x\right]-105 \cos\left[\frac{7 c}{2}+4 d x\right]+105 \cos\left[\frac{9 c}{2}+4 d x\right]-21 \cos\left[\frac{9 c}{2}+5 d x\right]-21 \cos\left[\frac{11 c}{2}+5 d x\right]-35 \cos\left[\frac{11 c}{2}+6 d x\right]+$$
$$35 \cos\left[\frac{13 c}{2}+6 d x\right]-15 \cos\left[\frac{13 c}{2}+7 d x\right]-15 \cos\left[\frac{15 c}{2}+7 d x\right]+1050 \sin\left[\frac{c}{2}\right]+840 d x \sin\left[\frac{c}{2}\right]-315 \sin\left[\frac{c}{2}+d x\right]+315 \sin\left[\frac{3 c}{2}+d x\right]+$$
$$105 \sin\left[\frac{3 c}{2}+2 d x\right]+105 \sin\left[\frac{5 c}{2}+2 d x\right]-105 \sin\left[\frac{5 c}{2}+3 d x\right]+105 \sin\left[\frac{7 c}{2}+3 d x\right]-105 \sin\left[\frac{7 c}{2}+4 d x\right]-105 \sin\left[\frac{9 c}{2}+4 d x\right]+$$
$$\left.21 \sin\left[\frac{9 c}{2}+5 d x\right]-21 \sin\left[\frac{11 c}{2}+5 d x\right]-35 \sin\left[\frac{11 c}{2}+6 d x\right]-35 \sin\left[\frac{13 c}{2}+6 d x\right]+15 \sin\left[\frac{13 c}{2}+7 d x\right]-15 \sin\left[\frac{15 c}{2}+7 d x\right]\right)$$

Problem 627: Result more than twice size of optimal antiderivative.

$$\int \frac{\cos[c+d x]^6 \sin[c+d x]}{a+a \sin[c+d x]} \, dx$$

Optimal (type 3, 97 leaves, 7 steps):

$$-\frac{x}{16 a}-\frac{\cos[c+d x]^5}{5 a d}-\frac{\cos[c+d x] \sin[c+d x]}{16 a d}-\frac{\cos[c+d x]^3 \sin[c+d x]}{24 a d}+\frac{\cos[c+d x]^5 \sin[c+d x]}{6 a d}$$

Result (type 3, 377 leaves):

$$-\frac{1}{1920\,a\,d\,\left(\text{Cos}\left[\frac{c}{2}\right]+\text{Sin}\left[\frac{c}{2}\right]\right)}\left(-30\,(5\,c-4\,d\,x)\,\text{Cos}\left[\frac{c}{2}\right]+120\,\text{Cos}\left[\frac{c}{2}+d\,x\right]+120\,\text{Cos}\left[\frac{3\,c}{2}+d\,x\right]+15\,\text{Cos}\left[\frac{3\,c}{2}+2\,d\,x\right]-15\,\text{Cos}\left[\frac{5\,c}{2}+2\,d\,x\right]+60\,\text{Cos}\left[\frac{5\,c}{2}+3\,d\,x\right]+60\,\text{Cos}\left[\frac{7\,c}{2}+3\,d\,x\right]-15\,\text{Cos}\left[\frac{7\,c}{2}+4\,d\,x\right]+15\,\text{Cos}\left[\frac{9\,c}{2}+4\,d\,x\right]+12\,\text{Cos}\left[\frac{9\,c}{2}+5\,d\,x\right]+12\,\text{Cos}\left[\frac{11\,c}{2}+5\,d\,x\right]-5\,\text{Cos}\left[\frac{11\,c}{2}+6\,d\,x\right]+5\,\text{Cos}\left[\frac{13\,c}{2}+6\,d\,x\right]+300\,\text{Sin}\left[\frac{c}{2}\right]-150\,c\,\text{Sin}\left[\frac{c}{2}\right]+120\,d\,x\,\text{Sin}\left[\frac{c}{2}\right]-120\,\text{Sin}\left[\frac{c}{2}+d\,x\right]+120\,\text{Sin}\left[\frac{3\,c}{2}+d\,x\right]+15\,\text{Sin}\left[\frac{3\,c}{2}+2\,d\,x\right]+15\,\text{Sin}\left[\frac{5\,c}{2}+2\,d\,x\right]-60\,\text{Sin}\left[\frac{5\,c}{2}+3\,d\,x\right]+60\,\text{Sin}\left[\frac{7\,c}{2}+3\,d\,x\right]-15\,\text{Sin}\left[\frac{7\,c}{2}+4\,d\,x\right]-15\,\text{Sin}\left[\frac{9\,c}{2}+4\,d\,x\right]-12\,\text{Sin}\left[\frac{9\,c}{2}+5\,d\,x\right]+12\,\text{Sin}\left[\frac{11\,c}{2}+5\,d\,x\right]-5\,\text{Sin}\left[\frac{11\,c}{2}+6\,d\,x\right]-5\,\text{Sin}\left[\frac{13\,c}{2}+6\,d\,x\right]\right)$$

- **Problem 632: Result more than twice size of optimal antiderivative.**

$$\int\frac{\text{Cos}[c+d\,x]\,\text{Cot}[c+d\,x]^5}{a+a\,\text{Sin}[c+d\,x]}\,dx$$

Optimal (type 3, 102 leaves, 7 steps):

$$-\frac{x}{a}-\frac{3\,\text{ArcTanh}[\text{Cos}[c+d\,x]]}{8\,a\,d}-\frac{\text{Cot}[c+d\,x]}{a\,d}+\frac{\text{Cot}[c+d\,x]^3}{3\,a\,d}+\frac{3\,\text{Cot}[c+d\,x]\,\text{Csc}[c+d\,x]}{8\,a\,d}-\frac{\text{Cot}[c+d\,x]^3\,\text{Csc}[c+d\,x]}{4\,a\,d}$$

Result (type 3, 232 leaves):

$$-\frac{1}{192\,a\,d\,(1+\text{Sin}[c+d\,x])}\text{Csc}[c+d\,x]^4\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2\left(72\,c+72\,d\,x+18\,\text{Cos}[c+d\,x]+30\,\text{Cos}[3\,(c+d\,x)]+24\,c\,\text{Cos}[4\,(c+d\,x)]+24\,d\,x\,\text{Cos}[4\,(c+d\,x)]+27\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]\right]+9\,\text{Cos}[4\,(c+d\,x)]\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]\right]-12\,\text{Cos}[2\,(c+d\,x)]\left(8\,c+8\,d\,x+3\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]\right]-3\,\text{Log}\left[\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\right)-27\,\text{Log}\left[\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]-9\,\text{Cos}[4\,(c+d\,x)]\,\text{Log}\left[\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]+32\,\text{Sin}[2\,(c+d\,x)]-32\,\text{Sin}[4\,(c+d\,x)]\right)$$

- **Problem 633: Result more than twice size of optimal antiderivative.**

$$\int\frac{\text{Cot}[c+d\,x]^6}{a+a\,\text{Sin}[c+d\,x]}\,dx$$

Optimal (type 3, 82 leaves, 6 steps):

$$\frac{3\,\text{ArcTanh}[\text{Cos}[c+d\,x]]}{8\,a\,d}-\frac{\text{Cot}[c+d\,x]^5}{5\,a\,d}-\frac{3\,\text{Cot}[c+d\,x]\,\text{Csc}[c+d\,x]}{8\,a\,d}+\frac{\text{Cot}[c+d\,x]^3\,\text{Csc}[c+d\,x]}{4\,a\,d}$$

Result (type 3, 189 leaves):

$$-\frac{1}{640\,a\,d}\text{Csc}[c+d\,x]^5\Big(80\,\text{Cos}[c+d\,x]+40\,\text{Cos}[3\,(c+d\,x)]+8\,\text{Cos}[5\,(c+d\,x)]-150\,\text{Log}\Big[\text{Cos}\Big[\frac{1}{2}\,(c+d\,x)\Big]\Big]\,\text{Sin}[c+d\,x]+150\,\text{Log}\Big[\text{Sin}\Big[\frac{1}{2}\,(c+d\,x)\Big]\Big]\,\text{Sin}[c+d\,x]+20\,\text{Sin}[2\,(c+d\,x)]+75\,\text{Log}\Big[\text{Cos}\Big[\frac{1}{2}\,(c+d\,x)\Big]\Big]\,\text{Sin}[3\,(c+d\,x)]-75\,\text{Log}\Big[\text{Sin}\Big[\frac{1}{2}\,(c+d\,x)\Big]\Big]\,\text{Sin}[3\,(c+d\,x)]-50\,\text{Sin}[4\,(c+d\,x)]-15\,\text{Log}\Big[\text{Cos}\Big[\frac{1}{2}\,(c+d\,x)\Big]\Big]\,\text{Sin}[5\,(c+d\,x)]+15\,\text{Log}\Big[\text{Sin}\Big[\frac{1}{2}\,(c+d\,x)\Big]\Big]\,\text{Sin}[5\,(c+d\,x)]\Big)$$

- **Problem 634: Result more than twice size of optimal antiderivative.**

$$\int\frac{\text{Cos}[c+d\,x]^6\,\text{Sin}[c+d\,x]^3}{(a+a\,\text{Sin}[c+d\,x])^2}\,dx$$

Optimal (type 3, 135 leaves, 13 steps):

$$-\frac{x}{8\,a^2}-\frac{2\,\text{Cos}[c+d\,x]^3}{3\,a^2\,d}+\frac{3\,\text{Cos}[c+d\,x]^5}{5\,a^2\,d}-\frac{\text{Cos}[c+d\,x]^7}{7\,a^2\,d}-\frac{\text{Cos}[c+d\,x]\,\text{Sin}[c+d\,x]}{8\,a^2\,d}+\frac{\text{Cos}[c+d\,x]^3\,\text{Sin}[c+d\,x]}{4\,a^2\,d}+\frac{\text{Cos}[c+d\,x]^3\,\text{Sin}[c+d\,x]^3}{3\,a^2\,d}$$

Result (type 3, 414 leaves):

$$-\frac{1}{13\,440\,a^2\,d\,\left(\text{Cos}\left[\frac{c}{2}\right]+\text{Sin}\left[\frac{c}{2}\right]\right)}\Big(1680\,d\,x\,\text{Cos}\Big[\frac{c}{2}\Big]+1365\,\text{Cos}\Big[\frac{c}{2}+d\,x\Big]+1365\,\text{Cos}\Big[\frac{3\,c}{2}+d\,x\Big]-210\,\text{Cos}\Big[\frac{3\,c}{2}+2\,d\,x\Big]+210\,\text{Cos}\Big[\frac{5\,c}{2}+2\,d\,x\Big]+175\,\text{Cos}\Big[\frac{5\,c}{2}+3\,d\,x\Big]+175\,\text{Cos}\Big[\frac{7\,c}{2}+3\,d\,x\Big]-210\,\text{Cos}\Big[\frac{7\,c}{2}+4\,d\,x\Big]+210\,\text{Cos}\Big[\frac{9\,c}{2}+4\,d\,x\Big]-147\,\text{Cos}\Big[\frac{9\,c}{2}+5\,d\,x\Big]-147\,\text{Cos}\Big[\frac{11\,c}{2}+5\,d\,x\Big]+70\,\text{Cos}\Big[\frac{11\,c}{2}+6\,d\,x\Big]-70\,\text{Cos}\Big[\frac{13\,c}{2}+6\,d\,x\Big]+15\,\text{Cos}\Big[\frac{13\,c}{2}+7\,d\,x\Big]+15\,\text{Cos}\Big[\frac{15\,c}{2}+7\,d\,x\Big]-420\,\text{Sin}\Big[\frac{c}{2}\Big]+1680\,d\,x\,\text{Sin}\Big[\frac{c}{2}\Big]-1365\,\text{Sin}\Big[\frac{c}{2}+d\,x\Big]+1365\,\text{Sin}\Big[\frac{3\,c}{2}+d\,x\Big]-210\,\text{Sin}\Big[\frac{3\,c}{2}+2\,d\,x\Big]-210\,\text{Sin}\Big[\frac{5\,c}{2}+2\,d\,x\Big]-175\,\text{Sin}\Big[\frac{5\,c}{2}+3\,d\,x\Big]+175\,\text{Sin}\Big[\frac{7\,c}{2}+3\,d\,x\Big]-210\,\text{Sin}\Big[\frac{7\,c}{2}+4\,d\,x\Big]-210\,\text{Sin}\Big[\frac{9\,c}{2}+4\,d\,x\Big]+147\,\text{Sin}\Big[\frac{9\,c}{2}+5\,d\,x\Big]-147\,\text{Sin}\Big[\frac{11\,c}{2}+5\,d\,x\Big]+70\,\text{Sin}\Big[\frac{11\,c}{2}+6\,d\,x\Big]+70\,\text{Sin}\Big[\frac{13\,c}{2}+6\,d\,x\Big]-15\,\text{Sin}\Big[\frac{13\,c}{2}+7\,d\,x\Big]+15\,\text{Sin}\Big[\frac{15\,c}{2}+7\,d\,x\Big]\Big)$$

- **Problem 635: Result more than twice size of optimal antiderivative.**

$$\int\frac{\text{Cos}[c+d\,x]^6\,\text{Sin}[c+d\,x]^2}{(a+a\,\text{Sin}[c+d\,x])^2}\,dx$$

Optimal (type 3, 104 leaves, 6 steps):

$$\frac{3\,x}{16\,a^2}+\frac{\text{Cos}[c+d\,x]^5}{10\,a^2\,d}+\frac{3\,\text{Cos}[c+d\,x]\,\text{Sin}[c+d\,x]}{16\,a^2\,d}+\frac{\text{Cos}[c+d\,x]^3\,\text{Sin}[c+d\,x]}{8\,a^2\,d}+\frac{\text{Cos}[c+d\,x]^3\,(a-a\,\text{Sin}[c+d\,x])^3}{6\,a^5\,d}$$

Result (type 3, 362 leaves):

$$\frac{1}{1920\,a^2\,d\,\left(\mathrm{Cos}\left[\frac{c}{2}\right]+\mathrm{Sin}\left[\frac{c}{2}\right]\right)}\left(360\,d\,x\,\mathrm{Cos}\left[\frac{c}{2}\right]+240\,\mathrm{Cos}\left[\frac{c}{2}+d\,x\right]+240\,\mathrm{Cos}\left[\frac{3\,c}{2}+d\,x\right]-15\,\mathrm{Cos}\left[\frac{3\,c}{2}+2\,d\,x\right]+15\,\mathrm{Cos}\left[\frac{5\,c}{2}+2\,d\,x\right]+40\,\mathrm{Cos}\left[\frac{5\,c}{2}+3\,d\,x\right]+40\,\mathrm{Cos}\left[\frac{7\,c}{2}+3\,d\,x\right]-45\,\mathrm{Cos}\left[\frac{7\,c}{2}+4\,d\,x\right]+45\,\mathrm{Cos}\left[\frac{9\,c}{2}+4\,d\,x\right]-24\,\mathrm{Cos}\left[\frac{9\,c}{2}+5\,d\,x\right]-24\,\mathrm{Cos}\left[\frac{11\,c}{2}+5\,d\,x\right]+5\,\mathrm{Cos}\left[\frac{11\,c}{2}+6\,d\,x\right]-5\,\mathrm{Cos}\left[\frac{13\,c}{2}+6\,d\,x\right]+50\,\mathrm{Sin}\left[\frac{c}{2}\right]+360\,d\,x\,\mathrm{Sin}\left[\frac{c}{2}\right]-240\,\mathrm{Sin}\left[\frac{c}{2}+d\,x\right]+240\,\mathrm{Sin}\left[\frac{3\,c}{2}+d\,x\right]-15\,\mathrm{Sin}\left[\frac{3\,c}{2}+2\,d\,x\right]-15\,\mathrm{Sin}\left[\frac{5\,c}{2}+2\,d\,x\right]-40\,\mathrm{Sin}\left[\frac{5\,c}{2}+3\,d\,x\right]+40\,\mathrm{Sin}\left[\frac{7\,c}{2}+3\,d\,x\right]-45\,\mathrm{Sin}\left[\frac{7\,c}{2}+4\,d\,x\right]-45\,\mathrm{Sin}\left[\frac{9\,c}{2}+4\,d\,x\right]+24\,\mathrm{Sin}\left[\frac{9\,c}{2}+5\,d\,x\right]-24\,\mathrm{Sin}\left[\frac{11\,c}{2}+5\,d\,x\right]+5\,\mathrm{Sin}\left[\frac{11\,c}{2}+6\,d\,x\right]+5\,\mathrm{Sin}\left[\frac{13\,c}{2}+6\,d\,x\right]\right)$$

- **Problem 636: Result more than twice size of optimal antiderivative.**

$$\int \frac{\mathrm{Cos}[c+d\,x]^6\,\mathrm{Sin}[c+d\,x]}{(a+a\,\mathrm{Sin}[c+d\,x])^2}\,dx$$

Optimal (type 3, 100 leaves, 5 steps) :

$$-\frac{x}{4\,a^2}-\frac{2\,\mathrm{Cos}[c+d\,x]^5}{15\,a^2\,d}-\frac{\mathrm{Cos}[c+d\,x]\,\mathrm{Sin}[c+d\,x]}{4\,a^2\,d}-\frac{\mathrm{Cos}[c+d\,x]^3\,\mathrm{Sin}[c+d\,x]}{6\,a^2\,d}-\frac{\mathrm{Cos}[c+d\,x]^7}{3\,d\,(a+a\,\mathrm{Sin}[c+d\,x])^2}$$

Result (type 3, 258 leaves) :

$$\frac{1}{480\,a^2\,d\,\left(\mathrm{Cos}\left[\frac{c}{2}\right]+\mathrm{Sin}\left[\frac{c}{2}\right]\right)}\left(-120\,d\,x\,\mathrm{Cos}\left[\frac{c}{2}\right]-90\,\mathrm{Cos}\left[\frac{c}{2}+d\,x\right]-90\,\mathrm{Cos}\left[\frac{3\,c}{2}+d\,x\right]-25\,\mathrm{Cos}\left[\frac{5\,c}{2}+3\,d\,x\right]-25\,\mathrm{Cos}\left[\frac{7\,c}{2}+3\,d\,x\right]+15\,\mathrm{Cos}\left[\frac{7\,c}{2}+4\,d\,x\right]-15\,\mathrm{Cos}\left[\frac{9\,c}{2}+4\,d\,x\right]+3\,\mathrm{Cos}\left[\frac{9\,c}{2}+5\,d\,x\right]+3\,\mathrm{Cos}\left[\frac{11\,c}{2}+5\,d\,x\right]+50\,\mathrm{Sin}\left[\frac{c}{2}\right]-120\,d\,x\,\mathrm{Sin}\left[\frac{c}{2}\right]+90\,\mathrm{Sin}\left[\frac{c}{2}+d\,x\right]-90\,\mathrm{Sin}\left[\frac{3\,c}{2}+d\,x\right]+25\,\mathrm{Sin}\left[\frac{5\,c}{2}+3\,d\,x\right]-25\,\mathrm{Sin}\left[\frac{7\,c}{2}+3\,d\,x\right]+15\,\mathrm{Sin}\left[\frac{7\,c}{2}+4\,d\,x\right]+15\,\mathrm{Sin}\left[\frac{9\,c}{2}+4\,d\,x\right]-3\,\mathrm{Sin}\left[\frac{9\,c}{2}+5\,d\,x\right]+3\,\mathrm{Sin}\left[\frac{11\,c}{2}+5\,d\,x\right]\right)$$

- **Problem 644: Result more than twice size of optimal antiderivative.**

$$\int \frac{\mathrm{Cos}[c+d\,x]^6\,\mathrm{Sin}[c+d\,x]^3}{(a+a\,\mathrm{Sin}[c+d\,x])^3}\,dx$$

Optimal (type 3, 129 leaves, 14 steps) :

$$-\frac{23\,x}{16\,a^3}-\frac{4\,\mathrm{Cos}[c+d\,x]}{a^3\,d}+\frac{7\,\mathrm{Cos}[c+d\,x]^3}{3\,a^3\,d}-\frac{3\,\mathrm{Cos}[c+d\,x]^5}{5\,a^3\,d}+\frac{23\,\mathrm{Cos}[c+d\,x]\,\mathrm{Sin}[c+d\,x]}{16\,a^3\,d}+\frac{23\,\mathrm{Cos}[c+d\,x]\,\mathrm{Sin}[c+d\,x]^3}{24\,a^3\,d}+\frac{\mathrm{Cos}[c+d\,x]\,\mathrm{Sin}[c+d\,x]^5}{6\,a^3\,d}$$

Result (type 3, 362 leaves) :

$$-\frac{1}{1920\, a^3\, d\, \left(\text{Cos}\left[\frac{c}{2}\right]+\text{Sin}\left[\frac{c}{2}\right]\right)}\left(2760\, d\, x\, \text{Cos}\left[\frac{c}{2}\right]+2520\, \text{Cos}\left[\frac{c}{2}+d\, x\right]+2520\, \text{Cos}\left[\frac{3\, c}{2}+d\, x\right]-945\, \text{Cos}\left[\frac{3\, c}{2}+2\, d\, x\right]+945\, \text{Cos}\left[\frac{5\, c}{2}+2\, d\, x\right]-380\, \text{Cos}\left[\frac{5\, c}{2}+3\, d\, x\right]-380\, \text{Cos}\left[\frac{7\, c}{2}+3\, d\, x\right]+135\, \text{Cos}\left[\frac{7\, c}{2}+4\, d\, x\right]-135\, \text{Cos}\left[\frac{9\, c}{2}+4\, d\, x\right]+36\, \text{Cos}\left[\frac{9\, c}{2}+5\, d\, x\right]+36\, \text{Cos}\left[\frac{11\, c}{2}+5\, d\, x\right]-5\, \text{Cos}\left[\frac{11\, c}{2}+6\, d\, x\right]+5\, \text{Cos}\left[\frac{13\, c}{2}+6\, d\, x\right]-18\, \text{Sin}\left[\frac{c}{2}\right]+2760\, d\, x\, \text{Sin}\left[\frac{c}{2}\right]-2520\, \text{Sin}\left[\frac{c}{2}+d\, x\right]+2520\, \text{Sin}\left[\frac{3\, c}{2}+d\, x\right]-945\, \text{Sin}\left[\frac{3\, c}{2}+2\, d\, x\right]-945\, \text{Sin}\left[\frac{5\, c}{2}+2\, d\, x\right]+380\, \text{Sin}\left[\frac{5\, c}{2}+3\, d\, x\right]-380\, \text{Sin}\left[\frac{7\, c}{2}+3\, d\, x\right]+135\, \text{Sin}\left[\frac{7\, c}{2}+4\, d\, x\right]+135\, \text{Sin}\left[\frac{9\, c}{2}+4\, d\, x\right]-36\, \text{Sin}\left[\frac{9\, c}{2}+5\, d\, x\right]+36\, \text{Sin}\left[\frac{11\, c}{2}+5\, d\, x\right]-5\, \text{Sin}\left[\frac{11\, c}{2}+6\, d\, x\right]-5\, \text{Sin}\left[\frac{13\, c}{2}+6\, d\, x\right]\right)$$

- **Problem 645: Result more than twice size of optimal antiderivative.**

$$\int \frac{\text{Cos}[c+d\, x]^6\, \text{Sin}[c+d\, x]^2}{(a+a\, \text{Sin}[c+d\, x])^3}\, dx$$

Optimal (type 3, 105 leaves, 12 steps):

$$\frac{13\, x}{8\, a^3}+\frac{4\, \text{Cos}[c+d\, x]}{a^3\, d}-\frac{5\, \text{Cos}[c+d\, x]^3}{3\, a^3\, d}+\frac{\text{Cos}[c+d\, x]^5}{5\, a^3\, d}-\frac{13\, \text{Cos}[c+d\, x]\, \text{Sin}[c+d\, x]}{8\, a^3\, d}-\frac{3\, \text{Cos}[c+d\, x]\, \text{Sin}[c+d\, x]^3}{4\, a^3\, d}$$

Result (type 3, 310 leaves):

$$\frac{1}{960\, a^3\, d\, \left(\text{Cos}\left[\frac{c}{2}\right]+\text{Sin}\left[\frac{c}{2}\right]\right)}\left(1560\, d\, x\, \text{Cos}\left[\frac{c}{2}\right]+1380\, \text{Cos}\left[\frac{c}{2}+d\, x\right]+1380\, \text{Cos}\left[\frac{3\, c}{2}+d\, x\right]-480\, \text{Cos}\left[\frac{3\, c}{2}+2\, d\, x\right]+480\, \text{Cos}\left[\frac{5\, c}{2}+2\, d\, x\right]-170\, \text{Cos}\left[\frac{5\, c}{2}+3\, d\, x\right]-170\, \text{Cos}\left[\frac{7\, c}{2}+3\, d\, x\right]+45\, \text{Cos}\left[\frac{7\, c}{2}+4\, d\, x\right]-45\, \text{Cos}\left[\frac{9\, c}{2}+4\, d\, x\right]+6\, \text{Cos}\left[\frac{9\, c}{2}+5\, d\, x\right]+6\, \text{Cos}\left[\frac{11\, c}{2}+5\, d\, x\right]+10\, \text{Sin}\left[\frac{c}{2}\right]+1560\, d\, x\, \text{Sin}\left[\frac{c}{2}\right]-1380\, \text{Sin}\left[\frac{c}{2}+d\, x\right]+1380\, \text{Sin}\left[\frac{3\, c}{2}+d\, x\right]-480\, \text{Sin}\left[\frac{3\, c}{2}+2\, d\, x\right]-480\, \text{Sin}\left[\frac{5\, c}{2}+2\, d\, x\right]+170\, \text{Sin}\left[\frac{5\, c}{2}+3\, d\, x\right]-170\, \text{Sin}\left[\frac{7\, c}{2}+3\, d\, x\right]+45\, \text{Sin}\left[\frac{7\, c}{2}+4\, d\, x\right]+45\, \text{Sin}\left[\frac{9\, c}{2}+4\, d\, x\right]-6\, \text{Sin}\left[\frac{9\, c}{2}+5\, d\, x\right]+6\, \text{Sin}\left[\frac{11\, c}{2}+5\, d\, x\right]\right)$$

- **Problem 646: Result more than twice size of optimal antiderivative.**

$$\int \frac{\text{Cos}[c+d\, x]^6\, \text{Sin}[c+d\, x]}{(a+a\, \text{Sin}[c+d\, x])^3}\, dx$$

Optimal (type 3, 84 leaves, 5 steps):

$$-\frac{15 x}{8 a^3}-\frac{4 \operatorname{Cos}[c+d x]}{a^3 d}+\frac{\operatorname{Cos}[c+d x]^3}{a^3 d}+\frac{15 \operatorname{Cos}[c+d x] \operatorname{Sin}[c+d x]}{8 a^3 d}+\frac{\operatorname{Cos}[c+d x] \operatorname{Sin}[c+d x]^3}{4 a^3 d}$$

Result (type 3, 252 leaves) :

$$-\frac{1}{64 a^3 d \left(\operatorname{Cos}\left[\frac{c}{2}\right]+\operatorname{Sin}\left[\frac{c}{2}\right]\right)}\left(120 d x \operatorname{Cos}\left[\frac{c}{2}\right]+104 \operatorname{Cos}\left[\frac{c}{2}+d x\right]+104 \operatorname{Cos}\left[\frac{3 c}{2}+d x\right]-32 \operatorname{Cos}\left[\frac{3 c}{2}+2 d x\right]+32 \operatorname{Cos}\left[\frac{5 c}{2}+2 d x\right]-8 \operatorname{Cos}\left[\frac{5 c}{2}+3 d x\right]-\right.$$
$$8 \operatorname{Cos}\left[\frac{7 c}{2}+3 d x\right]+\operatorname{Cos}\left[\frac{7 c}{2}+4 d x\right]-\operatorname{Cos}\left[\frac{9 c}{2}+4 d x\right]-2 \operatorname{Sin}\left[\frac{c}{2}\right]+120 d x \operatorname{Sin}\left[\frac{c}{2}\right]-104 \operatorname{Sin}\left[\frac{c}{2}+d x\right]+104 \operatorname{Sin}\left[\frac{3 c}{2}+d x\right]-$$
$$\left.32 \operatorname{Sin}\left[\frac{3 c}{2}+2 d x\right]-32 \operatorname{Sin}\left[\frac{5 c}{2}+2 d x\right]+8 \operatorname{Sin}\left[\frac{5 c}{2}+3 d x\right]-8 \operatorname{Sin}\left[\frac{7 c}{2}+3 d x\right]+\operatorname{Sin}\left[\frac{7 c}{2}+4 d x\right]+\operatorname{Sin}\left[\frac{9 c}{2}+4 d x\right]\right)$$

Problem 648: Result more than twice size of optimal antiderivative.

$$\int \frac{\operatorname{Cos}[c+d x]^4 \operatorname{Cot}[c+d x]^2}{(a+a \operatorname{Sin}[c+d x])^3} \, dx$$

Optimal (type 3, 49 leaves, 7 steps) :

$$\frac{3 x}{a^3}+\frac{3 \operatorname{ArcTanh}[\operatorname{Cos}[c+d x]]}{a^3 d}+\frac{\operatorname{Cos}[c+d x]}{a^3 d}-\frac{\operatorname{Cot}[c+d x]}{a^3 d}$$

Result (type 3, 106 leaves) :

$$\frac{1}{2 d (a+a \operatorname{Sin}[c+d x])^3}\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^6$$
$$\left(6 (c+d x)+2 \operatorname{Cos}[c+d x]-\operatorname{Cot}\left[\frac{1}{2}(c+d x)\right]+6 \operatorname{Log}\left[\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]\right]-6 \operatorname{Log}\left[\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right]+\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]\right)$$

Problem 649: Result more than twice size of optimal antiderivative.

$$\int \frac{\operatorname{Cos}[c+d x]^3 \operatorname{Cot}[c+d x]^3}{(a+a \operatorname{Sin}[c+d x])^3} \, dx$$

Optimal (type 3, 60 leaves, 8 steps) :

$$-\frac{x}{a^3}-\frac{7 \operatorname{ArcTanh}[\operatorname{Cos}[c+d x]]}{2 a^3 d}+\frac{3 \operatorname{Cot}[c+d x]}{a^3 d}-\frac{\operatorname{Cot}[c+d x] \operatorname{Csc}[c+d x]}{2 a^3 d}$$

Result (type 3, 126 leaves) :

$$\frac{1}{8 d (a+a \operatorname{Sin}[c+d x])^3}\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^6\left(-8 (c+d x)+12 \operatorname{Cot}\left[\frac{1}{2}(c+d x)\right]-\right.$$
$$\left.\operatorname{Csc}\left[\frac{1}{2}(c+d x)\right]^2-28 \operatorname{Log}\left[\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]\right]+28 \operatorname{Log}\left[\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right]+\operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^2-12 \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]\right)$$

Problem 651: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Cos}[c+d x] \, \text{Cot}[c+d x]^5}{(a+a \, \text{Sin}[c+d x])^3} \, dx$$

Optimal (type 3, 93 leaves, 12 steps):

$$-\frac{15 \, \text{ArcTanh}[\text{Cos}[c+d x]]}{8 a^3 d}+\frac{4 \, \text{Cot}[c+d x]}{a^3 d}+\frac{\text{Cot}[c+d x]^3}{a^3 d}-\frac{15 \, \text{Cot}[c+d x] \, \text{Csc}[c+d x]}{8 a^3 d}-\frac{\text{Cot}[c+d x] \, \text{Csc}[c+d x]^3}{4 a^3 d}$$

Result (type 3, 555 leaves):

$$\frac{3 \, \text{Cot}\left[\frac{1}{2} (c+d x)\right] \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^6}{2 d (a+a \, \text{Sin}[c+d x])^3}-\frac{15 \, \text{Csc}\left[\frac{1}{2} (c+d x)\right]^2 \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^6}{32 d (a+a \, \text{Sin}[c+d x])^3}+$$
$$\frac{\text{Cot}\left[\frac{1}{2} (c+d x)\right] \text{Csc}\left[\frac{1}{2} (c+d x)\right]^2 \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^6}{8 d (a+a \, \text{Sin}[c+d x])^3}-\frac{\text{Csc}\left[\frac{1}{2} (c+d x)\right]^4 \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^6}{64 d (a+a \, \text{Sin}[c+d x])^3}-$$
$$\frac{15 \, \text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]\right] \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^6}{8 d (a+a \, \text{Sin}[c+d x])^3}+\frac{15 \, \text{Log}\left[\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right] \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^6}{8 d (a+a \, \text{Sin}[c+d x])^3}+$$
$$\frac{15 \, \text{Sec}\left[\frac{1}{2} (c+d x)\right]^2 \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^6}{32 d (a+a \, \text{Sin}[c+d x])^3}+\frac{\text{Sec}\left[\frac{1}{2} (c+d x)\right]^4 \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^6}{64 d (a+a \, \text{Sin}[c+d x])^3}-$$
$$\frac{3 \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^6 \text{Tan}\left[\frac{1}{2} (c+d x)\right]}{2 d (a+a \, \text{Sin}[c+d x])^3}-\frac{\text{Sec}\left[\frac{1}{2} (c+d x)\right]^2 \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^6 \text{Tan}\left[\frac{1}{2} (c+d x)\right]}{8 d (a+a \, \text{Sin}[c+d x])^3}$$

Problem 653: Unable to integrate problem.

$$\int \text{Cos}[c+d x]^6 \, \text{Sin}[c+d x]^n \, (a+a \, \text{Sin}[c+d x])^3 \, dx$$

Optimal (type 5, 267 leaves, 6 steps):

$$\frac{a^3 \operatorname{Cos}[c+d x] \text{ Hypergeometric2F1}\left[-\frac{5}{2}, \frac{1+n}{2}, \frac{3+n}{2}, \operatorname{Sin}[c+d x]^2\right] \operatorname{Sin}[c+d x]^{1+n}}{d (1+n) \sqrt{\operatorname{Cos}[c+d x]^2}}+\frac{3 a^3 \operatorname{Cos}[c+d x] \text{ Hypergeometric2F1}\left[-\frac{5}{2}, \frac{2+n}{2}, \frac{4+n}{2}, \operatorname{Sin}[c+d x]^2\right] \operatorname{Sin}[c+d x]^{2+n}}{d (2+n) \sqrt{\operatorname{Cos}[c+d x]^2}}+\frac{3 a^3 \operatorname{Cos}[c+d x] \text{ Hypergeometric2F1}\left[-\frac{5}{2}, \frac{3+n}{2}, \frac{5+n}{2}, \operatorname{Sin}[c+d x]^2\right] \operatorname{Sin}[c+d x]^{3+n}}{d (3+n) \sqrt{\operatorname{Cos}[c+d x]^2}}+\frac{a^3 \operatorname{Cos}[c+d x] \text{ Hypergeometric2F1}\left[-\frac{5}{2}, \frac{4+n}{2}, \frac{6+n}{2}, \operatorname{Sin}[c+d x]^2\right] \operatorname{Sin}[c+d x]^{4+n}}{d (4+n) \sqrt{\operatorname{Cos}[c+d x]^2}}$$

Result (type 8, 31 leaves) :

$$\int \operatorname{Cos}[c+d x]^6 \operatorname{Sin}[c+d x]^n (a+a \operatorname{Sin}[c+d x])^3 \, dx$$

Problem 654: Unable to integrate problem.

$$\int \operatorname{Cos}[c+d x]^6 \operatorname{Sin}[c+d x]^n (a+a \operatorname{Sin}[c+d x])^2 \, dx$$

Optimal (type 5, 200 leaves, 5 steps) :

$$\frac{a^2 \operatorname{Cos}[c+d x] \text{ Hypergeometric2F1}\left[-\frac{5}{2}, \frac{1+n}{2}, \frac{3+n}{2}, \operatorname{Sin}[c+d x]^2\right] \operatorname{Sin}[c+d x]^{1+n}}{d (1+n) \sqrt{\operatorname{Cos}[c+d x]^2}}+\frac{2 a^2 \operatorname{Cos}[c+d x] \text{ Hypergeometric2F1}\left[-\frac{5}{2}, \frac{2+n}{2}, \frac{4+n}{2}, \operatorname{Sin}[c+d x]^2\right] \operatorname{Sin}[c+d x]^{2+n}}{d (2+n) \sqrt{\operatorname{Cos}[c+d x]^2}}+\frac{a^2 \operatorname{Cos}[c+d x] \text{ Hypergeometric2F1}\left[-\frac{5}{2}, \frac{3+n}{2}, \frac{5+n}{2}, \operatorname{Sin}[c+d x]^2\right] \operatorname{Sin}[c+d x]^{3+n}}{d (3+n) \sqrt{\operatorname{Cos}[c+d x]^2}}$$

Result (type 8, 31 leaves) :

$$\int \operatorname{Cos}[c+d x]^6 \operatorname{Sin}[c+d x]^n (a+a \operatorname{Sin}[c+d x])^2 \, dx$$

Problem 655: Unable to integrate problem.

$$\int \operatorname{Cos}[c+d x]^6 \operatorname{Sin}[c+d x]^n (a+a \operatorname{Sin}[c+d x]) \, dx$$

Optimal (type 5, 129 leaves, 3 steps) :

$$\frac{a\,\text{Cos}[c+d\,x]\,\text{Hypergeometric2F1}\left[-\frac{5}{2},\frac{1+n}{2},\frac{3+n}{2},\text{Sin}[c+d\,x]^2\right]\text{Sin}[c+d\,x]^{1+n}}{d\,(1+n)\,\sqrt{\text{Cos}[c+d\,x]^2}}+$$
$$\frac{a\,\text{Cos}[c+d\,x]\,\text{Hypergeometric2F1}\left[-\frac{5}{2},\frac{2+n}{2},\frac{4+n}{2},\text{Sin}[c+d\,x]^2\right]\text{Sin}[c+d\,x]^{2+n}}{d\,(2+n)\,\sqrt{\text{Cos}[c+d\,x]^2}}$$

Result (type 8, 29 leaves) :

$$\int \text{Cos}[c+d\,x]^6\,\text{Sin}[c+d\,x]^n\,(a+a\,\text{Sin}[c+d\,x])\,dx$$

Problem 669: Result more than twice size of optimal antiderivative.

$$\int \text{Cot}[c+d\,x]^7\,\text{Csc}[c+d\,x]\,(a+a\,\text{Sin}[c+d\,x])\,dx$$

Optimal (type 3, 119 leaves, 4 steps) :

$$\frac{a\,\text{Csc}[c+d\,x]}{d}-\frac{3\,a\,\text{Csc}[c+d\,x]^2}{2\,d}-\frac{a\,\text{Csc}[c+d\,x]^3}{d}+\frac{3\,a\,\text{Csc}[c+d\,x]^4}{4\,d}+\frac{3\,a\,\text{Csc}[c+d\,x]^5}{5\,d}-\frac{a\,\text{Csc}[c+d\,x]^6}{6\,d}-\frac{a\,\text{Csc}[c+d\,x]^7}{7\,d}-\frac{a\,\text{Log}[\text{Sin}[c+d\,x]]}{d}$$

Result (type 3, 278 leaves) :

$$\frac{381\,a\,\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]}{1120\,d}-\frac{179\,a\,\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\text{Csc}\left[\frac{1}{2}(c+d\,x)\right]^2}{2240\,d}+\frac{a\,\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\text{Csc}\left[\frac{1}{2}(c+d\,x)\right]^4}{70\,d}-$$
$$\frac{a\,\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\text{Csc}\left[\frac{1}{2}(c+d\,x)\right]^6}{896\,d}-\frac{3\,a\,\text{Csc}[c+d\,x]^2}{2\,d}+\frac{3\,a\,\text{Csc}[c+d\,x]^4}{4\,d}-\frac{a\,\text{Csc}[c+d\,x]^6}{6\,d}-\frac{a\,\text{Log}[\text{Sin}[c+d\,x]]}{d}+\frac{381\,a\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{1120\,d}-$$
$$\frac{179\,a\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{2240\,d}+\frac{a\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^4\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{70\,d}-\frac{a\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^6\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{896\,d}$$

Problem 670: Result more than twice size of optimal antiderivative.

$$\int \text{Cot}[c+d\,x]^7\,\text{Csc}[c+d\,x]^2\,(a+a\,\text{Sin}[c+d\,x])\,dx$$

Optimal (type 3, 74 leaves, 6 steps) :

$$-\frac{a\,\text{Cot}[c+d\,x]^8}{8\,d}+\frac{a\,\text{Csc}[c+d\,x]}{d}-\frac{a\,\text{Csc}[c+d\,x]^3}{d}+\frac{3\,a\,\text{Csc}[c+d\,x]^5}{5\,d}-\frac{a\,\text{Csc}[c+d\,x]^7}{7\,d}$$

Result (type 3, 233 leaves) :

$$\frac{381\,a\,\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]}{1120\,d}-\frac{a\,\text{Cot}[c+d\,x]^8}{8\,d}-\frac{179\,a\,\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\text{Csc}\left[\frac{1}{2}(c+d\,x)\right]^2}{2240\,d}+\frac{a\,\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\text{Csc}\left[\frac{1}{2}(c+d\,x)\right]^4}{70\,d}-\frac{a\,\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\text{Csc}\left[\frac{1}{2}(c+d\,x)\right]^6}{896\,d}+\frac{381\,a\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{1120\,d}-\frac{179\,a\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{2240\,d}+\frac{a\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^4\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{70\,d}-\frac{a\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^6\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{896\,d}$$

Problem 671: Result more than twice size of optimal antiderivative.

$$\int \text{Cot}[c+d\,x]^7\,\text{Csc}[c+d\,x]^3\,(a+a\,\text{Sin}[c+d\,x])\,dx$$

Optimal (type 3, 81 leaves, 6 steps):

$$-\frac{a\,\text{Cot}[c+d\,x]^8}{8\,d}+\frac{a\,\text{Csc}[c+d\,x]^3}{3\,d}-\frac{3\,a\,\text{Csc}[c+d\,x]^5}{5\,d}+\frac{3\,a\,\text{Csc}[c+d\,x]^7}{7\,d}-\frac{a\,\text{Csc}[c+d\,x]^9}{9\,d}$$

Result (type 3, 293 leaves):

$$\frac{1823\,a\,\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]}{80640\,d}-\frac{a\,\text{Cot}[c+d\,x]^8}{8\,d}+\frac{1823\,a\,\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\text{Csc}\left[\frac{1}{2}(c+d\,x)\right]^2}{161280\,d}-\frac{463\,a\,\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\text{Csc}\left[\frac{1}{2}(c+d\,x)\right]^4}{53760\,d}+\frac{73\,a\,\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\text{Csc}\left[\frac{1}{2}(c+d\,x)\right]^6}{32256\,d}-\frac{a\,\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\text{Csc}\left[\frac{1}{2}(c+d\,x)\right]^8}{4608\,d}+\frac{1823\,a\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{80640\,d}+\frac{1823\,a\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{161280\,d}-\frac{463\,a\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^4\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{53760\,d}+\frac{73\,a\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^6\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{32256\,d}-\frac{a\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^8\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{4608\,d}$$

Problem 672: Result more than twice size of optimal antiderivative.

$$\int \text{Cot}[c+d\,x]^7\,\text{Csc}[c+d\,x]^4\,(a+a\,\text{Sin}[c+d\,x])\,dx$$

Optimal (type 3, 97 leaves, 7 steps):

$$-\frac{a\,\text{Cot}[c+d\,x]^8}{8\,d}-\frac{a\,\text{Cot}[c+d\,x]^{10}}{10\,d}+\frac{a\,\text{Csc}[c+d\,x]^3}{3\,d}-\frac{3\,a\,\text{Csc}[c+d\,x]^5}{5\,d}+\frac{3\,a\,\text{Csc}[c+d\,x]^7}{7\,d}-\frac{a\,\text{Csc}[c+d\,x]^9}{9\,d}$$

Result (type 3, 341 leaves):

$$\frac{1823\,a\,\mathrm{Cot}\left[\frac{1}{2}(c+d\,x)\right]}{80640\,d}+\frac{1823\,a\,\mathrm{Cot}\left[\frac{1}{2}(c+d\,x)\right]\mathrm{Csc}\left[\frac{1}{2}(c+d\,x)\right]^2}{161280\,d}-\frac{463\,a\,\mathrm{Cot}\left[\frac{1}{2}(c+d\,x)\right]\mathrm{Csc}\left[\frac{1}{2}(c+d\,x)\right]^4}{53760\,d}+$$
$$\frac{73\,a\,\mathrm{Cot}\left[\frac{1}{2}(c+d\,x)\right]\mathrm{Csc}\left[\frac{1}{2}(c+d\,x)\right]^6}{32256\,d}-\frac{a\,\mathrm{Cot}\left[\frac{1}{2}(c+d\,x)\right]\mathrm{Csc}\left[\frac{1}{2}(c+d\,x)\right]^8}{4608\,d}+\frac{a\,\mathrm{Csc}[c+d\,x]^4}{4\,d}-\frac{a\,\mathrm{Csc}[c+d\,x]^6}{2\,d}+$$
$$\frac{3\,a\,\mathrm{Csc}[c+d\,x]^8}{8\,d}-\frac{a\,\mathrm{Csc}[c+d\,x]^{10}}{10\,d}+\frac{1823\,a\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{80640\,d}+\frac{1823\,a\,\mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{161280\,d}-$$
$$\frac{463\,a\,\mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]^4\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{53760\,d}+\frac{73\,a\,\mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]^6\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{32256\,d}-\frac{a\,\mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]^8\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{4608\,d}$$

Problem 673: Result more than twice size of optimal antiderivative.

$$\int \mathrm{Cot}[c+d\,x]^7\,\mathrm{Csc}[c+d\,x]^5\,(a+a\,\mathrm{Sin}[c+d\,x])\,dx$$

Optimal (type 3, 97 leaves, 7 steps) :

$$-\frac{a\,\mathrm{Cot}[c+d\,x]^8}{8\,d}-\frac{a\,\mathrm{Cot}[c+d\,x]^{10}}{10\,d}+\frac{a\,\mathrm{Csc}[c+d\,x]^5}{5\,d}-\frac{3\,a\,\mathrm{Csc}[c+d\,x]^7}{7\,d}+\frac{a\,\mathrm{Csc}[c+d\,x]^9}{3\,d}-\frac{a\,\mathrm{Csc}[c+d\,x]^{11}}{11\,d}$$

Result (type 3, 401 leaves) :

$$\frac{2911\,a\,\mathrm{Cot}\left[\frac{1}{2}(c+d\,x)\right]}{591360\,d}+\frac{2911\,a\,\mathrm{Cot}\left[\frac{1}{2}(c+d\,x)\right]\mathrm{Csc}\left[\frac{1}{2}(c+d\,x)\right]^2}{1182720\,d}+$$
$$\frac{27\,a\,\mathrm{Cot}\left[\frac{1}{2}(c+d\,x)\right]\mathrm{Csc}\left[\frac{1}{2}(c+d\,x)\right]^4}{197120\,d}-\frac{485\,a\,\mathrm{Cot}\left[\frac{1}{2}(c+d\,x)\right]\mathrm{Csc}\left[\frac{1}{2}(c+d\,x)\right]^6}{473088\,d}+\frac{13\,a\,\mathrm{Cot}\left[\frac{1}{2}(c+d\,x)\right]\mathrm{Csc}\left[\frac{1}{2}(c+d\,x)\right]^8}{33792\,d}-$$
$$\frac{a\,\mathrm{Cot}\left[\frac{1}{2}(c+d\,x)\right]\mathrm{Csc}\left[\frac{1}{2}(c+d\,x)\right]^{10}}{22528\,d}+\frac{a\,\mathrm{Csc}[c+d\,x]^4}{4\,d}-\frac{a\,\mathrm{Csc}[c+d\,x]^6}{2\,d}+\frac{3\,a\,\mathrm{Csc}[c+d\,x]^8}{8\,d}-\frac{a\,\mathrm{Csc}[c+d\,x]^{10}}{10\,d}+$$
$$\frac{2911\,a\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{591360\,d}+\frac{2911\,a\,\mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{1182720\,d}+\frac{27\,a\,\mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]^4\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{197120\,d}-$$
$$\frac{485\,a\,\mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]^6\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{473088\,d}+\frac{13\,a\,\mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]^8\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{33792\,d}-\frac{a\,\mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]^{10}\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{22528\,d}$$

Problem 674: Result more than twice size of optimal antiderivative.

$$\int \mathrm{Cot}[c+d\,x]^7\,\mathrm{Csc}[c+d\,x]^6\,(a+a\,\mathrm{Sin}[c+d\,x])\,dx$$

Optimal (type 3, 113 leaves, 8 steps) :

$$-\frac{a\,\mathrm{Cot}[c+d\,x]^8}{8\,d}-\frac{a\,\mathrm{Cot}[c+d\,x]^{10}}{5\,d}-\frac{a\,\mathrm{Cot}[c+d\,x]^{12}}{12\,d}+\frac{a\,\mathrm{Csc}[c+d\,x]^5}{5\,d}-\frac{3\,a\,\mathrm{Csc}[c+d\,x]^7}{7\,d}+\frac{a\,\mathrm{Csc}[c+d\,x]^9}{3\,d}-\frac{a\,\mathrm{Csc}[c+d\,x]^{11}}{11\,d}$$

Result (type 3, 401 leaves) :

$$\frac{2911\,a\,\mathrm{Cot}\left[\frac{1}{2}(c+d\,x)\right]}{591360\,d}+\frac{2911\,a\,\mathrm{Cot}\left[\frac{1}{2}(c+d\,x)\right]\mathrm{Csc}\left[\frac{1}{2}(c+d\,x)\right]^2}{1182720\,d}+\frac{27\,a\,\mathrm{Cot}\left[\frac{1}{2}(c+d\,x)\right]\mathrm{Csc}\left[\frac{1}{2}(c+d\,x)\right]^4}{197120\,d}-\frac{485\,a\,\mathrm{Cot}\left[\frac{1}{2}(c+d\,x)\right]\mathrm{Csc}\left[\frac{1}{2}(c+d\,x)\right]^6}{473088\,d}+\frac{13\,a\,\mathrm{Cot}\left[\frac{1}{2}(c+d\,x)\right]\mathrm{Csc}\left[\frac{1}{2}(c+d\,x)\right]^8}{33792\,d}-\frac{a\,\mathrm{Cot}\left[\frac{1}{2}(c+d\,x)\right]\mathrm{Csc}\left[\frac{1}{2}(c+d\,x)\right]^{10}}{22528\,d}+\frac{a\,\mathrm{Csc}[c+d\,x]^6}{6\,d}-\frac{3\,a\,\mathrm{Csc}[c+d\,x]^8}{8\,d}+\frac{3\,a\,\mathrm{Csc}[c+d\,x]^{10}}{10\,d}-\frac{a\,\mathrm{Csc}[c+d\,x]^{12}}{12\,d}+\frac{2911\,a\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{591360\,d}+\frac{2911\,a\,\mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{1182720\,d}+\frac{27\,a\,\mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]^4\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{197120\,d}-\frac{485\,a\,\mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]^6\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{473088\,d}+\frac{13\,a\,\mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]^8\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{33792\,d}-\frac{a\,\mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]^{10}\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{22528\,d}$$

- **Problem 675: Result more than twice size of optimal antiderivative.**

$$\int \mathrm{Cot}[c+d\,x]^7\,\mathrm{Csc}[c+d\,x]^7\,(a+a\,\mathrm{Sin}[c+d\,x])\,dx$$

Optimal (type 3, 113 leaves, 8 steps):

$$-\frac{a\,\mathrm{Cot}[c+d\,x]^8}{8\,d}-\frac{a\,\mathrm{Cot}[c+d\,x]^{10}}{5\,d}-\frac{a\,\mathrm{Cot}[c+d\,x]^{12}}{12\,d}+\frac{a\,\mathrm{Csc}[c+d\,x]^7}{7\,d}-\frac{a\,\mathrm{Csc}[c+d\,x]^9}{3\,d}+\frac{3\,a\,\mathrm{Csc}[c+d\,x]^{11}}{11\,d}-\frac{a\,\mathrm{Csc}[c+d\,x]^{13}}{13\,d}$$

Result (type 3, 461 leaves):

$$\frac{10027\,a\,\mathrm{Cot}\left[\frac{1}{2}(c+d\,x)\right]}{6150144\,d}+\frac{10027\,a\,\mathrm{Cot}\left[\frac{1}{2}(c+d\,x)\right]\mathrm{Csc}\left[\frac{1}{2}(c+d\,x)\right]^2}{12300288\,d}+\frac{755\,a\,\mathrm{Cot}\left[\frac{1}{2}(c+d\,x)\right]\mathrm{Csc}\left[\frac{1}{2}(c+d\,x)\right]^4}{4100096\,d}-\frac{101\,a\,\mathrm{Cot}\left[\frac{1}{2}(c+d\,x)\right]\mathrm{Csc}\left[\frac{1}{2}(c+d\,x)\right]^6}{768768\,d}-\frac{101\,a\,\mathrm{Cot}\left[\frac{1}{2}(c+d\,x)\right]\mathrm{Csc}\left[\frac{1}{2}(c+d\,x)\right]^8}{878592\,d}+\frac{79\,a\,\mathrm{Cot}\left[\frac{1}{2}(c+d\,x)\right]\mathrm{Csc}\left[\frac{1}{2}(c+d\,x)\right]^{10}}{1171456\,d}-\frac{a\,\mathrm{Cot}\left[\frac{1}{2}(c+d\,x)\right]\mathrm{Csc}\left[\frac{1}{2}(c+d\,x)\right]^{12}}{106496\,d}+\frac{a\,\mathrm{Csc}[c+d\,x]^6}{6\,d}-\frac{3\,a\,\mathrm{Csc}[c+d\,x]^8}{8\,d}+\frac{3\,a\,\mathrm{Csc}[c+d\,x]^{10}}{10\,d}-\frac{a\,\mathrm{Csc}[c+d\,x]^{12}}{12\,d}+\frac{10027\,a\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{6150144\,d}+\frac{10027\,a\,\mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{12300288\,d}+\frac{755\,a\,\mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]^4\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{4100096\,d}-\frac{101\,a\,\mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]^6\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{768768\,d}-\frac{101\,a\,\mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]^8\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{878592\,d}+\frac{79\,a\,\mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]^{10}\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{1171456\,d}-\frac{a\,\mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]^{12}\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{106496\,d}$$

- **Problem 676: Result more than twice size of optimal antiderivative.**

$$\int \mathrm{Cot}[c+d\,x]^7\,\mathrm{Csc}[c+d\,x]^8\,(a+a\,\mathrm{Sin}[c+d\,x])\,dx$$

Optimal (type 3, 129 leaves, 4 steps):

$$\frac{a\,\mathrm{Csc}[c+d\,x]^7}{7\,d}+\frac{a\,\mathrm{Csc}[c+d\,x]^8}{8\,d}-\frac{a\,\mathrm{Csc}[c+d\,x]^9}{3\,d}-\frac{3\,a\,\mathrm{Csc}[c+d\,x]^{10}}{10\,d}+\frac{3\,a\,\mathrm{Csc}[c+d\,x]^{11}}{11\,d}+\frac{a\,\mathrm{Csc}[c+d\,x]^{12}}{4\,d}-\frac{a\,\mathrm{Csc}[c+d\,x]^{13}}{13\,d}-\frac{a\,\mathrm{Csc}[c+d\,x]^{14}}{14\,d}$$

Result (type 3, 461 leaves) :

$$\frac{10027\,a\,\mathrm{Cot}\left[\frac{1}{2}(c+d\,x)\right]}{6150144\,d}+\frac{10027\,a\,\mathrm{Cot}\left[\frac{1}{2}(c+d\,x)\right]\mathrm{Csc}\left[\frac{1}{2}(c+d\,x)\right]^2}{12300288\,d}+\frac{755\,a\,\mathrm{Cot}\left[\frac{1}{2}(c+d\,x)\right]\mathrm{Csc}\left[\frac{1}{2}(c+d\,x)\right]^4}{4100096\,d}-$$
$$\frac{101\,a\,\mathrm{Cot}\left[\frac{1}{2}(c+d\,x)\right]\mathrm{Csc}\left[\frac{1}{2}(c+d\,x)\right]^6}{768768\,d}-\frac{101\,a\,\mathrm{Cot}\left[\frac{1}{2}(c+d\,x)\right]\mathrm{Csc}\left[\frac{1}{2}(c+d\,x)\right]^8}{878592\,d}+\frac{79\,a\,\mathrm{Cot}\left[\frac{1}{2}(c+d\,x)\right]\mathrm{Csc}\left[\frac{1}{2}(c+d\,x)\right]^{10}}{1171456\,d}-$$
$$\frac{a\,\mathrm{Cot}\left[\frac{1}{2}(c+d\,x)\right]\mathrm{Csc}\left[\frac{1}{2}(c+d\,x)\right]^{12}}{106496\,d}+\frac{a\,\mathrm{Csc}[c+d\,x]^8}{8\,d}-\frac{3\,a\,\mathrm{Csc}[c+d\,x]^{10}}{10\,d}+\frac{a\,\mathrm{Csc}[c+d\,x]^{12}}{4\,d}-\frac{a\,\mathrm{Csc}[c+d\,x]^{14}}{14\,d}+\frac{10027\,a\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{6150144\,d}+$$
$$\frac{10027\,a\,\mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{12300288\,d}+\frac{755\,a\,\mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]^4\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{4100096\,d}-\frac{101\,a\,\mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]^6\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{768768\,d}-$$
$$\frac{101\,a\,\mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]^8\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{878592\,d}+\frac{79\,a\,\mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]^{10}\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{1171456\,d}-\frac{a\,\mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]^{12}\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{106496\,d}$$

- **Problem 697: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int \mathrm{Cos}[c+d\,x]^7\,\mathrm{Sin}[c+d\,x]^n\,(a+a\,\mathrm{Sin}[c+d\,x])^3\,dx$$

Optimal (type 3, 184 leaves, 3 steps) :

$$\frac{a^3\,\mathrm{Sin}[c+d\,x]^{1+n}}{d\,(1+n)}+\frac{3\,a^3\,\mathrm{Sin}[c+d\,x]^{2+n}}{d\,(2+n)}-\frac{8\,a^3\,\mathrm{Sin}[c+d\,x]^{4+n}}{d\,(4+n)}-\frac{6\,a^3\,\mathrm{Sin}[c+d\,x]^{5+n}}{d\,(5+n)}+$$
$$\frac{6\,a^3\,\mathrm{Sin}[c+d\,x]^{6+n}}{d\,(6+n)}+\frac{8\,a^3\,\mathrm{Sin}[c+d\,x]^{7+n}}{d\,(7+n)}-\frac{3\,a^3\,\mathrm{Sin}[c+d\,x]^{9+n}}{d\,(9+n)}-\frac{a^3\,\mathrm{Sin}[c+d\,x]^{10+n}}{d\,(10+n)}$$

Result (type 3, 1019 leaves) :

$$\frac{1}{d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^6}$$

$$\text{Sin}[c+d x]^n\,(a+a\,\text{Sin}[c+d x])^3\left(\frac{3\left(11792+2276 n+260 n^2+11 n^3\right)}{256\,(2+n)\,(4+n)\,(6+n)\,(10+n)}+\frac{\left(28665+4541 n+471 n^2+19 n^3\right)\left(-\frac{1}{256}\,i\,\text{Cos}[c+d x]+\frac{1}{256}\,\text{Sin}[c+d x]\right)}{(1+n)\,(5+n)\,(7+n)\,(9+n)}+\right.$$

$$\frac{\left(28665+4541 n+471 n^2+19 n^3\right)\left(\frac{1}{256}\,i\,\text{Cos}[c+d x]+\frac{1}{256}\,\text{Sin}[c+d x]\right)}{(1+n)\,(5+n)\,(7+n)\,(9+n)}+$$

$$\frac{\left(-21840+2252 n+492 n^2+25 n^3\right)\left(\frac{1}{512}\,\text{Cos}[2\,(c+d x)]-\frac{1}{512}\,i\,\text{Sin}[2\,(c+d x)]\right)}{(2+n)\,(4+n)\,(6+n)\,(10+n)}+$$

$$\frac{\left(-21840+2252 n+492 n^2+25 n^3\right)\left(\frac{1}{512}\,\text{Cos}[2\,(c+d x)]+\frac{1}{512}\,i\,\text{Sin}[2\,(c+d x)]\right)}{(2+n)\,(4+n)\,(6+n)\,(10+n)}+$$

$$\frac{\left(735+108 n+5 n^2\right)\left(-\frac{3}{128}\,i\,\text{Cos}[3\,(c+d x)]+\frac{3}{128}\,\text{Sin}[3\,(c+d x)]\right)}{(5+n)\,(7+n)\,(9+n)}+\frac{\left(735+108 n+5 n^2\right)\left(\frac{3}{128}\,i\,\text{Cos}[3\,(c+d x)]+\frac{3}{128}\,\text{Sin}[3\,(c+d x)]\right)}{(5+n)\,(7+n)\,(9+n)}+$$

$$\frac{\left(-1320-166 n-7 n^2\right)\left(\frac{1}{128}\,\text{Cos}[4\,(c+d x)]-\frac{1}{128}\,i\,\text{Sin}[4\,(c+d x)]\right)}{(4+n)\,(6+n)\,(10+n)}+\frac{\left(-1320-166 n-7 n^2\right)\left(\frac{1}{128}\,\text{Cos}[4\,(c+d x)]+\frac{1}{128}\,i\,\text{Sin}[4\,(c+d x)]\right)}{(4+n)\,(6+n)\,(10+n)}+$$

$$\frac{\left(63+76 n+5 n^2\right)\left(-\frac{1}{128}\,i\,\text{Cos}[5\,(c+d x)]+\frac{1}{128}\,\text{Sin}[5\,(c+d x)]\right)}{(5+n)\,(7+n)\,(9+n)}+\frac{\left(63+76 n+5 n^2\right)\left(\frac{1}{128}\,i\,\text{Cos}[5\,(c+d x)]+\frac{1}{128}\,\text{Sin}[5\,(c+d x)]\right)}{(5+n)\,(7+n)\,(9+n)}+$$

$$\frac{(230+17 n)\left(-\frac{3\,\text{Cos}[6\,(c+d x)]}{1024}-\frac{3\,i\,\text{Sin}[6\,(c+d x)]}{1024}\right)}{(6+n)\,(10+n)}+\frac{(230+17 n)\left(-\frac{3\,\text{Cos}[6\,(c+d x)]}{1024}+\frac{3\,i\,\text{Sin}[6\,(c+d x)]}{1024}\right)}{(6+n)\,(10+n)}+$$

$$\frac{(99+5 n)\left(-\frac{1}{512}\,i\,\text{Cos}[7\,(c+d x)]-\frac{1}{512}\,\text{Sin}[7\,(c+d x)]\right)}{(7+n)\,(9+n)}+\frac{(99+5 n)\left(\frac{1}{512}\,i\,\text{Cos}[7\,(c+d x)]-\frac{1}{512}\,\text{Sin}[7\,(c+d x)]\right)}{(7+n)\,(9+n)}+$$

$$\frac{-\frac{5}{512}\,\text{Cos}[8\,(c+d x)]-\frac{5}{512}\,i\,\text{Sin}[8\,(c+d x)]}{10+n}+\frac{-\frac{5}{512}\,\text{Cos}[8\,(c+d x)]+\frac{5}{512}\,i\,\text{Sin}[8\,(c+d x)]}{10+n}+\frac{-\frac{3}{512}\,i\,\text{Cos}[9\,(c+d x)]-\frac{3}{512}\,\text{Sin}[9\,(c+d x)]}{9+n}+$$

$$\left.\frac{\frac{3}{512}\,i\,\text{Cos}[9\,(c+d x)]-\frac{3}{512}\,\text{Sin}[9\,(c+d x)]}{9+n}+\frac{\frac{\text{Cos}[10\,(c+d x)]}{1024}-\frac{i\,\text{Sin}[10\,(c+d x)]}{1024}}{10+n}+\frac{\frac{\text{Cos}[10\,(c+d x)]}{1024}+\frac{i\,\text{Sin}[10\,(c+d x)]}{1024}}{10+n}\right)$$

- **Problem 698: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int \text{Cos}[c+d x]^7\,\text{Sin}[c+d x]^n\,(a+a\,\text{Sin}[c+d x])^2\,dx$$

Optimal (type 3, 184 leaves, 3 steps):

$$\frac{a^2 \text{Sin}[c+d x]^{1+n}}{d (1+n)}+\frac{2 a^2 \text{Sin}[c+d x]^{2+n}}{d (2+n)}-\frac{2 a^2 \text{Sin}[c+d x]^{3+n}}{d (3+n)}-\frac{6 a^2 \text{Sin}[c+d x]^{4+n}}{d (4+n)}+\frac{6 a^2 \text{Sin}[c+d x]^{6+n}}{d (6+n)}+\frac{2 a^2 \text{Sin}[c+d x]^{7+n}}{d (7+n)}-\frac{2 a^2 \text{Sin}[c+d x]^{8+n}}{d (8+n)}-\frac{a^2 \text{Sin}[c+d x]^{9+n}}{d (9+n)}$$

Result (type 3, 925 leaves) :

$$\frac{1}{d \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^4} \text{Sin}[c+d x]^n (a+a \text{Sin}[c+d x])^2 \left(\frac{4464+892 n+108 n^2+5 n^3}{64 (2+n) (4+n) (6+n) (8+n)}+\frac{\left(14553+2547 n+295 n^2+13 n^3\right) \left(-\frac{1}{256} i \text{Cos}[c+d x]+\frac{1}{256} \text{Sin}[c+d x]\right)}{(1+n) (3+n) (7+n) (9+n)}+\right.$$

$$\frac{\left(14553+2547 n+295 n^2+13 n^3\right) \left(\frac{1}{256} i \text{Cos}[c+d x]+\frac{1}{256} \text{Sin}[c+d x]\right)}{(1+n) (3+n) (7+n) (9+n)}+\frac{\left(-672+80 n+18 n^2+n^3\right) \left(\frac{1}{32} \text{Cos}[2 (c+d x)]-\frac{1}{32} i \text{Sin}[2 (c+d x)]\right)}{(2+n) (4+n) (6+n) (8+n)}+$$

$$\frac{\left(-672+80 n+18 n^2+n^3\right) \left(\frac{1}{32} \text{Cos}[2 (c+d x)]+\frac{1}{32} i \text{Sin}[2 (c+d x)]\right)}{(2+n) (4+n) (6+n) (8+n)}+\frac{\left(1323+218 n+11 n^2\right) \left(-\frac{1}{128} i \text{Cos}[3 (c+d x)]+\frac{1}{128} \text{Sin}[3 (c+d x)]\right)}{(3+n) (7+n) (9+n)}+$$

$$\frac{\left(1323+218 n+11 n^2\right) \left(\frac{1}{128} i \text{Cos}[3 (c+d x)]+\frac{1}{128} \text{Sin}[3 (c+d x)]\right)}{(3+n) (7+n) (9+n)}+\frac{\left(-168-22 n-n^2\right) \left(\frac{1}{32} \text{Cos}[4 (c+d x)]-\frac{1}{32} i \text{Sin}[4 (c+d x)]\right)}{(4+n) (6+n) (8+n)}+$$

$$\frac{\left(-168-22 n-n^2\right) \left(\frac{1}{32} \text{Cos}[4 (c+d x)]+\frac{1}{32} i \text{Sin}[4 (c+d x)]\right)}{(4+n) (6+n) (8+n)}+\frac{(63+5 n) \left(-\frac{1}{128} i \text{Cos}[5 (c+d x)]+\frac{1}{128} \text{Sin}[5 (c+d x)]\right)}{(7+n) (9+n)}+$$

$$\frac{(63+5 n) \left(\frac{1}{128} i \text{Cos}[5 (c+d x)]+\frac{1}{128} \text{Sin}[5 (c+d x)]\right)}{(7+n) (9+n)}+\frac{(-12-n) \left(\frac{1}{32} \text{Cos}[6 (c+d x)]-\frac{1}{32} i \text{Sin}[6 (c+d x)]\right)}{(6+n) (8+n)}+$$

$$\frac{(-12-n) \left(\frac{1}{32} \text{Cos}[6 (c+d x)]+\frac{1}{32} i \text{Sin}[6 (c+d x)]\right)}{(6+n) (8+n)}+\frac{(-9+n) \left(-\frac{1}{512} i \text{Cos}[7 (c+d x)]+\frac{1}{512} \text{Sin}[7 (c+d x)]\right)}{(7+n) (9+n)}+$$

$$\frac{(-9+n) \left(\frac{1}{512} i \text{Cos}[7 (c+d x)]+\frac{1}{512} \text{Sin}[7 (c+d x)]\right)}{(7+n) (9+n)}+\frac{-\frac{1}{128} \text{Cos}[8 (c+d x)]-\frac{1}{128} i \text{Sin}[8 (c+d x)]}{8+n}+$$

$$\left.\frac{-\frac{1}{128} \text{Cos}[8 (c+d x)]+\frac{1}{128} i \text{Sin}[8 (c+d x)]}{8+n}+\frac{-\frac{1}{512} i \text{Cos}[9 (c+d x)]-\frac{1}{512} \text{Sin}[9 (c+d x)]}{9+n}+\frac{\frac{1}{512} i \text{Cos}[9 (c+d x)]-\frac{1}{512} \text{Sin}[9 (c+d x)]}{9+n}\right)$$

- **Problem 699: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int \text{Cos}[c+d x]^7 \text{Sin}[c+d x]^n (a+a \text{Sin}[c+d x]) \, dx$$

Optimal (type 3, 167 leaves, 3 steps) :

$$\frac{a\,\text{Sin}[c+d\,x]^{1+n}}{d\,(1+n)}+\frac{a\,\text{Sin}[c+d\,x]^{2+n}}{d\,(2+n)}-\frac{3\,a\,\text{Sin}[c+d\,x]^{3+n}}{d\,(3+n)}-\frac{3\,a\,\text{Sin}[c+d\,x]^{4+n}}{d\,(4+n)}+\frac{3\,a\,\text{Sin}[c+d\,x]^{5+n}}{d\,(5+n)}+\frac{3\,a\,\text{Sin}[c+d\,x]^{6+n}}{d\,(6+n)}-\frac{a\,\text{Sin}[c+d\,x]^{7+n}}{d\,(7+n)}-\frac{a\,\text{Sin}[c+d\,x]^{8+n}}{d\,(8+n)}$$

Result (type 3, 966 leaves):

$$\frac{1}{\left(\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right)^2}\,a\,\text{Sin}[c+d\,x]^n\,(1+\text{Sin}[c+d\,x])$$
$$\left(\frac{4464+892\,n+108\,n^2+5\,n^3}{128\,d\,(2+n)\,(4+n)\,(6+n)\,(8+n)}+\frac{\left(3675+691\,n+93\,n^2+5\,n^3\right)\left(-\frac{i\,\text{Cos}[c+d\,x]}{128\,d}+\frac{\text{Sin}[c+d\,x]}{128\,d}\right)}{(1+n)\,(3+n)\,(5+n)\,(7+n)}+\frac{\left(3675+691\,n+93\,n^2+5\,n^3\right)\left(\frac{i\,\text{Cos}[c+d\,x]}{128\,d}+\frac{\text{Sin}[c+d\,x]}{128\,d}\right)}{(1+n)\,(3+n)\,(5+n)\,(7+n)}+\right.$$
$$\frac{\left(-672+80\,n+18\,n^2+n^3\right)\left(\frac{\text{Cos}[2\,c+2\,d\,x]}{64\,d}-\frac{i\,\text{Sin}[2\,c+2\,d\,x]}{64\,d}\right)}{(2+n)\,(4+n)\,(6+n)\,(8+n)}+\frac{\left(-672+80\,n+18\,n^2+n^3\right)\left(\frac{\text{Cos}[2\,c+2\,d\,x]}{64\,d}+\frac{i\,\text{Sin}[2\,c+2\,d\,x]}{64\,d}\right)}{(2+n)\,(4+n)\,(6+n)\,(8+n)}+$$
$$\frac{\left(245+48\,n+3\,n^2\right)\left(-\frac{3\,i\,\text{Cos}[3\,c+3\,d\,x]}{128\,d}+\frac{3\,\text{Sin}[3\,c+3\,d\,x]}{128\,d}\right)}{(3+n)\,(5+n)\,(7+n)}+\frac{\left(245+48\,n+3\,n^2\right)\left(\frac{3\,i\,\text{Cos}[3\,c+3\,d\,x]}{128\,d}+\frac{3\,\text{Sin}[3\,c+3\,d\,x]}{128\,d}\right)}{(3+n)\,(5+n)\,(7+n)}+$$
$$\frac{\left(168+22\,n+n^2\right)\left(-\frac{\text{Cos}[4\,c+4\,d\,x]}{64\,d}-\frac{i\,\text{Sin}[4\,c+4\,d\,x]}{64\,d}\right)}{(4+n)\,(6+n)\,(8+n)}+\frac{\left(-168-22\,n-n^2\right)\left(\frac{\text{Cos}[4\,c+4\,d\,x]}{64\,d}-\frac{i\,\text{Sin}[4\,c+4\,d\,x]}{64\,d}\right)}{(4+n)\,(6+n)\,(8+n)}+\frac{(49+5\,n)\left(-\frac{i\,\text{Cos}[5\,c+5\,d\,x]}{128\,d}+\frac{\text{Sin}[5\,c+5\,d\,x]}{128\,d}\right)}{(5+n)\,(7+n)}+$$
$$\frac{(49+5\,n)\left(\frac{i\,\text{Cos}[5\,c+5\,d\,x]}{128\,d}+\frac{\text{Sin}[5\,c+5\,d\,x]}{128\,d}\right)}{(5+n)\,(7+n)}+\frac{(12+n)\left(-\frac{\text{Cos}[6\,c+6\,d\,x]}{64\,d}-\frac{i\,\text{Sin}[6\,c+6\,d\,x]}{64\,d}\right)}{(6+n)\,(8+n)}+\frac{(-12-n)\left(\frac{\text{Cos}[6\,c+6\,d\,x]}{64\,d}-\frac{i\,\text{Sin}[6\,c+6\,d\,x]}{64\,d}\right)}{(6+n)\,(8+n)}+$$
$$\left.\frac{-\frac{i\,\text{Cos}[7\,c+7\,d\,x]}{128\,d}+\frac{\text{Sin}[7\,c+7\,d\,x]}{128\,d}}{7+n}+\frac{\frac{i\,\text{Cos}[7\,c+7\,d\,x]}{128\,d}+\frac{\text{Sin}[7\,c+7\,d\,x]}{128\,d}}{7+n}+\frac{-\frac{\text{Cos}[8\,c+8\,d\,x]}{256\,d}-\frac{i\,\text{Sin}[8\,c+8\,d\,x]}{256\,d}}{8+n}+\frac{-\frac{\text{Cos}[8\,c+8\,d\,x]}{256\,d}+\frac{i\,\text{Sin}[8\,c+8\,d\,x]}{256\,d}}{8+n}\right)$$

■ Problem 700: Result more than twice size of optimal antiderivative.

$$\int\frac{\text{Cos}[c+d\,x]^7\,\text{Sin}[c+d\,x]^n}{a+a\,\text{Sin}[c+d\,x]}\,dx$$

Optimal (type 3, 137 leaves, 3 steps):

$$\frac{\text{Sin}[c+d\,x]^{1+n}}{a\,d\,(1+n)}-\frac{\text{Sin}[c+d\,x]^{2+n}}{a\,d\,(2+n)}-\frac{2\,\text{Sin}[c+d\,x]^{3+n}}{a\,d\,(3+n)}+\frac{2\,\text{Sin}[c+d\,x]^{4+n}}{a\,d\,(4+n)}+\frac{\text{Sin}[c+d\,x]^{5+n}}{a\,d\,(5+n)}-\frac{\text{Sin}[c+d\,x]^{6+n}}{a\,d\,(6+n)}$$

Result (type 3, 380 leaves):

$$-\frac{1}{16\,a\,d\,(1+n)\,(2+n)\,(3+n)\,(4+n)\,(5+n)\,(6+n)\,(1+\mathrm{Sin}[c+d\,x])}\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2\mathrm{Sin}[c+d\,x]^{1+n}\left(-8544-10520\,n-4888\,n^2-1114\,n^3-128\,n^4-6\,n^5-8\left(336+692\,n+484\,n^2+147\,n^3+20\,n^4+n^5\right)\mathrm{Cos}[2(c+d\,x)]-2\left(144+324\,n+260\,n^2+95\,n^3+16\,n^4+n^5\right)\mathrm{Cos}[4(c+d\,x)]+2640\,\mathrm{Sin}[c+d\,x]+4468\,n\,\mathrm{Sin}[c+d\,x]+2258\,n^2\,\mathrm{Sin}[c+d\,x]+474\,n^3\,\mathrm{Sin}[c+d\,x]+46\,n^4\,\mathrm{Sin}[c+d\,x]+2\,n^5\,\mathrm{Sin}[c+d\,x]+840\,\mathrm{Sin}[3(c+d\,x)]+1798\,n\,\mathrm{Sin}[3(c+d\,x)]+1331\,n^2\,\mathrm{Sin}[3(c+d\,x)]+431\,n^3\,\mathrm{Sin}[3(c+d\,x)]+61\,n^4\,\mathrm{Sin}[3(c+d\,x)]+3\,n^5\,\mathrm{Sin}[3(c+d\,x)]+120\,\mathrm{Sin}[5(c+d\,x)]+274\,n\,\mathrm{Sin}[5(c+d\,x)]+225\,n^2\,\mathrm{Sin}[5(c+d\,x)]+85\,n^3\,\mathrm{Sin}[5(c+d\,x)]+15\,n^4\,\mathrm{Sin}[5(c+d\,x)]+n^5\,\mathrm{Sin}[5(c+d\,x)]\right)$$

- **Problem 701: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int\frac{\mathrm{Cos}[c+d\,x]^7\,\mathrm{Sin}[c+d\,x]^n}{(a+a\,\mathrm{Sin}[c+d\,x])^2}\,dx$$

Optimal (type 3, 92 leaves, 3 steps):

$$\frac{\mathrm{Sin}[c+d\,x]^{1+n}}{a^2\,d\,(1+n)}-\frac{2\,\mathrm{Sin}[c+d\,x]^{2+n}}{a^2\,d\,(2+n)}+\frac{2\,\mathrm{Sin}[c+d\,x]^{4+n}}{a^2\,d\,(4+n)}-\frac{\mathrm{Sin}[c+d\,x]^{5+n}}{a^2\,d\,(5+n)}$$

Result (type 3, 405 leaves):

$$\frac{1}{d\,(a+a\,\mathrm{Sin}[c+d\,x])^2}\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4\mathrm{Sin}[c+d\,x]^n\left(-\frac{10+n}{4\,(2+n)\,(4+n)}+\frac{(35+3\,n)\left(-\frac{1}{16}\,i\,\mathrm{Cos}[c+d\,x]+\frac{1}{16}\,\mathrm{Sin}[c+d\,x]\right)}{(1+n)\,(5+n)}+\frac{(35+3\,n)\left(\frac{1}{16}\,i\,\mathrm{Cos}[c+d\,x]+\frac{1}{16}\,\mathrm{Sin}[c+d\,x]\right)}{(1+n)\,(5+n)}+\frac{\mathrm{Cos}[2(c+d\,x)]-i\,\mathrm{Sin}[2(c+d\,x)]}{(2+n)\,(4+n)}+\frac{\mathrm{Cos}[2(c+d\,x)]+i\,\mathrm{Sin}[2(c+d\,x)]}{(2+n)\,(4+n)}+\frac{-\frac{5}{32}\,i\,\mathrm{Cos}[3(c+d\,x)]+\frac{5}{32}\,\mathrm{Sin}[3(c+d\,x)]}{5+n}+\frac{\frac{5}{32}\,i\,\mathrm{Cos}[3(c+d\,x)]+\frac{5}{32}\,\mathrm{Sin}[3(c+d\,x)]}{5+n}+\frac{\frac{1}{8}\,\mathrm{Cos}[4(c+d\,x)]-\frac{1}{8}\,i\,\mathrm{Sin}[4(c+d\,x)]}{4+n}+\frac{\frac{1}{8}\,\mathrm{Cos}[4(c+d\,x)]+\frac{1}{8}\,i\,\mathrm{Sin}[4(c+d\,x)]}{4+n}+\frac{-\frac{1}{32}\,i\,\mathrm{Cos}[5(c+d\,x)]-\frac{1}{32}\,\mathrm{Sin}[5(c+d\,x)]}{5+n}+\frac{\frac{1}{32}\,i\,\mathrm{Cos}[5(c+d\,x)]-\frac{1}{32}\,\mathrm{Sin}[5(c+d\,x)]}{5+n}\right)$$

- **Problem 702: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int\frac{\mathrm{Cos}[c+d\,x]^7\,\mathrm{Sin}[c+d\,x]^n}{(a+a\,\mathrm{Sin}[c+d\,x])^3}\,dx$$

Optimal (type 3, 92 leaves, 3 steps):

$$\frac{\mathrm{Sin}[c+d\,x]^{1+n}}{a^3\,d\,(1+n)}-\frac{3\,\mathrm{Sin}[c+d\,x]^{2+n}}{a^3\,d\,(2+n)}+\frac{3\,\mathrm{Sin}[c+d\,x]^{3+n}}{a^3\,d\,(3+n)}-\frac{\mathrm{Sin}[c+d\,x]^{4+n}}{a^3\,d\,(4+n)}$$

Result (type 3, 363 leaves):

$$\frac{1}{d\,(a+a\,\mathrm{Sin}[c+d\,x])^3}\left(\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^6\,\mathrm{Sin}[c+d\,x]^n$$
$$\left(-\frac{3\,(18+5\,n)}{8\,(2+n)\,(4+n)}+\frac{(21+13\,n)\,\left(-\frac{1}{8}\,\mathrm{i}\,\mathrm{Cos}[c+d\,x]+\frac{1}{8}\,\mathrm{Sin}[c+d\,x]\right)}{(1+n)\,(3+n)}+\frac{(21+13\,n)\,\left(\frac{1}{8}\,\mathrm{i}\,\mathrm{Cos}[c+d\,x]+\frac{1}{8}\,\mathrm{Sin}[c+d\,x]\right)}{(1+n)\,(3+n)}+\right.$$
$$\frac{(7+2\,n)\,\left(\frac{1}{2}\,\mathrm{Cos}[2\,(c+d\,x)]-\frac{1}{2}\,\mathrm{i}\,\mathrm{Sin}[2\,(c+d\,x)]\right)}{(2+n)\,(4+n)}+\frac{(7+2\,n)\,\left(\frac{1}{2}\,\mathrm{Cos}[2\,(c+d\,x)]+\frac{1}{2}\,\mathrm{i}\,\mathrm{Sin}[2\,(c+d\,x)]\right)}{(2+n)\,(4+n)}+$$
$$\frac{-\frac{3}{8}\,\mathrm{i}\,\mathrm{Cos}[3\,(c+d\,x)]-\frac{3}{8}\,\mathrm{Sin}[3\,(c+d\,x)]}{3+n}+\frac{\frac{3}{8}\,\mathrm{i}\,\mathrm{Cos}[3\,(c+d\,x)]-\frac{3}{8}\,\mathrm{Sin}[3\,(c+d\,x)]}{3+n}+$$
$$\left.\frac{-\frac{1}{16}\,\mathrm{Cos}[4\,(c+d\,x)]-\frac{1}{16}\,\mathrm{i}\,\mathrm{Sin}[4\,(c+d\,x)]}{4+n}+\frac{-\frac{1}{16}\,\mathrm{Cos}[4\,(c+d\,x)]+\frac{1}{16}\,\mathrm{i}\,\mathrm{Sin}[4\,(c+d\,x)]}{4+n}\right)$$

Problem 703: Unable to integrate problem.

$$\int\frac{\mathrm{Cos}[c+d\,x]^7\,\mathrm{Sin}[c+d\,x]^n}{(a+a\,\mathrm{Sin}[c+d\,x])^4}\,dx$$

Optimal (type 5, 109 leaves, 8 steps):

$$-\frac{7\,\mathrm{Sin}[c+d\,x]^{1+n}}{a^4\,d\,(1+n)}+\frac{8\,\mathrm{Hypergeometric2F1}[1,\,1+n,\,2+n,\,-\mathrm{Sin}[c+d\,x]]\,\mathrm{Sin}[c+d\,x]^{1+n}}{a^4\,d\,(1+n)}+\frac{4\,\mathrm{Sin}[c+d\,x]^{2+n}}{a^4\,d\,(2+n)}-\frac{\mathrm{Sin}[c+d\,x]^{3+n}}{a^4\,d\,(3+n)}$$

Result (type 8, 31 leaves):

$$\int\frac{\mathrm{Cos}[c+d\,x]^7\,\mathrm{Sin}[c+d\,x]^n}{(a+a\,\mathrm{Sin}[c+d\,x])^4}\,dx$$

Problem 704: Unable to integrate problem.

$$\int\frac{\mathrm{Cos}[c+d\,x]^7\,\mathrm{Sin}[c+d\,x]^n}{(a+a\,\mathrm{Sin}[c+d\,x])^5}\,dx$$

Optimal (type 5, 160 leaves, 4 steps):

$$-\frac{4\,(3+2\,n)\,\mathrm{Hypergeometric2F1}[1,\,1+n,\,2+n,\,-\mathrm{Sin}[c+d\,x]]\,\mathrm{Sin}[c+d\,x]^{1+n}}{a^5\,d\,(1+n)}-$$
$$\frac{\mathrm{Sin}[c+d\,x]^{1+n}\,(a-a\,\mathrm{Sin}[c+d\,x])^2}{d\,(2+n)\,\left(a^7+a^7\,\mathrm{Sin}[c+d\,x]\right)}+\frac{\mathrm{Sin}[c+d\,x]^{1+n}\,\left(a\,\left(27+30\,n+8\,n^2\right)+a\,(7+2\,n)\,\mathrm{Sin}[c+d\,x]\right)}{d\,\left(2+3\,n+n^2\right)\,\left(a^6+a^6\,\mathrm{Sin}[c+d\,x]\right)}$$

Result (type 8, 31 leaves):

$$\int\frac{\mathrm{Cos}[c+d\,x]^7\,\mathrm{Sin}[c+d\,x]^n}{(a+a\,\mathrm{Sin}[c+d\,x])^5}\,dx$$

- **Problem 705: Result more than twice size of optimal antiderivative.**

$$\int \frac{\text{Cos}[c+d x]^8 \,\text{Sin}[c+d x]^5}{a+a \,\text{Sin}[c+d x]} \, dx$$

Optimal (type 3, 209 leaves, 11 steps):

$$-\frac{5 x}{1024 a}-\frac{\text{Cos}[c+d x]^7}{7 a d}+\frac{2 \,\text{Cos}[c+d x]^9}{9 a d}-\frac{\text{Cos}[c+d x]^{11}}{11 a d}-\frac{5 \,\text{Cos}[c+d x] \,\text{Sin}[c+d x]}{1024 a d}-\frac{5 \,\text{Cos}[c+d x]^3 \,\text{Sin}[c+d x]}{1536 a d}-\frac{\text{Cos}[c+d x]^5 \,\text{Sin}[c+d x]}{384 a d}+\frac{\text{Cos}[c+d x]^7 \,\text{Sin}[c+d x]}{64 a d}+\frac{\text{Cos}[c+d x]^7 \,\text{Sin}[c+d x]^3}{24 a d}+\frac{\text{Cos}[c+d x]^7 \,\text{Sin}[c+d x]^5}{12 a d}$$

Result (type 3, 1247 leaves):

$$\frac{1}{2048}\left(-\frac{9 x}{a}-\frac{16 \,\text{Cos}[c] \,\text{Cos}[d x]}{a d}+\frac{4 \,\text{Cos}[3 c] \,\text{Cos}[3 d x]}{a d}-\frac{8 \,\text{Cos}[5 c] \,\text{Cos}[5 d x]}{5 a d}+\frac{4 \,\text{Cos}[7 c] \,\text{Cos}[7 d x]}{7 a d}+\frac{7 \,\text{Cos}[2 d x] \,\text{Sin}[2 c]}{a d}-\frac{5 \,\text{Cos}[4 d x] \,\text{Sin}[4 c]}{2 a d}+\frac{\text{Cos}[6 d x] \,\text{Sin}[6 c]}{a d}-\frac{\text{Cos}[8 d x] \,\text{Sin}[8 c]}{4 a d}+\frac{16 \,\text{Sin}[c] \,\text{Sin}[d x]}{a d}+\frac{7 \,\text{Cos}[2 c] \,\text{Sin}[2 d x]}{a d}-\frac{4 \,\text{Sin}[3 c] \,\text{Sin}[3 d x]}{a d}-\frac{5 \,\text{Cos}[4 c] \,\text{Sin}[4 d x]}{2 a d}+\frac{8 \,\text{Sin}[5 c] \,\text{Sin}[5 d x]}{5 a d}+\frac{\text{Cos}[6 c] \,\text{Sin}[6 d x]}{a d}-\frac{4 \,\text{Sin}[7 c] \,\text{Sin}[7 d x]}{7 a d}-\frac{\text{Cos}[8 c] \,\text{Sin}[8 d x]}{4 a d}+\frac{2 \,\text{Sin}\left[\frac{d x}{2}\right]}{a d \left(\text{Cos}\left[\frac{c}{2}\right]+\text{Sin}\left[\frac{c}{2}\right]\right) \left(\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right)}\right)-\frac{1}{24576 a}5\left(30 x+\frac{48 \,\text{Cos}[c] \,\text{Cos}[d x]}{d}-\frac{8 \,\text{Cos}[3 c] \,\text{Cos}[3 d x]}{d}-\frac{18 \,\text{Cos}[2 d x] \,\text{Sin}[2 c]}{d}+\frac{3 \,\text{Cos}[4 d x] \,\text{Sin}[4 c]}{d}-\frac{48 \,\text{Sin}[c] \,\text{Sin}[d x]}{d}-\frac{18 \,\text{Cos}[2 c] \,\text{Sin}[2 d x]}{d}+\frac{8 \,\text{Sin}[3 c] \,\text{Sin}[3 d x]}{d}+\frac{3 \,\text{Cos}[4 c] \,\text{Sin}[4 d x]}{d}-\frac{12 \,\text{Sin}\left[\frac{d x}{2}\right]}{d \left(\text{Cos}\left[\frac{c}{2}\right]+\text{Sin}\left[\frac{c}{2}\right]\right) \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)}\right)+\frac{1}{4096 a}25\left(-3 x-\frac{4 \,\text{Cos}[c] \,\text{Cos}[d x]}{d}+\frac{\text{Cos}[2 d x] \,\text{Sin}[2 c]}{d}+\frac{4 \,\text{Sin}[c] \,\text{Sin}[d x]}{d}+\frac{\text{Cos}[2 c] \,\text{Sin}[2 d x]}{d}+\frac{2 \,\text{Sin}\left[\frac{d x}{2}\right]}{d \left(\text{Cos}\left[\frac{c}{2}\right]+\text{Sin}\left[\frac{c}{2}\right]\right) \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)}\right)-\frac{1}{61440 a}7\left(-210 x-\frac{360 \,\text{Cos}[c] \,\text{Cos}[d x]}{d}+\frac{80 \,\text{Cos}[3 c] \,\text{Cos}[3 d x]}{d}-\frac{24 \,\text{Cos}[5 c] \,\text{Cos}[5 d x]}{d}+\frac{150 \,\text{Cos}[2 d x] \,\text{Sin}[2 c]}{d}-\frac{45 \,\text{Cos}[4 d x] \,\text{Sin}[4 c]}{d}+\frac{10 \,\text{Cos}[6 d x] \,\text{Sin}[6 c]}{d}+\frac{360 \,\text{Sin}[c] \,\text{Sin}[d x]}{d}+\frac{150 \,\text{Cos}[2 c] \,\text{Sin}[2 d x]}{d}-\frac{80 \,\text{Sin}[3 c] \,\text{Sin}[3 d x]}{d}-\frac{45 \,\text{Cos}[4 c] \,\text{Sin}[4 d x]}{d}+\right.$$

$$\frac{24\,\text{Sin}[5\,c]\,\text{Sin}[5\,d\,x]}{d}+\frac{10\,\text{Cos}[6\,c]\,\text{Sin}[6\,d\,x]}{d}+\frac{60\,\text{Sin}\left[\frac{d\,x}{2}\right]}{d\left(\text{Cos}\left[\frac{c}{2}\right]+\text{Sin}\left[\frac{c}{2}\right]\right)\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)}\Bigg)+$$

$$\frac{5\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)\left((c+d\,x)\,\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+(-2+c+d\,x)\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)}{1024\,a\,d\,(1+\text{Sin}[c+d\,x])}+\frac{1}{1\,720\,320\,a\,d}$$

$$\Bigg(-13\,860\,(c+d\,x)-25\,200\,\text{Cos}[c+d\,x]+6720\,\text{Cos}[3\,(c+d\,x)]-3024\,\text{Cos}[5\,(c+d\,x)]+$$

$$1440\,\text{Cos}[7\,(c+d\,x)]-560\,\text{Cos}[9\,(c+d\,x)]+\frac{2520\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]}{\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]}+11\,340\,\text{Sin}[2\,(c+d\,x)]-$$

$$4410\,\text{Sin}[4\,(c+d\,x)]+2100\,\text{Sin}[6\,(c+d\,x)]-945\,\text{Sin}[8\,(c+d\,x)]+252\,\text{Sin}[10\,(c+d\,x)]\Bigg)+$$

$$\frac{1}{56\,770\,560\,a\,d}\Bigg(180\,180\,(c+d\,x)+332\,640\,\text{Cos}[c+d\,x]-92\,400\,\text{Cos}[3\,(c+d\,x)]+44\,352\,\text{Cos}[5\,(c+d\,x)]-23\,760\,\text{Cos}[7\,(c+d\,x)]+$$

$$12\,320\,\text{Cos}[9\,(c+d\,x)]-5040\,\text{Cos}[11\,(c+d\,x)]-\frac{27\,720\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]}{\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]}-152\,460\,\text{Sin}[2\,(c+d\,x)]+$$

$$62\,370\,\text{Sin}[4\,(c+d\,x)]-32\,340\,\text{Sin}[6\,(c+d\,x)]+17\,325\,\text{Sin}[8\,(c+d\,x)]-8316\,\text{Sin}[10\,(c+d\,x)]+2310\,\text{Sin}[12\,(c+d\,x)]\Bigg)$$

- **Problem 706: Result more than twice size of optimal antiderivative.**

$$\int\frac{\text{Cos}[c+d\,x]^8\,\text{Sin}[c+d\,x]^4}{a+a\,\text{Sin}[c+d\,x]}\,dx$$

Optimal (type 3, 183 leaves, 10 steps):

$$\frac{3\,x}{256\,a}+\frac{\text{Cos}[c+d\,x]^7}{7\,a\,d}-\frac{2\,\text{Cos}[c+d\,x]^9}{9\,a\,d}+\frac{\text{Cos}[c+d\,x]^{11}}{11\,a\,d}+\frac{3\,\text{Cos}[c+d\,x]\,\text{Sin}[c+d\,x]}{256\,a\,d}+$$

$$\frac{\text{Cos}[c+d\,x]^3\,\text{Sin}[c+d\,x]}{128\,a\,d}+\frac{\text{Cos}[c+d\,x]^5\,\text{Sin}[c+d\,x]}{160\,a\,d}-\frac{3\,\text{Cos}[c+d\,x]^7\,\text{Sin}[c+d\,x]}{80\,a\,d}-\frac{\text{Cos}[c+d\,x]^7\,\text{Sin}[c+d\,x]^3}{10\,a\,d}$$

Result (type 3, 1084 leaves):

$$\frac{1}{1024}\Bigg(-\frac{8\,x}{a}-\frac{14\,\text{Cos}[c]\,\text{Cos}[d\,x]}{a\,d}+\frac{10\,\text{Cos}[3\,c]\,\text{Cos}[3\,d\,x]}{3\,a\,d}-\frac{6\,\text{Cos}[5\,c]\,\text{Cos}[5\,d\,x]}{5\,a\,d}+\frac{2\,\text{Cos}[7\,c]\,\text{Cos}[7\,d\,x]}{7\,a\,d}+\frac{6\,\text{Cos}[2\,d\,x]\,\text{Sin}[2\,c]}{a\,d}-$$

$$\frac{2\,\text{Cos}[4\,d\,x]\,\text{Sin}[4\,c]}{a\,d}+\frac{2\,\text{Cos}[6\,d\,x]\,\text{Sin}[6\,c]}{3\,a\,d}+\frac{14\,\text{Sin}[c]\,\text{Sin}[d\,x]}{a\,d}+\frac{6\,\text{Cos}[2\,c]\,\text{Sin}[2\,d\,x]}{a\,d}-\frac{10\,\text{Sin}[3\,c]\,\text{Sin}[3\,d\,x]}{3\,a\,d}-\frac{2\,\text{Cos}[4\,c]\,\text{Sin}[4\,d\,x]}{a\,d}+$$

$$\frac{6\,\text{Sin}[5\,c]\,\text{Sin}[5\,d\,x]}{5\,a\,d}+\frac{2\,\text{Cos}[6\,c]\,\text{Sin}[6\,d\,x]}{3\,a\,d}-\frac{2\,\text{Sin}[7\,c]\,\text{Sin}[7\,d\,x]}{7\,a\,d}+\frac{2\,\text{Sin}\left[\frac{d\,x}{2}\right]}{a\,d\left(\text{Cos}\left[\frac{c}{2}\right]+\text{Sin}\left[\frac{c}{2}\right]\right)\left(\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right)}\Bigg)-$$

$$\frac{1}{2560\,a}3\Bigg(30\,x+\frac{50\,\text{Cos}[c]\,\text{Cos}[d\,x]}{d}-\frac{10\,\text{Cos}[3\,c]\,\text{Cos}[3\,d\,x]}{d}+\frac{2\,\text{Cos}[5\,c]\,\text{Cos}[5\,d\,x]}{d}-\frac{20\,\text{Cos}[2\,d\,x]\,\text{Sin}[2\,c]}{d}+$$

$$\frac{5\,\text{Cos}[4\,d\,x]\,\text{Sin}[4\,c]}{d}-\frac{50\,\text{Sin}[c]\,\text{Sin}[d\,x]}{d}-\frac{20\,\text{Cos}[2\,c]\,\text{Sin}[2\,d\,x]}{d}+\frac{10\,\text{Sin}[3\,c]\,\text{Sin}[3\,d\,x]}{d}+$$

$$\frac{5\,\text{Cos}[4\,c]\,\text{Sin}[4\,d\,x]}{d}-\frac{2\,\text{Sin}[5\,c]\,\text{Sin}[5\,d\,x]}{d}-\frac{10\,\text{Sin}\left[\frac{d\,x}{2}\right]}{d\left(\text{Cos}\left[\frac{c}{2}\right]+\text{Sin}\left[\frac{c}{2}\right]\right)\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)}\Bigg)+$$

$$\frac{x+\frac{\text{Cos}[c]\,\text{Cos}[d\,x]}{d}-\frac{\text{Sin}[c]\,\text{Sin}[d\,x]}{d}-\frac{\text{Sin}\left[\frac{d\,x}{2}\right]}{d\left(\text{Cos}\left[\frac{c}{2}\right]+\text{Sin}\left[\frac{c}{2}\right]\right)\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)}}{128\,a}-\frac{1}{3072\,a}$$

$$17\Bigg(-6\,x-\frac{9\,\text{Cos}[c]\,\text{Cos}[d\,x]}{d}+\frac{\text{Cos}[3\,c]\,\text{Cos}[3\,d\,x]}{d}+\frac{3\,\text{Cos}[2\,d\,x]\,\text{Sin}[2\,c]}{d}+\frac{9\,\text{Sin}[c]\,\text{Sin}[d\,x]}{d}+\frac{3\,\text{Cos}[2\,c]\,\text{Sin}[2\,d\,x]}{d}-\frac{\text{Sin}[3\,c]\,\text{Sin}[3\,d\,x]}{d}+$$

$$\frac{3\,\text{Sin}\left[\frac{d\,x}{2}\right]}{d\left(\text{Cos}\left[\frac{c}{2}\right]+\text{Sin}\left[\frac{c}{2}\right]\right)\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)}\Bigg)+\frac{7\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)}{512\,d\,(a+a\,\text{Sin}[c+d\,x])}+$$

$$\frac{1}{64\,512\,a\,d}\Bigg(1260\,(c+d\,x)+2268\,\text{Cos}[c+d\,x]-588\,\text{Cos}[3\,(c+d\,x)]+252\,\text{Cos}[5\,(c+d\,x)]-108\,\text{Cos}[7\,(c+d\,x)]+28\,\text{Cos}[9\,(c+d\,x)]-$$

$$\frac{252\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]}{\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]}-1008\,\text{Sin}[2\,(c+d\,x)]+378\,\text{Sin}[4\,(c+d\,x)]-168\,\text{Sin}[6\,(c+d\,x)]+63\,\text{Sin}[8\,(c+d\,x)]\Bigg)+$$

$$\frac{1}{2\,365\,440\,a\,d}\Bigg(-13\,860\,(c+d\,x)-25\,410\,\text{Cos}[c+d\,x]+6930\,\text{Cos}[3\,(c+d\,x)]-3234\,\text{Cos}[5\,(c+d\,x)]+1650\,\text{Cos}[7\,(c+d\,x)]-$$

$$770\,\text{Cos}[9\,(c+d\,x)]+210\,\text{Cos}[11\,(c+d\,x)]+\frac{2310\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]}{\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]}+11\,550\,\text{Sin}[2\,(c+d\,x)]-$$

$$4620\,\text{Sin}[4\,(c+d\,x)]+2310\,\text{Sin}[6\,(c+d\,x)]-1155\,\text{Sin}[8\,(c+d\,x)]+462\,\text{Sin}[10\,(c+d\,x)]\Bigg)$$

Problem 707: Result more than twice size of optimal antiderivative.

$$\int\frac{\text{Cos}[c+d\,x]^8\,\text{Sin}[c+d\,x]^3}{a+a\,\text{Sin}[c+d\,x]}\,dx$$

Optimal (type 3, 165 leaves, 10 steps):

$$-\frac{3x}{256a}-\frac{\text{Cos}[c+dx]^7}{7ad}+\frac{\text{Cos}[c+dx]^9}{9ad}-\frac{3\,\text{Cos}[c+dx]\,\text{Sin}[c+dx]}{256ad}-\frac{\text{Cos}[c+dx]^3\,\text{Sin}[c+dx]}{128ad}-\frac{\text{Cos}[c+dx]^5\,\text{Sin}[c+dx]}{160ad}+\frac{3\,\text{Cos}[c+dx]^7\,\text{Sin}[c+dx]}{80ad}+\frac{\text{Cos}[c+dx]^7\,\text{Sin}[c+dx]^3}{10ad}$$

Result (type 3, 1078 leaves):

$$-\frac{1}{1024}5\left(\frac{9x}{a}+\frac{16\,\text{Cos}[c]\,\text{Cos}[dx]}{ad}-\frac{4\,\text{Cos}[3c]\,\text{Cos}[3dx]}{ad}+\frac{8\,\text{Cos}[5c]\,\text{Cos}[5dx]}{5ad}-\frac{4\,\text{Cos}[7c]\,\text{Cos}[7dx]}{7ad}-\frac{7\,\text{Cos}[2dx]\,\text{Sin}[2c]}{ad}+\frac{5\,\text{Cos}[4dx]\,\text{Sin}[4c]}{2ad}-\frac{\text{Cos}[6dx]\,\text{Sin}[6c]}{ad}+\frac{\text{Cos}[8dx]\,\text{Sin}[8c]}{4ad}-\frac{16\,\text{Sin}[c]\,\text{Sin}[dx]}{ad}-\frac{7\,\text{Cos}[2c]\,\text{Sin}[2dx]}{ad}+\frac{4\,\text{Sin}[3c]\,\text{Sin}[3dx]}{ad}+\frac{5\,\text{Cos}[4c]\,\text{Sin}[4dx]}{2ad}-\frac{8\,\text{Sin}[5c]\,\text{Sin}[5dx]}{5ad}-\frac{\text{Cos}[6c]\,\text{Sin}[6dx]}{ad}+\frac{4\,\text{Sin}[7c]\,\text{Sin}[7dx]}{7ad}+\frac{\text{Cos}[8c]\,\text{Sin}[8dx]}{4ad}-\frac{2\,\text{Sin}\left[\frac{dx}{2}\right]}{ad\left(\text{Cos}\left[\frac{c}{2}\right]+\text{Sin}\left[\frac{c}{2}\right]\right)\left(\text{Cos}\left[\frac{c}{2}+\frac{dx}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{dx}{2}\right]\right)}\right)+\frac{1}{6144a}$$

$$5\left(30x+\frac{48\,\text{Cos}[c]\,\text{Cos}[dx]}{d}-\frac{8\,\text{Cos}[3c]\,\text{Cos}[3dx]}{d}-\frac{18\,\text{Cos}[2dx]\,\text{Sin}[2c]}{d}+\frac{3\,\text{Cos}[4dx]\,\text{Sin}[4c]}{d}-\frac{48\,\text{Sin}[c]\,\text{Sin}[dx]}{d}-\frac{18\,\text{Cos}[2c]\,\text{Sin}[2dx]}{d}+\frac{8\,\text{Sin}[3c]\,\text{Sin}[3dx]}{d}+\frac{3\,\text{Cos}[4c]\,\text{Sin}[4dx]}{d}-\frac{12\,\text{Sin}\left[\frac{dx}{2}\right]}{d\left(\text{Cos}\left[\frac{c}{2}\right]+\text{Sin}\left[\frac{c}{2}\right]\right)\left(\text{Cos}\left[\frac{1}{2}(c+dx)\right]+\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right)}\right)+$$

$$\frac{1}{512a}11\left(-3x-\frac{4\,\text{Cos}[c]\,\text{Cos}[dx]}{d}+\frac{\text{Cos}[2dx]\,\text{Sin}[2c]}{d}+\frac{4\,\text{Sin}[c]\,\text{Sin}[dx]}{d}+\frac{\text{Cos}[2c]\,\text{Sin}[2dx]}{d}+\frac{2\,\text{Sin}\left[\frac{dx}{2}\right]}{d\left(\text{Cos}\left[\frac{c}{2}\right]+\text{Sin}\left[\frac{c}{2}\right]\right)\left(\text{Cos}\left[\frac{1}{2}(c+dx)\right]+\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right)}\right)-\frac{1}{30720a}$$

$$7\left(-210x-\frac{360\,\text{Cos}[c]\,\text{Cos}[dx]}{d}+\frac{80\,\text{Cos}[3c]\,\text{Cos}[3dx]}{d}-\frac{24\,\text{Cos}[5c]\,\text{Cos}[5dx]}{d}+\frac{150\,\text{Cos}[2dx]\,\text{Sin}[2c]}{d}-\frac{45\,\text{Cos}[4dx]\,\text{Sin}[4c]}{d}+\frac{10\,\text{Cos}[6dx]\,\text{Sin}[6c]}{d}+\frac{360\,\text{Sin}[c]\,\text{Sin}[dx]}{d}+\frac{150\,\text{Cos}[2c]\,\text{Sin}[2dx]}{d}-\frac{80\,\text{Sin}[3c]\,\text{Sin}[3dx]}{d}-\frac{45\,\text{Cos}[4c]\,\text{Sin}[4dx]}{d}+\frac{24\,\text{Sin}[5c]\,\text{Sin}[5dx]}{d}+\frac{10\,\text{Cos}[6c]\,\text{Sin}[6dx]}{d}+\frac{60\,\text{Sin}\left[\frac{dx}{2}\right]}{d\left(\text{Cos}\left[\frac{c}{2}\right]+\text{Sin}\left[\frac{c}{2}\right]\right)\left(\text{Cos}\left[\frac{1}{2}(c+dx)\right]+\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right)}\right)+$$

$$\frac{7\left(\text{Cos}\left[\frac{1}{2}(c+dx)\right]+\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right)\left((c+dx)\,\text{Cos}\left[\frac{1}{2}(c+dx)\right]+(-2+c+dx)\,\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right)}{512ad\,(1+\text{Sin}[c+dx])}-$$

$$\frac{1}{1290240\,a\,d}\left(-13860\,(c+d\,x)-25200\,\text{Cos}[c+d\,x]+6720\,\text{Cos}[3\,(c+d\,x)]-3024\,\text{Cos}[5\,(c+d\,x)]+1440\,\text{Cos}[7\,(c+d\,x)]-560\,\text{Cos}[9\,(c+d\,x)]+\frac{2520\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]}{\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]}+11340\,\text{Sin}[2\,(c+d\,x)]-4410\,\text{Sin}[4\,(c+d\,x)]+2100\,\text{Sin}[6\,(c+d\,x)]-945\,\text{Sin}[8\,(c+d\,x)]+252\,\text{Sin}[10\,(c+d\,x)]\right)$$

Problem 708: Result more than twice size of optimal antiderivative.

$$\int\frac{\text{Cos}[c+d\,x]^8\,\text{Sin}[c+d\,x]^2}{a+a\,\text{Sin}[c+d\,x]}\,dx$$

Optimal (type 3, 139 leaves, 9 steps):

$$\frac{5\,x}{128\,a}+\frac{\text{Cos}[c+d\,x]^7}{7\,a\,d}-\frac{\text{Cos}[c+d\,x]^9}{9\,a\,d}+\frac{5\,\text{Cos}[c+d\,x]\,\text{Sin}[c+d\,x]}{128\,a\,d}+\frac{5\,\text{Cos}[c+d\,x]^3\,\text{Sin}[c+d\,x]}{192\,a\,d}+\frac{\text{Cos}[c+d\,x]^5\,\text{Sin}[c+d\,x]}{48\,a\,d}-\frac{\text{Cos}[c+d\,x]^7\,\text{Sin}[c+d\,x]}{8\,a\,d}$$

Result (type 3, 479 leaves):

$$-\frac{1}{129024\,a\,d\,\left(\text{Cos}\left[\frac{c}{2}\right]+\text{Sin}\left[\frac{c}{2}\right]\right)}\left(2520\,(c-2\,d\,x)\,\text{Cos}\left[\frac{c}{2}\right]-1512\,\text{Cos}\left[\frac{c}{2}+d\,x\right]-1512\,\text{Cos}\left[\frac{3\,c}{2}+d\,x\right]-1008\,\text{Cos}\left[\frac{3\,c}{2}+2\,d\,x\right]+1008\,\text{Cos}\left[\frac{5\,c}{2}+2\,d\,x\right]-672\,\text{Cos}\left[\frac{5\,c}{2}+3\,d\,x\right]-672\,\text{Cos}\left[\frac{7\,c}{2}+3\,d\,x\right]+504\,\text{Cos}\left[\frac{7\,c}{2}+4\,d\,x\right]-504\,\text{Cos}\left[\frac{9\,c}{2}+4\,d\,x\right]+336\,\text{Cos}\left[\frac{11\,c}{2}+6\,d\,x\right]-336\,\text{Cos}\left[\frac{13\,c}{2}+6\,d\,x\right]+108\,\text{Cos}\left[\frac{13\,c}{2}+7\,d\,x\right]+108\,\text{Cos}\left[\frac{15\,c}{2}+7\,d\,x\right]+63\,\text{Cos}\left[\frac{15\,c}{2}+8\,d\,x\right]-63\,\text{Cos}\left[\frac{17\,c}{2}+8\,d\,x\right]+28\,\text{Cos}\left[\frac{17\,c}{2}+9\,d\,x\right]+28\,\text{Cos}\left[\frac{19\,c}{2}+9\,d\,x\right]-7560\,\text{Sin}\left[\frac{c}{2}\right]+2520\,c\,\text{Sin}\left[\frac{c}{2}\right]-5040\,d\,x\,\text{Sin}\left[\frac{c}{2}\right]+1512\,\text{Sin}\left[\frac{c}{2}+d\,x\right]-1512\,\text{Sin}\left[\frac{3\,c}{2}+d\,x\right]-1008\,\text{Sin}\left[\frac{3\,c}{2}+2\,d\,x\right]-1008\,\text{Sin}\left[\frac{5\,c}{2}+2\,d\,x\right]+672\,\text{Sin}\left[\frac{5\,c}{2}+3\,d\,x\right]-672\,\text{Sin}\left[\frac{7\,c}{2}+3\,d\,x\right]+504\,\text{Sin}\left[\frac{7\,c}{2}+4\,d\,x\right]+504\,\text{Sin}\left[\frac{9\,c}{2}+4\,d\,x\right]+336\,\text{Sin}\left[\frac{11\,c}{2}+6\,d\,x\right]+336\,\text{Sin}\left[\frac{13\,c}{2}+6\,d\,x\right]-108\,\text{Sin}\left[\frac{13\,c}{2}+7\,d\,x\right]+108\,\text{Sin}\left[\frac{15\,c}{2}+7\,d\,x\right]+63\,\text{Sin}\left[\frac{15\,c}{2}+8\,d\,x\right]+63\,\text{Sin}\left[\frac{17\,c}{2}+8\,d\,x\right]-28\,\text{Sin}\left[\frac{17\,c}{2}+9\,d\,x\right]+28\,\text{Sin}\left[\frac{19\,c}{2}+9\,d\,x\right]\right)$$

Problem 709: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Cos}[c+d\,x]^8\,\text{Sin}[c+d\,x]}{a+a\,\text{Sin}[c+d\,x]}\,dx$$

Optimal (type 3, 121 leaves, 8 steps):

$$-\frac{5\,x}{128\,a}-\frac{\text{Cos}[c+d\,x]^7}{7\,a\,d}-\frac{5\,\text{Cos}[c+d\,x]\,\text{Sin}[c+d\,x]}{128\,a\,d}-\frac{5\,\text{Cos}[c+d\,x]^3\,\text{Sin}[c+d\,x]}{192\,a\,d}-\frac{\text{Cos}[c+d\,x]^5\,\text{Sin}[c+d\,x]}{48\,a\,d}+\frac{\text{Cos}[c+d\,x]^7\,\text{Sin}[c+d\,x]}{8\,a\,d}$$

Result (type 3, 481 leaves):

$$-\frac{1}{43\,008\,a\,d\,\left(\text{Cos}\left[\frac{c}{2}\right]+\text{Sin}\left[\frac{c}{2}\right]\right)}\left(-336\,(7\,c-5\,d\,x)\,\text{Cos}\left[\frac{c}{2}\right]+1680\,\text{Cos}\left[\frac{c}{2}+d\,x\right]+1680\,\text{Cos}\left[\frac{3\,c}{2}+d\,x\right]+336\,\text{Cos}\left[\frac{3\,c}{2}+2\,d\,x\right]-336\,\text{Cos}\left[\frac{5\,c}{2}+2\,d\,x\right]+1008\,\text{Cos}\left[\frac{5\,c}{2}+3\,d\,x\right]+\right.$$
$$1008\,\text{Cos}\left[\frac{7\,c}{2}+3\,d\,x\right]-168\,\text{Cos}\left[\frac{7\,c}{2}+4\,d\,x\right]+168\,\text{Cos}\left[\frac{9\,c}{2}+4\,d\,x\right]+336\,\text{Cos}\left[\frac{9\,c}{2}+5\,d\,x\right]+336\,\text{Cos}\left[\frac{11\,c}{2}+5\,d\,x\right]-112\,\text{Cos}\left[\frac{11\,c}{2}+6\,d\,x\right]+$$
$$112\,\text{Cos}\left[\frac{13\,c}{2}+6\,d\,x\right]+48\,\text{Cos}\left[\frac{13\,c}{2}+7\,d\,x\right]+48\,\text{Cos}\left[\frac{15\,c}{2}+7\,d\,x\right]-21\,\text{Cos}\left[\frac{15\,c}{2}+8\,d\,x\right]+21\,\text{Cos}\left[\frac{17\,c}{2}+8\,d\,x\right]+4704\,\text{Sin}\left[\frac{c}{2}\right]-$$
$$2352\,c\,\text{Sin}\left[\frac{c}{2}\right]+1680\,d\,x\,\text{Sin}\left[\frac{c}{2}\right]-1680\,\text{Sin}\left[\frac{c}{2}+d\,x\right]+1680\,\text{Sin}\left[\frac{3\,c}{2}+d\,x\right]+336\,\text{Sin}\left[\frac{3\,c}{2}+2\,d\,x\right]+336\,\text{Sin}\left[\frac{5\,c}{2}+2\,d\,x\right]-$$
$$1008\,\text{Sin}\left[\frac{5\,c}{2}+3\,d\,x\right]+1008\,\text{Sin}\left[\frac{7\,c}{2}+3\,d\,x\right]-168\,\text{Sin}\left[\frac{7\,c}{2}+4\,d\,x\right]-168\,\text{Sin}\left[\frac{9\,c}{2}+4\,d\,x\right]-336\,\text{Sin}\left[\frac{9\,c}{2}+5\,d\,x\right]+336\,\text{Sin}\left[\frac{11\,c}{2}+5\,d\,x\right]-$$
$$\left.112\,\text{Sin}\left[\frac{11\,c}{2}+6\,d\,x\right]-112\,\text{Sin}\left[\frac{13\,c}{2}+6\,d\,x\right]-48\,\text{Sin}\left[\frac{13\,c}{2}+7\,d\,x\right]+48\,\text{Sin}\left[\frac{15\,c}{2}+7\,d\,x\right]-21\,\text{Sin}\left[\frac{15\,c}{2}+8\,d\,x\right]-21\,\text{Sin}\left[\frac{17\,c}{2}+8\,d\,x\right]\right)$$

Problem 716: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Cos}[c+d\,x]\,\text{Cot}[c+d\,x]^7}{a+a\,\text{Sin}[c+d\,x]}\,dx$$

Optimal (type 3, 142 leaves, 9 steps):

$$\frac{x}{a}+\frac{5\,\text{ArcTanh}[\text{Cos}[c+d\,x]]}{16\,a\,d}+\frac{\text{Cot}[c+d\,x]}{a\,d}-\frac{\text{Cot}[c+d\,x]^3}{3\,a\,d}+\frac{\text{Cot}[c+d\,x]^5}{5\,a\,d}-$$
$$\frac{5\,\text{Cot}[c+d\,x]\,\text{Csc}[c+d\,x]}{16\,a\,d}+\frac{5\,\text{Cot}[c+d\,x]^3\,\text{Csc}[c+d\,x]}{24\,a\,d}-\frac{\text{Cot}[c+d\,x]^5\,\text{Csc}[c+d\,x]}{6\,a\,d}$$

Result (type 3, 317 leaves):

$$-\frac{1}{7680\,a\,d\,(1+\mathrm{Sin}[c+d\,x])}\mathrm{Csc}[c+d\,x]^6\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2 \Big(-2400\,c-2400\,d\,x+900\,\mathrm{Cos}[c+d\,x]+50\,\mathrm{Cos}[3\,(c+d\,x)]-1440\,c\,\mathrm{Cos}[4\,(c+d\,x)]-1440\,d\,x\,\mathrm{Cos}[4\,(c+d\,x)]+330\,\mathrm{Cos}[5\,(c+d\,x)]+240\,c\,\mathrm{Cos}[6\,(c+d\,x)]+240\,d\,x\,\mathrm{Cos}[6\,(c+d\,x)]-750\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]\right]-450\,\mathrm{Cos}[4\,(c+d\,x)]\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]\right]+75\,\mathrm{Cos}[6\,(c+d\,x)]\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]\right]+225\,\mathrm{Cos}[2\,(c+d\,x)]\left(16\,(c+d\,x)+5\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]\right]-5\,\mathrm{Log}\left[\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]\right)+750\,\mathrm{Log}\left[\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]+450\,\mathrm{Cos}[4\,(c+d\,x)]\,\mathrm{Log}\left[\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]-75\,\mathrm{Cos}[6\,(c+d\,x)]\,\mathrm{Log}\left[\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]-1200\,\mathrm{Sin}[2\,(c+d\,x)]+768\,\mathrm{Sin}[4\,(c+d\,x)]-368\,\mathrm{Sin}[6\,(c+d\,x)]\Big)$$

Problem 717: Result more than twice size of optimal antiderivative.

$$\int\frac{\mathrm{Cot}[c+d\,x]^8}{a+a\,\mathrm{Sin}[c+d\,x]}\,dx$$

Optimal (type 3, 106 leaves, 7 steps):

$$-\frac{5\,\mathrm{ArcTanh}[\mathrm{Cos}[c+d\,x]]}{16\,a\,d}-\frac{\mathrm{Cot}[c+d\,x]^7}{7\,a\,d}+\frac{5\,\mathrm{Cot}[c+d\,x]\,\mathrm{Csc}[c+d\,x]}{16\,a\,d}-\frac{5\,\mathrm{Cot}[c+d\,x]^3\,\mathrm{Csc}[c+d\,x]}{24\,a\,d}+\frac{\mathrm{Cot}[c+d\,x]^5\,\mathrm{Csc}[c+d\,x]}{6\,a\,d}$$

Result (type 3, 284 leaves):

$$-\frac{1}{86016\,a\,d\,(1+\mathrm{Sin}[c+d\,x])}\mathrm{Csc}[c+d\,x]^5\left(\mathrm{Csc}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]\right)^2\Big(1680\,\mathrm{Cos}[c+d\,x]+1008\,\mathrm{Cos}[3\,(c+d\,x)]+336\,\mathrm{Cos}[5\,(c+d\,x)]+48\,\mathrm{Cos}[7\,(c+d\,x)]+3675\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]\right]\mathrm{Sin}[c+d\,x]-3675\,\mathrm{Log}\left[\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]\mathrm{Sin}[c+d\,x]-1190\,\mathrm{Sin}[2\,(c+d\,x)]-2205\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]\right]\mathrm{Sin}[3\,(c+d\,x)]+2205\,\mathrm{Log}\left[\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]\mathrm{Sin}[3\,(c+d\,x)]+392\,\mathrm{Sin}[4\,(c+d\,x)]+735\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]\right]\mathrm{Sin}[5\,(c+d\,x)]-735\,\mathrm{Log}\left[\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]\mathrm{Sin}[5\,(c+d\,x)]-462\,\mathrm{Sin}[6\,(c+d\,x)]-105\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]\right]\mathrm{Sin}[7\,(c+d\,x)]+105\,\mathrm{Log}\left[\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]\mathrm{Sin}[7\,(c+d\,x)]\Big)$$

Problem 718: Result more than twice size of optimal antiderivative.

$$\int\frac{\mathrm{Cot}[c+d\,x]^8\,\mathrm{Csc}[c+d\,x]}{a+a\,\mathrm{Sin}[c+d\,x]}\,dx$$

Optimal (type 3, 134 leaves, 8 steps):

$$\frac{5\,\text{ArcTanh}[\text{Cos}[c+d\,x]]}{128\,a\,d}+\frac{\text{Cot}[c+d\,x]^7}{7\,a\,d}+\frac{5\,\text{Cot}[c+d\,x]\,\text{Csc}[c+d\,x]}{128\,a\,d}-\frac{5\,\text{Cot}[c+d\,x]\,\text{Csc}[c+d\,x]^3}{64\,a\,d}+\frac{5\,\text{Cot}[c+d\,x]^3\,\text{Csc}[c+d\,x]^3}{48\,a\,d}-\frac{\text{Cot}[c+d\,x]^5\,\text{Csc}[c+d\,x]^3}{8\,a\,d}$$

Result (type 3, 291 leaves) :

$$\frac{1}{344\,064\,a\,d}\text{Csc}[c+d\,x]^8\Big(-24\,710\,\text{Cos}[c+d\,x]-12\,530\,\text{Cos}[3\,(c+d\,x)]-5558\,\text{Cos}[5\,(c+d\,x)]-210\,\text{Cos}[7\,(c+d\,x)]+$$
$$3675\,\text{Log}\Big[\text{Cos}\Big[\frac{1}{2}\,(c+d\,x)\Big]\Big]-5880\,\text{Cos}[2\,(c+d\,x)]\,\text{Log}\Big[\text{Cos}\Big[\frac{1}{2}\,(c+d\,x)\Big]\Big]+2940\,\text{Cos}[4\,(c+d\,x)]\,\text{Log}\Big[\text{Cos}\Big[\frac{1}{2}\,(c+d\,x)\Big]\Big]-$$
$$840\,\text{Cos}[6\,(c+d\,x)]\,\text{Log}\Big[\text{Cos}\Big[\frac{1}{2}\,(c+d\,x)\Big]\Big]+105\,\text{Cos}[8\,(c+d\,x)]\,\text{Log}\Big[\text{Cos}\Big[\frac{1}{2}\,(c+d\,x)\Big]\Big]-3675\,\text{Log}\Big[\text{Sin}\Big[\frac{1}{2}\,(c+d\,x)\Big]\Big]+$$
$$5880\,\text{Cos}[2\,(c+d\,x)]\,\text{Log}\Big[\text{Sin}\Big[\frac{1}{2}\,(c+d\,x)\Big]\Big]-2940\,\text{Cos}[4\,(c+d\,x)]\,\text{Log}\Big[\text{Sin}\Big[\frac{1}{2}\,(c+d\,x)\Big]\Big]+840\,\text{Cos}[6\,(c+d\,x)]\,\text{Log}\Big[\text{Sin}\Big[\frac{1}{2}\,(c+d\,x)\Big]\Big]-$$
$$105\,\text{Cos}[8\,(c+d\,x)]\,\text{Log}\Big[\text{Sin}\Big[\frac{1}{2}\,(c+d\,x)\Big]\Big]+5376\,\text{Sin}[2\,(c+d\,x)]+5376\,\text{Sin}[4\,(c+d\,x)]+2304\,\text{Sin}[6\,(c+d\,x)]+384\,\text{Sin}[8\,(c+d\,x)]\Big)$$

- **Problem 719: Result more than twice size of optimal antiderivative.**

$$\int\frac{\text{Cot}[c+d\,x]^8\,\text{Csc}[c+d\,x]^2}{a+a\,\text{Sin}[c+d\,x]}\,dx$$

Optimal (type 3, 152 leaves, 9 steps) :

$$-\frac{5\,\text{ArcTanh}[\text{Cos}[c+d\,x]]}{128\,a\,d}-\frac{\text{Cot}[c+d\,x]^7}{7\,a\,d}-\frac{\text{Cot}[c+d\,x]^9}{9\,a\,d}-\frac{5\,\text{Cot}[c+d\,x]\,\text{Csc}[c+d\,x]}{128\,a\,d}+\frac{5\,\text{Cot}[c+d\,x]\,\text{Csc}[c+d\,x]^3}{64\,a\,d}-\frac{5\,\text{Cot}[c+d\,x]^3\,\text{Csc}[c+d\,x]^3}{48\,a\,d}+\frac{\text{Cot}[c+d\,x]^5\,\text{Csc}[c+d\,x]^3}{8\,a\,d}$$

Result (type 3, 313 leaves) :

$$-\frac{1}{2064384\,a\,d}\operatorname{Csc}[c+d\,x]^9\Big(129024\operatorname{Cos}[c+d\,x]+75264\operatorname{Cos}[3\,(c+d\,x)]+23040\operatorname{Cos}[5\,(c+d\,x)]+2304\operatorname{Cos}[7\,(c+d\,x)]-256\operatorname{Cos}[9\,(c+d\,x)]+39690\operatorname{Log}\Big[\operatorname{Cos}\Big[\frac{1}{2}(c+d\,x)\Big]\Big]\operatorname{Sin}[c+d\,x]-39690\operatorname{Log}\Big[\operatorname{Sin}\Big[\frac{1}{2}(c+d\,x)\Big]\Big]\operatorname{Sin}[c+d\,x]-36540\operatorname{Sin}[2\,(c+d\,x)]-26460\operatorname{Log}\Big[\operatorname{Cos}\Big[\frac{1}{2}(c+d\,x)\Big]\Big]\operatorname{Sin}[3\,(c+d\,x)]+26460\operatorname{Log}\Big[\operatorname{Sin}\Big[\frac{1}{2}(c+d\,x)\Big]\Big]\operatorname{Sin}[3\,(c+d\,x)]-20916\operatorname{Sin}[4\,(c+d\,x)]+11340\operatorname{Log}\Big[\operatorname{Cos}\Big[\frac{1}{2}(c+d\,x)\Big]\Big]\operatorname{Sin}[5\,(c+d\,x)]-11340\operatorname{Log}\Big[\operatorname{Sin}\Big[\frac{1}{2}(c+d\,x)\Big]\Big]\operatorname{Sin}[5\,(c+d\,x)]-16044\operatorname{Sin}[6\,(c+d\,x)]-2835\operatorname{Log}\Big[\operatorname{Cos}\Big[\frac{1}{2}(c+d\,x)\Big]\Big]\operatorname{Sin}[7\,(c+d\,x)]+2835\operatorname{Log}\Big[\operatorname{Sin}\Big[\frac{1}{2}(c+d\,x)\Big]\Big]\operatorname{Sin}[7\,(c+d\,x)]-630\operatorname{Sin}[8\,(c+d\,x)]+315\operatorname{Log}\Big[\operatorname{Cos}\Big[\frac{1}{2}(c+d\,x)\Big]\Big]\operatorname{Sin}[9\,(c+d\,x)]-315\operatorname{Log}\Big[\operatorname{Sin}\Big[\frac{1}{2}(c+d\,x)\Big]\Big]\operatorname{Sin}[9\,(c+d\,x)]\Big)$$

- **Problem 720: Result more than twice size of optimal antiderivative.**

$$\int\frac{\operatorname{Cot}[c+d\,x]^8\operatorname{Csc}[c+d\,x]^3}{a+a\operatorname{Sin}[c+d\,x]}\,dx$$

Optimal (type 3, 176 leaves, 10 steps):

$$\frac{3\operatorname{ArcTanh}[\operatorname{Cos}[c+d\,x]]}{256\,a\,d}+\frac{\operatorname{Cot}[c+d\,x]^7}{7\,a\,d}+\frac{\operatorname{Cot}[c+d\,x]^9}{9\,a\,d}+\frac{3\operatorname{Cot}[c+d\,x]\operatorname{Csc}[c+d\,x]}{256\,a\,d}+\frac{\operatorname{Cot}[c+d\,x]\operatorname{Csc}[c+d\,x]^3}{128\,a\,d}-\frac{\operatorname{Cot}[c+d\,x]\operatorname{Csc}[c+d\,x]^5}{32\,a\,d}+\frac{\operatorname{Cot}[c+d\,x]^3\operatorname{Csc}[c+d\,x]^5}{16\,a\,d}-\frac{\operatorname{Cot}[c+d\,x]^5\operatorname{Csc}[c+d\,x]^5}{10\,a\,d}$$

Result (type 3, 386 leaves):

$$-\frac{1}{165150720\,a\,d\,(1+\operatorname{Csc}[c+d\,x])}\operatorname{Csc}[c+d\,x]^9\Big(\operatorname{Csc}\Big[\frac{1}{2}(c+d\,x)\Big]+\operatorname{Sec}\Big[\frac{1}{2}(c+d\,x)\Big]\Big)^2\Big(2367540\operatorname{Cos}[c+d\,x]+1307880\operatorname{Cos}[3\,(c+d\,x)]+436968\operatorname{Cos}[5\,(c+d\,x)]+18270\operatorname{Cos}[7\,(c+d\,x)]-1890\operatorname{Cos}[9\,(c+d\,x)]-119070\operatorname{Log}\Big[\operatorname{Cos}\Big[\frac{1}{2}(c+d\,x)\Big]\Big]+198450\operatorname{Cos}[2\,(c+d\,x)]\operatorname{Log}\Big[\operatorname{Cos}\Big[\frac{1}{2}(c+d\,x)\Big]\Big]-113400\operatorname{Cos}[4\,(c+d\,x)]\operatorname{Log}\Big[\operatorname{Cos}\Big[\frac{1}{2}(c+d\,x)\Big]\Big]+42525\operatorname{Cos}[6\,(c+d\,x)]\operatorname{Log}\Big[\operatorname{Cos}\Big[\frac{1}{2}(c+d\,x)\Big]\Big]-9450\operatorname{Cos}[8\,(c+d\,x)]\operatorname{Log}\Big[\operatorname{Cos}\Big[\frac{1}{2}(c+d\,x)\Big]\Big]+945\operatorname{Cos}[10\,(c+d\,x)]\operatorname{Log}\Big[\operatorname{Cos}\Big[\frac{1}{2}(c+d\,x)\Big]\Big]+119070\operatorname{Log}\Big[\operatorname{Sin}\Big[\frac{1}{2}(c+d\,x)\Big]\Big]-198450\operatorname{Cos}[2\,(c+d\,x)]\operatorname{Log}\Big[\operatorname{Sin}\Big[\frac{1}{2}(c+d\,x)\Big]\Big]+113400\operatorname{Cos}[4\,(c+d\,x)]\operatorname{Log}\Big[\operatorname{Sin}\Big[\frac{1}{2}(c+d\,x)\Big]\Big]-42525\operatorname{Cos}[6\,(c+d\,x)]\operatorname{Log}\Big[\operatorname{Sin}\Big[\frac{1}{2}(c+d\,x)\Big]\Big]+9450\operatorname{Cos}[8\,(c+d\,x)]\operatorname{Log}\Big[\operatorname{Sin}\Big[\frac{1}{2}(c+d\,x)\Big]\Big]-945\operatorname{Cos}[10\,(c+d\,x)]\operatorname{Log}\Big[\operatorname{Sin}\Big[\frac{1}{2}(c+d\,x)\Big]\Big]-537600\operatorname{Sin}[2\,(c+d\,x)]-522240\operatorname{Sin}[4\,(c+d\,x)]-207360\operatorname{Sin}[6\,(c+d\,x)]-25600\operatorname{Sin}[8\,(c+d\,x)]+2560\operatorname{Sin}[10\,(c+d\,x)]\Big)$$

■ Problem 722: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Cos}[c+d\,x]^8\,\text{Sin}[c+d\,x]^5}{(a+a\,\text{Sin}[c+d\,x])^2}\,dx$$

Optimal (type 3, 203 leaves, 15 steps):

$$-\frac{3\,x}{128\,a^2}-\frac{2\,\text{Cos}[c+d\,x]^5}{5\,a^2\,d}+\frac{5\,\text{Cos}[c+d\,x]^7}{7\,a^2\,d}-\frac{4\,\text{Cos}[c+d\,x]^9}{9\,a^2\,d}+\frac{\text{Cos}[c+d\,x]^{11}}{11\,a^2\,d}-\frac{3\,\text{Cos}[c+d\,x]\,\text{Sin}[c+d\,x]}{128\,a^2\,d}-\frac{\text{Cos}[c+d\,x]^3\,\text{Sin}[c+d\,x]}{64\,a^2\,d}+\frac{\text{Cos}[c+d\,x]^5\,\text{Sin}[c+d\,x]}{16\,a^2\,d}+\frac{\text{Cos}[c+d\,x]^5\,\text{Sin}[c+d\,x]^3}{8\,a^2\,d}+\frac{\text{Cos}[c+d\,x]^5\,\text{Sin}[c+d\,x]^5}{5\,a^2\,d}$$

Result (type 3, 1469 leaves):

$$-\frac{5\,(-3+\text{Cos}[c+d\,x]+\text{Cos}[2\,(c+d\,x)]-4\,\text{Sin}[c+d\,x]+\text{Sin}[2\,(c+d\,x)])}{3072\,a^2\,d\,(1+\text{Sin}[c+d\,x])^2}+$$
$$\frac{1}{86\,016\,a^2\,d}\Bigg(27\,720\,(c+d\,x)+41\,580\,\text{Cos}[c+d\,x]-7056\,\text{Cos}[3\,(c+d\,x)]+1764\,\text{Cos}[5\,(c+d\,x)]-360\,\text{Cos}[7\,(c+d\,x)]+28\,\text{Cos}[9\,(c+d\,x)]+$$
$$\frac{42\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]}{\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^3}-\frac{21}{\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}-\frac{15\,204\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]}{\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]}-$$
$$15\,120\,\text{Sin}[2\,(c+d\,x)]+3528\,\text{Sin}[4\,(c+d\,x)]-840\,\text{Sin}[6\,(c+d\,x)]+126\,\text{Sin}[8\,(c+d\,x)]\Bigg)+\frac{1}{2\,027\,520\,a^2\,d}$$
$$\Bigg(-360\,360\,(c+d\,x)-566\,280\,\text{Cos}[c+d\,x]+108\,900\,\text{Cos}[3\,(c+d\,x)]-33\,264\,\text{Cos}[5\,(c+d\,x)]+9900\,\text{Cos}[7\,(c+d\,x)]-2200\,\text{Cos}[9\,(c+d\,x)]+$$
$$180\,\text{Cos}[11\,(c+d\,x)]-\frac{330\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]}{\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^3}+\frac{165}{\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}+\frac{166\,980\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]}{\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]}+$$
$$217\,800\,\text{Sin}[2\,(c+d\,x)]-59\,400\,\text{Sin}[4\,(c+d\,x)]+18\,480\,\text{Sin}[6\,(c+d\,x)]-4950\,\text{Sin}[8\,(c+d\,x)]+792\,\text{Sin}[10\,(c+d\,x)]\Bigg)+$$
$$\left(25\left(36\,d\,x\,\text{Cos}\left[\frac{d\,x}{2}\right]-21\,\text{Cos}\left[c+\frac{d\,x}{2}\right]+35\,\text{Cos}\left[c+\frac{3\,d\,x}{2}\right]-12\,d\,x\,\text{Cos}\left[2\,c+\frac{3\,d\,x}{2}\right]-3\,\text{Cos}\left[3\,c+\frac{5\,d\,x}{2}\right]-57\,\text{Sin}\left[\frac{d\,x}{2}\right]+36\,d\,x\,\text{Sin}\left[c+\frac{d\,x}{2}\right]+\right.\right.$$
$$\left.\left.12\,d\,x\,\text{Sin}\left[c+\frac{3\,d\,x}{2}\right]+9\,\text{Sin}\left[2\,c+\frac{3\,d\,x}{2}\right]+3\,\text{Sin}\left[2\,c+\frac{5\,d\,x}{2}\right]\right)\right)\Big/\left(12\,288\,a^2\,d\left(\text{Cos}\left[\frac{c}{2}\right]+\text{Sin}\left[\frac{c}{2}\right]\right)\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^3\right)+$$
$$\left(5\left(180\,d\,x\,\text{Cos}\left[\frac{d\,x}{2}\right]-21\,\text{Cos}\left[c+\frac{d\,x}{2}\right]+147\,\text{Cos}\left[c+\frac{3\,d\,x}{2}\right]-60\,d\,x\,\text{Cos}\left[2\,c+\frac{3\,d\,x}{2}\right]-15\,\text{Cos}\left[3\,c+\frac{5\,d\,x}{2}\right]+3\,\text{Cos}\left[3\,c+\frac{7\,d\,x}{2}\right]+\text{Cos}\left[5\,c+\frac{9\,d\,x}{2}\right]-201\right.\right.$$

$$\text{Sin}\left[\frac{d x}{2}\right]+180 d x \text{Sin}\left[c+\frac{d x}{2}\right]+60 d x \text{Sin}\left[c+\frac{3 d x}{2}\right]+73 \text{Sin}\left[2 c+\frac{3 d x}{2}\right]+15 \text{Sin}\left[2 c+\frac{5 d x}{2}\right]+3 \text{Sin}\left[4 c+\frac{7 d x}{2}\right]-\text{Sin}\left[4 c+\frac{9 d x}{2}\right]\Bigg)\Bigg)\Bigg)\Bigg/$$

$$\left(12288 a^2 d \left(\text{Cos}\left[\frac{c}{2}\right]+\text{Sin}\left[\frac{c}{2}\right]\right)\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3\right)-\frac{1}{30720 a^2 d \left(\text{Cos}\left[\frac{c}{2}\right]+\text{Sin}\left[\frac{c}{2}\right]\right)\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3}$$

$$7\Bigg(2520 d x \text{Cos}\left[\frac{d x}{2}\right]+165 \text{Cos}\left[c+\frac{d x}{2}\right]+1905 \text{Cos}\left[c+\frac{3 d x}{2}\right]-840 d x \text{Cos}\left[2 c+\frac{3 d x}{2}\right]-210 \text{Cos}\left[3 c+\frac{5 d x}{2}\right]+42 \text{Cos}\left[3 c+\frac{7 d x}{2}\right]+$$

$$14 \text{Cos}\left[5 c+\frac{9 d x}{2}\right]-6 \text{Cos}\left[5 c+\frac{11 d x}{2}\right]-3 \text{Cos}\left[7 c+\frac{13 d x}{2}\right]-2355 \text{Sin}\left[\frac{d x}{2}\right]+2520 d x \text{Sin}\left[c+\frac{d x}{2}\right]+840 d x \text{Sin}\left[c+\frac{3 d x}{2}\right]+$$

$$1175 \text{Sin}\left[2 c+\frac{3 d x}{2}\right]+210 \text{Sin}\left[2 c+\frac{5 d x}{2}\right]+42 \text{Sin}\left[4 c+\frac{7 d x}{2}\right]-14 \text{Sin}\left[4 c+\frac{9 d x}{2}\right]-6 \text{Sin}\left[6 c+\frac{11 d x}{2}\right]+3 \text{Sin}\left[6 c+\frac{13 d x}{2}\right]\Bigg)+$$

$$\frac{1}{43008 a^2 d \left(\text{Cos}\left[\frac{c}{2}\right]+\text{Sin}\left[\frac{c}{2}\right]\right)\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3}$$

$$\Bigg(7560 d x \text{Cos}\left[\frac{d x}{2}\right]+1239 \text{Cos}\left[c+\frac{d x}{2}\right]+5467 \text{Cos}\left[c+\frac{3 d x}{2}\right]-2520 d x \text{Cos}\left[2 c+\frac{3 d x}{2}\right]-630 \text{Cos}\left[3 c+\frac{5 d x}{2}\right]+$$

$$126 \text{Cos}\left[3 c+\frac{7 d x}{2}\right]+42 \text{Cos}\left[5 c+\frac{9 d x}{2}\right]-18 \text{Cos}\left[5 c+\frac{11 d x}{2}\right]-9 \text{Cos}\left[7 c+\frac{13 d x}{2}\right]+5 \text{Cos}\left[7 c+\frac{15 d x}{2}\right]+3 \text{Cos}\left[9 c+\frac{17 d x}{2}\right]-$$

$$6321 \text{Sin}\left[\frac{d x}{2}\right]+7560 d x \text{Sin}\left[c+\frac{d x}{2}\right]+2520 d x \text{Sin}\left[c+\frac{3 d x}{2}\right]+3773 \text{Sin}\left[2 c+\frac{3 d x}{2}\right]+630 \text{Sin}\left[2 c+\frac{5 d x}{2}\right]+$$

$$126 \text{Sin}\left[4 c+\frac{7 d x}{2}\right]-42 \text{Sin}\left[4 c+\frac{9 d x}{2}\right]-18 \text{Sin}\left[6 c+\frac{11 d x}{2}\right]+9 \text{Sin}\left[6 c+\frac{13 d x}{2}\right]+5 \text{Sin}\left[8 c+\frac{15 d x}{2}\right]-3 \text{Sin}\left[8 c+\frac{17 d x}{2}\right]\Bigg)\Bigg)$$

- **Problem 723: Result more than twice size of optimal antiderivative.**

$$\int \frac{\text{Cos}[c+d x]^8 \text{Sin}[c+d x]^4}{(a+a \text{Sin}[c+d x])^2}\, dx$$

Optimal (type 3, 185 leaves, 17 steps):

$$\frac{9 x}{256 a^2}+\frac{2 \text{Cos}[c+d x]^5}{5 a^2 d}-\frac{4 \text{Cos}[c+d x]^7}{7 a^2 d}+\frac{2 \text{Cos}[c+d x]^9}{9 a^2 d}+\frac{9 \text{Cos}[c+d x] \text{Sin}[c+d x]}{256 a^2 d}+$$

$$\frac{3 \text{Cos}[c+d x]^3 \text{Sin}[c+d x]}{128 a^2 d}-\frac{3 \text{Cos}[c+d x]^5 \text{Sin}[c+d x]}{32 a^2 d}-\frac{3 \text{Cos}[c+d x]^5 \text{Sin}[c+d x]^3}{16 a^2 d}-\frac{\text{Cos}[c+d x]^5 \text{Sin}[c+d x]^5}{10 a^2 d}$$

Result (type 3, 585 leaves):

$$\frac{1}{1290240\, a^2\, d\, \left(\text{Cos}\left[\frac{c}{2}\right]+\text{Sin}\left[\frac{c}{2}\right]\right)}\left(-2520\,(187\,c-18\,d\,x)\,\text{Cos}\left[\frac{c}{2}\right]+30240\,\text{Cos}\left[\frac{c}{2}+d\,x\right]+30240\,\text{Cos}\left[\frac{3\,c}{2}+d\,x\right]-1260\,\text{Cos}\left[\frac{3\,c}{2}+2\,d\,x\right]+1260\,\text{Cos}\left[\frac{5\,c}{2}+2\,d\,x\right]+6720\,\text{Cos}\left[\frac{5\,c}{2}+3\,d\,x\right]+\right.$$
$$6720\,\text{Cos}\left[\frac{7\,c}{2}+3\,d\,x\right]-7560\,\text{Cos}\left[\frac{7\,c}{2}+4\,d\,x\right]+7560\,\text{Cos}\left[\frac{9\,c}{2}+4\,d\,x\right]-4032\,\text{Cos}\left[\frac{9\,c}{2}+5\,d\,x\right]-4032\,\text{Cos}\left[\frac{11\,c}{2}+5\,d\,x\right]+$$
$$630\,\text{Cos}\left[\frac{11\,c}{2}+6\,d\,x\right]-630\,\text{Cos}\left[\frac{13\,c}{2}+6\,d\,x\right]-720\,\text{Cos}\left[\frac{13\,c}{2}+7\,d\,x\right]-720\,\text{Cos}\left[\frac{15\,c}{2}+7\,d\,x\right]+945\,\text{Cos}\left[\frac{15\,c}{2}+8\,d\,x\right]-945\,\text{Cos}\left[\frac{17\,c}{2}+8\,d\,x\right]+$$
$$560\,\text{Cos}\left[\frac{17\,c}{2}+9\,d\,x\right]+560\,\text{Cos}\left[\frac{19\,c}{2}+9\,d\,x\right]-126\,\text{Cos}\left[\frac{19\,c}{2}+10\,d\,x\right]+126\,\text{Cos}\left[\frac{21\,c}{2}+10\,d\,x\right]+327180\,\text{Sin}\left[\frac{c}{2}\right]-471240\,c\,\text{Sin}\left[\frac{c}{2}\right]+$$
$$45360\,d\,x\,\text{Sin}\left[\frac{c}{2}\right]-30240\,\text{Sin}\left[\frac{c}{2}+d\,x\right]+30240\,\text{Sin}\left[\frac{3\,c}{2}+d\,x\right]-1260\,\text{Sin}\left[\frac{3\,c}{2}+2\,d\,x\right]-1260\,\text{Sin}\left[\frac{5\,c}{2}+2\,d\,x\right]-6720\,\text{Sin}\left[\frac{5\,c}{2}+3\,d\,x\right]+$$
$$6720\,\text{Sin}\left[\frac{7\,c}{2}+3\,d\,x\right]-7560\,\text{Sin}\left[\frac{7\,c}{2}+4\,d\,x\right]-7560\,\text{Sin}\left[\frac{9\,c}{2}+4\,d\,x\right]+4032\,\text{Sin}\left[\frac{9\,c}{2}+5\,d\,x\right]-4032\,\text{Sin}\left[\frac{11\,c}{2}+5\,d\,x\right]+$$
$$630\,\text{Sin}\left[\frac{11\,c}{2}+6\,d\,x\right]+630\,\text{Sin}\left[\frac{13\,c}{2}+6\,d\,x\right]+720\,\text{Sin}\left[\frac{13\,c}{2}+7\,d\,x\right]-720\,\text{Sin}\left[\frac{15\,c}{2}+7\,d\,x\right]+945\,\text{Sin}\left[\frac{15\,c}{2}+8\,d\,x\right]+$$
$$\left.945\,\text{Sin}\left[\frac{17\,c}{2}+8\,d\,x\right]-560\,\text{Sin}\left[\frac{17\,c}{2}+9\,d\,x\right]+560\,\text{Sin}\left[\frac{19\,c}{2}+9\,d\,x\right]-126\,\text{Sin}\left[\frac{19\,c}{2}+10\,d\,x\right]-126\,\text{Sin}\left[\frac{21\,c}{2}+10\,d\,x\right]\right)$$

- **Problem 724: Result more than twice size of optimal antiderivative.**

$$\int \frac{\text{Cos}[c+d\,x]^8\,\text{Sin}[c+d\,x]^3}{(a+a\,\text{Sin}[c+d\,x])^2}\,dx$$

Optimal (type 3, 159 leaves, 14 steps):

$$-\frac{3\,x}{64\,a^2}-\frac{2\,\text{Cos}[c+d\,x]^5}{5\,a^2\,d}+\frac{3\,\text{Cos}[c+d\,x]^7}{7\,a^2\,d}-\frac{\text{Cos}[c+d\,x]^9}{9\,a^2\,d}-\frac{3\,\text{Cos}[c+d\,x]\,\text{Sin}[c+d\,x]}{64\,a^2\,d}-$$
$$\frac{\text{Cos}[c+d\,x]^3\,\text{Sin}[c+d\,x]}{32\,a^2\,d}+\frac{\text{Cos}[c+d\,x]^5\,\text{Sin}[c+d\,x]}{8\,a^2\,d}+\frac{\text{Cos}[c+d\,x]^5\,\text{Sin}[c+d\,x]^3}{4\,a^2\,d}$$

Result (type 3, 429 leaves):

$$-\frac{1}{322560\, a^2\, d\, \left(\text{Cos}\left[\frac{c}{2}\right]+\text{Sin}\left[\frac{c}{2}\right]\right)}$$
$$\left(2520\, (55\, c+6\, d\, x)\, \text{Cos}\left[\frac{c}{2}\right]+11340\, \text{Cos}\left[\frac{c}{2}+d\, x\right]+11340\, \text{Cos}\left[\frac{3\, c}{2}+d\, x\right]+3360\, \text{Cos}\left[\frac{5\, c}{2}+3\, d\, x\right]+3360\, \text{Cos}\left[\frac{7\, c}{2}+3\, d\, x\right]-\right.$$
$$2520\, \text{Cos}\left[\frac{7\, c}{2}+4\, d\, x\right]+2520\, \text{Cos}\left[\frac{9\, c}{2}+4\, d\, x\right]-1008\, \text{Cos}\left[\frac{9\, c}{2}+5\, d\, x\right]-1008\, \text{Cos}\left[\frac{11\, c}{2}+5\, d\, x\right]-450\, \text{Cos}\left[\frac{13\, c}{2}+7\, d\, x\right]-$$
$$450\, \text{Cos}\left[\frac{15\, c}{2}+7\, d\, x\right]+315\, \text{Cos}\left[\frac{15\, c}{2}+8\, d\, x\right]-315\, \text{Cos}\left[\frac{17\, c}{2}+8\, d\, x\right]+70\, \text{Cos}\left[\frac{17\, c}{2}+9\, d\, x\right]+70\, \text{Cos}\left[\frac{19\, c}{2}+9\, d\, x\right]-81900\, \text{Sin}\left[\frac{c}{2}\right]+$$
$$138600\, c\, \text{Sin}\left[\frac{c}{2}\right]+15120\, d\, x\, \text{Sin}\left[\frac{c}{2}\right]-11340\, \text{Sin}\left[\frac{c}{2}+d\, x\right]+11340\, \text{Sin}\left[\frac{3\, c}{2}+d\, x\right]-3360\, \text{Sin}\left[\frac{5\, c}{2}+3\, d\, x\right]+3360\, \text{Sin}\left[\frac{7\, c}{2}+3\, d\, x\right]-$$
$$2520\, \text{Sin}\left[\frac{7\, c}{2}+4\, d\, x\right]-2520\, \text{Sin}\left[\frac{9\, c}{2}+4\, d\, x\right]+1008\, \text{Sin}\left[\frac{9\, c}{2}+5\, d\, x\right]-1008\, \text{Sin}\left[\frac{11\, c}{2}+5\, d\, x\right]+450\, \text{Sin}\left[\frac{13\, c}{2}+7\, d\, x\right]-$$
$$\left.450\, \text{Sin}\left[\frac{15\, c}{2}+7\, d\, x\right]+315\, \text{Sin}\left[\frac{15\, c}{2}+8\, d\, x\right]+315\, \text{Sin}\left[\frac{17\, c}{2}+8\, d\, x\right]-70\, \text{Sin}\left[\frac{17\, c}{2}+9\, d\, x\right]+70\, \text{Sin}\left[\frac{19\, c}{2}+9\, d\, x\right]\right)$$

- **Problem 725: Result more than twice size of optimal antiderivative.**

$$\int \frac{\text{Cos}[c+d\, x]^8\, \text{Sin}[c+d\, x]^2}{(a+a\, \text{Sin}[c+d\, x])^2}\, dx$$

Optimal (type 3, 141 leaves, 15 steps):

$$\frac{11\, x}{128\, a^2}+\frac{2\, \text{Cos}[c+d\, x]^5}{5\, a^2\, d}-\frac{2\, \text{Cos}[c+d\, x]^7}{7\, a^2\, d}+\frac{11\, \text{Cos}[c+d\, x]\, \text{Sin}[c+d\, x]}{128\, a^2\, d}+$$
$$\frac{11\, \text{Cos}[c+d\, x]^3\, \text{Sin}[c+d\, x]}{192\, a^2\, d}-\frac{11\, \text{Cos}[c+d\, x]^5\, \text{Sin}[c+d\, x]}{48\, a^2\, d}-\frac{\text{Cos}[c+d\, x]^5\, \text{Sin}[c+d\, x]^3}{8\, a^2\, d}$$

Result (type 3, 481 leaves):

$$\frac{1}{215\,040\,a^2\,d\,\left(\text{Cos}\left[\frac{c}{2}\right]+\text{Sin}\left[\frac{c}{2}\right]\right)}\left(9240\,(15\,c+2\,d\,x)\,\text{Cos}\left[\frac{c}{2}\right]+10\,080\,\text{Cos}\left[\frac{c}{2}+d\,x\right]+10\,080\,\text{Cos}\left[\frac{3\,c}{2}+d\,x\right]+1680\,\text{Cos}\left[\frac{3\,c}{2}+2\,d\,x\right]-1680\,\text{Cos}\left[\frac{5\,c}{2}+2\,d\,x\right]+3360\,\text{Cos}\left[\frac{5\,c}{2}+3\,d\,x\right]+3360\,\text{Cos}\left[\frac{7\,c}{2}+3\,d\,x\right]-2520\,\text{Cos}\left[\frac{7\,c}{2}+4\,d\,x\right]+2520\,\text{Cos}\left[\frac{9\,c}{2}+4\,d\,x\right]-672\,\text{Cos}\left[\frac{9\,c}{2}+5\,d\,x\right]-672\,\text{Cos}\left[\frac{11\,c}{2}+5\,d\,x\right]-560\,\text{Cos}\left[\frac{11\,c}{2}+6\,d\,x\right]+560\,\text{Cos}\left[\frac{13\,c}{2}+6\,d\,x\right]-480\,\text{Cos}\left[\frac{13\,c}{2}+7\,d\,x\right]-480\,\text{Cos}\left[\frac{15\,c}{2}+7\,d\,x\right]+105\,\text{Cos}\left[\frac{15\,c}{2}+8\,d\,x\right]-105\,\text{Cos}\left[\frac{17\,c}{2}+8\,d\,x\right]-79\,800\,\text{Sin}\left[\frac{c}{2}\right]+138\,600\,c\,\text{Sin}\left[\frac{c}{2}\right]+18\,480\,d\,x\,\text{Sin}\left[\frac{c}{2}\right]-10\,080\,\text{Sin}\left[\frac{c}{2}+d\,x\right]+10\,080\,\text{Sin}\left[\frac{3\,c}{2}+d\,x\right]+1680\,\text{Sin}\left[\frac{3\,c}{2}+2\,d\,x\right]+1680\,\text{Sin}\left[\frac{5\,c}{2}+2\,d\,x\right]-3360\,\text{Sin}\left[\frac{5\,c}{2}+3\,d\,x\right]+3360\,\text{Sin}\left[\frac{7\,c}{2}+3\,d\,x\right]-2520\,\text{Sin}\left[\frac{7\,c}{2}+4\,d\,x\right]-2520\,\text{Sin}\left[\frac{9\,c}{2}+4\,d\,x\right]+672\,\text{Sin}\left[\frac{9\,c}{2}+5\,d\,x\right]-672\,\text{Sin}\left[\frac{11\,c}{2}+5\,d\,x\right]-560\,\text{Sin}\left[\frac{11\,c}{2}+6\,d\,x\right]-560\,\text{Sin}\left[\frac{13\,c}{2}+6\,d\,x\right]+480\,\text{Sin}\left[\frac{13\,c}{2}+7\,d\,x\right]-480\,\text{Sin}\left[\frac{15\,c}{2}+7\,d\,x\right]+105\,\text{Sin}\left[\frac{15\,c}{2}+8\,d\,x\right]+105\,\text{Sin}\left[\frac{17\,c}{2}+8\,d\,x\right]\right)$$

- **Problem 726: Result more than twice size of optimal antiderivative.**

$$\int\frac{\text{Cos}[c+d\,x]^8\,\text{Sin}[c+d\,x]}{(a+a\,\text{Sin}[c+d\,x])^2}\,dx$$

Optimal (type 3, 124 leaves, 6 steps):

$$-\frac{x}{8\,a^2}-\frac{2\,\text{Cos}[c+d\,x]^7}{35\,a^2\,d}-\frac{\text{Cos}[c+d\,x]\,\text{Sin}[c+d\,x]}{8\,a^2\,d}-\frac{\text{Cos}[c+d\,x]^3\,\text{Sin}[c+d\,x]}{12\,a^2\,d}-\frac{\text{Cos}[c+d\,x]^5\,\text{Sin}[c+d\,x]}{15\,a^2\,d}-\frac{\text{Cos}[c+d\,x]^9}{5\,d\,(a+a\,\text{Sin}[c+d\,x])^2}$$

Result (type 3, 414 leaves):

$$-\frac{1}{13\,440\,a^2\,d\,\left(\text{Cos}\left[\frac{c}{2}\right]+\text{Sin}\left[\frac{c}{2}\right]\right)}\left(1680\,d\,x\,\text{Cos}\left[\frac{c}{2}\right]+1155\,\text{Cos}\left[\frac{c}{2}+d\,x\right]+1155\,\text{Cos}\left[\frac{3\,c}{2}+d\,x\right]+210\,\text{Cos}\left[\frac{3\,c}{2}+2\,d\,x\right]-210\,\text{Cos}\left[\frac{5\,c}{2}+2\,d\,x\right]+525\,\text{Cos}\left[\frac{5\,c}{2}+3\,d\,x\right]+525\,\text{Cos}\left[\frac{7\,c}{2}+3\,d\,x\right]-210\,\text{Cos}\left[\frac{7\,c}{2}+4\,d\,x\right]+210\,\text{Cos}\left[\frac{9\,c}{2}+4\,d\,x\right]+63\,\text{Cos}\left[\frac{9\,c}{2}+5\,d\,x\right]+63\,\text{Cos}\left[\frac{11\,c}{2}+5\,d\,x\right]-70\,\text{Cos}\left[\frac{11\,c}{2}+6\,d\,x\right]+70\,\text{Cos}\left[\frac{13\,c}{2}+6\,d\,x\right]-15\,\text{Cos}\left[\frac{13\,c}{2}+7\,d\,x\right]-15\,\text{Cos}\left[\frac{15\,c}{2}+7\,d\,x\right]-980\,\text{Sin}\left[\frac{c}{2}\right]+1680\,d\,x\,\text{Sin}\left[\frac{c}{2}\right]-1155\,\text{Sin}\left[\frac{c}{2}+d\,x\right]+1155\,\text{Sin}\left[\frac{3\,c}{2}+d\,x\right]+210\,\text{Sin}\left[\frac{3\,c}{2}+2\,d\,x\right]+210\,\text{Sin}\left[\frac{5\,c}{2}+2\,d\,x\right]-525\,\text{Sin}\left[\frac{5\,c}{2}+3\,d\,x\right]+525\,\text{Sin}\left[\frac{7\,c}{2}+3\,d\,x\right]-210\,\text{Sin}\left[\frac{7\,c}{2}+4\,d\,x\right]-210\,\text{Sin}\left[\frac{9\,c}{2}+4\,d\,x\right]-63\,\text{Sin}\left[\frac{9\,c}{2}+5\,d\,x\right]+63\,\text{Sin}\left[\frac{11\,c}{2}+5\,d\,x\right]-70\,\text{Sin}\left[\frac{11\,c}{2}+6\,d\,x\right]-70\,\text{Sin}\left[\frac{13\,c}{2}+6\,d\,x\right]+15\,\text{Sin}\left[\frac{13\,c}{2}+7\,d\,x\right]-15\,\text{Sin}\left[\frac{15\,c}{2}+7\,d\,x\right]\right)$$

Problem 732: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Cos}[c+d x]^2 \,\text{Cot}[c+d x]^6}{(a+a \,\text{Sin}[c+d x])^2} \, dx$$

Optimal (type 3, 118 leaves, 11 steps):

$$\frac{x}{a^2}+\frac{3 \,\text{ArcTanh}[\text{Cos}[c+d x]]}{4 a^2 d}+\frac{\text{Cot}[c+d x]}{a^2 d}-\frac{\text{Cot}[c+d x]^3}{3 a^2 d}-\frac{\text{Cot}[c+d x]^5}{5 a^2 d}-\frac{3 \,\text{Cot}[c+d x] \,\text{Csc}[c+d x]}{4 a^2 d}+\frac{\text{Cot}[c+d x]^3 \,\text{Csc}[c+d x]}{2 a^2 d}$$

Result (type 3, 254 leaves):

$$\frac{1}{960 a^2 d} \text{Csc}[c+d x]^5 \left(-40 \,\text{Cos}[c+d x]-220 \,\text{Cos}[3 (c+d x)]+68 \,\text{Cos}[5 (c+d x)]+600 c \,\text{Sin}[c+d x]+600 d x \,\text{Sin}[c+d x]+450 \,\text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]\right] \text{Sin}[c+d x]-\right.$$
$$450 \,\text{Log}\left[\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right] \text{Sin}[c+d x]-60 \,\text{Sin}[2 (c+d x)]-300 c \,\text{Sin}[3 (c+d x)]-300 d x \,\text{Sin}[3 (c+d x)]-$$
$$225 \,\text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]\right] \text{Sin}[3 (c+d x)]+225 \,\text{Log}\left[\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right] \text{Sin}[3 (c+d x)]+150 \,\text{Sin}[4 (c+d x)]+$$
$$\left.60 c \,\text{Sin}[5 (c+d x)]+60 d x \,\text{Sin}[5 (c+d x)]+45 \,\text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]\right] \text{Sin}[5 (c+d x)]-45 \,\text{Log}\left[\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right] \text{Sin}[5 (c+d x)]\right)$$

Problem 734: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Cot}[c+d x]^8}{(a+a \,\text{Sin}[c+d x])^2} \, dx$$

Optimal (type 3, 124 leaves, 19 steps):

$$\frac{\text{ArcTanh}[\text{Cos}[c+d x]]}{8 a^2 d}-\frac{2 \,\text{Cot}[c+d x]^5}{5 a^2 d}-\frac{\text{Cot}[c+d x]^7}{7 a^2 d}+\frac{\text{Cot}[c+d x] \,\text{Csc}[c+d x]}{8 a^2 d}-\frac{7 \,\text{Cot}[c+d x] \,\text{Csc}[c+d x]^3}{12 a^2 d}+\frac{\text{Cot}[c+d x] \,\text{Csc}[c+d x]^5}{3 a^2 d}$$

Result (type 3, 251 leaves):

$$-\frac{1}{53760 a^2 d} \text{Csc}[c+d x]^7 \left(5880 \,\text{Cos}[c+d x]+2184 \,\text{Cos}[3 (c+d x)]-168 \,\text{Cos}[5 (c+d x)]-216 \,\text{Cos}[7 (c+d x)]-3675 \,\text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]\right] \text{Sin}[c+d x]+\right.$$
$$3675 \,\text{Log}\left[\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right] \text{Sin}[c+d x]-2170 \,\text{Sin}[2 (c+d x)]+2205 \,\text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]\right] \text{Sin}[3 (c+d x)]-$$
$$2205 \,\text{Log}\left[\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right] \text{Sin}[3 (c+d x)]-3080 \,\text{Sin}[4 (c+d x)]-735 \,\text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]\right] \text{Sin}[5 (c+d x)]+735 \,\text{Log}\left[\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right]$$
$$\left.\text{Sin}[5 (c+d x)]-210 \,\text{Sin}[6 (c+d x)]+105 \,\text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]\right] \text{Sin}[7 (c+d x)]-105 \,\text{Log}\left[\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right] \text{Sin}[7 (c+d x)]\right)$$

Problem 739: Result more than twice size of optimal antiderivative.

$$\int \frac{\cos[c+d x]^8 \sin[c+d x]^3}{(a+a \sin[c+d x])^3} \, dx$$

Optimal (type 3, 161 leaves, 18 steps):

$$-\frac{29 x}{128 a^3}-\frac{4 \cos[c+d x]^3}{3 a^3 d}+\frac{7 \cos[c+d x]^5}{5 a^3 d}-\frac{3 \cos[c+d x]^7}{7 a^3 d}-\frac{29 \cos[c+d x] \sin[c+d x]}{128 a^3 d}+\frac{29 \cos[c+d x]^3 \sin[c+d x]}{64 a^3 d}+\frac{29 \cos[c+d x]^3 \sin[c+d x]^3}{48 a^3 d}+\frac{\cos[c+d x]^3 \sin[c+d x]^5}{8 a^3 d}$$

Result (type 3, 481 leaves):

$$\frac{1}{215040 a^3 d \left(\cos\left[\frac{c}{2}\right]+\sin\left[\frac{c}{2}\right]\right)}\left(840 (1287 c-58 d x) \cos\left[\frac{c}{2}\right]-38640 \cos\left[\frac{c}{2}+d x\right]-38640 \cos\left[\frac{3 c}{2}+d x\right]+6720 \cos\left[\frac{3 c}{2}+2 d x\right]-6720 \cos\left[\frac{5 c}{2}+2 d x\right]-3920 \cos\left[\frac{5 c}{2}+3 d x\right]-3920 \cos\left[\frac{7 c}{2}+3 d x\right]+5880 \cos\left[\frac{7 c}{2}+4 d x\right]-5880 \cos\left[\frac{9 c}{2}+4 d x\right]+4368 \cos\left[\frac{9 c}{2}+5 d x\right]+4368 \cos\left[\frac{11 c}{2}+5 d x\right]-2240 \cos\left[\frac{11 c}{2}+6 d x\right]+2240 \cos\left[\frac{13 c}{2}+6 d x\right]-720 \cos\left[\frac{13 c}{2}+7 d x\right]-720 \cos\left[\frac{15 c}{2}+7 d x\right]+105 \cos\left[\frac{15 c}{2}+8 d x\right]-105 \cos\left[\frac{17 c}{2}+8 d x\right]-998340 \sin\left[\frac{c}{2}\right]+1081080 c \sin\left[\frac{c}{2}\right]-48720 d x \sin\left[\frac{c}{2}\right]+38640 \sin\left[\frac{c}{2}+d x\right]-38640 \sin\left[\frac{3 c}{2}+d x\right]+6720 \sin\left[\frac{3 c}{2}+2 d x\right]+6720 \sin\left[\frac{5 c}{2}+2 d x\right]+3920 \sin\left[\frac{5 c}{2}+3 d x\right]-3920 \sin\left[\frac{7 c}{2}+3 d x\right]+5880 \sin\left[\frac{7 c}{2}+4 d x\right]+5880 \sin\left[\frac{9 c}{2}+4 d x\right]-4368 \sin\left[\frac{9 c}{2}+5 d x\right]+4368 \sin\left[\frac{11 c}{2}+5 d x\right]-2240 \sin\left[\frac{11 c}{2}+6 d x\right]-2240 \sin\left[\frac{13 c}{2}+6 d x\right]+720 \sin\left[\frac{13 c}{2}+7 d x\right]-720 \sin\left[\frac{15 c}{2}+7 d x\right]+105 \sin\left[\frac{15 c}{2}+8 d x\right]+105 \sin\left[\frac{17 c}{2}+8 d x\right]\right)$$

Problem 740: Result more than twice size of optimal antiderivative.

$$\int \frac{\cos[c+d x]^8 \sin[c+d x]^2}{(a+a \sin[c+d x])^3} \, dx$$

Optimal (type 3, 133 leaves, 16 steps):

$$\frac{5 x}{16 a^3}+\frac{4 \cos[c+d x]^3}{3 a^3 d}-\frac{\cos[c+d x]^5}{a^3 d}+\frac{\cos[c+d x]^7}{7 a^3 d}+\frac{5 \cos[c+d x] \sin[c+d x]}{16 a^3 d}-\frac{5 \cos[c+d x]^3 \sin[c+d x]}{8 a^3 d}-\frac{\cos[c+d x]^3 \sin[c+d x]^3}{2 a^3 d}$$

Result (type 3, 429 leaves):

$$\frac{1}{2688 a^3 d \left(\text{Cos}\left[\frac{c}{2}\right]+\text{Sin}\left[\frac{c}{2}\right]\right)}\left(-168 (99 c-5 d x) \text{Cos}\left[\frac{c}{2}\right]+609 \text{Cos}\left[\frac{c}{2}+d x\right]+609 \text{Cos}\left[\frac{3 c}{2}+d x\right]-63 \text{Cos}\left[\frac{3 c}{2}+2 d x\right]+63 \text{Cos}\left[\frac{5 c}{2}+2 d x\right]+91 \text{Cos}\left[\frac{5 c}{2}+3 d x\right]+91 \text{Cos}\left[\frac{7 c}{2}+3 d x\right]-105 \text{Cos}\left[\frac{7 c}{2}+4 d x\right]+105 \text{Cos}\left[\frac{9 c}{2}+4 d x\right]-63 \text{Cos}\left[\frac{9 c}{2}+5 d x\right]-63 \text{Cos}\left[\frac{11 c}{2}+5 d x\right]+21 \text{Cos}\left[\frac{11 c}{2}+6 d x\right]-21 \text{Cos}\left[\frac{13 c}{2}+6 d x\right]+3 \text{Cos}\left[\frac{13 c}{2}+7 d x\right]+3 \text{Cos}\left[\frac{15 c}{2}+7 d x\right]+16996 \text{Sin}\left[\frac{c}{2}\right]-16632 c \text{Sin}\left[\frac{c}{2}\right]+840 d x \text{Sin}\left[\frac{c}{2}\right]-609 \text{Sin}\left[\frac{c}{2}+d x\right]+609 \text{Sin}\left[\frac{3 c}{2}+d x\right]-63 \text{Sin}\left[\frac{3 c}{2}+2 d x\right]-63 \text{Sin}\left[\frac{5 c}{2}+2 d x\right]-91 \text{Sin}\left[\frac{5 c}{2}+3 d x\right]+91 \text{Sin}\left[\frac{7 c}{2}+3 d x\right]-105 \text{Sin}\left[\frac{7 c}{2}+4 d x\right]-105 \text{Sin}\left[\frac{9 c}{2}+4 d x\right]+63 \text{Sin}\left[\frac{9 c}{2}+5 d x\right]-63 \text{Sin}\left[\frac{11 c}{2}+5 d x\right]+21 \text{Sin}\left[\frac{11 c}{2}+6 d x\right]+21 \text{Sin}\left[\frac{13 c}{2}+6 d x\right]-3 \text{Sin}\left[\frac{13 c}{2}+7 d x\right]+3 \text{Sin}\left[\frac{15 c}{2}+7 d x\right]\right)$$

- **Problem 741: Result more than twice size of optimal antiderivative.**

$$\int \frac{\text{Cos}[c+d x]^8 \text{Sin}[c+d x]}{(a+a \text{Sin}[c+d x])^3} \, dx$$

Optimal (type 3, 131 leaves, 6 steps):

$$-\frac{7 x}{16 a^3}-\frac{7 \text{Cos}[c+d x]^5}{30 a^3 d}-\frac{7 \text{Cos}[c+d x] \text{Sin}[c+d x]}{16 a^3 d}-\frac{7 \text{Cos}[c+d x]^3 \text{Sin}[c+d x]}{24 a^3 d}-\frac{\text{Cos}[c+d x]^9}{3 d (a+a \text{Sin}[c+d x])^3}-\frac{\text{Cos}[c+d x]^7}{6 d \left(a^3+a^3 \text{Sin}[c+d x]\right)}$$

Result (type 3, 362 leaves):

$$\frac{1}{1920 a^3 d \left(\text{Cos}\left[\frac{c}{2}\right]+\text{Sin}\left[\frac{c}{2}\right]\right)}\left(-840 d x \text{Cos}\left[\frac{c}{2}\right]-600 \text{Cos}\left[\frac{c}{2}+d x\right]-600 \text{Cos}\left[\frac{3 c}{2}+d x\right]+15 \text{Cos}\left[\frac{3 c}{2}+2 d x\right]-15 \text{Cos}\left[\frac{5 c}{2}+2 d x\right]-140 \text{Cos}\left[\frac{5 c}{2}+3 d x\right]-140 \text{Cos}\left[\frac{7 c}{2}+3 d x\right]+105 \text{Cos}\left[\frac{7 c}{2}+4 d x\right]-105 \text{Cos}\left[\frac{9 c}{2}+4 d x\right]+36 \text{Cos}\left[\frac{9 c}{2}+5 d x\right]+36 \text{Cos}\left[\frac{11 c}{2}+5 d x\right]-5 \text{Cos}\left[\frac{11 c}{2}+6 d x\right]+5 \text{Cos}\left[\frac{13 c}{2}+6 d x\right]+42 \text{Sin}\left[\frac{c}{2}\right]-840 d x \text{Sin}\left[\frac{c}{2}\right]+600 \text{Sin}\left[\frac{c}{2}+d x\right]-600 \text{Sin}\left[\frac{3 c}{2}+d x\right]+15 \text{Sin}\left[\frac{3 c}{2}+2 d x\right]+15 \text{Sin}\left[\frac{5 c}{2}+2 d x\right]+140 \text{Sin}\left[\frac{5 c}{2}+3 d x\right]-140 \text{Sin}\left[\frac{7 c}{2}+3 d x\right]+105 \text{Sin}\left[\frac{7 c}{2}+4 d x\right]+105 \text{Sin}\left[\frac{9 c}{2}+4 d x\right]-36 \text{Sin}\left[\frac{9 c}{2}+5 d x\right]+36 \text{Sin}\left[\frac{11 c}{2}+5 d x\right]-5 \text{Sin}\left[\frac{11 c}{2}+6 d x\right]-5 \text{Sin}\left[\frac{13 c}{2}+6 d x\right]\right)$$

- **Problem 745: Result more than twice size of optimal antiderivative.**

$$\int \frac{\text{Cos}[c+d x]^4 \text{Cot}[c+d x]^4}{(a+a \text{Sin}[c+d x])^3} \, dx$$

Optimal (type 3, 92 leaves, 11 steps) :

$$-\frac{3\,x}{a^3}-\frac{\text{ArcTanh}[\text{Cos}[c+d\,x]]}{2\,a^3\,d}-\frac{\text{Cos}[c+d\,x]}{a^3\,d}-\frac{3\,\text{Cot}[c+d\,x]}{a^3\,d}-\frac{\text{Cot}[c+d\,x]^3}{3\,a^3\,d}+\frac{3\,\text{Cot}[c+d\,x]\,\text{Csc}[c+d\,x]}{2\,a^3\,d}$$

Result (type 3, 538 leaves) :

$$-\frac{3\,(c+d\,x)\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^6}{d\,(a+a\,\text{Sin}[c+d\,x])^3}-\frac{\text{Cos}[c+d\,x]\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^6}{d\,(a+a\,\text{Sin}[c+d\,x])^3}-$$
$$\frac{4\,\text{Cot}\left[\frac{1}{2}\,(c+d\,x)\right]\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^6}{3\,d\,(a+a\,\text{Sin}[c+d\,x])^3}+\frac{3\,\text{Csc}\left[\frac{1}{2}\,(c+d\,x)\right]^2\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^6}{8\,d\,(a+a\,\text{Sin}[c+d\,x])^3}-$$
$$\frac{\text{Cot}\left[\frac{1}{2}\,(c+d\,x)\right]\,\text{Csc}\left[\frac{1}{2}\,(c+d\,x)\right]^2\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^6}{24\,d\,(a+a\,\text{Sin}[c+d\,x])^3}-\frac{\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^6}{2\,d\,(a+a\,\text{Sin}[c+d\,x])^3}+$$
$$\frac{\text{Log}\left[\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^6}{2\,d\,(a+a\,\text{Sin}[c+d\,x])^3}-\frac{3\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^6}{8\,d\,(a+a\,\text{Sin}[c+d\,x])^3}+$$
$$\frac{4\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^6\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]}{3\,d\,(a+a\,\text{Sin}[c+d\,x])^3}+\frac{\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^6\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]}{24\,d\,(a+a\,\text{Sin}[c+d\,x])^3}$$

- **Problem 746: Result more than twice size of optimal antiderivative.**

$$\int \frac{\text{Cos}[c+d\,x]^3\,\text{Cot}[c+d\,x]^5}{(a+a\,\text{Sin}[c+d\,x])^3}\,dx$$

Optimal (type 3, 97 leaves, 12 steps) :

$$\frac{x}{a^3}+\frac{13\,\text{ArcTanh}[\text{Cos}[c+d\,x]]}{8\,a^3\,d}+\frac{\text{Cot}[c+d\,x]}{a^3\,d}+\frac{\text{Cot}[c+d\,x]^3}{a^3\,d}-\frac{11\,\text{Cot}[c+d\,x]\,\text{Csc}[c+d\,x]}{8\,a^3\,d}-\frac{\text{Cot}[c+d\,x]\,\text{Csc}[c+d\,x]^3}{4\,a^3\,d}$$

Result (type 3, 495 leaves) :

$$\frac{(c+d x)\left(\cos\left[\frac{1}{2}(c+d x)\right]+\sin\left[\frac{1}{2}(c+d x)\right]\right)^6}{d\,(a+a \sin[c+d x])^3}-\frac{11 \csc\left[\frac{1}{2}(c+d x)\right]^2\left(\cos\left[\frac{1}{2}(c+d x)\right]+\sin\left[\frac{1}{2}(c+d x)\right]\right)^6}{32\,d\,(a+a \sin[c+d x])^3}+$$
$$\frac{\cot\left[\frac{1}{2}(c+d x)\right] \csc\left[\frac{1}{2}(c+d x)\right]^2\left(\cos\left[\frac{1}{2}(c+d x)\right]+\sin\left[\frac{1}{2}(c+d x)\right]\right)^6}{8\,d\,(a+a \sin[c+d x])^3}-$$
$$\frac{\csc\left[\frac{1}{2}(c+d x)\right]^4\left(\cos\left[\frac{1}{2}(c+d x)\right]+\sin\left[\frac{1}{2}(c+d x)\right]\right)^6}{64\,d\,(a+a \sin[c+d x])^3}+\frac{13 \log\left[\cos\left[\frac{1}{2}(c+d x)\right]\right]\left(\cos\left[\frac{1}{2}(c+d x)\right]+\sin\left[\frac{1}{2}(c+d x)\right]\right)^6}{8\,d\,(a+a \sin[c+d x])^3}-$$
$$\frac{13 \log\left[\sin\left[\frac{1}{2}(c+d x)\right]\right]\left(\cos\left[\frac{1}{2}(c+d x)\right]+\sin\left[\frac{1}{2}(c+d x)\right]\right)^6}{8\,d\,(a+a \sin[c+d x])^3}+\frac{11 \sec\left[\frac{1}{2}(c+d x)\right]^2\left(\cos\left[\frac{1}{2}(c+d x)\right]+\sin\left[\frac{1}{2}(c+d x)\right]\right)^6}{32\,d\,(a+a \sin[c+d x])^3}+$$
$$\frac{\sec\left[\frac{1}{2}(c+d x)\right]^4\left(\cos\left[\frac{1}{2}(c+d x)\right]+\sin\left[\frac{1}{2}(c+d x)\right]\right)^6}{64\,d\,(a+a \sin[c+d x])^3}-\frac{\sec\left[\frac{1}{2}(c+d x)\right]^2\left(\cos\left[\frac{1}{2}(c+d x)\right]+\sin\left[\frac{1}{2}(c+d x)\right]\right)^6 \tan\left[\frac{1}{2}(c+d x)\right]}{8\,d\,(a+a \sin[c+d x])^3}$$

- **Problem 750: Result more than twice size of optimal antiderivative.**

$$\int \frac{\cot[c+d x]^8 \csc[c+d x]}{(a+a \sin[c+d x])^3}\,dx$$

Optimal (type 3, 166 leaves, 18 steps):

$$\frac{29 \operatorname{ArcTanh}[\cos[c+d x]]}{128 a^3 d}+\frac{4 \cot[c+d x]^3}{3 a^3 d}+\frac{7 \cot[c+d x]^5}{5 a^3 d}+\frac{3 \cot[c+d x]^7}{7 a^3 d}+$$
$$\frac{29 \cot[c+d x] \csc[c+d x]}{128 a^3 d}+\frac{29 \cot[c+d x] \csc[c+d x]^3}{192 a^3 d}-\frac{23 \cot[c+d x] \csc[c+d x]^5}{48 a^3 d}-\frac{\cot[c+d x] \csc[c+d x]^7}{8 a^3 d}$$

Result (type 3, 1027 leaves):

$$-\frac{19\,\mathrm{Cot}\left[\frac{1}{2}(c+d x)\right]\left(\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^6}{105\,d\,(a+a\,\mathrm{Sin}[c+d x])^3}+\frac{29\,\mathrm{Csc}\left[\frac{1}{2}(c+d x)\right]^2\left(\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^6}{512\,d\,(a+a\,\mathrm{Sin}[c+d x])^3}-$$

$$\frac{83\,\mathrm{Cot}\left[\frac{1}{2}(c+d x)\right]\mathrm{Csc}\left[\frac{1}{2}(c+d x)\right]^2\left(\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^6}{6720\,d\,(a+a\,\mathrm{Sin}[c+d x])^3}+\frac{\mathrm{Csc}\left[\frac{1}{2}(c+d x)\right]^4\left(\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^6}{1024\,d\,(a+a\,\mathrm{Sin}[c+d x])^3}+$$

$$\frac{23\,\mathrm{Cot}\left[\frac{1}{2}(c+d x)\right]\mathrm{Csc}\left[\frac{1}{2}(c+d x)\right]^4\left(\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^6}{2240\,d\,(a+a\,\mathrm{Sin}[c+d x])^3}-\frac{13\,\mathrm{Csc}\left[\frac{1}{2}(c+d x)\right]^6\left(\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^6}{1536\,d\,(a+a\,\mathrm{Sin}[c+d x])^3}+$$

$$\frac{3\,\mathrm{Cot}\left[\frac{1}{2}(c+d x)\right]\mathrm{Csc}\left[\frac{1}{2}(c+d x)\right]^6\left(\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^6}{896\,d\,(a+a\,\mathrm{Sin}[c+d x])^3}-\frac{\mathrm{Csc}\left[\frac{1}{2}(c+d x)\right]^8\left(\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^6}{2048\,d\,(a+a\,\mathrm{Sin}[c+d x])^3}+$$

$$\frac{29\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]\right]\left(\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^6}{128\,d\,(a+a\,\mathrm{Sin}[c+d x])^3}-\frac{29\,\mathrm{Log}\left[\mathrm{Sin}\left[\frac{1}{2}(c+d x)\right]\right]\left(\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^6}{128\,d\,(a+a\,\mathrm{Sin}[c+d x])^3}-$$

$$\frac{29\,\mathrm{Sec}\left[\frac{1}{2}(c+d x)\right]^2\left(\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^6}{512\,d\,(a+a\,\mathrm{Sin}[c+d x])^3}-\frac{\mathrm{Sec}\left[\frac{1}{2}(c+d x)\right]^4\left(\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^6}{1024\,d\,(a+a\,\mathrm{Sin}[c+d x])^3}+$$

$$\frac{13\,\mathrm{Sec}\left[\frac{1}{2}(c+d x)\right]^6\left(\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^6}{1536\,d\,(a+a\,\mathrm{Sin}[c+d x])^3}+\frac{\mathrm{Sec}\left[\frac{1}{2}(c+d x)\right]^8\left(\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^6}{2048\,d\,(a+a\,\mathrm{Sin}[c+d x])^3}+$$

$$\frac{19\left(\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^6\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]}{105\,d\,(a+a\,\mathrm{Sin}[c+d x])^3}+\frac{83\,\mathrm{Sec}\left[\frac{1}{2}(c+d x)\right]^2\left(\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^6\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]}{6720\,d\,(a+a\,\mathrm{Sin}[c+d x])^3}-$$

$$\frac{23\,\mathrm{Sec}\left[\frac{1}{2}(c+d x)\right]^4\left(\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^6\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]}{2240\,d\,(a+a\,\mathrm{Sin}[c+d x])^3}-$$

$$\frac{3\,\mathrm{Sec}\left[\frac{1}{2}(c+d x)\right]^6\left(\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^6\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]}{896\,d\,(a+a\,\mathrm{Sin}[c+d x])^3}$$

- **Problem 757: Result more than twice size of optimal antiderivative.**

$$\int \mathrm{Csc}[c+d x]^3\,\mathrm{Sec}[c+d x]^2\,(a+a\,\mathrm{Sin}[c+d x])\,dx$$

Optimal (type 3, 75 leaves, 8 steps):

$$-\frac{3\,a\,\mathrm{ArcTanh}[\mathrm{Cos}[c+d x]]}{2\,d}-\frac{a\,\mathrm{Cot}[c+d x]}{d}+\frac{3\,a\,\mathrm{Sec}[c+d x]}{2\,d}-\frac{a\,\mathrm{Csc}[c+d x]^2\,\mathrm{Sec}[c+d x]}{2\,d}+\frac{a\,\mathrm{Tan}[c+d x]}{d}$$

Result (type 3, 172 leaves):

$$-\frac{2\,a\,\mathrm{Cot}[2\,(c+d\,x)]}{d}-\frac{a\,\mathrm{Csc}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{8\,d}-\frac{3\,a\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]\right]}{2\,d}+\frac{3\,a\,\mathrm{Log}\left[\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]}{2\,d}+\frac{a\,\mathrm{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{8\,d}+\frac{a\,\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]}{d\,\left(\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)}-\frac{a\,\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]}{d\,\left(\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)}$$

Problem 758: Result more than twice size of optimal antiderivative.

$$\int \mathrm{Csc}[c+d\,x]^4\,\mathrm{Sec}[c+d\,x]^2\,(a+a\,\mathrm{Sin}[c+d\,x])\,dx$$

Optimal (type 3, 91 leaves, 8 steps):

$$-\frac{3\,a\,\mathrm{ArcTanh}[\mathrm{Cos}[c+d\,x]]}{2\,d}-\frac{2\,a\,\mathrm{Cot}[c+d\,x]}{d}-\frac{a\,\mathrm{Cot}[c+d\,x]^3}{3\,d}+\frac{3\,a\,\mathrm{Sec}[c+d\,x]}{2\,d}-\frac{a\,\mathrm{Csc}[c+d\,x]^2\,\mathrm{Sec}[c+d\,x]}{2\,d}+\frac{a\,\mathrm{Tan}[c+d\,x]}{d}$$

Result (type 3, 205 leaves):

$$-\frac{5\,a\,\mathrm{Cot}[c+d\,x]}{3\,d}-\frac{a\,\mathrm{Csc}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{8\,d}-\frac{a\,\mathrm{Cot}[c+d\,x]\,\mathrm{Csc}[c+d\,x]^2}{3\,d}-\frac{3\,a\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]\right]}{2\,d}+\frac{3\,a\,\mathrm{Log}\left[\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]}{2\,d}+\frac{a\,\mathrm{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{8\,d}+\frac{a\,\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]}{d\,\left(\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)}-\frac{a\,\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]}{d\,\left(\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)}+\frac{a\,\mathrm{Tan}[c+d\,x]}{d}$$

Problem 760: Result more than twice size of optimal antiderivative.

$$\int (a+a\,\mathrm{Sin}[c+d\,x])^2\,\mathrm{Tan}[c+d\,x]^2\,dx$$

Optimal (type 3, 71 leaves, 6 steps):

$$-\frac{5\,a^2\,x}{2}+\frac{2\,a^2\,\mathrm{Cos}[c+d\,x]}{d}+\frac{2\,a^2\,\mathrm{Cos}[c+d\,x]}{d\,(1-\mathrm{Sin}[c+d\,x])}+\frac{a^2\,\mathrm{Cos}[c+d\,x]\,\mathrm{Sin}[c+d\,x]}{2\,d}$$

Result (type 3, 145 leaves):

$$-\left(a^2\,(1+\mathrm{Sin}[c+d\,x])^2\left(\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]\,(10\,(c+d\,x)-8\,\mathrm{Cos}[c+d\,x]-\mathrm{Sin}[2\,(c+d\,x)])+\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\,(-2\,(8+5\,c+5\,d\,x)+8\,\mathrm{Cos}[c+d\,x]+\mathrm{Sin}[2\,(c+d\,x)])\right)\right)\Big/\left(4\,d\,\left(\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\,\left(\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^4\right)$$

Problem 761: Result more than twice size of optimal antiderivative.

$$\int \mathrm{Sec}[c+d\,x]\,(a+a\,\mathrm{Sin}[c+d\,x])^2\,\mathrm{Tan}[c+d\,x]\,dx$$

Optimal (type 3, 43 leaves, 3 steps):

$$-2 a^2 x+\frac{2 a^2 \text{Cos}[c+d x]}{d}+\frac{\text{Sec}[c+d x] (a+a \text{Sin}[c+d x])^2}{d}$$

Result (type 3, 90 leaves) :

$$\frac{\left(-2 (c+d x)+\text{Cos}[c+d x]+\frac{4 \text{Sin}\left[\frac{1}{2} (c+d x)\right]}{\text{Cos}\left[\frac{1}{2} (c+d x)\right]-\text{Sin}\left[\frac{1}{2} (c+d x)\right]}\right) (a+a \text{Sin}[c+d x])^2}{d \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^4}$$

Problem 767: Result more than twice size of optimal antiderivative.

$$\int \text{Sec}[c+d x] (a+a \text{Sin}[c+d x])^3 \text{Tan}[c+d x] \, dx$$

Optimal (type 3, 67 leaves, 2 steps) :

$$-\frac{9 a^3 x}{2}+\frac{6 a^3 \text{Cos}[c+d x]}{d}+\frac{3 a^3 \text{Cos}[c+d x] \text{Sin}[c+d x]}{2 d}+\frac{\text{Sec}[c+d x] (a+a \text{Sin}[c+d x])^3}{d}$$

Result (type 3, 145 leaves) :

$$-\left(a^3 (1+\text{Sin}[c+d x])^3 \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right] (18 (c+d x)-12 \text{Cos}[c+d x]-\text{Sin}[2 (c+d x)])+\text{Sin}\left[\frac{1}{2} (c+d x)\right] (-2 (16+9 c+9 d x)+12 \text{Cos}[c+d x]+\text{Sin}[2 (c+d x)])\right)\right)\Big/\left(4 d \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]-\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right) \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^6\right)$$

Problem 771: Result more than twice size of optimal antiderivative.

$$\int \text{Csc}[c+d x]^4 \text{Sec}[c+d x]^2 (a+a \text{Sin}[c+d x])^3 \, dx$$

Optimal (type 3, 98 leaves, 10 steps) :

$$-\frac{11 a^3 \text{ArcTanh}[\text{Cos}[c+d x]]}{2 d}-\frac{5 a^3 \text{Cot}[c+d x]}{d}-\frac{a^3 \text{Cot}[c+d x]^3}{3 d}-\frac{3 a^3 \text{Cot}[c+d x] \text{Csc}[c+d x]}{2 d}+\frac{4 a^3 \text{Cos}[c+d x]}{d (1-\text{Sin}[c+d x])}$$

Result (type 3, 211 leaves) :

$$a^3 \left(-\frac{7 \text{Cot}\left[\frac{1}{2} (c+d x)\right]}{3 d}-\frac{3 \text{Csc}\left[\frac{1}{2} (c+d x)\right]^2}{8 d}-\frac{\text{Cot}\left[\frac{1}{2} (c+d x)\right] \text{Csc}\left[\frac{1}{2} (c+d x)\right]^2}{24 d}-\frac{11 \text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]\right]}{2 d}+\frac{11 \text{Log}\left[\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right]}{2 d}+\frac{3 \text{Sec}\left[\frac{1}{2} (c+d x)\right]^2}{8 d}+\frac{8 \text{Sin}\left[\frac{1}{2} (c+d x)\right]}{d \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]-\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)}+\frac{7 \text{Tan}\left[\frac{1}{2} (c+d x)\right]}{3 d}+\frac{\text{Sec}\left[\frac{1}{2} (c+d x)\right]^2 \text{Tan}\left[\frac{1}{2} (c+d x)\right]}{24 d}\right)$$

Problem 774: Result more than twice size of optimal antiderivative.

$$\int \frac{\tan(c+d x)^2}{a+a \sin(c+d x)} \, dx$$

Optimal (type 3, 50 leaves, 5 steps):

$$\frac{\sec(c+d x)}{a d}-\frac{\sec(c+d x)^3}{3 a d}+\frac{\tan(c+d x)^3}{3 a d}$$

Result (type 3, 106 leaves):

$$\frac{6-10 \cos(c+d x)+2 \cos(2 (c+d x))+8 \sin(c+d x)-5 \sin(2 (c+d x))}{12 a d \left(\cos\left[\frac{1}{2} (c+d x)\right]-\sin\left[\frac{1}{2} (c+d x)\right]\right) \left(\cos\left[\frac{1}{2} (c+d x)\right]+\sin\left[\frac{1}{2} (c+d x)\right]\right) (1+\sin(c+d x))}$$

Problem 775: Result more than twice size of optimal antiderivative.

$$\int \frac{\sec(c+d x) \tan(c+d x)}{a+a \sin(c+d x)} \, dx$$

Optimal (type 3, 37 leaves, 5 steps):

$$\frac{\sec(c+d x)^3}{3 a d}-\frac{\tan(c+d x)^3}{3 a d}$$

Result (type 3, 104 leaves):

$$\frac{-3+\cos(c+d x)+\cos(2 (c+d x))-2 \sin(c+d x)+\frac{1}{2} \sin(2 (c+d x))}{6 a d \left(-\cos\left[\frac{1}{2} (c+d x)\right]+\sin\left[\frac{1}{2} (c+d x)\right]\right) \left(\cos\left[\frac{1}{2} (c+d x)\right]+\sin\left[\frac{1}{2} (c+d x)\right]\right) (1+\sin(c+d x))}$$

Problem 777: Result more than twice size of optimal antiderivative.

$$\int \frac{\csc(c+d x)^2 \sec(c+d x)^2}{a+a \sin(c+d x)} \, dx$$

Optimal (type 3, 93 leaves, 8 steps):

$$\frac{\text{ArcTanh}(\cos(c+d x))}{a d}-\frac{\cot(c+d x)}{a d}-\frac{\sec(c+d x)}{a d}-\frac{\sec(c+d x)^3}{3 a d}+\frac{2 \tan(c+d x)}{a d}+\frac{\tan(c+d x)^3}{3 a d}$$

Result (type 3, 245 leaves):

$$-\left(\left(\mathrm{Csc}[c+d x]^3\left(2+10\,\mathrm{Cos}[2(c+d x)]+8\,\mathrm{Cos}[3(c+d x)]+3\,\mathrm{Cos}[3(c+d x)]\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]\right]-3\,\mathrm{Cos}[3(c+d x)]\,\mathrm{Log}\left[\mathrm{Sin}\left[\frac{1}{2}(c+d x)\right]\right]+\mathrm{Cos}[c+d x]\left(-8-3\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]\right]+3\,\mathrm{Log}\left[\mathrm{Sin}\left[\frac{1}{2}(c+d x)\right]\right]\right)+4\,\mathrm{Sin}[c+d x]-16\,\mathrm{Sin}[2(c+d x)]-6\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]\right]\mathrm{Sin}[2(c+d x)]+6\,\mathrm{Log}\left[\mathrm{Sin}\left[\frac{1}{2}(c+d x)\right]\right]\mathrm{Sin}[2(c+d x)]+8\,\mathrm{Sin}[3(c+d x)]\right)\right)\Big/\left(3 a d\left(\mathrm{Csc}\left[\frac{1}{2}(c+d x)\right]-\mathrm{Sec}\left[\frac{1}{2}(c+d x)\right]\right)\left(\mathrm{Csc}\left[\frac{1}{2}(c+d x)\right]+\mathrm{Sec}\left[\frac{1}{2}(c+d x)\right]\right)(1+\mathrm{Sin}[c+d x])\right)\right)$$

- **Problem 785: Result more than twice size of optimal antiderivative.**

$$\int \frac{\mathrm{Csc}[c+d x]^2\,\mathrm{Sec}[c+d x]^2}{(a+a\,\mathrm{Sin}[c+d x])^2}\,dx$$

Optimal (type 3, 130 leaves, 12 steps):

$$\frac{2\,\mathrm{ArcTanh}[\mathrm{Cos}[c+d x]]}{a^2 d}-\frac{\mathrm{Cot}[c+d x]}{a^2 d}-\frac{2\,\mathrm{Sec}[c+d x]}{a^2 d}-\frac{2\,\mathrm{Sec}[c+d x]^3}{3 a^2 d}-\frac{2\,\mathrm{Sec}[c+d x]^5}{5 a^2 d}+\frac{4\,\mathrm{Tan}[c+d x]}{a^2 d}+\frac{5\,\mathrm{Tan}[c+d x]^3}{3 a^2 d}+\frac{2\,\mathrm{Tan}[c+d x]^5}{5 a^2 d}$$

Result (type 3, 289 leaves):

$$-\frac{1}{15 a^2 d\left(\mathrm{Csc}\left[\frac{1}{2}(c+d x)\right]^2-\mathrm{Sec}\left[\frac{1}{2}(c+d x)\right]^2\right)(1+\mathrm{Sin}[c+d x])^2}\mathrm{Csc}[c+d x]^3\left(40+48\,\mathrm{Cos}[2(c+d x)]+112\,\mathrm{Cos}[3(c+d x)]-28\,\mathrm{Cos}[4(c+d x)]+60\,\mathrm{Cos}[3(c+d x)]\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]\right]-4\,\mathrm{Cos}[c+d x]\left(28+15\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]\right]-15\,\mathrm{Log}\left[\mathrm{Sin}\left[\frac{1}{2}(c+d x)\right]\right]\right)-60\,\mathrm{Cos}[3(c+d x)]\,\mathrm{Log}\left[\mathrm{Sin}\left[\frac{1}{2}(c+d x)\right]\right]+58\,\mathrm{Sin}[c+d x]-168\,\mathrm{Sin}[2(c+d x)]-90\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]\right]\mathrm{Sin}[2(c+d x)]+90\,\mathrm{Log}\left[\mathrm{Sin}\left[\frac{1}{2}(c+d x)\right]\right]\mathrm{Sin}[2(c+d x)]+82\,\mathrm{Sin}[3(c+d x)]+28\,\mathrm{Sin}[4(c+d x)]+15\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]\right]\mathrm{Sin}[4(c+d x)]-15\,\mathrm{Log}\left[\mathrm{Sin}\left[\frac{1}{2}(c+d x)\right]\right]\mathrm{Sin}[4(c+d x)]\right)$$

- **Problem 786: Result more than twice size of optimal antiderivative.**

$$\int \frac{\mathrm{Csc}[c+d x]^3\,\mathrm{Sec}[c+d x]^2}{(a+a\,\mathrm{Sin}[c+d x])^2}\,dx$$

Optimal (type 3, 158 leaves, 15 steps):

$$-\frac{9\,\mathrm{ArcTanh}[\mathrm{Cos}[c+d x]]}{2 a^2 d}+\frac{2\,\mathrm{Cot}[c+d x]}{a^2 d}+\frac{9\,\mathrm{Sec}[c+d x]}{2 a^2 d}+\frac{3\,\mathrm{Sec}[c+d x]^3}{2 a^2 d}+\frac{9\,\mathrm{Sec}[c+d x]^5}{10 a^2 d}-\frac{\mathrm{Csc}[c+d x]^2\,\mathrm{Sec}[c+d x]^5}{2 a^2 d}-\frac{6\,\mathrm{Tan}[c+d x]}{a^2 d}-\frac{2\,\mathrm{Tan}[c+d x]^3}{a^2 d}-\frac{2\,\mathrm{Tan}[c+d x]^5}{5 a^2 d}$$

Result (type 3, 328 leaves) :

$$-\frac{1}{320 a^2 d (1+\text{Sin}[c+d x])^2}\text{Csc}[c+d x]^2 \text{Sec}[c+d x] \left(-348+176 \text{Cos}[2 (c+d x)]-651 \text{Cos}[3 (c+d x)]+332 \text{Cos}[4 (c+d x)]+93 \text{Cos}[5 (c+d x)]-630 \text{Cos}[3 (c+d x)] \text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]\right]+ 90 \text{Cos}[5 (c+d x)] \text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]\right]+18 \text{Cos}[c+d x] \left(31+30 \text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]\right]-30 \text{Log}\left[\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right]\right)+ 630 \text{Cos}[3 (c+d x)] \text{Log}\left[\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right]-90 \text{Cos}[5 (c+d x)] \text{Log}\left[\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right]-432 \text{Sin}[c+d x]+744 \text{Sin}[2 (c+d x)]+ 720 \text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]\right] \text{Sin}[2 (c+d x)]-720 \text{Log}\left[\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right] \text{Sin}[2 (c+d x)]-176 \text{Sin}[3 (c+d x)]- 372 \text{Sin}[4 (c+d x)]-360 \text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]\right] \text{Sin}[4 (c+d x)]+360 \text{Log}\left[\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right] \text{Sin}[4 (c+d x)]+128 \text{Sin}[5 (c+d x)]\right)$$

- **Problem 793: Result more than twice size of optimal antiderivative.**

$$\int \frac{\text{Csc}[c+d x] \text{Sec}[c+d x]^2}{(a+a \text{Sin}[c+d x])^3} \, dx$$

Optimal (type 3, 151 leaves, 14 steps) :

$$-\frac{\text{ArcTanh}[\text{Cos}[c+d x]]}{a^3 d}+\frac{\text{Sec}[c+d x]}{a^3 d}+\frac{\text{Sec}[c+d x]^3}{3 a^3 d}+\frac{\text{Sec}[c+d x]^5}{5 a^3 d}+ \frac{4 \text{Sec}[c+d x]^7}{7 a^3 d}-\frac{3 \text{Tan}[c+d x]}{a^3 d}-\frac{10 \text{Tan}[c+d x]^3}{3 a^3 d}-\frac{11 \text{Tan}[c+d x]^5}{5 a^3 d}-\frac{4 \text{Tan}[c+d x]^7}{7 a^3 d}$$

Result (type 3, 341 leaves) :

$$\frac{1}{840 d (a+a \text{Sin}[c+d x])^3}\left(60-\frac{120 \text{Sin}\left[\frac{1}{2} (c+d x)\right]}{\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]}-324 \text{Sin}\left[\frac{1}{2} (c+d x)\right] \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)+162 \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^2- 706 \text{Sin}\left[\frac{1}{2} (c+d x)\right] \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^3+353 \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^4- 2281 \text{Sin}\left[\frac{1}{2} (c+d x)\right] \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^5-840 \text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]\right] \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^6+ 840 \text{Log}\left[\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right] \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^6+\frac{105 \text{Sin}\left[\frac{1}{2} (c+d x)\right] \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^6}{\text{Cos}\left[\frac{1}{2} (c+d x)\right]-\text{Sin}\left[\frac{1}{2} (c+d x)\right]}\right)$$

Problem 794: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Csc}[c+d x]^2 \,\text{Sec}[c+d x]^2}{(a+a \,\text{Sin}[c+d x])^3} \, dx$$

Optimal (type 3, 162 leaves, 14 steps):

$$\frac{3 \,\text{ArcTanh}[\text{Cos}[c+d x]]}{a^3 d}-\frac{\text{Cot}[c+d x]}{a^3 d}-\frac{3 \,\text{Sec}[c+d x]}{a^3 d}-\frac{\text{Sec}[c+d x]^3}{a^3 d}-\frac{3 \,\text{Sec}[c+d x]^5}{5 a^3 d}-\frac{4 \,\text{Sec}[c+d x]^7}{7 a^3 d}+\frac{7 \,\text{Tan}[c+d x]}{a^3 d}+\frac{5 \,\text{Tan}[c+d x]^3}{a^3 d}+\frac{13 \,\text{Tan}[c+d x]^5}{5 a^3 d}+\frac{4 \,\text{Tan}[c+d x]^7}{7 a^3 d}$$

Result (type 3, 351 leaves):

$$\frac{1}{140 a^3 d \left(\text{Csc}\left[\frac{1}{2}(c+d x)\right]^2-\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\right)(1+\text{Sin}[c+d x])^3} \text{Csc}[c+d x]^3 \Big(-966-440 \,\text{Cos}[2(c+d x)]-2640 \,\text{Cos}[3(c+d x)]+846 \,\text{Cos}[4(c+d x)]+176 \,\text{Cos}[5(c+d x)]-1575 \,\text{Cos}[3(c+d x)] \,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right]+105 \,\text{Cos}[5(c+d x)] \,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right]+14 \,\text{Cos}[c+d x]\left(176+105 \,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right]-105 \,\text{Log}\left[\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]\right)+1575 \,\text{Cos}[3(c+d x)] \,\text{Log}\left[\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]-105 \,\text{Cos}[5(c+d x)] \,\text{Log}\left[\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]-1316 \,\text{Sin}[c+d x]+3520 \,\text{Sin}[2(c+d x)]+2100 \,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right] \text{Sin}[2(c+d x)]-2100 \,\text{Log}\left[\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right] \text{Sin}[2(c+d x)]-1380 \,\text{Sin}[3(c+d x)]-1056 \,\text{Sin}[4(c+d x)]-630 \,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right] \text{Sin}[4(c+d x)]+630 \,\text{Log}\left[\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right] \text{Sin}[4(c+d x)]+176 \,\text{Sin}[5(c+d x)]\Big)$$

Problem 803: Result more than twice size of optimal antiderivative.

$$\int \text{Csc}[c+d x]^3 \,\text{Sec}[c+d x]^4 (a+a \,\text{Sin}[c+d x]) \, dx$$

Optimal (type 3, 110 leaves, 9 steps):

$$-\frac{5 a \,\text{ArcTanh}[\text{Cos}[c+d x]]}{2 d}-\frac{a \,\text{Cot}[c+d x]}{d}+\frac{5 a \,\text{Sec}[c+d x]}{2 d}+\frac{5 a \,\text{Sec}[c+d x]^3}{6 d}-\frac{a \,\text{Csc}[c+d x]^2 \,\text{Sec}[c+d x]^3}{2 d}+\frac{2 a \,\text{Tan}[c+d x]}{d}+\frac{a \,\text{Tan}[c+d x]^3}{3 d}$$

Result (type 3, 359 leaves):

$$-\frac{a\,\text{Cot}[c+d\,x]}{d}-\frac{a\,\text{Csc}\left[\frac{1}{2}(c+d\,x)\right]^2}{8\,d}-\frac{5\,a\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]\right]}{2\,d}+\frac{5\,a\,\text{Log}\left[\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]}{2\,d}+$$
$$\frac{a\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2}{8\,d}+\frac{a}{12\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2}+\frac{a\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]}{6\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^3}+$$
$$\frac{13\,a\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]}{6\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)}-\frac{a\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]}{6\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^3}+\frac{a}{12\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2}-$$
$$\frac{13\,a\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]}{6\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)}+\frac{5\,a\,\text{Tan}[c+d\,x]}{3\,d}+\frac{a\,\text{Sec}[c+d\,x]^2\,\text{Tan}[c+d\,x]}{3\,d}$$

Problem 818: Result more than twice size of optimal antiderivative.

$$\int \text{Csc}[c+d\,x]^4\,\text{Sec}[c+d\,x]^4\,(a+a\,\text{Sin}[c+d\,x])^3\,dx$$

Optimal (type 3, 128 leaves, 12 steps):

$$-\frac{17\,a^3\,\text{ArcTanh}[\text{Cos}[c+d\,x]]}{2\,d}-\frac{6\,a^3\,\text{Cot}[c+d\,x]}{d}-\frac{a^3\,\text{Cot}[c+d\,x]^3}{3\,d}-\frac{3\,a^3\,\text{Cot}[c+d\,x]\,\text{Csc}[c+d\,x]}{2\,d}+\frac{2\,a^3\,\text{Cos}[c+d\,x]}{3\,d\,(1-\text{Sin}[c+d\,x])^2}+\frac{23\,a^3\,\text{Cos}[c+d\,x]}{3\,d\,(1-\text{Sin}[c+d\,x])}$$

Result (type 3, 287 leaves):

$$a^3\left(-\frac{17\,\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]}{6\,d}-\frac{3\,\text{Csc}\left[\frac{1}{2}(c+d\,x)\right]^2}{8\,d}-\frac{\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\text{Csc}\left[\frac{1}{2}(c+d\,x)\right]^2}{24\,d}-\frac{17\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]\right]}{2\,d}+\frac{17\,\text{Log}\left[\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]}{2\,d}+\right.$$
$$\frac{3\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2}{8\,d}+\frac{2}{3\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2}+\frac{4\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]}{3\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^3}+$$
$$\left.\frac{46\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]}{3\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)}+\frac{17\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{6\,d}+\frac{\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{24\,d}\right)$$

Problem 827: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Csc}[c+d\,x]\,\text{Sec}[c+d\,x]^4}{a+a\,\text{Sin}[c+d\,x]}\,dx$$

Optimal (type 3, 115 leaves, 7 steps):

$$-\frac{\text{ArcTanh}[\text{Cos}[c+d\,x]]}{a\,d}+\frac{\text{Sec}[c+d\,x]}{a\,d}+\frac{\text{Sec}[c+d\,x]^3}{3\,a\,d}+\frac{\text{Sec}[c+d\,x]^5}{5\,a\,d}-\frac{\text{Tan}[c+d\,x]}{a\,d}-\frac{2\,\text{Tan}[c+d\,x]^3}{3\,a\,d}-\frac{\text{Tan}[c+d\,x]^5}{5\,a\,d}$$

Result (type 3, 267 leaves):

$$-\frac{1}{120\,a\,d\,(1+\text{Sin}[c+d\,x])}\text{Sec}[c+d\,x]^3\left(-100-76\,\text{Cos}[2\,(c+d\,x)]+\frac{149}{4}\text{Cos}[3\,(c+d\,x)]-8\,\text{Cos}[4\,(c+d\,x)]+30\,\text{Cos}[3\,(c+d\,x)]\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]\right]+\text{Cos}[c+d\,x]\left(\frac{447}{4}+90\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]\right]-90\,\text{Log}\left[\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]\right)-30\,\text{Cos}[3\,(c+d\,x)]\,\text{Log}\left[\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]-22\,\text{Sin}[c+d\,x]+\frac{149}{4}\text{Sin}[2\,(c+d\,x)]+30\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]\right]\text{Sin}[2\,(c+d\,x)]-30\,\text{Log}\left[\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]\text{Sin}[2\,(c+d\,x)]-14\,\text{Sin}[3\,(c+d\,x)]+\frac{149}{8}\text{Sin}[4\,(c+d\,x)]+15\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]\right]\text{Sin}[4\,(c+d\,x)]-15\,\text{Log}\left[\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]\text{Sin}[4\,(c+d\,x)]\right)$$

Problem 828: Result more than twice size of optimal antiderivative.

$$\int\frac{\text{Csc}[c+d\,x]^2\,\text{Sec}[c+d\,x]^4}{a+a\,\text{Sin}[c+d\,x]}\,dx$$

Optimal (type 3, 126 leaves, 8 steps):

$$\frac{\text{ArcTanh}[\text{Cos}[c+d\,x]]}{a\,d}-\frac{\text{Cot}[c+d\,x]}{a\,d}-\frac{\text{Sec}[c+d\,x]}{a\,d}-\frac{\text{Sec}[c+d\,x]^3}{3\,a\,d}-\frac{\text{Sec}[c+d\,x]^5}{5\,a\,d}+\frac{3\,\text{Tan}[c+d\,x]}{a\,d}+\frac{\text{Tan}[c+d\,x]^3}{a\,d}+\frac{\text{Tan}[c+d\,x]^5}{5\,a\,d}$$

Result (type 3, 341 leaves):

$$-\frac{1}{3840\,a\,d\,(1+\text{Sin}[c+d\,x])}\text{Csc}\left[\frac{1}{2}(c+d\,x)\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]\text{Sec}[c+d\,x]^3\left(176+1216\,\text{Cos}[2\,(c+d\,x)]+149\,\text{Cos}[3\,(c+d\,x)]+528\,\text{Cos}[4\,(c+d\,x)]+149\,\text{Cos}[5\,(c+d\,x)]+120\,\text{Cos}[3\,(c+d\,x)]\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]\right]+120\,\text{Cos}[5\,(c+d\,x)]\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]\right]-120\,\text{Cos}[3\,(c+d\,x)]\,\text{Log}\left[\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]-120\,\text{Cos}[5\,(c+d\,x)]\,\text{Log}\left[\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]+\text{Cos}[c+d\,x]\left(-298-240\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]\right]+240\,\text{Log}\left[\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]\right)+352\,\text{Sin}[c+d\,x]-596\,\text{Sin}[2\,(c+d\,x)]-480\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]\right]\text{Sin}[2\,(c+d\,x)]+480\,\text{Log}\left[\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]\text{Sin}[2\,(c+d\,x)]+864\,\text{Sin}[3\,(c+d\,x)]-298\,\text{Sin}[4\,(c+d\,x)]-240\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]\right]\text{Sin}[4\,(c+d\,x)]+240\,\text{Log}\left[\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]\text{Sin}[4\,(c+d\,x)]+384\,\text{Sin}[5\,(c+d\,x)]\right)$$

Problem 836: Result more than twice size of optimal antiderivative.

$$\int\frac{\text{Csc}[c+d\,x]\,\text{Sec}[c+d\,x]^4}{(a+a\,\text{Sin}[c+d\,x])^2}\,dx$$

Optimal (type 3, 149 leaves, 11 steps):

$$-\frac{\text{ArcTanh}[\text{Cos}[c+d x]]}{a^2 d}+\frac{\text{Sec}[c+d x]}{a^2 d}+\frac{\text{Sec}[c+d x]^3}{3 a^2 d}+\frac{\text{Sec}[c+d x]^5}{5 a^2 d}+\frac{2 \text{Sec}[c+d x]^7}{7 a^2 d}-\frac{2 \text{Tan}[c+d x]}{a^2 d}-\frac{2 \text{Tan}[c+d x]^3}{a^2 d}-\frac{6 \text{Tan}[c+d x]^5}{5 a^2 d}-\frac{2 \text{Tan}[c+d x]^7}{7 a^2 d}$$

Result (type 3, 352 leaves) :

$$\Big(6216+5312 \text{Cos}[2 (c+d x)]-1677 \text{Cos}[3 (c+d x)]+696 \text{Cos}[4 (c+d x)]+559 \text{Cos}[5 (c+d x)]-1260 \text{Cos}[3 (c+d x)] \text{Log}\Big[\text{Cos}\Big[\frac{1}{2} (c+d x)\Big]\Big]+ 420 \text{Cos}[5 (c+d x)] \text{Log}\Big[\text{Cos}\Big[\frac{1}{2} (c+d x)\Big]\Big]-14 \text{Cos}[c+d x] \Big(559+420 \text{Log}\Big[\text{Cos}\Big[\frac{1}{2} (c+d x)\Big]\Big]-420 \text{Log}\Big[\text{Sin}\Big[\frac{1}{2} (c+d x)\Big]\Big]\Big)+ 1260 \text{Cos}[3 (c+d x)] \text{Log}\Big[\text{Sin}\Big[\frac{1}{2} (c+d x)\Big]\Big]-420 \text{Cos}[5 (c+d x)] \text{Log}\Big[\text{Sin}\Big[\frac{1}{2} (c+d x)\Big]\Big]+2464 \text{Sin}[c+d x]-4472 \text{Sin}[2 (c+d x)]- 3360 \text{Log}\Big[\text{Cos}\Big[\frac{1}{2} (c+d x)\Big]\Big] \text{Sin}[2 (c+d x)]+3360 \text{Log}\Big[\text{Sin}\Big[\frac{1}{2} (c+d x)\Big]\Big] \text{Sin}[2 (c+d x)]+2208 \text{Sin}[3 (c+d x)]-2236 \text{Sin}[4 (c+d x)]- 1680 \text{Log}\Big[\text{Cos}\Big[\frac{1}{2} (c+d x)\Big]\Big] \text{Sin}[4 (c+d x)]+1680 \text{Log}\Big[\text{Sin}\Big[\frac{1}{2} (c+d x)\Big]\Big] \text{Sin}[4 (c+d x)]+384 \text{Sin}[5 (c+d x)]\Big)\Big/ \Big(6720 a^2 d \Big(\text{Cos}\Big[\frac{1}{2} (c+d x)\Big]-\text{Sin}\Big[\frac{1}{2} (c+d x)\Big]\Big)^3 \Big(\text{Cos}\Big[\frac{1}{2} (c+d x)\Big]+\text{Sin}\Big[\frac{1}{2} (c+d x)\Big]\Big)^7\Big)$$

- **Problem 837: Result more than twice size of optimal antiderivative.**

$$\int \frac{\text{Csc}[c+d x]^2 \text{Sec}[c+d x]^4}{(a+a \text{Sin}[c+d x])^2} \, dx$$

Optimal (type 3, 164 leaves, 12 steps) :

$$\frac{2 \text{ArcTanh}[\text{Cos}[c+d x]]}{a^2 d}-\frac{\text{Cot}[c+d x]}{a^2 d}-\frac{2 \text{Sec}[c+d x]}{a^2 d}-\frac{2 \text{Sec}[c+d x]^3}{3 a^2 d}-\frac{2 \text{Sec}[c+d x]^5}{5 a^2 d}-\frac{2 \text{Sec}[c+d x]^7}{7 a^2 d}+\frac{5 \text{Tan}[c+d x]}{a^2 d}+\frac{3 \text{Tan}[c+d x]^3}{a^2 d}+\frac{7 \text{Tan}[c+d x]^5}{5 a^2 d}+\frac{2 \text{Tan}[c+d x]^7}{7 a^2 d}$$

Result (type 3, 442 leaves) :

$$\frac{1}{a^2}16\left(-\frac{\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]}{32\,d}+\frac{\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]\right]}{8\,d}-\frac{\text{Log}\left[\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]}{8\,d}+\right.$$
$$\frac{1}{768\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2}+\frac{\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]}{384\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^3}+\frac{13\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]}{384\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)}+$$
$$\frac{\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]}{224\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^7}-\frac{1}{448\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^6}+\frac{3\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]}{140\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^5}-$$
$$\frac{3}{280\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4}+\frac{997\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]}{13\,440\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^3}-$$
$$\left.\frac{997}{26\,880\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2}+\frac{4777\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]}{13\,440\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)}+\frac{\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{32\,d}\right)$$

- **Problem 852: Result more than twice size of optimal antiderivative.**

$$\int(a+a\,\text{Sin}[c+d\,x])\,\text{Tan}[c+d\,x]^5\,dx$$

Optimal (type 3, 115 leaves, 3 steps):

$$-\frac{23\,a\,\text{Log}[1-\text{Sin}[c+d\,x]]}{16\,d}+\frac{7\,a\,\text{Log}[1+\text{Sin}[c+d\,x]]}{16\,d}-\frac{a\,\text{Sin}[c+d\,x]}{d}+\frac{a^3}{8\,d\,(a-a\,\text{Sin}[c+d\,x])^2}-\frac{a^2}{d\,(a-a\,\text{Sin}[c+d\,x])}+\frac{a^2}{8\,d\,(a+a\,\text{Sin}[c+d\,x])}$$

Result (type 3, 246 leaves):

$$-\frac{a\,\text{Log}[\text{Cos}[c+d\,x]]}{d}-\frac{15\,a\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]}{8\,d}+\frac{15\,a\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]}{8\,d}-$$
$$\frac{a\,\text{Sec}[c+d\,x]^2}{d}+\frac{a\,\text{Sec}[c+d\,x]^4}{4\,d}+\frac{a}{16\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4}-\frac{9\,a}{16\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2}-$$
$$\frac{a}{16\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4}+\frac{9\,a}{16\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2}-\frac{a\,\text{Sin}[c+d\,x]}{d}$$

- **Problem 853: Result more than twice size of optimal antiderivative.**

$$\int\text{Sec}[c+d\,x]\,(a+a\,\text{Sin}[c+d\,x])\,\text{Tan}[c+d\,x]^4\,dx$$

Optimal (type 3, 105 leaves, 4 steps):

$$-\frac{11\,a\,\text{Log}[1-\text{Sin}[c+d\,x]]}{16\,d}-\frac{5\,a\,\text{Log}[1+\text{Sin}[c+d\,x]]}{16\,d}+\frac{a^3}{8\,d\,(a-a\,\text{Sin}[c+d\,x])^2}-\frac{3\,a^2}{4\,d\,(a-a\,\text{Sin}[c+d\,x])}-\frac{a^2}{8\,d\,(a+a\,\text{Sin}[c+d\,x])}$$

Result (type 3, 234 leaves) :

$$-\frac{a\,\mathrm{Log}[\mathrm{Cos}[c+d\,x]]}{d}-\frac{3\,a\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]}{8\,d}+\frac{3\,a\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]}{8\,d}-\frac{a\,\mathrm{Sec}[c+d\,x]^2}{d}+\frac{a\,\mathrm{Sec}[c+d\,x]^4}{4\,d}+\frac{a}{16\,d\,\left(\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^4}-\frac{5\,a}{16\,d\,\left(\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}-\frac{a}{16\,d\,\left(\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^4}+\frac{5\,a}{16\,d\,\left(\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}$$

Problem 854: Result more than twice size of optimal antiderivative.

$$\int \mathrm{Sec}[c+d\,x]^2\,(a+a\,\mathrm{Sin}[c+d\,x])\,\mathrm{Tan}[c+d\,x]^3\,dx$$

Optimal (type 3, 84 leaves, 5 steps) :

$$\frac{3\,a\,\mathrm{ArcTanh}[\mathrm{Sin}[c+d\,x]]}{8\,d}+\frac{a^3}{8\,d\,(a-a\,\mathrm{Sin}[c+d\,x])^2}-\frac{a^2}{2\,d\,(a-a\,\mathrm{Sin}[c+d\,x])}+\frac{a^2}{8\,d\,(a+a\,\mathrm{Sin}[c+d\,x])}$$

Result (type 3, 207 leaves) :

$$-\frac{3\,a\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]}{8\,d}+\frac{3\,a\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]}{8\,d}+\frac{a}{16\,d\,\left(\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^4}-\frac{5\,a}{16\,d\,\left(\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}-\frac{a}{16\,d\,\left(\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^4}+\frac{5\,a}{16\,d\,\left(\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}+\frac{a\,\mathrm{Tan}[c+d\,x]^4}{4\,d}$$

Problem 855: Result more than twice size of optimal antiderivative.

$$\int \mathrm{Sec}[c+d\,x]^3\,(a+a\,\mathrm{Sin}[c+d\,x])\,\mathrm{Tan}[c+d\,x]^2\,dx$$

Optimal (type 3, 84 leaves, 5 steps) :

$$-\frac{a\,\mathrm{ArcTanh}[\mathrm{Sin}[c+d\,x]]}{8\,d}+\frac{a^3}{8\,d\,(a-a\,\mathrm{Sin}[c+d\,x])^2}-\frac{a^2}{4\,d\,(a-a\,\mathrm{Sin}[c+d\,x])}-\frac{a^2}{8\,d\,(a+a\,\mathrm{Sin}[c+d\,x])}$$

Result (type 3, 207 leaves) :

$$\frac{a\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]}{8\,d}-\frac{a\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]}{8\,d}+\frac{a}{16\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4}-\frac{a}{16\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2}-\frac{a}{16\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4}+\frac{a}{16\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2}+\frac{a\,\text{Tan}[c+d\,x]^4}{4\,d}$$

- **Problem 856: Result more than twice size of optimal antiderivative.**

$$\int \text{Sec}[c+d\,x]^4\,(a+a\,\text{Sin}[c+d\,x])\,\text{Tan}[c+d\,x]\,dx$$

Optimal (type 3, 61 leaves, 5 steps) :

$$-\frac{a\,\text{ArcTanh}[\text{Sin}[c+d\,x]]}{8\,d}+\frac{a^3}{8\,d\,(a-a\,\text{Sin}[c+d\,x])^2}+\frac{a^2}{8\,d\,(a+a\,\text{Sin}[c+d\,x])}$$

Result (type 3, 207 leaves) :

$$\frac{a\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]}{8\,d}-\frac{a\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]}{8\,d}+\frac{a\,\text{Sec}[c+d\,x]^4}{4\,d}+\frac{a}{16\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4}-\frac{a}{16\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2}-\frac{a}{16\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4}+\frac{a}{16\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2}$$

- **Problem 857: Result more than twice size of optimal antiderivative.**

$$\int \text{Csc}[c+d\,x]\,\text{Sec}[c+d\,x]^5\,(a+a\,\text{Sin}[c+d\,x])\,dx$$

Optimal (type 3, 117 leaves, 4 steps) :

$$-\frac{11\,a\,\text{Log}[1-\text{Sin}[c+d\,x]]}{16\,d}+\frac{a\,\text{Log}[\text{Sin}[c+d\,x]]}{d}-\frac{5\,a\,\text{Log}[1+\text{Sin}[c+d\,x]]}{16\,d}+\frac{a^3}{8\,d\,(a-a\,\text{Sin}[c+d\,x])^2}+\frac{a^2}{2\,d\,(a-a\,\text{Sin}[c+d\,x])}+\frac{a^2}{8\,d\,(a+a\,\text{Sin}[c+d\,x])}$$

Result (type 3, 248 leaves) :

$$-\frac{a\,\text{Log}[\text{Cos}[c+d\,x]]}{d}-\frac{3\,a\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]}{8\,d}+\frac{3\,a\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]}{8\,d}+\frac{a\,\text{Log}[\text{Sin}[c+d\,x]]}{d}+\frac{a\,\text{Sec}[c+d\,x]^2}{2\,d}+\frac{a\,\text{Sec}[c+d\,x]^4}{4\,d}+\frac{a}{16\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4}+\frac{3\,a}{16\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2}-\frac{a}{16\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4}-\frac{3\,a}{16\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2}$$

Problem 858: Result more than twice size of optimal antiderivative.

$$\int \text{Csc}[c+d\,x]^2\,\text{Sec}[c+d\,x]^5\,(a+a\,\text{Sin}[c+d\,x])\,dx$$

Optimal (type 3, 129 leaves, 4 steps):

$$-\frac{a\,\text{Csc}[c+d\,x]}{d}-\frac{23\,a\,\text{Log}[1-\text{Sin}[c+d\,x]]}{16\,d}+\frac{a\,\text{Log}[\text{Sin}[c+d\,x]]}{d}+\frac{7\,a\,\text{Log}[1+\text{Sin}[c+d\,x]]}{16\,d}+\frac{a^3}{8\,d\,(a-a\,\text{Sin}[c+d\,x])^2}+\frac{3\,a^2}{4\,d\,(a-a\,\text{Sin}[c+d\,x])}-\frac{a^2}{8\,d\,(a+a\,\text{Sin}[c+d\,x])}$$

Result (type 3, 284 leaves):

$$-\frac{a\,\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]}{2\,d}-\frac{a\,\text{Log}[\text{Cos}[c+d\,x]]}{d}-\frac{15\,a\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]}{8\,d}+\frac{15\,a\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]}{8\,d}+\frac{a\,\text{Log}[\text{Sin}[c+d\,x]]}{d}+\frac{a\,\text{Sec}[c+d\,x]^2}{2\,d}+\frac{a\,\text{Sec}[c+d\,x]^4}{4\,d}+\frac{a}{16\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4}+\frac{7\,a}{16\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2}-\frac{a}{16\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4}-\frac{7\,a}{16\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2}-\frac{a\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{2\,d}$$

Problem 859: Result more than twice size of optimal antiderivative.

$$\int \text{Csc}[c+d\,x]^3\,\text{Sec}[c+d\,x]^5\,(a+a\,\text{Sin}[c+d\,x])\,dx$$

Optimal (type 3, 143 leaves, 4 steps):

$$-\frac{a\,\text{Csc}[c+d\,x]}{d}-\frac{a\,\text{Csc}[c+d\,x]^2}{2\,d}-\frac{39\,a\,\text{Log}[1-\text{Sin}[c+d\,x]]}{16\,d}+\frac{3\,a\,\text{Log}[\text{Sin}[c+d\,x]]}{d}-\frac{9\,a\,\text{Log}[1+\text{Sin}[c+d\,x]]}{16\,d}+\frac{a^3}{8\,d\,(a-a\,\text{Sin}[c+d\,x])^2}+\frac{a^2}{d\,(a-a\,\text{Sin}[c+d\,x])}+\frac{a^2}{8\,d\,(a+a\,\text{Sin}[c+d\,x])}$$

Result (type 3, 298 leaves):

$$-\frac{a\,\mathrm{Cot}\left[\frac{1}{2}(c+d\,x)\right]}{2\,d}-\frac{a\,\mathrm{Csc}[c+d\,x]^2}{2\,d}-\frac{3\,a\,\mathrm{Log}[\mathrm{Cos}[c+d\,x]]}{d}-\frac{15\,a\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]}{8\,d}+\frac{15\,a\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]}{8\,d}+\frac{3\,a\,\mathrm{Log}[\mathrm{Sin}[c+d\,x]]}{d}+\frac{a\,\mathrm{Sec}[c+d\,x]^2}{d}+\frac{a\,\mathrm{Sec}[c+d\,x]^4}{4\,d}+\frac{a}{16\,d\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4}+\frac{7\,a}{16\,d\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2}-\frac{a}{16\,d\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4}-\frac{7\,a}{16\,d\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2}-\frac{a\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{2\,d}$$

- **Problem 860: Result more than twice size of optimal antiderivative.**

$$\int \mathrm{Csc}[c+d\,x]^4\,\mathrm{Sec}[c+d\,x]^5\,(a+a\,\mathrm{Sin}[c+d\,x])\,dx$$

Optimal (type 3, 162 leaves, 4 steps):

$$-\frac{3\,a\,\mathrm{Csc}[c+d\,x]}{d}-\frac{a\,\mathrm{Csc}[c+d\,x]^2}{2\,d}-\frac{a\,\mathrm{Csc}[c+d\,x]^3}{3\,d}-\frac{59\,a\,\mathrm{Log}[1-\mathrm{Sin}[c+d\,x]]}{16\,d}+\frac{3\,a\,\mathrm{Log}[\mathrm{Sin}[c+d\,x]]}{d}+\frac{11\,a\,\mathrm{Log}[1+\mathrm{Sin}[c+d\,x]]}{16\,d}+\frac{a^3}{8\,d\,(a-a\,\mathrm{Sin}[c+d\,x])^2}+\frac{5\,a^2}{4\,d\,(a-a\,\mathrm{Sin}[c+d\,x])}-\frac{a^2}{8\,d\,(a+a\,\mathrm{Sin}[c+d\,x])}$$

Result (type 3, 358 leaves):

$$-\frac{19\,a\,\mathrm{Cot}\left[\frac{1}{2}(c+d\,x)\right]}{12\,d}-\frac{a\,\mathrm{Cot}\left[\frac{1}{2}(c+d\,x)\right]\mathrm{Csc}\left[\frac{1}{2}(c+d\,x)\right]^2}{24\,d}-\frac{a\,\mathrm{Csc}[c+d\,x]^2}{2\,d}-\frac{3\,a\,\mathrm{Log}[\mathrm{Cos}[c+d\,x]]}{d}-\frac{35\,a\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]}{8\,d}+\frac{35\,a\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]}{8\,d}+\frac{3\,a\,\mathrm{Log}[\mathrm{Sin}[c+d\,x]]}{d}+\frac{a\,\mathrm{Sec}[c+d\,x]^2}{d}+\frac{a\,\mathrm{Sec}[c+d\,x]^4}{4\,d}+\frac{a}{16\,d\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4}+\frac{11\,a}{16\,d\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2}-\frac{a}{16\,d\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4}-\frac{11\,a}{16\,d\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2}-\frac{19\,a\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{12\,d}-\frac{a\,\mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{24\,d}$$

- **Problem 863: Result more than twice size of optimal antiderivative.**

$$\int \mathrm{Sec}[c+d\,x]^2\,(a+a\,\mathrm{Sin}[c+d\,x])^2\,\mathrm{Tan}[c+d\,x]^3\,dx$$

Optimal (type 3, 87 leaves, 4 steps):

$$-\frac{7 a^2 \text{Log}[1-\text{Sin}[c+d x]]}{8 d}-\frac{a^2 \text{Log}[1+\text{Sin}[c+d x]]}{8 d}+\frac{a^4}{4 d (a-a \text{Sin}[c+d x])^2}-\frac{5 a^3}{4 d (a-a \text{Sin}[c+d x])}$$

Result (type 3, 270 leaves) :

$$-\frac{a^2 \text{Log}[\text{Cos}[c+d x]]}{d}-\frac{3 a^2 \text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]-\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right]}{4 d}+\frac{3 a^2 \text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right]}{4 d}-\frac{a^2 \text{Sec}[c+d x]^2}{d}+\frac{a^2 \text{Sec}[c+d x]^4}{4 d}+\frac{a^2}{8 d \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]-\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^4}-\frac{5 a^2}{8 d \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]-\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^2}-\frac{a^2}{8 d \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^4}+\frac{5 a^2}{8 d \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^2}+\frac{a^2 \text{Tan}[c+d x]^4}{4 d}$$

Problem 869: Result more than twice size of optimal antiderivative.

$$\int \text{Csc}[c+d x]^4 \, \text{Sec}[c+d x]^5 \, (a+a \text{Sin}[c+d x])^2 \, dx$$

Optimal (type 3, 150 leaves, 4 steps) :

$$-\frac{4 a^2 \text{Csc}[c+d x]}{d}-\frac{a^2 \text{Csc}[c+d x]^2}{d}-\frac{a^2 \text{Csc}[c+d x]^3}{3 d}-\frac{49 a^2 \text{Log}[1-\text{Sin}[c+d x]]}{8 d}+\frac{6 a^2 \text{Log}[\text{Sin}[c+d x]]}{d}+\frac{a^2 \text{Log}[1+\text{Sin}[c+d x]]}{8 d}+\frac{a^4}{4 d (a-a \text{Sin}[c+d x])^2}+\frac{9 a^3}{4 d (a-a \text{Sin}[c+d x])}$$

Result (type 3, 652 leaves) :

$$-\frac{25\,\text{Cot}\left[\frac{1}{2}(c+d x)\right](a+a\,\text{Sin}[c+d x])^2}{12\,d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^4}-\frac{\text{Csc}\left[\frac{1}{2}(c+d x)\right]^2(a+a\,\text{Sin}[c+d x])^2}{4\,d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^4}-$$

$$\frac{\text{Cot}\left[\frac{1}{2}(c+d x)\right]\text{Csc}\left[\frac{1}{2}(c+d x)\right]^2(a+a\,\text{Sin}[c+d x])^2}{24\,d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^4}-\frac{49\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right](a+a\,\text{Sin}[c+d x])^2}{4\,d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^4}+$$

$$\frac{\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right](a+a\,\text{Sin}[c+d x])^2}{4\,d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^4}+\frac{6\,\text{Log}[\text{Sin}[c+d x]](a+a\,\text{Sin}[c+d x])^2}{d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^4}-$$

$$\frac{\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2(a+a\,\text{Sin}[c+d x])^2}{4\,d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^4}+\frac{(a+a\,\text{Sin}[c+d x])^2}{4\,d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^4\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^4}+$$

$$\frac{9\,(a+a\,\text{Sin}[c+d x])^2}{4\,d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^4}-$$

$$\frac{25\,(a+a\,\text{Sin}[c+d x])^2\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]}{12\,d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^4}-\frac{\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2(a+a\,\text{Sin}[c+d x])^2\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]}{24\,d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^4}$$

- **Problem 882: Result more than twice size of optimal antiderivative.**

$$\int \frac{\text{Tan}[c+d x]^7}{a+a\,\text{Sin}[c+d x]}\,dx$$

Optimal (type 3, 130 leaves, 8 steps):

$$-\frac{35\,\text{ArcTanh}[\text{Sin}[c+d x]]}{128\,a\,d}+\frac{35\,\text{Sec}[c+d x]\,\text{Tan}[c+d x]}{128\,a\,d}-\frac{35\,\text{Sec}[c+d x]\,\text{Tan}[c+d x]^3}{192\,a\,d}+\frac{7\,\text{Sec}[c+d x]\,\text{Tan}[c+d x]^5}{48\,a\,d}-\frac{\text{Sec}[c+d x]\,\text{Tan}[c+d x]^7}{8\,a\,d}+\frac{\text{Tan}[c+d x]^8}{8\,a\,d}$$

Result (type 3, 342 leaves):

$$\frac{1}{384\, d\, (a + a\, \text{Sin}[c + d\, x])} \left(-192 + \frac{6}{\left(\text{Cos}\left[\frac{1}{2}(c + d\, x)\right] + \text{Sin}\left[\frac{1}{2}(c + d\, x)\right]\right)^6} - \frac{40}{\left(\text{Cos}\left[\frac{1}{2}(c + d\, x)\right] + \text{Sin}\left[\frac{1}{2}(c + d\, x)\right]\right)^4} + \frac{114}{\left(\text{Cos}\left[\frac{1}{2}(c + d\, x)\right] + \text{Sin}\left[\frac{1}{2}(c + d\, x)\right]\right)^2} + 105\, \text{Log}\left[\text{Cos}\left[\frac{1}{2}(c + d\, x)\right] - \text{Sin}\left[\frac{1}{2}(c + d\, x)\right]\right] \left(\text{Cos}\left[\frac{1}{2}(c + d\, x)\right] + \text{Sin}\left[\frac{1}{2}(c + d\, x)\right]\right)^2 - 105\, \text{Log}\left[\text{Cos}\left[\frac{1}{2}(c + d\, x)\right] + \text{Sin}\left[\frac{1}{2}(c + d\, x)\right]\right] \left(\text{Cos}\left[\frac{1}{2}(c + d\, x)\right] + \text{Sin}\left[\frac{1}{2}(c + d\, x)\right]\right)^2 + \frac{4 \left(\text{Cos}\left[\frac{1}{2}(c + d\, x)\right] + \text{Sin}\left[\frac{1}{2}(c + d\, x)\right]\right)^2}{\left(\text{Cos}\left[\frac{1}{2}(c + d\, x)\right] - \text{Sin}\left[\frac{1}{2}(c + d\, x)\right]\right)^6} - \frac{27 \left(\text{Cos}\left[\frac{1}{2}(c + d\, x)\right] + \text{Sin}\left[\frac{1}{2}(c + d\, x)\right]\right)^2}{\left(\text{Cos}\left[\frac{1}{2}(c + d\, x)\right] - \text{Sin}\left[\frac{1}{2}(c + d\, x)\right]\right)^4} + \frac{87 \left(\text{Cos}\left[\frac{1}{2}(c + d\, x)\right] + \text{Sin}\left[\frac{1}{2}(c + d\, x)\right]\right)^2}{\left(\text{Cos}\left[\frac{1}{2}(c + d\, x)\right] - \text{Sin}\left[\frac{1}{2}(c + d\, x)\right]\right)^2}\right)$$

- **Problem 883: Result more than twice size of optimal antiderivative.**

$$\int \frac{\text{Sec}[c + d\, x]\, \text{Tan}[c + d\, x]^6}{a + a\, \text{Sin}[c + d\, x]}\, dx$$

Optimal (type 3, 134 leaves, 8 steps):

$$-\frac{5\, \text{ArcTanh}[\text{Sin}[c + d\, x]]}{128\, a\, d} - \frac{5\, \text{Sec}[c + d\, x]\, \text{Tan}[c + d\, x]}{128\, a\, d} + \frac{5\, \text{Sec}[c + d\, x]^3\, \text{Tan}[c + d\, x]}{64\, a\, d} - \frac{5\, \text{Sec}[c + d\, x]^3\, \text{Tan}[c + d\, x]^3}{48\, a\, d} + \frac{\text{Sec}[c + d\, x]^3\, \text{Tan}[c + d\, x]^5}{8\, a\, d} - \frac{\text{Tan}[c + d\, x]^8}{8\, a\, d}$$

Result (type 3, 342 leaves):

$$\frac{1}{384\, d\, (a + a\, \text{Sin}[c + d\, x])} \left(60 - \frac{6}{\left(\text{Cos}\left[\frac{1}{2}(c + d\, x)\right] + \text{Sin}\left[\frac{1}{2}(c + d\, x)\right]\right)^6} + \frac{32}{\left(\text{Cos}\left[\frac{1}{2}(c + d\, x)\right] + \text{Sin}\left[\frac{1}{2}(c + d\, x)\right]\right)^4} - \frac{66}{\left(\text{Cos}\left[\frac{1}{2}(c + d\, x)\right] + \text{Sin}\left[\frac{1}{2}(c + d\, x)\right]\right)^2} + 15\, \text{Log}\left[\text{Cos}\left[\frac{1}{2}(c + d\, x)\right] - \text{Sin}\left[\frac{1}{2}(c + d\, x)\right]\right] \left(\text{Cos}\left[\frac{1}{2}(c + d\, x)\right] + \text{Sin}\left[\frac{1}{2}(c + d\, x)\right]\right)^2 - 15\, \text{Log}\left[\text{Cos}\left[\frac{1}{2}(c + d\, x)\right] + \text{Sin}\left[\frac{1}{2}(c + d\, x)\right]\right] \left(\text{Cos}\left[\frac{1}{2}(c + d\, x)\right] + \text{Sin}\left[\frac{1}{2}(c + d\, x)\right]\right)^2 + \frac{4 \left(\text{Cos}\left[\frac{1}{2}(c + d\, x)\right] + \text{Sin}\left[\frac{1}{2}(c + d\, x)\right]\right)^2}{\left(\text{Cos}\left[\frac{1}{2}(c + d\, x)\right] - \text{Sin}\left[\frac{1}{2}(c + d\, x)\right]\right)^6} - \frac{21 \left(\text{Cos}\left[\frac{1}{2}(c + d\, x)\right] + \text{Sin}\left[\frac{1}{2}(c + d\, x)\right]\right)^2}{\left(\text{Cos}\left[\frac{1}{2}(c + d\, x)\right] - \text{Sin}\left[\frac{1}{2}(c + d\, x)\right]\right)^4} + \frac{45 \left(\text{Cos}\left[\frac{1}{2}(c + d\, x)\right] + \text{Sin}\left[\frac{1}{2}(c + d\, x)\right]\right)^2}{\left(\text{Cos}\left[\frac{1}{2}(c + d\, x)\right] - \text{Sin}\left[\frac{1}{2}(c + d\, x)\right]\right)^2}\right)$$

- **Problem 884: Result more than twice size of optimal antiderivative.**

$$\int \frac{\text{Sec}[c + d\, x]^2\, \text{Tan}[c + d\, x]^5}{a + a\, \text{Sin}[c + d\, x]}\, dx$$

Optimal (type 3, 152 leaves, 9 steps):

$$\frac{5\,\text{ArcTanh}[\text{Sin}[c+d\,x]]}{128\,a\,d}+\frac{5\,\text{Sec}[c+d\,x]\,\text{Tan}[c+d\,x]}{128\,a\,d}-\frac{5\,\text{Sec}[c+d\,x]^3\,\text{Tan}[c+d\,x]}{64\,a\,d}+\frac{5\,\text{Sec}[c+d\,x]^3\,\text{Tan}[c+d\,x]^3}{48\,a\,d}-\frac{\text{Sec}[c+d\,x]^3\,\text{Tan}[c+d\,x]^5}{8\,a\,d}+\frac{\text{Tan}[c+d\,x]^6}{6\,a\,d}+\frac{\text{Tan}[c+d\,x]^8}{8\,a\,d}$$

Result (type 3, 340 leaves):

$$\frac{1}{384\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^6(a+a\,\text{Sin}[c+d\,x])}\left(6-24\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2+30\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4-15\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^8+15\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^8+\frac{4\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^8}{\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^6}-\frac{15\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^8}{\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4}+\frac{15\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^8}{\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2}\right)$$

- **Problem 885: Result more than twice size of optimal antiderivative.**

$$\int\frac{\text{Sec}[c+d\,x]^3\,\text{Tan}[c+d\,x]^4}{a+a\,\text{Sin}[c+d\,x]}\,dx$$

Optimal (type 3, 150 leaves, 9 steps):

$$\frac{3\,\text{ArcTanh}[\text{Sin}[c+d\,x]]}{128\,a\,d}+\frac{3\,\text{Sec}[c+d\,x]\,\text{Tan}[c+d\,x]}{128\,a\,d}+\frac{\text{Sec}[c+d\,x]^3\,\text{Tan}[c+d\,x]}{64\,a\,d}-\frac{\text{Sec}[c+d\,x]^5\,\text{Tan}[c+d\,x]}{16\,a\,d}+\frac{\text{Sec}[c+d\,x]^5\,\text{Tan}[c+d\,x]^3}{8\,a\,d}-\frac{\text{Tan}[c+d\,x]^6}{6\,a\,d}-\frac{\text{Tan}[c+d\,x]^8}{8\,a\,d}$$

Result (type 3, 342 leaves):

$$-\frac{1}{384\,d\,(a+a\,\mathrm{Sin}[c+d\,x])}\left(12+\frac{6}{\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^6}-\frac{16}{\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4}+\frac{6}{\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2}+9\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2-9\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2-\frac{4\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2}{\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^6}+\frac{9\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2}{\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4}+\frac{3\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2}{\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2}\right)$$

Problem 886: Result more than twice size of optimal antiderivative.

$$\int\frac{\mathrm{Sec}[c+d\,x]^4\,\mathrm{Tan}[c+d\,x]^3}{a+a\,\mathrm{Sin}[c+d\,x]}\,dx$$

Optimal (type 3, 150 leaves, 9 steps):

$$-\frac{3\,\mathrm{ArcTanh}[\mathrm{Sin}[c+d\,x]]}{128\,a\,d}-\frac{\mathrm{Sec}[c+d\,x]^6}{6\,a\,d}+\frac{\mathrm{Sec}[c+d\,x]^8}{8\,a\,d}-\frac{3\,\mathrm{Sec}[c+d\,x]\,\mathrm{Tan}[c+d\,x]}{128\,a\,d}-\frac{\mathrm{Sec}[c+d\,x]^3\,\mathrm{Tan}[c+d\,x]}{64\,a\,d}+\frac{\mathrm{Sec}[c+d\,x]^5\,\mathrm{Tan}[c+d\,x]}{16\,a\,d}-\frac{\mathrm{Sec}[c+d\,x]^5\,\mathrm{Tan}[c+d\,x]^3}{8\,a\,d}$$

Result (type 3, 340 leaves):

$$-\frac{1}{384\,d\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^6(a+a\,\mathrm{Sin}[c+d\,x])}\left(-6+8\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2+6\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4-9\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^8+9\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^8-\frac{4\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^8}{\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^6}+\frac{3\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^8}{\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4}+\frac{9\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^8}{\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2}\right)$$

Problem 887: Result more than twice size of optimal antiderivative.

$$\int\frac{\mathrm{Sec}[c+d\,x]^5\,\mathrm{Tan}[c+d\,x]^2}{a+a\,\mathrm{Sin}[c+d\,x]}\,dx$$

Optimal (type 3, 148 leaves, 9 steps):

$$-\frac{5\,\text{ArcTanh}[\text{Sin}[c+d\,x]]}{128\,a\,d}+\frac{\text{Sec}[c+d\,x]^6}{6\,a\,d}-\frac{\text{Sec}[c+d\,x]^8}{8\,a\,d}-\frac{5\,\text{Sec}[c+d\,x]\,\text{Tan}[c+d\,x]}{128\,a\,d}-\frac{5\,\text{Sec}[c+d\,x]^3\,\text{Tan}[c+d\,x]}{192\,a\,d}-\frac{\text{Sec}[c+d\,x]^5\,\text{Tan}[c+d\,x]}{48\,a\,d}+\frac{\text{Sec}[c+d\,x]^7\,\text{Tan}[c+d\,x]}{8\,a\,d}$$

Result (type 3, 317 leaves) :

$$\frac{1}{384\,d\,(a+a\,\text{Sin}[c+d\,x])}\left(12-\frac{6}{\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^6}+\frac{6}{\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}+15\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2-15\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2+\frac{4\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}{\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^6}+\frac{3\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}{\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^4}-\frac{3\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}{\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}\right)$$

- **Problem 888: Result more than twice size of optimal antiderivative.**

$$\int\frac{\text{Sec}[c+d\,x]^6\,\text{Tan}[c+d\,x]}{a+a\,\text{Sin}[c+d\,x]}\,dx$$

Optimal (type 3, 130 leaves, 8 steps) :

$$\frac{5\,\text{ArcTanh}[\text{Sin}[c+d\,x]]}{128\,a\,d}+\frac{\text{Sec}[c+d\,x]^8}{8\,a\,d}+\frac{5\,\text{Sec}[c+d\,x]\,\text{Tan}[c+d\,x]}{128\,a\,d}+\frac{5\,\text{Sec}[c+d\,x]^3\,\text{Tan}[c+d\,x]}{192\,a\,d}+\frac{\text{Sec}[c+d\,x]^5\,\text{Tan}[c+d\,x]}{48\,a\,d}-\frac{\text{Sec}[c+d\,x]^7\,\text{Tan}[c+d\,x]}{8\,a\,d}$$

Result (type 3, 340 leaves) :

$$\frac{1}{384\,d\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^6(a+a\,\text{Sin}[c+d\,x])}\left(6+8\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2+6\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^4-15\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^8+15\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^8+\frac{4\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^8}{\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^6}+\frac{9\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^8}{\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^4}+\frac{15\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^8}{\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}\right)$$

Problem 889: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Sec}[c+d x]^7}{a+a \text{Sin}[c+d x]} \, dx$$

Optimal (type 3, 165 leaves, 4 steps):

$$\frac{35 \text{ArcTanh}[\text{Sin}[c+d x]]}{128 a d}+\frac{a^2}{96 d (a-a \text{Sin}[c+d x])^3}+\frac{5 a}{128 d (a-a \text{Sin}[c+d x])^2}+\frac{15}{128 d (a-a \text{Sin}[c+d x])}-\frac{a^3}{64 d (a+a \text{Sin}[c+d x])^4}-\frac{a^2}{24 d (a+a \text{Sin}[c+d x])^3}-\frac{5 a}{64 d (a+a \text{Sin}[c+d x])^2}-\frac{5}{32 d (a+a \text{Sin}[c+d x])}$$

Result (type 3, 342 leaves):

$$\frac{1}{384 d (a+a \text{Sin}[c+d x])}\left(-60-\frac{6}{\left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^6}-\frac{16}{\left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^4}-\frac{30}{\left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^2}-105 \text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]-\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right]\left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^2+105 \text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right]\left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^2+\frac{4\left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^2}{\left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]-\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^6}+\frac{15\left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^2}{\left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]-\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^4}+\frac{45\left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^2}{\left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]-\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^2}\right)$$

Problem 891: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Csc}[c+d x]^2 \text{Sec}[c+d x]^7}{a+a \text{Sin}[c+d x]} \, dx$$

Optimal (type 3, 217 leaves, 4 steps):

$$-\frac{\text{Csc}[c+d x]}{a d}-\frac{187 \text{Log}[1-\text{Sin}[c+d x]]}{256 a d}-\frac{\text{Log}[\text{Sin}[c+d x]]}{a d}+\frac{443 \text{Log}[1+\text{Sin}[c+d x]]}{256 a d}+\frac{a^2}{96 d (a-a \text{Sin}[c+d x])^3}+\frac{9 a}{128 d (a-a \text{Sin}[c+d x])^2}+\frac{47}{128 d (a-a \text{Sin}[c+d x])}-\frac{a^3}{64 d (a+a \text{Sin}[c+d x])^4}-\frac{a^2}{12 d (a+a \text{Sin}[c+d x])^3}-\frac{19 a}{64 d (a+a \text{Sin}[c+d x])^2}-\frac{35}{32 d (a+a \text{Sin}[c+d x])}$$

Result (type 3, 628 leaves):

$$-\frac{35}{32\,d\,(a+a\,\mathrm{Sin}[c+d\,x])}-\frac{1}{64\,d\,\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^6(a+a\,\mathrm{Sin}[c+d\,x])}-$$

$$\frac{1}{12\,d\,\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4(a+a\,\mathrm{Sin}[c+d\,x])}-\frac{19}{64\,d\,\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2(a+a\,\mathrm{Sin}[c+d\,x])}-$$

$$\frac{\mathrm{Cot}\left[\frac{1}{2}(c+d\,x)\right]\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2}{2\,d\,(a+a\,\mathrm{Sin}[c+d\,x])}-\frac{187\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2}{128\,d\,(a+a\,\mathrm{Sin}[c+d\,x])}+$$

$$\frac{443\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2}{128\,d\,(a+a\,\mathrm{Sin}[c+d\,x])}-\frac{\mathrm{Log}[\mathrm{Sin}[c+d\,x]]\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2}{d\,(a+a\,\mathrm{Sin}[c+d\,x])}+$$

$$\frac{\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2}{96\,d\,\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^6(a+a\,\mathrm{Sin}[c+d\,x])}+\frac{9\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2}{128\,d\,\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4(a+a\,\mathrm{Sin}[c+d\,x])}+$$

$$\frac{47\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2}{128\,d\,\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2(a+a\,\mathrm{Sin}[c+d\,x])}-\frac{\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{2\,d\,(a+a\,\mathrm{Sin}[c+d\,x])}$$

- **Problem 892: Result more than twice size of optimal antiderivative.**

$$\int\frac{\mathrm{Csc}[c+d\,x]^3\,\mathrm{Sec}[c+d\,x]^7}{a+a\,\mathrm{Sin}[c+d\,x]}\,dx$$

Optimal (type 3, 232 leaves, 4 steps):

$$\frac{\mathrm{Csc}[c+d\,x]}{a\,d}-\frac{\mathrm{Csc}[c+d\,x]^2}{2\,a\,d}-\frac{325\,\mathrm{Log}[1-\mathrm{Sin}[c+d\,x]]}{256\,a\,d}+\frac{5\,\mathrm{Log}[\mathrm{Sin}[c+d\,x]]}{a\,d}-$$

$$\frac{955\,\mathrm{Log}[1+\mathrm{Sin}[c+d\,x]]}{256\,a\,d}+\frac{a^2}{96\,d\,(a-a\,\mathrm{Sin}[c+d\,x])^3}+\frac{11\,a}{128\,d\,(a-a\,\mathrm{Sin}[c+d\,x])^2}+\frac{69}{128\,d\,(a-a\,\mathrm{Sin}[c+d\,x])}+$$

$$\frac{a^3}{64\,d\,(a+a\,\mathrm{Sin}[c+d\,x])^4}+\frac{5\,a^2}{48\,d\,(a+a\,\mathrm{Sin}[c+d\,x])^3}+\frac{29\,a}{64\,d\,(a+a\,\mathrm{Sin}[c+d\,x])^2}+\frac{2}{d\,(a+a\,\mathrm{Sin}[c+d\,x])}$$

Result (type 3, 734 leaves):

$$\frac{2}{d\,(a+a\,\text{Sin}[c+d\,x])}+\frac{1}{64\,d\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^6\,(a+a\,\text{Sin}[c+d\,x])}+$$

$$\frac{5}{48\,d\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^4\,(a+a\,\text{Sin}[c+d\,x])}+\frac{29}{64\,d\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2\,(a+a\,\text{Sin}[c+d\,x])}+$$

$$\frac{\text{Cot}\left[\frac{1}{2}\,(c+d\,x)\right]\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}{2\,d\,(a+a\,\text{Sin}[c+d\,x])}-\frac{\text{Csc}\left[\frac{1}{2}\,(c+d\,x)\right]^2\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}{8\,d\,(a+a\,\text{Sin}[c+d\,x])}-$$

$$\frac{325\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}{128\,d\,(a+a\,\text{Sin}[c+d\,x])}-$$

$$\frac{955\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}{128\,d\,(a+a\,\text{Sin}[c+d\,x])}+$$

$$\frac{5\,\text{Log}[\text{Sin}[c+d\,x]]\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}{d\,(a+a\,\text{Sin}[c+d\,x])}-\frac{\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}{8\,d\,(a+a\,\text{Sin}[c+d\,x])}+$$

$$\frac{\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}{96\,d\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^6\,(a+a\,\text{Sin}[c+d\,x])}+\frac{11\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}{128\,d\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^4\,(a+a\,\text{Sin}[c+d\,x])}+$$

$$\frac{69\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}{128\,d\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2\,(a+a\,\text{Sin}[c+d\,x])}+\frac{\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]}{2\,d\,(a+a\,\text{Sin}[c+d\,x])}$$

- **Problem 893: Result more than twice size of optimal antiderivative.**

$$\int\frac{\text{Csc}[c+d\,x]^4\,\text{Sec}[c+d\,x]^7}{a+a\,\text{Sin}[c+d\,x]}\,dx$$

Optimal (type 3, 253 leaves, 4 steps):

$$-\frac{5\,\text{Csc}[c+d\,x]}{a\,d}+\frac{\text{Csc}[c+d\,x]^2}{2\,a\,d}-\frac{\text{Csc}[c+d\,x]^3}{3\,a\,d}-\frac{515\,\text{Log}[1-\text{Sin}[c+d\,x]]}{256\,a\,d}-\frac{5\,\text{Log}[\text{Sin}[c+d\,x]]}{a\,d}+$$

$$\frac{1795\,\text{Log}[1+\text{Sin}[c+d\,x]]}{256\,a\,d}+\frac{a^2}{96\,d\,(a-a\,\text{Sin}[c+d\,x])^3}+\frac{13\,a}{128\,d\,(a-a\,\text{Sin}[c+d\,x])^2}+\frac{95}{128\,d\,(a-a\,\text{Sin}[c+d\,x])}-$$

$$\frac{a^3}{64\,d\,(a+a\,\text{Sin}[c+d\,x])^4}-\frac{a^2}{8\,d\,(a+a\,\text{Sin}[c+d\,x])^3}-\frac{41\,a}{64\,d\,(a+a\,\text{Sin}[c+d\,x])^2}-\frac{105}{32\,d\,(a+a\,\text{Sin}[c+d\,x])}$$

Result (type 3, 864 leaves):

$$-\frac{105}{32 d (a+a \operatorname{Sin}[c+d x])}-\frac{1}{64 d \left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^6 (a+a \operatorname{Sin}[c+d x])}-$$

$$\frac{1}{8 d \left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^4 (a+a \operatorname{Sin}[c+d x])}-\frac{41}{64 d \left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2 (a+a \operatorname{Sin}[c+d x])}-$$

$$\frac{31 \operatorname{Cot}\left[\frac{1}{2}(c+d x)\right] \left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2}{12 d (a+a \operatorname{Sin}[c+d x])}+\frac{\operatorname{Csc}\left[\frac{1}{2}(c+d x)\right]^2 \left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2}{8 d (a+a \operatorname{Sin}[c+d x])}-$$

$$\frac{\operatorname{Cot}\left[\frac{1}{2}(c+d x)\right] \operatorname{Csc}\left[\frac{1}{2}(c+d x)\right]^2 \left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2}{24 d (a+a \operatorname{Sin}[c+d x])}-$$

$$\frac{515 \operatorname{Log}\left[\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]-\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right] \left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2}{128 d (a+a \operatorname{Sin}[c+d x])}+$$

$$\frac{1795 \operatorname{Log}\left[\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right] \left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2}{128 d (a+a \operatorname{Sin}[c+d x])}-\frac{5 \operatorname{Log}[\operatorname{Sin}[c+d x]] \left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2}{d (a+a \operatorname{Sin}[c+d x])}+$$

$$\frac{\operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2}{8 d (a+a \operatorname{Sin}[c+d x])}+\frac{\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2}{96 d \left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]-\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^6 (a+a \operatorname{Sin}[c+d x])}+$$

$$\frac{13 \left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2}{128 d \left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]-\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^4 (a+a \operatorname{Sin}[c+d x])}+\frac{95 \left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2}{128 d \left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]-\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2 (a+a \operatorname{Sin}[c+d x])}-$$

$$\frac{31 \left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2 \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]}{12 d (a+a \operatorname{Sin}[c+d x])}-\frac{\operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2 \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]}{24 d (a+a \operatorname{Sin}[c+d x])}$$

- **Problem 897: Result more than twice size of optimal antiderivative.**

$$\int \frac{\operatorname{Sin}[c+d x] \operatorname{Tan}[c+d x]^9}{a+a \operatorname{Sin}[c+d x]} \, dx$$

Optimal (type 3, 233 leaves, 4 steps):

$$-\frac{193 \operatorname{Log}[1-\operatorname{Sin}[c+d x]]}{512 a d}-\frac{319 \operatorname{Log}[1+\operatorname{Sin}[c+d x]]}{512 a d}+\frac{a^3}{256 d (a-a \operatorname{Sin}[c+d x])^4}-$$

$$\frac{7 a^2}{192 d (a-a \operatorname{Sin}[c+d x])^3}+\frac{81 a}{512 d (a-a \operatorname{Sin}[c+d x])^2}-\frac{61}{128 d (a-a \operatorname{Sin}[c+d x])}-\frac{a^4}{160 d (a+a \operatorname{Sin}[c+d x])^5}+$$

$$\frac{15 a^3}{256 d (a+a \operatorname{Sin}[c+d x])^4}-\frac{95 a^2}{384 d (a+a \operatorname{Sin}[c+d x])^3}+\frac{325 a}{512 d (a+a \operatorname{Sin}[c+d x])^2}-\frac{315}{256 d (a+a \operatorname{Sin}[c+d x])}$$

Result (type 3, 586 leaves):

$$-\frac{315}{256 d (a+a \sin[c+d x])}-\frac{1}{160 d \left(\cos\left[\frac{1}{2}(c+d x)\right]+\sin\left[\frac{1}{2}(c+d x)\right]\right)^8 (a+a \sin[c+d x])}+$$

$$\frac{15}{256 d \left(\cos\left[\frac{1}{2}(c+d x)\right]+\sin\left[\frac{1}{2}(c+d x)\right]\right)^6 (a+a \sin[c+d x])}-$$

$$\frac{95}{384 d \left(\cos\left[\frac{1}{2}(c+d x)\right]+\sin\left[\frac{1}{2}(c+d x)\right]\right)^4 (a+a \sin[c+d x])}+\frac{325}{512 d \left(\cos\left[\frac{1}{2}(c+d x)\right]+\sin\left[\frac{1}{2}(c+d x)\right]\right)^2 (a+a \sin[c+d x])}-$$

$$\frac{193 \operatorname{Log}\left[\cos\left[\frac{1}{2}(c+d x)\right]-\sin\left[\frac{1}{2}(c+d x)\right]\right] \left(\cos\left[\frac{1}{2}(c+d x)\right]+\sin\left[\frac{1}{2}(c+d x)\right]\right)^2}{256 d (a+a \sin[c+d x])}-$$

$$\frac{319 \operatorname{Log}\left[\cos\left[\frac{1}{2}(c+d x)\right]+\sin\left[\frac{1}{2}(c+d x)\right]\right] \left(\cos\left[\frac{1}{2}(c+d x)\right]+\sin\left[\frac{1}{2}(c+d x)\right]\right)^2}{256 d (a+a \sin[c+d x])}+$$

$$\frac{\left(\cos\left[\frac{1}{2}(c+d x)\right]+\sin\left[\frac{1}{2}(c+d x)\right]\right)^2}{256 d \left(\cos\left[\frac{1}{2}(c+d x)\right]-\sin\left[\frac{1}{2}(c+d x)\right]\right)^8 (a+a \sin[c+d x])}-\frac{7 \left(\cos\left[\frac{1}{2}(c+d x)\right]+\sin\left[\frac{1}{2}(c+d x)\right]\right)^2}{192 d \left(\cos\left[\frac{1}{2}(c+d x)\right]-\sin\left[\frac{1}{2}(c+d x)\right]\right)^6 (a+a \sin[c+d x])}+$$

$$\frac{81 \left(\cos\left[\frac{1}{2}(c+d x)\right]+\sin\left[\frac{1}{2}(c+d x)\right]\right)^2}{512 d \left(\cos\left[\frac{1}{2}(c+d x)\right]-\sin\left[\frac{1}{2}(c+d x)\right]\right)^4 (a+a \sin[c+d x])}-\frac{61 \left(\cos\left[\frac{1}{2}(c+d x)\right]+\sin\left[\frac{1}{2}(c+d x)\right]\right)^2}{128 d \left(\cos\left[\frac{1}{2}(c+d x)\right]-\sin\left[\frac{1}{2}(c+d x)\right]\right)^2 (a+a \sin[c+d x])}$$

- **Problem 898: Result more than twice size of optimal antiderivative.**

$$\int \frac{\tan[c+d x]^9}{a+a \sin[c+d x]} \, dx$$

Optimal (type 3, 154 leaves, 9 steps) :

$$\frac{63 \operatorname{ArcTanh}[\sin[c+d x]]}{256 a d}-\frac{63 \sec[c+d x] \tan[c+d x]}{256 a d}+\frac{21 \sec[c+d x] \tan[c+d x]^3}{128 a d}-$$

$$\frac{21 \sec[c+d x] \tan[c+d x]^5}{160 a d}+\frac{9 \sec[c+d x] \tan[c+d x]^7}{80 a d}-\frac{\sec[c+d x] \tan[c+d x]^9}{10 a d}+\frac{\tan[c+d x]^{10}}{10 a d}$$

Result (type 3, 417 leaves) :

$$\frac{1}{2560\, d\, (a + a\, \text{Sin}[c + d\, x])} \left(1280 + \frac{16}{\left(\text{Cos}\left[\frac{1}{2}(c + d\, x)\right] + \text{Sin}\left[\frac{1}{2}(c + d\, x)\right]\right)^8} - \frac{130}{\left(\text{Cos}\left[\frac{1}{2}(c + d\, x)\right] + \text{Sin}\left[\frac{1}{2}(c + d\, x)\right]\right)^6} + \frac{460}{\left(\text{Cos}\left[\frac{1}{2}(c + d\, x)\right] + \text{Sin}\left[\frac{1}{2}(c + d\, x)\right]\right)^4} - \right.$$

$$\frac{935}{\left(\text{Cos}\left[\frac{1}{2}(c + d\, x)\right] + \text{Sin}\left[\frac{1}{2}(c + d\, x)\right]\right)^2} - 630\, \text{Log}\left[\text{Cos}\left[\frac{1}{2}(c + d\, x)\right] - \text{Sin}\left[\frac{1}{2}(c + d\, x)\right]\right] \left(\text{Cos}\left[\frac{1}{2}(c + d\, x)\right] + \text{Sin}\left[\frac{1}{2}(c + d\, x)\right]\right)^2 +$$

$$630\, \text{Log}\left[\text{Cos}\left[\frac{1}{2}(c + d\, x)\right] + \text{Sin}\left[\frac{1}{2}(c + d\, x)\right]\right] \left(\text{Cos}\left[\frac{1}{2}(c + d\, x)\right] + \text{Sin}\left[\frac{1}{2}(c + d\, x)\right]\right)^2 + \frac{10 \left(\text{Cos}\left[\frac{1}{2}(c + d\, x)\right] + \text{Sin}\left[\frac{1}{2}(c + d\, x)\right]\right)^2}{\left(\text{Cos}\left[\frac{1}{2}(c + d\, x)\right] - \text{Sin}\left[\frac{1}{2}(c + d\, x)\right]\right)^8} -$$

$$\left. \frac{80 \left(\text{Cos}\left[\frac{1}{2}(c + d\, x)\right] + \text{Sin}\left[\frac{1}{2}(c + d\, x)\right]\right)^2}{\left(\text{Cos}\left[\frac{1}{2}(c + d\, x)\right] - \text{Sin}\left[\frac{1}{2}(c + d\, x)\right]\right)^6} + \frac{285 \left(\text{Cos}\left[\frac{1}{2}(c + d\, x)\right] + \text{Sin}\left[\frac{1}{2}(c + d\, x)\right]\right)^2}{\left(\text{Cos}\left[\frac{1}{2}(c + d\, x)\right] - \text{Sin}\left[\frac{1}{2}(c + d\, x)\right]\right)^4} - \frac{650 \left(\text{Cos}\left[\frac{1}{2}(c + d\, x)\right] + \text{Sin}\left[\frac{1}{2}(c + d\, x)\right]\right)^2}{\left(\text{Cos}\left[\frac{1}{2}(c + d\, x)\right] - \text{Sin}\left[\frac{1}{2}(c + d\, x)\right]\right)^2} \right)$$

- **Problem 899: Result more than twice size of optimal antiderivative.**

$$\int \frac{\text{Sec}[c + d\, x]\, \text{Tan}[c + d\, x]^8}{a + a\, \text{Sin}[c + d\, x]}\, dx$$

Optimal (type 3, 160 leaves, 9 steps) :

$$\frac{7\, \text{ArcTanh}[\text{Sin}[c + d\, x]]}{256\, a\, d} + \frac{7\, \text{Sec}[c + d\, x]\, \text{Tan}[c + d\, x]}{256\, a\, d} - \frac{7\, \text{Sec}[c + d\, x]^3\, \text{Tan}[c + d\, x]}{128\, a\, d} +$$

$$\frac{7\, \text{Sec}[c + d\, x]^3\, \text{Tan}[c + d\, x]^3}{96\, a\, d} - \frac{7\, \text{Sec}[c + d\, x]^3\, \text{Tan}[c + d\, x]^5}{80\, a\, d} + \frac{\text{Sec}[c + d\, x]^3\, \text{Tan}[c + d\, x]^7}{10\, a\, d} - \frac{\text{Tan}[c + d\, x]^{10}}{10\, a\, d}$$

Result (type 3, 417 leaves) :

$$\frac{1}{7680\, d\, (a + a \sin[c + d x])}\left(-1050 - \frac{48}{\left(\cos\left[\frac{1}{2}(c+dx)\right] + \sin\left[\frac{1}{2}(c+dx)\right]\right)^8} + \frac{330}{\left(\cos\left[\frac{1}{2}(c+dx)\right] + \sin\left[\frac{1}{2}(c+dx)\right]\right)^6} - \frac{940}{\left(\cos\left[\frac{1}{2}(c+dx)\right] + \sin\left[\frac{1}{2}(c+dx)\right]\right)^4} + \frac{1395}{\left(\cos\left[\frac{1}{2}(c+dx)\right] + \sin\left[\frac{1}{2}(c+dx)\right]\right)^2} - 210 \operatorname{Log}\left[\cos\left[\frac{1}{2}(c+dx)\right] - \sin\left[\frac{1}{2}(c+dx)\right]\right]\left(\cos\left[\frac{1}{2}(c+dx)\right] + \sin\left[\frac{1}{2}(c+dx)\right]\right)^2 + 210 \operatorname{Log}\left[\cos\left[\frac{1}{2}(c+dx)\right] + \sin\left[\frac{1}{2}(c+dx)\right]\right]\left(\cos\left[\frac{1}{2}(c+dx)\right] + \sin\left[\frac{1}{2}(c+dx)\right]\right)^2 + \frac{30\left(\cos\left[\frac{1}{2}(c+dx)\right] + \sin\left[\frac{1}{2}(c+dx)\right]\right)^2}{\left(\cos\left[\frac{1}{2}(c+dx)\right] - \sin\left[\frac{1}{2}(c+dx)\right]\right)^8} - \frac{200\left(\cos\left[\frac{1}{2}(c+dx)\right] + \sin\left[\frac{1}{2}(c+dx)\right]\right)^2}{\left(\cos\left[\frac{1}{2}(c+dx)\right] - \sin\left[\frac{1}{2}(c+dx)\right]\right)^6} + \frac{555\left(\cos\left[\frac{1}{2}(c+dx)\right] + \sin\left[\frac{1}{2}(c+dx)\right]\right)^2}{\left(\cos\left[\frac{1}{2}(c+dx)\right] - \sin\left[\frac{1}{2}(c+dx)\right]\right)^4} - \frac{840\left(\cos\left[\frac{1}{2}(c+dx)\right] + \sin\left[\frac{1}{2}(c+dx)\right]\right)^2}{\left(\cos\left[\frac{1}{2}(c+dx)\right] - \sin\left[\frac{1}{2}(c+dx)\right]\right)^2}\right)$$

- **Problem 900: Result more than twice size of optimal antiderivative.**

$$\int \frac{\sec[c+dx]^2 \tan[c+dx]^7}{a + a \sin[c+dx]}\, dx$$

Optimal (type 3, 178 leaves, 10 steps):

$$-\frac{7 \operatorname{ArcTanh}[\sin[c+dx]]}{256\, a\, d} - \frac{7 \sec[c+dx] \tan[c+dx]}{256\, a\, d} + \frac{7 \sec[c+dx]^3 \tan[c+dx]}{128\, a\, d} - \frac{7 \sec[c+dx]^3 \tan[c+dx]^3}{96\, a\, d} + \frac{7 \sec[c+dx]^3 \tan[c+dx]^5}{80\, a\, d} - \frac{\sec[c+dx]^3 \tan[c+dx]^7}{10\, a\, d} + \frac{\tan[c+dx]^8}{8\, a\, d} + \frac{\tan[c+dx]^{10}}{10\, a\, d}$$

Result (type 3, 415 leaves):

$$\frac{1}{7680\, d \left(\cos\left[\frac{1}{2}(c+dx)\right] + \sin\left[\frac{1}{2}(c+dx)\right]\right)^8 (a + a \sin[c+dx])}\left(48 - 270\left(\cos\left[\frac{1}{2}(c+dx)\right] + \sin\left[\frac{1}{2}(c+dx)\right]\right)^2 + 580\left(\cos\left[\frac{1}{2}(c+dx)\right] + \sin\left[\frac{1}{2}(c+dx)\right]\right)^4 - 525\left(\cos\left[\frac{1}{2}(c+dx)\right] + \sin\left[\frac{1}{2}(c+dx)\right]\right)^6 + 210 \operatorname{Log}\left[\cos\left[\frac{1}{2}(c+dx)\right] - \sin\left[\frac{1}{2}(c+dx)\right]\right]\left(\cos\left[\frac{1}{2}(c+dx)\right] + \sin\left[\frac{1}{2}(c+dx)\right]\right)^{10} - 210 \operatorname{Log}\left[\cos\left[\frac{1}{2}(c+dx)\right] + \sin\left[\frac{1}{2}(c+dx)\right]\right]\left(\cos\left[\frac{1}{2}(c+dx)\right] + \sin\left[\frac{1}{2}(c+dx)\right]\right)^{10} + \frac{30\left(\cos\left[\frac{1}{2}(c+dx)\right] + \sin\left[\frac{1}{2}(c+dx)\right]\right)^{10}}{\left(\cos\left[\frac{1}{2}(c+dx)\right] - \sin\left[\frac{1}{2}(c+dx)\right]\right)^8} - \frac{160\left(\cos\left[\frac{1}{2}(c+dx)\right] + \sin\left[\frac{1}{2}(c+dx)\right]\right)^{10}}{\left(\cos\left[\frac{1}{2}(c+dx)\right] - \sin\left[\frac{1}{2}(c+dx)\right]\right)^6} + \frac{315\left(\cos\left[\frac{1}{2}(c+dx)\right] + \sin\left[\frac{1}{2}(c+dx)\right]\right)^{10}}{\left(\cos\left[\frac{1}{2}(c+dx)\right] - \sin\left[\frac{1}{2}(c+dx)\right]\right)^4} - \frac{210\left(\cos\left[\frac{1}{2}(c+dx)\right] + \sin\left[\frac{1}{2}(c+dx)\right]\right)^{10}}{\left(\cos\left[\frac{1}{2}(c+dx)\right] - \sin\left[\frac{1}{2}(c+dx)\right]\right)^2}\right)$$

Problem 901: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Sec}[c+d x]^3 \,\text{Tan}[c+d x]^6}{a+a \,\text{Sin}[c+d x]} \, dx$$

Optimal (type 3, 176 leaves, 10 steps):

$$-\frac{3\,\text{ArcTanh}[\text{Sin}[c+d x]]}{256\,a\,d}-\frac{3\,\text{Sec}[c+d x]\,\text{Tan}[c+d x]}{256\,a\,d}-\frac{\text{Sec}[c+d x]^3\,\text{Tan}[c+d x]}{128\,a\,d}+\frac{\text{Sec}[c+d x]^5\,\text{Tan}[c+d x]}{32\,a\,d}-\frac{\text{Sec}[c+d x]^5\,\text{Tan}[c+d x]^3}{16\,a\,d}+\frac{\text{Sec}[c+d x]^5\,\text{Tan}[c+d x]^5}{10\,a\,d}-\frac{\text{Tan}[c+d x]^8}{8\,a\,d}-\frac{\text{Tan}[c+d x]^{10}}{10\,a\,d}$$

Result (type 3, 417 leaves):

$$\frac{1}{2560\,d\,(a+a\,\text{Sin}[c+d x])}\left(50-\frac{16}{\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^8}+\frac{70}{\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^6}-\frac{100}{\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^4}+\frac{25}{\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2}+30\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2-30\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2+\frac{10\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2}{\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^8}-\frac{40\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2}{\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^6}+\frac{45\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2}{\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^4}+\frac{20\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2}{\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2}\right)$$

Problem 902: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Sec}[c+d x]^4 \,\text{Tan}[c+d x]^5}{a+a \,\text{Sin}[c+d x]} \, dx$$

Optimal (type 3, 194 leaves, 11 steps):

$$\frac{3\,\text{ArcTanh}[\text{Sin}[c+d x]]}{256\,a\,d}+\frac{\text{Sec}[c+d x]^6}{6\,a\,d}-\frac{\text{Sec}[c+d x]^8}{4\,a\,d}+\frac{\text{Sec}[c+d x]^{10}}{10\,a\,d}+\frac{3\,\text{Sec}[c+d x]\,\text{Tan}[c+d x]}{256\,a\,d}+\frac{\text{Sec}[c+d x]^3\,\text{Tan}[c+d x]}{128\,a\,d}-\frac{\text{Sec}[c+d x]^5\,\text{Tan}[c+d x]}{32\,a\,d}+\frac{\text{Sec}[c+d x]^5\,\text{Tan}[c+d x]^3}{16\,a\,d}-\frac{\text{Sec}[c+d x]^5\,\text{Tan}[c+d x]^5}{10\,a\,d}$$

Result (type 3, 415 leaves):

$$\frac{1}{7680\, d \left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^8 (a+a\,\text{Sin}[c+d x])}\left(48-150\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2+100\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^4+75\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^6-90\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^{10}+90\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^{10}+\frac{30\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^{10}}{\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^8}-\frac{80\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^{10}}{\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^6}+\frac{15\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^{10}}{\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^4}+\frac{90\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^{10}}{\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2}\right)$$

- **Problem 904: Result more than twice size of optimal antiderivative.**

$$\int \frac{\text{Sec}[c+d x]^6\,\text{Tan}[c+d x]^3}{a+a\,\text{Sin}[c+d x]}\,dx$$

Optimal (type 3, 174 leaves, 10 steps):

$$-\frac{3\,\text{ArcTanh}[\text{Sin}[c+d x]]}{256\, a\, d}-\frac{\text{Sec}[c+d x]^8}{8\, a\, d}+\frac{\text{Sec}[c+d x]^{10}}{10\, a\, d}-\frac{3\,\text{Sec}[c+d x]\,\text{Tan}[c+d x]}{256\, a\, d}-\frac{\text{Sec}[c+d x]^3\,\text{Tan}[c+d x]}{128\, a\, d}-\frac{\text{Sec}[c+d x]^5\,\text{Tan}[c+d x]}{160\, a\, d}+\frac{3\,\text{Sec}[c+d x]^7\,\text{Tan}[c+d x]}{80\, a\, d}-\frac{\text{Sec}[c+d x]^7\,\text{Tan}[c+d x]^3}{10\, a\, d}$$

Result (type 3, 365 leaves):

$$-\frac{1}{2560\, d \left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^8 (a+a\,\text{Sin}[c+d x])}\left(-16+10\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2+20\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^4+15\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^6-30\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^{10}+30\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^{10}-\frac{10\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^{10}}{\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^8}+\frac{15\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^{10}}{\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^4}+\frac{30\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^{10}}{\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2}\right)$$

Problem 905: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Sec}[c+d x]^7 \,\text{Tan}[c+d x]^2}{a+a \,\text{Sin}[c+d x]} \, dx$$

Optimal (type 3, 172 leaves, 10 steps):

$$-\frac{7 \,\text{ArcTanh}[\text{Sin}[c+d x]]}{256 a d}+\frac{\text{Sec}[c+d x]^8}{8 a d}-\frac{\text{Sec}[c+d x]^{10}}{10 a d}-\frac{7 \,\text{Sec}[c+d x] \,\text{Tan}[c+d x]}{256 a d}-\frac{7 \,\text{Sec}[c+d x]^3 \,\text{Tan}[c+d x]}{384 a d}-\frac{7 \,\text{Sec}[c+d x]^5 \,\text{Tan}[c+d x]}{480 a d}-\frac{\text{Sec}[c+d x]^7 \,\text{Tan}[c+d x]}{80 a d}+\frac{\text{Sec}[c+d x]^9 \,\text{Tan}[c+d x]}{10 a d}$$

Result (type 3, 417 leaves):

$$\frac{1}{7680 d (a+a \,\text{Sin}[c+d x])} \left(150-\frac{48}{\left(\text{Cos}[\frac{1}{2}(c+d x)]+\text{Sin}[\frac{1}{2}(c+d x)]\right)^8}-\frac{30}{\left(\text{Cos}[\frac{1}{2}(c+d x)]+\text{Sin}[\frac{1}{2}(c+d x)]\right)^6}+\frac{20}{\left(\text{Cos}[\frac{1}{2}(c+d x)]+\text{Sin}[\frac{1}{2}(c+d x)]\right)^4}+\frac{75}{\left(\text{Cos}[\frac{1}{2}(c+d x)]+\text{Sin}[\frac{1}{2}(c+d x)]\right)^2}+210 \,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right] \left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2-210 \,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right] \left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2+\frac{30 \left(\text{Cos}[\frac{1}{2}(c+d x)]+\text{Sin}[\frac{1}{2}(c+d x)]\right)^2}{\left(\text{Cos}[\frac{1}{2}(c+d x)]-\text{Sin}[\frac{1}{2}(c+d x)]\right)^8}+\frac{40 \left(\text{Cos}[\frac{1}{2}(c+d x)]+\text{Sin}[\frac{1}{2}(c+d x)]\right)^2}{\left(\text{Cos}[\frac{1}{2}(c+d x)]-\text{Sin}[\frac{1}{2}(c+d x)]\right)^6}+\frac{15 \left(\text{Cos}[\frac{1}{2}(c+d x)]+\text{Sin}[\frac{1}{2}(c+d x)]\right)^2}{\left(\text{Cos}[\frac{1}{2}(c+d x)]-\text{Sin}[\frac{1}{2}(c+d x)]\right)^4}-\frac{60 \left(\text{Cos}[\frac{1}{2}(c+d x)]+\text{Sin}[\frac{1}{2}(c+d x)]\right)^2}{\left(\text{Cos}[\frac{1}{2}(c+d x)]-\text{Sin}[\frac{1}{2}(c+d x)]\right)^2}\right)$$

Problem 906: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Sec}[c+d x]^8 \,\text{Tan}[c+d x]}{a+a \,\text{Sin}[c+d x]} \, dx$$

Optimal (type 3, 154 leaves, 9 steps):

$$\frac{7 \,\text{ArcTanh}[\text{Sin}[c+d x]]}{256 a d}+\frac{\text{Sec}[c+d x]^{10}}{10 a d}+\frac{7 \,\text{Sec}[c+d x] \,\text{Tan}[c+d x]}{256 a d}+\frac{7 \,\text{Sec}[c+d x]^3 \,\text{Tan}[c+d x]}{384 a d}+\frac{7 \,\text{Sec}[c+d x]^5 \,\text{Tan}[c+d x]}{480 a d}+\frac{\text{Sec}[c+d x]^7 \,\text{Tan}[c+d x]}{80 a d}-\frac{\text{Sec}[c+d x]^9 \,\text{Tan}[c+d x]}{10 a d}$$

Result (type 3, 415 leaves):

$$\frac{1}{7680\, d\, \left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^8 (a+a\,\text{Sin}[c+d x])}$$
$$\Bigg(48+90\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2+100\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^4+$$
$$75\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^6-210\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^{10}+$$
$$210\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^{10}+\frac{30\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^{10}}{\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^8}+$$
$$\frac{80\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^{10}}{\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^6}+\frac{135\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^{10}}{\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^4}+\frac{210\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^{10}}{\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2}\Bigg)$$

- **Problem 909: Result more than twice size of optimal antiderivative.**

$$\int \frac{\text{Csc}[c+d x]^2\,\text{Sec}[c+d x]^9}{a+a\,\text{Sin}[c+d x]}\,dx$$

Optimal (type 3, 262 leaves, 4 steps):

$$-\frac{\text{Csc}[c+d x]}{a d}-\frac{437\,\text{Log}[1-\text{Sin}[c+d x]]}{512\, a d}-\frac{\text{Log}[\text{Sin}[c+d x]]}{a d}+\frac{949\,\text{Log}[1+\text{Sin}[c+d x]]}{512\, a d}+\frac{a^3}{256\, d\,(a-a\,\text{Sin}[c+d x])^4}+$$
$$\frac{5 a^2}{192\, d\,(a-a\,\text{Sin}[c+d x])^3}+\frac{57 a}{512\, d\,(a-a\,\text{Sin}[c+d x])^2}+\frac{61}{128\, d\,(a-a\,\text{Sin}[c+d x])}-\frac{a^4}{160\, d\,(a+a\,\text{Sin}[c+d x])^5}-$$
$$\frac{9 a^3}{256\, d\,(a+a\,\text{Sin}[c+d x])^4}-\frac{47 a^2}{384\, d\,(a+a\,\text{Sin}[c+d x])^3}-\frac{187 a}{512\, d\,(a+a\,\text{Sin}[c+d x])^2}-\frac{315}{256\, d\,(a+a\,\text{Sin}[c+d x])}$$

Result (type 3, 737 leaves):

$$-\frac{315}{256\,d\,(a+a\,\mathrm{Sin}[c+d\,x])}-\frac{1}{160\,d\,\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^8(a+a\,\mathrm{Sin}[c+d\,x])}-$$

$$\frac{9}{256\,d\,\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^6(a+a\,\mathrm{Sin}[c+d\,x])}-\frac{47}{384\,d\,\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4(a+a\,\mathrm{Sin}[c+d\,x])}-$$

$$\frac{187}{512\,d\,\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2(a+a\,\mathrm{Sin}[c+d\,x])}-\frac{\mathrm{Cot}\left[\frac{1}{2}(c+d\,x)\right]\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2}{2\,d\,(a+a\,\mathrm{Sin}[c+d\,x])}-$$

$$\frac{437\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2}{256\,d\,(a+a\,\mathrm{Sin}[c+d\,x])}+$$

$$\frac{949\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2}{256\,d\,(a+a\,\mathrm{Sin}[c+d\,x])}-$$

$$\frac{\mathrm{Log}[\mathrm{Sin}[c+d\,x]]\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2}{d\,(a+a\,\mathrm{Sin}[c+d\,x])}+\frac{\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2}{256\,d\,\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^8(a+a\,\mathrm{Sin}[c+d\,x])}+$$

$$\frac{5\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2}{192\,d\,\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^6(a+a\,\mathrm{Sin}[c+d\,x])}+\frac{57\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2}{512\,d\,\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4(a+a\,\mathrm{Sin}[c+d\,x])}+$$

$$\frac{61\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2}{128\,d\,\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2(a+a\,\mathrm{Sin}[c+d\,x])}-\frac{\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{2\,d\,(a+a\,\mathrm{Sin}[c+d\,x])}$$

- **Problem 910: Result more than twice size of optimal antiderivative.**

$$\int\frac{\mathrm{Csc}[c+d\,x]^3\,\mathrm{Sec}[c+d\,x]^9}{a+a\,\mathrm{Sin}[c+d\,x]}\,dx$$

Optimal (type 3, 279 leaves, 4 steps):

$$\frac{\mathrm{Csc}[c+d\,x]}{a\,d}-\frac{\mathrm{Csc}[c+d\,x]^2}{2\,a\,d}-\frac{843\,\mathrm{Log}[1-\mathrm{Sin}[c+d\,x]]}{512\,a\,d}+\frac{6\,\mathrm{Log}[\mathrm{Sin}[c+d\,x]]}{a\,d}-\frac{2229\,\mathrm{Log}[1+\mathrm{Sin}[c+d\,x]]}{512\,a\,d}+$$

$$\frac{a^3}{256\,d\,(a-a\,\mathrm{Sin}[c+d\,x])^4}+\frac{a^2}{32\,d\,(a-a\,\mathrm{Sin}[c+d\,x])^3}+\frac{81\,a}{512\,d\,(a-a\,\mathrm{Sin}[c+d\,x])^2}+\frac{203}{256\,d\,(a-a\,\mathrm{Sin}[c+d\,x])}+$$

$$\frac{a^4}{160\,d\,(a+a\,\mathrm{Sin}[c+d\,x])^5}+\frac{11\,a^3}{256\,d\,(a+a\,\mathrm{Sin}[c+d\,x])^4}+\frac{23\,a^2}{128\,d\,(a+a\,\mathrm{Sin}[c+d\,x])^3}+\frac{325\,a}{512\,d\,(a+a\,\mathrm{Sin}[c+d\,x])^2}+\frac{5}{2\,d\,(a+a\,\mathrm{Sin}[c+d\,x])}$$

Result (type 3, 845 leaves):

$$\frac{5}{2\,d\,(a+a\,\text{Sin}[c+d\,x])}+\frac{1}{160\,d\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^8\,(a+a\,\text{Sin}[c+d\,x])}+$$

$$\frac{11}{256\,d\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^6\,(a+a\,\text{Sin}[c+d\,x])}+\frac{23}{128\,d\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^4\,(a+a\,\text{Sin}[c+d\,x])}+$$

$$\frac{325}{512\,d\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2\,(a+a\,\text{Sin}[c+d\,x])}+\frac{\text{Cot}\left[\frac{1}{2}\,(c+d\,x)\right]\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}{2\,d\,(a+a\,\text{Sin}[c+d\,x])}-$$

$$\frac{\text{Csc}\left[\frac{1}{2}\,(c+d\,x)\right]^2\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}{8\,d\,(a+a\,\text{Sin}[c+d\,x])}-\frac{843\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}{256\,d\,(a+a\,\text{Sin}[c+d\,x])}-$$

$$\frac{2229\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}{256\,d\,(a+a\,\text{Sin}[c+d\,x])}+\frac{6\,\text{Log}[\text{Sin}[c+d\,x]]\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}{d\,(a+a\,\text{Sin}[c+d\,x])}-$$

$$\frac{\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}{8\,d\,(a+a\,\text{Sin}[c+d\,x])}+\frac{\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}{256\,d\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^8\,(a+a\,\text{Sin}[c+d\,x])}+$$

$$\frac{\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}{32\,d\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^6\,(a+a\,\text{Sin}[c+d\,x])}+\frac{81\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}{512\,d\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^4\,(a+a\,\text{Sin}[c+d\,x])}+$$

$$\frac{203\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}{256\,d\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2\,(a+a\,\text{Sin}[c+d\,x])}+\frac{\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]}{2\,d\,(a+a\,\text{Sin}[c+d\,x])}$$

Problem 911: Result more than twice size of optimal antiderivative.

$$\int (g\,\text{Sec}[e+f\,x])^p\,(d\,\text{Sin}[e+f\,x])^n\,(a+a\,\text{Sin}[e+f\,x])^m\,dx$$

Optimal (type 6, 127 leaves, 5 steps):

$$\frac{1}{d\,f\,(1+n)}\text{AppellF1}\left[1+n,\,\frac{1+p}{2},\,\frac{1}{2}\,(1-2\,m+p),\,2+n,\,\text{Sin}[e+f\,x],\,-\text{Sin}[e+f\,x]\right]\,\text{Sec}[e+f\,x]$$
$$(g\,\text{Sec}[e+f\,x])^p\,(1-\text{Sin}[e+f\,x])^{\frac{1+p}{2}}\,(d\,\text{Sin}[e+f\,x])^{1+n}\,(1+\text{Sin}[e+f\,x])^{\frac{1}{2}\,(1-2\,m+p)}\,(a+a\,\text{Sin}[e+f\,x])^m$$

Result (type 6, 3577 leaves):

$$\left((-3+p)\,\text{AppellF1}\left[\frac{1}{2}-\frac{p}{2},\,-n,\,1+m+n-p,\,\frac{3}{2}-\frac{p}{2},\,\text{Tan}\left[\frac{1}{2}\,\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right.$$
$$\left.\left(\text{Sec}\left[\frac{1}{2}\,\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{-m}\,\text{Sec}[e+f\,x]^{-1+p}\,(g\,\text{Sec}[e+f\,x])^p\,\text{Sin}[e+f\,x]^n\,(d\,\text{Sin}[e+f\,x])^n\,(a+a\,\text{Sin}[e+f\,x])^m\right)\Big/$$

$$\left(f(-1+p)\left((-3+p)\,\text{AppellF1}\left[\frac{1}{2}-\frac{p}{2},-n,1+m+n-p,\frac{3}{2}-\frac{p}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.\right.$$

$$2\left(n\,\text{AppellF1}\left[\frac{3}{2}-\frac{p}{2},1-n,1+m+n-p,\frac{5}{2}-\frac{p}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$\left.\left.\left.(1+m+n-p)\,\text{AppellF1}\left[\frac{3}{2}-\frac{p}{2},-n,2+m+n-p,\frac{5}{2}-\frac{p}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)$$

$$\left(\left(n(-3+p)\,\text{AppellF1}\left[\frac{1}{2}-\frac{p}{2},-n,1+m+n-p,\frac{3}{2}-\frac{p}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right.\right.$$

$$\left.\left(\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{-m}\text{Sec}[e+f x]^{-2+p}\,\text{Sin}[e+f x]^{-1+n}\right)\Big/$$

$$\left((-1+p)\left((-3+p)\,\text{AppellF1}\left[\frac{1}{2}-\frac{p}{2},-n,1+m+n-p,\frac{3}{2}-\frac{p}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.\right.$$

$$2\left(n\,\text{AppellF1}\left[\frac{3}{2}-\frac{p}{2},1-n,1+m+n-p,\frac{5}{2}-\frac{p}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+(1+m+n-p)\right.$$

$$\left.\left.\left.\text{AppellF1}\left[\frac{3}{2}-\frac{p}{2},-n,2+m+n-p,\frac{5}{2}-\frac{p}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\right)+$$

$$\left((-3+p)\,\text{AppellF1}\left[\frac{1}{2}-\frac{p}{2},-n,1+m+n-p,\frac{3}{2}-\frac{p}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\left(\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{-m}\right.$$

$$\left.\text{Sec}[e+f x]^{p}\,\text{Sin}[e+f x]^{1+n}\right)\Big/\left((-3+p)\,\text{AppellF1}\left[\frac{1}{2}-\frac{p}{2},-n,1+m+n-p,\frac{3}{2}-\frac{p}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$2\left(n\,\text{AppellF1}\left[\frac{3}{2}-\frac{p}{2},1-n,1+m+n-p,\frac{5}{2}-\frac{p}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$\left.\left.(1+m+n-p)\,\text{AppellF1}\left[\frac{3}{2}-\frac{p}{2},-n,2+m+n-p,\frac{5}{2}-\frac{p}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)+$$

$$\left(m(-3+p)\,\text{AppellF1}\left[\frac{1}{2}-\frac{p}{2},-n,1+m+n-p,\frac{3}{2}-\frac{p}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right.$$

$$\left.\left(\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{-m}\text{Sec}[e+f x]^{-1+p}\,\text{Sin}[e+f x]^{n}\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)\Big/$$

$$\left((-1+p)\left((-3+p)\,\text{AppellF1}\left[\frac{1}{2}-\frac{p}{2},-n,1+m+n-p,\frac{3}{2}-\frac{p}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.\right.$$

$$2\left(n\,\text{AppellF1}\left[\frac{3}{2}-\frac{p}{2},1-n,1+m+n-p,\frac{5}{2}-\frac{p}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+(1+m+n-p)\right.$$

$$\left.\left.\left.\text{AppellF1}\left[\frac{3}{2}-\frac{p}{2},-n,2+m+n-p,\frac{5}{2}-\frac{p}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\right)-$$

$$\Big((-3+p)\,\Big(\text{Sec}\Big[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big)^{-m}\,\text{Sec}[e+f x]^{-1+p}\,\text{Sin}[e+f x]^n\,\Big(-\frac{1}{\frac{3}{2}-\frac{p}{2}}n\left(\frac{1}{2}-\frac{p}{2}\right)\text{AppellF1}\Big[\frac{3}{2}-\frac{p}{2},1-n,1+m+n-p,$$

$$\frac{5}{2}-\frac{p}{2},\text{Tan}\Big[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2,-\text{Tan}\Big[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\,\text{Tan}\Big[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\Big]-\frac{1}{\frac{3}{2}-\frac{p}{2}}$$

$$(1+m+n-p)\left(\frac{1}{2}-\frac{p}{2}\right)\text{AppellF1}\Big[\frac{3}{2}-\frac{p}{2},-n,2+m+n-p,\frac{5}{2}-\frac{p}{2},\text{Tan}\Big[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2,-\text{Tan}\Big[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big]$$

$$\text{Sec}\Big[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\,\text{Tan}\Big[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\Big]\Big)\Big)\Big/$$

$$\Big((-1+p)\,\Big((-3+p)\,\text{AppellF1}\Big[\frac{1}{2}-\frac{p}{2},-n,1+m+n-p,\frac{3}{2}-\frac{p}{2},\text{Tan}\Big[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2,-\text{Tan}\Big[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big]+$$

$$2\,\Big(n\,\text{AppellF1}\Big[\frac{3}{2}-\frac{p}{2},1-n,1+m+n-p,\frac{5}{2}-\frac{p}{2},\text{Tan}\Big[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2,-\text{Tan}\Big[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big]+(1+m+n-p)$$

$$\text{AppellF1}\Big[\frac{3}{2}-\frac{p}{2},-n,2+m+n-p,\frac{5}{2}-\frac{p}{2},\text{Tan}\Big[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2,-\text{Tan}\Big[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big)\Big)+$$

$$\Big((-3+p)\,\text{AppellF1}\Big[\frac{1}{2}-\frac{p}{2},-n,1+m+n-p,\frac{3}{2}-\frac{p}{2},\text{Tan}\Big[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2,-\text{Tan}\Big[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big]\,\Big(\text{Sec}\Big[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big)^{-m}$$

$$\text{Sec}[e+f x]^{-1+p}\,\text{Sin}[e+f x]^n\,\Big(2\,\Big(n\,\text{AppellF1}\Big[\frac{3}{2}-\frac{p}{2},1-n,1+m+n-p,\frac{5}{2}-\frac{p}{2},\text{Tan}\Big[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2,-\text{Tan}\Big[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big]+$$

$$(1+m+n-p)\,\text{AppellF1}\Big[\frac{3}{2}-\frac{p}{2},-n,2+m+n-p,\frac{5}{2}-\frac{p}{2},\text{Tan}\Big[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2,-\text{Tan}\Big[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big]\Big)\,\text{Sec}\Big[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2$$

$$\text{Tan}\Big[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\Big]+(-3+p)\,\Big(-\frac{1}{\frac{3}{2}-\frac{p}{2}}n\left(\frac{1}{2}-\frac{p}{2}\right)\text{AppellF1}\Big[\frac{3}{2}-\frac{p}{2},1-n,1+m+n-p,\frac{5}{2}-\frac{p}{2},\text{Tan}\Big[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2,$$

$$-\text{Tan}\Big[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\,\text{Tan}\Big[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\Big]-\frac{1}{\frac{3}{2}-\frac{p}{2}}(1+m+n-p)\left(\frac{1}{2}-\frac{p}{2}\right)\text{AppellF1}\Big[\frac{3}{2}-\frac{p}{2},-n,2+$$

$$m+n-p,\frac{5}{2}-\frac{p}{2},\text{Tan}\Big[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2,-\text{Tan}\Big[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\,\text{Tan}\Big[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\Big]\Big)+$$

$$2\,\text{Tan}\Big[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\,\Big(n\,\Big(-\frac{1}{\frac{5}{2}-\frac{p}{2}}(1+m+n-p)\left(\frac{3}{2}-\frac{p}{2}\right)\text{AppellF1}\Big[\frac{5}{2}-\frac{p}{2},1-n,2+m+n-p,\frac{7}{2}-\frac{p}{2},\text{Tan}\Big[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2,$$

$$-\text{Tan}\Big[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\,\text{Tan}\Big[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\Big]+\frac{1}{\frac{5}{2}-\frac{p}{2}}(1-n)\left(\frac{3}{2}-\frac{p}{2}\right)\text{AppellF1}\Big[\frac{5}{2}-\frac{p}{2},2-n,$$

$$1+m+n-p,\ \frac{7}{2}-\frac{p}{2},\ \text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\ \text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\ \text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\Bigg)+$$

$$(1+m+n-p)\left(-\frac{1}{\frac{5}{2}-\frac{p}{2}}n\left(\frac{3}{2}-\frac{p}{2}\right)\text{AppellF1}\left[\frac{5}{2}-\frac{p}{2},\ 1-n,\ 2+m+n-p,\ \frac{7}{2}-\frac{p}{2},\ \text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right.$$

$$\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\ \text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-\frac{1}{\frac{5}{2}-\frac{p}{2}}(2+m+n-p)\left(\frac{3}{2}-\frac{p}{2}\right)\text{AppellF1}\left[\frac{5}{2}-\frac{p}{2},\ -n,\ 3+m+n-p,\right.$$

$$\left.\frac{7}{2}-\frac{p}{2},\ \text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\ \text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\ \text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\Bigg)\Bigg)\Bigg)\Bigg)\Bigg/$$

$$\Bigg((-1+p)\Bigg((-3+p)\ \text{AppellF1}\left[\frac{1}{2}-\frac{p}{2},\ -n,\ 1+m+n-p,\ \frac{3}{2}-\frac{p}{2},\ \text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+$$

$$2\Bigg(n\,\text{AppellF1}\left[\frac{3}{2}-\frac{p}{2},\ 1-n,\ 1+m+n-p,\ \frac{5}{2}-\frac{p}{2},\ \text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+(1+m+n-p)$$

$$\text{AppellF1}\left[\frac{3}{2}-\frac{p}{2},\ -n,\ 2+m+n-p,\ \frac{5}{2}-\frac{p}{2},\ \text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\Bigg)\ \text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Bigg)^2\Bigg)\Bigg)\Bigg)$$

- **Problem 913: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int \text{Cos}[e+f\,x]\ (a+a\,\text{Sin}[e+f\,x])^4\ (c+d\,\text{Sin}[e+f\,x])^n\,dx$$

Optimal (type 3, 175 leaves, 3 steps):

$$\frac{a^4\ (c-d)^4\ (c+d\,\text{Sin}[e+f\,x])^{1+n}}{d^5\,f\,(1+n)}-\frac{4\,a^4\ (c-d)^3\ (c+d\,\text{Sin}[e+f\,x])^{2+n}}{d^5\,f\,(2+n)}+$$

$$\frac{6\,a^4\ (c-d)^2\ (c+d\,\text{Sin}[e+f\,x])^{3+n}}{d^5\,f\,(3+n)}-\frac{4\,a^4\ (c-d)\ (c+d\,\text{Sin}[e+f\,x])^{4+n}}{d^5\,f\,(4+n)}+\frac{a^4\ (c+d\,\text{Sin}[e+f\,x])^{5+n}}{d^5\,f\,(5+n)}$$

Result (type 3, 1209 leaves):

$$\frac{1}{f\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^8}(a+a\,\text{Sin}[e+f x])^4\,(c+d\,\text{Sin}[e+f x])^n$$

$$\Big(\big(192 c^5-960 c^4 d+1920 c^3 d^2-1920 c^2 d^3+960 c d^4+1320 d^5-192 c^4 d n+912 c^3 d^2 n-1744 c^2 d^3 n+1730 c d^4 n+2444 d^5 n+144 c^3 d^2 n^2-$$
$$672 c^2 d^3 n^2+1297 c d^4 n^2+1436 d^5 n^2-80 c^2 d^3 n^3+370 c d^4 n^3+340 d^5 n^3+35 c d^4 n^4+28 d^5 n^4\big)\Big/\big(8 d^5 (1+n)(2+n)(3+n)(4+n)(5+n)\big)+$$
$$\Big(\big(2520 d^4-192 c^4 n+960 c^3 d n-1968 c^2 d^2 n+2160 c d^3 n+4290 d^4 n+192 c^3 d n^2-936 c^2 d^2 n^2+1912 c d^3 n^2+2507 d^4 n^2-$$
$$120 c^2 d^2 n^3+576 c d^3 n^3+594 d^4 n^3+56 c d^3 n^4+49 d^4 n^4\big)\left(-\frac{i\,\text{Cos}[e+f x]}{16 d^4}+\frac{\text{Sin}[e+f x]}{16 d^4}\right)\Big)\Big/((1+n)(2+n)(3+n)(4+n)(5+n))+$$
$$\Big(\big(2520 d^4-192 c^4 n+960 c^3 d n-1968 c^2 d^2 n+2160 c d^3 n+4290 d^4 n+192 c^3 d n^2-936 c^2 d^2 n^2+1912 c d^3 n^2+2507 d^4 n^2-$$
$$120 c^2 d^2 n^3+576 c d^3 n^3+594 d^4 n^3+56 c d^3 n^4+49 d^4 n^4\big)\left(\frac{i\,\text{Cos}[e+f x]}{16 d^4}+\frac{\text{Sin}[e+f x]}{16 d^4}\right)\Big)\Big/((1+n)(2+n)(3+n)(4+n)(5+n))+$$
$$\Big(\big(-360 d^3-12 c^3 n+60 c^2 d n-126 c d^2 n-312 d^3 n+12 c^2 d n^2-59 c d^2 n^2-88 d^3 n^2-7 c d^2 n^3-8 d^3 n^3\big)$$
$$\left(\frac{\text{Cos}[2(e+f x)]}{4 d^3}-\frac{i\,\text{Sin}[2(e+f x)]}{4 d^3}\right)\Big)\Big/((2+n)(3+n)(4+n)(5+n))+$$
$$\Big(\big(-360 d^3-12 c^3 n+60 c^2 d n-126 c d^2 n-312 d^3 n+12 c^2 d n^2-59 c d^2 n^2-88 d^3 n^2-7 c d^2 n^3-8 d^3 n^3\big)$$
$$\left(\frac{\text{Cos}[2(e+f x)]}{4 d^3}+\frac{i\,\text{Sin}[2(e+f x)]}{4 d^3}\right)\Big)\Big/((2+n)(3+n)(4+n)(5+n))+$$
$$\frac{\left(540 d^2-16 c^2 n+80 c d n+251 d^2 n+16 c d n^2+29 d^2 n^2\right)\left(-\frac{i\,\text{Cos}[3(e+f x)]}{32 d^2}-\frac{\text{Sin}[3(e+f x)]}{32 d^2}\right)}{(3+n)(4+n)(5+n)}+$$
$$\frac{\left(540 d^2-16 c^2 n+80 c d n+251 d^2 n+16 c d n^2+29 d^2 n^2\right)\left(\frac{i\,\text{Cos}[3(e+f x)]}{32 d^2}-\frac{\text{Sin}[3(e+f x)]}{32 d^2}\right)}{(3+n)(4+n)(5+n)}+$$
$$\frac{(20 d+c n+4 d n)\left(\frac{\text{Cos}[4(e+f x)]}{16 d}-\frac{i\,\text{Sin}[4(e+f x)]}{16 d}\right)}{(4+n)(5+n)}+\frac{(20 d+c n+4 d n)\left(\frac{\text{Cos}[4(e+f x)]}{16 d}+\frac{i\,\text{Sin}[4(e+f x)]}{16 d}\right)}{(4+n)(5+n)}+$$
$$\frac{-\frac{1}{32}\,i\,\text{Cos}[5(e+f x)]+\frac{1}{32}\text{Sin}[5(e+f x)]}{5+n}+\frac{\frac{1}{32}\,i\,\text{Cos}[5(e+f x)]+\frac{1}{32}\text{Sin}[5(e+f x)]}{5+n}\Big)$$

- **Problem 914: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int \text{Cos}[e+f x]\,(a+a\,\text{Sin}[e+f x])^3\,(c+d\,\text{Sin}[e+f x])^n\,dx$$

Optimal (type 3, 139 leaves, 3 steps):

$$-\frac{a^3 (c-d)^3 (c+d \sin[e+f x])^{1+n}}{d^4 f (1+n)}+\frac{3 a^3 (c-d)^2 (c+d \sin[e+f x])^{2+n}}{d^4 f (2+n)}-\frac{3 a^3 (c-d) (c+d \sin[e+f x])^{3+n}}{d^4 f (3+n)}+\frac{a^3 (c+d \sin[e+f x])^{4+n}}{d^4 f (4+n)}$$

Result (type 3, 784 leaves) :

$$\frac{1}{f \left(\cos\left[\frac{1}{2}(e+f x)\right]+\sin\left[\frac{1}{2}(e+f x)\right]\right)^6}(a+a \sin[e+f x])^3 (c+d \sin[e+f x])^n \Bigg(\big(-48 c^4+192 c^3 d-288 c^2 d^2+192 c d^3+162 d^4+48 c^3 d n-180 c^2 d^2 n+256 c d^3 n+261 d^4 n-36 c^2 d^2 n^2+132 c d^3 n^2+114 d^4 n^2+20 c d^3 n^3+15 d^4 n^3\big) / \big(8 d^4 (1+n) (2+n) (3+n) (4+n)\big)+\left(\left(168 d^3+24 c^3 n-96 c^2 d n+150 c d^2 n+230 d^3 n-24 c^2 d n^2+93 c d^2 n^2+99 d^3 n^2+15 c d^2 n^3+13 d^3 n^3\right)\left(-\frac{i \cos[e+f x]}{8 d^3}+\frac{\sin[e+f x]}{8 d^3}\right)\right) / ((1+n) (2+n) (3+n) (4+n))+\left(\left(168 d^3+24 c^3 n-96 c^2 d n+150 c d^2 n+230 d^3 n-24 c^2 d n^2+93 c d^2 n^2+99 d^3 n^2+15 c d^2 n^3+13 d^3 n^3\right)\left(\frac{i \cos[e+f x]}{8 d^3}+\frac{\sin[e+f x]}{8 d^3}\right)\right) / ((1+n) (2+n) (3+n) (4+n))+\frac{\left(-42 d^2+3 c^2 n-12 c d n-26 d^2 n-3 c d n^2-4 d^2 n^2\right)\left(\frac{\cos[2 (e+f x)]}{4 d^2}-\frac{i \sin[2 (e+f x)]}{4 d^2}\right)}{(2+n) (3+n) (4+n)}+\frac{\left(-42 d^2+3 c^2 n-12 c d n-26 d^2 n-3 c d n^2-4 d^2 n^2\right)\left(\frac{\cos[2 (e+f x)]}{4 d^2}+\frac{i \sin[2 (e+f x)]}{4 d^2}\right)}{(2+n) (3+n) (4+n)}+\frac{(12 d+c n+3 d n)\left(-\frac{i \cos[3 (e+f x)]}{8 d}-\frac{\sin[3 (e+f x)]}{8 d}\right)}{(3+n) (4+n)}+\frac{(12 d+c n+3 d n)\left(\frac{i \cos[3 (e+f x)]}{8 d}-\frac{\sin[3 (e+f x)]}{8 d}\right)}{(3+n) (4+n)}+\frac{\frac{1}{16} \cos[4 (e+f x)]-\frac{1}{16} i \sin[4 (e+f x)]}{4+n}+\frac{\frac{1}{16} \cos[4 (e+f x)]+\frac{1}{16} i \sin[4 (e+f x)]}{4+n}\Bigg)$$

Problem 917: Unable to integrate problem.

$$\int \frac{\cos[e+f x] (c+d \sin[e+f x])^n}{a+a \sin[e+f x]} \, dx$$

Optimal (type 5, 60 leaves, 2 steps) :

$$-\frac{\text{Hypergeometric2F1}\left[1, 1+n, 2+n, \frac{c+d \sin[e+f x]}{c-d}\right] (c+d \sin[e+f x])^{1+n}}{a (c-d) f (1+n)}$$

Result (type 8, 33 leaves) :

$$\int \frac{\cos[e+f x] (c+d \sin[e+f x])^n}{a+a \sin[e+f x]} \, dx$$

Problem 918: Unable to integrate problem.

$$\int \frac{\cos[e+f x] (c+d \sin[e+f x])^n}{(a+a \sin[e+f x])^2} \, dx$$

Optimal (type 5, 60 leaves, 2 steps):

$$\frac{d\,\text{Hypergeometric2F1}\left[2,\,1+n,\,2+n,\,\frac{c+d\,\text{Sin}[e+f\,x]}{c-d}\right]\,(c+d\,\text{Sin}[e+f\,x])^{1+n}}{a^2\,(c-d)^2\,f\,(1+n)}$$

Result (type 8, 33 leaves):

$$\int\frac{\text{Cos}[e+f\,x]\,(c+d\,\text{Sin}[e+f\,x])^n}{(a+a\,\text{Sin}[e+f\,x])^2}\,dx$$

Problem 919: Unable to integrate problem.

$$\int\frac{\text{Cos}[e+f\,x]\,(c+d\,\text{Sin}[e+f\,x])^n}{(a+a\,\text{Sin}[e+f\,x])^3}\,dx$$

Optimal (type 5, 63 leaves, 2 steps):

$$-\frac{d^2\,\text{Hypergeometric2F1}\left[3,\,1+n,\,2+n,\,\frac{c+d\,\text{Sin}[e+f\,x]}{c-d}\right]\,(c+d\,\text{Sin}[e+f\,x])^{1+n}}{a^3\,(c-d)^3\,f\,(1+n)}$$

Result (type 8, 33 leaves):

$$\int\frac{\text{Cos}[e+f\,x]\,(c+d\,\text{Sin}[e+f\,x])^n}{(a+a\,\text{Sin}[e+f\,x])^3}\,dx$$

Problem 920: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int\text{Cos}[e+f\,x]\,(a+a\,\text{Sin}[e+f\,x])^m\,(c+d\,\text{Sin}[e+f\,x])^4\,dx$$

Optimal (type 3, 170 leaves, 3 steps):

$$\frac{(c-d)^4\,(a+a\,\text{Sin}[e+f\,x])^{1+m}}{a\,f\,(1+m)}+\frac{4\,(c-d)^3\,d\,(a+a\,\text{Sin}[e+f\,x])^{2+m}}{a^2\,f\,(2+m)}+$$
$$\frac{6\,(c-d)^2\,d^2\,(a+a\,\text{Sin}[e+f\,x])^{3+m}}{a^3\,f\,(3+m)}+\frac{4\,(c-d)\,d^3\,(a+a\,\text{Sin}[e+f\,x])^{4+m}}{a^4\,f\,(4+m)}+\frac{d^4\,(a+a\,\text{Sin}[e+f\,x])^{5+m}}{a^5\,f\,(5+m)}$$

Result (type 3, 1457 leaves):

$$\frac{1}{f}(a(1+\text{Sin}[e+f x]))^m \Bigg(\Big(960 c^4-960 c^3 d+1920 c^2 d^2-600 c d^3+192 d^4+1232 c^4 m+208 c^3 d m+1344 c^2 d^2 m+300 c d^3 m+66 d^4 m+568 c^4 m^2+560 c^3 d m^2+792 c^2 d^2 m^2+204 c d^3 m^2+81 d^4 m^2+112 c^4 m^3+176 c^3 d m^3+240 c^2 d^2 m^3+84 c d^3 m^3+18 d^4 m^3+8 c^4 m^4+16 c^3 d m^4+24 c^2 d^2 m^4+12 c d^3 m^4+3 d^4 m^4\Big)\Big/(8(1+m)(2+m)(3+m)(4+m)(5+m))+\frac{1}{(1+m)(2+m)(3+m)(4+m)(5+m)}\Big(960 c^4+1440 c^2 d^2+120 d^4+1232 c^4 m+1920 c^3 d m+888 c^2 d^2 m+1200 c d^3 m+10 d^4 m+568 c^4 m^2+1504 c^3 d m^2+900 c^2 d^2 m^2+600 c d^3 m^2+103 d^4 m^2+112 c^4 m^3+384 c^3 d m^3+336 c^2 d^2 m^3+192 c d^3 m^3+26 d^4 m^3+8 c^4 m^4+32 c^3 d m^4+36 c^2 d^2 m^4+24 c d^3 m^4+5 d^4 m^4\Big)\left(-\frac{1}{16} i\,\text{Cos}[e+f x]+\frac{1}{16}\text{Sin}[e+f x]\right)+\frac{1}{(1+m)(2+m)(3+m)(4+m)(5+m)}\Big(960 c^4+1440 c^2 d^2+120 d^4+1232 c^4 m+1920 c^3 d m+888 c^2 d^2 m+1200 c d^3 m+10 d^4 m+568 c^4 m^2+1504 c^3 d m^2+900 c^2 d^2 m^2+600 c d^3 m^2+103 d^4 m^2+112 c^4 m^3+384 c^3 d m^3+336 c^2 d^2 m^3+192 c d^3 m^3+26 d^4 m^3+8 c^4 m^4+32 c^3 d m^4+36 c^2 d^2 m^4+24 c d^3 m^4+5 d^4 m^4\Big)\left(\frac{1}{16} i\,\text{Cos}[e+f x]+\frac{1}{16}\text{Sin}[e+f x]\right)+\left(\Big(-240 c^3 d-120 c d^3-188 c^3 d m-120 c^2 d^2 m-64 c d^3 m-18 d^4 m-48 c^3 d m^2-54 c^2 d^2 m^2-28 c d^3 m^2-5 d^4 m^2-4 c^3 d m^3-6 c^2 d^2 m^3-4 c d^3 m^3-d^4 m^3\Big)\left(\frac{1}{4}\text{Cos}[2(e+f x)]-\frac{1}{4} i\,\text{Sin}[2(e+f x)]\right)\right)\Big/((2+m)(3+m)(4+m)(5+m))+\left(\Big(-240 c^3 d-120 c d^3-188 c^3 d m-120 c^2 d^2 m-64 c d^3 m-18 d^4 m-48 c^3 d m^2-54 c^2 d^2 m^2-28 c d^3 m^2-5 d^4 m^2-4 c^3 d m^3-6 c^2 d^2 m^3-4 c d^3 m^3-d^4 m^3\Big)\left(\frac{1}{4}\text{Cos}[2(e+f x)]+\frac{1}{4} i\,\text{Sin}[2(e+f x)]\right)\right)\Big/((2+m)(3+m)(4+m)(5+m))+\frac{1}{(3+m)(4+m)(5+m)}\Big(480 c^2 d^2+60 d^4+216 c^2 d^2 m+80 c d^3 m+19 d^4 m+24 c^2 d^2 m^2+16 c d^3 m^2+5 d^4 m^2\Big)\left(-\frac{1}{32} i\,\text{Cos}[3(e+f x)]-\frac{1}{32}\text{Sin}[3(e+f x)]\right)+\frac{1}{(3+m)(4+m)(5+m)}\Big(480 c^2 d^2+60 d^4+216 c^2 d^2 m+80 c d^3 m+19 d^4 m+24 c^2 d^2 m^2+16 c d^3 m^2+5 d^4 m^2\Big)\left(\frac{1}{32} i\,\text{Cos}[3(e+f x)]-\frac{1}{32}\text{Sin}[3(e+f x)]\right)+\frac{\left(20 c d^3+4 c d^3 m+d^4 m\right)\left(\frac{1}{16}\text{Cos}[4(e+f x)]-\frac{1}{16} i\,\text{Sin}[4(e+f x)]\right)}{(4+m)(5+m)}+\frac{\left(20 c d^3+4 c d^3 m+d^4 m\right)\left(\frac{1}{16}\text{Cos}[4(e+f x)]+\frac{1}{16} i\,\text{Sin}[4(e+f x)]\right)}{(4+m)(5+m)}+\frac{-\frac{1}{32} i\, d^4\,\text{Cos}[5(e+f x)]+\frac{1}{32} d^4\,\text{Sin}[5(e+f x)]}{5+m}+\frac{\frac{1}{32} i\, d^4\,\text{Cos}[5(e+f x)]+\frac{1}{32} d^4\,\text{Sin}[5(e+f x)]}{5+m}\Bigg)$$

- **Problem 921: Result more than twice size of optimal antiderivative.**

$$\int \text{Cos}[e+f x]\,(a+a\,\text{Sin}[e+f x])^m\,(c+d\,\text{Sin}[e+f x])^3\,dx$$

Optimal (type 3, 133 leaves, 3 steps):

$$\frac{(c-d)^3\,(a+a\,\text{Sin}[e+f x])^{1+m}}{a\,f\,(1+m)}+\frac{3\,(c-d)^2\,d\,(a+a\,\text{Sin}[e+f x])^{2+m}}{a^2\,f\,(2+m)}+\frac{3\,(c-d)\,d^2\,(a+a\,\text{Sin}[e+f x])^{3+m}}{a^3\,f\,(3+m)}+\frac{d^3\,(a+a\,\text{Sin}[e+f x])^{4+m}}{a^4\,f\,(4+m)}$$

Result (type 3, 295 leaves):

$$\frac{1}{4\,f\,(1+m)\,(2+m)\,(3+m)\,(4+m)}\left(\text{Cos}\left[\frac{1}{2}\,(e+f x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f x)\right]\right)^2\,(a\,(1+\text{Sin}[e+f x]))^m$$
$$\left(96\,c^3-144\,c^2\,d+144\,c\,d^2-36\,d^3+104\,c^3\,m-84\,c^2\,d\,m+108\,c\,d^2\,m-18\,d^3\,m+36\,c^3\,m^2-12\,c^2\,d\,m^2+42\,c\,d^2\,m^2-6\,d^3\,m^2+4\,c^3\,m^3+6\,c\,d^2\,m^3+\right.$$
$$6\,d^2\,\left(2+3\,m+m^2\right)\,(d-c\,(4+m))\,\text{Cos}[2\,(e+f x)]+3\,d\,(1+m)\,\left(-8\,c\,d\,(4+m)+d^2\,\left(14+5\,m+m^2\right)+4\,c^2\,\left(12+7\,m+m^2\right)\right)\,\text{Sin}[e+f x]-$$
$$\left.6\,d^3\,\text{Sin}[3\,(e+f x)]-11\,d^3\,m\,\text{Sin}[3\,(e+f x)]-6\,d^3\,m^2\,\text{Sin}[3\,(e+f x)]-d^3\,m^3\,\text{Sin}[3\,(e+f x)]\right)$$

- **Problem 926: Result more than twice size of optimal antiderivative.**

$$\int \frac{\text{Cos}[e+f x]\,(a+a\,\text{Sin}[e+f x])^m}{(c+d\,\text{Sin}[e+f x])^3}\,dx$$

Optimal (type 5, 59 leaves, 2 steps):

$$\frac{\text{Hypergeometric2F1}\left[3,\,1+m,\,2+m,\,-\frac{d\,(1+\text{Sin}[e+f x])}{c-d}\right]\,(a+a\,\text{Sin}[e+f x])^{1+m}}{a\,(c-d)^3\,f\,(1+m)}$$

Result (type 5, 203 leaves):

$$\left(2\,(a\,(1+\text{Sin}[e+f x]))^m\,\left(\frac{c-d}{c+d\,\text{Sin}[e+f x]}\right)^m\right.$$
$$\left(-2\,d\,(1+m)\,\text{Cos}\left[\frac{1}{4}\,(2\,e-\pi+2\,f x)\right]^2\,\text{Hypergeometric2F1}\left[m,\,2+m,\,3+m,\,\frac{2\,d\,\text{Cos}\left[\frac{1}{4}\,(2\,e-\pi+2\,f x)\right]^2}{c+d\,\text{Sin}[e+f x]}\right]+\right.$$
$$\left.(2+m)\,\text{Hypergeometric2F1}\left[m,\,1+m,\,2+m,\,\frac{2\,d\,\text{Cos}\left[\frac{1}{4}\,(2\,e-\pi+2\,f x)\right]^2}{c+d\,\text{Sin}[e+f x]}\right]\,(c+d\,\text{Sin}[e+f x])\right)$$
$$\left.\text{Sin}\left[\frac{1}{4}\,(2\,e+\pi+2\,f x)\right]^2\right)\Big/\left((c-d)^2\,f\,(1+m)\,(2+m)\,(c+d\,\text{Sin}[e+f x])^2\right)$$

- **Problem 932: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int \text{Cot}[c+d x]\,(a+a\,\text{Sin}[c+d x])^m\,dx$$

Optimal (type 5, 43 leaves, 2 steps):

$$-\frac{\text{Hypergeometric2F1}[1,\,1+m,\,2+m,\,1+\text{Sin}[c+d\,x]]\,(a+a\,\text{Sin}[c+d\,x])^{1+m}}{a\,d\,(1+m)}$$

Result (type 6, 12 204 leaves):

$$-\frac{1}{d}\text{Cos}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^{-2m}(a+a\,\text{Sin}[c+d\,x])^m$$

$$\left(\frac{1}{2m}\text{Cos}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^{2m}\left(-1+(-\text{Csc}[c+d\,x])^m\,\text{Hypergeometric2F1}\left[m,\,m,\,1+m,\,2\,\text{Cos}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\text{Csc}[c+d\,x]\right]\right)+\right.$$

$$\left(\text{Cos}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^{2+2m}\text{Csc}[c+d\,x]\left(\text{Sec}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)^{-m}\right.$$

$$\left(4\,m\,\text{Hypergeometric2F1}\left[\frac{1}{2},\,1+m,\,\frac{3}{2},\,-\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\left(\text{Sec}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)^m\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]+\right.$$

$$\text{AppellF1}\left[2m,\,m,\,m,\,1+2m,\,-\frac{1+\mathrm{i}}{-1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]},\,-\frac{1-\mathrm{i}}{-1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}\right]\left(\frac{-\mathrm{i}+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}{-1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}\right)^m$$

$$\left(\frac{\mathrm{i}+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}{-1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}\right)^m-\text{AppellF1}\left[2m,\,m,\,m,\,1+2m,\,\frac{1-\mathrm{i}}{1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]},\,\frac{1+\mathrm{i}}{1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}\right]$$

$$\left.\left.\left(\frac{-\mathrm{i}+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}{1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}\right)^m\left(\frac{\mathrm{i}+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}{1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}\right)^m\right)\right)\Big/$$

$$\left(16\,m\left(-\frac{1}{8}\left(\text{Sec}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)^{-m}\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\left(4\,m\,\text{Hypergeometric2F1}\left[\frac{1}{2},\,1+m,\,\frac{3}{2},\,-\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\right.\right.\right.$$

$$\left(\text{Sec}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)^m\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]+\text{AppellF1}\left[2m,\,m,\,m,\,1+2m,\,-\frac{1+\mathrm{i}}{-1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]},\right.$$

$$\left.-\frac{1-\mathrm{i}}{-1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}\right]\left(\frac{-\mathrm{i}+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}{-1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}\right)^m\left(\frac{\mathrm{i}+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}{-1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}\right)^m-\text{AppellF1}\left[2m,\,m,\,m,\,1+2m,\right.$$

$$\left.\left.\frac{1-\mathrm{i}}{1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]},\,\frac{1+\mathrm{i}}{1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}\right]\left(\frac{-\mathrm{i}+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}{1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}\right)^m\left(\frac{\mathrm{i}+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}{1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}\right)^m\right)+$$

$$\frac{1}{8m}\left(\text{Sec}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)^{-m}\left(2\,m\,\text{Hypergeometric2F1}\left[\frac{1}{2},\,1+m,\,\frac{3}{2},\,-\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\left(\text{Sec}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)^{1+m}+\right.$$

$$4\,m^2\,\text{Hypergeometric2F1}\Big[\frac{1}{2},\,1+m,\,\frac{3}{2},\,-\text{Tan}\Big[\frac{1}{2}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big]\,\Big(\text{Sec}\Big[\frac{1}{2}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big)^m\,\text{Tan}\Big[\frac{1}{2}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2+\Big(\Big((1-i)\,m^2$$

$$\text{AppellF1}\Big[1+2m,\,m,\,1+m,\,2+2m,\,-\frac{1+i}{-1+\text{Tan}[\frac{1}{2}(-c+\frac{\pi}{2}-d\,x)]},\,-\frac{1-i}{-1+\text{Tan}[\frac{1}{2}(-c+\frac{\pi}{2}-d\,x)]}\Big]\,\text{Sec}\Big[\frac{1}{2}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big)\Big/$$

$$\Big((1+2m)\Big(-1+\text{Tan}\Big[\frac{1}{2}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]\Big)^2\Big)+\Big((1+i)\,m^2\,\text{AppellF1}\Big[1+2m,\,1+m,\,m,\,2+2m,\,-\frac{1+i}{-1+\text{Tan}[\frac{1}{2}(-c+\frac{\pi}{2}-d\,x)]},$$

$$-\frac{1-i}{-1+\text{Tan}[\frac{1}{2}(-c+\frac{\pi}{2}-d\,x)]}\Big]\,\text{Sec}\Big[\frac{1}{2}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big)\Big/\Big((1+2m)\Big(-1+\text{Tan}\Big[\frac{1}{2}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]\Big)^2\Big)\Big)$$

$$\Big(\frac{-i+\text{Tan}[\frac{1}{2}(-c+\frac{\pi}{2}-d\,x)]}{-1+\text{Tan}[\frac{1}{2}(-c+\frac{\pi}{2}-d\,x)]}\Big)^m\Big(\frac{i+\text{Tan}[\frac{1}{2}(-c+\frac{\pi}{2}-d\,x)]}{-1+\text{Tan}[\frac{1}{2}(-c+\frac{\pi}{2}-d\,x)]}\Big)^m+m\,\text{AppellF1}\Big[2m,\,m,\,m,\,1+2m,$$

$$-\frac{1+i}{-1+\text{Tan}[\frac{1}{2}(-c+\frac{\pi}{2}-d\,x)]},\,-\frac{1-i}{-1+\text{Tan}[\frac{1}{2}(-c+\frac{\pi}{2}-d\,x)]}\Big]\Big(\frac{-i+\text{Tan}[\frac{1}{2}(-c+\frac{\pi}{2}-d\,x)]}{-1+\text{Tan}[\frac{1}{2}(-c+\frac{\pi}{2}-d\,x)]}\Big)^{-1+m}\Big(\frac{i+\text{Tan}[\frac{1}{2}(-c+\frac{\pi}{2}-d\,x)]}{-1+\text{Tan}[\frac{1}{2}(-c+\frac{\pi}{2}-d\,x)]}\Big)^m$$

$$\Big(\frac{\text{Sec}[\frac{1}{2}(-c+\frac{\pi}{2}-d\,x)]^2}{2(-1+\text{Tan}[\frac{1}{2}(-c+\frac{\pi}{2}-d\,x)])}-\frac{\text{Sec}[\frac{1}{2}(-c+\frac{\pi}{2}-d\,x)]^2(-i+\text{Tan}[\frac{1}{2}(-c+\frac{\pi}{2}-d\,x)])}{2(-1+\text{Tan}[\frac{1}{2}(-c+\frac{\pi}{2}-d\,x)])^2}\Big)+m\,\text{AppellF1}\Big[2m,\,m,\,m,\,1+2m,$$

$$-\frac{1+i}{-1+\text{Tan}[\frac{1}{2}(-c+\frac{\pi}{2}-d\,x)]},\,-\frac{1-i}{-1+\text{Tan}[\frac{1}{2}(-c+\frac{\pi}{2}-d\,x)]}\Big]\Big(\frac{-i+\text{Tan}[\frac{1}{2}(-c+\frac{\pi}{2}-d\,x)]}{-1+\text{Tan}[\frac{1}{2}(-c+\frac{\pi}{2}-d\,x)]}\Big)^m\Big(\frac{i+\text{Tan}[\frac{1}{2}(-c+\frac{\pi}{2}-d\,x)]}{-1+\text{Tan}[\frac{1}{2}(-c+\frac{\pi}{2}-d\,x)]}\Big)^{-1+m}$$

$$\Big(\frac{\text{Sec}[\frac{1}{2}(-c+\frac{\pi}{2}-d\,x)]^2}{2(-1+\text{Tan}[\frac{1}{2}(-c+\frac{\pi}{2}-d\,x)])}-\frac{\text{Sec}[\frac{1}{2}(-c+\frac{\pi}{2}-d\,x)]^2(i+\text{Tan}[\frac{1}{2}(-c+\frac{\pi}{2}-d\,x)])}{2(-1+\text{Tan}[\frac{1}{2}(-c+\frac{\pi}{2}-d\,x)])^2}\Big)-\Big(\frac{-i+\text{Tan}[\frac{1}{2}(-c+\frac{\pi}{2}-d\,x)]}{1+\text{Tan}[\frac{1}{2}(-c+\frac{\pi}{2}-d\,x)]}\Big)^m$$

$$\Big(\frac{i+\text{Tan}[\frac{1}{2}(-c+\frac{\pi}{2}-d\,x)]}{1+\text{Tan}[\frac{1}{2}(-c+\frac{\pi}{2}-d\,x)]}\Big)^m\Big(-\Big((1+i)\,m^2\,\text{AppellF1}\Big[1+2m,\,m,\,1+m,\,2+2m,\,\frac{1-i}{1+\text{Tan}[\frac{1}{2}(-c+\frac{\pi}{2}-d\,x)]},$$

$$\frac{1+i}{1+\text{Tan}[\frac{1}{2}(-c+\frac{\pi}{2}-d\,x)]}\Big]\,\text{Sec}\Big[\frac{1}{2}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big)\Big/\Big((1+2m)\Big(1+\text{Tan}\Big[\frac{1}{2}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]\Big)^2\Big)-$$

$$\Big((1-i)\,m^2\,\text{AppellF1}\Big[1+2m,\,1+m,\,m,\,2+2m,\,\frac{1-i}{1+\text{Tan}[\frac{1}{2}(-c+\frac{\pi}{2}-d\,x)]},\,\frac{1+i}{1+\text{Tan}[\frac{1}{2}(-c+\frac{\pi}{2}-d\,x)]}\Big]$$

$$\text{Sec}\Big[\frac{1}{2}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]^2\Big)\Big/\Big((1+2m)\Big(1+\text{Tan}\Big[\frac{1}{2}\Big(-c+\frac{\pi}{2}-d\,x\Big)\Big]\Big)^2\Big)\Big)-m\,\text{AppellF1}\Big[2m,\,m,\,m,\,1+2m,$$

$$\frac{1-\mathrm{i}}{1+\mathrm{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]},\ \frac{1+\mathrm{i}}{1+\mathrm{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}\Bigg]\left(\frac{-\mathrm{i}+\mathrm{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}{1+\mathrm{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}\right)^{-1+m}\left(\frac{\mathrm{i}+\mathrm{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}{1+\mathrm{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}\right)^{m}$$

$$\left(-\frac{\mathrm{Sec}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\left(-\mathrm{i}+\mathrm{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\right)}{2\left(1+\mathrm{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\right)^2}+\frac{\mathrm{Sec}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2}{2\left(1+\mathrm{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\right)}\right)-m\,\mathrm{AppellF1}\Big[2\,m,\ m,\ m,$$

$$1+2\,m,\ \frac{1-\mathrm{i}}{1+\mathrm{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]},\ \frac{1+\mathrm{i}}{1+\mathrm{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}\Big]\left(\frac{-\mathrm{i}+\mathrm{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}{1+\mathrm{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}\right)^{m}\left(\frac{\mathrm{i}+\mathrm{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}{1+\mathrm{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}\right)^{-1+m}$$

$$\left(-\frac{\mathrm{Sec}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\left(\mathrm{i}+\mathrm{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\right)}{2\left(1+\mathrm{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\right)^2}+\frac{\mathrm{Sec}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2}{2\left(1+\mathrm{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\right)}\right)+2\,m\left(\mathrm{Sec}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)^{1+m}$$

$$\left(-\mathrm{Hypergeometric2F1}\left[\frac{1}{2},\ 1+m,\ \frac{3}{2},\ -\mathrm{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]+\left(1+\mathrm{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)^{-1-m}\right)\Bigg)\Bigg)\Bigg)-$$

$$\Bigg(\mathrm{Cos}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^{2\,m}\mathrm{Csc}[c+d\,x]\left(\mathrm{Sec}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)^{-m}\mathrm{Sin}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2$$

$$\Bigg(4\,m\,\mathrm{Hypergeometric2F1}\left[\frac{1}{2},\ 1+m,\ \frac{3}{2},\ -\mathrm{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\left(\mathrm{Sec}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)^{m}\mathrm{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]-$$

$$\mathrm{AppellF1}\Big[2\,m,\ m,\ m,\ 1+2\,m,\ -\frac{1+\mathrm{i}}{-1+\mathrm{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]},\ -\frac{1-\mathrm{i}}{-1+\mathrm{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}\Big]\left(\frac{-\mathrm{i}+\mathrm{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}{-1+\mathrm{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}\right)^{m}$$

$$\left(\frac{\mathrm{i}+\mathrm{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}{-1+\mathrm{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}\right)^{m}+\mathrm{AppellF1}\Big[2\,m,\ m,\ m,\ 1+2\,m,\ \frac{1-\mathrm{i}}{1+\mathrm{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]},\ \frac{1+\mathrm{i}}{1+\mathrm{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}\Big]$$

$$\left(\frac{-\mathrm{i}+\mathrm{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}{1+\mathrm{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}\right)^{m}\left(\frac{\mathrm{i}+\mathrm{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}{1+\mathrm{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}\right)^{m}\Bigg)\Bigg)\Bigg/$$

$$\Bigg(16\,m\left(\frac{1}{8}\left(\mathrm{Sec}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)^{-m}\mathrm{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\Bigg(4\,m\,\mathrm{Hypergeometric2F1}\left[\frac{1}{2},\ 1+m,\ \frac{3}{2},\ -\mathrm{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\right.$$

$$\left(\mathrm{Sec}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)^{m}\mathrm{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]-\mathrm{AppellF1}\Big[2\,m,\ m,\ m,\ 1+2\,m,\ -\frac{1+\mathrm{i}}{-1+\mathrm{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]},$$

$$-\frac{1-\mathrm{i}}{-1+\mathrm{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}\Big]\left(\frac{-\mathrm{i}+\mathrm{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}{-1+\mathrm{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}\right)^{m}\left(\frac{\mathrm{i}+\mathrm{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}{-1+\mathrm{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}\right)^{m}+\mathrm{AppellF1}\Big[2\,m,\ m,\ m,\ 1+2\,m,$$

$$\frac{1-i}{1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]},\ \frac{1+i}{1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}\Big]\left(\frac{-i+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}{1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}\right)^m\left(\frac{i+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}{1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}\right)^m\Bigg) -$$

$$\frac{1}{8\,m}\left(\text{Sec}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)^{-m}\Bigg(2\,m\,\text{Hypergeometric2F1}\left[\frac{1}{2},\ 1+m,\ \frac{3}{2},\ -\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\left(\text{Sec}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)^{1+m}+$$

$$4\,m^2\,\text{Hypergeometric2F1}\left[\frac{1}{2},\ 1+m,\ \frac{3}{2},\ -\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\left(\text{Sec}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)^m\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2-\Bigg(\Bigg(\Big((1-i)\,m^2$$

$$\text{AppellF1}\Big[1+2\,m,\ m,\ 1+m,\ 2+2\,m,\ -\frac{1+i}{-1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]},\ -\frac{1-i}{-1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}\Big]\,\text{Sec}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Big)\Big/$$

$$\left((1+2\,m)\left(-1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\right)^2\right)+\Big((1+i)\,m^2\,\text{AppellF1}\Big[1+2\,m,\ 1+m,\ m,\ 2+2\,m,\ -\frac{1+i}{-1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]},$$

$$-\frac{1-i}{-1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}\Big]\,\text{Sec}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Big)\Big/\left((1+2\,m)\left(-1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\right)^2\right)\Bigg)$$

$$\left(\frac{-i+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}{-1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}\right)^m\left(\frac{i+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}{-1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}\right)^m-m\,\text{AppellF1}\Big[2\,m,\ m,\ m,\ 1+2\,m,$$

$$-\frac{1+i}{-1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]},\ -\frac{1-i}{-1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}\Big]\left(\frac{-i+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}{-1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}\right)^{-1+m}\left(\frac{i+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}{-1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}\right)^m$$

$$\left(\frac{\text{Sec}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2}{2\left(-1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\right)}-\frac{\text{Sec}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\left(-i+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\right)}{2\left(-1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\right)^2}\right)-m\,\text{AppellF1}\Big[2\,m,\ m,\ m,\ 1+2\,m,$$

$$-\frac{1+i}{-1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]},\ -\frac{1-i}{-1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}\Big]\left(\frac{-i+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}{-1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}\right)^m\left(\frac{i+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}{-1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}\right)^{-1+m}$$

$$\left(\frac{\text{Sec}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2}{2\left(-1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\right)}-\frac{\text{Sec}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\left(i+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\right)}{2\left(-1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\right)^2}\right)+\left(\frac{-i+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}{1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}\right)^m$$

$$\left(\frac{i+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}{1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}\right)^m\Bigg(-\Big((1+i)\,m^2\,\text{AppellF1}\Big[1+2\,m,\ m,\ 1+m,\ 2+2\,m,\ \frac{1-i}{1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]},$$

$$\frac{1+i}{1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}\Big]\,\text{Sec}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Big)\Big/\left((1+2\,m)\left(1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\right)^2\right)-$$

$$\left((1-i)\, m^2\, \text{AppellF1}\left[1+2m,\, 1+m,\, m,\, 2+2m,\, \frac{1-i}{1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]},\, \frac{1+i}{1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}\right]\right.$$

$$\left.\text{Sec}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right) \Big/ \left((1+2m)\left(1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\right)^2\right) + m\, \text{AppellF1}\Big[2m,\, m,\, m,\, 1+2m,$$

$$\frac{1-i}{1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]},\, \frac{1+i}{1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}\Big] \left(\frac{-i+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}{1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}\right)^{-1+m} \left(\frac{i+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}{1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}\right)^{m}$$

$$\left(-\frac{\text{Sec}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\left(-i+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\right)}{2\left(1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\right)^2} + \frac{\text{Sec}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2}{2\left(1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\right)}\right) + m\, \text{AppellF1}\Big[2m,\, m,\, m,$$

$$1+2m,\, \frac{1-i}{1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]},\, \frac{1+i}{1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}\Big] \left(\frac{-i+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}{1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}\right)^{m} \left(\frac{i+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}{1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}\right)^{-1+m}$$

$$\left(-\frac{\text{Sec}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\left(i+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\right)}{2\left(1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\right)^2} + \frac{\text{Sec}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2}{2\left(1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\right)}\right) + 2m\left(\text{Sec}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)^{1+m}$$

$$\left.\left.\left.\left.\left(-\text{Hypergeometric2F1}\left[\frac{1}{2},\, 1+m,\, \frac{3}{2},\, -\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right] + \left(1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)^{-1-m}\right)\right)\right)\right)\right) +$$

$$\frac{1}{d}\text{Cos}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^{-2m}(a+a\,\text{Sin}[c+d\,x])^m \left(-\frac{1}{2m}\text{Cos}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^{2m}\left(-1+(-\text{Csc}[c+d\,x])^m\right.\right.$$

$$\left.\left.\text{Hypergeometric2F1}\left[m,\, m,\, 1+m,\, 2\,\text{Cos}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\text{Csc}[c+d\,x]\right]\right) +\right.$$

$$\left(\text{Cos}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^{2+2m}\left(\text{Sec}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)^{-m}\left(4m\,\text{Hypergeometric2F1}\left[\frac{1}{2},\, 1+m,\, \frac{3}{2},\, -\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\right.\right.$$

$$\left(\text{Sec}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)^m \text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right] +$$

$$\text{AppellF1}\left[2m,\, m,\, m,\, 1+2m,\, -\frac{1+i}{-1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]},\, -\frac{1-i}{-1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}\right]$$

$$\left(\frac{-i+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}{-1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}\right)^{m}\left(\frac{i+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}{-1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}\right)^{m} -$$

$$\text{AppellF1}\left[2m, m, m, 1+2m, \frac{1-i}{1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-dx\right)\right]}, \frac{1+i}{1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-dx\right)\right]}\right]$$

$$\left(\frac{-i+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-dx\right)\right]}{1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-dx\right)\right]}\right)^m \left(\frac{i+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-dx\right)\right]}{1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-dx\right)\right]}\right)^m\Bigg)\Bigg)\Bigg/$$

$$\Bigg(16m\left(\text{Cos}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-dx\right)\right]-\text{Sin}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-dx\right)\right]\right)\left(\text{Cos}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-dx\right)\right]+\text{Sin}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-dx\right)\right]\right)$$

$$\Bigg(-\frac{1}{8}\left(\text{Sec}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right)^{-m}\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-dx\right)\right]$$

$$\Bigg(4m\,\text{Hypergeometric2F1}\left[\frac{1}{2}, 1+m, \frac{3}{2}, -\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]\left(\text{Sec}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right)^m\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-dx\right)\right]+$$

$$\text{AppellF1}\left[2m, m, m, 1+2m, -\frac{1+i}{-1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-dx\right)\right]}, -\frac{1-i}{-1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-dx\right)\right]}\right]\left(\frac{-i+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-dx\right)\right]}{-1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-dx\right)\right]}\right)^m$$

$$\left(\frac{i+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-dx\right)\right]}{-1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-dx\right)\right]}\right)^m - \text{AppellF1}\left[2m, m, m, 1+2m, \frac{1-i}{1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-dx\right)\right]}, \frac{1+i}{1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-dx\right)\right]}\right]$$

$$\left(\frac{-i+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-dx\right)\right]}{1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-dx\right)\right]}\right)^m\left(\frac{i+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-dx\right)\right]}{1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-dx\right)\right]}\right)^m\Bigg)+$$

$$\frac{1}{8m}\left(\text{Sec}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right)^{-m}\Bigg(2m\,\text{Hypergeometric2F1}\left[\frac{1}{2}, 1+m, \frac{3}{2}, -\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]\left(\text{Sec}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right)^{1+m}+$$

$$4m^2\,\text{Hypergeometric2F1}\left[\frac{1}{2}, 1+m, \frac{3}{2}, -\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right]\left(\text{Sec}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\right)^m\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-dx\right)\right]^2+$$

$$\Bigg(\Bigg((1-i)\,m^2\,\text{AppellF1}\left[1+2m, m, 1+m, 2+2m, -\frac{1+i}{-1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-dx\right)\right]}, -\frac{1-i}{-1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-dx\right)\right]}\right]$$

$$\text{Sec}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\Bigg)\Bigg/\left((1+2m)\left(-1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-dx\right)\right]\right)^2\right)+\Bigg((1+i)\,m^2$$

$$\text{AppellF1}\left[1+2m, 1+m, m, 2+2m, -\frac{1+i}{-1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-dx\right)\right]}, -\frac{1-i}{-1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-dx\right)\right]}\right]\text{Sec}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-dx\right)\right]^2\Bigg)\Bigg/$$

$$\left.\left.(1+2 m) \left(-1+\mathrm{Tan}\left[\frac{1}{2} \left(-c+\frac{\pi}{2}-d x\right)\right]^2\right)\right)\right) \left(\frac{-\mathrm{i}+\mathrm{Tan}\left[\frac{1}{2} \left(-c+\frac{\pi}{2}-d x\right)\right]}{-1+\mathrm{Tan}\left[\frac{1}{2} \left(-c+\frac{\pi}{2}-d x\right)\right]}\right)^m \left(\frac{\mathrm{i}+\mathrm{Tan}\left[\frac{1}{2} \left(-c+\frac{\pi}{2}-d x\right)\right]}{-1+\mathrm{Tan}\left[\frac{1}{2} \left(-c+\frac{\pi}{2}-d x\right)\right]}\right)^m +$$

$$m\, \mathrm{AppellF1}\left[2 m, m, m, 1+2 m, -\frac{1+\mathrm{i}}{-1+\mathrm{Tan}\left[\frac{1}{2} \left(-c+\frac{\pi}{2}-d x\right)\right]}, -\frac{1-\mathrm{i}}{-1+\mathrm{Tan}\left[\frac{1}{2} \left(-c+\frac{\pi}{2}-d x\right)\right]}\right] \left(\frac{-\mathrm{i}+\mathrm{Tan}\left[\frac{1}{2} \left(-c+\frac{\pi}{2}-d x\right)\right]}{-1+\mathrm{Tan}\left[\frac{1}{2} \left(-c+\frac{\pi}{2}-d x\right)\right]}\right)^{-1+m}$$

$$\left(\frac{\mathrm{i}+\mathrm{Tan}\left[\frac{1}{2} \left(-c+\frac{\pi}{2}-d x\right)\right]}{-1+\mathrm{Tan}\left[\frac{1}{2} \left(-c+\frac{\pi}{2}-d x\right)\right]}\right)^m \left(\frac{\mathrm{Sec}\left[\frac{1}{2} \left(-c+\frac{\pi}{2}-d x\right)\right]^2}{2 \left(-1+\mathrm{Tan}\left[\frac{1}{2} \left(-c+\frac{\pi}{2}-d x\right)\right]\right)}-\frac{\mathrm{Sec}\left[\frac{1}{2} \left(-c+\frac{\pi}{2}-d x\right)\right]^2 \left(-\mathrm{i}+\mathrm{Tan}\left[\frac{1}{2} \left(-c+\frac{\pi}{2}-d x\right)\right]\right)}{2 \left(-1+\mathrm{Tan}\left[\frac{1}{2} \left(-c+\frac{\pi}{2}-d x\right)\right]\right)^2}\right)+$$

$$m\, \mathrm{AppellF1}\left[2 m, m, m, 1+2 m, -\frac{1+\mathrm{i}}{-1+\mathrm{Tan}\left[\frac{1}{2} \left(-c+\frac{\pi}{2}-d x\right)\right]}, -\frac{1-\mathrm{i}}{-1+\mathrm{Tan}\left[\frac{1}{2} \left(-c+\frac{\pi}{2}-d x\right)\right]}\right]$$

$$\left(\frac{-\mathrm{i}+\mathrm{Tan}\left[\frac{1}{2} \left(-c+\frac{\pi}{2}-d x\right)\right]}{-1+\mathrm{Tan}\left[\frac{1}{2} \left(-c+\frac{\pi}{2}-d x\right)\right]}\right)^m \left(\frac{\mathrm{i}+\mathrm{Tan}\left[\frac{1}{2} \left(-c+\frac{\pi}{2}-d x\right)\right]}{-1+\mathrm{Tan}\left[\frac{1}{2} \left(-c+\frac{\pi}{2}-d x\right)\right]}\right)^{-1+m} \left(\frac{\mathrm{Sec}\left[\frac{1}{2} \left(-c+\frac{\pi}{2}-d x\right)\right]^2}{2 \left(-1+\mathrm{Tan}\left[\frac{1}{2} \left(-c+\frac{\pi}{2}-d x\right)\right]\right)}-\right.$$

$$\left.\frac{\mathrm{Sec}\left[\frac{1}{2} \left(-c+\frac{\pi}{2}-d x\right)\right]^2 \left(\mathrm{i}+\mathrm{Tan}\left[\frac{1}{2} \left(-c+\frac{\pi}{2}-d x\right)\right]\right)}{2 \left(-1+\mathrm{Tan}\left[\frac{1}{2} \left(-c+\frac{\pi}{2}-d x\right)\right]\right)^2}\right)-\left(\frac{-\mathrm{i}+\mathrm{Tan}\left[\frac{1}{2} \left(-c+\frac{\pi}{2}-d x\right)\right]}{1+\mathrm{Tan}\left[\frac{1}{2} \left(-c+\frac{\pi}{2}-d x\right)\right]}\right)^m \left(\frac{\mathrm{i}+\mathrm{Tan}\left[\frac{1}{2} \left(-c+\frac{\pi}{2}-d x\right)\right]}{1+\mathrm{Tan}\left[\frac{1}{2} \left(-c+\frac{\pi}{2}-d x\right)\right]}\right)^m$$

$$\left(-\left((1+\mathrm{i})\, m^2\, \mathrm{AppellF1}\left[1+2 m, m, 1+m, 2+2 m, \frac{1-\mathrm{i}}{1+\mathrm{Tan}\left[\frac{1}{2} \left(-c+\frac{\pi}{2}-d x\right)\right]}, \frac{1+\mathrm{i}}{1+\mathrm{Tan}\left[\frac{1}{2} \left(-c+\frac{\pi}{2}-d x\right)\right]}\right] \mathrm{Sec}\left[\frac{1}{2} \left(-c+\frac{\pi}{2}-d x\right)\right]^2\right)\right/$$

$$\left((1+2 m) \left(1+\mathrm{Tan}\left[\frac{1}{2} \left(-c+\frac{\pi}{2}-d x\right)\right]^2\right)\right)-\left((1-\mathrm{i})\, m^2\, \mathrm{AppellF1}\left[1+2 m, 1+m, m, 2+2 m, \frac{1-\mathrm{i}}{1+\mathrm{Tan}\left[\frac{1}{2} \left(-c+\frac{\pi}{2}-d x\right)\right]},\right.\right.$$

$$\left.\left.\frac{1+\mathrm{i}}{1+\mathrm{Tan}\left[\frac{1}{2} \left(-c+\frac{\pi}{2}-d x\right)\right]}\right] \mathrm{Sec}\left[\frac{1}{2} \left(-c+\frac{\pi}{2}-d x\right)\right]^2\right) \Big/ \left((1+2 m) \left(1+\mathrm{Tan}\left[\frac{1}{2} \left(-c+\frac{\pi}{2}-d x\right)\right]^2\right)\right)-m\, \mathrm{AppellF1}\left[2 m, m, m,\right.$$

$$\left.1+2 m, \frac{1-\mathrm{i}}{1+\mathrm{Tan}\left[\frac{1}{2} \left(-c+\frac{\pi}{2}-d x\right)\right]}, \frac{1+\mathrm{i}}{1+\mathrm{Tan}\left[\frac{1}{2} \left(-c+\frac{\pi}{2}-d x\right)\right]}\right] \left(\frac{-\mathrm{i}+\mathrm{Tan}\left[\frac{1}{2} \left(-c+\frac{\pi}{2}-d x\right)\right]}{1+\mathrm{Tan}\left[\frac{1}{2} \left(-c+\frac{\pi}{2}-d x\right)\right]}\right)^{-1+m} \left(\frac{\mathrm{i}+\mathrm{Tan}\left[\frac{1}{2} \left(-c+\frac{\pi}{2}-d x\right)\right]}{1+\mathrm{Tan}\left[\frac{1}{2} \left(-c+\frac{\pi}{2}-d x\right)\right]}\right)^m$$

$$\left(-\frac{\mathrm{Sec}\left[\frac{1}{2} \left(-c+\frac{\pi}{2}-d x\right)\right]^2 \left(-\mathrm{i}+\mathrm{Tan}\left[\frac{1}{2} \left(-c+\frac{\pi}{2}-d x\right)\right]\right)}{2 \left(1+\mathrm{Tan}\left[\frac{1}{2} \left(-c+\frac{\pi}{2}-d x\right)\right]\right)^2}+\frac{\mathrm{Sec}\left[\frac{1}{2} \left(-c+\frac{\pi}{2}-d x\right)\right]^2}{2 \left(1+\mathrm{Tan}\left[\frac{1}{2} \left(-c+\frac{\pi}{2}-d x\right)\right]\right)}\right)-m\, \mathrm{AppellF1}\left[2 m, m, m,\right.$$

$$\left.1+2 m, \frac{1-\mathrm{i}}{1+\mathrm{Tan}\left[\frac{1}{2} \left(-c+\frac{\pi}{2}-d x\right)\right]}, \frac{1+\mathrm{i}}{1+\mathrm{Tan}\left[\frac{1}{2} \left(-c+\frac{\pi}{2}-d x\right)\right]}\right] \left(\frac{-\mathrm{i}+\mathrm{Tan}\left[\frac{1}{2} \left(-c+\frac{\pi}{2}-d x\right)\right]}{1+\mathrm{Tan}\left[\frac{1}{2} \left(-c+\frac{\pi}{2}-d x\right)\right]}\right)^m \left(\frac{\mathrm{i}+\mathrm{Tan}\left[\frac{1}{2} \left(-c+\frac{\pi}{2}-d x\right)\right]}{1+\mathrm{Tan}\left[\frac{1}{2} \left(-c+\frac{\pi}{2}-d x\right)\right]}\right)^{-1+m}$$

$$\left(-\frac{\text{Sec}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\left(i+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\right)}{2\left(1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\right)^2}+\frac{\text{Sec}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2}{2\left(1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\right)}\right)+2\,m\left(\text{Sec}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)^{1+m}$$

$$\left(-\text{Hypergeometric2F1}\left[\frac{1}{2},1+m,\frac{3}{2},-\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]+\left(1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)^{-1-m}\right)\Bigg)\Bigg)\Bigg)-$$

$$\Bigg(\text{Cos}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^{2\,m}\left(\text{Sec}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)^{-m}\text{Sin}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Bigg(4\,m\,\text{Hypergeometric2F1}\Big[\frac{1}{2},1+m,\frac{3}{2},$$

$$-\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\Big]\left(\text{Sec}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)^m\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]-$$

$$\text{AppellF1}\left[2\,m,m,m,1+2\,m,-\frac{1+i}{-1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]},-\frac{1-i}{-1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}\right]$$

$$\left(\frac{-i+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}{-1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}\right)^m\left(\frac{i+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}{-1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}\right)^m+$$

$$\text{AppellF1}\left[2\,m,m,m,1+2\,m,\frac{1-i}{1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]},\frac{1+i}{1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}\right]$$

$$\left(\frac{-i+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}{1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}\right)^m\left(\frac{i+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}{1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}\right)^m\Bigg)\Bigg)\Big/$$

$$\Bigg(16\,m\left(\text{Cos}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]-\text{Sin}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\right)\left(\text{Cos}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]+\text{Sin}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\right)$$

$$\Bigg(\frac{1}{8}\left(\text{Sec}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)^{-m}\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]$$

$$\Bigg(4\,m\,\text{Hypergeometric2F1}\left[\frac{1}{2},1+m,\frac{3}{2},-\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]\left(\text{Sec}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)^m\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]-$$

$$\text{AppellF1}\left[2\,m,m,m,1+2\,m,-\frac{1+i}{-1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]},-\frac{1-i}{-1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}\right]\left(\frac{-i+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}{-1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}\right)^m$$

$$\left(\frac{i+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}{-1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}\right)^m+\text{AppellF1}\left[2\,m,m,m,1+2\,m,\frac{1-i}{1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]},\frac{1+i}{1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}\right]$$

$$\left(\frac{-i+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}{1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}\right)^m \left(\frac{i+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}{1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}\right)^m \Bigg) -$$

$$\frac{1}{8 m}\left(\text{Sec}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right)^{-m} \Bigg(2 m\, \text{Hypergeometric2F1}\left[\frac{1}{2}, 1+m, \frac{3}{2}, -\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right] \left(\text{Sec}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right)^{1+m} +$$

$$4 m^2\, \text{Hypergeometric2F1}\left[\frac{1}{2}, 1+m, \frac{3}{2}, -\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right] \left(\text{Sec}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\right)^m \text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]^2 -$$

$$\Bigg(\Bigg(\Bigg((1-i)\, m^2\, \text{AppellF1}\left[1+2 m, m, 1+m, 2+2 m, -\frac{1+i}{-1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}, -\frac{1-i}{-1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}\right]$$

$$\text{Sec}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\Bigg) \Big/ \left((1+2 m)\left(-1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]\right)^2\right) + \Bigg((1+i)\, m^2$$

$$\text{AppellF1}\left[1+2 m, 1+m, m, 2+2 m, -\frac{1+i}{-1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}, -\frac{1-i}{-1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}\right] \text{Sec}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\Bigg) \Big/$$

$$\left((1+2 m)\left(-1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]\right)^2\right)\Bigg) \left(\frac{-i+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}{-1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}\right)^m \left(\frac{i+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}{-1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}\right)^m -$$

$$m\, \text{AppellF1}\left[2 m, m, m, 1+2 m, -\frac{1+i}{-1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}, -\frac{1-i}{-1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}\right] \left(\frac{-i+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}{-1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}\right)^{-1+m}$$

$$\left(\frac{i+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}{-1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}\right)^m \left(\frac{\text{Sec}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]^2}{2\left(-1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]\right)} - \frac{\text{Sec}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]^2 \left(-i+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]\right)}{2\left(-1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]\right)^2}\right) -$$

$$m\, \text{AppellF1}\left[2 m, m, m, 1+2 m, -\frac{1+i}{-1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}, -\frac{1-i}{-1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}\right]$$

$$\left(\frac{-i+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}{-1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}\right)^m \left(\frac{i+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}{-1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}\right)^{-1+m} \left(\frac{\text{Sec}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]^2}{2\left(-1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]\right)} -\right.$$

$$\left.\frac{\text{Sec}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]^2 \left(i+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]\right)}{2\left(-1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]\right)^2}\right) + \left(\frac{-i+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}{1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}\right)^m \left(\frac{i+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}{1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}\right)^m$$

$$\Bigg(-\Bigg((1+i)\, m^2\, \text{AppellF1}\left[1+2 m, m, 1+m, 2+2 m, \frac{1-i}{1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}, \frac{1+i}{1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]}\right] \text{Sec}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right)\right]^2\Bigg) \Big/$$

$$\left((1+2\,m)\left(1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\right)^2\right)-\left((1-\mathrm{i})\,m^2\,\text{AppellF1}\left[1+2\,m,\,1+m,\,m,\,2+2\,m,\,\frac{1-\mathrm{i}}{1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]},\right.\right.$$

$$\left.\left.\frac{1+\mathrm{i}}{1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}\right]\text{Sec}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)\Big/\left((1+2\,m)\left(1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\right)^2\right)\right)+m\,\text{AppellF1}\left[2\,m,\,m,\,m,\right.$$

$$\left.1+2\,m,\,\frac{1-\mathrm{i}}{1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]},\,\frac{1+\mathrm{i}}{1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}\right]\left(\frac{-\mathrm{i}+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}{1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}\right)^{-1+m}\left(\frac{\mathrm{i}+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}{1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}\right)^{m}$$

$$\left(-\frac{\text{Sec}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\left(-\mathrm{i}+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\right)}{2\left(1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\right)^2}+\frac{\text{Sec}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2}{2\left(1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\right)}\right)+m\,\text{AppellF1}\left[2\,m,\,m,\,m,\right.$$

$$\left.1+2\,m,\,\frac{1-\mathrm{i}}{1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]},\,\frac{1+\mathrm{i}}{1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}\right]\left(\frac{-\mathrm{i}+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}{1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}\right)^{m}\left(\frac{\mathrm{i}+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}{1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]}\right)^{-1+m}$$

$$\left(-\frac{\text{Sec}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\left(\mathrm{i}+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\right)}{2\left(1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\right)^2}+\frac{\text{Sec}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2}{2\left(1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]\right)}\right)+2\,m\left(\text{Sec}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)^{1+m}$$

$$\left.\left.\left.\left.\left.\left(-\text{Hypergeometric2F1}\left[\frac{1}{2},\,1+m,\,\frac{3}{2},\,-\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right]+\left(1+\text{Tan}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right)\right]^2\right)^{-1-m}\right)\right)\right)\right)\right)\right)$$

- **Problem 933: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int \text{Cot}[c+d\,x]\,\text{Csc}[c+d\,x]\,(a+a\,\text{Sin}[c+d\,x])^m\,dx$$

Optimal (type 5, 42 leaves, 3 steps):

$$\frac{\text{Hypergeometric2F1}[2,\,1+m,\,2+m,\,1+\text{Sin}[c+d\,x]]\,(a+a\,\text{Sin}[c+d\,x])^{1+m}}{a\,d\,(1+m)}$$

Result (type 6, 20 340 leaves): Display of huge result suppressed!

- **Problem 934: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int \text{Cot}[c+d\,x]\,\text{Csc}[c+d\,x]^2\,(a+a\,\text{Sin}[c+d\,x])^m\,dx$$

Optimal (type 5, 43 leaves, 3 steps):

$$-\frac{\text{Hypergeometric2F1}[3,\,1+m,\,2+m,\,1+\text{Sin}[c+d\,x]]\,(a+a\,\text{Sin}[c+d\,x])^{1+m}}{a\,d\,(1+m)}$$

Result (type 6, 35 073 leaves): Display of huge result suppressed!

Problem 936: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{\cos[e+f x]^2}{(a+a \sin[e+f x])^{3/2} (c+d \sin[e+f x])} \, dx$$

Optimal (type 3, 123 leaves, 6 steps):

$$-\frac{2 \sqrt{2} \operatorname{ArcTanh}\left[\frac{\sqrt{a} \cos[e+f x]}{\sqrt{2} \sqrt{a+a \sin[e+f x]}}\right]}{a^{3/2} (c-d) f}+\frac{2 \sqrt{c+d} \operatorname{ArcTanh}\left[\frac{\sqrt{a} \sqrt{d} \cos[e+f x]}{\sqrt{c+d} \sqrt{a+a \sin[e+f x]}}\right]}{a^{3/2} (c-d) \sqrt{d} f}$$

Result (type 3, 220 leaves):

$$\frac{1}{\sqrt{d} (-c+d) f (a (1+\sin[e+f x]))^{3/2}} (-1)^{3/4} \left((-4-4 i) \sqrt{d} \operatorname{ArcTanh}\left[\left(\frac{1}{2}+\frac{i}{2}\right) (-1)^{3/4} \left(-1+\tan\left[\frac{1}{4} (e+f x)\right]\right)\right]+\right.$$
$$(-1)^{1/4} \sqrt{c+d} \left(\operatorname{Log}\left[\operatorname{Sec}\left[\frac{1}{4} (e+f x)\right]^2 \left(\sqrt{c+d}+\sqrt{d} \cos\left[\frac{1}{2} (e+f x)\right]-\sqrt{d} \sin\left[\frac{1}{2} (e+f x)\right]\right)\right]-\right.$$
$$\left.\left.\operatorname{Log}\left[\operatorname{Sec}\left[\frac{1}{4} (e+f x)\right]^2 \left(\sqrt{c+d}-\sqrt{d} \cos\left[\frac{1}{2} (e+f x)\right]+\sqrt{d} \sin\left[\frac{1}{2} (e+f x)\right]\right)\right]\right)\right) \left(\cos\left[\frac{1}{2} (e+f x)\right]+\sin\left[\frac{1}{2} (e+f x)\right]\right)^3$$

Problem 937: Humongous result has more than 200000 leaves.

$$\int \frac{\cos[e+f x]^2}{(a+a \sin[e+f x])^{3/2} \sqrt{c+d \sin[e+f x]}} \, dx$$

Optimal (type 3, 141 leaves, 6 steps):

$$\frac{2 \operatorname{ArcTan}\left[\frac{\sqrt{a} \sqrt{d} \cos[e+f x]}{\sqrt{a+a \sin[e+f x]} \sqrt{c+d \sin[e+f x]}}\right]}{a^{3/2} \sqrt{d} f}-\frac{2 \sqrt{2} \operatorname{ArcTanh}\left[\frac{\sqrt{a} \sqrt{c-d} \cos[e+f x]}{\sqrt{2} \sqrt{a+a \sin[e+f x]} \sqrt{c+d \sin[e+f x]}}\right]}{a^{3/2} \sqrt{c-d} f}$$

Result (type ?, 208 404 leaves): Display of huge result suppressed!

Problem 938: Result more than twice size of optimal antiderivative.

$$\int \cos[e+f x]^2 (a+a \sin[e+f x])^m (c+d \sin[e+f x])^n \, dx$$

Optimal (type 6, 135 leaves, 4 steps):

$$\left(2 \sqrt{2} \operatorname{AppellF1}\left[\frac{3}{2}+m, -\frac{1}{2}, -n, \frac{5}{2}+m, \frac{1}{2} (1+\sin[e+f x]), -\frac{d (1+\sin[e+f x])}{c-d}\right]\right.$$
$$\left.\cos[e+f x] (a+a \sin[e+f x])^{1+m} (c+d \sin[e+f x])^n \left(\frac{c+d \sin[e+f x]}{c-d}\right)^{-n}\right) \Big/ \left(a f (3+2 m) \sqrt{1-\sin[e+f x]}\right)$$

Result (type 6, 391 leaves):

$$\left(10\,(c+d)\,\text{AppellF1}\left[\frac{3}{2},-\frac{1}{2}-m,-n,\frac{5}{2},\text{Cos}\left[\frac{1}{4}(2e+\pi+2fx)\right]^2,\frac{2d\,\text{Sin}\left[\frac{1}{4}(2e-\pi+2fx)\right]^2}{c+d}\right]\left(\text{Cos}\left[\frac{1}{4}(2e-\pi+2fx)\right]^2\right)^{\frac{1}{2}+m}\right.$$

$$\left.\text{Cos}\left[\frac{1}{4}(2e+\pi+2fx)\right]^2\text{Csc}[e+fx]\,(a\,(1+\text{Sin}[e+fx]))^m\,(c+d\,\text{Sin}[e+fx])^n\,\text{Sin}[2\,(e+fx)]\left(\text{Sin}\left[\frac{1}{4}(2e+\pi+2fx)\right]^2\right)^{-\frac{1}{2}-m}\right)\Big/$$

$$\left(3f\left(-5\,(c+d)\,\text{AppellF1}\left[\frac{3}{2},-\frac{1}{2}-m,-n,\frac{5}{2},\text{Cos}\left[\frac{1}{4}(2e+\pi+2fx)\right]^2,\frac{2d\,\text{Sin}\left[\frac{1}{4}(2e-\pi+2fx)\right]^2}{c+d}\right]+\right.\right.$$

$$\left(4dn\,\text{AppellF1}\left[\frac{5}{2},-\frac{1}{2}-m,1-n,\frac{7}{2},\text{Cos}\left[\frac{1}{4}(2e+\pi+2fx)\right]^2,\frac{2d\,\text{Sin}\left[\frac{1}{4}(2e-\pi+2fx)\right]^2}{c+d}\right]+\right.$$

$$\left.\left.\left.(c+d)\,(1+2m)\,\text{AppellF1}\left[\frac{5}{2},\frac{1}{2}-m,-n,\frac{7}{2},\text{Cos}\left[\frac{1}{4}(2e+\pi+2fx)\right]^2,\frac{2d\,\text{Sin}\left[\frac{1}{4}(2e-\pi+2fx)\right]^2}{c+d}\right]\right)\text{Sin}\left[\frac{1}{4}(2e-\pi+2fx)\right]^2\right)\right)$$

Problem 939: Attempted integration timed out after 120 seconds.

$$\int \text{Cos}[e+fx]^2\,(a+a\,\text{Sin}[e+fx])^3\,(c+d\,\text{Sin}[e+fx])^n\,dx$$

Optimal (type 6, 119 leaves, 3 steps):

$$-\frac{1}{3f\sqrt{1+\text{Sin}[e+fx]}}16\sqrt{2}\,a^3\,\text{AppellF1}\left[\frac{3}{2},-\frac{7}{2},-n,\frac{5}{2},\frac{1}{2}(1-\text{Sin}[e+fx]),\frac{d\,(1-\text{Sin}[e+fx])}{c+d}\right]$$

$$\text{Cos}[e+fx]\,(1-\text{Sin}[e+fx])\,(c+d\,\text{Sin}[e+fx])^n\left(\frac{c+d\,\text{Sin}[e+fx]}{c+d}\right)^{-n}$$

Result (type 1, 1 leaves):

???

Problem 940: Unable to integrate problem.

$$\int \text{Cos}[e+fx]^2\,(a+a\,\text{Sin}[e+fx])^2\,(c+d\,\text{Sin}[e+fx])^n\,dx$$

Optimal (type 6, 119 leaves, 3 steps):

$$-\frac{1}{3f\sqrt{1+\text{Sin}[e+fx]}}8\sqrt{2}\,a^2\,\text{AppellF1}\left[\frac{3}{2},-\frac{5}{2},-n,\frac{5}{2},\frac{1}{2}(1-\text{Sin}[e+fx]),\frac{d\,(1-\text{Sin}[e+fx])}{c+d}\right]$$

$$\text{Cos}[e+fx]\,(1-\text{Sin}[e+fx])\,(c+d\,\text{Sin}[e+fx])^n\left(\frac{c+d\,\text{Sin}[e+fx]}{c+d}\right)^{-n}$$

Result (type 8, 35 leaves):

$$\int \text{Cos}[e+f x]^2 (a+a \text{Sin}[e+f x])^2 (c+d \text{Sin}[e+f x])^n \, dx$$

Problem 941: Unable to integrate problem.

$$\int \text{Cos}[e+f x]^2 (a+a \text{Sin}[e+f x]) (c+d \text{Sin}[e+f x])^n \, dx$$

Optimal (type 6, 117 leaves, 3 steps):

$$-\frac{1}{3 f \sqrt{1+\text{Sin}[e+f x]}} 4 \sqrt{2} \, a \, \text{AppellF1}\left[\frac{3}{2}, -\frac{3}{2}, -n, \frac{5}{2}, \frac{1}{2} (1-\text{Sin}[e+f x]), \frac{d (1-\text{Sin}[e+f x])}{c+d}\right] \text{Cos}[e+f x] (1-\text{Sin}[e+f x]) (c+d \text{Sin}[e+f x])^n \left(\frac{c+d \text{Sin}[e+f x]}{c+d}\right)^{-n}$$

Result (type 8, 33 leaves):

$$\int \text{Cos}[e+f x]^2 (a+a \text{Sin}[e+f x]) (c+d \text{Sin}[e+f x])^n \, dx$$

Problem 943: Unable to integrate problem.

$$\int \frac{\text{Cos}[e+f x]^2 (c+d \text{Sin}[e+f x])^n}{(a+a \text{Sin}[e+f x])^2} \, dx$$

Optimal (type 6, 119 leaves, 3 steps):

$$-\left(\text{AppellF1}\left[\frac{3}{2}, \frac{3}{2}, -n, \frac{5}{2}, \frac{1}{2} (1-\text{Sin}[e+f x]), \frac{d (1-\text{Sin}[e+f x])}{c+d}\right] \text{Cos}[e+f x] (1-\text{Sin}[e+f x]) (c+d \text{Sin}[e+f x])^n \left(\frac{c+d \text{Sin}[e+f x]}{c+d}\right)^{-n}\right) \Big/ \left(3 \sqrt{2} \, a^2 f \sqrt{1+\text{Sin}[e+f x]}\right)$$

Result (type 8, 35 leaves):

$$\int \frac{\text{Cos}[e+f x]^2 (c+d \text{Sin}[e+f x])^n}{(a+a \text{Sin}[e+f x])^2} \, dx$$

Problem 944: Unable to integrate problem.

$$\int \frac{\text{Cos}[e+f x]^2 (c+d \text{Sin}[e+f x])^n}{(a+a \text{Sin}[e+f x])^3} \, dx$$

Optimal (type 6, 119 leaves, 3 steps):

$$-\left(\text{AppellF1}\left[\frac{3}{2}, \frac{5}{2}, -n, \frac{5}{2}, \frac{1}{2} (1-\text{Sin}[e+f x]), \frac{d (1-\text{Sin}[e+f x])}{c+d}\right] \text{Cos}[e+f x] (1-\text{Sin}[e+f x]) (c+d \text{Sin}[e+f x])^n \left(\frac{c+d \text{Sin}[e+f x]}{c+d}\right)^{-n}\right) \Big/ \left(6 \sqrt{2} \, a^3 f \sqrt{1+\text{Sin}[e+f x]}\right)$$

Result (type 8, 35 leaves):

$$\int \frac{\text{Cos}[e+f x]^2 (c+d \text{Sin}[e+f x])^n}{(a+a \text{Sin}[e+f x])^3} \, dx$$

Problem 945: Result more than twice size of optimal antiderivative.

$$\int \text{Cos}[e+f x]^4 (a+a \text{Sin}[e+f x])^m (c+d \text{Sin}[e+f x])^n \, dx$$

Optimal (type 6, 135 leaves, 4 steps):

$$\left(4 \sqrt{2} \, \text{AppellF1}\left[\frac{5}{2}+m, -\frac{3}{2}, -n, \frac{7}{2}+m, \frac{1}{2} (1+\text{Sin}[e+f x]), -\frac{d (1+\text{Sin}[e+f x])}{c-d}\right] \text{Cos}[e+f x] (a+a \text{Sin}[e+f x])^{2+m} (c+d \text{Sin}[e+f x])^n \left(\frac{c+d \text{Sin}[e+f x]}{c-d}\right)^{-n}\right) \Big/ \left(a^2 f (5+2 m) \sqrt{1-\text{Sin}[e+f x]}\right)$$

Result (type 6, 455 leaves):

$$\left(224 (c+d) \, \text{AppellF1}\left[\frac{5}{2}, -\frac{3}{2}-m, -n, \frac{7}{2}, \text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, \frac{2 d \, \text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right] \text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^3 \left(\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{\frac{1}{2}(-3-2 m)} \text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^5 \left(1-\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{\frac{3}{2}+m} \left(c+d-2 d \, \text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^n (a+a \text{Sin}[e+f x])^m\right) \Big/ \left(5 f \left(-7 (c+d) \, \text{AppellF1}\left[\frac{5}{2}, -\frac{3}{2}-m, -n, \frac{7}{2}, \text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, \frac{2 d \, \text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right] + \left(4 d n \, \text{AppellF1}\left[\frac{7}{2}, -\frac{3}{2}-m, 1-n, \frac{9}{2}, \text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, \frac{2 d \, \text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right] + (c+d) (3+2 m) \, \text{AppellF1}\left[\frac{7}{2}, -\frac{1}{2}-m, -n, \frac{9}{2}, \text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, \frac{2 d \, \text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\right) \text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\right)$$

Problem 946: Unable to integrate problem.

$$\int \text{Cos}[e+f x]^4 (a+a \text{Sin}[e+f x])^2 (c+d \text{Sin}[e+f x])^n \, dx$$

Optimal (type 6, 121 leaves, 3 steps):

$$-\frac{1}{5\,f\,\sqrt{1+\mathrm{Sin}[e+f\,x]}}16\,\sqrt{2}\,a^2\,\mathrm{AppellF1}\left[\frac{5}{2},-\frac{7}{2},-n,\frac{7}{2},\frac{1}{2}\,(1-\mathrm{Sin}[e+f\,x]),\frac{d\,(1-\mathrm{Sin}[e+f\,x])}{c+d}\right]$$
$$\mathrm{Cos}[e+f\,x]\,(1-\mathrm{Sin}[e+f\,x])^2\,(c+d\,\mathrm{Sin}[e+f\,x])^n\left(\frac{c+d\,\mathrm{Sin}[e+f\,x]}{c+d}\right)^{-n}$$

Result (type 8, 35 leaves) :

$$\int \mathrm{Cos}[e+f\,x]^4\,(a+a\,\mathrm{Sin}[e+f\,x])^2\,(c+d\,\mathrm{Sin}[e+f\,x])^n\,dx$$

Problem 947: Unable to integrate problem.

$$\int \mathrm{Cos}[e+f\,x]^4\,(a+a\,\mathrm{Sin}[e+f\,x])\,(c+d\,\mathrm{Sin}[e+f\,x])^n\,dx$$

Optimal (type 6, 119 leaves, 3 steps) :

$$-\frac{1}{5\,f\,(1+\mathrm{Sin}[e+f\,x])^{3/2}}8\,\sqrt{2}\,a\,\mathrm{AppellF1}\left[\frac{5}{2},-\frac{5}{2},-n,\frac{7}{2},\frac{1}{2}\,(1-\mathrm{Sin}[e+f\,x]),\frac{d\,(1-\mathrm{Sin}[e+f\,x])}{c+d}\right]$$
$$\mathrm{Cos}[e+f\,x]^3\,(1-\mathrm{Sin}[e+f\,x])\,(c+d\,\mathrm{Sin}[e+f\,x])^n\left(\frac{c+d\,\mathrm{Sin}[e+f\,x]}{c+d}\right)^{-n}$$

Result (type 8, 33 leaves) :

$$\int \mathrm{Cos}[e+f\,x]^4\,(a+a\,\mathrm{Sin}[e+f\,x])\,(c+d\,\mathrm{Sin}[e+f\,x])^n\,dx$$

Problem 948: Unable to integrate problem.

$$\int \frac{\mathrm{Cos}[e+f\,x]^4\,(c+d\,\mathrm{Sin}[e+f\,x])^n}{a+a\,\mathrm{Sin}[e+f\,x]}\,dx$$

Optimal (type 6, 121 leaves, 3 steps) :

$$-\frac{1}{5\,a\,f\,\sqrt{1+\mathrm{Sin}[e+f\,x]}}2\,\sqrt{2}\,\mathrm{AppellF1}\left[\frac{5}{2},-\frac{1}{2},-n,\frac{7}{2},\frac{1}{2}\,(1-\mathrm{Sin}[e+f\,x]),\frac{d\,(1-\mathrm{Sin}[e+f\,x])}{c+d}\right]$$
$$\mathrm{Cos}[e+f\,x]\,(1-\mathrm{Sin}[e+f\,x])^2\,(c+d\,\mathrm{Sin}[e+f\,x])^n\left(\frac{c+d\,\mathrm{Sin}[e+f\,x]}{c+d}\right)^{-n}$$

Result (type 8, 35 leaves) :

$$\int \frac{\mathrm{Cos}[e+f\,x]^4\,(c+d\,\mathrm{Sin}[e+f\,x])^n}{a+a\,\mathrm{Sin}[e+f\,x]}\,dx$$

Problem 949: Unable to integrate problem.

$$\int \frac{\mathrm{Cos}[e+f\,x]^4\,(c+d\,\mathrm{Sin}[e+f\,x])^n}{(a+a\,\mathrm{Sin}[e+f\,x])^2}\,dx$$

Optimal (type 6, 121 leaves, 4 steps) :

$$-\frac{1}{5\,a^2\,f\,\sqrt{1+\text{Sin}[e+f\,x]}}\sqrt{2}\,\text{AppellF1}\left[\frac{5}{2},\frac{1}{2},-n,\frac{7}{2},\frac{1}{2}\,(1-\text{Sin}[e+f\,x]),\frac{d\,(1-\text{Sin}[e+f\,x])}{c+d}\right]\text{Cos}[e+f\,x]\,(1-\text{Sin}[e+f\,x])^2\,(c+d\,\text{Sin}[e+f\,x])^n\left(\frac{c+d\,\text{Sin}[e+f\,x]}{c+d}\right)^{-n}$$

Result (type 8, 35 leaves) :

$$\int\frac{\text{Cos}[e+f\,x]^4\,(c+d\,\text{Sin}[e+f\,x])^n}{(a+a\,\text{Sin}[e+f\,x])^2}\,dx$$

- **Problem 950: Unable to integrate problem.**

$$\int\frac{\text{Cos}[e+f\,x]^4\,(c+d\,\text{Sin}[e+f\,x])^n}{(a+a\,\text{Sin}[e+f\,x])^3}\,dx$$

Optimal (type 6, 121 leaves, 3 steps) :

$$-\left(\text{AppellF1}\left[\frac{5}{2},\frac{3}{2},-n,\frac{7}{2},\frac{1}{2}\,(1-\text{Sin}[e+f\,x]),\frac{d\,(1-\text{Sin}[e+f\,x])}{c+d}\right]\text{Cos}[e+f\,x]\,(1-\text{Sin}[e+f\,x])^2\,(c+d\,\text{Sin}[e+f\,x])^n\left(\frac{c+d\,\text{Sin}[e+f\,x]}{c+d}\right)^{-n}\right)\Big/\left(5\,\sqrt{2}\,a^3\,f\,\sqrt{1+\text{Sin}[e+f\,x]}\right)$$

Result (type 8, 35 leaves) :

$$\int\frac{\text{Cos}[e+f\,x]^4\,(c+d\,\text{Sin}[e+f\,x])^n}{(a+a\,\text{Sin}[e+f\,x])^3}\,dx$$

- **Problem 951: Unable to integrate problem.**

$$\int\frac{\text{Cos}[e+f\,x]^4\,(c+d\,\text{Sin}[e+f\,x])^n}{(a+a\,\text{Sin}[e+f\,x])^4}\,dx$$

Optimal (type 6, 121 leaves, 3 steps) :

$$-\left(\text{AppellF1}\left[\frac{5}{2},\frac{5}{2},-n,\frac{7}{2},\frac{1}{2}\,(1-\text{Sin}[e+f\,x]),\frac{d\,(1-\text{Sin}[e+f\,x])}{c+d}\right]\text{Cos}[e+f\,x]\,(1-\text{Sin}[e+f\,x])^2\,(c+d\,\text{Sin}[e+f\,x])^n\left(\frac{c+d\,\text{Sin}[e+f\,x]}{c+d}\right)^{-n}\right)\Big/\left(10\,\sqrt{2}\,a^4\,f\,\sqrt{1+\text{Sin}[e+f\,x]}\right)$$

Result (type 8, 35 leaves) :

$$\int\frac{\text{Cos}[e+f\,x]^4\,(c+d\,\text{Sin}[e+f\,x])^n}{(a+a\,\text{Sin}[e+f\,x])^4}\,dx$$

- **Problem 952: Unable to integrate problem.**

$$\int\frac{\text{Cos}[e+f\,x]^4\,(c+d\,\text{Sin}[e+f\,x])^n}{(a+a\,\text{Sin}[e+f\,x])^5}\,dx$$

Optimal (type 6, 121 leaves, 3 steps) :

$$-\left(\text{AppellF1}\left[\frac{5}{2},\frac{7}{2},-n,\frac{7}{2},\frac{1}{2}(1-\sin[e+f x]),\frac{d(1-\sin[e+f x])}{c+d}\right]\cos[e+f x](1-\sin[e+f x])^2(c+d\sin[e+f x])^n\left(\frac{c+d\sin[e+f x]}{c+d}\right)^{-n}\right)\Big/\left(20\sqrt{2}\,a^5 f\sqrt{1+\sin[e+f x]}\right)$$

Result (type 8, 35 leaves):

$$\int\frac{\cos[e+f x]^4(c+d\sin[e+f x])^n}{(a+a\sin[e+f x])^5}\,dx$$

Problem 957: Result more than twice size of optimal antiderivative.

$$\int\sec[c+d x](a+a\sin[c+d x])(A+B\sin[c+d x])\,dx$$

Optimal (type 3, 34 leaves, 3 steps):

$$-\frac{a(A+B)\text{Log}[1-\sin[c+d x]]}{d}-\frac{a B\sin[c+d x]}{d}$$

Result (type 3, 172 leaves):

$$-\frac{a A\text{Log}[\cos[c+d x]]}{d}-\frac{a B\text{Log}[\cos[c+d x]]}{d}-\frac{a A\text{Log}\left[\cos\left[\frac{c}{2}+\frac{d x}{2}\right]-\sin\left[\frac{c}{2}+\frac{d x}{2}\right]\right]}{d}+\frac{a A\text{Log}\left[\cos\left[\frac{c}{2}+\frac{d x}{2}\right]+\sin\left[\frac{c}{2}+\frac{d x}{2}\right]\right]}{d}-\frac{a B\text{Log}\left[\cos\left[\frac{1}{2}(c+d x)\right]-\sin\left[\frac{1}{2}(c+d x)\right]\right]}{d}+\frac{a B\text{Log}\left[\cos\left[\frac{1}{2}(c+d x)\right]+\sin\left[\frac{1}{2}(c+d x)\right]\right]}{d}-\frac{a B\sin[c+d x]}{d}$$

Problem 958: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int\sec[c+d x]^3(a+a\sin[c+d x])(A+B\sin[c+d x])\,dx$$

Optimal (type 3, 47 leaves, 4 steps):

$$\frac{a(A-B)\text{ArcTanh}[\sin[c+d x]]}{2 d}+\frac{a^2(A+B)}{2 d(a-a\sin[c+d x])}$$

Result (type 3, 260 leaves):

$$\frac{1}{4 d\left(\cos\left[\frac{1}{2}(c+d x)\right]-\sin\left[\frac{1}{2}(c+d x)\right]\right)^2}a\left(2 A+2 B+i A d x-i B d x-2 A\text{Log}\left[\cos\left[\frac{1}{2}(c+d x)\right]-\sin\left[\frac{1}{2}(c+d x)\right]\right]+2 B\text{Log}\left[\cos\left[\frac{1}{2}(c+d x)\right]-\sin\left[\frac{1}{2}(c+d x)\right]\right]+A\text{Log}\left[\left(\cos\left[\frac{1}{2}(c+d x)\right]+\sin\left[\frac{1}{2}(c+d x)\right]\right)^2\right]-B\text{Log}\left[\left(\cos\left[\frac{1}{2}(c+d x)\right]+\sin\left[\frac{1}{2}(c+d x)\right]\right)^2\right]+2 i(A-B)\text{ArcTan}\left[\tan\left[\frac{1}{2}(c+d x)\right]\right](-1+\sin[c+d x])+(A-B)\left(-i d x+2\text{Log}\left[\cos\left[\frac{1}{2}(c+d x)\right]-\sin\left[\frac{1}{2}(c+d x)\right]\right]-\text{Log}\left[\left(\cos\left[\frac{1}{2}(c+d x)\right]+\sin\left[\frac{1}{2}(c+d x)\right]\right)^2\right]\right)\sin[c+d x]\right)$$

Problem 959: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \text{Sec}[c+d x]^5 (a+a \text{Sin}[c+d x]) (A+B \text{Sin}[c+d x]) \, dx$$

Optimal (type 3, 100 leaves, 4 steps):

$$\frac{a (3 A-B) \text{ArcTanh}[\text{Sin}[c+d x]]}{8 d}+\frac{a^3 (A+B)}{8 d (a-a \text{Sin}[c+d x])^2}+\frac{a^2 A}{4 d (a-a \text{Sin}[c+d x])}-\frac{a^2 (A-B)}{8 d (a+a \text{Sin}[c+d x])}$$

Result (type 3, 357 leaves):

$$\frac{1}{16 \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^4} a \left(\frac{2 (-A+B)}{d}+i (3 A-B) x \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^2-\frac{2 i (3 A-B) \text{ArcTan}\left[\text{Tan}\left[\frac{1}{2} (c+d x)\right]\right] \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^2}{d}-\frac{2 (3 A-B) \text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]-\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right] \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^2}{d}+\frac{(3 A-B) \text{Log}\left[\left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^2\right] \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^2}{d}+\frac{2 (A+B) \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^2}{d \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]-\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^4}+\frac{4 A \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^2}{d \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]-\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^2}\right) (1+\text{Sin}[c+d x])$$

Problem 960: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \text{Sec}[c+d x]^7 (a+a \text{Sin}[c+d x]) (A+B \text{Sin}[c+d x]) \, dx$$

Optimal (type 3, 157 leaves, 4 steps):

$$\frac{a (5 A-B) \text{ArcTanh}[\text{Sin}[c+d x]]}{16 d}+\frac{a^4 (A+B)}{24 d (a-a \text{Sin}[c+d x])^3}+\frac{a^3 (3 A+B)}{32 d (a-a \text{Sin}[c+d x])^2}+\frac{3 a^2 A}{16 d (a-a \text{Sin}[c+d x])}-\frac{a^3 (A-B)}{32 d (a+a \text{Sin}[c+d x])^2}-\frac{a^2 (2 A-B)}{16 d (a+a \text{Sin}[c+d x])}$$

Result (type 3, 451 leaves):

$$\frac{1}{96\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^6}$$
$$a\left(\frac{3(-A+B)}{d}-\frac{6(2A-B)\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2}{d}+3 i (5A-B) x\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^4-\right.$$
$$\frac{6 i (5A-B)\,\text{ArcTan}\left[\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^4}{d}-$$
$$\frac{6(5A-B)\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^4}{d}+$$
$$\frac{3(5A-B)\,\text{Log}\left[\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2\right]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^4}{d}+$$
$$\frac{4(A+B)\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^4}{d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^6}+\frac{3(3A+B)\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^4}{d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^4}+$$
$$\left.\frac{18A\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^4}{d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2}\right)(1+\text{Sin}[c+d x])$$

- **Problem 964: Result more than twice size of optimal antiderivative.**

$$\int \text{Sec}[c+d x]^2 (a+a\,\text{Sin}[c+d x]) (A+B\,\text{Sin}[c+d x])\, dx$$

Optimal (type 3, 29 leaves, 2 steps):

$$-a B x+\frac{(A+B)\,\text{Sec}[c+d x]\,(a+a\,\text{Sin}[c+d x])}{d}$$

Result (type 3, 85 leaves):

$$\frac{a\left(-B d x\,\text{Cos}\left[\frac{d x}{2}\right]+2(A+B)\,\text{Sin}\left[\frac{d x}{2}\right]+B d x\,\text{Sin}\left[c+\frac{d x}{2}\right]\right)}{d\left(\text{Cos}\left[\frac{c}{2}\right]-\text{Sin}\left[\frac{c}{2}\right]\right)\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)}$$

- **Problem 966: Result more than twice size of optimal antiderivative.**

$$\int \text{Sec}[c+d x]^6 (a+a\,\text{Sin}[c+d x]) (A+B\,\text{Sin}[c+d x])\, dx$$

Optimal (type 3, 73 leaves, 3 steps):

$$\frac{(A+B)\,\text{Sec}[c+d x]^5\,(a+a\,\text{Sin}[c+d x])}{5 d}+\frac{a(4A-B)\,\text{Tan}[c+d x]}{5 d}+\frac{a(4A-B)\,\text{Tan}[c+d x]^3}{15 d}$$

Result (type 3, 223 leaves):

$$\left(a \operatorname{Sec}[c] \left(240 B \operatorname{Cos}[c] - 54 (A+B) \operatorname{Cos}[c+d x] - 18 A \operatorname{Cos}[3 (c+d x)] - 18 B \operatorname{Cos}[3 (c+d x)] + 128 A \operatorname{Cos}[c+2 d x] - 32 B \operatorname{Cos}[c+2 d x] + 64 A \operatorname{Cos}[3 c+4 d x] - 16 B \operatorname{Cos}[3 c+4 d x] + 384 A \operatorname{Sin}[d x] - 96 B \operatorname{Sin}[d x] + 18 A \operatorname{Sin}[2 (c+d x)] + 18 B \operatorname{Sin}[2 (c+d x)] + 9 A \operatorname{Sin}[4 (c+d x)] + 9 B \operatorname{Sin}[4 (c+d x)] + 128 A \operatorname{Sin}[2 c+3 d x] - 32 B \operatorname{Sin}[2 c+3 d x]\right)\right) \Big/ \left(960 d \left(\operatorname{Cos}\left[\frac{1}{2} (c+d x)\right] - \operatorname{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^5 \left(\operatorname{Cos}\left[\frac{1}{2} (c+d x)\right] + \operatorname{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^3\right)$$

Problem 967: Result more than twice size of optimal antiderivative.

$$\int \operatorname{Sec}[c+d x]^8 (a+a \operatorname{Sin}[c+d x]) (A+B \operatorname{Sin}[c+d x]) \, dx$$

Optimal (type 3, 96 leaves, 3 steps):

$$\frac{(A+B) \operatorname{Sec}[c+d x]^7 (a+a \operatorname{Sin}[c+d x])}{7 d} + \frac{a (6 A-B) \operatorname{Tan}[c+d x]}{7 d} + \frac{2 a (6 A-B) \operatorname{Tan}[c+d x]^3}{21 d} + \frac{a (6 A-B) \operatorname{Tan}[c+d x]^5}{35 d}$$

Result (type 3, 315 leaves):

$$\left(a \operatorname{Sec}[c] \left(8960 B \operatorname{Cos}[c] - 1500 (A+B) \operatorname{Cos}[c+d x] - 750 A \operatorname{Cos}[3 (c+d x)] - 750 B \operatorname{Cos}[3 (c+d x)] - 150 A \operatorname{Cos}[5 (c+d x)] - 150 B \operatorname{Cos}[5 (c+d x)] + 3840 A \operatorname{Cos}[c+2 d x] - 640 B \operatorname{Cos}[c+2 d x] + 3072 A \operatorname{Cos}[3 c+4 d x] - 512 B \operatorname{Cos}[3 c+4 d x] + 768 A \operatorname{Cos}[5 c+6 d x] - 128 B \operatorname{Cos}[5 c+6 d x] + 15360 A \operatorname{Sin}[d x] - 2560 B \operatorname{Sin}[d x] + 375 A \operatorname{Sin}[2 (c+d x)] + 375 B \operatorname{Sin}[2 (c+d x)] + 300 A \operatorname{Sin}[4 (c+d x)] + 300 B \operatorname{Sin}[4 (c+d x)] + 75 A \operatorname{Sin}[6 (c+d x)] + 75 B \operatorname{Sin}[6 (c+d x)] + 7680 A \operatorname{Sin}[2 c+3 d x] - 1280 B \operatorname{Sin}[2 c+3 d x] + 1536 A \operatorname{Sin}[4 c+5 d x] - 256 B \operatorname{Sin}[4 c+5 d x]\right)\right) \Big/ \left(53760 d \left(\operatorname{Cos}\left[\frac{1}{2} (c+d x)\right] - \operatorname{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^7 \left(\operatorname{Cos}\left[\frac{1}{2} (c+d x)\right] + \operatorname{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^5\right)$$

Problem 968: Result more than twice size of optimal antiderivative.

$$\int \operatorname{Sec}[c+d x]^{10} (a+a \operatorname{Sin}[c+d x]) (A+B \operatorname{Sin}[c+d x]) \, dx$$

Optimal (type 3, 119 leaves, 3 steps):

$$\frac{(A+B) \operatorname{Sec}[c+d x]^9 (a+a \operatorname{Sin}[c+d x])}{9 d} + \frac{a (8 A-B) \operatorname{Tan}[c+d x]}{9 d} + \frac{a (8 A-B) \operatorname{Tan}[c+d x]^3}{9 d} + \frac{a (8 A-B) \operatorname{Tan}[c+d x]^5}{15 d} + \frac{a (8 A-B) \operatorname{Tan}[c+d x]^7}{63 d}$$

Result (type 3, 1683 leaves):

$$a \left(\frac{\left(A \operatorname{Sin}\left[\frac{d x}{2}\right] - B \operatorname{Sin}\left[\frac{d x}{2}\right]\right) (1+\operatorname{Sin}[c+d x])}{112 d \left(\operatorname{Cos}\left[\frac{c}{2}\right] + \operatorname{Sin}\left[\frac{c}{2}\right]\right) \left(\operatorname{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right] + \operatorname{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right)^9} + \right.$$

$$\frac{\left(-A \operatorname{Cos}\left[\frac{c}{2}\right] + B \operatorname{Cos}\left[\frac{c}{2}\right] + A \operatorname{Sin}\left[\frac{c}{2}\right] - B \operatorname{Sin}\left[\frac{c}{2}\right]\right) (1+\operatorname{Sin}[c+d x])}{224 d \left(\operatorname{Cos}\left[\frac{c}{2}\right] + \operatorname{Sin}\left[\frac{c}{2}\right]\right) \left(\operatorname{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right] + \operatorname{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right)^8} + \frac{\left(41 A \operatorname{Sin}\left[\frac{d x}{2}\right] - 27 B \operatorname{Sin}\left[\frac{d x}{2}\right]\right) (1+\operatorname{Sin}[c+d x])}{1120 d \left(\operatorname{Cos}\left[\frac{c}{2}\right] + \operatorname{Sin}\left[\frac{c}{2}\right]\right) \left(\operatorname{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right] + \operatorname{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right)^7} +$$

$$\frac{\left(-41 A \operatorname{Cos}\left[\frac{c}{2}\right] + 27 B \operatorname{Cos}\left[\frac{c}{2}\right] + 41 A \operatorname{Sin}\left[\frac{c}{2}\right] - 27 B \operatorname{Sin}\left[\frac{c}{2}\right]\right) (1+\operatorname{Sin}[c+d x])}{2240 d \left(\operatorname{Cos}\left[\frac{c}{2}\right] + \operatorname{Sin}\left[\frac{c}{2}\right]\right) \left(\operatorname{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right] + \operatorname{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right)^6} + \frac{\left(689 A \operatorname{Sin}\left[\frac{d x}{2}\right] - 283 B \operatorname{Sin}\left[\frac{d x}{2}\right]\right) (1+\operatorname{Sin}[c+d x])}{6720 d \left(\operatorname{Cos}\left[\frac{c}{2}\right] + \operatorname{Sin}\left[\frac{c}{2}\right]\right) \left(\operatorname{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right] + \operatorname{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right)^5} +$$

$$\frac{\left(-689\,A\,\mathrm{Cos}\left[\frac{c}{2}\right]+283\,B\,\mathrm{Cos}\left[\frac{c}{2}\right]+689\,A\,\mathrm{Sin}\left[\frac{c}{2}\right]-283\,B\,\mathrm{Sin}\left[\frac{c}{2}\right]\right)\,(1+\mathrm{Sin}[c+d\,x])}{13\,440\,d\,\left(\mathrm{Cos}\left[\frac{c}{2}\right]+\mathrm{Sin}\left[\frac{c}{2}\right]\right)\,\left(\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]+\mathrm{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right)^4}+\frac{\left(5053\,A\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]-1091\,B\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]\right)\,(1+\mathrm{Sin}[c+d\,x])}{13\,440\,d\,\left(\mathrm{Cos}\left[\frac{c}{2}\right]+\mathrm{Sin}\left[\frac{c}{2}\right]\right)\,\left(\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]+\mathrm{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right)^3}+$$

$$\frac{\left(A\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]+B\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]\right)\,(1+\mathrm{Sin}[c+d\,x])}{72\,d\,\left(\mathrm{Cos}\left[\frac{c}{2}\right]-\mathrm{Sin}\left[\frac{c}{2}\right]\right)\,\left(\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]-\mathrm{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right)^9\,\left(\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]+\mathrm{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right)^2}+$$

$$\frac{\left(A\,\mathrm{Cos}\left[\frac{c}{2}\right]+B\,\mathrm{Cos}\left[\frac{c}{2}\right]+A\,\mathrm{Sin}\left[\frac{c}{2}\right]+B\,\mathrm{Sin}\left[\frac{c}{2}\right]\right)\,(1+\mathrm{Sin}[c+d\,x])}{144\,d\,\left(\mathrm{Cos}\left[\frac{c}{2}\right]-\mathrm{Sin}\left[\frac{c}{2}\right]\right)\,\left(\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]-\mathrm{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right)^8\,\left(\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]+\mathrm{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right)^2}+$$

$$\frac{\left(22\,A\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]+13\,B\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]\right)\,(1+\mathrm{Sin}[c+d\,x])}{504\,d\,\left(\mathrm{Cos}\left[\frac{c}{2}\right]-\mathrm{Sin}\left[\frac{c}{2}\right]\right)\,\left(\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]-\mathrm{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right)^7\,\left(\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]+\mathrm{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right)^2}+$$

$$\frac{\left(22\,A\,\mathrm{Cos}\left[\frac{c}{2}\right]+13\,B\,\mathrm{Cos}\left[\frac{c}{2}\right]+22\,A\,\mathrm{Sin}\left[\frac{c}{2}\right]+13\,B\,\mathrm{Sin}\left[\frac{c}{2}\right]\right)\,(1+\mathrm{Sin}[c+d\,x])}{1008\,d\,\left(\mathrm{Cos}\left[\frac{c}{2}\right]-\mathrm{Sin}\left[\frac{c}{2}\right]\right)\,\left(\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]-\mathrm{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right)^6\,\left(\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]+\mathrm{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right)^2}+$$

$$\frac{\left(149\,A\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]+47\,B\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]\right)\,(1+\mathrm{Sin}[c+d\,x])}{1680\,d\,\left(\mathrm{Cos}\left[\frac{c}{2}\right]-\mathrm{Sin}\left[\frac{c}{2}\right]\right)\,\left(\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]-\mathrm{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right)^5\,\left(\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]+\mathrm{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right)^2}+$$

$$\frac{\left(149\,A\,\mathrm{Cos}\left[\frac{c}{2}\right]+47\,B\,\mathrm{Cos}\left[\frac{c}{2}\right]+149\,A\,\mathrm{Sin}\left[\frac{c}{2}\right]+47\,B\,\mathrm{Sin}\left[\frac{c}{2}\right]\right)\,(1+\mathrm{Sin}[c+d\,x])}{3360\,d\,\left(\mathrm{Cos}\left[\frac{c}{2}\right]-\mathrm{Sin}\left[\frac{c}{2}\right]\right)\,\left(\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]-\mathrm{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right)^4\,\left(\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]+\mathrm{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right)^2}+$$

$$\frac{\left(823\,A\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]+94\,B\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]\right)\,(1+\mathrm{Sin}[c+d\,x])}{5040\,d\,\left(\mathrm{Cos}\left[\frac{c}{2}\right]-\mathrm{Sin}\left[\frac{c}{2}\right]\right)\,\left(\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]-\mathrm{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right)^3\,\left(\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]+\mathrm{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right)^2}+$$

$$\frac{\left(823\,A\,\mathrm{Cos}\left[\frac{c}{2}\right]+94\,B\,\mathrm{Cos}\left[\frac{c}{2}\right]+823\,A\,\mathrm{Sin}\left[\frac{c}{2}\right]+94\,B\,\mathrm{Sin}\left[\frac{c}{2}\right]\right)\,(1+\mathrm{Sin}[c+d\,x])}{10\,080\,d\,\left(\mathrm{Cos}\left[\frac{c}{2}\right]-\mathrm{Sin}\left[\frac{c}{2}\right]\right)\,\left(\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]-\mathrm{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right)^2\,\left(\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]+\mathrm{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right)^2}+$$

$$\left.\frac{\left(17\,609\,A\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]-823\,B\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]\right)\,(1+\mathrm{Sin}[c+d\,x])}{40\,320\,d\,\left(\mathrm{Cos}\left[\frac{c}{2}\right]-\mathrm{Sin}\left[\frac{c}{2}\right]\right)\,\left(\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]-\mathrm{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right)\,\left(\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]+\mathrm{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right)^2}\right)$$

Problem 974: Result more than twice size of optimal antiderivative.

$$\int \mathrm{Sec}[c+d\,x]^3\,(a+a\,\mathrm{Sin}[c+d\,x])^2\,(A+B\,\mathrm{Sin}[c+d\,x])\,dx$$

Optimal (type 3, 43 leaves, 3 steps):

$$\frac{a^2\,B\,\mathrm{Log}[1-\mathrm{Sin}[c+d\,x]]}{d}+\frac{a^3\,(A+B)}{d\,(a-a\,\mathrm{Sin}[c+d\,x])}$$

Result (type 3, 95 leaves):

$$\left(a^2 \left(A+B+2 B \operatorname{Log}\left[\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]-\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right]-2 B \operatorname{Log}\left[\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]-\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right] \operatorname{Sin}[c+d x]\right)\right) \Big/ \left(d \left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]-\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2\right)$$

- **Problem 976: Result more than twice size of optimal antiderivative.**

$$\int \operatorname{Sec}[c+d x]^7 (a+a \operatorname{Sin}[c+d x])^2 (A+B \operatorname{Sin}[c+d x]) \, dx$$

Optimal (type 3, 132 leaves, 4 steps):

$$\frac{a^2 (2 A-B) \operatorname{ArcTanh}[\operatorname{Sin}[c+d x]]}{8 d}+\frac{a^5 (A+B)}{12 d (a-a \operatorname{Sin}[c+d x])^3}+\frac{a^4 A}{8 d (a-a \operatorname{Sin}[c+d x])^2}+\frac{a^3 (3 A-B)}{16 d (a-a \operatorname{Sin}[c+d x])}-\frac{a^3 (A-B)}{16 d (a+a \operatorname{Sin}[c+d x])}$$

Result (type 3, 319 leaves):

$$\frac{1}{48 d \left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^6} \left(3 (-A+B)+6 (-2 A+B) \operatorname{Log}\left[\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]-\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right] \left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2+\right.$$

$$6 (2 A-B) \operatorname{Log}\left[\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right] \left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2+\frac{4 (A+B) \left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2}{\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]-\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^6}+$$

$$\left.\frac{6 A \left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2}{\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]-\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^4}+\frac{3 (3 A-B) \left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2}{\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]-\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2}\right) (a+a \operatorname{Sin}[c+d x])^2$$

- **Problem 984: Result more than twice size of optimal antiderivative.**

$$\int \operatorname{Sec}[c+d x]^{10} (a+a \operatorname{Sin}[c+d x])^2 (A+B \operatorname{Sin}[c+d x]) \, dx$$

Optimal (type 3, 154 leaves, 4 steps):

$$\frac{a^2 (7 A-2 B) \operatorname{Sec}[c+d x]^7}{63 d}+\frac{(A+B) \operatorname{Sec}[c+d x]^9 (a+a \operatorname{Sin}[c+d x])^2}{9 d}+$$

$$\frac{a^2 (7 A-2 B) \operatorname{Tan}[c+d x]}{9 d}+\frac{a^2 (7 A-2 B) \operatorname{Tan}[c+d x]^3}{9 d}+\frac{a^2 (7 A-2 B) \operatorname{Tan}[c+d x]^5}{15 d}+\frac{a^2 (7 A-2 B) \operatorname{Tan}[c+d x]^7}{63 d}$$

Result (type 3, 324 leaves):

$$-\frac{1}{1290240\,d}a^2\,\text{Sec}[c+d\,x]^9\,(1+\text{Sin}[c+d\,x])^2\,(-184320\,B+1125\,(49\,A+13\,B)\,\text{Cos}[c+d\,x]-20480\,(7\,A-2\,B)\,\text{Cos}[2\,(c+d\,x)]+23275\,A\,\text{Cos}[3\,(c+d\,x)]+6175\,B\,\text{Cos}[3\,(c+d\,x)]-114688\,A\,\text{Cos}[4\,(c+d\,x)]+32768\,B\,\text{Cos}[4\,(c+d\,x)]+1225\,A\,\text{Cos}[5\,(c+d\,x)]+325\,B\,\text{Cos}[5\,(c+d\,x)]-28672\,A\,\text{Cos}[6\,(c+d\,x)]+8192\,B\,\text{Cos}[6\,(c+d\,x)]-1225\,A\,\text{Cos}[7\,(c+d\,x)]-325\,B\,\text{Cos}[7\,(c+d\,x)]-322560\,A\,\text{Sin}[c+d\,x]+92160\,B\,\text{Sin}[c+d\,x]-24500\,A\,\text{Sin}[2\,(c+d\,x)]-6500\,B\,\text{Sin}[2\,(c+d\,x)]-136192\,A\,\text{Sin}[3\,(c+d\,x)]+38912\,B\,\text{Sin}[3\,(c+d\,x)]-19600\,A\,\text{Sin}[4\,(c+d\,x)]-5200\,B\,\text{Sin}[4\,(c+d\,x)]-7168\,A\,\text{Sin}[5\,(c+d\,x)]+2048\,B\,\text{Sin}[5\,(c+d\,x)]-4900\,A\,\text{Sin}[6\,(c+d\,x)]-1300\,B\,\text{Sin}[6\,(c+d\,x)]+7168\,A\,\text{Sin}[7\,(c+d\,x)]-2048\,B\,\text{Sin}[7\,(c+d\,x)])$$

- **Problem 985: Result more than twice size of optimal antiderivative.**

$$\int \text{Sec}[c+d\,x]^{12}\,(a+a\,\text{Sin}[c+d\,x])^2\,(A+B\,\text{Sin}[c+d\,x])\,dx$$

Optimal (type 3, 179 leaves, 4 steps):

$$\frac{a^2\,(9\,A-2\,B)\,\text{Sec}[c+d\,x]^9}{99\,d}+\frac{(A+B)\,\text{Sec}[c+d\,x]^{11}\,(a+a\,\text{Sin}[c+d\,x])^2}{11\,d}+\frac{a^2\,(9\,A-2\,B)\,\text{Tan}[c+d\,x]}{11\,d}+\frac{4\,a^2\,(9\,A-2\,B)\,\text{Tan}[c+d\,x]^3}{33\,d}+\frac{6\,a^2\,(9\,A-2\,B)\,\text{Tan}[c+d\,x]^5}{55\,d}+\frac{4\,a^2\,(9\,A-2\,B)\,\text{Tan}[c+d\,x]^7}{77\,d}+\frac{a^2\,(9\,A-2\,B)\,\text{Tan}[c+d\,x]^9}{99\,d}$$

Result (type 3, 1349 leaves):

$$\frac{(-A+B)\,(a+a\,\text{Sin}[c+d\,x])^2}{448\,d\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^{10}}+\frac{(-24\,A+17\,B)\,(a+a\,\text{Sin}[c+d\,x])^2}{2240\,d\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^{8}}+$$
$$\frac{(-927\,A+451\,B)\,(a+a\,\text{Sin}[c+d\,x])^2}{26880\,d\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^{6}}+\frac{(A+B)\,(a+a\,\text{Sin}[c+d\,x])^2}{176\,d\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^{10}\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^{4}}+$$
$$\frac{(27\,A+16\,B)\,(a+a\,\text{Sin}[c+d\,x])^2}{1584\,d\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^{8}\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^{4}}+$$
$$\frac{(711\,A+227\,B)\,(a+a\,\text{Sin}[c+d\,x])^2}{22176\,d\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^{6}\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^{4}}+$$
$$\frac{(1866\,A+227\,B)\,(a+a\,\text{Sin}[c+d\,x])^2}{36960\,d\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^{4}\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^{4}}+$$
$$\frac{(70281\,A-2143\,B)\,(a+a\,\text{Sin}[c+d\,x])^2}{887040\,d\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^{2}\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^{4}}+$$
$$\frac{\left(167301\,A\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]-26398\,B\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)(a+a\,\text{Sin}[c+d\,x])^2}{443520\,d\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^{4}}+$$

$$\frac{\left(70281\,A\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]-2143\,B\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)(a+a\,\text{Sin}[c+d\,x])^2}{443520\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^3\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4}+$$

$$\frac{\left(3867\,A\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]-1186\,B\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)(a+a\,\text{Sin}[c+d\,x])^2}{13440\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^5}+\frac{\left(927\,A\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]-451\,B\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)(a+a\,\text{Sin}[c+d\,x])^2}{13440\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^7}+$$

$$\frac{\left(24\,A\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]-17\,B\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)(a+a\,\text{Sin}[c+d\,x])^2}{1120\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^9}+\frac{\left(A\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]-B\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)(a+a\,\text{Sin}[c+d\,x])^2}{224\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^{11}}+$$

$$\frac{\left(A\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]+B\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)(a+a\,\text{Sin}[c+d\,x])^2}{88\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^{11}\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4}+$$

$$\frac{\left(27\,A\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]+16\,B\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)(a+a\,\text{Sin}[c+d\,x])^2}{792\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^9\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4}+$$

$$\frac{\left(711\,A\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]+227\,B\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)(a+a\,\text{Sin}[c+d\,x])^2}{11088\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^7\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4}+$$

$$\frac{\left(1866\,A\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]+227\,B\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)(a+a\,\text{Sin}[c+d\,x])^2}{18480\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^5\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4}$$

- **Problem 989: Result more than twice size of optimal antiderivative.**

$$\int \text{Cos}[c+d\,x]\,(a+a\,\text{Sin}[c+d\,x])^3\,(A+B\,\text{Sin}[c+d\,x])\,dx$$

Optimal (type 3, 51 leaves, 3 steps):

$$\frac{(A-B)\,(a+a\,\text{Sin}[c+d\,x])^4}{4\,a\,d}+\frac{B\,(a+a\,\text{Sin}[c+d\,x])^5}{5\,a^2\,d}$$

Result (type 3, 116 leaves):

$$\Big((a+a\,\text{Sin}[c+d\,x])^3\,(-20\,(7\,A+5\,B)\,\text{Cos}[2\,(c+d\,x)]+5\,(A+3\,B)\,\text{Cos}[4\,(c+d\,x)]+140\,(2\,A+B)\,\text{Sin}[c+d\,x]-10\,(4\,A+5\,B)\,\text{Sin}[3\,(c+d\,x)]+2\,B\,\text{Sin}[5\,(c+d\,x)])\Big)\Big/\left(160\,d\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^6\right)$$

- **Problem 994: Result more than twice size of optimal antiderivative.**

$$\int \text{Sec}[c+d\,x]^9\,(a+a\,\text{Sin}[c+d\,x])^3\,(A+B\,\text{Sin}[c+d\,x])\,dx$$

Optimal (type 3, 162 leaves, 4 steps):

$$\frac{a^3 (5A-3B)\,\text{ArcTanh}[\text{Sin}[c+dx]]}{32d}+\frac{a^7 (A+B)}{16d\,(a-a\,\text{Sin}[c+dx])^4}+\frac{a^6 A}{12d\,(a-a\,\text{Sin}[c+dx])^3}+\frac{a^5 (3A-B)}{32d\,(a-a\,\text{Sin}[c+dx])^2}+\frac{a^4 (2A-B)}{16d\,(a-a\,\text{Sin}[c+dx])}-\frac{a^4 (A-B)}{32d\,(a+a\,\text{Sin}[c+dx])}$$

Result (type 3, 378 leaves):

$$\frac{1}{96d\left(\text{Cos}\left[\frac{1}{2}(c+dx)\right]+\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right)^8}\Bigg(3(-A+B)+3(-5A+3B)\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+dx)\right]-\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right]\left(\text{Cos}\left[\frac{1}{2}(c+dx)\right]+\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right)^2+$$
$$3(5A-3B)\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+dx)\right]+\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right]\left(\text{Cos}\left[\frac{1}{2}(c+dx)\right]+\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right)^2+$$
$$\frac{6(A+B)\left(\text{Cos}\left[\frac{1}{2}(c+dx)\right]+\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right)^2}{\left(\text{Cos}\left[\frac{1}{2}(c+dx)\right]-\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right)^8}+\frac{8A\left(\text{Cos}\left[\frac{1}{2}(c+dx)\right]+\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right)^2}{\left(\text{Cos}\left[\frac{1}{2}(c+dx)\right]-\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right)^6}+$$
$$\frac{3(3A-B)\left(\text{Cos}\left[\frac{1}{2}(c+dx)\right]+\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right)^2}{\left(\text{Cos}\left[\frac{1}{2}(c+dx)\right]-\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right)^4}+\frac{6(2A-B)\left(\text{Cos}\left[\frac{1}{2}(c+dx)\right]+\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right)^2}{\left(\text{Cos}\left[\frac{1}{2}(c+dx)\right]-\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right)^2}\Bigg)(a+a\,\text{Sin}[c+dx])^3$$

Problem 1007: Result more than twice size of optimal antiderivative.

$$\int\frac{\text{Sec}[c+dx]\,(A+B\,\text{Sin}[c+dx])}{a+a\,\text{Sin}[c+dx]}\,dx$$

Optimal (type 3, 45 leaves, 4 steps):

$$\frac{(A+B)\,\text{ArcTanh}[\text{Sin}[c+dx]]}{2ad}-\frac{A-B}{2d\,(a+a\,\text{Sin}[c+dx])}$$

Result (type 3, 126 leaves):

$$\frac{1}{2ad\,(1+\text{Sin}[c+dx])}\Bigg(-A+B-(A+B)\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+dx)\right]-\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right]\left(\text{Cos}\left[\frac{1}{2}(c+dx)\right]+\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right)^2+$$
$$(A+B)\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+dx)\right]+\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right]\left(\text{Cos}\left[\frac{1}{2}(c+dx)\right]+\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right)^2\Bigg)$$

Problem 1008: Result more than twice size of optimal antiderivative.

$$\int\frac{\text{Sec}[c+dx]^3\,(A+B\,\text{Sin}[c+dx])}{a+a\,\text{Sin}[c+dx]}\,dx$$

Optimal (type 3, 91 leaves, 4 steps):

$$\frac{(3A+B)\,\text{ArcTanh}[\text{Sin}[c+d x]]}{8 a d}+\frac{A+B}{8 d\,(a-a\,\text{Sin}[c+d x])}-\frac{a\,(A-B)}{8 d\,(a+a\,\text{Sin}[c+d x])^2}-\frac{A}{4 d\,(a+a\,\text{Sin}[c+d x])}$$

Result (type 3, 210 leaves):

$$\frac{1}{8 a d\,(1+\text{Sin}[c+d x])}\left(-2A+\frac{-A+B}{\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2}-(3A+B)\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2+\right.$$
$$\left.(3A+B)\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2+\frac{(A+B)\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2}{\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2}\right)$$

- **Problem 1009: Result more than twice size of optimal antiderivative.**

$$\int\frac{\text{Sec}[c+d x]^5\,(A+B\,\text{Sin}[c+d x])}{a+a\,\text{Sin}[c+d x]}\,dx$$

Optimal (type 3, 146 leaves, 4 steps):

$$\frac{(5A+B)\,\text{ArcTanh}[\text{Sin}[c+d x]]}{16 a d}+\frac{a\,(A+B)}{32 d\,(a-a\,\text{Sin}[c+d x])^2}+$$
$$\frac{2A+B}{16 d\,(a-a\,\text{Sin}[c+d x])}-\frac{a^2\,(A-B)}{24 d\,(a+a\,\text{Sin}[c+d x])^3}-\frac{a\,(3A-B)}{32 d\,(a+a\,\text{Sin}[c+d x])^2}-\frac{3A}{16 d\,(a+a\,\text{Sin}[c+d x])}$$

Result (type 3, 298 leaves):

$$\frac{1}{96 a d\,(1+\text{Sin}[c+d x])}\left(-18A+\frac{4\,(-A+B)}{\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^4}+\frac{3\,(-3A+B)}{\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2}-6\,(5A+B)\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]\right.$$
$$\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2+6\,(5A+B)\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2+$$
$$\left.\frac{3\,(A+B)\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2}{\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^4}+\frac{6\,(2A+B)\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2}{\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2}\right)$$

- **Problem 1014: Result more than twice size of optimal antiderivative.**

$$\int\frac{\text{Cos}[c+d x]\,(A+B\,\text{Sin}[c+d x])}{(a+a\,\text{Sin}[c+d x])^2}\,dx$$

Optimal (type 3, 44 leaves, 3 steps):

$$\frac{B\,\text{Log}[1+\text{Sin}[c+d\,x]]}{a^2\,d}-\frac{A-B}{d\,\left(a^2+a^2\,\text{Sin}[c+d\,x]\right)}$$

Result (type 3, 92 leaves):

$$\frac{1}{d\,(a+a\,\text{Sin}[c+d\,x])^2}\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2\left(-A+B+2\,B\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2\right)$$

- **Problem 1015: Result more than twice size of optimal antiderivative.**

$$\int\frac{\text{Sec}[c+d\,x]\,(A+B\,\text{Sin}[c+d\,x])}{(a+a\,\text{Sin}[c+d\,x])^2}\,dx$$

Optimal (type 3, 71 leaves, 4 steps):

$$\frac{(A+B)\,\text{ArcTanh}[\text{Sin}[c+d\,x]]}{4\,a^2\,d}-\frac{A-B}{4\,d\,(a+a\,\text{Sin}[c+d\,x])^2}-\frac{A+B}{4\,d\,\left(a^2+a^2\,\text{Sin}[c+d\,x]\right)}$$

Result (type 3, 153 leaves):

$$-\frac{1}{4\,a^2\,d\,(1+\text{Sin}[c+d\,x])^2}\left(A-B+(A+B)\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2+(A+B)\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^4-\right.$$
$$\left.(A+B)\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^4\right)$$

- **Problem 1020: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int\text{Cos}[e+f\,x]^7\,(a+a\,\text{Sin}[e+f\,x])^m\,(A+B\,\text{Sin}[e+f\,x])\,dx$$

Optimal (type 3, 159 leaves, 3 steps):

$$\frac{8\,(A-B)\,(a+a\,\text{Sin}[e+f\,x])^{4+m}}{a^4\,f\,(4+m)}-\frac{4\,(3\,A-5\,B)\,(a+a\,\text{Sin}[e+f\,x])^{5+m}}{a^5\,f\,(5+m)}+$$
$$\frac{6\,(A-3\,B)\,(a+a\,\text{Sin}[e+f\,x])^{6+m}}{a^6\,f\,(6+m)}-\frac{(A-7\,B)\,(a+a\,\text{Sin}[e+f\,x])^{7+m}}{a^7\,f\,(7+m)}-\frac{B\,(a+a\,\text{Sin}[e+f\,x])^{8+m}}{a^8\,f\,(8+m)}$$

Result (type 3, 1361 leaves):

$$\frac{1}{f}\,(a\,(1+\text{Sin}[e+f\,x]))^m\left(\left(393\,216\,A-29\,400\,B+118\,528\,A\,m+26\,822\,B\,m+16\,160\,A\,m^2+2407\,B\,m^2+1256\,A\,m^3+166\,B\,m^3+40\,A\,m^4+5\,B\,m^4\right)\Big/\right.$$

$$(128\,(4+m)\,(5+m)\,(6+m)\,(7+m)\,(8+m))+$$
$$\left(\left(235\,200\,A+50\,024\,A\,m+29\,400\,B\,m+3946\,A\,m^2+2578\,B\,m^2+211\,A\,m^3+171\,B\,m^3+5\,A\,m^4+5\,B\,m^4\right)\left(-\frac{1}{128}\,i\,\text{Cos}[e+f\,x]+\frac{1}{128}\,\text{Sin}[e+f\,x]\right)\right)\Big/$$
$$((4+m)\,(5+m)\,(6+m)\,(7+m)\,(8+m))+$$
$$\left(\left(235\,200\,A+50\,024\,A\,m+29\,400\,B\,m+3946\,A\,m^2+2578\,B\,m^2+211\,A\,m^3+171\,B\,m^3+5\,A\,m^4+5\,B\,m^4\right)\left(\frac{1}{128}\,i\,\text{Cos}[e+f\,x]+\frac{1}{128}\,\text{Sin}[e+f\,x]\right)\right)\Big/$$
$$((4+m)\,(5+m)\,(6+m)\,(7+m)\,(8+m))+$$
$$\left(\left(-11\,760\,B+19\,296\,A\,m-8932\,B\,m+5028\,A\,m^2-94\,B\,m^2+447\,A\,m^3+19\,B\,m^3+15\,A\,m^4+B\,m^4\right)\left(\frac{1}{64}\,\text{Cos}[2\,(e+f\,x)]-\frac{1}{64}\,i\,\text{Sin}[2\,(e+f\,x)]\right)\right)\Big/$$
$$((4+m)\,(5+m)\,(6+m)\,(7+m)\,(8+m))+$$
$$\left(\left(-11\,760\,B+19\,296\,A\,m-8932\,B\,m+5028\,A\,m^2-94\,B\,m^2+447\,A\,m^3+19\,B\,m^3+15\,A\,m^4+B\,m^4\right)\left(\frac{1}{64}\,\text{Cos}[2\,(e+f\,x)]+\frac{1}{64}\,i\,\text{Sin}[2\,(e+f\,x)]\right)\right)\Big/$$
$$((4+m)\,(5+m)\,(6+m)\,(7+m)\,(8+m))+$$
$$\left(\left(15\,680\,A+10\,520\,A\,m+1960\,B\,m+1814\,A\,m^2+1070\,B\,m^2+117\,A\,m^3+93\,B\,m^3+3\,A\,m^4+3\,B\,m^4\right)\left(-\frac{3}{128}\,i\,\text{Cos}[3\,(e+f\,x)]+\frac{3}{128}\,\text{Sin}[3\,(e+f\,x)]\right)\right)\Big/$$
$$((4+m)\,(5+m)\,(6+m)\,(7+m)\,(8+m))+$$
$$\left(\left(15\,680\,A+10\,520\,A\,m+1960\,B\,m+1814\,A\,m^2+1070\,B\,m^2+117\,A\,m^3+93\,B\,m^3+3\,A\,m^4+3\,B\,m^4\right)\left(\frac{3}{128}\,i\,\text{Cos}[3\,(e+f\,x)]+\frac{3}{128}\,\text{Sin}[3\,(e+f\,x)]\right)\right)\Big/$$
$$((4+m)\,(5+m)\,(6+m)\,(7+m)\,(8+m))+$$
$$\left(\left(-5880\,B+2112\,A\,m-4466\,B\,m+1080\,A\,m^2-989\,B\,m^2+150\,A\,m^3-52\,B\,m^3+6\,A\,m^4-B\,m^4\right)\left(\frac{1}{64}\,\text{Cos}[4\,(e+f\,x)]-\frac{1}{64}\,i\,\text{Sin}[4\,(e+f\,x)]\right)\right)\Big/$$
$$((4+m)\,(5+m)\,(6+m)\,(7+m)\,(8+m))+$$
$$\left(\left(-5880\,B+2112\,A\,m-4466\,B\,m+1080\,A\,m^2-989\,B\,m^2+150\,A\,m^3-52\,B\,m^3+6\,A\,m^4-B\,m^4\right)\left(\frac{1}{64}\,\text{Cos}[4\,(e+f\,x)]+\frac{1}{64}\,i\,\text{Sin}[4\,(e+f\,x)]\right)\right)\Big/$$
$$((4+m)\,(5+m)\,(6+m)\,(7+m)\,(8+m))+$$
$$\left(\left(2352\,A+1118\,A\,m+294\,B\,m+143\,A\,m^2+103\,B\,m^2+5\,A\,m^3+5\,B\,m^3\right)\left(-\frac{1}{128}\,i\,\text{Cos}[5\,(e+f\,x)]+\frac{1}{128}\,\text{Sin}[5\,(e+f\,x)]\right)\right)\Big/$$
$$((5+m)\,(6+m)\,(7+m)\,(8+m))+$$
$$\left(\left(2352\,A+1118\,A\,m+294\,B\,m+143\,A\,m^2+103\,B\,m^2+5\,A\,m^3+5\,B\,m^3\right)\left(\frac{1}{128}\,i\,\text{Cos}[5\,(e+f\,x)]+\frac{1}{128}\,\text{Sin}[5\,(e+f\,x)]\right)\right)\Big/$$
$$((5+m)\,(6+m)\,(7+m)\,(8+m))+\frac{\left(-84\,B+8\,A\,m-26\,B\,m+A\,m^2-B\,m^2\right)\left(\frac{1}{64}\,\text{Cos}[6\,(e+f\,x)]-\frac{1}{64}\,i\,\text{Sin}[6\,(e+f\,x)]\right)}{(6+m)\,(7+m)\,(8+m)}+$$
$$\frac{\left(-84\,B+8\,A\,m-26\,B\,m+A\,m^2-B\,m^2\right)\left(\frac{1}{64}\,\text{Cos}[6\,(e+f\,x)]+\frac{1}{64}\,i\,\text{Sin}[6\,(e+f\,x)]\right)}{(6+m)\,(7+m)\,(8+m)}+$$
$$\frac{(8\,A+A\,m+B\,m)\left(-\frac{1}{128}\,i\,\text{Cos}[7\,(e+f\,x)]+\frac{1}{128}\,\text{Sin}[7\,(e+f\,x)]\right)}{(7+m)\,(8+m)}+\frac{(8\,A+A\,m+B\,m)\left(\frac{1}{128}\,i\,\text{Cos}[7\,(e+f\,x)]+\frac{1}{128}\,\text{Sin}[7\,(e+f\,x)]\right)}{(7+m)\,(8+m)}+$$

$$\left.\frac{-\frac{1}{256}\,B\,\mathrm{Cos}[8\,(e+f\,x)]-\frac{1}{256}\,i\,B\,\mathrm{Sin}[8\,(e+f\,x)]}{8+m}+\frac{-\frac{1}{256}\,B\,\mathrm{Cos}[8\,(e+f\,x)]+\frac{1}{256}\,i\,B\,\mathrm{Sin}[8\,(e+f\,x)]}{8+m}\right)$$

- **Problem 1021: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int \mathrm{Cos}[e+f\,x]^5\,(a+a\,\mathrm{Sin}[e+f\,x])^m\,(A+B\,\mathrm{Sin}[e+f\,x])\,dx$$

Optimal (type 3, 123 leaves, 3 steps):

$$\frac{4\,(A-B)\,(a+a\,\mathrm{Sin}[e+f\,x])^{3+m}}{a^3\,f\,(3+m)}-\frac{4\,(A-2\,B)\,(a+a\,\mathrm{Sin}[e+f\,x])^{4+m}}{a^4\,f\,(4+m)}+\frac{(A-5\,B)\,(a+a\,\mathrm{Sin}[e+f\,x])^{5+m}}{a^5\,f\,(5+m)}+\frac{B\,(a+a\,\mathrm{Sin}[e+f\,x])^{6+m}}{a^6\,f\,(6+m)}$$

Result (type 3, 869 leaves):

$$\frac{1}{f}\,(a\,(1+\mathrm{Sin}[e+f\,x]))^m\left(\frac{3072\,A-300\,B+1004\,A\,m+277\,B\,m+118\,A\,m^2+22\,B\,m^2+6\,A\,m^3+B\,m^3}{16\,(3+m)\,(4+m)\,(5+m)\,(6+m)}+\right.$$

$$\frac{\left(1800\,A+438\,A\,m+300\,B\,m+29\,A\,m^2+23\,B\,m^2+A\,m^3+B\,m^3\right)\left(-\frac{1}{16}\,i\,\mathrm{Cos}[e+f\,x]+\frac{1}{16}\,\mathrm{Sin}[e+f\,x]\right)}{(3+m)\,(4+m)\,(5+m)\,(6+m)}+$$

$$\frac{\left(1800\,A+438\,A\,m+300\,B\,m+29\,A\,m^2+23\,B\,m^2+A\,m^3+B\,m^3\right)\left(\frac{1}{16}\,i\,\mathrm{Cos}[e+f\,x]+\frac{1}{16}\,\mathrm{Sin}[e+f\,x]\right)}{(3+m)\,(4+m)\,(5+m)\,(6+m)}+$$

$$\left(\left(-900\,B+1056\,A\,m-705\,B\,m+272\,A\,m^2-4\,B\,m^2+16\,A\,m^3+B\,m^3\right)\left(\frac{1}{64}\,\mathrm{Cos}[2\,(e+f\,x)]-\frac{1}{64}\,i\,\mathrm{Sin}[2\,(e+f\,x)]\right)\right)\Big/\left((3+m)\,(4+m)\,(5+m)\,(6+m)\right)+$$

$$\left(\left(-900\,B+1056\,A\,m-705\,B\,m+272\,A\,m^2-4\,B\,m^2+16\,A\,m^3+B\,m^3\right)\left(\frac{1}{64}\,\mathrm{Cos}[2\,(e+f\,x)]+\frac{1}{64}\,i\,\mathrm{Sin}[2\,(e+f\,x)]\right)\right)\Big/\left((3+m)\,(4+m)\,(5+m)\,(6+m)\right)+$$

$$\left(\left(600\,A+418\,A\,m+100\,B\,m+71\,A\,m^2+53\,B\,m^2+3\,A\,m^3+3\,B\,m^3\right)\left(-\frac{1}{32}\,i\,\mathrm{Cos}[3\,(e+f\,x)]+\frac{1}{32}\,\mathrm{Sin}[3\,(e+f\,x)]\right)\right)\Big/\left((3+m)\,(4+m)\,(5+m)\,(6+m)\right)+$$

$$\left(\left(600\,A+418\,A\,m+100\,B\,m+71\,A\,m^2+53\,B\,m^2+3\,A\,m^3+3\,B\,m^3\right)\left(\frac{1}{32}\,i\,\mathrm{Cos}[3\,(e+f\,x)]+\frac{1}{32}\,\mathrm{Sin}[3\,(e+f\,x)]\right)\right)\Big/\left((3+m)\,(4+m)\,(5+m)\,(6+m)\right)+$$

$$\frac{\left(-60\,B+12\,A\,m-27\,B\,m+2\,A\,m^2-B\,m^2\right)\left(\frac{1}{32}\,\mathrm{Cos}[4\,(e+f\,x)]-\frac{1}{32}\,i\,\mathrm{Sin}[4\,(e+f\,x)]\right)}{(4+m)\,(5+m)\,(6+m)}+$$

$$\frac{\left(-60\,B+12\,A\,m-27\,B\,m+2\,A\,m^2-B\,m^2\right)\left(\frac{1}{32}\,\mathrm{Cos}[4\,(e+f\,x)]+\frac{1}{32}\,i\,\mathrm{Sin}[4\,(e+f\,x)]\right)}{(4+m)\,(5+m)\,(6+m)}+$$

$$\frac{(6\,A+A\,m+B\,m)\left(-\frac{1}{32}\,i\,\mathrm{Cos}[5\,(e+f\,x)]+\frac{1}{32}\,\mathrm{Sin}[5\,(e+f\,x)]\right)}{(5+m)\,(6+m)}+\frac{(6\,A+A\,m+B\,m)\left(\frac{1}{32}\,i\,\mathrm{Cos}[5\,(e+f\,x)]+\frac{1}{32}\,\mathrm{Sin}[5\,(e+f\,x)]\right)}{(5+m)\,(6+m)}+$$

$$\left.\frac{-\frac{1}{64}\,B\,\mathrm{Cos}[6\,(e+f\,x)]-\frac{1}{64}\,i\,B\,\mathrm{Sin}[6\,(e+f\,x)]}{6+m}+\frac{-\frac{1}{64}\,B\,\mathrm{Cos}[6\,(e+f\,x)]+\frac{1}{64}\,i\,B\,\mathrm{Sin}[6\,(e+f\,x)]}{6+m}\right)$$

Problem 1024: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \mathrm{Sec}[e+f x]\,(a+a\,\mathrm{Sin}[e+f x])^m\,(A+B\,\mathrm{Sin}[e+f x])\,dx$$

Optimal (type 5, 80 leaves, 3 steps):

$$\frac{(A-B)\,(a+a\,\mathrm{Sin}[e+f x])^m}{2\,f\,m}+\frac{(A+B)\,\mathrm{Hypergeometric2F1}\left[1,\,1+m,\,2+m,\,\frac{1}{2}\,(1+\mathrm{Sin}[e+f x])\right]\,(a+a\,\mathrm{Sin}[e+f x])^{1+m}}{4\,a\,f\,(1+m)}$$

Result (type 6, 16323 leaves):

$$-\left(\left(\mathrm{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{-2m}\mathrm{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right.\right.$$

$$(a+a\,\mathrm{Sin}[e+f x])^m\left(\left(A\,\mathrm{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2m}\right)\Big/\left(\left(\mathrm{Cos}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]-\mathrm{Sin}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]\right)\right.\right.$$

$$\left.\left.\left(\mathrm{Cos}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]+\mathrm{Sin}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]\right)\right)+\left(B\,\mathrm{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2m}\mathrm{Sin}[e+f x]\right)\Big/$$

$$\left.\left(\left(\mathrm{Cos}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]-\mathrm{Sin}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]\right)\left(\mathrm{Cos}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]+\mathrm{Sin}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]\right)\right)\right)$$

$$\left(\frac{1-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{1+\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}\right)^{2m}\left(\left(2\,A\,\mathrm{AppellF1}\left[1,\,1-2m,\,2m,\,2,\,\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^4\right)\Big/\right.$$

$$\left(\left(-1+\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\left(-2\,\mathrm{AppellF1}\left[1,\,1-2m,\,2m,\,2,\,\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.\right.$$

$$\left(2\,m\,\mathrm{AppellF1}\left[2,\,1-2m,\,1+2m,\,3,\,\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+(-1+2m)\right.$$

$$\left.\left.\left.\mathrm{AppellF1}\left[2,\,2-2m,\,2m,\,3,\,\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\right)-$$

$$\left(2\,B\,\mathrm{AppellF1}\left[1,\,1-2m,\,2m,\,2,\,\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^4\right)\Big/$$

$$\left(\left(-1+\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\left(-2\,\mathrm{AppellF1}\left[1,\,1-2m,\,2m,\,2,\,\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.\right.$$

$$\left(2\,m\,\mathrm{AppellF1}\left[2,\,1-2m,\,1+2m,\,3,\,\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+(-1+2m)\right.$$

$$\left.\left.\left.\mathrm{AppellF1}\left[2,\,2-2m,\,2m,\,3,\,\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\right)+$$

$$\left(4\,B\,\mathrm{AppellF1}\left[1,\,-2m,\,1+2m,\,2,\,\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^4\right)\Big/$$

$$\left(\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\left(-2\,\text{AppellF1}\left[1,-2 m,1+2 m,2,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.\right.$$

$$\left(2 m\,\text{AppellF1}\left[2,1-2 m,1+2 m,3,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+(1+2 m)\right.$$

$$\left.\left.\text{AppellF1}\left[2,-2 m,2+2 m,3,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\right)+$$

$$\left(A\,(1+m)\,\text{AppellF1}\left[1+2 m,2 m,1,2+2 m,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\left(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\right)\Big/$$

$$\left((1+2 m)\left(2\,(1+m)\,\text{AppellF1}\left[1+2 m,2 m,1,2+2 m,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]-\right.\right.$$

$$\left(\text{AppellF1}\left[2+2 m,2 m,2,3+2 m,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+m\,\text{AppellF1}\left[2+2 m,\right.\right.$$

$$\left.\left.\left.\left.1+2 m,1,3+2 m,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\left(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\right)\right)+$$

$$\left(B\,(1+m)\,\text{AppellF1}\left[1+2 m,2 m,1,2+2 m,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\left(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\right)\Big/$$

$$\left((1+2 m)\left(2\,(1+m)\,\text{AppellF1}\left[1+2 m,2 m,1,2+2 m,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]-\right.\right.$$

$$\left(\text{AppellF1}\left[2+2 m,2 m,2,3+2 m,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+m\,\text{AppellF1}\left[2+2 m,\right.\right.$$

$$\left.\left.\left.\left.\left.1+2 m,1,3+2 m,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\left(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\right)\right)\right)\Big/$$

$$\left(f\left(-\frac{1}{2}\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\text{Csc}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\left(\frac{1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}\right)^{2 m}\right.\right.$$

$$\left(\left(2 A\,\text{AppellF1}\left[1,1-2 m,2 m,2,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^4\right)\Big/\right.$$

$$\left(\left(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\left(-2\,\text{AppellF1}\left[1,1-2 m,2 m,2,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.\right.$$

$$\left(2 m\,\text{AppellF1}\left[2,1-2 m,1+2 m,3,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$\left.\left.\left.(-1+2 m)\,\text{AppellF1}\left[2,2-2 m,2 m,3,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\right)-$$

$$\left(2 B\,\text{AppellF1}\left[1,1-2 m,2 m,2,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^4\right)\Big/$$

$$\left(\left(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\left(-2\,\text{AppellF1}\left[1,\,1-2\,m,\,2\,m,\,2,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.\right.$$

$$\left(2\,m\,\text{AppellF1}\left[2,\,1-2\,m,\,1+2\,m,\,3,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.$$

$$\left.\left.\left.(-1+2\,m)\,\text{AppellF1}\left[2,\,2-2\,m,\,2\,m,\,3,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\right)+$$

$$\left(4\,B\,\text{AppellF1}\left[1,\,-2\,m,\,1+2\,m,\,2,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\right)\Big/$$

$$\left(\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\left(-2\,\text{AppellF1}\left[1,\,-2\,m,\,1+2\,m,\,2,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.\right.$$

$$\left(2\,m\,\text{AppellF1}\left[2,\,1-2\,m,\,1+2\,m,\,3,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.$$

$$\left.\left.\left.(1+2\,m)\,\text{AppellF1}\left[2,\,-2\,m,\,2+2\,m,\,3,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\right)+$$

$$\left(A\,(1+m)\,\text{AppellF1}\left[1+2\,m,\,2\,m,\,1,\,2+2\,m,\,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\left(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\right)\Big/$$

$$\left((1+2\,m)\left(2\,(1+m)\,\text{AppellF1}\left[1+2\,m,\,2\,m,\,1,\,2+2\,m,\,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]-\right.\right.$$

$$\left(\text{AppellF1}\left[2+2\,m,\,2\,m,\,2,\,3+2\,m,\,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+m\,\text{AppellF1}\left[2+2\,m,\right.\right.$$

$$\left.\left.\left.\left.1+2\,m,\,1,\,3+2\,m,\,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\left(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\right)\right)+$$

$$\left(B\,(1+m)\,\text{AppellF1}\left[1+2\,m,\,2\,m,\,1,\,2+2\,m,\,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\left(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\right)\Big/$$

$$\left((1+2\,m)\left(2\,(1+m)\,\text{AppellF1}\left[1+2\,m,\,2\,m,\,1,\,2+2\,m,\,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]-\right.\right.$$

$$\left(\text{AppellF1}\left[2+2\,m,\,2\,m,\,2,\,3+2\,m,\,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+m\,\text{AppellF1}\left[2+2\,m,\right.\right.$$

$$\left.\left.\left.\left.\left.1+2\,m,\,1,\,3+2\,m,\,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\left(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\right)\right)\right)+$$

$$2\,m\,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\left(\frac{1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}\right)^{-1+2\,m}\left(-\frac{\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)}{2\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^2}-\right.$$

$$\left.\frac{\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]}{2\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)}\right)$$

$$\Bigg(\Bigg(2\,A\,\text{AppellF1}\left[1,1-2m,2m,2,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\Bigg)\Big/$$

$$\Bigg(\left(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\Bigg(-2\,\text{AppellF1}\left[1,1-2m,2m,2,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+$$

$$\Bigg(2\,m\,\text{AppellF1}\left[2,1-2m,1+2m,3,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+$$

$$(-1+2m)\,\text{AppellF1}\left[2,2-2m,2m,3,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\Bigg)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Bigg)\Bigg)-$$

$$\Bigg(2\,B\,\text{AppellF1}\left[1,1-2m,2m,2,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\Bigg)\Big/$$

$$\Bigg(\left(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\Bigg(-2\,\text{AppellF1}\left[1,1-2m,2m,2,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+$$

$$\Bigg(2\,m\,\text{AppellF1}\left[2,1-2m,1+2m,3,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+$$

$$(-1+2m)\,\text{AppellF1}\left[2,2-2m,2m,3,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\Bigg)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Bigg)\Bigg)+$$

$$\Bigg(4\,B\,\text{AppellF1}\left[1,-2m,1+2m,2,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\Bigg)\Big/$$

$$\Bigg(\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\Bigg(-2\,\text{AppellF1}\left[1,-2m,1+2m,2,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+$$

$$\Bigg(2\,m\,\text{AppellF1}\left[2,1-2m,1+2m,3,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+$$

$$(1+2m)\,\text{AppellF1}\left[2,-2m,2+2m,3,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\Bigg)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Bigg)\Bigg)+$$

$$\Bigg(A\,(1+m)\,\text{AppellF1}\left[1+2m,2m,1,2+2m,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\left(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\Bigg)\Big/$$

$$\Bigg((1+2m)\,\Bigg(2\,(1+m)\,\text{AppellF1}\left[1+2m,2m,1,2+2m,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]-$$

$$\Bigg(\text{AppellF1}\left[2+2m,2m,2,3+2m,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+m\,\text{AppellF1}\Big[2+2m,$$

$$1+2m,1,3+2m,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]\Bigg)\left(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\Bigg)\Bigg)+$$

$$\Bigg(B\,(1+m)\,\text{AppellF1}\left[1+2m,2m,1,2+2m,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\left(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\Bigg)\Big/$$

$$\Bigg((1+2m)\,\Bigg(2\,(1+m)\,\text{AppellF1}\left[1+2m,2m,1,2+2m,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]-$$

$$\left(\text{AppellF1}\left[2+2 m, 2 m, 2, 3+2 m, \frac{1}{2}-\frac{1}{2} \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, 1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+m\,\text{AppellF1}\left[2+2 m,\right.\right.$$

$$\left.\left.1+2 m, 1, 3+2 m, \frac{1}{2}-\frac{1}{2} \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, 1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\left(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\Bigg)\Bigg)\Bigg)+$$

$$\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\left(\frac{1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}\right)^{2 m}\Bigg(-\Bigg(\Bigg(A\,\text{AppellF1}\left[1, 1-2 m, 2 m, 2, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\right.$$

$$\left.-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right] \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^5\Bigg)\Big/$$

$$\Bigg(\left(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^2\Bigg(-2\,\text{AppellF1}\left[1, 1-2 m, 2 m, 2, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$\Bigg(2 m\,\text{AppellF1}\left[2, 1-2 m, 1+2 m, 3, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$(-1+2 m)\,\text{AppellF1}\left[2, 2-2 m, 2 m, 3, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\Bigg) \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)\Bigg)\Bigg)+$$

$$\Bigg(B\,\text{AppellF1}\left[1, 1-2 m, 2 m, 2, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right] \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^5\Bigg)\Big/$$

$$\Bigg(\left(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^2\Bigg(-2\,\text{AppellF1}\left[1, 1-2 m, 2 m, 2, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$\Bigg(2 m\,\text{AppellF1}\left[2, 1-2 m, 1+2 m, 3, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$(-1+2 m)\,\text{AppellF1}\left[2, 2-2 m, 2 m, 3, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\Bigg) \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)\Bigg)+$$

$$\Bigg(2 A\,\text{AppellF1}\left[1, 1-2 m, 2 m, 2, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right] \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^3\Bigg)\Big/$$

$$\Bigg(\left(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\Bigg(-2\,\text{AppellF1}\left[1, 1-2 m, 2 m, 2, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$\Bigg(2 m\,\text{AppellF1}\left[2, 1-2 m, 1+2 m, 3, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$(-1+2 m)\,\text{AppellF1}\left[2, 2-2 m, 2 m, 3, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\Bigg) \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)\Bigg)-$$

$$\Bigg(2 B\,\text{AppellF1}\left[1, 1-2 m, 2 m, 2, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right] \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^3\Bigg)\Big/$$

$$\Bigg(\left(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\Bigg(-2\,\text{AppellF1}\left[1, 1-2 m, 2 m, 2, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$\Big(2\,m\,\text{AppellF1}\Big[2,\,1-2\,m,\,1+2\,m,\,3,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+$$

$$(-1+2\,m)\,\text{AppellF1}\Big[2,\,2-2\,m,\,2\,m,\,3,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)\Big)+$$

$$\Big(2\,A\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^4\,\Big(-\frac{1}{2}\,m\,\text{AppellF1}\Big[2,\,1-2\,m,\,1+2\,m,\,3,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]$$

$$\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]+\frac{1}{4}\,(1-2\,m)\,\text{AppellF1}\Big[2,\,2-2\,m,\,2\,m,\,3,$$

$$\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\Big)\Big)\Big/$$

$$\Big(\Big(-1+\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)\,\Big(-2\,\text{AppellF1}\Big[1,\,1-2\,m,\,2\,m,\,2,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+$$

$$\Big(2\,m\,\text{AppellF1}\Big[2,\,1-2\,m,\,1+2\,m,\,3,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+$$

$$(-1+2\,m)\,\text{AppellF1}\Big[2,\,2-2\,m,\,2\,m,\,3,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)\Big)-$$

$$\Big(2\,B\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^4\,\Big(-\frac{1}{2}\,m\,\text{AppellF1}\Big[2,\,1-2\,m,\,1+2\,m,\,3,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]$$

$$\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]+\frac{1}{4}\,(1-2\,m)\,\text{AppellF1}\Big[2,\,2-2\,m,\,2\,m,\,3,$$

$$\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\Big)\Big)\Big/$$

$$\Big(\Big(-1+\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)\,\Big(-2\,\text{AppellF1}\Big[1,\,1-2\,m,\,2\,m,\,2,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+$$

$$\Big(2\,m\,\text{AppellF1}\Big[2,\,1-2\,m,\,1+2\,m,\,3,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+$$

$$(-1+2\,m)\,\text{AppellF1}\Big[2,\,2-2\,m,\,2\,m,\,3,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)\Big)-$$

$$\Big(2\,B\,\text{AppellF1}\Big[1,\,-2\,m,\,1+2\,m,\,2,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^5\Big)\Big/$$

$$\Big(\Big(1+\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)^2\,\Big(-2\,\text{AppellF1}\Big[1,\,-2\,m,\,1+2\,m,\,2,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+$$

$$\Big(2\,m\,\text{AppellF1}\Big[2,\,1-2\,m,\,1+2\,m,\,3,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+$$

$$(1+2\,m)\,\text{AppellF1}\Big[2,\,-2\,m,\,2+2\,m,\,3,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)\Big)+$$

$$\left(4\,B\,\text{AppellF1}\left[1,-2m,1+2m,2,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^3\right)\Big/$$

$$\left(\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\left(-2\,\text{AppellF1}\left[1,-2m,1+2m,2,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.\right.$$

$$\left(2\,m\,\text{AppellF1}\left[2,1-2m,1+2m,3,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.$$

$$\left.\left.\left.(1+2m)\,\text{AppellF1}\left[2,-2m,2+2m,3,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\right)+$$

$$\left(4\,B\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\left(-\frac{1}{2}\,m\,\text{AppellF1}\left[2,1-2m,1+2m,3,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right.\right.$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-\frac{1}{4}(1+2m)\,\text{AppellF1}\left[2,-2m,2+2m,3,\right.$$

$$\left.\left.\left.\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\right)\right)\Big/$$

$$\left(\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\left(-2\,\text{AppellF1}\left[1,-2m,1+2m,2,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.\right.$$

$$\left(2\,m\,\text{AppellF1}\left[2,1-2m,1+2m,3,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.$$

$$\left.\left.\left.(1+2m)\,\text{AppellF1}\left[2,-2m,2+2m,3,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\right)+$$

$$\left(A\,(1+m)\,\text{AppellF1}\left[1+2m,2m,1,2+2m,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right.$$

$$\left.\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\right)\Big/$$

$$\left(2\,(1+2m)\left(2\,(1+m)\,\text{AppellF1}\left[1+2m,2m,1,2+2m,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]-\right.\right.$$

$$\left(\text{AppellF1}\left[2+2m,2m,2,3+2m,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+m\,\text{AppellF1}\left[2+2m,\right.\right.$$

$$\left.\left.\left.\left.1+2m,1,3+2m,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\left(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\right)\right)+$$

$$\left(B\,(1+m)\,\text{AppellF1}\left[1+2m,2m,1,2+2m,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right.$$

$$\left.\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\right)\Big/$$

$$\left(2\,(1+2m)\left(2\,(1+m)\,\text{AppellF1}\left[1+2m,2m,1,2+2m,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]-\right.\right.$$

$$\left(\text{AppellF1}\left[2+2m,\,2m,\,2,\,3+2m,\,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+m\,\text{AppellF1}\left[2+2m,\right.\right.$$

$$\left.\left.1+2m,\,1,\,3+2m,\,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\left(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\Big)\Big)+$$

$$\Big(A\,(1+m)\,\Big(-\frac{1}{2\,(2+2m)}(1+2m)\,\text{AppellF1}\left[2+2m,\,2m,\,2,\,3+2m,\,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{1}{2\,(2+2m)}m\,(1+2m)$$

$$\text{AppellF1}\left[2+2m,\,1+2m,\,1,\,3+2m,\,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\Big)\left(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\Big)\Big/$$

$$\Big((1+2m)\,\Big(2\,(1+m)\,\text{AppellF1}\left[1+2m,\,2m,\,1,\,2+2m,\,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]-$$

$$\left(\text{AppellF1}\left[2+2m,\,2m,\,2,\,3+2m,\,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+m\,\text{AppellF1}\left[2+2m,\right.\right.$$

$$\left.\left.1+2m,\,1,\,3+2m,\,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\left(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\Big)\Big)+$$

$$\Big(B\,(1+m)\,\Big(-\frac{1}{2\,(2+2m)}(1+2m)\,\text{AppellF1}\left[2+2m,\,2m,\,2,\,3+2m,\,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{1}{2\,(2+2m)}m\,(1+2m)$$

$$\text{AppellF1}\left[2+2m,\,1+2m,\,1,\,3+2m,\,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\Big)\left(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\Big)\Big/$$

$$\Big((1+2m)\,\Big(2\,(1+m)\,\text{AppellF1}\left[1+2m,\,2m,\,1,\,2+2m,\,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]-$$

$$\left(\text{AppellF1}\left[2+2m,\,2m,\,2,\,3+2m,\,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+m\,\text{AppellF1}\left[2+2m,\right.\right.$$

$$\left.\left.1+2m,\,1,\,3+2m,\,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\left(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\Big)\Big)-$$

$$\Big(2\,A\,\text{AppellF1}\left[1,\,1-2m,\,2m,\,2,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^4$$

$$\Big(\frac{1}{2}\Big(2m\,\text{AppellF1}\left[2,\,1-2m,\,1+2m,\,3,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+(-1+2m)\,\text{AppellF1}\Big[2,\,2-2m,$$

$$2\,m,\,3,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\Big)\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-2$$

$$\Big(-\frac{1}{2}\,m\,\text{AppellF1}\left[2,\,1-2\,m,\,1+2\,m,\,3,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]+\frac{1}{4}\,(1-2\,m)\,\text{AppellF1}\left[2,\,2-2\,m,\,2\,m,\,3,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\Big)+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,\Big(2\,m\,\Big(-\frac{1}{3}\,(1+2\,m)\,\text{AppellF1}\Big[3,\,1-2\,m,$$

$$2+2\,m,\,4,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]+$$

$$\frac{1}{3}\,(1-2\,m)\,\text{AppellF1}\left[3,\,2-2\,m,\,1+2\,m,\,4,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\Big)+(-1+2\,m)\,\Big(-\frac{2}{3}\,m\,\text{AppellF1}\Big[3,\,2-2\,m,\,1+2\,m,\,4,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,$$

$$-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]+\frac{1}{3}\,(2-2\,m)\,\text{AppellF1}\Big[3,\,3-2\,m,\,2\,m,$$

$$4,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\Big)\Big)\Big)\Big)\Big)\Big/$$

$$\Big(\Big(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big)\,\Big(-2\,\text{AppellF1}\left[1,\,1-2\,m,\,2\,m,\,2,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+$$

$$\Big(2\,m\,\text{AppellF1}\left[2,\,1-2\,m,\,1+2\,m,\,3,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+$$

$$(-1+2\,m)\,\text{AppellF1}\left[2,\,2-2\,m,\,2\,m,\,3,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\Big)\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big)^2\Big)+$$

$$\Big(2\,B\,\text{AppellF1}\left[1,\,1-2\,m,\,2\,m,\,2,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4$$

$$\Big(\frac{1}{2}\,\Big(2\,m\,\text{AppellF1}\left[2,\,1-2\,m,\,1+2\,m,\,3,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+(-1+2\,m)\,\text{AppellF1}\Big[2,\,2-2\,m,$$

$$2\,m,\,3,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]\Big)\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-2$$

$$\Big(-\frac{1}{2}\,m\,\text{AppellF1}\left[2,\,1-2\,m,\,1+2\,m,\,3,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]+\frac{1}{4}\,(1-2\,m)\,\text{AppellF1}\left[2,\,2-2\,m,\,2\,m,\,3,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\Big)+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,\Big(2\,m\,\Big(-\frac{1}{3}\,(1+2\,m)\,\text{AppellF1}\Big[3,\,1-2\,m,$$

$$2+2\,m,\,4,\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]+$$

$$\frac{1}{3}\,(1-2\,m)\,\text{AppellF1}\Big[3,\,2-2\,m,\,1+2\,m,\,4,\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2$$

$$\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]\Big]\Big)+(-1+2\,m)\,\Big(-\frac{2}{3}\,m\,\text{AppellF1}\Big[3,\,2-2\,m,\,1+2\,m,\,4,\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,$$

$$-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]+\frac{1}{3}\,(2-2\,m)\,\text{AppellF1}\Big[3,\,3-2\,m,\,2\,m,$$

$$4,\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]\Big]\Big)\Big)\Big)\Big)\Big/$$

$$\Big(\Big(-1+\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big)\,\Big(-2\,\text{AppellF1}\Big[1,\,1-2\,m,\,2\,m,\,2,\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]+$$

$$\Big(2\,m\,\text{AppellF1}\Big[2,\,1-2\,m,\,1+2\,m,\,3,\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]+$$

$$(-1+2\,m)\,\text{AppellF1}\Big[2,\,2-2\,m,\,2\,m,\,3,\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big)^2\Big)-$$

$$\Big(4\,B\,\text{AppellF1}\Big[1,\,-2\,m,\,1+2\,m,\,2,\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^4$$

$$\Big(\frac{1}{2}\,\Big(2\,m\,\text{AppellF1}\Big[2,\,1-2\,m,\,1+2\,m,\,3,\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]+$$

$$(1+2\,m)\,\text{AppellF1}\Big[2,\,-2\,m,\,2+2\,m,\,3,\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]\Big)\,\text{Sec}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2$$

$$\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]-2\,\Big(-\frac{1}{2}\,m\,\text{AppellF1}\Big[2,\,1-2\,m,\,1+2\,m,\,3,\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]$$

$$\text{Sec}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]-\frac{1}{4}\,(1+2\,m)\,\text{AppellF1}\Big[2,\,-2\,m,\,2+2\,m,\,3,\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,$$

$$-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]\Big]\Big)+\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2$$

$$\Big(2\,m\,\Big(-\frac{1}{3}\,(1+2\,m)\,\text{AppellF1}\Big[3,\,1-2\,m,\,2+2\,m,\,4,\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2$$

$$\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]+\frac{1}{3}\,(1-2\,m)\,\text{AppellF1}\Big[3,\,2-2\,m,\,1+2\,m,\,4,\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]$$

$$\text{Sec}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]\Big)+(1+2\,m)\,\Big(-\frac{2}{3}\,m\,\text{AppellF1}\Big[3,\,1-2\,m,\,2+2\,m,\,4,\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,$$

$$-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]-\frac{1}{3}\,(2+2\,m)\,\text{AppellF1}\Big[3,\,-2\,m,\,3+2\,m,$$

$$4,\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]\ \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\Big)\Big)\Big)\Big)\Big)\Big/$$

$$\Bigg(\Bigg(\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\ \Bigg(-2\,\text{AppellF1}\Big[1,\ -2\,m,\ 1+2\,m,\ 2,\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]+$$

$$\Bigg(2\,m\,\text{AppellF1}\Big[2,\ 1-2\,m,\ 1+2\,m,\ 3,\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]+$$

$$(1+2\,m)\ \text{AppellF1}\Big[2,\ -2\,m,\ 2+2\,m,\ 3,\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]\Bigg)\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Bigg)^2\Bigg)-$$

$$\Bigg(A\ (1+m)\ \text{AppellF1}\Big[1+2\,m,\ 2\,m,\ 1,\ 2+2\,m,\ \frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ 1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]$$

$$\left(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\ \Bigg(-\frac{1}{2}\Bigg(\text{AppellF1}\Big[2+2\,m,\ 2\,m,\ 2,\ 3+2\,m,\ \frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ 1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]+$$

$$m\,\text{AppellF1}\Big[2+2\,m,\ 1+2\,m,\ 1,\ 3+2\,m,\ \frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ 1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]\Bigg)\ \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]+2\ (1+m)\ \Bigg(-\frac{1}{2\ (2+2\,m)}(1+2\,m)\ \text{AppellF1}\Big[2+2\,m,\ 2\,m,\ 2,\ 3+2\,m,\ \frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,$$

$$1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]\ \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-\frac{1}{2\ (2+2\,m)}m\ (1+2\,m)\ \text{AppellF1}\Big[2+2\,m,\ 1+2\,m,$$

$$1,\ 3+2\,m,\ \frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ 1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]\ \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\Bigg)-$$

$$\left(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\ \Bigg(-\frac{1}{3+2\,m}(2+2\,m)\ \text{AppellF1}\Big[3+2\,m,\ 2\,m,\ 3,\ 4+2\,m,\ \frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,$$

$$1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]\ \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-\frac{1}{2\ (3+2\,m)}m\ (2+2\,m)\ \text{AppellF1}\Big[3+2\,m,\ 1+2\,m,$$

$$2,\ 4+2\,m,\ \frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ 1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]\ \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]+$$

$$m\ \Bigg(-\frac{1}{2\ (3+2\,m)}(2+2\,m)\ \text{AppellF1}\Big[3+2\,m,\ 1+2\,m,\ 2,\ 4+2\,m,\ \frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ 1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-\frac{1}{4\ (3+2\,m)}(1+2\,m)\ (2+2\,m)\ \text{AppellF1}\Big[3+2\,m,\ 2+2\,m,\ 1,\ 4+2\,m,$$

$$\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ 1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]\ \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\Bigg)\Bigg)\Bigg)\Bigg)\Bigg)\Big/$$

$$\Bigg((1+2\,m)\ \Bigg(2\ (1+m)\ \text{AppellF1}\Big[1+2\,m,\ 2\,m,\ 1,\ 2+2\,m,\ \frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ 1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]-$$

$$\Bigg(\text{AppellF1}\Big[2+2\,m,\ 2\,m,\ 2,\ 3+2\,m,\ \frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ 1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]+m\,\text{AppellF1}\Big[2+2\,m,$$

$$1+2\,m,\,1,\,3+2\,m,\,\frac{1}{2}-\frac{1}{2}\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]\Big)\,\left(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\Big)^2\Big)-$$

$$\Big(B\,(1+m)\,\text{AppellF1}\Big[1+2\,m,\,2\,m,\,1,\,2+2\,m,\,\frac{1}{2}-\frac{1}{2}\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]$$

$$\left(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\,\Big(-\frac{1}{2}\,\Big(\text{AppellF1}\Big[2+2\,m,\,2\,m,\,2,\,3+2\,m,\,\frac{1}{2}-\frac{1}{2}\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]+$$

$$m\,\text{AppellF1}\Big[2+2\,m,\,1+2\,m,\,1,\,3+2\,m,\,\frac{1}{2}-\frac{1}{2}\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]\Big)\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]+2\,(1+m)\,\Big(-\frac{1}{2\,(2+2\,m)}\,(1+2\,m)\,\text{AppellF1}\Big[2+2\,m,\,2\,m,\,2,\,3+2\,m,\,\frac{1}{2}-\frac{1}{2}\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,$$

$$1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-\frac{1}{2\,(2+2\,m)}\,m\,(1+2\,m)\,\text{AppellF1}\Big[2+2\,m,\,1+2\,m,$$

$$1,\,3+2\,m,\,\frac{1}{2}-\frac{1}{2}\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\Big)\Big)-$$

$$\left(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\,\Big(-\frac{1}{3+2\,m}\,(2+2\,m)\,\text{AppellF1}\Big[3+2\,m,\,2\,m,\,3,\,4+2\,m,\,\frac{1}{2}-\frac{1}{2}\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,$$

$$1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-\frac{1}{2\,(3+2\,m)}\,m\,(2+2\,m)\,\text{AppellF1}\Big[3+2\,m,\,1+2\,m,$$

$$2,\,4+2\,m,\,\frac{1}{2}-\frac{1}{2}\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]+$$

$$m\,\Big(-\frac{1}{2\,(3+2\,m)}\,(2+2\,m)\,\text{AppellF1}\Big[3+2\,m,\,1+2\,m,\,2,\,4+2\,m,\,\frac{1}{2}-\frac{1}{2}\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-\frac{1}{4\,(3+2\,m)}\,(1+2\,m)\,(2+2\,m)\,\text{AppellF1}\Big[3+2\,m,\,2+2\,m,\,1,\,4+2\,m,$$

$$\frac{1}{2}-\frac{1}{2}\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\Big)\Big)\Big)\Big)\Big)\Big/$$

$$\Big((1+2\,m)\,\Big(2\,(1+m)\,\text{AppellF1}\Big[1+2\,m,\,2\,m,\,1,\,2+2\,m,\,\frac{1}{2}-\frac{1}{2}\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]-$$

$$\Big(\text{AppellF1}\Big[2+2\,m,\,2\,m,\,2,\,3+2\,m,\,\frac{1}{2}-\frac{1}{2}\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]+m\,\text{AppellF1}\Big[2+2\,m,\,1+2\,m,$$

$$1,\,3+2\,m,\,\frac{1}{2}-\frac{1}{2}\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]\Big)\,\left(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^2\Big)\Big)\Big)\Big)$$

- **Problem 1025: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int \text{Sec}[e+f\,x]^3\,(a+a\,\text{Sin}[e+f\,x])^m\,(A+B\,\text{Sin}[e+f\,x])\,dx$$

Optimal (type 5, 100 leaves, 3 steps):

$$-\frac{a\,(A\,(2-m)-B\,m)\,\text{Hypergeometric2F1}\left[1,-1+m,m,\frac{1}{2}\,(1+\text{Sin}[e+f\,x])\right]\,(a+a\,\text{Sin}[e+f\,x])^{-1+m}}{4\,f\,(1-m)}+\frac{a^2\,(A+B)\,(a+a\,\text{Sin}[e+f\,x])^{-1+m}}{2\,f\,(a-a\,\text{Sin}[e+f\,x])}$$

Result (type 6, 46 238 leaves): Display of huge result suppressed!

Problem 1026: Unable to integrate problem.

$$\int \text{Sec}[e+f\,x]^5\,(a+a\,\text{Sin}[e+f\,x])^m\,(A+B\,\text{Sin}[e+f\,x])\,dx$$

Optimal (type 5, 104 leaves, 3 steps):

$$-\frac{a^2\,(A\,(4-m)-B\,m)\,\text{Hypergeometric2F1}\left[2,-2+m,-1+m,\frac{1}{2}\,(1+\text{Sin}[e+f\,x])\right]\,(a+a\,\text{Sin}[e+f\,x])^{-2+m}}{16\,f\,(2-m)}+\frac{a^4\,(A+B)\,(a+a\,\text{Sin}[e+f\,x])^{-2+m}}{4\,f\,(a-a\,\text{Sin}[e+f\,x])^2}$$

Result (type 8, 33 leaves):

$$\int \text{Sec}[e+f\,x]^5\,(a+a\,\text{Sin}[e+f\,x])^m\,(A+B\,\text{Sin}[e+f\,x])\,dx$$

Problem 1027: Unable to integrate problem.

$$\int \text{Cos}[e+f\,x]^6\,(a+a\,\text{Sin}[e+f\,x])^m\,(A+B\,\text{Sin}[e+f\,x])\,dx$$

Optimal (type 5, 129 leaves, 4 steps):

$$-\frac{1}{7\,f\,(7+m)}2^{\frac{7}{2}+m}\,a^3\,(B\,m+A\,(7+m))\,\text{Cos}[e+f\,x]^7\,\text{Hypergeometric2F1}\left[\frac{7}{2},-\frac{5}{2}-m,\frac{9}{2},\frac{1}{2}\,(1-\text{Sin}[e+f\,x])\right]$$
$$(1+\text{Sin}[e+f\,x])^{-\frac{1}{2}-m}\,(a+a\,\text{Sin}[e+f\,x])^{-3+m}-\frac{B\,\text{Cos}[e+f\,x]^7\,(a+a\,\text{Sin}[e+f\,x])^m}{f\,(7+m)}$$

Result (type 8, 33 leaves):

$$\int \text{Cos}[e+f\,x]^6\,(a+a\,\text{Sin}[e+f\,x])^m\,(A+B\,\text{Sin}[e+f\,x])\,dx$$

Problem 1028: Unable to integrate problem.

$$\int \text{Cos}[e+f\,x]^4\,(a+a\,\text{Sin}[e+f\,x])^m\,(A+B\,\text{Sin}[e+f\,x])\,dx$$

Optimal (type 5, 129 leaves, 4 steps):

$$-\frac{1}{5\,f\,(5+m)}2^{\frac{5}{2}+m}\,a^2\,(B\,m+A\,(5+m))\,\text{Cos}[e+f\,x]^5\,\text{Hypergeometric2F1}\left[\frac{5}{2},-\frac{3}{2}-m,\frac{7}{2},\frac{1}{2}\,(1-\text{Sin}[e+f\,x])\right]$$
$$(1+\text{Sin}[e+f\,x])^{-\frac{1}{2}-m}\,(a+a\,\text{Sin}[e+f\,x])^{-2+m}-\frac{B\,\text{Cos}[e+f\,x]^5\,(a+a\,\text{Sin}[e+f\,x])^m}{f\,(5+m)}$$

Result (type 8, 33 leaves):

$$\int \text{Cos}[e+f x]^4 (a+a \text{Sin}[e+f x])^m (A+B \text{Sin}[e+f x]) \, dx$$

- **Problem 1029: Attempted integration timed out after 120 seconds.**

$$\int \text{Cos}[e+f x]^2 (a+a \text{Sin}[e+f x])^m (A+B \text{Sin}[e+f x]) \, dx$$

Optimal (type 5, 127 leaves, 4 steps):

$$-\frac{1}{3 f (3+m)} 2^{\frac{3}{2}+m} a (B m+A (3+m)) \text{Cos}[e+f x]^3 \text{Hypergeometric2F1}\left[\frac{3}{2}, -\frac{1}{2}-m, \frac{5}{2}, \frac{1}{2} (1-\text{Sin}[e+f x])\right] (1+\text{Sin}[e+f x])^{-\frac{1}{2}-m} (a+a \text{Sin}[e+f x])^{-1+m} - \frac{B \text{Cos}[e+f x]^3 (a+a \text{Sin}[e+f x])^m}{f (3+m)}$$

Result (type 1, 1 leaves):

???

- **Problem 1030: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int \text{Sec}[e+f x]^2 (a+a \text{Sin}[e+f x])^m (A+B \text{Sin}[e+f x]) \, dx$$

Optimal (type 5, 123 leaves, 4 steps):

$$\frac{B \text{Sec}[e+f x] (a+a \text{Sin}[e+f x])^m}{f (1-m)} + \frac{1}{f (1-m)} 2^{-\frac{1}{2}+m} (A (1-m) - B m) \text{Hypergeometric2F1}\left[-\frac{1}{2}, \frac{3}{2}-m, \frac{1}{2}, \frac{1}{2} (1-\text{Sin}[e+f x])\right] \text{Sec}[e+f x] (1+\text{Sin}[e+f x])^{\frac{1}{2}-m} (a+a \text{Sin}[e+f x])^m$$

Result (type 6, 12 366 leaves):

$$-\left(\left(\left(\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{-2 m} \text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right] (a+a \text{Sin}[e+f x])^m \left(\left(A \text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2 m}\right) \Big/ \left(\left(\text{Cos}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right] - \text{Sin}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]\right)^2 \left(\text{Cos}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right] + \text{Sin}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]\right)^2\right) + \left(B \text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2 m} \text{Sin}[e+f x]\right) \Big/ \left(\left(\text{Cos}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right] - \text{Sin}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]\right)^2 \left(\text{Cos}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right] + \text{Sin}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]\right)^2\right)\right) \left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{2 (-1+m)} \left(\frac{1}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}\right)^{2 m} \left(-\left(\left(15 (A+B) \text{AppellF1}\left[-\frac{1}{2}, 2-2 m, 2 m, \frac{1}{2}, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right) \Big/\right.\right.$$

$$\left(\text{AppellF1}\left[-\frac{1}{2},2-2m,2m,\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]-\right.$$
$$4\left(m\,\text{AppellF1}\left[\frac{1}{2},2-2m,1+2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+(-1+m)\right.$$
$$\left.\left.\text{AppellF1}\left[\frac{1}{2},3-2m,2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)+$$
$$\left(45\,(3A-5B)\,\text{AppellF1}\left[\frac{1}{2},2-2m,2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)\Big/$$
$$\left(3\,\text{AppellF1}\left[\frac{1}{2},2-2m,2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]-\right.$$
$$4\left(m\,\text{AppellF1}\left[\frac{3}{2},2-2m,1+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+\right.$$
$$\left.\left.(-1+m)\,\text{AppellF1}\left[\frac{3}{2},3-2m,2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)+$$
$$\left(25\,(3A-5B)\,\text{AppellF1}\left[\frac{3}{2},2-2m,2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^4\right)\Big/$$
$$\left(5\,\text{AppellF1}\left[\frac{3}{2},2-2m,2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]-\right.$$
$$4\left(m\,\text{AppellF1}\left[\frac{5}{2},2-2m,1+2m,\frac{7}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+\right.$$
$$\left.\left.(-1+m)\,\text{AppellF1}\left[\frac{5}{2},3-2m,2m,\frac{7}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)-$$
$$\left(21\,(A+B)\,\text{AppellF1}\left[\frac{5}{2},2-2m,2m,\frac{7}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^6\right)\Big/$$
$$\left(-7\,\text{AppellF1}\left[\frac{5}{2},2-2m,2m,\frac{7}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+\right.$$
$$4\left(m\,\text{AppellF1}\left[\frac{7}{2},2-2m,1+2m,\frac{9}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+\right.$$
$$\left.\left.\left.(-1+m)\,\text{AppellF1}\left[\frac{7}{2},3-2m,2m,\frac{9}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)\right)\right)\Big/$$
$$\left(60f\left(-\frac{1}{60}(-1+m)\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)^{-1+2(-1+m)}\left(\frac{1}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2}\right)^{2m}\right.\right.$$
$$\left(-\left(\left(15\,(A+B)\,\text{AppellF1}\left[-\frac{1}{2},2-2m,2m,\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right)\Big/\right.\right.$$

$$\Big(\text{AppellF1}\Big[-\frac{1}{2},\,2-2\,m,\,2\,m,\,\frac{1}{2},\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]-4$$

$$\Big(m\,\text{AppellF1}\Big[\frac{1}{2},\,2-2\,m,\,1+2\,m,\,\frac{3}{2},\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]+$$

$$(-1+m)\,\text{AppellF1}\Big[\frac{1}{2},\,3-2\,m,\,2\,m,\,\frac{3}{2},\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big)\Big)+$$

$$\Big(45\,(3\,A-5\,B)\,\text{AppellF1}\Big[\frac{1}{2},\,2-2\,m,\,2\,m,\,\frac{3}{2},\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big)\Big/$$

$$\Big(3\,\text{AppellF1}\Big[\frac{1}{2},\,2-2\,m,\,2\,m,\,\frac{3}{2},\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]-$$

$$4\,\Big(m\,\text{AppellF1}\Big[\frac{3}{2},\,2-2\,m,\,1+2\,m,\,\frac{5}{2},\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]+$$

$$(-1+m)\,\text{AppellF1}\Big[\frac{3}{2},\,3-2\,m,\,2\,m,\,\frac{5}{2},\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big)+$$

$$\Big(25\,(3\,A-5\,B)\,\text{AppellF1}\Big[\frac{3}{2},\,2-2\,m,\,2\,m,\,\frac{5}{2},\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^4\Big)\Big/$$

$$\Big(5\,\text{AppellF1}\Big[\frac{3}{2},\,2-2\,m,\,2\,m,\,\frac{5}{2},\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]-$$

$$4\,\Big(m\,\text{AppellF1}\Big[\frac{5}{2},\,2-2\,m,\,1+2\,m,\,\frac{7}{2},\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]+$$

$$(-1+m)\,\text{AppellF1}\Big[\frac{5}{2},\,3-2\,m,\,2\,m,\,\frac{7}{2},\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big)-$$

$$\Big(21\,(A+B)\,\text{AppellF1}\Big[\frac{5}{2},\,2-2\,m,\,2\,m,\,\frac{7}{2},\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^6\Big)\Big/$$

$$\Big(-7\,\text{AppellF1}\Big[\frac{5}{2},\,2-2\,m,\,2\,m,\,\frac{7}{2},\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]+$$

$$4\,\Big(m\,\text{AppellF1}\Big[\frac{7}{2},\,2-2\,m,\,1+2\,m,\,\frac{9}{2},\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]+$$

$$(-1+m)\,\text{AppellF1}\Big[\frac{7}{2},\,3-2\,m,\,2\,m,\,\frac{9}{2},\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big)\Big)-$$

$$\frac{1}{240}\,\text{Csc}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\,\Big(1-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big)^{2\,(-1+m)}\,\left(\frac{1}{1+\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2}\right)^{2\,m}$$

$$\Big(-\Big(\Big(15\,(A+B)\,\text{AppellF1}\Big[-\frac{1}{2},\,2-2\,m,\,2\,m,\,\frac{1}{2},\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]\Big)\Big/$$

$$\Big(\text{AppellF1}\Big[-\frac{1}{2},\,2-2m,\,2m,\,\frac{1}{2},\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]-4$$

$$\Big(m\,\text{AppellF1}\Big[\frac{1}{2},\,2-2m,\,1+2m,\,\frac{3}{2},\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+$$

$$(-1+m)\,\text{AppellF1}\Big[\frac{1}{2},\,3-2m,\,2m,\,\frac{3}{2},\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)\Big)+$$

$$\Big(45\,(3\,A-5\,B)\,\text{AppellF1}\Big[\frac{1}{2},\,2-2m,\,2m,\,\frac{3}{2},\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)\Big/$$

$$\Big(3\,\text{AppellF1}\Big[\frac{1}{2},\,2-2m,\,2m,\,\frac{3}{2},\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]-$$

$$4\,\Big(m\,\text{AppellF1}\Big[\frac{3}{2},\,2-2m,\,1+2m,\,\frac{5}{2},\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+$$

$$(-1+m)\,\text{AppellF1}\Big[\frac{3}{2},\,3-2m,\,2m,\,\frac{5}{2},\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)+$$

$$\Big(25\,(3\,A-5\,B)\,\text{AppellF1}\Big[\frac{3}{2},\,2-2m,\,2m,\,\frac{5}{2},\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^4\Big)\Big/$$

$$\Big(5\,\text{AppellF1}\Big[\frac{3}{2},\,2-2m,\,2m,\,\frac{5}{2},\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]-$$

$$4\,\Big(m\,\text{AppellF1}\Big[\frac{5}{2},\,2-2m,\,1+2m,\,\frac{7}{2},\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+$$

$$(-1+m)\,\text{AppellF1}\Big[\frac{5}{2},\,3-2m,\,2m,\,\frac{7}{2},\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)-$$

$$\Big(21\,(A+B)\,\text{AppellF1}\Big[\frac{5}{2},\,2-2m,\,2m,\,\frac{7}{2},\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^6\Big)\Big/$$

$$\Big(-7\,\text{AppellF1}\Big[\frac{5}{2},\,2-2m,\,2m,\,\frac{7}{2},\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+$$

$$4\,\Big(m\,\text{AppellF1}\Big[\frac{7}{2},\,2-2m,\,1+2m,\,\frac{9}{2},\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+$$

$$(-1+m)\,\text{AppellF1}\Big[\frac{7}{2},\,3-2m,\,2m,\,\frac{9}{2},\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)\Big)-$$

$$\frac{1}{60}\,m\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\,\Big(1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)^{2\,(-1+m)}\,\Bigg(\frac{1}{1+\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2}\Bigg)^{1+2m}$$

$$\Big(-\Big(\Big(15\,(A+B)\,\text{AppellF1}\Big[-\frac{1}{2},\,2-2m,\,2m,\,\frac{1}{2},\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\Big)\Big/$$

$$\left(\text{AppellF1}\left[-\frac{1}{2}, 2-2m, 2m, \frac{1}{2}, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right] - 4\right.$$

$$\left(m\,\text{AppellF1}\left[\frac{1}{2}, 2-2m, 1+2m, \frac{3}{2}, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right] + \right.$$

$$\left.\left.(-1+m)\,\text{AppellF1}\left[\frac{1}{2}, 3-2m, 2m, \frac{3}{2}, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)\right) +$$

$$\left(45\,(3A-5B)\,\text{AppellF1}\left[\frac{1}{2}, 2-2m, 2m, \frac{3}{2}, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)\Big/$$

$$\left(3\,\text{AppellF1}\left[\frac{1}{2}, 2-2m, 2m, \frac{3}{2}, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right] - \right.$$

$$4\left(m\,\text{AppellF1}\left[\frac{3}{2}, 2-2m, 1+2m, \frac{5}{2}, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right] + \right.$$

$$\left.\left.(-1+m)\,\text{AppellF1}\left[\frac{3}{2}, 3-2m, 2m, \frac{5}{2}, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right) +$$

$$\left(25\,(3A-5B)\,\text{AppellF1}\left[\frac{3}{2}, 2-2m, 2m, \frac{5}{2}, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^4\right)\Big/$$

$$\left(5\,\text{AppellF1}\left[\frac{3}{2}, 2-2m, 2m, \frac{5}{2}, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right] - \right.$$

$$4\left(m\,\text{AppellF1}\left[\frac{5}{2}, 2-2m, 1+2m, \frac{7}{2}, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right] + \right.$$

$$\left.\left.(-1+m)\,\text{AppellF1}\left[\frac{5}{2}, 3-2m, 2m, \frac{7}{2}, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right) -$$

$$\left(21\,(A+B)\,\text{AppellF1}\left[\frac{5}{2}, 2-2m, 2m, \frac{7}{2}, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^6\right)\Big/$$

$$\left(-7\,\text{AppellF1}\left[\frac{5}{2}, 2-2m, 2m, \frac{7}{2}, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right] + \right.$$

$$4\left(m\,\text{AppellF1}\left[\frac{7}{2}, 2-2m, 1+2m, \frac{9}{2}, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right] + \right.$$

$$\left.\left.(-1+m)\,\text{AppellF1}\left[\frac{7}{2}, 3-2m, 2m, \frac{9}{2}, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)\right) +$$

$$\frac{1}{60}\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)^{2(-1+m)}\left(\frac{1}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2}\right)^{2m}$$

$$\left(-\left(\left(15\,(A+B)\left(m\,\text{AppellF1}\left[\frac{1}{2}, 2-2m, 1+2m, \frac{3}{2}, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right.\right.\right.\right.$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-\frac{1}{2}\,(2-2\,m)\,\text{AppellF1}\left[\frac{1}{2},\,3-2\,m,\,2\,m,\,\frac{3}{2},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\Bigg)\Bigg)\Bigg/\,\Bigg(\text{AppellF1}\left[-\frac{1}{2},\,2-2\,m,\,2\,m,\,\frac{1}{2},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\right.$$

$$\left.-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]-4\,\Bigg(m\,\text{AppellF1}\left[\frac{1}{2},\,2-2\,m,\,1+2\,m,\,\frac{3}{2},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+$$

$$(-1+m)\,\text{AppellF1}\left[\frac{1}{2},\,3-2\,m,\,2\,m,\,\frac{3}{2},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\Bigg)\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Bigg)\Bigg)+$$

$$\Bigg(45\,(3\,A-5\,B)\,\text{AppellF1}\left[\frac{1}{2},\,2-2\,m,\,2\,m,\,\frac{3}{2},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\Bigg)\Bigg/\,\Bigg(2\,\Bigg(3\,\text{AppellF1}\left[\frac{1}{2},\,2-2\,m,\,2\,m,\,\frac{3}{2},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]-4$$

$$\Bigg(m\,\text{AppellF1}\left[\frac{3}{2},\,2-2\,m,\,1+2\,m,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+$$

$$(-1+m)\,\text{AppellF1}\left[\frac{3}{2},\,3-2\,m,\,2\,m,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\Bigg)\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Bigg)\Bigg)+$$

$$\Bigg(45\,(3\,A-5\,B)\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,\Bigg(-\frac{1}{3}\,m\,\text{AppellF1}\left[\frac{3}{2},\,2-2\,m,\,1+2\,m,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]+\frac{1}{6}\,(2-2\,m)\,\text{AppellF1}\left[\frac{3}{2},\,3-2\,m,\,2\,m,\,\frac{5}{2},\right.$$

$$\left.\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\Bigg)\Bigg)\Bigg/$$

$$\Bigg(3\,\text{AppellF1}\left[\frac{1}{2},\,2-2\,m,\,2\,m,\,\frac{3}{2},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]-$$

$$4\,\Bigg(m\,\text{AppellF1}\left[\frac{3}{2},\,2-2\,m,\,1+2\,m,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+$$

$$(-1+m)\,\text{AppellF1}\left[\frac{3}{2},\,3-2\,m,\,2\,m,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\Bigg)\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Bigg)+$$

$$\Bigg(25\,(3\,A-5\,B)\,\text{AppellF1}\left[\frac{3}{2},\,2-2\,m,\,2\,m,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^3\Bigg)\Bigg/\,\Bigg(5\,\text{AppellF1}\left[\frac{3}{2},\,2-2\,m,\,2\,m,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]-$$

$$4\,\Bigg(m\,\text{AppellF1}\left[\frac{5}{2},\,2-2\,m,\,1+2\,m,\,\frac{7}{2},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+$$

$$(-1+m)\,\text{AppellF1}\left[\frac{5}{2},\,3-2\,m,\,2\,m,\,\frac{7}{2},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\Bigg)\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Bigg)+$$

$$\Big(25\,(3\,A-5\,B)\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^4\,\Big(-\frac{3}{5}\,m\,\text{AppellF1}\Big[\frac{5}{2},\,2-2\,m,\,1+2\,m,\,\frac{7}{2},\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]$$

$$\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]+\frac{3}{10}\,(2-2\,m)\,\text{AppellF1}\Big[\frac{5}{2},\,3-2\,m,\,2\,m,\,\frac{7}{2},$$

$$\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\Big)\Big)\Big)\Big/$$

$$\Big(5\,\text{AppellF1}\Big[\frac{3}{2},\,2-2\,m,\,2\,m,\,\frac{5}{2},\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]-$$

$$4\,\Big(m\,\text{AppellF1}\Big[\frac{5}{2},\,2-2\,m,\,1+2\,m,\,\frac{7}{2},\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+$$

$$(-1+m)\,\text{AppellF1}\Big[\frac{5}{2},\,3-2\,m,\,2\,m,\,\frac{7}{2},\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)-$$

$$\Big(63\,(A+B)\,\text{AppellF1}\Big[\frac{5}{2},\,2-2\,m,\,2\,m,\,\frac{7}{2},\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2$$

$$\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^5\Big)\Big/\Big(2\,\Big(-7\,\text{AppellF1}\Big[\frac{5}{2},\,2-2\,m,\,2\,m,\,\frac{7}{2},\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+4$$

$$\Big(m\,\text{AppellF1}\Big[\frac{7}{2},\,2-2\,m,\,1+2\,m,\,\frac{9}{2},\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+$$

$$(-1+m)\,\text{AppellF1}\Big[\frac{7}{2},\,3-2\,m,\,2\,m,\,\frac{9}{2},\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)\Big)-$$

$$\Big(21\,(A+B)\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^6\,\Big(-\frac{5}{7}\,m\,\text{AppellF1}\Big[\frac{7}{2},\,2-2\,m,\,1+2\,m,\,\frac{9}{2},\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]$$

$$\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]+\frac{5}{14}\,(2-2\,m)\,\text{AppellF1}\Big[\frac{7}{2},\,3-2\,m,\,2\,m,\,\frac{9}{2},$$

$$\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\Big)\Big)\Big)\Big/$$

$$\Big(-7\,\text{AppellF1}\Big[\frac{5}{2},\,2-2\,m,\,2\,m,\,\frac{7}{2},\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+$$

$$4\,\Big(m\,\text{AppellF1}\Big[\frac{7}{2},\,2-2\,m,\,1+2\,m,\,\frac{9}{2},\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+$$

$$(-1+m)\,\text{AppellF1}\Big[\frac{7}{2},\,3-2\,m,\,2\,m,\,\frac{9}{2},\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)+$$

$$\Big(15\,(A+B)\,\text{AppellF1}\Big[-\frac{1}{2},\,2-2\,m,\,2\,m,\,\frac{1}{2},\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\,\Big(m\,\text{AppellF1}\Big[\frac{1}{2},\,2-2\,m,$$

$$1+2\,m,\,\frac{3}{2},\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]-\frac{1}{2}$$

$$(2-2m)\,\text{AppellF1}\left[\frac{1}{2},3-2m,2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]-2\left(m\,\text{AppellF1}\left[\frac{1}{2},2-2m,1+2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+\right.$$

$$\left.(-1+m)\,\text{AppellF1}\left[\frac{1}{2},3-2m,2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right)\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]-4\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\left(m\left(-\frac{1}{6}(1+2m)\,\text{AppellF1}\left[\frac{3}{2},2-2m,2+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,\right.\right.\right.$$

$$-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]+\frac{1}{6}(2-2m)\,\text{AppellF1}\left[\frac{3}{2},3-2m,1+2m,\right.$$

$$\left.\left.\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]\right)+(-1+m)$$

$$\left(-\frac{1}{3}m\,\text{AppellF1}\left[\frac{3}{2},3-2m,1+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right.$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]+\frac{1}{6}(3-2m)\,\text{AppellF1}\left[\frac{3}{2},4-2m,2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]$$

$$\left.\left.\left.\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]\right)\right)\right)\Big/\left(\text{AppellF1}\left[-\frac{1}{2},2-2m,2m,\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,\right.\right.$$

$$-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]-4\left(m\,\text{AppellF1}\left[\frac{1}{2},2-2m,1+2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+\right.$$

$$\left.\left.(-1+m)\,\text{AppellF1}\left[\frac{1}{2},3-2m,2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)^2-$$

$$\left(45(3A-5B)\,\text{AppellF1}\left[\frac{1}{2},2-2m,2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right.$$

$$\left(-2\left(m\,\text{AppellF1}\left[\frac{3}{2},2-2m,1+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+(-1+m)\,\text{AppellF1}\left[\frac{3}{2},3-2m,\right.\right.\right.$$

$$\left.\left.2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right)\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]+3$$

$$\left(-\frac{1}{3}m\,\text{AppellF1}\left[\frac{3}{2},2-2m,1+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right.$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]+\frac{1}{6}(2-2m)\,\text{AppellF1}\left[\frac{3}{2},3-2m,2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]$$

$$\left.\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]\right)-4\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\left(m\left(-\frac{3}{10}(1+2m)\,\text{AppellF1}\left[\frac{5}{2},2-2m,\right.\right.\right.$$

$$2+2m,\frac{7}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]+$$

$$\frac{3}{10}(2-2m)\,\text{AppellF1}\left[\frac{5}{2},3-2m,1+2m,\frac{7}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]\Bigg)+(-1+m)\left(-\frac{3}{5}m\,\text{AppellF1}\left[\frac{5}{2},3-2m,1+2m,\frac{7}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,\right.\right.$$

$$\left.-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]+\frac{3}{10}(3-2m)\,\text{AppellF1}\left[\frac{5}{2},4-2m,\right.$$

$$\left.\left.\left.\left.2m,\frac{7}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]\right)\right)\right)\right)\Big/$$

$$\left(3\,\text{AppellF1}\left[\frac{1}{2},2-2m,2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]-4\left(m\,\text{AppellF1}\left[\frac{3}{2},2-2m,\right.\right.\right.$$

$$\left.1+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+(-1+m)$$

$$\left.\left.\text{AppellF1}\left[\frac{3}{2},3-2m,2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)^2-$$

$$\left(25(3A-5B)\,\text{AppellF1}\left[\frac{3}{2},2-2m,2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^4\right.$$

$$\left(-2\left(m\,\text{AppellF1}\left[\frac{5}{2},2-2m,1+2m,\frac{7}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+(-1+m)\,\text{AppellF1}\left[\frac{5}{2},3-2m,\right.\right.\right.$$

$$\left.\left.2m,\frac{7}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right)\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]+5$$

$$\left(-\frac{3}{5}m\,\text{AppellF1}\left[\frac{5}{2},2-2m,1+2m,\frac{7}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right.$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]+\frac{3}{10}(2-2m)\,\text{AppellF1}\left[\frac{5}{2},3-2m,2m,\frac{7}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]$$

$$\left.\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]\right)-4\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\left(m\left(-\frac{5}{14}(1+2m)\,\text{AppellF1}\left[\frac{7}{2},2-2m,\right.\right.\right.$$

$$\left.2+2m,\frac{9}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]+$$

$$\frac{5}{14}(2-2m)\,\text{AppellF1}\left[\frac{7}{2},3-2m,1+2m,\frac{9}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]\Bigg)+(-1+m)\left(-\frac{5}{7}m\,\text{AppellF1}\left[\frac{7}{2},3-2m,1+2m,\frac{9}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,\right.\right.$$

$$\left.-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]+\frac{5}{14}(3-2m)\,\text{AppellF1}\left[\frac{7}{2},4-2m,\right.$$

$$\left.\left.\left.\left.2m,\frac{9}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]\right)\right)\right)\right)\Big/$$

$$\Bigg(5\,\text{AppellF1}\Big[\frac{3}{2},2-2m,2m,\frac{5}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-fx\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-fx\Big)\Big]^2\Big]-4\Big(m\,\text{AppellF1}\Big[\frac{5}{2},2-2m,1+2m,\frac{7}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-fx\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-fx\Big)\Big]^2\Big]+(-1+m)\,\text{AppellF1}\Big[\frac{5}{2},3-2m,2m,\frac{7}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-fx\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-fx\Big)\Big]^2\Big]\Big)\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-fx\Big)\Big]^2\Bigg)^2+$$

$$\Bigg(21\,(A+B)\,\text{AppellF1}\Big[\frac{5}{2},2-2m,2m,\frac{7}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-fx\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-fx\Big)\Big]^2\Big]\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-fx\Big)\Big]^6$$

$$\Bigg(2\Big(m\,\text{AppellF1}\Big[\frac{7}{2},2-2m,1+2m,\frac{9}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-fx\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-fx\Big)\Big]^2\Big]+(-1+m)\,\text{AppellF1}\Big[\frac{7}{2},3-2m,2m,\frac{9}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-fx\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-fx\Big)\Big]^2\Big]\Big)\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-fx\Big)\Big]^2$$

$$\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-fx\Big)\Big]-7\Big(-\frac{5}{7}m\,\text{AppellF1}\Big[\frac{7}{2},2-2m,1+2m,\frac{9}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-fx\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-fx\Big)\Big]^2\Big]$$

$$\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-fx\Big)\Big]^2\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-fx\Big)\Big]+\frac{5}{14}(2-2m)\,\text{AppellF1}\Big[\frac{7}{2},3-2m,2m,\frac{9}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-fx\Big)\Big]^2,$$

$$-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-fx\Big)\Big]^2\Big]\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-fx\Big)\Big]^2\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-fx\Big)\Big]\Big)+4\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-fx\Big)\Big]^2$$

$$\Bigg(m\Big(-\frac{7}{18}(1+2m)\,\text{AppellF1}\Big[\frac{9}{2},2-2m,2+2m,\frac{11}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-fx\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-fx\Big)\Big]^2\Big]$$

$$\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-fx\Big)\Big]^2\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-fx\Big)\Big]+\frac{7}{18}(2-2m)\,\text{AppellF1}\Big[\frac{9}{2},3-2m,1+2m,\frac{11}{2},$$

$$\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-fx\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-fx\Big)\Big]^2\Big]\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-fx\Big)\Big]^2\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-fx\Big)\Big]\Big)+$$

$$(-1+m)\Big(-\frac{7}{9}m\,\text{AppellF1}\Big[\frac{9}{2},3-2m,1+2m,\frac{11}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-fx\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-fx\Big)\Big]^2\Big]$$

$$\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-fx\Big)\Big]^2\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-fx\Big)\Big]+\frac{7}{18}(3-2m)\,\text{AppellF1}\Big[\frac{9}{2},4-2m,2m,\frac{11}{2},$$

$$\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-fx\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-fx\Big)\Big]^2\Big]\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-fx\Big)\Big]^2\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-fx\Big)\Big]\Big)\Bigg)\Bigg)\Bigg)\Bigg/$$

$$\Bigg(-7\,\text{AppellF1}\Big[\frac{5}{2},2-2m,2m,\frac{7}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-fx\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-fx\Big)\Big]^2\Big]+4\Big(m\,\text{AppellF1}\Big[\frac{7}{2},2-2m,1+2m,\frac{9}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-fx\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-fx\Big)\Big]^2\Big]+(-1+m)\,\text{AppellF1}\Big[\frac{7}{2},3-2m,2m,\frac{9}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-fx\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-fx\Big)\Big]^2\Big]\Big)\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-fx\Big)\Big]^2\Bigg)^2\Bigg)\Bigg)\Bigg)\Bigg)$$

Problem 1031: Unable to integrate problem.

$$\int \text{Sec}[e+f x]^4 (a+a \text{Sin}[e+f x])^m (A+B \text{Sin}[e+f x]) \, dx$$

Optimal (type 5, 135 leaves, 4 steps):

$$\frac{B \text{Sec}[e+f x]^3 (a+a \text{Sin}[e+f x])^m}{f (3-m)}+\frac{1}{3 a f (3-m)} 2^{-\frac{3}{2}+m} (A (3-m)-B m) \text{Hypergeometric2F1}\left[-\frac{3}{2}, \frac{5}{2}-m, -\frac{1}{2}, \frac{1}{2} (1-\text{Sin}[e+f x])\right] \text{Sec}[e+f x]^3 (1+\text{Sin}[e+f x])^{\frac{1}{2}-m} (a+a \text{Sin}[e+f x])^{1+m}$$

Result (type 8, 33 leaves):

$$\int \text{Sec}[e+f x]^4 (a+a \text{Sin}[e+f x])^m (A+B \text{Sin}[e+f x]) \, dx$$

Problem 1032: Unable to integrate problem.

$$\int \text{Sec}[e+f x]^6 (a+a \text{Sin}[e+f x])^m (A+B \text{Sin}[e+f x]) \, dx$$

Optimal (type 5, 135 leaves, 4 steps):

$$\frac{B \text{Sec}[e+f x]^5 (a+a \text{Sin}[e+f x])^m}{f (5-m)}+\frac{1}{5 a^2 f (5-m)} 2^{-\frac{5}{2}+m} (A (5-m)-B m) \text{Hypergeometric2F1}\left[-\frac{5}{2}, \frac{7}{2}-m, -\frac{3}{2}, \frac{1}{2} (1-\text{Sin}[e+f x])\right] \text{Sec}[e+f x]^5 (1+\text{Sin}[e+f x])^{\frac{1}{2}-m} (a+a \text{Sin}[e+f x])^{2+m}$$

Result (type 8, 33 leaves):

$$\int \text{Sec}[e+f x]^6 (a+a \text{Sin}[e+f x])^m (A+B \text{Sin}[e+f x]) \, dx$$

Problem 1033: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int (g \text{Cos}[e+f x])^p (A+B \text{Sin}[e+f x]) (c-c \text{Sin}[e+f x])^{-4-p} \, dx$$

Optimal (type 3, 239 leaves, 4 steps):

$$\frac{(A+B) (g \text{Cos}[e+f x])^{1+p} (c-c \text{Sin}[e+f x])^{-4-p}}{f g (7+p)}+\frac{(3 A-B (4+p)) (g \text{Cos}[e+f x])^{1+p} (c-c \text{Sin}[e+f x])^{-3-p}}{c f g (5+p) (7+p)}+\frac{2 (3 A-B (4+p)) (g \text{Cos}[e+f x])^{1+p} (c-c \text{Sin}[e+f x])^{-2-p}}{c^2 f g (3+p) (5+p) (7+p)}+\frac{2 (3 A-B (4+p)) (g \text{Cos}[e+f x])^{1+p} (c-c \text{Sin}[e+f x])^{-1-p}}{c^3 f g (1+p) (3+p) (5+p) (7+p)}$$

Result (type 5, 1100 leaves):

$$\frac{1}{f\left(-1+\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]\right)^7}\mathrm{Cos}[e+f x]^{-p}(g\,\mathrm{Cos}[e+f x])^p\left(\mathrm{Cos}\left[\frac{1}{2}(e+f x)\right]-\mathrm{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^{-2(-4-p)-2p}(c-c\,\mathrm{Sin}[e+f x])^{-4-p}$$

$$\left(\frac{1-\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]}{\sqrt{\mathrm{Sec}\left[\frac{1}{2}(e+f x)\right]^2}}\right)^{2p}\left(\frac{1-\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2}{1+\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2}\right)^p\left(\frac{1-\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]}{\sqrt{1+\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2}}\right)^{-2p}\left(-\frac{A\left(-1+\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]\right)^6\left(1+\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]\right)}{1+p}-\right.$$

$$\frac{2^{4+p}A\,\mathrm{Hypergeometric2F1}\left[-7-p,-p,-6-p,\frac{1}{2}\left(1-\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\right]\left(1+\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]\right)^{-p}}{7+p}-$$

$$\frac{2^{4+p}B\,\mathrm{Hypergeometric2F1}\left[-7-p,-p,-6-p,\frac{1}{2}\left(1-\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\right]\left(1+\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]\right)^{-p}}{7+p}-\frac{1}{6+p}$$

$$3\times 2^{4+p}A\,\mathrm{Hypergeometric2F1}\left[-6-p,-p,-5-p,\frac{1}{2}\left(1-\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\right]\left(-1+\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\left(1+\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]\right)^{-p}-$$

$$\frac{1}{6+p}3\times 2^{4+p}B\,\mathrm{Hypergeometric2F1}\left[-6-p,-p,-5-p,\frac{1}{2}\left(1-\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\right]\left(-1+\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\left(1+\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]\right)^{-p}-$$

$$\frac{1}{5+p}9\times 2^{3+p}A\,\mathrm{Hypergeometric2F1}\left[-5-p,-p,-4-p,\frac{1}{2}\left(1-\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\right]\left(-1+\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]\right)^2\left(1+\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]\right)^{-p}-$$

$$\frac{1}{5+p}2^{6+p}B\,\mathrm{Hypergeometric2F1}\left[-5-p,-p,-4-p,\frac{1}{2}\left(1-\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\right]\left(-1+\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]\right)^2\left(1+\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]\right)^{-p}-$$

$$\frac{1}{4+p}2^{6+p}A\,\mathrm{Hypergeometric2F1}\left[-4-p,-p,-3-p,\frac{1}{2}\left(1-\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\right]\left(-1+\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]\right)^3\left(1+\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]\right)^{-p}-$$

$$\frac{1}{4+p}3\times 2^{4+p}B\,\mathrm{Hypergeometric2F1}\left[-4-p,-p,-3-p,\frac{1}{2}\left(1-\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\right]\left(-1+\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]\right)^3\left(1+\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]\right)^{-p}-$$

$$\frac{1}{3+p}9\times 2^{2+p}A\,\mathrm{Hypergeometric2F1}\left[-3-p,-p,-2-p,\frac{1}{2}\left(1-\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\right]\left(-1+\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]\right)^4\left(1+\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]\right)^{-p}-$$

$$\frac{1}{3+p}5\times 2^{2+p}B\,\mathrm{Hypergeometric2F1}\left[-3-p,-p,-2-p,\frac{1}{2}\left(1-\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\right]\left(-1+\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]\right)^4\left(1+\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]\right)^{-p}-$$

$$\frac{1}{2+p}3\times 2^{2+p}A\,\mathrm{Hypergeometric2F1}\left[-2-p,-p,-1-p,\frac{1}{2}\left(1-\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\right]\left(-1+\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]\right)^5\left(1+\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]\right)^{-p}-$$

$$\left.\frac{1}{2+p}2^{2+p}B\,\mathrm{Hypergeometric2F1}\left[-2-p,-p,-1-p,\frac{1}{2}\left(1-\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\right]\left(-1+\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]\right)^5\left(1+\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]\right)^{-p}\right)$$

Problem 1036: Unable to integrate problem.

$$\int (g \operatorname{Cos}[e+f x])^p (A+B \operatorname{Sin}[e+f x]) (c-c \operatorname{Sin}[e+f x])^{-1-p} \, dx$$

Optimal (type 5, 151 leaves, 4 steps):

$$\frac{(A+B) (g \operatorname{Cos}[e+f x])^{1+p} (c-c \operatorname{Sin}[e+f x])^{-1-p}}{f g (1+p)} - \frac{1}{f g (1+p)}$$
$$2^{\frac{1}{2}-\frac{p}{2}} B (g \operatorname{Cos}[e+f x])^{1+p} \operatorname{Hypergeometric2F1}\left[\frac{1+p}{2}, \frac{1+p}{2}, \frac{3+p}{2}, \frac{1}{2} (1+\operatorname{Sin}[e+f x])\right] (1-\operatorname{Sin}[e+f x])^{\frac{1+p}{2}} (c-c \operatorname{Sin}[e+f x])^{-1-p}$$

Result (type 8, 40 leaves):

$$\int (g \operatorname{Cos}[e+f x])^p (A+B \operatorname{Sin}[e+f x]) (c-c \operatorname{Sin}[e+f x])^{-1-p} \, dx$$

Problem 1037: Unable to integrate problem.

$$\int (g \operatorname{Cos}[e+f x])^p (A+B \operatorname{Sin}[e+f x]) (c-c \operatorname{Sin}[e+f x])^{-p} \, dx$$

Optimal (type 5, 147 leaves, 4 steps):

$$\frac{1}{f g (1+p)} 2^{\frac{1}{2}-\frac{p}{2}} c (A+B p) (g \operatorname{Cos}[e+f x])^{1+p} \operatorname{Hypergeometric2F1}\left[\frac{1+p}{2}, \frac{1+p}{2}, \frac{3+p}{2}, \frac{1}{2} (1+\operatorname{Sin}[e+f x])\right]$$
$$(1-\operatorname{Sin}[e+f x])^{\frac{1+p}{2}} (c-c \operatorname{Sin}[e+f x])^{-1-p} - \frac{B (g \operatorname{Cos}[e+f x])^{1+p} (c-c \operatorname{Sin}[e+f x])^{-p}}{f g}$$

Result (type 8, 38 leaves):

$$\int (g \operatorname{Cos}[e+f x])^p (A+B \operatorname{Sin}[e+f x]) (c-c \operatorname{Sin}[e+f x])^{-p} \, dx$$

Problem 1038: Unable to integrate problem.

$$\int (g \operatorname{Cos}[e+f x])^p (A+B \operatorname{Sin}[e+f x]) (c-c \operatorname{Sin}[e+f x])^{1-p} \, dx$$

Optimal (type 5, 160 leaves, 4 steps):

$$\frac{1}{f g (1+p)} 2^{\frac{1}{2}-\frac{p}{2}} c^2 (2 A-B (1-p)) (g \operatorname{Cos}[e+f x])^{1+p} \operatorname{Hypergeometric2F1}\left[\frac{1}{2} (-1+p), \frac{1+p}{2}, \frac{3+p}{2}, \frac{1}{2} (1+\operatorname{Sin}[e+f x])\right]$$
$$(1-\operatorname{Sin}[e+f x])^{\frac{1+p}{2}} (c-c \operatorname{Sin}[e+f x])^{-1-p} - \frac{B (g \operatorname{Cos}[e+f x])^{1+p} (c-c \operatorname{Sin}[e+f x])^{1-p}}{2 f g}$$

Result (type 8, 40 leaves):

$$\int (g \operatorname{Cos}[e+f x])^p (A+B \operatorname{Sin}[e+f x]) (c-c \operatorname{Sin}[e+f x])^{1-p} \, dx$$

Problem 1039: Attempted integration timed out after 120 seconds.

$$\int (g \cos[e+f x])^p (A+B \sin[e+f x]) (c-c \sin[e+f x])^{2-p} \, dx$$

Optimal (type 5, 163 leaves, 4 steps):

$$\frac{1}{3 f g (1+p)} 2^{\frac{5}{2}-\frac{p}{2}} c^3 (3 A-B (2-p)) (g \cos[e+f x])^{1+p} \text{Hypergeometric2F1}\left[\frac{1}{2} (-3+p), \frac{1+p}{2}, \frac{3+p}{2}, \frac{1}{2} (1+\sin[e+f x])\right] (1-\sin[e+f x])^{\frac{1+p}{2}} (c-c \sin[e+f x])^{-1-p} - \frac{B (g \cos[e+f x])^{1+p} (c-c \sin[e+f x])^{2-p}}{3 f g}$$

Result (type 1, 1 leaves):

???

Problem 1042: Result more than twice size of optimal antiderivative.

$$\int (g \cos[e+f x])^p (a+a \sin[e+f x])^m (c+d \sin[e+f x])^n \, dx$$

Optimal (type 6, 168 leaves, 4 steps):

$$\frac{1}{a f (1+2 m+p)} 2^{\frac{1+p}{2}} g \text{AppellF1}\left[\frac{1}{2} (1+2 m+p), \frac{1-p}{2}, -n, \frac{1}{2} (3+2 m+p), \frac{1}{2} (1+\sin[e+f x]), -\frac{d (1+\sin[e+f x])}{c-d}\right] (g \cos[e+f x])^{-1+p} (1-\sin[e+f x])^{\frac{1-p}{2}} (a+a \sin[e+f x])^{1+m} (c+d \sin[e+f x])^n \left(\frac{c+d \sin[e+f x]}{c-d}\right)^{-n}$$

Result (type 6, 4377 leaves):

$$-\left(\left(2 (c+d) (3+p) \text{AppellF1}\left[\frac{1+p}{2}, 1+m+n+p, -n, \frac{3+p}{2}, -\text{Tan}\left[\frac{1}{2} \left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\frac{(c-d) \text{Tan}\left[\frac{1}{2} \left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right] \cos[e+f x]^p (g \cos[e+f x])^p \left(\sec\left[\frac{1}{2} \left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{-1-m} (a+a \sin[e+f x])^m (c+d \sin[e+f x])^{2 n} \text{Tan}\left[\frac{1}{2} \left(-e+\frac{\pi}{2}-f x\right)\right]\right) \Big/ \left(f (1+p) \left((c+d) (3+p) \text{AppellF1}\left[\frac{1+p}{2}, 1+m+n+p, -n, \frac{3+p}{2}, -\text{Tan}\left[\frac{1}{2} \left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\frac{(c-d) \text{Tan}\left[\frac{1}{2} \left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right] - 2 \left((-c+d) n \text{AppellF1}\left[\frac{3+p}{2}, 1+m+n+p, 1-n, \frac{5+p}{2}, -\text{Tan}\left[\frac{1}{2} \left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\frac{(c-d) \text{Tan}\left[\frac{1}{2} \left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right] + (c+d) (1+m+n+p) \text{AppellF1}\left[\frac{3+p}{2}, 2+m+n+p, -n, \frac{5+p}{2}, -\text{Tan}\left[\frac{1}{2} \left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\frac{(c-d) \text{Tan}\left[\frac{1}{2} \left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\right) \text{Tan}\left[\frac{1}{2} \left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)$$

$$\Bigg(\Bigg((c+d)\,(3+p)\,\text{AppellF1}\Big[\frac{1+p}{2},\,1+m+n+p,\,-n,\,\frac{3+p}{2},\,-\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\frac{(c-d)\,\text{Tan}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f\,x\big)\big]^2}{c+d}\Big]$$

$$\text{Cos}[e+f\,x]^p\left(\text{Sec}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\right)^{-m}(c+d\,\text{Sin}[e+f\,x])^n\Bigg)\Big/$$

$$\Bigg((1+p)\,\Bigg((c+d)\,(3+p)\,\text{AppellF1}\Big[\frac{1+p}{2},\,1+m+n+p,\,-n,\,\frac{3+p}{2},\,-\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\frac{(c-d)\,\text{Tan}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f\,x\big)\big]^2}{c+d}\Big]-2\,\Bigg((-c+d)$$

$$n\,\text{AppellF1}\Big[\frac{3+p}{2},\,1+m+n+p,\,1-n,\,\frac{5+p}{2},\,-\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\frac{(c-d)\,\text{Tan}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f\,x\big)\big]^2}{c+d}\Big]+(c+d)\,(1+m+n+p)$$

$$\text{AppellF1}\Big[\frac{3+p}{2},\,2+m+n+p,\,-n,\,\frac{5+p}{2},\,-\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\frac{(c-d)\,\text{Tan}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f\,x\big)\big]^2}{c+d}\Big]\Bigg)\,\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Bigg)\Bigg)-$$

$$\Bigg(2\,d\,(c+d)\,n\,(3+p)\,\text{AppellF1}\Big[\frac{1+p}{2},\,1+m+n+p,\,-n,\,\frac{3+p}{2},\,-\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\frac{(c-d)\,\text{Tan}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f\,x\big)\big]^2}{c+d}\Big]$$

$$\text{Cos}[e+f\,x]^{1+p}\left(\text{Sec}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\right)^{-1-m}(c+d\,\text{Sin}[e+f\,x])^{-1+n}\,\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\Bigg)\Big/$$

$$\Bigg((1+p)\,\Bigg((c+d)\,(3+p)\,\text{AppellF1}\Big[\frac{1+p}{2},\,1+m+n+p,\,-n,\,\frac{3+p}{2},\,-\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\frac{(c-d)\,\text{Tan}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f\,x\big)\big]^2}{c+d}\Big]-2\,\Bigg((-c+d)$$

$$n\,\text{AppellF1}\Big[\frac{3+p}{2},\,1+m+n+p,\,1-n,\,\frac{5+p}{2},\,-\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\frac{(c-d)\,\text{Tan}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f\,x\big)\big]^2}{c+d}\Big]+(c+d)\,(1+m+n+p)$$

$$\text{AppellF1}\Big[\frac{3+p}{2},\,2+m+n+p,\,-n,\,\frac{5+p}{2},\,-\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\frac{(c-d)\,\text{Tan}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f\,x\big)\big]^2}{c+d}\Big]\Bigg)\,\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Bigg)\Bigg)+$$

$$\Bigg(2\,(c+d)\,p\,(3+p)\,\text{AppellF1}\Big[\frac{1+p}{2},\,1+m+n+p,\,-n,\,\frac{3+p}{2},\,-\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\frac{(c-d)\,\text{Tan}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f\,x\big)\big]^2}{c+d}\Big]$$

$$\text{Cos}[e+f\,x]^{-1+p}\left(\text{Sec}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\right)^{-1-m}\text{Sin}[e+f\,x]\,(c+d\,\text{Sin}[e+f\,x])^n\,\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\Bigg)\Big/$$

$$\Bigg((1+p)\,\Bigg((c+d)\,(3+p)\,\text{AppellF1}\Big[\frac{1+p}{2},\,1+m+n+p,\,-n,\,\frac{3+p}{2},\,-\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\frac{(c-d)\,\text{Tan}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f\,x\big)\big]^2}{c+d}\Big]-2\,\Bigg((-c+d)$$

$$n\,\text{AppellF1}\left[\frac{3+p}{2}, 1+m+n+p, 1-n, \frac{5+p}{2}, -\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right] + (c+d)\,(1+m+n+p)$$

$$\text{AppellF1}\left[\frac{3+p}{2}, 2+m+n+p, -n, \frac{5+p}{2}, -\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\Bigg)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)\Bigg) +$$

$$\Bigg(2\,(c+d)\,(-1-m)\,(3+p)\,\text{AppellF1}\left[\frac{1+p}{2}, 1+m+n+p, -n, \frac{3+p}{2}, -\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]$$

$$\text{Cos}[e+f x]^p\left(\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{-1-m}(c+d\,\text{Sin}[e+f x])^n\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)\Big/$$

$$\Bigg((1+p)\,\Bigg((c+d)\,(3+p)\,\text{AppellF1}\left[\frac{1+p}{2}, 1+m+n+p, -n, \frac{3+p}{2}, -\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right] - 2\,\Bigg((-c+d)$$

$$n\,\text{AppellF1}\left[\frac{3+p}{2}, 1+m+n+p, 1-n, \frac{5+p}{2}, -\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right] + (c+d)\,(1+m+n+p)$$

$$\text{AppellF1}\left[\frac{3+p}{2}, 2+m+n+p, -n, \frac{5+p}{2}, -\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\Bigg)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)\Bigg) +$$

$$\Bigg(2\,(c+d)\,(3+p)\,\text{Cos}[e+f x]^p\left(\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{-1-m}(c+d\,\text{Sin}[e+f x])^n\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\,\Bigg(\frac{1}{(c+d)\,(3+p)}$$

$$(c-d)\,n\,(1+p)\,\text{AppellF1}\left[1+\frac{1+p}{2}, 1+m+n+p, 1-n, 1+\frac{3+p}{2}, -\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]$$

$$\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right] - \frac{1}{3+p}(1+p)\,(1+m+n+p)\,\text{AppellF1}\left[1+\frac{1+p}{2}, 2+m+n+p, -n, 1+\frac{3+p}{2},\right.$$

$$\left.-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\Bigg)\Bigg)\Big/$$

$$\Bigg((1+p)\,\Bigg((c+d)\,(3+p)\,\text{AppellF1}\left[\frac{1+p}{2}, 1+m+n+p, -n, \frac{3+p}{2}, -\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right] - 2\,\Bigg((-c+d)$$

$$n\,\text{AppellF1}\left[\frac{3+p}{2}, 1+m+n+p, 1-n, \frac{5+p}{2}, -\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right] + (c+d)\,(1+m+n+p)$$

$$\text{AppellF1}\left[\frac{3+p}{2},2+m+n+p,-n,\frac{5+p}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\right)\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)\Bigg)-$$

$$\Bigg(2\,(c+d)\,(3+p)\,\text{AppellF1}\left[\frac{1+p}{2},1+m+n+p,-n,\frac{3+p}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]$$

$$\text{Cos}[e+f x]^p\left(\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{-1-m}(c+d\,\text{Sin}[e+f x])^n\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]$$

$$\Bigg(-2\,\Bigg((-c+d)\,n\,\text{AppellF1}\left[\frac{3+p}{2},1+m+n+p,1-n,\frac{5+p}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]+(c+d)$$

$$(1+m+n+p)\,\text{AppellF1}\left[\frac{3+p}{2},2+m+n+p,-n,\frac{5+p}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\Bigg)$$

$$\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]+(c+d)\,(3+p)\,\Bigg(\frac{1}{(c+d)\,(3+p)}(c-d)\,n\,(1+p)$$

$$\text{AppellF1}\left[1+\frac{1+p}{2},1+m+n+p,1-n,1+\frac{3+p}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]$$

$$\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{1}{3+p}(1+p)\,(1+m+n+p)\,\text{AppellF1}\left[1+\frac{1+p}{2},2+m+n+p,-n,\right.$$

$$\left.1+\frac{3+p}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\Bigg)-$$

$$2\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg((-c+d)\,n\,\Bigg(-\frac{1}{(c+d)\,(5+p)}(c-d)\,(1-n)\,(3+p)\,\text{AppellF1}\left[1+\frac{3+p}{2},1+m+n+p,2-n,\right.$$

$$\left.1+\frac{5+p}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]-$$

$$\frac{1}{5+p}(3+p)\,(1+m+n+p)\,\text{AppellF1}\left[1+\frac{3+p}{2},2+m+n+p,1-n,1+\frac{5+p}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\right.$$

$$\left.-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\Bigg)+(c+d)\,(1+m+n+p)\,\Bigg(\frac{1}{(c+d)\,(5+p)}$$

$$(c-d)\,n\,(3+p)\,\text{AppellF1}\left[1+\frac{3+p}{2},2+m+n+p,1-n,1+\frac{5+p}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]$$

$$\operatorname{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \operatorname{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{1}{5+p}(3+p)(2+m+n+p)\,\text{AppellF1}\left[1+\frac{3+p}{2},3+m+n+p,-n,1+\frac{5+p}{2},\right.$$
$$\left.\left.\left.\left.\left.\left.-\operatorname{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\operatorname{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\operatorname{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\operatorname{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)\right)\right)\right)\right)\Big/$$
$$\left((1+p)\left((c+d)(3+p)\,\text{AppellF1}\left[\frac{1+p}{2},1+m+n+p,-n,\frac{3+p}{2},-\operatorname{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\operatorname{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]-\right.\right.$$
$$2\left((-c+d)\,n\,\text{AppellF1}\left[\frac{3+p}{2},1+m+n+p,1-n,\frac{5+p}{2},-\operatorname{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\operatorname{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]+\right.$$
$$(c+d)(1+m+n+p)\,\text{AppellF1}\left[\frac{3+p}{2},2+m+n+p,-n,\frac{5+p}{2},-\operatorname{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\right.$$
$$\left.\left.\left.\left.\left.-\frac{(c-d)\operatorname{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\right)\operatorname{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^2\right)\right)\right)\right)$$

Problem 1043: Unable to integrate problem.

$$\int (g \operatorname{Cos}[e+f x])^p\,(a+a \operatorname{Sin}[e+f x])^2\,(c+d \operatorname{Sin}[e+f x])^n\,dx$$

Optimal (type 6, 149 leaves, 3 steps):

$$-\frac{1}{f g (1+p)}2^{\frac{5}{2}+\frac{p}{2}} a^2\,\text{AppellF1}\left[\frac{1+p}{2},\frac{1}{2}(-3-p),-n,\frac{3+p}{2},\frac{1}{2}(1-\operatorname{Sin}[e+f x]),\frac{d(1-\operatorname{Sin}[e+f x])}{c+d}\right]$$
$$(g \operatorname{Cos}[e+f x])^{1+p}\,(1+\operatorname{Sin}[e+f x])^{2+\frac{1}{2}(-5-p)}\,(c+d \operatorname{Sin}[e+f x])^n\left(\frac{c+d \operatorname{Sin}[e+f x]}{c+d}\right)^{-n}$$

Result (type 8, 37 leaves):

$$\int (g \operatorname{Cos}[e+f x])^p\,(a+a \operatorname{Sin}[e+f x])^2\,(c+d \operatorname{Sin}[e+f x])^n\,dx$$

Problem 1044: Unable to integrate problem.

$$\int (g \operatorname{Cos}[e+f x])^p\,(a+a \operatorname{Sin}[e+f x])\,(c+d \operatorname{Sin}[e+f x])^n\,dx$$

Optimal (type 6, 145 leaves, 3 steps):

$$-\frac{1}{f g (1+p)}2^{\frac{3}{2}+\frac{p}{2}} a\,\text{AppellF1}\left[\frac{1+p}{2},\frac{1}{2}(-1-p),-n,\frac{3+p}{2},\frac{1}{2}(1-\operatorname{Sin}[e+f x]),\frac{d(1-\operatorname{Sin}[e+f x])}{c+d}\right]$$
$$(g \operatorname{Cos}[e+f x])^{1+p}\,(1+\operatorname{Sin}[e+f x])^{\frac{1}{2}(-1-p)}\,(c+d \operatorname{Sin}[e+f x])^n\left(\frac{c+d \operatorname{Sin}[e+f x]}{c+d}\right)^{-n}$$

Result (type 8, 35 leaves):

$$\int (g\,\mathrm{Cos}[e+f\,x])^p\,(a+a\,\mathrm{Sin}[e+f\,x])\,(c+d\,\mathrm{Sin}[e+f\,x])^n\,dx$$

Problem 1045: Unable to integrate problem.

$$\int \frac{(g\,\mathrm{Cos}[e+f\,x])^p\,(c+d\,\mathrm{Sin}[e+f\,x])^n}{a+a\,\mathrm{Sin}[e+f\,x]}\,dx$$

Optimal (type 6, 149 leaves, 3 steps):

$$-\frac{1}{a\,f\,g\,(1+p)}2^{-\frac{1}{2}+\frac{p}{2}}\,\mathrm{AppellF1}\left[\frac{1+p}{2},\frac{3-p}{2},-n,\frac{3+p}{2},\frac{1}{2}\,(1-\mathrm{Sin}[e+f\,x]),\frac{d\,(1-\mathrm{Sin}[e+f\,x])}{c+d}\right]$$
$$(g\,\mathrm{Cos}[e+f\,x])^{1+p}\,(1+\mathrm{Sin}[e+f\,x])^{-1+\frac{1-p}{2}}\,(c+d\,\mathrm{Sin}[e+f\,x])^n\left(\frac{c+d\,\mathrm{Sin}[e+f\,x]}{c+d}\right)^{-n}$$

Result (type 8, 37 leaves):

$$\int \frac{(g\,\mathrm{Cos}[e+f\,x])^p\,(c+d\,\mathrm{Sin}[e+f\,x])^n}{a+a\,\mathrm{Sin}[e+f\,x]}\,dx$$

Problem 1046: Unable to integrate problem.

$$\int \frac{(g\,\mathrm{Cos}[e+f\,x])^p\,(c+d\,\mathrm{Sin}[e+f\,x])^n}{(a+a\,\mathrm{Sin}[e+f\,x])^2}\,dx$$

Optimal (type 6, 149 leaves, 3 steps):

$$-\frac{1}{a^2\,f\,g\,(1+p)}2^{-\frac{3}{2}+\frac{p}{2}}\,\mathrm{AppellF1}\left[\frac{1+p}{2},\frac{5-p}{2},-n,\frac{3+p}{2},\frac{1}{2}\,(1-\mathrm{Sin}[e+f\,x]),\frac{d\,(1-\mathrm{Sin}[e+f\,x])}{c+d}\right]$$
$$(g\,\mathrm{Cos}[e+f\,x])^{1+p}\,(1+\mathrm{Sin}[e+f\,x])^{-2+\frac{3-p}{2}}\,(c+d\,\mathrm{Sin}[e+f\,x])^n\left(\frac{c+d\,\mathrm{Sin}[e+f\,x]}{c+d}\right)^{-n}$$

Result (type 8, 37 leaves):

$$\int \frac{(g\,\mathrm{Cos}[e+f\,x])^p\,(c+d\,\mathrm{Sin}[e+f\,x])^n}{(a+a\,\mathrm{Sin}[e+f\,x])^2}\,dx$$

Problem 1047: Unable to integrate problem.

$$\int \frac{(g\,\mathrm{Cos}[e+f\,x])^p\,(c+d\,\mathrm{Sin}[e+f\,x])^n}{(a+a\,\mathrm{Sin}[e+f\,x])^3}\,dx$$

Optimal (type 6, 149 leaves, 3 steps):

$$-\frac{1}{a^3\,f\,g\,(1+p)}2^{-\frac{5}{2}+\frac{p}{2}}\,\mathrm{AppellF1}\left[\frac{1+p}{2},\frac{7-p}{2},-n,\frac{3+p}{2},\frac{1}{2}\,(1-\mathrm{Sin}[e+f\,x]),\frac{d\,(1-\mathrm{Sin}[e+f\,x])}{c+d}\right]$$
$$(g\,\mathrm{Cos}[e+f\,x])^{1+p}\,(1+\mathrm{Sin}[e+f\,x])^{-3+\frac{5-p}{2}}\,(c+d\,\mathrm{Sin}[e+f\,x])^n\left(\frac{c+d\,\mathrm{Sin}[e+f\,x]}{c+d}\right)^{-n}$$

Result (type 8, 37 leaves) :

$$\int \frac{(g \operatorname{Cos}[e+f x])^p (c+d \operatorname{Sin}[e+f x])^n}{(a+a \operatorname{Sin}[e+f x])^3} \, dx$$

Problem 1048: Unable to integrate problem.

$$\int \frac{(g \operatorname{Cos}[e+f x])^p (c+d \operatorname{Sin}[e+f x])^n}{(a+a \operatorname{Sin}[e+f x])^4} \, dx$$

Optimal (type 6, 149 leaves, 3 steps) :

$$-\frac{1}{a^4 f g (1+p)} 2^{-\frac{7}{2}+\frac{p}{2}} \text{AppellF1}\left[\frac{1+p}{2}, \frac{9-p}{2}, -n, \frac{3+p}{2}, \frac{1}{2} (1-\operatorname{Sin}[e+f x]), \frac{d (1-\operatorname{Sin}[e+f x])}{c+d}\right] (g \operatorname{Cos}[e+f x])^{1+p} (1+\operatorname{Sin}[e+f x])^{-4+\frac{7-p}{2}} (c+d \operatorname{Sin}[e+f x])^n \left(\frac{c+d \operatorname{Sin}[e+f x]}{c+d}\right)^{-n}$$

Result (type 8, 37 leaves) :

$$\int \frac{(g \operatorname{Cos}[e+f x])^p (c+d \operatorname{Sin}[e+f x])^n}{(a+a \operatorname{Sin}[e+f x])^4} \, dx$$

Problem 1049: Result more than twice size of optimal antiderivative.

$$\int (g \operatorname{Sec}[e+f x])^p (a+a \operatorname{Sin}[e+f x])^m (c+d \operatorname{Sin}[e+f x])^n \, dx$$

Optimal (type 6, 175 leaves, 5 steps) :

$$\frac{1}{a f (1+2 m-p)} 2^{\frac{1}{2}-\frac{p}{2}} \text{AppellF1}\left[\frac{1}{2} (1+2 m-p), \frac{1+p}{2}, -n, \frac{1}{2} (3+2 m-p), \frac{1}{2} (1+\operatorname{Sin}[e+f x]), -\frac{d (1+\operatorname{Sin}[e+f x])}{c-d}\right] \operatorname{Sec}[e+f x] (g \operatorname{Sec}[e+f x])^p (1-\operatorname{Sin}[e+f x])^{\frac{1+p}{2}} (a+a \operatorname{Sin}[e+f x])^{1+m} (c+d \operatorname{Sin}[e+f x])^n \left(\frac{c+d \operatorname{Sin}[e+f x]}{c-d}\right)^{-n}$$

Result (type 6, 4680 leaves) :

$$-\left(\left(2 (c+d) (-3+p) \text{AppellF1}\left[\frac{1-p}{2}, 1+m+n-p, -n, \frac{3-p}{2}, -\operatorname{Tan}\left[\frac{1}{2} \left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\frac{(c-d) \operatorname{Tan}\left[\frac{1}{2} \left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right] \left(\operatorname{Sec}\left[\frac{1}{2} \left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{-1-m} \operatorname{Sec}[e+f x]^p (g \operatorname{Sec}[e+f x])^p (a+a \operatorname{Sin}[e+f x])^m (c+d \operatorname{Sin}[e+f x])^{2 n} \operatorname{Tan}\left[\frac{1}{2} \left(-e+\frac{\pi}{2}-f x\right)\right]\right) \Big/ \left(f (1-p) \left((c+d) (-3+p) \text{AppellF1}\left[\frac{1-p}{2}, 1+m+n-p, -n, \frac{3-p}{2}, -\operatorname{Tan}\left[\frac{1}{2} \left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\frac{(c-d) \operatorname{Tan}\left[\frac{1}{2} \left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right] -\right.\right.$$

$$2\left((c-d)\;n\;\text{AppellF1}\left[\frac{3-p}{2},\,1+m+n-p,\,1-n,\,\frac{5-p}{2},\,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\frac{(c-d)\;\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]-(c+d)\;(1+m+n-p)\right.$$

$$\left.\text{AppellF1}\left[\frac{3-p}{2},\,2+m+n-p,\,-n,\,\frac{5-p}{2},\,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\frac{(c-d)\;\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right)\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Bigg)$$

$$\Bigg(\Bigg((c+d)\;(-3+p)\;\text{AppellF1}\left[\frac{1-p}{2},\,1+m+n-p,\,-n,\,\frac{3-p}{2},\,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\frac{(c-d)\;\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]$$

$$\left(\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{-m}\text{Sec}[e+f\,x]^p\;(c+d\,\text{Sin}[e+f\,x])^n\Bigg)\Big/$$

$$\left((1-p)\;\left((c+d)\;(-3+p)\;\text{AppellF1}\left[\frac{1-p}{2},\,1+m+n-p,\,-n,\,\frac{3-p}{2},\,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\frac{(c-d)\;\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]-2\left((c-d)\right.\right.\right.$$

$$n\;\text{AppellF1}\left[\frac{3-p}{2},\,1+m+n-p,\,1-n,\,\frac{5-p}{2},\,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\frac{(c-d)\;\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]-(c+d)\;(1+m+n-p)$$

$$\left.\left.\left.\text{AppellF1}\left[\frac{3-p}{2},\,2+m+n-p,\,-n,\,\frac{5-p}{2},\,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\frac{(c-d)\;\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right)\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\right)-$$

$$\Bigg(2\,d\;(c+d)\;n\;(-3+p)\;\text{AppellF1}\left[\frac{1-p}{2},\,1+m+n-p,\,-n,\,\frac{3-p}{2},\,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\frac{(c-d)\;\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]$$

$$\left(\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{-1-m}\text{Sec}[e+f\,x]^{-1+p}\;(c+d\,\text{Sin}[e+f\,x])^{-1+n}\;\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\Bigg)\Big/$$

$$\left((1-p)\;\left((c+d)\;(-3+p)\;\text{AppellF1}\left[\frac{1-p}{2},\,1+m+n-p,\,-n,\,\frac{3-p}{2},\,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\frac{(c-d)\;\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]-2\left((c-d)\right.\right.\right.$$

$$n\;\text{AppellF1}\left[\frac{3-p}{2},\,1+m+n-p,\,1-n,\,\frac{5-p}{2},\,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\frac{(c-d)\;\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]-(c+d)\;(1+m+n-p)$$

$$\left.\left.\left.\text{AppellF1}\left[\frac{3-p}{2},\,2+m+n-p,\,-n,\,\frac{5-p}{2},\,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\frac{(c-d)\;\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right)\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\right)-$$

$$\Bigg(2\;(c+d)\;(-3+p)\;p\;\text{AppellF1}\left[\frac{1-p}{2},\,1+m+n-p,\,-n,\,\frac{3-p}{2},\,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\frac{(c-d)\;\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]$$

$$\left(\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{-1-m}\text{Sec}[e+f x]^{1+p}\,\text{Sin}[e+f x]\,(c+d\,\text{Sin}[e+f x])^n\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\Bigg)\Bigg/$$

$$\Bigg((1-p)\Bigg((c+d)\,(-3+p)\,\text{AppellF1}\left[\frac{1-p}{2},1+m+n-p,-n,\frac{3-p}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]-2\Bigg((c-d)$$

$$n\,\text{AppellF1}\left[\frac{3-p}{2},1+m+n-p,1-n,\frac{5-p}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]-(c+d)\,(1+m+n-p)$$

$$\text{AppellF1}\left[\frac{3-p}{2},2+m+n-p,-n,\frac{5-p}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\Bigg)\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)\Bigg)+$$

$$\Bigg(2\,(c+d)\,(-1-m)\,(-3+p)\,\text{AppellF1}\left[\frac{1-p}{2},1+m+n-p,-n,\frac{3-p}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]$$

$$\left(\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{-1-m}\text{Sec}[e+f x]^p\,(c+d\,\text{Sin}[e+f x])^n\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)\Bigg/$$

$$\Bigg((1-p)\Bigg((c+d)\,(-3+p)\,\text{AppellF1}\left[\frac{1-p}{2},1+m+n-p,-n,\frac{3-p}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]-2\Bigg((c-d)$$

$$n\,\text{AppellF1}\left[\frac{3-p}{2},1+m+n-p,1-n,\frac{5-p}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]-(c+d)\,(1+m+n-p)$$

$$\text{AppellF1}\left[\frac{3-p}{2},2+m+n-p,-n,\frac{5-p}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\Bigg)\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)\Bigg)+$$

$$\Bigg(2\,(c+d)\,(-3+p)\left(\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{-1-m}\text{Sec}[e+f x]^p\,(c+d\,\text{Sin}[e+f x])^n\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\Bigg(\frac{1}{(c+d)\,(3-p)}$$

$$(c-d)\,n\,(1-p)\,\text{AppellF1}\left[1+\frac{1-p}{2},1+m+n-p,1-n,1+\frac{3-p}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]$$

$$\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{1}{3-p}(1-p)\,(1+m+n-p)\,\text{AppellF1}\left[1+\frac{1-p}{2},2+m+n-p,-n,1+\frac{3-p}{2},\right.$$

$$\left.-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\Bigg)\Bigg)\Bigg/$$

$$\left((1-p)\left((c+d)(-3+p)\,\text{AppellF1}\left[\frac{1-p}{2},1+m+n-p,-n,\frac{3-p}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]-2\left((c-d)\right.\right.\right.$$

$$n\,\text{AppellF1}\left[\frac{3-p}{2},1+m+n-p,1-n,\frac{5-p}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]-(c+d)(1+m+n-p)$$

$$\left.\left.\left.\text{AppellF1}\left[\frac{3-p}{2},2+m+n-p,-n,\frac{5-p}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\right)\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\right)-$$

$$\left(2(c+d)(-3+p)\,\text{AppellF1}\left[\frac{1-p}{2},1+m+n-p,-n,\frac{3-p}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\right.$$

$$\left(\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{-1-m}\text{Sec}[e+f x]^p\,(c+d\,\text{Sin}[e+f x])^n\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]$$

$$\left(-2\left((c-d)\,n\,\text{AppellF1}\left[\frac{3-p}{2},1+m+n-p,1-n,\frac{5-p}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]-(c+d)\right.\right.$$

$$\left.(1+m+n-p)\,\text{AppellF1}\left[\frac{3-p}{2},2+m+n-p,-n,\frac{5-p}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\right)$$

$$\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]+(c+d)(-3+p)\left(\frac{1}{(c+d)(3-p)}(c-d)\,n\,(1-p)\right.$$

$$\text{AppellF1}\left[1+\frac{1-p}{2},1+m+n-p,1-n,1+\frac{3-p}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]$$

$$\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{1}{3-p}(1-p)(1+m+n-p)\,\text{AppellF1}\left[1+\frac{1-p}{2},2+m+n-p,-n,\right.$$

$$\left.\left.1+\frac{3-p}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)-$$

$$2\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\left((c-d)\,n\left(-\frac{1}{(c+d)(5-p)}(c-d)(1-n)(3-p)\,\text{AppellF1}\left[1+\frac{3-p}{2},1+m+n-p,2-n,\right.\right.\right.$$

$$\left.1+\frac{5-p}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]-$$

$$\frac{1}{5-p}(3-p)(1+m+n-p)\,\text{AppellF1}\left[1+\frac{3-p}{2},2+m+n-p,1-n,1+\frac{5-p}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\right.$$

$$-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\Big]\,\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\Bigg)-(c+d)\,(1+m+n-p)\,\Bigg(\frac{1}{(c+d)\,(5-p)}$$

$$(c-d)\,n\,(3-p)\,\text{AppellF1}\Big[1+\frac{3-p}{2},\,2+m+n-p,\,1-n,\,1+\frac{5-p}{2},\,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\Big]$$

$$\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{1}{5-p}(3-p)\,(2+m+n-p)\,\text{AppellF1}\Big[1+\frac{3-p}{2},\,3+m+n-p,\,-n,\,1+\frac{5-p}{2},$$

$$-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\Big]\,\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\Bigg)\Bigg)\Bigg)\Bigg)\Bigg)\Bigg/$$

$$\Bigg((1-p)\,\Bigg((c+d)\,(-3+p)\,\text{AppellF1}\Big[\frac{1-p}{2},\,1+m+n-p,\,-n,\,\frac{3-p}{2},\,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\Big]-$$

$$2\,\Bigg((c-d)\,n\,\text{AppellF1}\Big[\frac{3-p}{2},\,1+m+n-p,\,1-n,\,\frac{5-p}{2},\,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\Big]-$$

$$(c+d)\,(1+m+n-p)\,\text{AppellF1}\Big[\frac{3-p}{2},\,2+m+n-p,\,-n,\,\frac{5-p}{2},\,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,$$

$$-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\Big]\Bigg)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)^2\Bigg)\Bigg)\Bigg)\Bigg)$$

- **Problem 1065: Result more than twice size of optimal antiderivative.**

$$\int \text{Cot}[c+d x]^2\,\text{Csc}[c+d x]^2\,(a+b\,\text{Sin}[c+d x])^2\,dx$$

Optimal (type 3, 96 leaves, 6 steps):

$$-b^2 x+\frac{a\,b\,\text{ArcTanh}[\text{Cos}[c+d x]]}{d}+\frac{\left(a^2-2 b^2\right)\text{Cot}[c+d x]}{3 d}-\frac{a\,b\,\text{Cot}[c+d x]\,\text{Csc}[c+d x]}{3 d}-\frac{\text{Cot}[c+d x]\,\text{Csc}[c+d x]^2\,(a+b\,\text{Sin}[c+d x])^2}{3 d}$$

Result (type 3, 538 leaves):

$$-\frac{b^2 (c+d x) (b+a \operatorname{Csc}[c+d x])^2 \operatorname{Sin}[c+d x]^2}{d (a+b \operatorname{Sin}[c+d x])^2}+\frac{\left(a^2 \operatorname{Cos}\left[\frac{1}{2} (c+d x)\right]-3 b^2 \operatorname{Cos}\left[\frac{1}{2} (c+d x)\right]\right) \operatorname{Csc}\left[\frac{1}{2} (c+d x)\right] (b+a \operatorname{Csc}[c+d x])^2 \operatorname{Sin}[c+d x]^2}{6 d (a+b \operatorname{Sin}[c+d x])^2}-$$

$$\frac{a b \operatorname{Csc}\left[\frac{1}{2} (c+d x)\right]^2 (b+a \operatorname{Csc}[c+d x])^2 \operatorname{Sin}[c+d x]^2}{4 d (a+b \operatorname{Sin}[c+d x])^2}-\frac{a^2 \operatorname{Cot}\left[\frac{1}{2} (c+d x)\right] \operatorname{Csc}\left[\frac{1}{2} (c+d x)\right]^2 (b+a \operatorname{Csc}[c+d x])^2 \operatorname{Sin}[c+d x]^2}{24 d (a+b \operatorname{Sin}[c+d x])^2}+$$

$$\frac{a b (b+a \operatorname{Csc}[c+d x])^2 \operatorname{Log}\left[\operatorname{Cos}\left[\frac{1}{2} (c+d x)\right]\right] \operatorname{Sin}[c+d x]^2}{d (a+b \operatorname{Sin}[c+d x])^2}-$$

$$\frac{a b (b+a \operatorname{Csc}[c+d x])^2 \operatorname{Log}\left[\operatorname{Sin}\left[\frac{1}{2} (c+d x)\right]\right] \operatorname{Sin}[c+d x]^2}{d (a+b \operatorname{Sin}[c+d x])^2}+\frac{a b (b+a \operatorname{Csc}[c+d x])^2 \operatorname{Sec}\left[\frac{1}{2} (c+d x)\right]^2 \operatorname{Sin}[c+d x]^2}{4 d (a+b \operatorname{Sin}[c+d x])^2}+$$

$$\frac{(b+a \operatorname{Csc}[c+d x])^2 \operatorname{Sec}\left[\frac{1}{2} (c+d x)\right] \left(-a^2 \operatorname{Sin}\left[\frac{1}{2} (c+d x)\right]+3 b^2 \operatorname{Sin}\left[\frac{1}{2} (c+d x)\right]\right) \operatorname{Sin}[c+d x]^2}{6 d (a+b \operatorname{Sin}[c+d x])^2}+$$

$$\frac{a^2 (b+a \operatorname{Csc}[c+d x])^2 \operatorname{Sec}\left[\frac{1}{2} (c+d x)\right]^2 \operatorname{Sin}[c+d x]^2 \operatorname{Tan}\left[\frac{1}{2} (c+d x)\right]}{24 d (a+b \operatorname{Sin}[c+d x])^2}$$

- **Problem 1066: Result more than twice size of optimal antiderivative.**

$$\int \operatorname{Cot}[c+d x]^2 \operatorname{Csc}[c+d x]^3 (a+b \operatorname{Sin}[c+d x])^2 \, dx$$

Optimal (type 3, 123 leaves, 8 steps):

$$\frac{\left(a^2+4 b^2\right) \operatorname{ArcTanh}[\operatorname{Cos}[c+d x]]}{8 d}+\frac{2 a b \operatorname{Cot}[c+d x]}{3 d}+\frac{\left(a^2-2 b^2\right) \operatorname{Cot}[c+d x] \operatorname{Csc}[c+d x]}{8 d}-$$

$$\frac{a b \operatorname{Cot}[c+d x] \operatorname{Csc}[c+d x]^2}{6 d}-\frac{\operatorname{Cot}[c+d x] \operatorname{Csc}[c+d x]^3 (a+b \operatorname{Sin}[c+d x])^2}{4 d}$$

Result (type 3, 579 leaves):

$$\frac{a\,b\,\text{Cot}\left[\frac{1}{2}(c+d\,x)\right](b+a\,\text{Csc}[c+d\,x])^2\,\text{Sin}[c+d\,x]^2}{3\,d\,(a+b\,\text{Sin}[c+d\,x])^2}+\frac{\left(a^2-4\,b^2\right)\text{Csc}\left[\frac{1}{2}(c+d\,x)\right]^2(b+a\,\text{Csc}[c+d\,x])^2\,\text{Sin}[c+d\,x]^2}{32\,d\,(a+b\,\text{Sin}[c+d\,x])^2}-$$

$$\frac{a\,b\,\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\text{Csc}\left[\frac{1}{2}(c+d\,x)\right]^2(b+a\,\text{Csc}[c+d\,x])^2\,\text{Sin}[c+d\,x]^2}{12\,d\,(a+b\,\text{Sin}[c+d\,x])^2}-\frac{a^2\,\text{Csc}\left[\frac{1}{2}(c+d\,x)\right]^4(b+a\,\text{Csc}[c+d\,x])^2\,\text{Sin}[c+d\,x]^2}{64\,d\,(a+b\,\text{Sin}[c+d\,x])^2}+$$

$$\frac{\left(a^2+4\,b^2\right)(b+a\,\text{Csc}[c+d\,x])^2\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]\right]\text{Sin}[c+d\,x]^2}{8\,d\,(a+b\,\text{Sin}[c+d\,x])^2}+\frac{\left(-a^2-4\,b^2\right)(b+a\,\text{Csc}[c+d\,x])^2\,\text{Log}\left[\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]\text{Sin}[c+d\,x]^2}{8\,d\,(a+b\,\text{Sin}[c+d\,x])^2}+$$

$$\frac{\left(-a^2+4\,b^2\right)(b+a\,\text{Csc}[c+d\,x])^2\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Sin}[c+d\,x]^2}{32\,d\,(a+b\,\text{Sin}[c+d\,x])^2}+\frac{a^2\,(b+a\,\text{Csc}[c+d\,x])^2\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^4\text{Sin}[c+d\,x]^2}{64\,d\,(a+b\,\text{Sin}[c+d\,x])^2}-$$

$$\frac{a\,b\,(b+a\,\text{Csc}[c+d\,x])^2\,\text{Sin}[c+d\,x]^2\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{3\,d\,(a+b\,\text{Sin}[c+d\,x])^2}+\frac{a\,b\,(b+a\,\text{Csc}[c+d\,x])^2\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Sin}[c+d\,x]^2\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{12\,d\,(a+b\,\text{Sin}[c+d\,x])^2}$$

- **Problem 1074: Result more than twice size of optimal antiderivative.**

$$\int \text{Cot}[c+d\,x]^2\,\text{Csc}[c+d\,x]^2\,(a+b\,\text{Sin}[c+d\,x])^3\,dx$$

Optimal (type 3, 138 leaves, 7 steps):

$$-3\,a\,b^2\,x+\frac{b\left(3\,a^2-2\,b^2\right)\text{ArcTanh}[\text{Cos}[c+d\,x]]}{2\,d}+\frac{11\,b^3\,\text{Cos}[c+d\,x]}{6\,d}+\frac{a\left(a^2-3\,b^2\right)\text{Cot}[c+d\,x]}{3\,d}-$$

$$\frac{b\,\text{Cot}[c+d\,x]\,\text{Csc}[c+d\,x]\,(a+b\,\text{Sin}[c+d\,x])^2}{2\,d}-\frac{\text{Cot}[c+d\,x]\,\text{Csc}[c+d\,x]^2\,(a+b\,\text{Sin}[c+d\,x])^3}{3\,d}$$

Result (type 3, 615 leaves):

$$-\frac{3 a b^2 (c+d x) (b+a \operatorname{Csc}[c+d x])^3 \operatorname{Sin}[c+d x]^3}{d (a+b \operatorname{Sin}[c+d x])^3}+\frac{b^3 \operatorname{Cos}[c+d x] (b+a \operatorname{Csc}[c+d x])^3 \operatorname{Sin}[c+d x]^3}{d (a+b \operatorname{Sin}[c+d x])^3}+$$
$$\frac{\left(a^3 \operatorname{Cos}\left[\frac{1}{2} (c+d x)\right]-9 a b^2 \operatorname{Cos}\left[\frac{1}{2} (c+d x)\right]\right) \operatorname{Csc}\left[\frac{1}{2} (c+d x)\right] (b+a \operatorname{Csc}[c+d x])^3 \operatorname{Sin}[c+d x]^3}{6 d (a+b \operatorname{Sin}[c+d x])^3}-$$
$$\frac{3 a^2 b \operatorname{Csc}\left[\frac{1}{2} (c+d x)\right]^2 (b+a \operatorname{Csc}[c+d x])^3 \operatorname{Sin}[c+d x]^3}{8 d (a+b \operatorname{Sin}[c+d x])^3}-\frac{a^3 \operatorname{Cot}\left[\frac{1}{2} (c+d x)\right] \operatorname{Csc}\left[\frac{1}{2} (c+d x)\right]^2 (b+a \operatorname{Csc}[c+d x])^3 \operatorname{Sin}[c+d x]^3}{24 d (a+b \operatorname{Sin}[c+d x])^3}+$$
$$\frac{\left(3 a^2 b-2 b^3\right) (b+a \operatorname{Csc}[c+d x])^3 \operatorname{Log}\left[\operatorname{Cos}\left[\frac{1}{2} (c+d x)\right]\right] \operatorname{Sin}[c+d x]^3}{2 d (a+b \operatorname{Sin}[c+d x])^3}+$$
$$\frac{\left(-3 a^2 b+2 b^3\right) (b+a \operatorname{Csc}[c+d x])^3 \operatorname{Log}\left[\operatorname{Sin}\left[\frac{1}{2} (c+d x)\right]\right] \operatorname{Sin}[c+d x]^3}{2 d (a+b \operatorname{Sin}[c+d x])^3}+\frac{3 a^2 b (b+a \operatorname{Csc}[c+d x])^3 \operatorname{Sec}\left[\frac{1}{2} (c+d x)\right]^2 \operatorname{Sin}[c+d x]^3}{8 d (a+b \operatorname{Sin}[c+d x])^3}+$$
$$\frac{(b+a \operatorname{Csc}[c+d x])^3 \operatorname{Sec}\left[\frac{1}{2} (c+d x)\right] \left(-a^3 \operatorname{Sin}\left[\frac{1}{2} (c+d x)\right]+9 a b^2 \operatorname{Sin}\left[\frac{1}{2} (c+d x)\right]\right) \operatorname{Sin}[c+d x]^3}{6 d (a+b \operatorname{Sin}[c+d x])^3}+$$
$$\frac{a^3 (b+a \operatorname{Csc}[c+d x])^3 \operatorname{Sec}\left[\frac{1}{2} (c+d x)\right]^2 \operatorname{Sin}[c+d x]^3 \operatorname{Tan}\left[\frac{1}{2} (c+d x)\right]}{24 d (a+b \operatorname{Sin}[c+d x])^3}$$

- **Problem 1075: Result more than twice size of optimal antiderivative.**

$$\int \operatorname{Cot}[c+d x]^2 \operatorname{Csc}[c+d x]^3 (a+b \operatorname{Sin}[c+d x])^3 \, dx$$

Optimal (type 3, 152 leaves, 7 steps) :

$$-b^3 x+\frac{a \left(a^2+12 b^2\right) \operatorname{ArcTanh}[\operatorname{Cos}[c+d x]]}{8 d}+\frac{b \left(2 a^2-b^2\right) \operatorname{Cot}[c+d x]}{2 d}+\frac{a \left(a^2-2 b^2\right) \operatorname{Cot}[c+d x] \operatorname{Csc}[c+d x]}{8 d}-$$
$$\frac{b \operatorname{Cot}[c+d x] \operatorname{Csc}[c+d x]^2 (a+b \operatorname{Sin}[c+d x])^2}{4 d}-\frac{\operatorname{Cot}[c+d x] \operatorname{Csc}[c+d x]^3 (a+b \operatorname{Sin}[c+d x])^3}{4 d}$$

Result (type 3, 690 leaves) :

$$-\frac{b^3 (c+d x) (b+a \operatorname{Csc}[c+d x])^3 \operatorname{Sin}[c+d x]^3}{d (a+b \operatorname{Sin}[c+d x])^3}+\frac{\left(a^2 b \operatorname{Cos}\left[\frac{1}{2} (c+d x)\right]-b^3 \operatorname{Cos}\left[\frac{1}{2} (c+d x)\right]\right) \operatorname{Csc}\left[\frac{1}{2} (c+d x)\right] (b+a \operatorname{Csc}[c+d x])^3 \operatorname{Sin}[c+d x]^3}{2 d (a+b \operatorname{Sin}[c+d x])^3}+$$

$$\frac{\left(a^3-12 a b^2\right) \operatorname{Csc}\left[\frac{1}{2} (c+d x)\right]^2 (b+a \operatorname{Csc}[c+d x])^3 \operatorname{Sin}[c+d x]^3}{32 d (a+b \operatorname{Sin}[c+d x])^3}-\frac{a^2 b \operatorname{Cot}\left[\frac{1}{2} (c+d x)\right] \operatorname{Csc}\left[\frac{1}{2} (c+d x)\right]^2 (b+a \operatorname{Csc}[c+d x])^3 \operatorname{Sin}[c+d x]^3}{8 d (a+b \operatorname{Sin}[c+d x])^3}-$$

$$\frac{a^3 \operatorname{Csc}\left[\frac{1}{2} (c+d x)\right]^4 (b+a \operatorname{Csc}[c+d x])^3 \operatorname{Sin}[c+d x]^3}{64 d (a+b \operatorname{Sin}[c+d x])^3}+\frac{\left(a^3+12 a b^2\right) (b+a \operatorname{Csc}[c+d x])^3 \operatorname{Log}\left[\operatorname{Cos}\left[\frac{1}{2} (c+d x)\right]\right] \operatorname{Sin}[c+d x]^3}{8 d (a+b \operatorname{Sin}[c+d x])^3}+$$

$$\frac{\left(-a^3-12 a b^2\right) (b+a \operatorname{Csc}[c+d x])^3 \operatorname{Log}\left[\operatorname{Sin}\left[\frac{1}{2} (c+d x)\right]\right] \operatorname{Sin}[c+d x]^3}{8 d (a+b \operatorname{Sin}[c+d x])^3}+$$

$$\frac{\left(-a^3+12 a b^2\right) (b+a \operatorname{Csc}[c+d x])^3 \operatorname{Sec}\left[\frac{1}{2} (c+d x)\right]^2 \operatorname{Sin}[c+d x]^3}{32 d (a+b \operatorname{Sin}[c+d x])^3}+\frac{a^3 (b+a \operatorname{Csc}[c+d x])^3 \operatorname{Sec}\left[\frac{1}{2} (c+d x)\right]^4 \operatorname{Sin}[c+d x]^3}{64 d (a+b \operatorname{Sin}[c+d x])^3}+$$

$$\frac{(b+a \operatorname{Csc}[c+d x])^3 \operatorname{Sec}\left[\frac{1}{2} (c+d x)\right] \left(-a^2 b \operatorname{Sin}\left[\frac{1}{2} (c+d x)\right]+b^3 \operatorname{Sin}\left[\frac{1}{2} (c+d x)\right]\right) \operatorname{Sin}[c+d x]^3}{2 d (a+b \operatorname{Sin}[c+d x])^3}+$$

$$\frac{a^2 b (b+a \operatorname{Csc}[c+d x])^3 \operatorname{Sec}\left[\frac{1}{2} (c+d x)\right]^2 \operatorname{Sin}[c+d x]^3 \operatorname{Tan}\left[\frac{1}{2} (c+d x)\right]}{8 d (a+b \operatorname{Sin}[c+d x])^3}$$

- **Problem 1091: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int \frac{\operatorname{Cos}[e+f x]^2}{\sqrt{d \operatorname{Sin}[e+f x]} (a+b \operatorname{Sin}[e+f x])^{5/2}} \, dx$$

Optimal (type 4, 347 leaves, 5 steps):

$$\frac{2 \operatorname{Cos}[e+f x] \sqrt{d \operatorname{Sin}[e+f x]}}{3 a d f (a+b \operatorname{Sin}[e+f x])^{3/2}}+\frac{4 b \operatorname{Cos}[e+f x]}{3 a \left(a^2-b^2\right) f \sqrt{d \operatorname{Sin}[e+f x]} \sqrt{a+b \operatorname{Sin}[e+f x]}}-$$

$$\frac{4 b \sqrt{\frac{a (1-\operatorname{Csc}[e+f x])}{a+b}} \sqrt{\frac{a (1+\operatorname{Csc}[e+f x])}{a-b}} \operatorname{EllipticE}\left[\operatorname{ArcSin}\left[\frac{\sqrt{d} \sqrt{a+b \operatorname{Sin}[e+f x]}}{\sqrt{a+b} \sqrt{d \operatorname{Sin}[e+f x]}}\right],-\frac{a+b}{a-b}\right] \operatorname{Tan}[e+f x]}{3 a^3 \sqrt{a+b} \sqrt{d} f}-$$

$$\frac{4 \sqrt{\frac{a (1-\operatorname{Csc}[e+f x])}{a+b}} \sqrt{\frac{a (1+\operatorname{Csc}[e+f x])}{a-b}} \operatorname{EllipticF}\left[\operatorname{ArcSin}\left[\frac{\sqrt{d} \sqrt{a+b \operatorname{Sin}[e+f x]}}{\sqrt{a+b} \sqrt{d \operatorname{Sin}[e+f x]}}\right],-\frac{a+b}{a-b}\right] \operatorname{Tan}[e+f x]}{3 a^2 \sqrt{a+b} \sqrt{d} f}$$

Result (type 4, 9146 leaves):

$$\frac{\operatorname{Sin}[e+f x] \sqrt{a+b \operatorname{Sin}[e+f x]} \left(\frac{2 \operatorname{Cos}[e+f x]}{3 a (a+b \operatorname{Sin}[e+f x])^2}-\frac{4 b^2 \operatorname{Cos}[e+f x]}{3 a^2 \left(a^2-b^2\right) (a+b \operatorname{Sin}[e+f x])}\right)}{f \sqrt{d \operatorname{Sin}[e+f x]}}-\frac{1}{3 \left(a^2-b^2\right) f \sqrt{d \operatorname{Sin}[e+f x]}}$$

$$8\sqrt{\text{Sin}[e+fx]}\left(\left(\sqrt{\text{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-fx\right)\right]^2}\ \text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Sin}[e+fx]}{a}}}{\sqrt{2}}\right],\frac{2a}{a+b}\right]\text{Sec}[e+fx]\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-fx\right)\right]^4\right.\right.$$

$$\left.\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Sin}[e+fx]}{a}}\ \sqrt{\frac{\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-fx\right)\right]^2(a+b\,\text{Sin}[e+fx])}{a}}\right)\Big/\left(\sqrt{\text{Sin}[e+fx]}\ \sqrt{a+b\,\text{Sin}[e+fx]}\right)-$$

$$\left(b\sqrt{\text{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-fx\right)\right]^2}\ \text{EllipticPi}\left[\frac{a}{a+b},\text{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Sin}[e+fx]}{a}}}{\sqrt{2}}\right],\frac{2a}{a+b}\right]\text{Sec}[e+fx]\right.$$

$$\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-fx\right)\right]^4\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Sin}[e+fx]}{a}}$$

$$\left.\left.\sqrt{\frac{\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-fx\right)\right]^2(a+b\,\text{Sin}[e+fx])}{a}}\right)\Big/\left((a+b)\sqrt{\text{Sin}[e+fx]}\ \sqrt{a+b\,\text{Sin}[e+fx]}\right)\right)-$$

$$\left(4\,b\,\text{Sin}[e+fx]\sqrt{a+b\,\text{Sin}[e+fx]}\left(\sqrt{2}\,\text{Tan}\left[\frac{1}{2}(e+fx)\right]\sqrt{\frac{\text{Tan}\left[\frac{1}{2}(e+fx)\right]}{1+\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2}}\ \sqrt{\frac{a+2\,b\,\text{Tan}\left[\frac{1}{2}(e+fx)\right]+a\,\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2}{1+\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2}}\right.\right.-$$

$$\frac{1}{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}\left(a+2\,b\,\text{Tan}\left[\frac{1}{2}(e+fx)\right]+a\,\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right)}\sqrt{2}\left(\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}\left(a+2\,b\,\text{Cot}\left[\frac{1}{2}(e+fx)\right]+a\,\text{Cot}\left[\frac{1}{2}(e+fx)\right]^2\right)+\right.$$

$$\frac{1}{\sqrt{\mathrm{Tan}\left[\frac{1}{2}(e+fx)\right]}}\, i\left(b-\sqrt{-a^2+b^2}\right)\sqrt{\frac{b+\sqrt{-a^2+b^2}+a\,\mathrm{Cot}\left[\frac{1}{2}(e+fx)\right]}{b+\sqrt{-a^2+b^2}}}\sqrt{1+\frac{a\,\mathrm{Cot}\left[\frac{1}{2}(e+fx)\right]}{b-\sqrt{-a^2+b^2}}}$$

$$\left(\mathrm{EllipticE}\left[i\,\mathrm{ArcSinh}\left[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\mathrm{Tan}\left[\frac{1}{2}(e+fx)\right]}}\right],\frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\right]-\mathrm{EllipticF}\left[i\,\mathrm{ArcSinh}\left[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\mathrm{Tan}\left[\frac{1}{2}(e+fx)\right]}}\right],\frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\right]\right)-$$

$$\frac{1}{\sqrt{\mathrm{Tan}\left[\frac{1}{2}(e+fx)\right]}}\, a\sqrt{\frac{b+\sqrt{-a^2+b^2}+a\,\mathrm{Cot}\left[\frac{1}{2}(e+fx)\right]}{b+\sqrt{-a^2+b^2}}}\sqrt{1+\frac{a\,\mathrm{Cot}\left[\frac{1}{2}(e+fx)\right]}{b-\sqrt{-a^2+b^2}}}\;\mathrm{EllipticPi}\left[-\frac{i\left(b+\sqrt{-a^2+b^2}\right)}{a},\right.$$

$$\left. i\,\mathrm{ArcSinh}\left[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\mathrm{Tan}\left[\frac{1}{2}(e+fx)\right]}}\right],\frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\right]+\frac{1}{\sqrt{\mathrm{Tan}\left[\frac{1}{2}(e+fx)\right]}}\, a\sqrt{\frac{b+\sqrt{-a^2+b^2}+a\,\mathrm{Cot}\left[\frac{1}{2}(e+fx)\right]}{b+\sqrt{-a^2+b^2}}}$$

$$\left.\sqrt{1+\frac{a\,\mathrm{Cot}\left[\frac{1}{2}(e+fx)\right]}{b-\sqrt{-a^2+b^2}}}\;\mathrm{EllipticPi}\left[\frac{i\left(b+\sqrt{-a^2+b^2}\right)}{a}, i\,\mathrm{ArcSinh}\left[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\mathrm{Tan}\left[\frac{1}{2}(e+fx)\right]}}\right],\frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\right]\right)$$

$$\left.\left.\left(\frac{\mathrm{Tan}\left[\frac{1}{2}(e+fx)\right]}{1+\mathrm{Tan}\left[\frac{1}{2}(e+fx)\right]^2}\right)^{3/2}\left(1+\mathrm{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right)^2\sqrt{\frac{a+2\,b\,\mathrm{Tan}\left[\frac{1}{2}(e+fx)\right]+a\,\mathrm{Tan}\left[\frac{1}{2}(e+fx)\right]^2}{1+\mathrm{Tan}\left[\frac{1}{2}(e+fx)\right]^2}}\right)\right)\Big/$$

$$\left(3\,a^2\left(a^2-b^2\right)f\sqrt{d\,\mathrm{Sin}[e+fx]}\left(\frac{\mathrm{Sec}\left[\frac{1}{2}(e+fx)\right]^2\sqrt{\frac{\mathrm{Tan}\left[\frac{1}{2}(e+fx)\right]}{1+\mathrm{Tan}\left[\frac{1}{2}(e+fx)\right]^2}}\sqrt{\frac{a+2\,b\,\mathrm{Tan}\left[\frac{1}{2}(e+fx)\right]+a\,\mathrm{Tan}\left[\frac{1}{2}(e+fx)\right]^2}{1+\mathrm{Tan}\left[\frac{1}{2}(e+fx)\right]^2}}}{\sqrt{2}}+\right.\right.$$

$$\frac{1}{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}\left(a+2\,b\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]+a\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right)^2}\sqrt{2}\left(\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}\left(a+2\,b\,\text{Cot}\left[\frac{1}{2}\,(e+f\,x)\right]+a\,\text{Cot}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right)+\right.$$

$$\frac{1}{\sqrt{\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]}}\,i\left(b-\sqrt{-a^2+b^2}\right)\sqrt{\frac{b+\sqrt{-a^2+b^2}+a\,\text{Cot}\left[\frac{1}{2}\,(e+f\,x)\right]}{b+\sqrt{-a^2+b^2}}}\sqrt{1+\frac{a\,\text{Cot}\left[\frac{1}{2}\,(e+f\,x)\right]}{b-\sqrt{-a^2+b^2}}}$$

$$\left(\text{EllipticE}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]}}\right],\frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\right]-\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]}}\right],\frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\right]\right)-$$

$$\frac{1}{\sqrt{\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]}}\,a\sqrt{\frac{b+\sqrt{-a^2+b^2}+a\,\text{Cot}\left[\frac{1}{2}\,(e+f\,x)\right]}{b+\sqrt{-a^2+b^2}}}\sqrt{1+\frac{a\,\text{Cot}\left[\frac{1}{2}\,(e+f\,x)\right]}{b-\sqrt{-a^2+b^2}}}\;\text{EllipticPi}\left[-\frac{i\left(b+\sqrt{-a^2+b^2}\right)}{a},\right.$$

$$\left.i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]}}\right],\frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\right]+\frac{1}{\sqrt{\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]}}\,a\sqrt{\frac{b+\sqrt{-a^2+b^2}+a\,\text{Cot}\left[\frac{1}{2}\,(e+f\,x)\right]}{b+\sqrt{-a^2+b^2}}}$$

$$\left.\sqrt{1+\frac{a\,\text{Cot}\left[\frac{1}{2}\,(e+f\,x)\right]}{b-\sqrt{-a^2+b^2}}}\;\text{EllipticPi}\left[\frac{i\left(b+\sqrt{-a^2+b^2}\right)}{a},i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]}}\right],\frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\right]\right)$$

$$\left(b\,\text{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]^2+a\,\text{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]^2\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right)\left(\frac{\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]}{1+\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2}\right)^{3/2}\left(1+\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right)^2$$

$$\sqrt{\frac{a+2\,b\,\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]+a\,\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2}{1+\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2}}-\frac{1}{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}\,\left(a+2\,b\,\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]+a\,\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right)}$$

$$2\,\sqrt{2}\,\mathrm{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]^2\left(\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}\,\left(a+2\,b\,\mathrm{Cot}\left[\frac{1}{2}\,(e+f\,x)\right]+a\,\mathrm{Cot}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right)+\frac{1}{\sqrt{\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]}}\right.$$

$$i\,\left(b-\sqrt{-a^2+b^2}\right)\sqrt{\frac{b+\sqrt{-a^2+b^2}+a\,\mathrm{Cot}\left[\frac{1}{2}\,(e+f\,x)\right]}{b+\sqrt{-a^2+b^2}}}\,\sqrt{1+\frac{a\,\mathrm{Cot}\left[\frac{1}{2}\,(e+f\,x)\right]}{b-\sqrt{-a^2+b^2}}}$$

$$\left(\mathrm{EllipticE}\left[i\,\mathrm{ArcSinh}\left[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]}}\right],\frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\right]-\mathrm{EllipticF}\left[i\,\mathrm{ArcSinh}\left[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]}}\right],\frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\right]\right)-$$

$$\frac{1}{\sqrt{\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]}}a\,\sqrt{\frac{b+\sqrt{-a^2+b^2}+a\,\mathrm{Cot}\left[\frac{1}{2}\,(e+f\,x)\right]}{b+\sqrt{-a^2+b^2}}}\,\sqrt{1+\frac{a\,\mathrm{Cot}\left[\frac{1}{2}\,(e+f\,x)\right]}{b-\sqrt{-a^2+b^2}}}\,\mathrm{EllipticPi}\left[-\frac{i\,\left(b+\sqrt{-a^2+b^2}\right)}{a},\right.$$

$$\left.i\,\mathrm{ArcSinh}\left[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]}}\right],\frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\right]+\frac{1}{\sqrt{\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]}}a\,\sqrt{\frac{b+\sqrt{-a^2+b^2}+a\,\mathrm{Cot}\left[\frac{1}{2}\,(e+f\,x)\right]}{b+\sqrt{-a^2+b^2}}}$$

$$\left.\sqrt{1+\frac{a\,\mathrm{Cot}\left[\frac{1}{2}\,(e+f\,x)\right]}{b-\sqrt{-a^2+b^2}}}\,\mathrm{EllipticPi}\left[\frac{i\,\left(b+\sqrt{-a^2+b^2}\right)}{a},i\,\mathrm{ArcSinh}\left[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]}}\right],\frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\right]\right)$$

$$\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\left(\frac{\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]}{1+\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2}\right)^{3/2}\left(1+\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right)\sqrt{\frac{a+2\,b\,\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]+a\,\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2}{1+\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2}}-$$

$$\frac{1}{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}\left(a+2\,b\,\mathrm{Tan}\left[\frac{1}{2}(e+f\,x)\right]+a\,\mathrm{Tan}\left[\frac{1}{2}(e+f\,x)\right]^2\right)}$$

$$\sqrt{2}\left(\frac{\mathrm{i}\,a\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}\sqrt{\frac{b+\sqrt{-a^2+b^2}+a\,\mathrm{Cot}\left[\frac{1}{2}(e+f\,x)\right]}{b+\sqrt{-a^2+b^2}}}\,\mathrm{Csc}\left[\frac{1}{2}(e+f\,x)\right]^2}{4\left(1-\mathrm{i}\,\mathrm{Cot}\left[\frac{1}{2}(e+f\,x)\right]\right)\sqrt{1+\frac{a\,\mathrm{Cot}\left[\frac{1}{2}(e+f\,x)\right]}{b+\sqrt{-a^2+b^2}}}}-\frac{\mathrm{i}\,a\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}\sqrt{\frac{b+\sqrt{-a^2+b^2}+a\,\mathrm{Cot}\left[\frac{1}{2}(e+f\,x)\right]}{b+\sqrt{-a^2+b^2}}}\,\mathrm{Csc}\left[\frac{1}{2}(e+f\,x)\right]^2}{4\left(1+\mathrm{i}\,\mathrm{Cot}\left[\frac{1}{2}(e+f\,x)\right]\right)\sqrt{1+\frac{a\,\mathrm{Cot}\left[\frac{1}{2}(e+f\,x)\right]}{b+\sqrt{-a^2+b^2}}}}+\right.$$

$$\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}\left(-b\,\mathrm{Csc}\left[\frac{1}{2}(e+f\,x)\right]^2-a\,\mathrm{Cot}\left[\frac{1}{2}(e+f\,x)\right]\mathrm{Csc}\left[\frac{1}{2}(e+f\,x)\right]^2\right)-\frac{1}{4\,\mathrm{Tan}\left[\frac{1}{2}(e+f\,x)\right]^{3/2}}$$

$$\mathrm{i}\left(b-\sqrt{-a^2+b^2}\right)\sqrt{\frac{b+\sqrt{-a^2+b^2}+a\,\mathrm{Cot}\left[\frac{1}{2}(e+f\,x)\right]}{b+\sqrt{-a^2+b^2}}}\sqrt{1+\frac{a\,\mathrm{Cot}\left[\frac{1}{2}(e+f\,x)\right]}{b-\sqrt{-a^2+b^2}}}$$

$$\left(\mathrm{EllipticE}\left[\mathrm{i}\,\mathrm{ArcSinh}\left[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\mathrm{Tan}\left[\frac{1}{2}(e+f\,x)\right]}}\right],\frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\right]-\mathrm{EllipticF}\left[\mathrm{i}\,\mathrm{ArcSinh}\left[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\mathrm{Tan}\left[\frac{1}{2}(e+f\,x)\right]}}\right],\frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\right]\right)$$

$$\mathrm{Sec}\left[\frac{1}{2}(e+f\,x)\right]^2+\frac{1}{4\,\mathrm{Tan}\left[\frac{1}{2}(e+f\,x)\right]^{3/2}}a\sqrt{\frac{b+\sqrt{-a^2+b^2}+a\,\mathrm{Cot}\left[\frac{1}{2}(e+f\,x)\right]}{b+\sqrt{-a^2+b^2}}}\sqrt{1+\frac{a\,\mathrm{Cot}\left[\frac{1}{2}(e+f\,x)\right]}{b-\sqrt{-a^2+b^2}}}$$

$$\mathrm{EllipticPi}\left[-\frac{\mathrm{i}\left(b+\sqrt{-a^2+b^2}\right)}{a},\mathrm{i}\,\mathrm{ArcSinh}\left[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\mathrm{Tan}\left[\frac{1}{2}(e+f\,x)\right]}}\right],\frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\right]\mathrm{Sec}\left[\frac{1}{2}(e+f\,x)\right]^2-$$

$$\frac{1}{4\,\mathrm{Tan}\left[\frac{1}{2}(e+f\,x)\right]^{3/2}}a\sqrt{\frac{b+\sqrt{-a^2+b^2}+a\,\mathrm{Cot}\left[\frac{1}{2}(e+f\,x)\right]}{b+\sqrt{-a^2+b^2}}}\sqrt{1+\frac{a\,\mathrm{Cot}\left[\frac{1}{2}(e+f\,x)\right]}{b-\sqrt{-a^2+b^2}}}\;\mathrm{EllipticPi}\left[\frac{\mathrm{i}\left(b+\sqrt{-a^2+b^2}\right)}{a},\right.$$

$$i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}}\right],\frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2-\left(i\,a\sqrt{\frac{b+\sqrt{-a^2+b^2}+a\,\text{Cot}\left[\frac{1}{2}(e+f x)\right]}{b+\sqrt{-a^2+b^2}}}\,\text{Csc}\left[\frac{1}{2}(e+f x)\right]^2\right.$$

$$\left.\left(\text{EllipticE}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}}\right],\frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\right]-\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}}\right],\frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\right]\right)\right)\Big/$$

$$\left(4\sqrt{1+\frac{a\,\text{Cot}\left[\frac{1}{2}(e+f x)\right]}{b-\sqrt{-a^2+b^2}}}\sqrt{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}\right)-\left(i\,a\left(b-\sqrt{-a^2+b^2}\right)\sqrt{1+\frac{a\,\text{Cot}\left[\frac{1}{2}(e+f x)\right]}{b-\sqrt{-a^2+b^2}}}\,\text{Csc}\left[\frac{1}{2}(e+f x)\right]^2\right.$$

$$\left.\left(\text{EllipticE}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}}\right],\frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\right]-\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}}\right],\frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\right]\right)\right)\Big/$$

$$\left(4\left(b+\sqrt{-a^2+b^2}\right)\sqrt{\frac{b+\sqrt{-a^2+b^2}+a\,\text{Cot}\left[\frac{1}{2}(e+f x)\right]}{b+\sqrt{-a^2+b^2}}}\sqrt{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}\right)+$$

$$\left(a^2\sqrt{\frac{b+\sqrt{-a^2+b^2}+a\,\text{Cot}\left[\frac{1}{2}(e+f x)\right]}{b+\sqrt{-a^2+b^2}}}\,\text{Csc}\left[\frac{1}{2}(e+f x)\right]^2\text{EllipticPi}\left[-\frac{i\left(b+\sqrt{-a^2+b^2}\right)}{a},\,i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}}\right],\right.\right.$$

$$\left.\left.\frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\right]\right)\Big/\left(4\left(b-\sqrt{-a^2+b^2}\right)\sqrt{1+\frac{a\,\text{Cot}\left[\frac{1}{2}(e+f x)\right]}{b-\sqrt{-a^2+b^2}}}\sqrt{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}\right)+$$

$$\left(a^2 \sqrt{1+\frac{a \,\text{Cot}\left[\frac{1}{2}\,(e+f\,x)\right]}{b-\sqrt{-a^2+b^2}}}\;\text{Csc}\left[\frac{1}{2}\,(e+f\,x)\right]^2 \text{EllipticPi}\left[-\frac{\mathbb{i}\left(b+\sqrt{-a^2+b^2}\right)}{a},\,\mathbb{i}\,\text{ArcSinh}\left[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]}}\right],\,\frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\right]\right)\Bigg/$$

$$\left(4\left(b+\sqrt{-a^2+b^2}\right)\sqrt{\frac{b+\sqrt{-a^2+b^2}\;+a\,\text{Cot}\left[\frac{1}{2}\,(e+f\,x)\right]}{b+\sqrt{-a^2+b^2}}}\;\sqrt{\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]}\right)-$$

$$\left(a^2 \sqrt{\frac{b+\sqrt{-a^2+b^2}\;+a\,\text{Cot}\left[\frac{1}{2}\,(e+f\,x)\right]}{b+\sqrt{-a^2+b^2}}}\;\text{Csc}\left[\frac{1}{2}\,(e+f\,x)\right]^2 \text{EllipticPi}\left[\frac{\mathbb{i}\left(b+\sqrt{-a^2+b^2}\right)}{a},\,\mathbb{i}\,\text{ArcSinh}\left[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]}}\right],\right.\right.$$

$$\left.\left.\frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\right]\right)\Bigg/\left(4\left(b-\sqrt{-a^2+b^2}\right)\sqrt{1+\frac{a\,\text{Cot}\left[\frac{1}{2}\,(e+f\,x)\right]}{b-\sqrt{-a^2+b^2}}}\;\sqrt{\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]}\right)-$$

$$\left(a^2 \sqrt{1+\frac{a \,\text{Cot}\left[\frac{1}{2}\,(e+f\,x)\right]}{b-\sqrt{-a^2+b^2}}}\;\text{Csc}\left[\frac{1}{2}\,(e+f\,x)\right]^2 \text{EllipticPi}\left[\frac{\mathbb{i}\left(b+\sqrt{-a^2+b^2}\right)}{a},\,\mathbb{i}\,\text{ArcSinh}\left[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]}}\right],\,\frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\right]\right)\Bigg/$$

$$\left(4\left(b+\sqrt{-a^2+b^2}\right)\sqrt{\frac{b+\sqrt{-a^2+b^2}\;+a\,\text{Cot}\left[\frac{1}{2}\,(e+f\,x)\right]}{b+\sqrt{-a^2+b^2}}}\;\sqrt{\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]}\right)+$$

$$\frac{1}{\sqrt{\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]}}\,\mathbb{i}\left(b-\sqrt{-a^2+b^2}\right)\sqrt{\frac{b+\sqrt{-a^2+b^2}\;+a\,\text{Cot}\left[\frac{1}{2}\,(e+f\,x)\right]}{b+\sqrt{-a^2+b^2}}}\;\sqrt{1+\frac{a\,\text{Cot}\left[\frac{1}{2}\,(e+f\,x)\right]}{b-\sqrt{-a^2+b^2}}}$$

$$\left(\frac{i\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}\,\mathrm{Sec}\left[\frac{1}{2}(e+f x)\right]^2}{4\sqrt{1+\frac{a\,\mathrm{Cot}\left[\frac{1}{2}(e+f x)\right]}{b-\sqrt{-a^2+b^2}}}\sqrt{1+\frac{a\,\mathrm{Cot}\left[\frac{1}{2}(e+f x)\right]}{b+\sqrt{-a^2+b^2}}}\,\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^{3/2}}-\frac{i\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}\sqrt{1+\frac{a\,\mathrm{Cot}\left[\frac{1}{2}(e+f x)\right]}{b-\sqrt{-a^2+b^2}}}\,\mathrm{Sec}\left[\frac{1}{2}(e+f x)\right]^2}{4\sqrt{1+\frac{a\,\mathrm{Cot}\left[\frac{1}{2}(e+f x)\right]}{b+\sqrt{-a^2+b^2}}}\,\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^{3/2}}\right)\Bigg)$$

$$\left(\frac{\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]}{1+\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2}\right)^{3/2}\left(1+\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)^2\sqrt{\frac{a+2 b\,\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]+a\,\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2}{1+\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2}}+$$

$$\frac{\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]\sqrt{\frac{a+2 b\,\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]+a\,\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2}{1+\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2}}\left(-\frac{\mathrm{Sec}\left[\frac{1}{2}(e+f x)\right]^2\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2}{\left(1+\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)^2}+\frac{\mathrm{Sec}\left[\frac{1}{2}(e+f x)\right]^2}{2\left(1+\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)}\right)}{\sqrt{2}\sqrt{\frac{\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]}{1+\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2}}}-$$

$$\frac{1}{\sqrt{2}\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}\left(a+2 b\,\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]+a\,\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)}$$

$$3\left(\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}\left(a+2 b\,\mathrm{Cot}\left[\frac{1}{2}(e+f x)\right]+a\,\mathrm{Cot}\left[\frac{1}{2}(e+f x)\right]^2\right)+\frac{1}{\sqrt{\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]}}\right.$$

$$i\left(b-\sqrt{-a^2+b^2}\right)\sqrt{\frac{b+\sqrt{-a^2+b^2}+a\,\mathrm{Cot}\left[\frac{1}{2}(e+f x)\right]}{b+\sqrt{-a^2+b^2}}}\sqrt{1+\frac{a\,\mathrm{Cot}\left[\frac{1}{2}(e+f x)\right]}{b-\sqrt{-a^2+b^2}}}$$

$$\left(\mathrm{EllipticE}\left[i\,\mathrm{ArcSinh}\left[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]}}\right],\frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\right]-\mathrm{EllipticF}\left[i\,\mathrm{ArcSinh}\left[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]}}\right],\frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\right]\right)-$$

$$\frac{1}{\sqrt{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}} a \sqrt{\frac{b+\sqrt{-a^2+b^2}+a \text{Cot}\left[\frac{1}{2}(e+f x)\right]}{b+\sqrt{-a^2+b^2}}} \sqrt{1+\frac{a \text{Cot}\left[\frac{1}{2}(e+f x)\right]}{b-\sqrt{-a^2+b^2}}} \text{EllipticPi}\left[-\frac{i\left(b+\sqrt{-a^2+b^2}\right)}{a},\right.$$

$$\left. i \text{ArcSinh}\left[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}}\right], \frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\right]+\frac{1}{\sqrt{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}} a \sqrt{\frac{b+\sqrt{-a^2+b^2}+a \text{Cot}\left[\frac{1}{2}(e+f x)\right]}{b+\sqrt{-a^2+b^2}}}$$

$$\left.\sqrt{1+\frac{a \text{Cot}\left[\frac{1}{2}(e+f x)\right]}{b-\sqrt{-a^2+b^2}}} \text{EllipticPi}\left[\frac{i\left(b+\sqrt{-a^2+b^2}\right)}{a}, i \text{ArcSinh}\left[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}}\right], \frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\right]\right)$$

$$\sqrt{\frac{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}} \left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)^2 \sqrt{\frac{a+2 b \text{Tan}\left[\frac{1}{2}(e+f x)\right]+a \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}{1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}}$$

$$\left(-\frac{\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2 \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}{\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)^2}+\frac{\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2}{2\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)}\right)+$$

$$\left(\text{Tan}\left[\frac{1}{2}(e+f x)\right] \sqrt{\frac{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}} \left(\frac{b \text{Sec}\left[\frac{1}{2}(e+f x)\right]^2+a \text{Sec}\left[\frac{1}{2}(e+f x)\right]^2 \text{Tan}\left[\frac{1}{2}(e+f x)\right]}{1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}-\right.\right.$$

$$\left.\left.\frac{\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2 \text{Tan}\left[\frac{1}{2}(e+f x)\right]\left(a+2 b \text{Tan}\left[\frac{1}{2}(e+f x)\right]+a \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)}{\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)^2}\right)\right) \Big/$$

$$\left(\sqrt{2} \sqrt{\frac{a+2 b \text{Tan}\left[\frac{1}{2}(e+f x)\right]+a \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}{1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}}\right)-\left(\left(\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}} \left(a+2 b \text{Cot}\left[\frac{1}{2}(e+f x)\right]+a \text{Cot}\left[\frac{1}{2}(e+f x)\right]^2\right)+\right.\right.$$

$$\frac{1}{\sqrt{\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]}}\, i \left(b-\sqrt{-a^2+b^2}\right) \sqrt{\frac{b+\sqrt{-a^2+b^2}+a\,\mathrm{Cot}\left[\frac{1}{2}(e+f x)\right]}{b+\sqrt{-a^2+b^2}}}\, \sqrt{1+\frac{a\,\mathrm{Cot}\left[\frac{1}{2}(e+f x)\right]}{b-\sqrt{-a^2+b^2}}}$$

$$\left(\mathrm{EllipticE}\left[i\,\mathrm{ArcSinh}\left[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]}}\right], \frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\right] - \mathrm{EllipticF}\left[i\,\mathrm{ArcSinh}\left[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]}}\right], \frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\right]\right) -$$

$$\frac{1}{\sqrt{\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]}}\, a \sqrt{\frac{b+\sqrt{-a^2+b^2}+a\,\mathrm{Cot}\left[\frac{1}{2}(e+f x)\right]}{b+\sqrt{-a^2+b^2}}}\, \sqrt{1+\frac{a\,\mathrm{Cot}\left[\frac{1}{2}(e+f x)\right]}{b-\sqrt{-a^2+b^2}}}\ \mathrm{EllipticPi}\left[-\frac{i\left(b+\sqrt{-a^2+b^2}\right)}{a},\right.$$

$$\left. i\,\mathrm{ArcSinh}\left[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]}}\right], \frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\right] + \frac{1}{\sqrt{\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]}}\, a \sqrt{\frac{b+\sqrt{-a^2+b^2}+a\,\mathrm{Cot}\left[\frac{1}{2}(e+f x)\right]}{b+\sqrt{-a^2+b^2}}}$$

$$\left.\sqrt{1+\frac{a\,\mathrm{Cot}\left[\frac{1}{2}(e+f x)\right]}{b-\sqrt{-a^2+b^2}}}\ \mathrm{EllipticPi}\left[\frac{i\left(b+\sqrt{-a^2+b^2}\right)}{a}, i\,\mathrm{ArcSinh}\left[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]}}\right], \frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\right]\right)$$

$$\left(\frac{\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]}{1+\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2}\right)^{3/2} \left(1+\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)^2 \left(\frac{b\,\mathrm{Sec}\left[\frac{1}{2}(e+f x)\right]^2+a\,\mathrm{Sec}\left[\frac{1}{2}(e+f x)\right]^2\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]}{1+\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2} -\right.$$

$$\left.\left.\frac{\mathrm{Sec}\left[\frac{1}{2}(e+f x)\right]^2\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]\left(a+2\,b\,\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]+a\,\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)}{\left(1+\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)^2}\right)\right) \Big/$$

$$\left(\sqrt{2}\,\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}\,\left(a+2\,b\,\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]+a\,\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right)\sqrt{\frac{a+2\,b\,\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]+a\,\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2}{1+\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2}}\right)\Bigg)\Bigg)$$

Problem 1103: Result more than twice size of optimal antiderivative.

$$\int \mathrm{Cot}[c+d\,x]^4\,\mathrm{Csc}[c+d\,x]^4\,(a+b\,\mathrm{Sin}[c+d\,x])\,dx$$

Optimal (type 3, 114 leaves, 8 steps):

$$-\frac{b\,\mathrm{ArcTanh}[\mathrm{Cos}[c+d\,x]]}{16\,d}-\frac{a\,\mathrm{Cot}[c+d\,x]^5}{5\,d}-\frac{a\,\mathrm{Cot}[c+d\,x]^7}{7\,d}-\frac{b\,\mathrm{Cot}[c+d\,x]\,\mathrm{Csc}[c+d\,x]}{16\,d}+\frac{b\,\mathrm{Cot}[c+d\,x]\,\mathrm{Csc}[c+d\,x]^3}{8\,d}-\frac{b\,\mathrm{Cot}[c+d\,x]^3\,\mathrm{Csc}[c+d\,x]^3}{6\,d}$$

Result (type 3, 239 leaves):

$$-\frac{2\,a\,\mathrm{Cot}[c+d\,x]}{35\,d}-\frac{b\,\mathrm{Csc}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{64\,d}+\frac{b\,\mathrm{Csc}\left[\frac{1}{2}\,(c+d\,x)\right]^4}{64\,d}-\frac{b\,\mathrm{Csc}\left[\frac{1}{2}\,(c+d\,x)\right]^6}{384\,d}-\frac{a\,\mathrm{Cot}[c+d\,x]\,\mathrm{Csc}[c+d\,x]^2}{35\,d}+\frac{8\,a\,\mathrm{Cot}[c+d\,x]\,\mathrm{Csc}[c+d\,x]^4}{35\,d}-\frac{a\,\mathrm{Cot}[c+d\,x]\,\mathrm{Csc}[c+d\,x]^6}{7\,d}-\frac{b\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]\right]}{16\,d}+\frac{b\,\mathrm{Log}\left[\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]}{16\,d}+\frac{b\,\mathrm{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{64\,d}-\frac{b\,\mathrm{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^4}{64\,d}+\frac{b\,\mathrm{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^6}{384\,d}$$

Problem 1104: Result more than twice size of optimal antiderivative.

$$\int \mathrm{Cot}[c+d\,x]^4\,\mathrm{Csc}[c+d\,x]^5\,(a+b\,\mathrm{Sin}[c+d\,x])\,dx$$

Optimal (type 3, 136 leaves, 9 steps):

$$-\frac{3\,a\,\mathrm{ArcTanh}[\mathrm{Cos}[c+d\,x]]}{128\,d}-\frac{b\,\mathrm{Cot}[c+d\,x]^5}{5\,d}-\frac{b\,\mathrm{Cot}[c+d\,x]^7}{7\,d}-\frac{3\,a\,\mathrm{Cot}[c+d\,x]\,\mathrm{Csc}[c+d\,x]}{128\,d}-\frac{a\,\mathrm{Cot}[c+d\,x]\,\mathrm{Csc}[c+d\,x]^3}{64\,d}+\frac{a\,\mathrm{Cot}[c+d\,x]\,\mathrm{Csc}[c+d\,x]^5}{16\,d}-\frac{a\,\mathrm{Cot}[c+d\,x]^3\,\mathrm{Csc}[c+d\,x]^5}{8\,d}$$

Result (type 3, 279 leaves):

$$-\frac{2\,b\,\text{Cot}[c+d\,x]}{35\,d}-\frac{3\,a\,\text{Csc}\left[\frac{1}{2}(c+d\,x)\right]^2}{512\,d}+\frac{a\,\text{Csc}\left[\frac{1}{2}(c+d\,x)\right]^4}{1024\,d}+\frac{a\,\text{Csc}\left[\frac{1}{2}(c+d\,x)\right]^6}{512\,d}-\frac{a\,\text{Csc}\left[\frac{1}{2}(c+d\,x)\right]^8}{2048\,d}-\frac{b\,\text{Cot}[c+d\,x]\,\text{Csc}[c+d\,x]^2}{35\,d}+\frac{8\,b\,\text{Cot}[c+d\,x]\,\text{Csc}[c+d\,x]^4}{35\,d}-\frac{b\,\text{Cot}[c+d\,x]\,\text{Csc}[c+d\,x]^6}{7\,d}-\frac{3\,a\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]\right]}{128\,d}+\frac{3\,a\,\text{Log}\left[\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]}{128\,d}+\frac{3\,a\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2}{512\,d}-\frac{a\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^4}{1024\,d}-\frac{a\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^6}{512\,d}+\frac{a\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^8}{2048\,d}$$

- **Problem 1111: Result more than twice size of optimal antiderivative.**

$$\int \text{Cot}[c+d\,x]^4\,(a+b\,\text{Sin}[c+d\,x])^2\,dx$$

Optimal (type 3, 133 leaves, 13 steps):

$$a^2\,x-\frac{3\,b^2\,x}{2}+\frac{3\,a\,b\,\text{ArcTanh}[\text{Cos}[c+d\,x]]}{d}-\frac{3\,a\,b\,\text{Cos}[c+d\,x]}{d}+\frac{a^2\,\text{Cot}[c+d\,x]}{d}-\frac{3\,b^2\,\text{Cot}[c+d\,x]}{2\,d}+\frac{b^2\,\text{Cos}[c+d\,x]^2\,\text{Cot}[c+d\,x]}{2\,d}-\frac{a\,b\,\text{Cos}[c+d\,x]\,\text{Cot}[c+d\,x]^2}{d}-\frac{a^2\,\text{Cot}[c+d\,x]^3}{3\,d}$$

Result (type 3, 293 leaves):

$$\frac{\left(2\,a^2-3\,b^2\right)(c+d\,x)}{2\,d}-\frac{2\,a\,b\,\text{Cos}[c+d\,x]}{d}+\frac{\left(4\,a^2\,\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-3\,b^2\,\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]\right)\text{Csc}\left[\frac{1}{2}(c+d\,x)\right]}{6\,d}-\frac{a\,b\,\text{Csc}\left[\frac{1}{2}(c+d\,x)\right]^2}{4\,d}-\frac{a^2\,\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\text{Csc}\left[\frac{1}{2}(c+d\,x)\right]^2}{24\,d}+\frac{3\,a\,b\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]\right]}{d}-\frac{3\,a\,b\,\text{Log}\left[\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]}{d}+\frac{a\,b\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2}{4\,d}+\frac{\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]\left(-4\,a^2\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]+3\,b^2\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)}{6\,d}-\frac{b^2\,\text{Sin}[2\,(c+d\,x)]}{4\,d}+\frac{a^2\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{24\,d}$$

- **Problem 1122: Result more than twice size of optimal antiderivative.**

$$\int \text{Cot}[c+d\,x]^4\,\text{Csc}[c+d\,x]\,(a+b\,\text{Sin}[c+d\,x])^3\,dx$$

Optimal (type 3, 187 leaves, 7 steps):

$$\frac{3}{2}\,b\left(2\,a^2-b^2\right)x-\frac{3\,a\left(a^2-12\,b^2\right)\text{ArcTanh}[\text{Cos}[c+d\,x]]}{8\,d}-\frac{b^2\left(73\,a^2-2\,b^2\right)\text{Cos}[c+d\,x]}{8\,a\,d}-\frac{13\,b^3\,\text{Cos}[c+d\,x]\,\text{Sin}[c+d\,x]}{4\,d}+\frac{17\,b\,\text{Cot}[c+d\,x]\,(a+b\,\text{Sin}[c+d\,x])^2}{8\,d}+\frac{5\,\text{Cot}[c+d\,x]\,\text{Csc}[c+d\,x]\,(a+b\,\text{Sin}[c+d\,x])^3}{8\,d}-\frac{\text{Cot}[c+d\,x]\,\text{Csc}[c+d\,x]^3\,(a+b\,\text{Sin}[c+d\,x])^4}{4\,a\,d}$$

Result (type 3, 381 leaves):

$$-\frac{3 b \left(-2 a^2+b^2\right) (c+d x)}{2 d}-\frac{3 a b^2 \operatorname{Cos}[c+d x]}{d}+\frac{\left(4 a^2 b \operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]-b^3 \operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]\right) \operatorname{Csc}\left[\frac{1}{2}(c+d x)\right]}{2 d}+$$
$$\frac{\left(5 a^3-12 a b^2\right) \operatorname{Csc}\left[\frac{1}{2}(c+d x)\right]^2}{32 d}-\frac{a^2 b \operatorname{Cot}\left[\frac{1}{2}(c+d x)\right] \operatorname{Csc}\left[\frac{1}{2}(c+d x)\right]^2}{8 d}-\frac{a^3 \operatorname{Csc}\left[\frac{1}{2}(c+d x)\right]^4}{64 d}-\frac{3\left(a^3-12 a b^2\right) \operatorname{Log}\left[\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]\right]}{8 d}+$$
$$\frac{3\left(a^3-12 a b^2\right) \operatorname{Log}\left[\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right]}{8 d}+\frac{\left(-5 a^3+12 a b^2\right) \operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^2}{32 d}+\frac{a^3 \operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^4}{64 d}+$$
$$\frac{\operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]\left(-4 a^2 b \operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]+b^3 \operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)}{2 d}-\frac{b^3 \operatorname{Sin}[2(c+d x)]}{4 d}+\frac{a^2 b \operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]}{8 d}$$

- **Problem 1135: Result more than twice size of optimal antiderivative.**

$$\int \frac{\operatorname{Cos}[c+d x]^4 \operatorname{Sin}[c+d x]^3}{(a+b \operatorname{Sin}[c+d x])^3} \, dx$$

Optimal (type 3, 331 leaves, 9 steps):

$$\frac{3\left(40 a^4-24 a^2 b^2+b^4\right) x}{8 b^7}-\frac{3 a\left(10 a^4-11 a^2 b^2+2 b^4\right) \operatorname{ArcTan}\left[\frac{b+a \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]}{\sqrt{a^2-b^2}}\right]}{b^7 \sqrt{a^2-b^2}\, d}+$$
$$\frac{a\left(30 a^2-13 b^2\right) \operatorname{Cos}[c+d x]}{2 b^6 d}-\frac{3\left(20 a^2-7 b^2\right) \operatorname{Cos}[c+d x] \operatorname{Sin}[c+d x]}{8 b^5 d}+\frac{\left(10 a^2-3 b^2\right) \operatorname{Cos}[c+d x] \operatorname{Sin}[c+d x]^2}{2 a b^4 d}-$$
$$\frac{\left(15 a^2-4 b^2\right) \operatorname{Cos}[c+d x] \operatorname{Sin}[c+d x]^3}{4 a^2 b^3 d}-\frac{\left(a^2-b^2\right) \operatorname{Cos}[c+d x] \operatorname{Sin}[c+d x]^4}{2 a b^2 d (a+b \operatorname{Sin}[c+d x])^2}+\frac{\left(7 a^2-2 b^2\right) \operatorname{Cos}[c+d x] \operatorname{Sin}[c+d x]^4}{2 a^2 b^2 d (a+b \operatorname{Sin}[c+d x])}$$

Result (type 3, 1264 leaves):

$$\frac{1}{128 b^3 d}$$
$$3\left(-8(c+d x)+\frac{2 a\left(8 a^4-20 a^2 b^2+15 b^4\right) \operatorname{ArcTan}\left[\frac{b+a \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]}{\sqrt{a^2-b^2}}\right]}{\left(a^2-b^2\right)^{5/2}}+\frac{a b\left(4 a^2-3 b^2\right) \operatorname{Cos}[c+d x]}{(a-b)(a+b)(a+b \operatorname{Sin}[c+d x])^2}-\frac{3 b\left(4 a^4-7 a^2 b^2+2 b^4\right) \operatorname{Cos}[c+d x]}{(a-b)^2(a+b)^2(a+b \operatorname{Sin}[c+d x])}\right)-$$
$$\frac{3\left(\frac{6 a b \operatorname{ArcTan}\left[\frac{b+a \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]}{\sqrt{a^2-b^2}}\right]}{\sqrt{a^2-b^2}}+\frac{\operatorname{Cos}[c+d x]\left(a\left(2 a^2+b^2\right)+b\left(a^2+2 b^2\right) \operatorname{Sin}[c+d x]\right)}{(a+b \operatorname{Sin}[c+d x])^2}\right)}{128(a-b)^2(a+b)^2 d}-\frac{1}{128 b^5 d}$$

$$\left(-24\left(-8a^2+b^2\right)(c+dx)-\frac{6a\left(64a^6-168a^4b^2+140a^2b^4-35b^6\right)\text{ArcTan}\left[\frac{b+a\,\text{Tan}\left[\frac{1}{2}(c+dx)\right]}{\sqrt{a^2-b^2}}\right]}{\left(a^2-b^2\right)^{5/2}}+96\,a\,b\,\text{Cos}[c+dx]+\right.$$

$$\left.\frac{a\,b\left(-16a^4+20a^2b^2-5b^4\right)\text{Cos}[c+dx]}{(a-b)(a+b)(a+b\,\text{Sin}[c+dx])^2}+\frac{b\left(112a^6-220a^4b^2+115a^2b^4-10b^6\right)\text{Cos}[c+dx]}{(a-b)^2(a+b)^2(a+b\,\text{Sin}[c+dx])}-8b^2\,\text{Sin}[2(c+dx)]\right)-$$

$$\frac{1}{256\,b^7\,d}\left(\frac{12a\left(640a^8-1920a^6b^2+2016a^4b^4-840a^2b^6+105b^8\right)\text{ArcTan}\left[\frac{b+a\,\text{Tan}\left[\frac{1}{2}(c+dx)\right]}{\sqrt{a^2-b^2}}\right]}{\left(a^2-b^2\right)^{5/2}}+\right.$$

$$\frac{1}{\left(a^2-b^2\right)^2(a+b\,\text{Sin}[c+dx])^2}\left(-3840a^{10}(c+dx)+7680a^8b^2(c+dx)-2976a^6b^4(c+dx)-1776a^4b^6(c+dx)+\right.$$
$$960a^2b^8(c+dx)-48b^{10}(c+dx)-3840a^9b\,\text{Cos}[c+dx]+8640a^7b^3\,\text{Cos}[c+dx]-5696a^5b^5\,\text{Cos}[c+dx]+$$
$$788a^3b^7\,\text{Cos}[c+dx]+114a\,b^9\,\text{Cos}[c+dx]+1920a^8b^2(c+dx)\text{Cos}[2(c+dx)]-4800a^6b^4(c+dx)\text{Cos}[2(c+dx)]+$$
$$3888a^4b^6(c+dx)\text{Cos}[2(c+dx)]-1056a^2b^8(c+dx)\text{Cos}[2(c+dx)]+48b^{10}(c+dx)\text{Cos}[2(c+dx)]+320a^7b^3\,\text{Cos}[3(c+dx)]-$$
$$760a^5b^5\,\text{Cos}[3(c+dx)]+560a^3b^7\,\text{Cos}[3(c+dx)]-120a\,b^9\,\text{Cos}[3(c+dx)]-8a^5b^5\,\text{Cos}[5(c+dx)]+16a^3b^7\,\text{Cos}[5(c+dx)]-$$
$$8a\,b^9\,\text{Cos}[5(c+dx)]-7680a^9b(c+dx)\text{Sin}[c+dx]+19200a^7b^3(c+dx)\text{Sin}[c+dx]-15552a^5b^5(c+dx)\text{Sin}[c+dx]+$$
$$4224a^3b^7(c+dx)\text{Sin}[c+dx]-192a\,b^9(c+dx)\text{Sin}[c+dx]-2880a^8b^2\,\text{Sin}[2(c+dx)]+6880a^6b^4\,\text{Sin}[2(c+dx)]-$$
$$5182a^4b^6\,\text{Sin}[2(c+dx)]+1221a^2b^8\,\text{Sin}[2(c+dx)]-36b^{10}\,\text{Sin}[2(c+dx)]-40a^6b^4\,\text{Sin}[4(c+dx)]+88a^4b^6\,\text{Sin}[4(c+dx)]-$$
$$\left.\left.56a^2b^8\,\text{Sin}[4(c+dx)]+8b^{10}\,\text{Sin}[4(c+dx)]+2a^4b^6\,\text{Sin}[6(c+dx)]-4a^2b^8\,\text{Sin}[6(c+dx)]+2b^{10}\,\text{Sin}[6(c+dx)]\right)\right)$$

- **Problem 1136: Result more than twice size of optimal antiderivative.**

$$\int\frac{\text{Cos}[c+dx]^4\,\text{Sin}[c+dx]^2}{(a+b\,\text{Sin}[c+dx])^3}\,dx$$

Optimal (type 3, 284 leaves, 8 steps) :

$$\frac{a\left(9-\frac{20a^2}{b^2}\right)x}{2b^4}+\frac{\left(20a^4-19a^2b^2+2b^4\right)\text{ArcTan}\left[\frac{b+a\,\text{Tan}\left[\frac{1}{2}(c+dx)\right]}{\sqrt{a^2-b^2}}\right]}{b^6\sqrt{a^2-b^2}\,d}-\frac{\left(60a^2-17b^2\right)\text{Cos}[c+dx]}{6b^5d}+\frac{\left(5a^2-b^2\right)\text{Cos}[c+dx]\,\text{Sin}[c+dx]}{a\,b^4d}-$$

$$\frac{\left(20a^2-3b^2\right)\text{Cos}[c+dx]\,\text{Sin}[c+dx]^2}{6a^2b^3d}-\frac{\left(a^2-b^2\right)\text{Cos}[c+dx]\,\text{Sin}[c+dx]^3}{2a\,b^2d\,(a+b\,\text{Sin}[c+dx])^2}+\frac{\left(6a^2-b^2\right)\text{Cos}[c+dx]\,\text{Sin}[c+dx]^3}{2a^2b^2d\,(a+b\,\text{Sin}[c+dx])}$$

Result (type 3, 1030 leaves):

$$\frac{1}{384d}\left(-\frac{1}{b^4}12\left(-48a(c+dx)+\frac{6\left(16a^6-40a^4b^2+30a^2b^4-5b^6\right)\text{ArcTan}\left[\frac{b+a\,\text{Tan}\left[\frac{1}{2}(c+dx)\right]}{\sqrt{a^2-b^2}}\right]}{\left(a^2-b^2\right)^{5/2}}-\right.\right.$$

$$\left.16b\,\text{Cos}[c+dx]+\frac{b\left(8a^4-8a^2b^2+b^4\right)\text{Cos}[c+dx]}{(a-b)(a+b)(a+b\,\text{Sin}[c+dx])^2}+\frac{a\,b\left(-40a^4+72a^2b^2-29b^4\right)\text{Cos}[c+dx]}{(a-b)^2(a+b)^2(a+b\,\text{Sin}[c+dx])}\right)+$$

$$12\left(\frac{2\left(2a^2+b^2\right)\text{ArcTan}\left[\frac{b+a\,\text{Tan}\left[\frac{1}{2}(c+dx)\right]}{\sqrt{a^2-b^2}}\right]}{\left(a^2-b^2\right)^{5/2}}+\frac{b\,\text{Cos}[c+dx]\left(4a^2-b^2+3a\,b\,\text{Sin}[c+dx]\right)}{(a-b)^2(a+b)^2(a+b\,\text{Sin}[c+dx])^2}\right)+$$

$$\frac{6\left(-\frac{6b^2\,\text{ArcTan}\left[\frac{b+a\,\text{Tan}\left[\frac{1}{2}(c+dx)\right]}{\sqrt{a^2-b^2}}\right]}{\sqrt{a^2-b^2}}+\frac{\text{Cos}[c+dx]\left(-b\left(2a^2+b^2\right)+a\left(2a^2-5b^2\right)\text{Sin}[c+dx]\right)}{(a+b\,\text{Sin}[c+dx])^2}\right)}{(a-b)^2(a+b)^2}-$$

$$\frac{1}{b^6}\left(-\frac{12\left(640a^8-1792a^6b^2+1680a^4b^4-560a^2b^6+35b^8\right)\text{ArcTan}\left[\frac{b+a\,\text{Tan}\left[\frac{1}{2}(c+dx)\right]}{\sqrt{a^2-b^2}}\right]}{\left(a^2-b^2\right)^{5/2}}+\frac{1}{\left(a^2-b^2\right)^2(a+b\,\text{Sin}[c+dx])^2}\right.$$

$$\left(3840a^9(c+dx)-6912a^7b^2(c+dx)+1728a^5b^4(c+dx)+1920a^3b^6(c+dx)-576a\,b^8(c+dx)+3840a^8b\,\text{Cos}[c+dx]-\right.$$
$$7872a^6b^3\,\text{Cos}[c+dx]+4256a^4b^5\,\text{Cos}[c+dx]-172a^2b^7\,\text{Cos}[c+dx]-70b^9\,\text{Cos}[c+dx]-1920a^7b^2(c+dx)\,\text{Cos}[2(c+dx)]+$$
$$4416a^5b^4(c+dx)\,\text{Cos}[2(c+dx)]-3072a^3b^6(c+dx)\,\text{Cos}[2(c+dx)]+576a\,b^8(c+dx)\,\text{Cos}[2(c+dx)]-$$

$320 a^6 b^3 \text{Cos}[3 (c + d x)] + 696 a^4 b^5 \text{Cos}[3 (c + d x)] - 432 a^2 b^7 \text{Cos}[3 (c + d x)] + 56 b^9 \text{Cos}[3 (c + d x)] + 8 a^4 b^5 \text{Cos}[5 (c + d x)] - 16 a^2 b^7 \text{Cos}[5 (c + d x)] + 8 b^9 \text{Cos}[5 (c + d x)] + 7680 a^8 b (c + d x) \text{Sin}[c + d x] - 17664 a^6 b^3 (c + d x) \text{Sin}[c + d x] + 12288 a^4 b^5 (c + d x) \text{Sin}[c + d x] - 2304 a^2 b^7 (c + d x) \text{Sin}[c + d x] + 2880 a^7 b^2 \text{Sin}[2 (c + d x)] - 6304 a^5 b^4 \text{Sin}[2 (c + d x)] + 4022 a^3 b^6 \text{Sin}[2 (c + d x)] - 607 a b^8 \text{Sin}[2 (c + d x)] + 40 a^5 b^4 \text{Sin}[4 (c + d x)] - 80 a^3 b^6 \text{Sin}[4 (c + d x)] + 40 a b^8 \text{Sin}[4 (c + d x)]\Big)\Bigg)$

■ Problem 1145: Result unnecessarily involves imaginary or complex numbers.

$$\int \text{Cos}[c + d x]^3 \text{Cot}[c + d x] \sqrt{a + b \text{Sin}[c + d x]} \, dx$$

Optimal (type 4, 338 leaves, 10 steps):

$$-\frac{2 \left(8 a^2 - 45 b^2\right) \text{Cos}[c + d x] \sqrt{a + b \text{Sin}[c + d x]}}{105 b^2 d} + \frac{8 a \text{Cos}[c + d x] (a + b \text{Sin}[c + d x])^{3/2}}{35 b^2 d} - \frac{2 \text{Cos}[c + d x] \text{Sin}[c + d x] (a + b \text{Sin}[c + d x])^{3/2}}{7 b d} + \frac{2 a \left(8 a^2 - 51 b^2\right) \text{EllipticE}\left[\frac{1}{2} \left(c - \frac{\pi}{2} + d x\right), \frac{2 b}{a+b}\right] \sqrt{a + b \text{Sin}[c + d x]}}{105 b^3 d \sqrt{\frac{a+b \text{Sin}[c+d x]}{a+b}}} - \frac{2 \left(8 a^4 - 53 a^2 b^2 - 60 b^4\right) \text{EllipticF}\left[\frac{1}{2} \left(c - \frac{\pi}{2} + d x\right), \frac{2 b}{a+b}\right] \sqrt{\frac{a+b \text{Sin}[c+d x]}{a+b}}}{105 b^3 d \sqrt{a + b \text{Sin}[c + d x]}} + \frac{2 a \text{EllipticPi}\left[2, \frac{1}{2} \left(c - \frac{\pi}{2} + d x\right), \frac{2 b}{a+b}\right] \sqrt{\frac{a+b \text{Sin}[c+d x]}{a+b}}}{d \sqrt{a + b \text{Sin}[c + d x]}}$$

Result (type 4, 435 leaves):

$$\frac{1}{210\, b^2\, d}\left(\frac{1}{b^2\sqrt{-\frac{1}{a+b}}}2\, i\, \left(-8\, a^2+51\, b^2\right)\left(-2\, a\, (a-b)\, \text{EllipticE}\left[i\, \text{ArcSinh}\left[\sqrt{-\frac{1}{a+b}}\sqrt{a+b\, \text{Sin}[c+d\, x]}\right],\frac{a+b}{a-b}\right]+b\left(-2\, a\, \text{EllipticF}\left[i\, \text{ArcSinh}\left[\sqrt{-\frac{1}{a+b}}\sqrt{a+b\, \text{Sin}[c+d\, x]}\right],\frac{a+b}{a-b}\right]+b\, \text{EllipticPi}\left[\frac{a+b}{a},\, i\, \text{ArcSinh}\left[\sqrt{-\frac{1}{a+b}}\sqrt{a+b\, \text{Sin}[c+d\, x]}\right],\frac{a+b}{a-b}\right]\right)\right)\text{Sec}[c+d\, x]\sqrt{-\frac{b\, (-1+\text{Sin}[c+d\, x])}{a+b}}\sqrt{\frac{b\, (1+\text{Sin}[c+d\, x])}{-a+b}}-\frac{8\, b\, \left(a^2+30\, b^2\right)\text{EllipticF}\left[\frac{1}{4}(-2\, c+\pi-2\, d\, x),\frac{2\, b}{a+b}\right]\sqrt{\frac{a+b\, \text{Sin}[c+d\, x]}{a+b}}}{\sqrt{a+b\, \text{Sin}[c+d\, x]}}-\frac{2\, a\, \left(8\, a^2+159\, b^2\right)\text{EllipticPi}\left[2,\frac{1}{4}(-2\, c+\pi-2\, d\, x),\frac{2\, b}{a+b}\right]\sqrt{\frac{a+b\, \text{Sin}[c+d\, x]}{a+b}}}{\sqrt{a+b\, \text{Sin}[c+d\, x]}}+2\, \text{Cos}[c+d\, x]\sqrt{a+b\, \text{Sin}[c+d\, x]}\left(8\, a^2+75\, b^2+15\, b^2\, \text{Cos}[2\, (c+d\, x)]-6\, a\, b\, \text{Sin}[c+d\, x]\right)\right)$$

- **Problem 1146: Result unnecessarily involves imaginary or complex numbers.**

$$\int \text{Cos}[c+d\, x]^2\, \text{Cot}[c+d\, x]^2\sqrt{a+b\, \text{Sin}[c+d\, x]}\, dx$$

Optimal (type 4, 323 leaves, 10 steps) :

$$\frac{\left(4 a^2+15 b^2\right) \text{Cos}[c+d x] \sqrt{a+b \text{Sin}[c+d x]}}{15 a b d}-\frac{2 \text{Cos}[c+d x] (a+b \text{Sin}[c+d x])^{3/2}}{5 b d}-\frac{\text{Cot}[c+d x] (a+b \text{Sin}[c+d x])^{3/2}}{a d}-\frac{\left(4 a^2+57 b^2\right) \text{EllipticE}\left[\frac{1}{2} \left(c-\frac{\pi}{2}+d x\right),\frac{2 b}{a+b}\right] \sqrt{a+b \text{Sin}[c+d x]}}{15 b^2 d \sqrt{\frac{a+b \text{Sin}[c+d x]}{a+b}}}+\frac{a \left(4 a^2+11 b^2\right) \text{EllipticF}\left[\frac{1}{2} \left(c-\frac{\pi}{2}+d x\right),\frac{2 b}{a+b}\right] \sqrt{\frac{a+b \text{Sin}[c+d x]}{a+b}}}{15 b^2 d \sqrt{a+b \text{Sin}[c+d x]}}+\frac{b \text{EllipticPi}\left[2,\frac{1}{2} \left(c-\frac{\pi}{2}+d x\right),\frac{2 b}{a+b}\right] \sqrt{\frac{a+b \text{Sin}[c+d x]}{a+b}}}{d \sqrt{a+b \text{Sin}[c+d x]}}$$

Result (type 4, 541 leaves) :

$$\frac{1}{60\,b\,d}\left(\frac{184\,a\,b\,\text{EllipticF}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right),\frac{2\,b}{a+b}\right]\sqrt{\frac{a+b\,\text{Sin}[c+d\,x]}{a+b}}}{\sqrt{a+b\,\text{Sin}[c+d\,x]}}-\right.$$

$$\frac{2\left(-4\,a^2-27\,b^2\right)\text{EllipticPi}\left[2,\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right),\frac{2\,b}{a+b}\right]\sqrt{\frac{a+b\,\text{Sin}[c+d\,x]}{a+b}}}{\sqrt{a+b\,\text{Sin}[c+d\,x]}}-\Bigg(2\,\text{i}\left(4\,a^2+57\,b^2\right)\text{Cos}[c+d\,x]\,\text{Cos}[2\,(c+d\,x)]$$

$$\left(2\,a\,(a-b)\,\text{EllipticE}\left[\text{i}\,\text{ArcSinh}\left[\sqrt{-\frac{1}{a+b}}\,\sqrt{a+b\,\text{Sin}[c+d\,x]}\right],\frac{a+b}{a-b}\right]+b\left(2\,a\,\text{EllipticF}\left[\text{i}\,\text{ArcSinh}\left[\sqrt{-\frac{1}{a+b}}\,\sqrt{a+b\,\text{Sin}[c+d\,x]}\right],\right.\right.\right.$$

$$\left.\left.\left.\frac{a+b}{a-b}\right]-b\,\text{EllipticPi}\left[\frac{a+b}{a},\text{i}\,\text{ArcSinh}\left[\sqrt{-\frac{1}{a+b}}\,\sqrt{a+b\,\text{Sin}[c+d\,x]}\right],\frac{a+b}{a-b}\right]\right)\right)\sqrt{\frac{b-b\,\text{Sin}[c+d\,x]}{a+b}}\,\sqrt{-\frac{b+b\,\text{Sin}[c+d\,x]}{a-b}}\Bigg)\Big/$$

$$\left(a\,\sqrt{-\frac{1}{a+b}}\,\sqrt{1-\text{Sin}[c+d\,x]^2}\,\left(-2\,a^2+b^2+4\,a\,(a+b\,\text{Sin}[c+d\,x])-2\,(a+b\,\text{Sin}[c+d\,x])^2\right)\right.$$

$$\left.\left.\sqrt{-\frac{a^2-b^2-2\,a\,(a+b\,\text{Sin}[c+d\,x])+(a+b\,\text{Sin}[c+d\,x])^2}{b^2}}\right)\right)+$$

$$\frac{\sqrt{a+b\,\text{Sin}[c+d\,x]}\,\left(-\frac{2\,a\,\text{Cos}[c+d\,x]}{15\,b}-\text{Cot}[c+d\,x]-\frac{1}{5}\,\text{Sin}[2\,(c+d\,x)]\right)}{d}$$

- **Problem 1147: Result unnecessarily involves imaginary or complex numbers.**

$$\int \text{Cos}[c+d\,x]\,\text{Cot}[c+d\,x]^3\,\sqrt{a+b\,\text{Sin}[c+d\,x]}\,dx$$

Optimal (type 4, 345 leaves, 10 steps):

$$-\frac{\left(8 a^2+3 b^2\right) \operatorname{Cos}[c+d x] \sqrt{a+b \operatorname{Sin}[c+d x]}}{12 a^2 d}+\frac{b \operatorname{Cot}[c+d x] (a+b \operatorname{Sin}[c+d x])^{3/2}}{4 a^2 d}-$$

$$\frac{\operatorname{Cot}[c+d x] \operatorname{Csc}[c+d x] (a+b \operatorname{Sin}[c+d x])^{3/2}}{2 a d}+\frac{\left(8 a^2-3 b^2\right) \operatorname{EllipticE}\left[\frac{1}{2}\left(c-\frac{\pi}{2}+d x\right), \frac{2 b}{a+b}\right] \sqrt{a+b \operatorname{Sin}[c+d x]}}{12 a b d \sqrt{\frac{a+b \operatorname{Sin}[c+d x]}{a+b}}}-$$

$$\frac{\left(8 a^2+31 b^2\right) \operatorname{EllipticF}\left[\frac{1}{2}\left(c-\frac{\pi}{2}+d x\right), \frac{2 b}{a+b}\right] \sqrt{\frac{a+b \operatorname{Sin}[c+d x]}{a+b}}}{12 b d \sqrt{a+b \operatorname{Sin}[c+d x]}}-\frac{\left(12 a^2+b^2\right) \operatorname{EllipticPi}\left[2, \frac{1}{2}\left(c-\frac{\pi}{2}+d x\right), \frac{2 b}{a+b}\right] \sqrt{\frac{a+b \operatorname{Sin}[c+d x]}{a+b}}}{4 a d \sqrt{a+b \operatorname{Sin}[c+d x]}}$$

Result (type 4, 547 leaves):

$$\frac{\left(-\frac{2}{3} \operatorname{Cos}[c+d x]-\frac{b \operatorname{Cot}[c+d x]}{4 a}-\frac{1}{2} \operatorname{Cot}[c+d x] \operatorname{Csc}[c+d x]\right) \sqrt{a+b \operatorname{Sin}[c+d x]}}{d}-$$

$$\frac{1}{48 a d}\left(-\frac{136 a b \operatorname{EllipticF}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right), \frac{2 b}{a+b}\right] \sqrt{\frac{a+b \operatorname{Sin}[c+d x]}{a+b}}}{\sqrt{a+b \operatorname{Sin}[c+d x]}}-\frac{2\left(64 a^2+9 b^2\right) \operatorname{EllipticPi}\left[2, \frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right), \frac{2 b}{a+b}\right] \sqrt{\frac{a+b \operatorname{Sin}[c+d x]}{a+b}}}{\sqrt{a+b \operatorname{Sin}[c+d x]}}-\right.$$

$$\left(2 i \left(8 a^2-3 b^2\right) \operatorname{Cos}[c+d x] \operatorname{Cos}[2 (c+d x)] \left(2 a (a-b) \operatorname{EllipticE}\left[i \operatorname{ArcSinh}\left[\sqrt{-\frac{1}{a+b}} \sqrt{a+b \operatorname{Sin}[c+d x]}\right], \frac{a+b}{a-b}\right]+b \left(2 a \operatorname{EllipticF}\left[\right.\right.\right.\right.$$

$$\left.\left.\left. i \operatorname{ArcSinh}\left[\sqrt{-\frac{1}{a+b}} \sqrt{a+b \operatorname{Sin}[c+d x]}\right], \frac{a+b}{a-b}\right]-b \operatorname{EllipticPi}\left[\frac{a+b}{a}, i \operatorname{ArcSinh}\left[\sqrt{-\frac{1}{a+b}} \sqrt{a+b \operatorname{Sin}[c+d x]}\right], \frac{a+b}{a-b}\right]\right)\right)$$

$$\left.\sqrt{\frac{b-b \operatorname{Sin}[c+d x]}{a+b}} \sqrt{-\frac{b+b \operatorname{Sin}[c+d x]}{a-b}}\right) \Big/ \left(a \sqrt{-\frac{1}{a+b}} \sqrt{1-\operatorname{Sin}[c+d x]^2} \left(-2 a^2+b^2+4 a (a+b \operatorname{Sin}[c+d x])-2 (a+b \operatorname{Sin}[c+d x])^2\right)\right.$$

$$\left.\left.\sqrt{-\frac{a^2-b^2-2 a (a+b \operatorname{Sin}[c+d x])+(a+b \operatorname{Sin}[c+d x])^2}{b^2}}\right)\right)$$

Problem 1148: Result unnecessarily involves imaginary or complex numbers.

$$\int \operatorname{Cot}[c+d x]^4 \sqrt{a+b \operatorname{Sin}[c+d x]}\, dx$$

Optimal (type 4, 351 leaves, 10 steps) :

$$\frac{\left(32 a^2-3 b^2\right) \text{Cot}[c+d x] \sqrt{a+b \text{Sin}[c+d x]}}{24 a^2 d}+\frac{b \text{Cot}[c+d x] \text{Csc}[c+d x] (a+b \text{Sin}[c+d x])^{3/2}}{4 a^2 d}-$$

$$\frac{\text{Cot}[c+d x] \text{Csc}[c+d x]^2 (a+b \text{Sin}[c+d x])^{3/2}}{3 a d}+\frac{\left(80 a^2+3 b^2\right) \text{EllipticE}\left[\frac{1}{2} \left(c-\frac{\pi }{2}+d x\right),\frac{2 b}{a+b}\right] \sqrt{a+b \text{Sin}[c+d x]}}{24 a^2 d \sqrt{\frac{a+b \text{Sin}[c+d x]}{a+b}}}-$$

$$\frac{\left(32 a^2+b^2\right) \text{EllipticF}\left[\frac{1}{2} \left(c-\frac{\pi }{2}+d x\right),\frac{2 b}{a+b}\right] \sqrt{\frac{a+b \text{Sin}[c+d x]}{a+b}}}{24 a d \sqrt{a+b \text{Sin}[c+d x]}}-\frac{b \left(12 a^2-b^2\right) \text{EllipticPi}\left[2,\frac{1}{2} \left(c-\frac{\pi }{2}+d x\right),\frac{2 b}{a+b}\right] \sqrt{\frac{a+b \text{Sin}[c+d x]}{a+b}}}{8 a^2 d \sqrt{a+b \text{Sin}[c+d x]}}$$

Result (type 4, 593 leaves) :

$$\frac{\left(\frac{\left(32 a^2 \text{Cos}[c+d x]+3 b^2 \text{Cos}[c+d x]\right) \text{Csc}[c+d x]}{24 a^2}-\frac{b \text{Cot}[c+d x] \text{Csc}[c+d x]}{12 a}-\frac{1}{3} \text{Cot}[c+d x] \text{Csc}[c+d x]^2\right) \sqrt{a+b \text{Sin}[c+d x]}}{d}+$$

$$\frac{1}{96 a^2 d}\left(-\frac{2 \left(96 a^3+4 a b^2\right) \text{EllipticF}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right),\frac{2 b}{a+b}\right] \sqrt{\frac{a+b \text{Sin}[c+d x]}{a+b}}}{\sqrt{a+b \text{Sin}[c+d x]}}-\right.$$

$$\frac{2 \left(8 a^2 b+9 b^3\right) \text{EllipticPi}\left[2,\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right),\frac{2 b}{a+b}\right] \sqrt{\frac{a+b \text{Sin}[c+d x]}{a+b}}}{\sqrt{a+b \text{Sin}[c+d x]}}-\left(2 i \left(-80 a^2 b-3 b^3\right) \text{Cos}[c+d x] \text{Cos}[2 (c+d x)]\right.$$

$$\left(2 a (a-b) \text{EllipticE}\left[i \text{ArcSinh}\left[\sqrt{-\frac{1}{a+b}} \sqrt{a+b \text{Sin}[c+d x]}\right],\frac{a+b}{a-b}\right]+b \left(2 a \text{EllipticF}\left[i \text{ArcSinh}\left[\sqrt{-\frac{1}{a+b}} \sqrt{a+b \text{Sin}[c+d x]}\right],\right.\right.\right.$$

$$\left.\left.\left.\frac{a+b}{a-b}\right]-b \text{EllipticPi}\left[\frac{a+b}{a},i \text{ArcSinh}\left[\sqrt{-\frac{1}{a+b}} \sqrt{a+b \text{Sin}[c+d x]}\right],\frac{a+b}{a-b}\right]\right)\right) \sqrt{\frac{b-b \text{Sin}[c+d x]}{a+b}} \sqrt{-\frac{b+b \text{Sin}[c+d x]}{a-b}}\Bigg) \Bigg/$$

$$\left(a \sqrt{-\frac{1}{a+b}} \sqrt{1-\text{Sin}[c+d x]^2} \left(-2 a^2+b^2+4 a (a+b \text{Sin}[c+d x])-2 (a+b \text{Sin}[c+d x])^2\right)\right.$$

$$\left.\left.\sqrt{-\frac{a^2-b^2-2 a (a+b \text{Sin}[c+d x])+(a+b \text{Sin}[c+d x])^2}{b^2}}\right)\right)$$

- **Problem 1149: Result unnecessarily involves imaginary or complex numbers.**

$$\int \text{Cot}[c+d x]^4 \text{Csc}[c+d x] \sqrt{a+b \text{Sin}[c+d x]}\, dx$$

Optimal (type 4, 412 leaves, 11 steps) :

$$\frac{b\left(68 a^2-15 b^2\right) \operatorname{Cot}[c+d x] \sqrt{a+b \operatorname{Sin}[c+d x]}}{192 a^3 d}+\frac{5\left(4 a^2-b^2\right) \operatorname{Cot}[c+d x] \operatorname{Csc}[c+d x] \sqrt{a+b \operatorname{Sin}[c+d x]}}{32 a^2 d}+$$

$$\frac{5 b \operatorname{Cot}[c+d x] \operatorname{Csc}[c+d x]^2 (a+b \operatorname{Sin}[c+d x])^{3/2}}{24 a^2 d}-\frac{\operatorname{Cot}[c+d x] \operatorname{Csc}[c+d x]^3 (a+b \operatorname{Sin}[c+d x])^{3/2}}{4 a d}+$$

$$\frac{b\left(68 a^2-15 b^2\right) \operatorname{EllipticE}\left[\frac{1}{2}\left(c-\frac{\pi}{2}+d x\right), \frac{2 b}{a+b}\right] \sqrt{a+b \operatorname{Sin}[c+d x]}}{192 a^3 d \sqrt{\frac{a+b \operatorname{Sin}[c+d x]}{a+b}}}+\frac{b\left(196 a^2+5 b^2\right) \operatorname{EllipticF}\left[\frac{1}{2}\left(c-\frac{\pi}{2}+d x\right), \frac{2 b}{a+b}\right] \sqrt{\frac{a+b \operatorname{Sin}[c+d x]}{a+b}}}{192 a^2 d \sqrt{a+b \operatorname{Sin}[c+d x]}}+$$

$$\frac{\left(48 a^4+24 a^2 b^2-5 b^4\right) \operatorname{EllipticPi}\left[2, \frac{1}{2}\left(c-\frac{\pi}{2}+d x\right), \frac{2 b}{a+b}\right] \sqrt{\frac{a+b \operatorname{Sin}[c+d x]}{a+b}}}{64 a^3 d \sqrt{a+b \operatorname{Sin}[c+d x]}}$$

Result (type 4, 643 leaves) :

$$\frac{1}{d}\left(\frac{\left(68\,a^2\,b\,\mathrm{Cos}[c+d\,x]-15\,b^3\,\mathrm{Cos}[c+d\,x]\right)\mathrm{Csc}[c+d\,x]}{192\,a^3}+\frac{5\left(12\,a^2\,\mathrm{Cos}[c+d\,x]+b^2\,\mathrm{Cos}[c+d\,x]\right)\mathrm{Csc}[c+d\,x]^2}{96\,a^2}-\frac{b\,\mathrm{Cot}[c+d\,x]\,\mathrm{Csc}[c+d\,x]^2}{24\,a}-\frac{1}{4}\,\mathrm{Cot}[c+d\,x]\,\mathrm{Csc}[c+d\,x]^3\right)\sqrt{a+b\,\mathrm{Sin}[c+d\,x]}+$$

$$\frac{1}{768\,a^3\,d}\left(-\frac{2\left(528\,a^3\,b-20\,a\,b^3\right)\mathrm{EllipticF}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right),\frac{2\,b}{a+b}\right]\sqrt{\frac{a+b\,\mathrm{Sin}[c+d\,x]}{a+b}}}{\sqrt{a+b\,\mathrm{Sin}[c+d\,x]}}-\right.$$

$$\frac{2\left(288\,a^4+212\,a^2\,b^2-45\,b^4\right)\mathrm{EllipticPi}\left[2,\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right),\frac{2\,b}{a+b}\right]\sqrt{\frac{a+b\,\mathrm{Sin}[c+d\,x]}{a+b}}}{\sqrt{a+b\,\mathrm{Sin}[c+d\,x]}}-$$

$$\left(2\,\mathrm{i}\left(-68\,a^2\,b^2+15\,b^4\right)\mathrm{Cos}[c+d\,x]\,\mathrm{Cos}[2\,(c+d\,x)]\left(2\,a\,(a-b)\,\mathrm{EllipticE}\left[\mathrm{i}\,\mathrm{ArcSinh}\left[\sqrt{-\frac{1}{a+b}}\,\sqrt{a+b\,\mathrm{Sin}[c+d\,x]}\right],\frac{a+b}{a-b}\right]+\right.\right.$$

$$b\left(2\,a\,\mathrm{EllipticF}\left[\mathrm{i}\,\mathrm{ArcSinh}\left[\sqrt{-\frac{1}{a+b}}\,\sqrt{a+b\,\mathrm{Sin}[c+d\,x]}\right],\frac{a+b}{a-b}\right]-b\,\mathrm{EllipticPi}\left[\frac{a+b}{a},\mathrm{i}\,\mathrm{ArcSinh}\left[\sqrt{-\frac{1}{a+b}}\,\sqrt{a+b\,\mathrm{Sin}[c+d\,x]}\right],\right.\right.$$

$$\left.\left.\left.\frac{a+b}{a-b}\right]\right)\right)\sqrt{\frac{b-b\,\mathrm{Sin}[c+d\,x]}{a+b}}\,\sqrt{-\frac{b+b\,\mathrm{Sin}[c+d\,x]}{a-b}}\right)\Bigg/\left(a\,\sqrt{-\frac{1}{a+b}}\,\sqrt{1-\mathrm{Sin}[c+d\,x]^2}\right.$$

$$\left.\left.\left(-2\,a^2+b^2+4\,a\,(a+b\,\mathrm{Sin}[c+d\,x])-2\,(a+b\,\mathrm{Sin}[c+d\,x])^2\right)\sqrt{-\frac{a^2-b^2-2\,a\,(a+b\,\mathrm{Sin}[c+d\,x])+(a+b\,\mathrm{Sin}[c+d\,x])^2}{b^2}}\right)\right)$$

- **Problem 1150: Result unnecessarily involves imaginary or complex numbers.**

$$\int \mathrm{Cot}[c+d\,x]^4\,\mathrm{Csc}[c+d\,x]^2\,\sqrt{a+b\,\mathrm{Sin}[c+d\,x]}\,dx$$

Optimal (type 4, 484 leaves, 12 steps) :

$$-\frac{\left(384 a^4+332 a^2 b^2-105 b^4\right) \operatorname{Cot}[c+d x] \sqrt{a+b \operatorname{Sin}[c+d x]}}{1920 a^4 d}+\frac{b\left(108 a^2-35 b^2\right) \operatorname{Cot}[c+d x] \operatorname{Csc}[c+d x] \sqrt{a+b \operatorname{Sin}[c+d x]}}{960 a^3 d}+$$

$$\frac{\left(96 a^2-35 b^2\right) \operatorname{Cot}[c+d x] \operatorname{Csc}[c+d x]^2 \sqrt{a+b \operatorname{Sin}[c+d x]}}{240 a^2 d}+\frac{7 b \operatorname{Cot}[c+d x] \operatorname{Csc}[c+d x]^3 (a+b \operatorname{Sin}[c+d x])^{3/2}}{40 a^2 d}-$$

$$\frac{\operatorname{Cot}[c+d x] \operatorname{Csc}[c+d x]^4 (a+b \operatorname{Sin}[c+d x])^{3/2}}{5 a d}-\frac{\left(384 a^4+332 a^2 b^2-105 b^4\right) \operatorname{EllipticE}\left[\frac{1}{2}\left(c-\frac{\pi}{2}+d x\right), \frac{2 b}{a+b}\right] \sqrt{a+b \operatorname{Sin}[c+d x]}}{1920 a^4 d \sqrt{\frac{a+b \operatorname{Sin}[c+d x]}{a+b}}}+$$

$$\frac{\left(384 a^4+116 a^2 b^2-35 b^4\right) \operatorname{EllipticF}\left[\frac{1}{2}\left(c-\frac{\pi}{2}+d x\right), \frac{2 b}{a+b}\right] \sqrt{\frac{a+b \operatorname{Sin}[c+d x]}{a+b}}}{1920 a^3 d \sqrt{a+b \operatorname{Sin}[c+d x]}}+$$

$$\frac{b\left(48 a^4-24 a^2 b^2+7 b^4\right) \operatorname{EllipticPi}\left[2, \frac{1}{2}\left(c-\frac{\pi}{2}+d x\right), \frac{2 b}{a+b}\right] \sqrt{\frac{a+b \operatorname{Sin}[c+d x]}{a+b}}}{128 a^4 d \sqrt{a+b \operatorname{Sin}[c+d x]}}$$

Result (type 4, 702 leaves) :

$$\frac{1}{d}\left(\frac{\left(-384\,a^4\,\text{Cos}[c+d\,x]-332\,a^2\,b^2\,\text{Cos}[c+d\,x]+105\,b^4\,\text{Cos}[c+d\,x]\right)\,\text{Csc}[c+d\,x]}{1920\,a^4}+\frac{\left(108\,a^2\,b\,\text{Cos}[c+d\,x]-35\,b^3\,\text{Cos}[c+d\,x]\right)\,\text{Csc}[c+d\,x]^2}{960\,a^3}+\frac{\left(96\,a^2\,\text{Cos}[c+d\,x]+7\,b^2\,\text{Cos}[c+d\,x]\right)\,\text{Csc}[c+d\,x]^3}{240\,a^2}-\frac{b\,\text{Cot}[c+d\,x]\,\text{Csc}[c+d\,x]^3}{40\,a}-\frac{1}{5}\,\text{Cot}[c+d\,x]\,\text{Csc}[c+d\,x]^4\right)\,\sqrt{a+b\,\text{Sin}[c+d\,x]}+$$

$$\frac{1}{7680\,a^4\,d}\,b\left(-\frac{2\,\left(-432\,a^3\,b+140\,a\,b^3\right)\,\text{EllipticF}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right),\frac{2\,b}{a+b}\right]\,\sqrt{\frac{a+b\,\text{Sin}[c+d\,x]}{a+b}}}{\sqrt{a+b\,\text{Sin}[c+d\,x]}}-\frac{2\,\left(1056\,a^4-1052\,a^2\,b^2+315\,b^4\right)\,\text{EllipticPi}\left[2,\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right),\frac{2\,b}{a+b}\right]\,\sqrt{\frac{a+b\,\text{Sin}[c+d\,x]}{a+b}}}{\sqrt{a+b\,\text{Sin}[c+d\,x]}}-\right.$$

$$\left(2\,i\,\left(384\,a^4+332\,a^2\,b^2-105\,b^4\right)\,\text{Cos}[c+d\,x]\,\text{Cos}[2\,(c+d\,x)]\left(2\,a\,(a-b)\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[\sqrt{-\frac{1}{a+b}}\,\sqrt{a+b\,\text{Sin}[c+d\,x]}\right],\frac{a+b}{a-b}\right]+b\left(2\,a\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[\sqrt{-\frac{1}{a+b}}\,\sqrt{a+b\,\text{Sin}[c+d\,x]}\right],\frac{a+b}{a-b}\right]-b\,\text{EllipticPi}\left[\frac{a+b}{a},i\,\text{ArcSinh}\left[\sqrt{-\frac{1}{a+b}}\,\sqrt{a+b\,\text{Sin}[c+d\,x]}\right],\frac{a+b}{a-b}\right]\right)\right)\sqrt{\frac{b-b\,\text{Sin}[c+d\,x]}{a+b}}\,\sqrt{-\frac{b+b\,\text{Sin}[c+d\,x]}{a-b}}\right)\Bigg/\left(a\,\sqrt{-\frac{1}{a+b}}\,\sqrt{1-\text{Sin}[c+d\,x]^2}\right.$$

$$\left.\left.\left(-2\,a^2+b^2+4\,a\,(a+b\,\text{Sin}[c+d\,x])-2\,(a+b\,\text{Sin}[c+d\,x])^2\right)\,\sqrt{-\frac{a^2-b^2-2\,a\,(a+b\,\text{Sin}[c+d\,x])+(a+b\,\text{Sin}[c+d\,x])^2}{b^2}}\right)\right)$$

Problem 1151: Result more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d\,x]^4\,\text{Sin}[c+d\,x]^2\,(a+b\,\text{Sin}[c+d\,x])^{3/2}\,dx$$

Optimal (type 4, 528 leaves, 11 steps):

$$\frac{8\left(64 a^6-174 a^4 b^2+81 a^2 b^4-195 b^6\right) \operatorname{Cos}[c+d x] \sqrt{a+b \operatorname{Sin}[c+d x]}}{45045 b^5 d}+$$

$$\frac{16 a\left(32 a^4-47 a^2 b^2-27 b^4\right) \operatorname{Cos}[c+d x](a+b \operatorname{Sin}[c+d x])^{3/2}}{45045 b^5 d}-\frac{8\left(160 a^4-375 a^2 b^2+117 b^4\right) \operatorname{Cos}[c+d x](a+b \operatorname{Sin}[c+d x])^{5/2}}{45045 b^5 d}+$$

$$\frac{8 a\left(8 a^2-21 b^2\right) \operatorname{Cos}[c+d x] \operatorname{Sin}[c+d x](a+b \operatorname{Sin}[c+d x])^{5/2}}{1287 b^4 d}-\frac{2\left(80 a^2-221 b^2\right) \operatorname{Cos}[c+d x] \operatorname{Sin}[c+d x]^2(a+b \operatorname{Sin}[c+d x])^{5/2}}{2145 b^3 d}+$$

$$\frac{4 a \operatorname{Cos}[c+d x] \operatorname{Sin}[c+d x]^3(a+b \operatorname{Sin}[c+d x])^{5/2}}{39 b^2 d}-\frac{2 \operatorname{Cos}[c+d x] \operatorname{Sin}[c+d x]^4(a+b \operatorname{Sin}[c+d x])^{5/2}}{15 b d}-$$

$$\frac{16 a\left(32 a^6-111 a^4 b^2+102 a^2 b^4-471 b^6\right) \operatorname{EllipticE}\left[\frac{1}{2}\left(c-\frac{\pi}{2}+d x\right), \frac{2 b}{a+b}\right] \sqrt{a+b \operatorname{Sin}[c+d x]}}{45045 b^6 d \sqrt{\frac{a+b \operatorname{Sin}[c+d x]}{a+b}}}+$$

$$\frac{8\left(64 a^8-238 a^6 b^2+255 a^4 b^4-276 a^2 b^6+195 b^8\right) \operatorname{EllipticF}\left[\frac{1}{2}\left(c-\frac{\pi}{2}+d x\right), \frac{2 b}{a+b}\right] \sqrt{\frac{a+b \operatorname{Sin}[c+d x]}{a+b}}}{45045 b^6 d \sqrt{a+b \operatorname{Sin}[c+d x]}}$$

Result (type 4, 1987 leaves) :

$$-\frac{a \operatorname{EllipticE}\left[\frac{1}{4}(-2 c+\pi-2 d x), \frac{2 b}{a+b}\right] \sqrt{a+b \operatorname{Sin}[c+d x]}}{8 d \sqrt{\frac{a+b \operatorname{Sin}[c+d x]}{a+b}}}-\frac{1}{24 d \sqrt{a+b \operatorname{Sin}[c+d x]}}$$

$$\left(b \operatorname{Cos}[c+d x](a+b \operatorname{Sin}[c+d x])+a(a+b) \operatorname{EllipticE}\left[\frac{1}{4}(-2 c+\pi-2 d x), \frac{2 b}{a+b}\right] \sqrt{\frac{a+b \operatorname{Sin}[c+d x]}{a+b}}-\right.$$

$$\left.\left(a^2-b^2\right) \operatorname{EllipticF}\left[\frac{1}{4}(-2 c+\pi-2 d x), \frac{2 b}{a+b}\right] \sqrt{\frac{a+b \operatorname{Sin}[c+d x]}{a+b}}\right)+$$

$$\left(a\left(-2\left(4 a^3+4 a^2 b-3 a b^2-3 b^3\right) \operatorname{EllipticE}\left[\frac{1}{4}(-2 c+\pi-2 d x), \frac{2 b}{a+b}\right] \sqrt{\frac{a+b \operatorname{Sin}[c+d x]}{a+b}}+8 a\left(a^2-b^2\right) \operatorname{EllipticF}\left[\frac{1}{4}(-2 c+\pi-2 d x), \frac{2 b}{a+b}\right]\right.\right.$$

$$\left.\left.\sqrt{\frac{a+b \operatorname{Sin}[c+d x]}{a+b}}+2 b \operatorname{Cos}[c+d x]\left(2 a^2+3 b^2-3 b^2 \operatorname{Cos}[2(c+d x)]+8 a b \operatorname{Sin}[c+d x]\right)\right)\right) \Big/ \left(480 b^2 d \sqrt{a+b \operatorname{Sin}[c+d x]}\right)+$$

$$\left(2\,a\,\left(16\,a^3+16\,a^2\,b+3\,a\,b^2+3\,b^3\right)\,\text{EllipticE}\left[\frac{1}{4}\,(-2\,c+\pi-2\,d\,x),\,\frac{2\,b}{a+b}\right]\,\sqrt{\frac{a+b\,\text{Sin}[c+d\,x]}{a+b}}\,-\right.$$

$$2\,\left(16\,a^4-a^2\,b^2-15\,b^4\right)\,\text{EllipticF}\left[\frac{1}{4}\,(-2\,c+\pi-2\,d\,x),\,\frac{2\,b}{a+b}\right]\,\sqrt{\frac{a+b\,\text{Sin}[c+d\,x]}{a+b}}\,+b\,\text{Cos}[c+d\,x]$$

$$\left.\left(-16\,a^3+66\,a\,b^2-36\,a\,b^2\,\text{Cos}[2\,(c+d\,x)]+\left(-4\,a^2\,b+75\,b^3\right)\,\text{Sin}[c+d\,x]-15\,b^3\,\text{Sin}[3\,(c+d\,x)]\right)\right)\Big/\left(3360\,b^2\,d\,\sqrt{a+b\,\text{Sin}[c+d\,x]}\right)+$$

$$\frac{1}{2520\,b^4\,d\,\sqrt{a+b\,\text{Sin}[c+d\,x]}}\,a\,\left(b\,\left(-32\,a^3\,b+27\,a\,b^3\right)\,\text{EllipticF}\left[\frac{1}{4}\,(-2\,c+\pi-2\,d\,x),\,\frac{2\,b}{a+b}\right]\,\sqrt{\frac{a+b\,\text{Sin}[c+d\,x]}{a+b}}\,-\right.$$

$$\left(128\,a^4-144\,a^2\,b^2+21\,b^4\right)\,\left((a+b)\,\text{EllipticE}\left[\frac{1}{4}\,(-2\,c+\pi-2\,d\,x),\,\frac{2\,b}{a+b}\right]-a\,\text{EllipticF}\left[\frac{1}{4}\,(-2\,c+\pi-2\,d\,x),\,\frac{2\,b}{a+b}\right]\right)\,\sqrt{\frac{a+b\,\text{Sin}[c+d\,x]}{a+b}}\,-$$

$$\left.2\,b\,\text{Cos}[c+d\,x]\,(a+b\,\text{Sin}[c+d\,x])\,\left(-32\,a^3+22\,a\,b^2+10\,a\,b^2\,\text{Cos}[2\,(c+d\,x)]+b\,\left(24\,a^2-49\,b^2\right)\,\text{Sin}[c+d\,x]+35\,b^3\,\text{Sin}[3\,(c+d\,x)]\right)\right)-$$

$$\frac{1}{55\,440\,b^4\,d\,\sqrt{a+b\,\text{Sin}[c+d\,x]}}\,\left(-2\,a\,\left(1024\,a^5+1024\,a^4\,b-864\,a^3\,b^2-864\,a^2\,b^3-93\,a\,b^4-93\,b^5\right)\,\text{EllipticE}\left[\frac{1}{4}\,(-2\,c+\pi-2\,d\,x),\,\frac{2\,b}{a+b}\right]\right.$$

$$\sqrt{\frac{a+b\,\text{Sin}[c+d\,x]}{a+b}}\,+2\,\left(1024\,a^6-1120\,a^4\,b^2+51\,a^2\,b^4+45\,b^6\right)\,\text{EllipticF}\left[\frac{1}{4}\,(-2\,c+\pi-2\,d\,x),\,\frac{2\,b}{a+b}\right]\,\sqrt{\frac{a+b\,\text{Sin}[c+d\,x]}{a+b}}\,-$$

$$b\,\text{Cos}[c+d\,x]\,\left(-1024\,a^5+800\,a^3\,b^2+1034\,a\,b^4-32\,\left(2\,a^3\,b^2+57\,a\,b^4\right)\,\text{Cos}[2\,(c+d\,x)]+700\,a\,b^4\,\text{Cos}[4\,(c+d\,x)]-256\,a^4\,b\,\text{Sin}[c+d\,x]+\right.$$

$$\left.\left.164\,a^2\,b^3\,\text{Sin}[c+d\,x]+1980\,b^5\,\text{Sin}[c+d\,x]+20\,a^2\,b^3\,\text{Sin}[3\,(c+d\,x)]-1215\,b^5\,\text{Sin}[3\,(c+d\,x)]+315\,b^5\,\text{Sin}[5\,(c+d\,x)]\right)\right)-$$

$$\frac{1}{720\,720\,b^6\,d\,\sqrt{a+b\,\text{Sin}[c+d\,x]}}\,a\,\left(-b\,\left(10\,240\,a^5\,b-13\,504\,a^3\,b^3+3579\,a\,b^5\right)\,\text{EllipticF}\left[\frac{1}{4}\,(-2\,c+\pi-2\,d\,x),\,\frac{2\,b}{a+b}\right]\,\sqrt{\frac{a+b\,\text{Sin}[c+d\,x]}{a+b}}\,-\right.$$

$$\left(40\,960\,a^6-65\,536\,a^4\,b^2+26\,508\,a^2\,b^4-1617\,b^6\right)$$

$$\left((a+b)\,\text{EllipticE}\left[\frac{1}{4}\,(-2\,c+\pi-2\,d\,x),\,\frac{2\,b}{a+b}\right]-a\,\text{EllipticF}\left[\frac{1}{4}\,(-2\,c+\pi-2\,d\,x),\,\frac{2\,b}{a+b}\right]\right)\,\sqrt{\frac{a+b\,\text{Sin}[c+d\,x]}{a+b}}\,+$$

$$b\,(a+b\,\mathrm{Sin}[c+d\,x])\,\Big(2\,a\,(10\,240\,a^4-13\,504\,a^2\,b^2+3579\,b^4)\,\mathrm{Cos}[c+d\,x]-10\,a\,b^2\,(320\,a^2-257\,b^2)\,\mathrm{Cos}[3\,(c+d\,x)]+630\,a\,b^4\,\mathrm{Cos}[5\,(c+d\,x)]-$$
$$2\,b\,(3840\,a^4-4064\,a^2\,b^2+539\,b^4)\,\mathrm{Sin}[2\,(c+d\,x)]+70\,b^3\,(20\,a^2-11\,b^2)\,\mathrm{Sin}[4\,(c+d\,x)]+3465\,b^5\,\mathrm{Sin}[6\,(c+d\,x)]\Big)\Bigg)-$$

$$\frac{1}{1\,441\,440\,b^6\,d\,\sqrt{a+b\,\mathrm{Sin}[c+d\,x]}}\Bigg(2\,a\,(32\,768\,a^7+32\,768\,a^6\,b-47\,104\,a^5\,b^2-47\,104\,a^4\,b^3+13\,968\,a^3\,b^4+13\,968\,a^2\,b^5+711\,a\,b^6+711\,b^7)$$
$$\mathrm{EllipticE}\Big[\frac{1}{4}\,(-2\,c+\pi-2\,d\,x),\,\frac{2\,b}{a+b}\Big]\,\sqrt{\frac{a+b\,\mathrm{Sin}[c+d\,x]}{a+b}}\,-$$
$$2\,(32\,768\,a^8-55\,296\,a^6\,b^2+23\,440\,a^4\,b^4-717\,a^2\,b^6-195\,b^8)\,\mathrm{EllipticF}\Big[\frac{1}{4}\,(-2\,c+\pi-2\,d\,x),\,\frac{2\,b}{a+b}\Big]\,\sqrt{\frac{a+b\,\mathrm{Sin}[c+d\,x]}{a+b}}\,+$$
$$b\,\mathrm{Cos}[c+d\,x]\,\Big(-32\,768\,a^7+45\,056\,a^5\,b^2-12\,208\,a^3\,b^4+7018\,a\,b^6-16\,(128\,a^5\,b^2-124\,a^3\,b^4+969\,a\,b^6)\,\mathrm{Cos}[2\,(c+d\,x)]+$$
$$112\,(2\,a^3\,b^4+137\,a\,b^6)\,\mathrm{Cos}[4\,(c+d\,x)]-6468\,a\,b^6\,\mathrm{Cos}[6\,(c+d\,x)]-8192\,a^6\,b\,\mathrm{Sin}[c+d\,x]+10\,112\,a^4\,b^3\,\mathrm{Sin}[c+d\,x]-$$
$$1796\,a^2\,b^5\,\mathrm{Sin}[c+d\,x]+15\,444\,b^7\,\mathrm{Sin}[c+d\,x]+640\,a^4\,b^3\,\mathrm{Sin}[3\,(c+d\,x)]-452\,a^2\,b^5\,\mathrm{Sin}[3\,(c+d\,x)]-$$
$$15\,756\,b^7\,\mathrm{Sin}[3\,(c+d\,x)]-84\,a^2\,b^5\,\mathrm{Sin}[5\,(c+d\,x)]+10\,647\,b^7\,\mathrm{Sin}[5\,(c+d\,x)]-3003\,b^7\,\mathrm{Sin}[7\,(c+d\,x)]\Big)\Bigg)$$

- **Problem 1153: Result unnecessarily involves imaginary or complex numbers.**

$$\int \mathrm{Cos}[c+d\,x]^3\,\mathrm{Cot}[c+d\,x]\,(a+b\,\mathrm{Sin}[c+d\,x])^{3/2}\,dx$$

Optimal (type 4, 390 leaves, 11 steps):

$$-\frac{2\,a\,(8\,a^2-87\,b^2)\,\mathrm{Cos}[c+d\,x]\,\sqrt{a+b\,\mathrm{Sin}[c+d\,x]}}{315\,b^2\,d}-\frac{2\,(8\,a^2-77\,b^2)\,\mathrm{Cos}[c+d\,x]\,(a+b\,\mathrm{Sin}[c+d\,x])^{3/2}}{315\,b^2\,d}+\frac{8\,a\,\mathrm{Cos}[c+d\,x]\,(a+b\,\mathrm{Sin}[c+d\,x])^{5/2}}{63\,b^2\,d}-$$
$$\frac{2\,\mathrm{Cos}[c+d\,x]\,\mathrm{Sin}[c+d\,x]\,(a+b\,\mathrm{Sin}[c+d\,x])^{5/2}}{9\,b\,d}+\frac{2\,(8\,a^4-93\,a^2\,b^2+84\,b^4)\,\mathrm{EllipticE}\Big[\frac{1}{2}\,(c-\frac{\pi}{2}+d\,x),\,\frac{2\,b}{a+b}\Big]\,\sqrt{a+b\,\mathrm{Sin}[c+d\,x]}}{315\,b^3\,d\,\sqrt{\frac{a+b\,\mathrm{Sin}[c+d\,x]}{a+b}}}-$$
$$\frac{2\,a\,(8\,a^4-95\,a^2\,b^2-228\,b^4)\,\mathrm{EllipticF}\Big[\frac{1}{2}\,(c-\frac{\pi}{2}+d\,x),\,\frac{2\,b}{a+b}\Big]\,\sqrt{\frac{a+b\,\mathrm{Sin}[c+d\,x]}{a+b}}}{315\,b^3\,d\,\sqrt{a+b\,\mathrm{Sin}[c+d\,x]}}+\frac{2\,a^2\,\mathrm{EllipticPi}\Big[2,\,\frac{1}{2}\,(c-\frac{\pi}{2}+d\,x),\,\frac{2\,b}{a+b}\Big]\,\sqrt{\frac{a+b\,\mathrm{Sin}[c+d\,x]}{a+b}}}{d\,\sqrt{a+b\,\mathrm{Sin}[c+d\,x]}}$$

Result (type 4, 611 leaves):

$$-\frac{1}{630\,b^2\,d}\left(-\frac{2\left(-4\,a^3\,b-624\,a\,b^3\right)\text{EllipticF}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right),\frac{2\,b}{a+b}\right]\sqrt{\frac{a+b\,\text{Sin}[c+d\,x]}{a+b}}}{\sqrt{a+b\,\text{Sin}[c+d\,x]}}-\right.$$

$$\frac{2\left(-8\,a^4-537\,a^2\,b^2-84\,b^4\right)\text{EllipticPi}\left[2,\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right),\frac{2\,b}{a+b}\right]\sqrt{\frac{a+b\,\text{Sin}[c+d\,x]}{a+b}}}{\sqrt{a+b\,\text{Sin}[c+d\,x]}}-$$

$$\left(2\,i\left(8\,a^4-93\,a^2\,b^2+84\,b^4\right)\text{Cos}[c+d\,x]\,\text{Cos}[2\,(c+d\,x)]\left(2\,a\,(a-b)\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[\sqrt{-\frac{1}{a+b}}\,\sqrt{a+b\,\text{Sin}[c+d\,x]}\right],\frac{a+b}{a-b}\right]+\right.\right.$$

$$b\left(2\,a\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[\sqrt{-\frac{1}{a+b}}\,\sqrt{a+b\,\text{Sin}[c+d\,x]}\right],\frac{a+b}{a-b}\right]-\right.$$

$$\left.\left.b\,\text{EllipticPi}\left[\frac{a+b}{a},i\,\text{ArcSinh}\left[\sqrt{-\frac{1}{a+b}}\,\sqrt{a+b\,\text{Sin}[c+d\,x]}\right],\frac{a+b}{a-b}\right]\right)\right)\sqrt{\frac{b-b\,\text{Sin}[c+d\,x]}{a+b}}\,\sqrt{-\frac{b+b\,\text{Sin}[c+d\,x]}{a-b}}\Bigg)\Bigg/$$

$$\left(a\sqrt{-\frac{1}{a+b}}\,\sqrt{1-\text{Sin}[c+d\,x]^2}\,\left(-2\,a^2+b^2+4\,a\,(a+b\,\text{Sin}[c+d\,x])-2\,(a+b\,\text{Sin}[c+d\,x])^2\right)\right.$$

$$\left.\left.\sqrt{-\frac{a^2-b^2-2\,a\,(a+b\,\text{Sin}[c+d\,x])+(a+b\,\text{Sin}[c+d\,x])^2}{b^2}}\right)\right)+\frac{1}{d}$$

$$\sqrt{a+b\,\text{Sin}[c+d\,x]}\left(\frac{a\left(8\,a^2+303\,b^2\right)\text{Cos}[c+d\,x]}{315\,b^2}+\frac{5}{63}\,a\,\text{Cos}[3\,(c+d\,x)]+\frac{\left(-6\,a^2+119\,b^2\right)\text{Sin}[2\,(c+d\,x)]}{630\,b}+\right.$$

$$\left.\frac{1}{36}\,b\,\text{Sin}[4\,(c+d\,x)]\right)$$

- **Problem 1154: Result unnecessarily involves imaginary or complex numbers.**

$$\int\text{Cos}[c+d\,x]^2\,\text{Cot}[c+d\,x]^2\,(a+b\,\text{Sin}[c+d\,x])^{3/2}\,dx$$

Optimal (type 4, 374 leaves, 11 steps) :

$$\frac{\left(4 a^2+65 b^2\right) \operatorname{Cos}[c+d x] \sqrt{a+b \operatorname{Sin}[c+d x]}}{35 b d}+\frac{\left(4 a^2+35 b^2\right) \operatorname{Cos}[c+d x] (a+b \operatorname{Sin}[c+d x])^{3/2}}{35 a b d}-\frac{2 \operatorname{Cos}[c+d x] (a+b \operatorname{Sin}[c+d x])^{5/2}}{7 b d}-$$

$$\frac{\operatorname{Cot}[c+d x] (a+b \operatorname{Sin}[c+d x])^{5/2}}{a d}-\frac{a \left(4 a^2+167 b^2\right) \operatorname{EllipticE}\left[\frac{1}{2}\left(c-\frac{\pi}{2}+d x\right), \frac{2 b}{a+b}\right] \sqrt{a+b \operatorname{Sin}[c+d x]}}{35 b^2 d \sqrt{\frac{a+b \operatorname{Sin}[c+d x]}{a+b}}}+$$

$$\frac{\left(4 a^4+61 a^2 b^2+40 b^4\right) \operatorname{EllipticF}\left[\frac{1}{2}\left(c-\frac{\pi}{2}+d x\right), \frac{2 b}{a+b}\right] \sqrt{\frac{a+b \operatorname{Sin}[c+d x]}{a+b}}}{35 b^2 d \sqrt{a+b \operatorname{Sin}[c+d x]}}+\frac{3 a b \operatorname{EllipticPi}\left[2, \frac{1}{2}\left(c-\frac{\pi}{2}+d x\right), \frac{2 b}{a+b}\right] \sqrt{\frac{a+b \operatorname{Sin}[c+d x]}{a+b}}}{d \sqrt{a+b \operatorname{Sin}[c+d x]}}$$

Result (type 4, 578 leaves) :

$$\frac{1}{140\,b\,d}\left(-\frac{2\left(-212\,a^2\,b+80\,b^3\right)\text{EllipticF}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right),\frac{2\,b}{a+b}\right]\sqrt{\frac{a+b\,\text{Sin}[c+d\,x]}{a+b}}}{\sqrt{a+b\,\text{Sin}[c+d\,x]}}-\right.$$

$$\frac{2\left(-4\,a^3+43\,a\,b^2\right)\text{EllipticPi}\left[2,\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right),\frac{2\,b}{a+b}\right]\sqrt{\frac{a+b\,\text{Sin}[c+d\,x]}{a+b}}}{\sqrt{a+b\,\text{Sin}[c+d\,x]}}-$$

$$\left(2\,\mathrm{i}\left(4\,a^3+167\,a\,b^2\right)\text{Cos}[c+d\,x]\,\text{Cos}[2\,(c+d\,x)]\right.\left(2\,a\,(a-b)\,\text{EllipticE}\left[\mathrm{i}\,\text{ArcSinh}\left[\sqrt{-\frac{1}{a+b}}\,\sqrt{a+b\,\text{Sin}[c+d\,x]}\right],\frac{a+b}{a-b}\right]+\right.$$

$$b\left(2\,a\,\text{EllipticF}\left[\mathrm{i}\,\text{ArcSinh}\left[\sqrt{-\frac{1}{a+b}}\,\sqrt{a+b\,\text{Sin}[c+d\,x]}\right],\frac{a+b}{a-b}\right]-\right.$$

$$\left.\left.b\,\text{EllipticPi}\left[\frac{a+b}{a},\mathrm{i}\,\text{ArcSinh}\left[\sqrt{-\frac{1}{a+b}}\,\sqrt{a+b\,\text{Sin}[c+d\,x]}\right],\frac{a+b}{a-b}\right]\right)\right)\sqrt{\frac{b-b\,\text{Sin}[c+d\,x]}{a+b}}\,\left.\sqrt{-\frac{b+b\,\text{Sin}[c+d\,x]}{a-b}}\right)\Big/$$

$$\left(a\,\sqrt{-\frac{1}{a+b}}\,\sqrt{1-\text{Sin}[c+d\,x]^2}\,\left(-2\,a^2+b^2+4\,a\,(a+b\,\text{Sin}[c+d\,x])-2\,(a+b\,\text{Sin}[c+d\,x])^2\right)\right.$$

$$\left.\left.\sqrt{-\frac{a^2-b^2-2\,a\,(a+b\,\text{Sin}[c+d\,x])+(a+b\,\text{Sin}[c+d\,x])^2}{b^2}}\right)\right)+$$

$$\frac{\sqrt{a+b\,\text{Sin}[c+d\,x]}\,\left(\frac{\left(-4\,a^2+55\,b^2\right)\text{Cos}[c+d\,x]}{70\,b}+\frac{1}{14}\,b\,\text{Cos}[3\,(c+d\,x)]-a\,\text{Cot}[c+d\,x]-\frac{8}{35}\,a\,\text{Sin}[2\,(c+d\,x)]\right)}{d}$$

- **Problem 1155: Result unnecessarily involves imaginary or complex numbers.**

$$\int \text{Cos}[c+d\,x]\,\text{Cot}[c+d\,x]^3\,(a+b\,\text{Sin}[c+d\,x])^{3/2}\,dx$$

Optimal (type 4, 383 leaves, 11 steps) :

$$-\frac{\left(8 a^2-15 b^2\right) \operatorname{Cos}[c+d x] \sqrt{a+b \operatorname{Sin}[c+d x]}}{20 a d}-\frac{\left(8 a^2-5 b^2\right) \operatorname{Cos}[c+d x] (a+b \operatorname{Sin}[c+d x])^{3/2}}{20 a^2 d}-\frac{b \operatorname{Cot}[c+d x] (a+b \operatorname{Sin}[c+d x])^{5/2}}{4 a^2 d}-$$
$$\frac{\operatorname{Cot}[c+d x] \operatorname{Csc}[c+d x] (a+b \operatorname{Sin}[c+d x])^{5/2}}{2 a d}+\frac{\left(8 a^2-81 b^2\right) \operatorname{EllipticE}\left[\frac{1}{2}\left(c-\frac{\pi}{2}+d x\right), \frac{2 b}{a+b}\right] \sqrt{a+b \operatorname{Sin}[c+d x]}}{20 b d \sqrt{\frac{a+b \operatorname{Sin}[c+d x]}{a+b}}}-$$
$$\frac{a\left(8 a^2+37 b^2\right) \operatorname{EllipticF}\left[\frac{1}{2}\left(c-\frac{\pi}{2}+d x\right), \frac{2 b}{a+b}\right] \sqrt{\frac{a+b \operatorname{Sin}[c+d x]}{a+b}}}{20 b d \sqrt{a+b \operatorname{Sin}[c+d x]}}-\frac{3\left(4 a^2-b^2\right) \operatorname{EllipticPi}\left[2, \frac{1}{2}\left(c-\frac{\pi}{2}+d x\right), \frac{2 b}{a+b}\right] \sqrt{\frac{a+b \operatorname{Sin}[c+d x]}{a+b}}}{4 d \sqrt{a+b \operatorname{Sin}[c+d x]}}$$

Result (type 4, 434 leaves) :

$$\frac{1}{80 d}\left(\frac{1}{a b^2 \sqrt{-\frac{1}{a+b}}} 2 i\left(-8 a^2+81 b^2\right)\right.$$
$$\left(-2 a (a-b) \operatorname{EllipticE}\left[i \operatorname{ArcSinh}\left[\sqrt{-\frac{1}{a+b}} \sqrt{a+b \operatorname{Sin}[c+d x]}\right], \frac{a+b}{a-b}\right]+b\left(-2 a \operatorname{EllipticF}\left[i \operatorname{ArcSinh}\left[\sqrt{-\frac{1}{a+b}} \sqrt{a+b \operatorname{Sin}[c+d x]}\right],\right.\right.\right.$$
$$\left.\left.\left.\frac{a+b}{a-b}\right]+b \operatorname{EllipticPi}\left[\frac{a+b}{a}, i \operatorname{ArcSinh}\left[\sqrt{-\frac{1}{a+b}} \sqrt{a+b \operatorname{Sin}[c+d x]}\right], \frac{a+b}{a-b}\right]\right)\right) \operatorname{Sec}[c+d x]$$
$$\sqrt{-\frac{b(-1+\operatorname{Sin}[c+d x])}{a+b}} \sqrt{-\frac{b(1+\operatorname{Sin}[c+d x])}{a-b}}+\frac{472 a b \operatorname{EllipticF}\left[\frac{1}{4}(-2 c+\pi-2 d x), \frac{2 b}{a+b}\right] \sqrt{\frac{a+b \operatorname{Sin}[c+d x]}{a+b}}}{\sqrt{a+b \operatorname{Sin}[c+d x]}}+$$
$$\frac{2\left(112 a^2+51 b^2\right) \operatorname{EllipticPi}\left[2, \frac{1}{4}(-2 c+\pi-2 d x), \frac{2 b}{a+b}\right] \sqrt{\frac{a+b \operatorname{Sin}[c+d x]}{a+b}}}{\sqrt{a+b \operatorname{Sin}[c+d x]}}+$$
$$\left.4 \operatorname{Cot}[c+d x] \operatorname{Csc}[c+d x] \sqrt{a+b \operatorname{Sin}[c+d x]}(-18 a+8 a \operatorname{Cos}[2(c+d x)]-31 b \operatorname{Sin}[c+d x]+2 b \operatorname{Sin}[3(c+d x)])\right)$$

- **Problem 1156: Result unnecessarily involves imaginary or complex numbers.**

$$\int \cot[c+d x]^4 (a+b \sin[c+d x])^{3/2} \, dx$$

Optimal (type 4, 386 leaves, 11 steps):

$$-\frac{b\left(16 a^2+b^2\right) \cos[c+d x] \sqrt{a+b \sin[c+d x]}}{8 a^2 d}+\frac{\left(32 a^2+b^2\right) \cot[c+d x] (a+b \sin[c+d x])^{3/2}}{24 a^2 d}+\frac{b \cot[c+d x] \csc[c+d x] (a+b \sin[c+d x])^{5/2}}{12 a^2 d}-$$
$$\frac{\cot[c+d x] \csc[c+d x]^2 (a+b \sin[c+d x])^{5/2}}{3 a d}+\frac{\left(32 a^2-b^2\right) \text{EllipticE}\left[\frac{1}{2}\left(c-\frac{\pi}{2}+d x\right), \frac{2 b}{a+b}\right] \sqrt{a+b \sin[c+d x]}}{8 a d \sqrt{\frac{a+b \sin[c+d x]}{a+b}}}-$$
$$\frac{\left(16 a^2+21 b^2\right) \text{EllipticF}\left[\frac{1}{2}\left(c-\frac{\pi}{2}+d x\right), \frac{2 b}{a+b}\right] \sqrt{\frac{a+b \sin[c+d x]}{a+b}}}{8 d \sqrt{a+b \sin[c+d x]}}-\frac{b\left(36 a^2+b^2\right) \text{EllipticPi}\left[2, \frac{1}{2}\left(c-\frac{\pi}{2}+d x\right), \frac{2 b}{a+b}\right] \sqrt{\frac{a+b \sin[c+d x]}{a+b}}}{8 a d \sqrt{a+b \sin[c+d x]}}$$

Result (type 4, 600 leaves):

$$\frac{1}{d}\left(-\frac{2}{3}\,b\,\text{Cos}[c+d\,x]+\frac{\left(32\,a^2\,\text{Cos}[c+d\,x]-3\,b^2\,\text{Cos}[c+d\,x]\right)\text{Csc}[c+d\,x]}{24\,a}-\frac{7}{12}\,b\,\text{Cot}[c+d\,x]\,\text{Csc}[c+d\,x]-\frac{1}{3}\,a\,\text{Cot}[c+d\,x]\,\text{Csc}[c+d\,x]^2\right)$$

$$\sqrt{a+b\,\text{Sin}[c+d\,x]}+\frac{1}{32\,a\,d}$$

$$\left(-\frac{2\left(32\,a^3-44\,a\,b^2\right)\text{EllipticF}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right),\frac{2\,b}{a+b}\right]\sqrt{\frac{a+b\,\text{Sin}[c+d\,x]}{a+b}}}{\sqrt{a+b\,\text{Sin}[c+d\,x]}}-\frac{2\left(-40\,a^2\,b-3\,b^3\right)\text{EllipticPi}\left[2,\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right),\frac{2\,b}{a+b}\right]\sqrt{\frac{a+b\,\text{Sin}[c+d\,x]}{a+b}}}{\sqrt{a+b\,\text{Sin}[c+d\,x]}}-\right.$$

$$\left(2\,i\left(-32\,a^2\,b+b^3\right)\text{Cos}[c+d\,x]\,\text{Cos}[2\,(c+d\,x)]\left(2\,a\,(a-b)\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[\sqrt{-\frac{1}{a+b}}\,\sqrt{a+b\,\text{Sin}[c+d\,x]}\right],\frac{a+b}{a-b}\right]+b\left(2\,a\,\text{EllipticF}\left[\right.\right.\right.\right.$$

$$\left.\left.\left.i\,\text{ArcSinh}\left[\sqrt{-\frac{1}{a+b}}\,\sqrt{a+b\,\text{Sin}[c+d\,x]}\right],\frac{a+b}{a-b}\right]-b\,\text{EllipticPi}\left[\frac{a+b}{a},i\,\text{ArcSinh}\left[\sqrt{-\frac{1}{a+b}}\,\sqrt{a+b\,\text{Sin}[c+d\,x]}\right],\frac{a+b}{a-b}\right]\right)\right)$$

$$\left.\sqrt{\frac{b-b\,\text{Sin}[c+d\,x]}{a+b}}\,\sqrt{-\frac{b+b\,\text{Sin}[c+d\,x]}{a-b}}\right)\Bigg/\left(a\sqrt{-\frac{1}{a+b}}\,\sqrt{1-\text{Sin}[c+d\,x]^2}\,\left(-2\,a^2+b^2+4\,a\,(a+b\,\text{Sin}[c+d\,x])-2\,(a+b\,\text{Sin}[c+d\,x])^2\right)\right.$$

$$\left.\left.\sqrt{-\frac{a^2-b^2-2\,a\,(a+b\,\text{Sin}[c+d\,x])+(a+b\,\text{Sin}[c+d\,x])^2}{b^2}}\right)\right)$$

- **Problem 1157: Result unnecessarily involves imaginary or complex numbers.**

$$\int \text{Cot}[c+d\,x]^4\,\text{Csc}[c+d\,x]\,(a+b\,\text{Sin}[c+d\,x])^{3/2}\,dx$$

Optimal (type 4, 408 leaves, 11 steps) :

$$\frac{b\left(68 a^2-3 b^2\right) \operatorname{Cot}[c+d x] \sqrt{a+b \operatorname{Sin}[c+d x]}}{64 a^2 d}+\frac{\left(20 a^2-b^2\right) \operatorname{Cot}[c+d x] \operatorname{Csc}[c+d x](a+b \operatorname{Sin}[c+d x])^{3/2}}{32 a^2 d}+$$

$$\frac{b \operatorname{Cot}[c+d x] \operatorname{Csc}[c+d x]^2 (a+b \operatorname{Sin}[c+d x])^{5/2}}{8 a^2 d}-\frac{\operatorname{Cot}[c+d x] \operatorname{Csc}[c+d x]^3 (a+b \operatorname{Sin}[c+d x])^{5/2}}{4 a d}+$$

$$\frac{b\left(236 a^2+3 b^2\right) \operatorname{EllipticE}\left[\frac{1}{2}\left(c-\frac{\pi}{2}+d x\right), \frac{2 b}{a+b}\right] \sqrt{a+b \operatorname{Sin}[c+d x]}}{64 a^2 d \sqrt{\frac{a+b \operatorname{Sin}[c+d x]}{a+b}}}-\frac{b\left(20 a^2+b^2\right) \operatorname{EllipticF}\left[\frac{1}{2}\left(c-\frac{\pi}{2}+d x\right), \frac{2 b}{a+b}\right] \sqrt{\frac{a+b \operatorname{Sin}[c+d x]}{a+b}}}{64 a d \sqrt{a+b \operatorname{Sin}[c+d x]}}+$$

$$\frac{3\left(16 a^4-24 a^2 b^2+b^4\right) \operatorname{EllipticPi}\left[2, \frac{1}{2}\left(c-\frac{\pi}{2}+d x\right), \frac{2 b}{a+b}\right] \sqrt{\frac{a+b \operatorname{Sin}[c+d x]}{a+b}}}{64 a^2 d \sqrt{a+b \operatorname{Sin}[c+d x]}}$$

Result (type 4, 641 leaves) :

$$\frac{1}{d}\left(\frac{3\left(36 a^2 b \operatorname{Cos}[c+d x]+b^3 \operatorname{Cos}[c+d x]\right) \operatorname{Csc}[c+d x]}{64 a^2}+\frac{\left(20 a^2 \operatorname{Cos}[c+d x]-b^2 \operatorname{Cos}[c+d x]\right) \operatorname{Csc}[c+d x]^2}{32 a}-\frac{3}{8} b \operatorname{Cot}[c+d x] \operatorname{Csc}[c+d x]^2-\frac{1}{4} a \operatorname{Cot}[c+d x] \operatorname{Csc}[c+d x]^3\right) \sqrt{a+b \operatorname{Sin}[c+d x]}+$$

$$\frac{1}{256 a^2 d}\left(-\frac{2\left(432 a^3 b+4 a b^3\right) \operatorname{EllipticF}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right), \frac{2 b}{a+b}\right] \sqrt{\frac{a+b \operatorname{Sin}[c+d x]}{a+b}}}{\sqrt{a+b \operatorname{Sin}[c+d x]}}-\right.$$

$$\frac{2\left(96 a^4+92 a^2 b^2+9 b^4\right) \operatorname{EllipticPi}\left[2, \frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right), \frac{2 b}{a+b}\right] \sqrt{\frac{a+b \operatorname{Sin}[c+d x]}{a+b}}}{\sqrt{a+b \operatorname{Sin}[c+d x]}}-$$

$$\left(2 i\left(-236 a^2 b^2-3 b^4\right) \operatorname{Cos}[c+d x] \operatorname{Cos}[2(c+d x)]\left(2 a(a-b) \operatorname{EllipticE}\left[i \operatorname{ArcSinh}\left[\sqrt{-\frac{1}{a+b}} \sqrt{a+b \operatorname{Sin}[c+d x]}\right], \frac{a+b}{a-b}\right]+\right.\right.$$

$$b\left(2 a \operatorname{EllipticF}\left[i \operatorname{ArcSinh}\left[\sqrt{-\frac{1}{a+b}} \sqrt{a+b \operatorname{Sin}[c+d x]}\right], \frac{a+b}{a-b}\right]-b \operatorname{EllipticPi}\left[\frac{a+b}{a}, i \operatorname{ArcSinh}\left[\sqrt{-\frac{1}{a+b}} \sqrt{a+b \operatorname{Sin}[c+d x]}\right],\right.\right.$$

$$\left.\left.\left.\frac{a+b}{a-b}\right]\right)\right) \sqrt{\frac{b-b \operatorname{Sin}[c+d x]}{a+b}} \sqrt{-\frac{b+b \operatorname{Sin}[c+d x]}{a-b}}\right) \Bigg/ \left(a \sqrt{-\frac{1}{a+b}} \sqrt{1-\operatorname{Sin}[c+d x]^2}\right.$$

$$\left.\left.\left(-2 a^2+b^2+4 a(a+b \operatorname{Sin}[c+d x])-2(a+b \operatorname{Sin}[c+d x])^2\right) \sqrt{-\frac{a^2-b^2-2 a(a+b \operatorname{Sin}[c+d x])+(a+b \operatorname{Sin}[c+d x])^2}{b^2}}\right)\right)$$

Problem 1158: Result unnecessarily involves imaginary or complex numbers.

$$\int \operatorname{Cot}[c+d x]^4 \operatorname{Csc}[c+d x]^2 (a+b \operatorname{Sin}[c+d x])^{3/2} \, dx$$

Optimal (type 4, 484 leaves, 12 steps) :

$$-\frac{\left(128 a^4-116 a^2 b^2+15 b^4\right) \text{Cot}[c+d x] \sqrt{a+b \text{Sin}[c+d x]}}{640 a^3 d}+\frac{3 b \left(36 a^2-5 b^2\right) \text{Cot}[c+d x] \text{Csc}[c+d x] \sqrt{a+b \text{Sin}[c+d x]}}{320 a^2 d}+$$

$$\frac{\left(32 a^2-5 b^2\right) \text{Cot}[c+d x] \text{Csc}[c+d x]^2 (a+b \text{Sin}[c+d x])^{3/2}}{80 a^2 d}+\frac{b \text{Cot}[c+d x] \text{Csc}[c+d x]^3 (a+b \text{Sin}[c+d x])^{5/2}}{8 a^2 d}-$$

$$\frac{\text{Cot}[c+d x] \text{Csc}[c+d x]^4 (a+b \text{Sin}[c+d x])^{5/2}}{5 a d}-\frac{\left(128 a^4-116 a^2 b^2+15 b^4\right) \text{EllipticE}\left[\frac{1}{2} \left(c-\frac{\pi}{2}+d x\right), \frac{2 b}{a+b}\right] \sqrt{a+b \text{Sin}[c+d x]}}{640 a^3 d \sqrt{\frac{a+b \text{Sin}[c+d x]}{a+b}}}+$$

$$\frac{\left(128 a^4+692 a^2 b^2+5 b^4\right) \text{EllipticF}\left[\frac{1}{2} \left(c-\frac{\pi}{2}+d x\right), \frac{2 b}{a+b}\right] \sqrt{\frac{a+b \text{Sin}[c+d x]}{a+b}}}{640 a^2 d \sqrt{a+b \text{Sin}[c+d x]}}+$$

$$\frac{3 b \left(48 a^4+8 a^2 b^2-b^4\right) \text{EllipticPi}\left[2, \frac{1}{2} \left(c-\frac{\pi}{2}+d x\right), \frac{2 b}{a+b}\right] \sqrt{\frac{a+b \text{Sin}[c+d x]}{a+b}}}{128 a^3 d \sqrt{a+b \text{Sin}[c+d x]}}$$

Result (type 4, 700 leaves) :

$$\frac{1}{d}\left(\frac{\left(-128\,a^4\,\text{Cos}[c+d\,x]+116\,a^2\,b^2\,\text{Cos}[c+d\,x]-15\,b^4\,\text{Cos}[c+d\,x]\right)\,\text{Csc}[c+d\,x]}{640\,a^3}+\frac{\left(236\,a^2\,b\,\text{Cos}[c+d\,x]+5\,b^3\,\text{Cos}[c+d\,x]\right)\,\text{Csc}[c+d\,x]^2}{320\,a^2}+\frac{\left(32\,a^2\,\text{Cos}[c+d\,x]-b^2\,\text{Cos}[c+d\,x]\right)\,\text{Csc}[c+d\,x]^3}{80\,a}-\frac{11}{40}\,b\,\text{Cot}[c+d\,x]\,\text{Csc}[c+d\,x]^3-\frac{1}{5}\,a\,\text{Cot}[c+d\,x]\,\text{Csc}[c+d\,x]^4\right)\sqrt{a+b\,\text{Sin}[c+d\,x]}+$$

$$\frac{1}{2560\,a^3\,d}\,b\left(-\frac{2\left(1616\,a^3\,b-20\,a\,b^3\right)\,\text{EllipticF}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right),\frac{2\,b}{a+b}\right]\sqrt{\frac{a+b\,\text{Sin}[c+d\,x]}{a+b}}}{\sqrt{a+b\,\text{Sin}[c+d\,x]}}-\frac{2\left(1312\,a^4+356\,a^2\,b^2-45\,b^4\right)\,\text{EllipticPi}\left[2,\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right),\frac{2\,b}{a+b}\right]\sqrt{\frac{a+b\,\text{Sin}[c+d\,x]}{a+b}}}{\sqrt{a+b\,\text{Sin}[c+d\,x]}}-\right.$$

$$\left(2\,i\left(128\,a^4-116\,a^2\,b^2+15\,b^4\right)\,\text{Cos}[c+d\,x]\,\text{Cos}[2\,(c+d\,x)]\left(2\,a\,(a-b)\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[\sqrt{-\frac{1}{a+b}}\,\sqrt{a+b\,\text{Sin}[c+d\,x]}\right],\frac{a+b}{a-b}\right]+b\left(2\,a\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[\sqrt{-\frac{1}{a+b}}\,\sqrt{a+b\,\text{Sin}[c+d\,x]}\right],\frac{a+b}{a-b}\right]-b\,\text{EllipticPi}\left[\frac{a+b}{a},i\,\text{ArcSinh}\left[\sqrt{-\frac{1}{a+b}}\,\sqrt{a+b\,\text{Sin}[c+d\,x]}\right],\frac{a+b}{a-b}\right]\right)\right)\sqrt{\frac{b-b\,\text{Sin}[c+d\,x]}{a+b}}\,\sqrt{-\frac{b+b\,\text{Sin}[c+d\,x]}{a-b}}\right)\Big/\left(a\,\sqrt{-\frac{1}{a+b}}\,\sqrt{1-\text{Sin}[c+d\,x]^2}\,\left(-2\,a^2+b^2+4\,a\,(a+b\,\text{Sin}[c+d\,x])-2\,(a+b\,\text{Sin}[c+d\,x])^2\right)\sqrt{-\frac{a^2-b^2-2\,a\,(a+b\,\text{Sin}[c+d\,x])+(a+b\,\text{Sin}[c+d\,x])^2}{b^2}}\right)\Bigg)$$

- **Problem 1159: Result unnecessarily involves imaginary or complex numbers.**

$$\int \text{Cot}[c+d\,x]^4\,\text{Csc}[c+d\,x]^3\,(a+b\,\text{Sin}[c+d\,x])^{3/2}\,dx$$

Optimal (type 4, 551 leaves, 13 steps) :

$$-\frac{b\left(2064 a^4+512 a^2 b^2-105 b^4\right) \text{Cot}[c+d x] \sqrt{a+b \text{Sin}[c+d x]}}{7680 a^4 d}-\frac{\left(240 a^4-168 a^2 b^2+35 b^4\right) \text{Cot}[c+d x] \text{Csc}[c+d x] \sqrt{a+b \text{Sin}[c+d x]}}{3840 a^3 d}+$$

$$\frac{b\left(156 a^2-35 b^2\right) \text{Cot}[c+d x] \text{Csc}[c+d x]^2 \sqrt{a+b \text{Sin}[c+d x]}}{960 a^2 d}+\frac{7\left(4 a^2-b^2\right) \text{Cot}[c+d x] \text{Csc}[c+d x]^3 (a+b \text{Sin}[c+d x])^{3/2}}{96 a^2 d}+$$

$$\frac{7 b \text{Cot}[c+d x] \text{Csc}[c+d x]^4 (a+b \text{Sin}[c+d x])^{5/2}}{60 a^2 d}-\frac{\text{Cot}[c+d x] \text{Csc}[c+d x]^5 (a+b \text{Sin}[c+d x])^{5/2}}{6 a d}-$$

$$\frac{b\left(2064 a^4+512 a^2 b^2-105 b^4\right) \text{EllipticE}\left[\frac{1}{2}\left(c-\frac{\pi}{2}+d x\right), \frac{2 b}{a+b}\right] \sqrt{a+b \text{Sin}[c+d x]}}{7680 a^4 d \sqrt{\frac{a+b \text{Sin}[c+d x]}{a+b}}}+$$

$$\frac{b\left(2544 a^4+176 a^2 b^2-35 b^4\right) \text{EllipticF}\left[\frac{1}{2}\left(c-\frac{\pi}{2}+d x\right), \frac{2 b}{a+b}\right] \sqrt{\frac{a+b \text{Sin}[c+d x]}{a+b}}}{7680 a^3 d \sqrt{a+b \text{Sin}[c+d x]}}+$$

$$\frac{\left(64 a^6+144 a^4 b^2-36 a^2 b^4+7 b^6\right) \text{EllipticPi}\left[2, \frac{1}{2}\left(c-\frac{\pi}{2}+d x\right), \frac{2 b}{a+b}\right] \sqrt{\frac{a+b \text{Sin}[c+d x]}{a+b}}}{512 a^4 d \sqrt{a+b \text{Sin}[c+d x]}}$$

Result (type 4, 771 leaves) :

$$\frac{1}{d}\left(\frac{\left(-2064 a^4 b \operatorname{Cos}[c+d x]-512 a^2 b^3 \operatorname{Cos}[c+d x]+105 b^5 \operatorname{Cos}[c+d x]\right) \operatorname{Csc}[c+d x]}{7680 a^4}+\right.$$
$$\frac{\left(-240 a^4 \operatorname{Cos}[c+d x]+168 a^2 b^2 \operatorname{Cos}[c+d x]-35 b^4 \operatorname{Cos}[c+d x]\right) \operatorname{Csc}[c+d x]^2}{3840 a^3}+\frac{\left(436 a^2 b \operatorname{Cos}[c+d x]+7 b^3 \operatorname{Cos}[c+d x]\right) \operatorname{Csc}[c+d x]^3}{960 a^2}+$$
$$\left.\frac{\left(140 a^2 \operatorname{Cos}[c+d x]-3 b^2 \operatorname{Cos}[c+d x]\right) \operatorname{Csc}[c+d x]^4}{480 a}-\frac{13}{60} b \operatorname{Cot}[c+d x] \operatorname{Csc}[c+d x]^4-\frac{1}{6} a \operatorname{Cot}[c+d x] \operatorname{Csc}[c+d x]^5\right) \sqrt{a+b \operatorname{Sin}[c+d x]}+$$
$$\frac{1}{30720 a^4 d}\left(-\frac{2\left(960 a^5 b-672 a^3 b^3+140 a b^5\right) \operatorname{EllipticF}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right), \frac{2 b}{a+b}\right] \sqrt{\frac{a+b \operatorname{Sin}[c+d x]}{a+b}}}{\sqrt{a+b \operatorname{Sin}[c+d x]}}-\right.$$
$$\frac{2\left(1920 a^6+2256 a^4 b^2-1592 a^2 b^4+315 b^6\right) \operatorname{EllipticPi}\left[2, \frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right), \frac{2 b}{a+b}\right] \sqrt{\frac{a+b \operatorname{Sin}[c+d x]}{a+b}}}{\sqrt{a+b \operatorname{Sin}[c+d x]}}-$$
$$\left(2 i\left(2064 a^4 b^2+512 a^2 b^4-105 b^6\right) \operatorname{Cos}[c+d x] \operatorname{Cos}[2(c+d x)]\left(2 a(a-b) \operatorname{EllipticE}\left[i \operatorname{ArcSinh}\left[\sqrt{-\frac{1}{a+b}} \sqrt{a+b \operatorname{Sin}[c+d x]}\right], \frac{a+b}{a-b}\right]+\right.\right.$$
$$b\left(2 a \operatorname{EllipticF}\left[i \operatorname{ArcSinh}\left[\sqrt{-\frac{1}{a+b}} \sqrt{a+b \operatorname{Sin}[c+d x]}\right], \frac{a+b}{a-b}\right]-b \operatorname{EllipticPi}\left[\frac{a+b}{a}, i \operatorname{ArcSinh}\left[\sqrt{-\frac{1}{a+b}} \sqrt{a+b \operatorname{Sin}[c+d x]}\right],\right.\right.$$
$$\left.\left.\left.\frac{a+b}{a-b}\right]\right)\right) \sqrt{\frac{b-b \operatorname{Sin}[c+d x]}{a+b}} \sqrt{-\frac{b+b \operatorname{Sin}[c+d x]}{a-b}}\right) \Big/ \left(a \sqrt{-\frac{1}{a+b}} \sqrt{1-\operatorname{Sin}[c+d x]^2}\right.$$
$$\left.\left.\left(-2 a^2+b^2+4 a(a+b \operatorname{Sin}[c+d x])-2(a+b \operatorname{Sin}[c+d x])^2\right) \sqrt{-\frac{a^2-b^2-2 a(a+b \operatorname{Sin}[c+d x])+(a+b \operatorname{Sin}[c+d x])^2}{b^2}}\right)\right)$$

- **Problem 1161: Result unnecessarily involves imaginary or complex numbers.**

$$\int \operatorname{Cos}[c+d x]^3 \operatorname{Cot}[c+d x](a+b \operatorname{Sin}[c+d x])^{5/2} \, dx$$

Optimal (type 4, 447 leaves, 12 steps):

$$-\frac{2\left(8a^4-141a^2b^2+36b^4\right)\text{Cos}[c+dx]\sqrt{a+b\,\text{Sin}[c+dx]}}{693\,b^2\,d}-\frac{2a\left(8a^2-131b^2\right)\text{Cos}[c+dx]\,(a+b\,\text{Sin}[c+dx])^{3/2}}{693\,b^2\,d}-$$

$$\frac{2\left(8a^2-117b^2\right)\text{Cos}[c+dx]\,(a+b\,\text{Sin}[c+dx])^{5/2}}{693\,b^2\,d}+\frac{8a\,\text{Cos}[c+dx]\,(a+b\,\text{Sin}[c+dx])^{7/2}}{99\,b^2\,d}-$$

$$\frac{2\,\text{Cos}[c+dx]\,\text{Sin}[c+dx]\,(a+b\,\text{Sin}[c+dx])^{7/2}}{11\,b\,d}+\frac{2a\left(8a^4-147a^2b^2+444b^4\right)\text{EllipticE}\left[\frac{1}{2}\left(c-\frac{\pi}{2}+dx\right),\frac{2b}{a+b}\right]\sqrt{a+b\,\text{Sin}[c+dx]}}{693\,b^3\,d\sqrt{\frac{a+b\,\text{Sin}[c+dx]}{a+b}}}-$$

$$\frac{2\left(8a^6-149a^4b^2-516a^2b^4-36b^6\right)\text{EllipticF}\left[\frac{1}{2}\left(c-\frac{\pi}{2}+dx\right),\frac{2b}{a+b}\right]\sqrt{\frac{a+b\,\text{Sin}[c+dx]}{a+b}}}{693\,b^3\,d\sqrt{a+b\,\text{Sin}[c+dx]}}+\frac{2a^3\,\text{EllipticPi}\left[2,\frac{1}{2}\left(c-\frac{\pi}{2}+dx\right),\frac{2b}{a+b}\right]\sqrt{\frac{a+b\,\text{Sin}[c+dx]}{a+b}}}{d\sqrt{a+b\,\text{Sin}[c+dx]}}$$

Result (type 4, 654 leaves) :

$$-\frac{1}{1386\,b^2\,d}\left(-\frac{2\left(-4\,a^4\,b-1920\,a^2\,b^3-72\,b^5\right)\text{EllipticF}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right),\frac{2\,b}{a+b}\right]\sqrt{\frac{a+b\,\text{Sin}[c+d\,x]}{a+b}}}{\sqrt{a+b\,\text{Sin}[c+d\,x]}}-\right.$$

$$\frac{2\left(-8\,a^5-1239\,a^3\,b^2-444\,a\,b^4\right)\text{EllipticPi}\left[2,\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right),\frac{2\,b}{a+b}\right]\sqrt{\frac{a+b\,\text{Sin}[c+d\,x]}{a+b}}}{\sqrt{a+b\,\text{Sin}[c+d\,x]}}-$$

$$\Big(2\,i\left(8\,a^5-147\,a^3\,b^2+444\,a\,b^4\right)\text{Cos}[c+d\,x]\,\text{Cos}[2\,(c+d\,x)]$$

$$\left(2\,a\,(a-b)\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[\sqrt{-\frac{1}{a+b}}\,\sqrt{a+b\,\text{Sin}[c+d\,x]}\right],\frac{a+b}{a-b}\right]+b\left(2\,a\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[\sqrt{-\frac{1}{a+b}}\,\sqrt{a+b\,\text{Sin}[c+d\,x]}\right],\right.\right.\right.$$

$$\left.\left.\left.\frac{a+b}{a-b}\right]-b\,\text{EllipticPi}\left[\frac{a+b}{a},\,i\,\text{ArcSinh}\left[\sqrt{-\frac{1}{a+b}}\,\sqrt{a+b\,\text{Sin}[c+d\,x]}\right],\frac{a+b}{a-b}\right]\right)\right)\sqrt{\frac{b-b\,\text{Sin}[c+d\,x]}{a+b}}\,\sqrt{-\frac{b+b\,\text{Sin}[c+d\,x]}{a-b}}\Bigg)\Bigg/$$

$$\left(a\,\sqrt{-\frac{1}{a+b}}\,\sqrt{1-\text{Sin}[c+d\,x]^2}\,\left(-2\,a^2+b^2+4\,a\,(a+b\,\text{Sin}[c+d\,x])-2\,(a+b\,\text{Sin}[c+d\,x])^2\right)\right.$$

$$\left.\left.\sqrt{-\frac{a^2-b^2-2\,a\,(a+b\,\text{Sin}[c+d\,x])+(a+b\,\text{Sin}[c+d\,x])^2}{b^2}}\right)\right)+\frac{1}{d}$$

$$\sqrt{a+b\,\text{Sin}[c+d\,x]}\,\left(-\frac{\left(-32\,a^4-2886\,a^2\,b^2+117\,b^4\right)\text{Cos}[c+d\,x]}{2772\,b^2}+\frac{\left(452\,a^2-279\,b^2\right)\text{Cos}[3\,(c+d\,x)]}{5544}-\right.$$

$$\frac{1}{88}\,b^2\,\text{Cos}[5\,(c+d\,x)]-\frac{a\left(6\,a^2-569\,b^2\right)\text{Sin}[2\,(c+d\,x)]}{1386\,b}+$$

$$\left.\frac{23}{396}\,a\,b\,\text{Sin}[4\,(c+d\,x)]\right)$$

- **Problem 1162: Result unnecessarily involves imaginary or complex numbers.**

$$\int \text{Cos}[c+d\,x]^2\,\text{Cot}[c+d\,x]^2\,(a+b\,\text{Sin}[c+d\,x])^{5/2}\,dx$$

Optimal (type 4, 426 leaves, 12 steps) :

$$\frac{a\left(20 a^2+759 b^2\right) \operatorname{Cos}[c+d x] \sqrt{a+b \operatorname{Sin}[c+d x]}}{315 b d}+\frac{\left(20 a^2+469 b^2\right) \operatorname{Cos}[c+d x](a+b \operatorname{Sin}[c+d x])^{3/2}}{315 b d}+\frac{\left(4 a^2+63 b^2\right) \operatorname{Cos}[c+d x](a+b \operatorname{Sin}[c+d x])^{5/2}}{63 a b d}-\frac{2 \operatorname{Cos}[c+d x](a+b \operatorname{Sin}[c+d x])^{7/2}}{9 b d}-\frac{\operatorname{Cot}[c+d x](a+b \operatorname{Sin}[c+d x])^{7/2}}{a d}-\frac{\left(20 a^4+1689 a^2 b^2-168 b^4\right) \operatorname{EllipticE}\left[\frac{1}{2}\left(c-\frac{\pi}{2}+d x\right), \frac{2 b}{a+b}\right] \sqrt{a+b \operatorname{Sin}[c+d x]}}{315 b^2 d \sqrt{\frac{a+b \operatorname{Sin}[c+d x]}{a+b}}}+\frac{a\left(20 a^4+739 a^2 b^2+816 b^4\right) \operatorname{EllipticF}\left[\frac{1}{2}\left(c-\frac{\pi}{2}+d x\right), \frac{2 b}{a+b}\right] \sqrt{\frac{a+b \operatorname{Sin}[c+d x]}{a+b}}}{315 b^2 d \sqrt{a+b \operatorname{Sin}[c+d x]}}+\frac{5 a^2 b \operatorname{EllipticPi}\left[2, \frac{1}{2}\left(c-\frac{\pi}{2}+d x\right), \frac{2 b}{a+b}\right] \sqrt{\frac{a+b \operatorname{Sin}[c+d x]}{a+b}}}{d \sqrt{a+b \operatorname{Sin}[c+d x]}}$$

Result (type 4, 622 leaves) :

$$\frac{1}{1260\, b\, d}\left(-\frac{2\left(-1900 a^3 b+1968 a b^3\right) \text{EllipticF}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right), \frac{2 b}{a+b}\right] \sqrt{\frac{a+b \text{Sin}[c+d x]}{a+b}}}{\sqrt{a+b \text{Sin}[c+d x]}}-\right.$$

$$\frac{2\left(-20 a^4+1461 a^2 b^2+168 b^4\right) \text{EllipticPi}\left[2, \frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right), \frac{2 b}{a+b}\right] \sqrt{\frac{a+b \text{Sin}[c+d x]}{a+b}}}{\sqrt{a+b \text{Sin}[c+d x]}}-$$

$$\left(2 \mathrm{i}\left(20 a^4+1689 a^2 b^2-168 b^4\right) \text{Cos}[c+d x] \text{Cos}[2(c+d x)]\right.$$

$$\left(2 a(a-b) \text{EllipticE}\left[\mathrm{i} \text{ArcSinh}\left[\sqrt{-\frac{1}{a+b}} \sqrt{a+b \text{Sin}[c+d x]}\right], \frac{a+b}{a-b}\right]+b\left(2 a \text{EllipticF}\left[\mathrm{i} \text{ArcSinh}\left[\sqrt{-\frac{1}{a+b}} \sqrt{a+b \text{Sin}[c+d x]}\right],\right.\right.\right.$$

$$\left.\left.\left.\frac{a+b}{a-b}\right]-b \text{EllipticPi}\left[\frac{a+b}{a}, \mathrm{i} \text{ArcSinh}\left[\sqrt{-\frac{1}{a+b}} \sqrt{a+b \text{Sin}[c+d x]}\right], \frac{a+b}{a-b}\right]\right)\right) \sqrt{\frac{b-b \text{Sin}[c+d x]}{a+b}} \sqrt{-\frac{b+b \text{Sin}[c+d x]}{a-b}}\Bigg) \Big/$$

$$\left(a \sqrt{-\frac{1}{a+b}} \sqrt{1-\text{Sin}[c+d x]^2}\left(-2 a^2+b^2+4 a(a+b \text{Sin}[c+d x])-2(a+b \text{Sin}[c+d x])^2\right)\right.$$

$$\left.\left.\sqrt{-\frac{a^2-b^2-2 a(a+b \text{Sin}[c+d x])+(a+b \text{Sin}[c+d x])^2}{b^2}}\right)\right)+$$

$$\frac{1}{d} \sqrt{a+b \text{Sin}[c+d x]}\left(-\frac{a\left(20 a^2-1101 b^2\right) \text{Cos}[c+d x]}{630 b}+\frac{19}{126} a b \text{Cos}[3(c+d x)]-a^2 \text{Cot}[c+d x]-\right.$$

$$\left.\frac{1}{630}\left(150 a^2-119 b^2\right) \text{Sin}[2(c+d x)]+\frac{1}{36} b^2 \text{Sin}[4(c+d x)]\right)$$

- **Problem 1163: Result unnecessarily involves imaginary or complex numbers.**

$$\int \text{Cos}[c+d x] \text{Cot}[c+d x]^3 (a+b \text{Sin}[c+d x])^{5/2} \, dx$$

Optimal (type 4, 430 leaves, 12 steps):

$$-\frac{\left(8 a^2-73 b^2\right) \operatorname{Cos}[c+d x] \sqrt{a+b \operatorname{Sin}[c+d x]}}{28 d}-\frac{\left(8 a^2-35 b^2\right) \operatorname{Cos}[c+d x] (a+b \operatorname{Sin}[c+d x])^{3/2}}{28 a d}-$$

$$\frac{\left(8 a^2-21 b^2\right) \operatorname{Cos}[c+d x] (a+b \operatorname{Sin}[c+d x])^{5/2}}{28 a^2 d}-\frac{3 b \operatorname{Cot}[c+d x] (a+b \operatorname{Sin}[c+d x])^{7/2}}{4 a^2 d}-$$

$$\frac{\operatorname{Cot}[c+d x] \operatorname{Csc}[c+d x] (a+b \operatorname{Sin}[c+d x])^{7/2}}{2 a d}+\frac{a \left(8 a^2-247 b^2\right) \operatorname{EllipticE}\left[\frac{1}{2} \left(c-\frac{\pi}{2}+d x\right), \frac{2 b}{a+b}\right] \sqrt{a+b \operatorname{Sin}[c+d x]}}{28 b d \sqrt{\frac{a+b \operatorname{Sin}[c+d x]}{a+b}}}-$$

$$\frac{\left(8 a^4+3 a^2 b^2-32 b^4\right) \operatorname{EllipticF}\left[\frac{1}{2} \left(c-\frac{\pi}{2}+d x\right), \frac{2 b}{a+b}\right] \sqrt{\frac{a+b \operatorname{Sin}[c+d x]}{a+b}}}{28 b d \sqrt{a+b \operatorname{Sin}[c+d x]}}-\frac{3 a \left(4 a^2-5 b^2\right) \operatorname{EllipticPi}\left[2, \frac{1}{2} \left(c-\frac{\pi}{2}+d x\right), \frac{2 b}{a+b}\right] \sqrt{\frac{a+b \operatorname{Sin}[c+d x]}{a+b}}}{4 d \sqrt{a+b \operatorname{Sin}[c+d x]}}$$

Result (type 4, 597 leaves) :

$$\frac{1}{112\,d}\left(\frac{2\left(500\,a^2\,b-64\,b^3\right)\,\text{EllipticF}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right),\,\frac{2\,b}{a+b}\right]\sqrt{\frac{a+b\,\text{Sin}[c+d\,x]}{a+b}}}{\sqrt{a+b\,\text{Sin}[c+d\,x]}}+\frac{2\left(160\,a^3+37\,a\,b^2\right)\,\text{EllipticPi}\left[2,\,\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right),\,\frac{2\,b}{a+b}\right]\sqrt{\frac{a+b\,\text{Sin}[c+d\,x]}{a+b}}}{\sqrt{a+b\,\text{Sin}[c+d\,x]}}+\right.$$

$$\left(2\,i\left(8\,a^3-247\,a\,b^2\right)\,\text{Cos}[c+d\,x]\,\text{Cos}[2\,(c+d\,x)]\left(2\,a\,(a-b)\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[\sqrt{-\frac{1}{a+b}}\,\sqrt{a+b\,\text{Sin}[c+d\,x]}\right],\,\frac{a+b}{a-b}\right]+b\left(2\,a\,\text{EllipticF}\left[\right.\right.\right.\right.$$

$$\left.\left.i\,\text{ArcSinh}\left[\sqrt{-\frac{1}{a+b}}\,\sqrt{a+b\,\text{Sin}[c+d\,x]}\right],\,\frac{a+b}{a-b}\right]-b\,\text{EllipticPi}\left[\frac{a+b}{a},\,i\,\text{ArcSinh}\left[\sqrt{-\frac{1}{a+b}}\,\sqrt{a+b\,\text{Sin}[c+d\,x]}\right],\,\frac{a+b}{a-b}\right]\right)\right)$$

$$\left.\sqrt{\frac{b-b\,\text{Sin}[c+d\,x]}{a+b}}\,\sqrt{-\frac{b+b\,\text{Sin}[c+d\,x]}{a-b}}\right)\Big/\left(a\sqrt{-\frac{1}{a+b}}\,\sqrt{1-\text{Sin}[c+d\,x]^2}\,\left(-2\,a^2+b^2+4\,a\,(a+b\,\text{Sin}[c+d\,x])-2\,(a+b\,\text{Sin}[c+d\,x])^2\right)\right.$$

$$\left.\left.\sqrt{-\frac{a^2-b^2-2\,a\,(a+b\,\text{Sin}[c+d\,x])+(a+b\,\text{Sin}[c+d\,x])^2}{b^2}}\right)\right)+$$

$$\frac{1}{d}\sqrt{a+b\,\text{Sin}[c+d\,x]}\,\left(-\frac{1}{14}\left(12\,a^2-11\,b^2\right)\,\text{Cos}[c+d\,x]+\frac{1}{14}\,b^2\,\text{Cos}[3\,(c+d\,x)]-\frac{9}{4}\,a\,b\,\text{Cot}[c+d\,x]-\right.$$

$$\left.\frac{1}{2}\,a^2\,\text{Cot}[c+d\,x]\,\text{Csc}[c+d\,x]-\frac{3}{7}\,a\,b\,\text{Sin}[2\,(c+d\,x)]\right)$$

■ **Problem 1164: Result unnecessarily involves imaginary or complex numbers.**

$$\int \text{Cot}[c+d\,x]^4\,(a+b\,\text{Sin}[c+d\,x])^{5/2}\,dx$$

Optimal (type 4, 429 leaves, 12 steps) :

$$-\frac{b\left(96 a^2-25 b^2\right) \text{Cos}[c+d x] \sqrt{a+b \text{Sin}[c+d x]}}{40 a d}-\frac{b\left(208 a^2-25 b^2\right) \text{Cos}[c+d x] (a+b \text{Sin}[c+d x])^{3/2}}{120 a^2 d}+$$
$$\frac{\left(32 a^2-3 b^2\right) \text{Cot}[c+d x] (a+b \text{Sin}[c+d x])^{5/2}}{24 a^2 d}-\frac{b \text{Cot}[c+d x] \text{Csc}[c+d x] (a+b \text{Sin}[c+d x])^{7/2}}{12 a^2 d}-$$
$$\frac{\text{Cot}[c+d x] \text{Csc}[c+d x]^2 (a+b \text{Sin}[c+d x])^{7/2}}{3 a d}+\frac{\left(176 a^2-167 b^2\right) \text{EllipticE}\left[\frac{1}{2}\left(c-\frac{\pi}{2}+d x\right),\frac{2 b}{a+b}\right] \sqrt{a+b \text{Sin}[c+d x]}}{40 d \sqrt{\frac{a+b \text{Sin}[c+d x]}{a+b}}}-$$
$$\frac{a\left(96 a^2+179 b^2\right) \text{EllipticF}\left[\frac{1}{2}\left(c-\frac{\pi}{2}+d x\right),\frac{2 b}{a+b}\right] \sqrt{\frac{a+b \text{Sin}[c+d x]}{a+b}}}{40 d \sqrt{a+b \text{Sin}[c+d x]}}-\frac{5 b\left(12 a^2-b^2\right) \text{EllipticPi}\left[2,\frac{1}{2}\left(c-\frac{\pi}{2}+d x\right),\frac{2 b}{a+b}\right] \sqrt{\frac{a+b \text{Sin}[c+d x]}{a+b}}}{8 d \sqrt{a+b \text{Sin}[c+d x]}}$$

Result (type 4, 615 leaves) :

$$\frac{1}{160\,d}\left(-\frac{2\left(160\,a^3-692\,a\,b^2\right)\text{EllipticF}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right),\frac{2\,b}{a+b}\right]\sqrt{\frac{a+b\,\text{Sin}[c+d\,x]}{a+b}}}{\sqrt{a+b\,\text{Sin}[c+d\,x]}}-\right.$$

$$\frac{2\left(-424\,a^2\,b-117\,b^3\right)\text{EllipticPi}\left[2,\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right),\frac{2\,b}{a+b}\right]\sqrt{\frac{a+b\,\text{Sin}[c+d\,x]}{a+b}}}{\sqrt{a+b\,\text{Sin}[c+d\,x]}}-$$

$$\left(2\,i\left(-176\,a^2\,b+167\,b^3\right)\text{Cos}[c+d\,x]\,\text{Cos}[2\,(c+d\,x)]\left(2\,a\,(a-b)\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[\sqrt{-\frac{1}{a+b}}\,\sqrt{a+b\,\text{Sin}[c+d\,x]}\right],\frac{a+b}{a-b}\right]+\right.\right.$$

$$b\left(2\,a\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[\sqrt{-\frac{1}{a+b}}\,\sqrt{a+b\,\text{Sin}[c+d\,x]}\right],\frac{a+b}{a-b}\right]-\right.$$

$$\left.\left.b\,\text{EllipticPi}\left[\frac{a+b}{a},i\,\text{ArcSinh}\left[\sqrt{-\frac{1}{a+b}}\,\sqrt{a+b\,\text{Sin}[c+d\,x]}\right],\frac{a+b}{a-b}\right]\right)\right)\sqrt{\frac{b-b\,\text{Sin}[c+d\,x]}{a+b}}\,\sqrt{-\frac{b+b\,\text{Sin}[c+d\,x]}{a-b}}\Bigg)\Bigg/$$

$$\left(a\sqrt{-\frac{1}{a+b}}\,\sqrt{1-\text{Sin}[c+d\,x]^2}\,\left(-2\,a^2+b^2+4\,a\,(a+b\,\text{Sin}[c+d\,x])-2\,(a+b\,\text{Sin}[c+d\,x])^2\right)\right.$$

$$\left.\left.\sqrt{-\frac{a^2-b^2-2\,a\,(a+b\,\text{Sin}[c+d\,x])+(a+b\,\text{Sin}[c+d\,x])^2}{b^2}}\right)\right)+\frac{1}{d}$$

$$\sqrt{a+b\,\text{Sin}[c+d\,x]}\,\left(-\frac{22}{15}\,a\,b\,\text{Cos}[c+d\,x]+\frac{1}{24}\left(32\,a^2\,\text{Cos}[c+d\,x]-33\,b^2\,\text{Cos}[c+d\,x]\right)\text{Csc}[c+d\,x]-\right.$$

$$\left.\frac{13}{12}\,a\,b\,\text{Cot}[c+d\,x]\,\text{Csc}[c+d\,x]-\frac{1}{3}\,a^2\,\text{Cot}[c+d\,x]\,\text{Csc}[c+d\,x]^2-\frac{1}{5}\,b^2\,\text{Sin}[2\,(c+d\,x)]\right)$$

- **Problem 1165: Result unnecessarily involves imaginary or complex numbers.**

$$\int \text{Cot}[c+d\,x]^4\,\text{Csc}[c+d\,x]\,(a+b\,\text{Sin}[c+d\,x])^{5/2}\,dx$$

Optimal (type 4, 449 leaves, 12 steps):

$$-\frac{b^2 \left(196 a^2+5 b^2\right) \text{Cos}[c+d x] \sqrt{a+b \text{Sin}[c+d x]}}{64 a^2 d}+\frac{5 b \left(68 a^2+b^2\right) \text{Cot}[c+d x] (a+b \text{Sin}[c+d x])^{3/2}}{192 a^2 d}+$$

$$\frac{\left(60 a^2+b^2\right) \text{Cot}[c+d x] \text{Csc}[c+d x] (a+b \text{Sin}[c+d x])^{5/2}}{96 a^2 d}+\frac{b \text{Cot}[c+d x] \text{Csc}[c+d x]^2 (a+b \text{Sin}[c+d x])^{7/2}}{24 a^2 d}-$$

$$\frac{\text{Cot}[c+d x] \text{Csc}[c+d x]^3 (a+b \text{Sin}[c+d x])^{7/2}}{4 a d}+\frac{b \left(492 a^2-5 b^2\right) \text{EllipticE}\left[\frac{1}{2} \left(c-\frac{\pi}{2}+d x\right), \frac{2 b}{a+b}\right] \sqrt{a+b \text{Sin}[c+d x]}}{64 a d \sqrt{\frac{a+b \text{Sin}[c+d x]}{a+b}}}-$$

$$\frac{b \left(148 a^2+169 b^2\right) \text{EllipticF}\left[\frac{1}{2} \left(c-\frac{\pi}{2}+d x\right), \frac{2 b}{a+b}\right] \sqrt{\frac{a+b \text{Sin}[c+d x]}{a+b}}}{64 d \sqrt{a+b \text{Sin}[c+d x]}}+\frac{\left(48 a^4-360 a^2 b^2-5 b^4\right) \text{EllipticPi}\left[2, \frac{1}{2} \left(c-\frac{\pi}{2}+d x\right), \frac{2 b}{a+b}\right] \sqrt{\frac{a+b \text{Sin}[c+d x]}{a+b}}}{64 a d \sqrt{a+b \text{Sin}[c+d x]}}$$

Result (type 4, 655 leaves) :

$$\frac{1}{d}\left(-\frac{2}{3}b^2\operatorname{Cos}[c+d x]+\frac{5\left(116 a^2 b\operatorname{Cos}[c+d x]-3 b^3\operatorname{Cos}[c+d x]\right)\operatorname{Csc}[c+d x]}{192 a}+\frac{1}{96}\left(60 a^2\operatorname{Cos}[c+d x]-59 b^2\operatorname{Cos}[c+d x]\right)\operatorname{Csc}[c+d x]^2-\right.$$

$$\left.\frac{17}{24}a b\operatorname{Cot}[c+d x]\operatorname{Csc}[c+d x]^2-\frac{1}{4}a^2\operatorname{Cot}[c+d x]\operatorname{Csc}[c+d x]^3\right)\sqrt{a+b\operatorname{Sin}[c+d x]}+$$

$$\frac{1}{256 a d}\left(-\frac{2\left(688 a^3 b-348 a b^3\right)\operatorname{EllipticF}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right),\frac{2b}{a+b}\right]\sqrt{\frac{a+b\operatorname{Sin}[c+d x]}{a+b}}}{\sqrt{a+b\operatorname{Sin}[c+d x]}}-\right.$$

$$\frac{2\left(96 a^4-228 a^2 b^2-15 b^4\right)\operatorname{EllipticPi}\left[2,\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right),\frac{2b}{a+b}\right]\sqrt{\frac{a+b\operatorname{Sin}[c+d x]}{a+b}}}{\sqrt{a+b\operatorname{Sin}[c+d x]}}-$$

$$\left(2\,i\left(-492 a^2 b^2+5 b^4\right)\operatorname{Cos}[c+d x]\operatorname{Cos}[2(c+d x)]\left(2 a(a-b)\operatorname{EllipticE}\left[i\operatorname{ArcSinh}\left[\sqrt{-\frac{1}{a+b}}\sqrt{a+b\operatorname{Sin}[c+d x]}\right],\frac{a+b}{a-b}\right]+\right.\right.$$

$$b\left(2 a\operatorname{EllipticF}\left[i\operatorname{ArcSinh}\left[\sqrt{-\frac{1}{a+b}}\sqrt{a+b\operatorname{Sin}[c+d x]}\right],\frac{a+b}{a-b}\right]-b\operatorname{EllipticPi}\left[\frac{a+b}{a},i\operatorname{ArcSinh}\left[\sqrt{-\frac{1}{a+b}}\sqrt{a+b\operatorname{Sin}[c+d x]}\right],\right.\right.$$

$$\left.\left.\left.\frac{a+b}{a-b}\right]\right)\right)\sqrt{\frac{b-b\operatorname{Sin}[c+d x]}{a+b}}\sqrt{-\frac{b+b\operatorname{Sin}[c+d x]}{a-b}}\right)\Big/\left(a\sqrt{-\frac{1}{a+b}}\sqrt{1-\operatorname{Sin}[c+d x]^2}\right.$$

$$\left.\left.\left(-2a^2+b^2+4a\,(a+b\operatorname{Sin}[c+d x])-2\,(a+b\operatorname{Sin}[c+d x])^2\right)\sqrt{-\frac{a^2-b^2-2a\,(a+b\operatorname{Sin}[c+d x])+(a+b\operatorname{Sin}[c+d x])^2}{b^2}}\right)\right)$$

- **Problem 1166: Result unnecessarily involves imaginary or complex numbers.**

$$\int\operatorname{Cot}[c+d x]^4\operatorname{Csc}[c+d x]^2\,(a+b\operatorname{Sin}[c+d x])^{5/2}\,dx$$

Optimal (type 4, 482 leaves, 12 steps) :

$$-\frac{\left(128 a^4-580 a^2 b^2+15 b^4\right) \text{Cot}[c+d x] \sqrt{a+b \text{Sin}[c+d x]}}{640 a^2 d}+\frac{b \left(36 a^2-b^2\right) \text{Cot}[c+d x] \text{Csc}[c+d x] (a+b \text{Sin}[c+d x])^{3/2}}{64 a^2 d}+$$
$$\frac{\left(32 a^2-b^2\right) \text{Cot}[c+d x] \text{Csc}[c+d x]^2 (a+b \text{Sin}[c+d x])^{5/2}}{80 a^2 d}+\frac{3 b \text{Cot}[c+d x] \text{Csc}[c+d x]^3 (a+b \text{Sin}[c+d x])^{7/2}}{40 a^2 d}-$$
$$\frac{\text{Cot}[c+d x] \text{Csc}[c+d x]^4 (a+b \text{Sin}[c+d x])^{7/2}}{5 a d}-\frac{\left(128 a^4-2476 a^2 b^2-15 b^4\right) \text{EllipticE}\left[\frac{1}{2}\left(c-\frac{\pi}{2}+d x\right),\frac{2 b}{a+b}\right] \sqrt{a+b \text{Sin}[c+d x]}}{640 a^2 d \sqrt{\frac{a+b \text{Sin}[c+d x]}{a+b}}}+$$
$$\frac{\left(128 a^4+492 a^2 b^2-5 b^4\right) \text{EllipticF}\left[\frac{1}{2}\left(c-\frac{\pi}{2}+d x\right),\frac{2 b}{a+b}\right] \sqrt{\frac{a+b \text{Sin}[c+d x]}{a+b}}}{640 a d \sqrt{a+b \text{Sin}[c+d x]}}+$$
$$\frac{3 b \left(80 a^4-40 a^2 b^2+b^4\right) \text{EllipticPi}\left[2,\frac{1}{2}\left(c-\frac{\pi}{2}+d x\right),\frac{2 b}{a+b}\right] \sqrt{\frac{a+b \text{Sin}[c+d x]}{a+b}}}{128 a^2 d \sqrt{a+b \text{Sin}[c+d x]}}$$

Result (type 4, 700 leaves) :

$$\frac{1}{d}\left(\frac{\left(-128 a^4 \operatorname{Cos}[c+d x]+1196 a^2 b^2 \operatorname{Cos}[c+d x]+15 b^4 \operatorname{Cos}[c+d x]\right) \operatorname{Csc}[c+d x]}{640 a^2}+\frac{\left(436 a^2 b \operatorname{Cos}[c+d x]-5 b^3 \operatorname{Cos}[c+d x]\right) \operatorname{Csc}[c+d x]^2}{320 a}+\right.$$

$$\left.\frac{1}{80}\left(32 a^2 \operatorname{Cos}[c+d x]-31 b^2 \operatorname{Cos}[c+d x]\right) \operatorname{Csc}[c+d x]^3-\frac{21}{40} a b \operatorname{Cot}[c+d x] \operatorname{Csc}[c+d x]^3-\frac{1}{5} a^2 \operatorname{Cot}[c+d x] \operatorname{Csc}[c+d x]^4\right)$$

$$\sqrt{a+b \operatorname{Sin}[c+d x]}+\frac{1}{2560 a^2 d} b\left(-\frac{2\left(5936 a^3 b+20 a b^3\right) \operatorname{EllipticF}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right), \frac{2 b}{a+b}\right] \sqrt{\frac{a+b \operatorname{Sin}[c+d x]}{a+b}}}{\sqrt{a+b \operatorname{Sin}[c+d x]}}-\right.$$

$$\frac{2\left(2272 a^4+1276 a^2 b^2+45 b^4\right) \operatorname{EllipticPi}\left[2, \frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right), \frac{2 b}{a+b}\right] \sqrt{\frac{a+b \operatorname{Sin}[c+d x]}{a+b}}}{\sqrt{a+b \operatorname{Sin}[c+d x]}}-$$

$$\left(2 i\left(128 a^4-2476 a^2 b^2-15 b^4\right) \operatorname{Cos}[c+d x] \operatorname{Cos}[2(c+d x)]\left(2 a(a-b) \operatorname{EllipticE}\left[i \operatorname{ArcSinh}\left[\sqrt{-\frac{1}{a+b}} \sqrt{a+b \operatorname{Sin}[c+d x]}\right], \frac{a+b}{a-b}\right]+\right.\right.$$

$$b\left(2 a \operatorname{EllipticF}\left[i \operatorname{ArcSinh}\left[\sqrt{-\frac{1}{a+b}} \sqrt{a+b \operatorname{Sin}[c+d x]}\right], \frac{a+b}{a-b}\right]-b \operatorname{EllipticPi}\left[\frac{a+b}{a}, i \operatorname{ArcSinh}\left[\sqrt{-\frac{1}{a+b}} \sqrt{a+b \operatorname{Sin}[c+d x]}\right],\right.\right.$$

$$\left.\left.\left.\frac{a+b}{a-b}\right]\right)\right) \sqrt{\frac{b-b \operatorname{Sin}[c+d x]}{a+b}} \sqrt{-\frac{b+b \operatorname{Sin}[c+d x]}{a-b}}\Bigg) \Bigg/\left(a \sqrt{-\frac{1}{a+b}} \sqrt{1-\operatorname{Sin}[c+d x]^2}\right.$$

$$\left.\left.\left(-2 a^2+b^2+4 a(a+b \operatorname{Sin}[c+d x])-2(a+b \operatorname{Sin}[c+d x])^2\right) \sqrt{-\frac{a^2-b^2-2 a(a+b \operatorname{Sin}[c+d x])+(a+b \operatorname{Sin}[c+d x])^2}{b^2}}\right)\right)$$

Problem 1167: Result unnecessarily involves imaginary or complex numbers.

$$\int \operatorname{Cot}[c+d x]^4 \operatorname{Csc}[c+d x]^3 (a+b \operatorname{Sin}[c+d x])^{5/2} \, dx$$

Optimal (type 4, 551 leaves, 13 steps) :

$$-\frac{b\left(720 a^4-176 a^2 b^2+15 b^4\right) \text{Cot}[c+d x] \sqrt{a+b \text{Sin}[c+d x]}}{1536 a^3 d}-$$

$$\frac{\left(16 a^4-56 a^2 b^2+5 b^4\right) \text{Cot}[c+d x] \text{Csc}[c+d x] \sqrt{a+b \text{Sin}[c+d x]}}{256 a^2 d}+\frac{b\left(52 a^2-5 b^2\right) \text{Cot}[c+d x] \text{Csc}[c+d x]^2 (a+b \text{Sin}[c+d x])^{3/2}}{192 a^2 d}+$$

$$\frac{\left(28 a^2-3 b^2\right) \text{Cot}[c+d x] \text{Csc}[c+d x]^3 (a+b \text{Sin}[c+d x])^{5/2}}{96 a^2 d}+\frac{b \text{Cot}[c+d x] \text{Csc}[c+d x]^4 (a+b \text{Sin}[c+d x])^{7/2}}{12 a^2 d}-$$

$$\frac{\text{Cot}[c+d x] \text{Csc}[c+d x]^5 (a+b \text{Sin}[c+d x])^{7/2}}{6 a d}-\frac{b\left(720 a^4-176 a^2 b^2+15 b^4\right) \text{EllipticE}\left[\frac{1}{2}\left(c-\frac{\pi}{2}+d x\right), \frac{2 b}{a+b}\right] \sqrt{a+b \text{Sin}[c+d x]}}{1536 a^3 d \sqrt{\frac{a+b \text{Sin}[c+d x]}{a+b}}}+$$

$$\frac{b\left(816 a^4+1696 a^2 b^2+5 b^4\right) \text{EllipticF}\left[\frac{1}{2}\left(c-\frac{\pi}{2}+d x\right), \frac{2 b}{a+b}\right] \sqrt{\frac{a+b \text{Sin}[c+d x]}{a+b}}}{1536 a^2 d \sqrt{a+b \text{Sin}[c+d x]}}+$$

$$\frac{\left(64 a^6+720 a^4 b^2+60 a^2 b^4-5 b^6\right) \text{EllipticPi}\left[2, \frac{1}{2}\left(c-\frac{\pi}{2}+d x\right), \frac{2 b}{a+b}\right] \sqrt{\frac{a+b \text{Sin}[c+d x]}{a+b}}}{512 a^3 d \sqrt{a+b \text{Sin}[c+d x]}}$$

Result (type 4, 771 leaves) :

$$\frac{1}{d}\left(\frac{\left(-720\,a^4\,b\,\text{Cos}[c+d\,x]+176\,a^2\,b^3\,\text{Cos}[c+d\,x]-15\,b^5\,\text{Cos}[c+d\,x]\right)\,\text{Csc}[c+d\,x]}{1536\,a^3}+\right.$$
$$\frac{\left(-48\,a^4\,\text{Cos}[c+d\,x]+600\,a^2\,b^2\,\text{Cos}[c+d\,x]+5\,b^4\,\text{Cos}[c+d\,x]\right)\,\text{Csc}[c+d\,x]^2}{768\,a^2}+\frac{\left(164\,a^2\,b\,\text{Cos}[c+d\,x]-b^3\,\text{Cos}[c+d\,x]\right)\,\text{Csc}[c+d\,x]^3}{192\,a}+$$
$$\left.\frac{1}{96}\left(28\,a^2\,\text{Cos}[c+d\,x]-27\,b^2\,\text{Cos}[c+d\,x]\right)\,\text{Csc}[c+d\,x]^4-\frac{5}{12}\,a\,b\,\text{Cot}[c+d\,x]\,\text{Csc}[c+d\,x]^4-\frac{1}{6}\,a^2\,\text{Cot}[c+d\,x]\,\text{Csc}[c+d\,x]^5\right)$$
$$\sqrt{a+b\,\text{Sin}[c+d\,x]}+\frac{1}{6144\,a^3\,d}\left(-\frac{2\left(192\,a^5\,b+3744\,a^3\,b^3-20\,a\,b^5\right)\,\text{EllipticF}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right),\frac{2\,b}{a+b}\right]\sqrt{\frac{a+b\,\text{Sin}[c+d\,x]}{a+b}}}{\sqrt{a+b\,\text{Sin}[c+d\,x]}}-\right.$$
$$\frac{2\left(384\,a^6+3600\,a^4\,b^2+536\,a^2\,b^4-45\,b^6\right)\,\text{EllipticPi}\left[2,\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right),\frac{2\,b}{a+b}\right]\sqrt{\frac{a+b\,\text{Sin}[c+d\,x]}{a+b}}}{\sqrt{a+b\,\text{Sin}[c+d\,x]}}-$$
$$\left(2\,i\left(720\,a^4\,b^2-176\,a^2\,b^4+15\,b^6\right)\,\text{Cos}[c+d\,x]\,\text{Cos}[2\,(c+d\,x)]\left(2\,a\,(a-b)\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[\sqrt{-\frac{1}{a+b}}\sqrt{a+b\,\text{Sin}[c+d\,x]}\right],\frac{a+b}{a-b}\right]+\right.\right.$$
$$b\left(2\,a\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[\sqrt{-\frac{1}{a+b}}\sqrt{a+b\,\text{Sin}[c+d\,x]}\right],\frac{a+b}{a-b}\right]-b\,\text{EllipticPi}\left[\frac{a+b}{a},i\,\text{ArcSinh}\left[\sqrt{-\frac{1}{a+b}}\sqrt{a+b\,\text{Sin}[c+d\,x]}\right],\right.\right.$$
$$\left.\left.\left.\frac{a+b}{a-b}\right]\right)\right)\sqrt{\frac{b-b\,\text{Sin}[c+d\,x]}{a+b}}\sqrt{-\frac{b+b\,\text{Sin}[c+d\,x]}{a-b}}\right)\Bigg/\left(a\sqrt{-\frac{1}{a+b}}\sqrt{1-\text{Sin}[c+d\,x]^2}\right.$$
$$\left.\left.\left(-2\,a^2+b^2+4\,a\,(a+b\,\text{Sin}[c+d\,x])-2\,(a+b\,\text{Sin}[c+d\,x])^2\right)\sqrt{-\frac{a^2-b^2-2\,a\,(a+b\,\text{Sin}[c+d\,x])+(a+b\,\text{Sin}[c+d\,x])^2}{b^2}}\right)\right)$$

Problem 1171: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{\text{Cos}[c+d\,x]^3\,\text{Cot}[c+d\,x]}{\sqrt{a+b\,\text{Sin}[c+d\,x]}}\,dx$$

Optimal (type 4, 288 leaves, 9 steps):

$$\frac{8\,a\,\text{Cos}[c+d\,x]\,\sqrt{a+b\,\text{Sin}[c+d\,x]}}{15\,b^2\,d}-\frac{2\,\text{Cos}[c+d\,x]\,\text{Sin}[c+d\,x]\,\sqrt{a+b\,\text{Sin}[c+d\,x]}}{5\,b\,d}+$$

$$\frac{2\left(8\,a^2-21\,b^2\right)\text{EllipticE}\left[\frac{1}{2}\left(c-\frac{\pi}{2}+d\,x\right),\frac{2\,b}{a+b}\right]\sqrt{a+b\,\text{Sin}[c+d\,x]}}{15\,b^3\,d\,\sqrt{\frac{a+b\,\text{Sin}[c+d\,x]}{a+b}}}-$$

$$\frac{2\,a\left(8\,a^2-23\,b^2\right)\text{EllipticF}\left[\frac{1}{2}\left(c-\frac{\pi}{2}+d\,x\right),\frac{2\,b}{a+b}\right]\sqrt{\frac{a+b\,\text{Sin}[c+d\,x]}{a+b}}}{15\,b^3\,d\,\sqrt{a+b\,\text{Sin}[c+d\,x]}}+\frac{2\,\text{EllipticPi}\left[2,\frac{1}{2}\left(c-\frac{\pi}{2}+d\,x\right),\frac{2\,b}{a+b}\right]\sqrt{\frac{a+b\,\text{Sin}[c+d\,x]}{a+b}}}{d\,\sqrt{a+b\,\text{Sin}[c+d\,x]}}$$

Result (type 4, 536 leaves):

$$-\frac{1}{30\,b^2\,d}\left(\frac{8\,a\,b\,\text{EllipticF}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right),\frac{2\,b}{a+b}\right]\sqrt{\frac{a+b\,\text{Sin}[c+d\,x]}{a+b}}}{\sqrt{a+b\,\text{Sin}[c+d\,x]}}-\right.$$

$$\frac{2\left(-8\,a^2-9\,b^2\right)\text{EllipticPi}\left[2,\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right),\frac{2\,b}{a+b}\right]\sqrt{\frac{a+b\,\text{Sin}[c+d\,x]}{a+b}}}{\sqrt{a+b\,\text{Sin}[c+d\,x]}}-\Bigg(2\,i\left(8\,a^2-21\,b^2\right)\text{Cos}[c+d\,x]\,\text{Cos}[2\,(c+d\,x)]$$

$$\left(2\,a\,(a-b)\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[\sqrt{-\frac{1}{a+b}}\,\sqrt{a+b\,\text{Sin}[c+d\,x]}\right],\frac{a+b}{a-b}\right]+b\left(2\,a\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[\sqrt{-\frac{1}{a+b}}\,\sqrt{a+b\,\text{Sin}[c+d\,x]}\right],\right.\right.\right.$$

$$\left.\left.\left.\frac{a+b}{a-b}\right]-b\,\text{EllipticPi}\left[\frac{a+b}{a},\,i\,\text{ArcSinh}\left[\sqrt{-\frac{1}{a+b}}\,\sqrt{a+b\,\text{Sin}[c+d\,x]}\right],\frac{a+b}{a-b}\right]\right)\right)\sqrt{\frac{b-b\,\text{Sin}[c+d\,x]}{a+b}}\,\sqrt{-\frac{b+b\,\text{Sin}[c+d\,x]}{a-b}}\Bigg)\Big/$$

$$\left(a\,\sqrt{-\frac{1}{a+b}}\,\sqrt{1-\text{Sin}[c+d\,x]^2}\,\left(-2\,a^2+b^2+4\,a\,(a+b\,\text{Sin}[c+d\,x])-2\,(a+b\,\text{Sin}[c+d\,x])^2\right)\right.$$

$$\left.\left.\sqrt{-\frac{a^2-b^2-2\,a\,(a+b\,\text{Sin}[c+d\,x])+(a+b\,\text{Sin}[c+d\,x])^2}{b^2}}\right)\right)+\frac{\sqrt{a+b\,\text{Sin}[c+d\,x]}\left(\frac{8\,a\,\text{Cos}[c+d\,x]}{15\,b^2}-\frac{\text{Sin}[2\,(c+d\,x)]}{5\,b}\right)}{d}$$

■ Problem 1172: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{\text{Cos}[c+d x]^2\,\text{Cot}[c+d x]^2}{\sqrt{a+b\,\text{Sin}[c+d x]}}\,dx$$

Optimal (type 4, 285 leaves, 9 steps):

$$-\frac{2\,\text{Cos}[c+d x]\sqrt{a+b\,\text{Sin}[c+d x]}}{3 b d}-\frac{\text{Cot}[c+d x]\sqrt{a+b\,\text{Sin}[c+d x]}}{a d}-\frac{\left(4 a^2+3 b^2\right)\text{EllipticE}\left[\frac{1}{2}\left(c-\frac{\pi}{2}+d x\right),\frac{2 b}{a+b}\right]\sqrt{a+b\,\text{Sin}[c+d x]}}{3 a b^2 d\sqrt{\frac{a+b\,\text{Sin}[c+d x]}{a+b}}}+\frac{\left(4 a^2-7 b^2\right)\text{EllipticF}\left[\frac{1}{2}\left(c-\frac{\pi}{2}+d x\right),\frac{2 b}{a+b}\right]\sqrt{\frac{a+b\,\text{Sin}[c+d x]}{a+b}}}{3 b^2 d\sqrt{a+b\,\text{Sin}[c+d x]}}-\frac{b\,\text{EllipticPi}\left[2,\frac{1}{2}\left(c-\frac{\pi}{2}+d x\right),\frac{2 b}{a+b}\right]\sqrt{\frac{a+b\,\text{Sin}[c+d x]}{a+b}}}{a d\sqrt{a+b\,\text{Sin}[c+d x]}}$$

Result (type 4, 534 leaves):

$$\frac{\left(-\frac{2\,\text{Cos}[c+d x]}{3 b}-\frac{\text{Cot}[c+d x]}{a}\right)\sqrt{a+b\,\text{Sin}[c+d x]}}{d}+\frac{1}{12 a b d}\left(\frac{40 a b\,\text{EllipticF}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right),\frac{2 b}{a+b}\right]\sqrt{\frac{a+b\,\text{Sin}[c+d x]}{a+b}}}{\sqrt{a+b\,\text{Sin}[c+d x]}}-\frac{2\left(-4 a^2-9 b^2\right)\text{EllipticPi}\left[2,\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right),\frac{2 b}{a+b}\right]\sqrt{\frac{a+b\,\text{Sin}[c+d x]}{a+b}}}{\sqrt{a+b\,\text{Sin}[c+d x]}}-\right.$$

$$\left(2\,i\left(4 a^2+3 b^2\right)\text{Cos}[c+d x]\,\text{Cos}[2(c+d x)]\left(2 a(a-b)\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[\sqrt{-\frac{1}{a+b}}\sqrt{a+b\,\text{Sin}[c+d x]}\right],\frac{a+b}{a-b}\right]+b\left(2 a\,\text{EllipticF}\left[\right.\right.\right.\right.$$

$$\left.\left.\left.i\,\text{ArcSinh}\left[\sqrt{-\frac{1}{a+b}}\sqrt{a+b\,\text{Sin}[c+d x]}\right],\frac{a+b}{a-b}\right]-b\,\text{EllipticPi}\left[\frac{a+b}{a},i\,\text{ArcSinh}\left[\sqrt{-\frac{1}{a+b}}\sqrt{a+b\,\text{Sin}[c+d x]}\right],\frac{a+b}{a-b}\right]\right)\right)$$

$$\left.\sqrt{\frac{b-b\,\text{Sin}[c+d x]}{a+b}}\sqrt{-\frac{b+b\,\text{Sin}[c+d x]}{a-b}}\right)\Bigg/\left(a\sqrt{-\frac{1}{a+b}}\sqrt{1-\text{Sin}[c+d x]^2}\left(-2 a^2+b^2+4 a(a+b\,\text{Sin}[c+d x])-2(a+b\,\text{Sin}[c+d x])^2\right)\right.$$

$$\left.\left.\sqrt{-\frac{a^2-b^2-2 a(a+b\,\text{Sin}[c+d x])+(a+b\,\text{Sin}[c+d x])^2}{b^2}}\right)\right)$$

Problem 1173: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{\operatorname{Cos}[c+d x] \operatorname{Cot}[c+d x]^3}{\sqrt{a+b \operatorname{Sin}[c+d x]}} \, dx$$

Optimal (type 4, 307 leaves, 9 steps):

$$\frac{3 b \operatorname{Cot}[c+d x] \sqrt{a+b \operatorname{Sin}[c+d x]}}{4 a^2 d}-\frac{\operatorname{Cot}[c+d x] \operatorname{Csc}[c+d x] \sqrt{a+b \operatorname{Sin}[c+d x]}}{2 a d}+$$
$$\frac{\left(8 a^2+3 b^2\right) \operatorname{EllipticE}\left[\frac{1}{2}\left(c-\frac{\pi}{2}+d x\right), \frac{2 b}{a+b}\right] \sqrt{a+b \operatorname{Sin}[c+d x]}}{4 a^2 b d \sqrt{\frac{a+b \operatorname{Sin}[c+d x]}{a+b}}}-$$
$$\frac{\left(8 a^2+b^2\right) \operatorname{EllipticF}\left[\frac{1}{2}\left(c-\frac{\pi}{2}+d x\right), \frac{2 b}{a+b}\right] \sqrt{\frac{a+b \operatorname{Sin}[c+d x]}{a+b}}}{4 a b d \sqrt{a+b \operatorname{Sin}[c+d x]}}-\frac{3\left(4 a^2-b^2\right) \operatorname{EllipticPi}\left[2, \frac{1}{2}\left(c-\frac{\pi}{2}+d x\right), \frac{2 b}{a+b}\right] \sqrt{\frac{a+b \operatorname{Sin}[c+d x]}{a+b}}}{4 a^2 d \sqrt{a+b \operatorname{Sin}[c+d x]}}$$

Result (type 4, 443 leaves):

$$\frac{1}{16 d}\left(\frac{1}{a^3 b^2 \sqrt{-\frac{1}{a+b}}\left(-2+\operatorname{Csc}[c+d x]^2\right)}\right.$$
$$2 i \left(8 a^2+3 b^2\right) \operatorname{Cos}[2(c+d x)] \operatorname{Csc}[c+d x]^2\left(2 a(a-b) \operatorname{EllipticE}\left[i \operatorname{ArcSinh}\left[\sqrt{-\frac{1}{a+b}} \sqrt{a+b \operatorname{Sin}[c+d x]}\right], \frac{a+b}{a-b}\right]+b\left(2 a \operatorname{EllipticF}\left[\right.\right.\right.$$
$$\left.\left.\left. i \operatorname{ArcSinh}\left[\sqrt{-\frac{1}{a+b}} \sqrt{a+b \operatorname{Sin}[c+d x]}\right], \frac{a+b}{a-b}\right]-b \operatorname{EllipticPi}\left[\frac{a+b}{a}, i \operatorname{ArcSinh}\left[\sqrt{-\frac{1}{a+b}} \sqrt{a+b \operatorname{Sin}[c+d x]}\right], \frac{a+b}{a-b}\right]\right)\right)$$
$$\operatorname{Sec}[c+d x] \sqrt{-\frac{b(-1+\operatorname{Sin}[c+d x])}{a+b}} \sqrt{-\frac{b(1+\operatorname{Sin}[c+d x])}{a-b}}-\frac{4 \operatorname{Cot}[c+d x](-3 b+2 a \operatorname{Csc}[c+d x]) \sqrt{a+b \operatorname{Sin}[c+d x]}}{a^2}-$$
$$\left.\frac{8 b \operatorname{EllipticF}\left[\frac{1}{4}(-2 c+\pi-2 d x), \frac{2 b}{a+b}\right] \sqrt{\frac{a+b \operatorname{Sin}[c+d x]}{a+b}}}{a \sqrt{a+b \operatorname{Sin}[c+d x]}}+\frac{2\left(16 a^2-9 b^2\right) \operatorname{EllipticPi}\left[2, \frac{1}{4}(-2 c+\pi-2 d x), \frac{2 b}{a+b}\right] \sqrt{\frac{a+b \operatorname{Sin}[c+d x]}{a+b}}}{a^2 \sqrt{a+b \operatorname{Sin}[c+d x]}}\right)$$

Problem 1174: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{\text{Cot}[c+d x]^4}{\sqrt{a+b\,\text{Sin}[c+d x]}}\, dx$$

Optimal (type 4, 353 leaves, 10 steps):

$$\frac{\left(32 a^2-15 b^2\right) \text{Cot}[c+d x] \sqrt{a+b\,\text{Sin}[c+d x]}}{24 a^3 d}+\frac{5 b\,\text{Cot}[c+d x]\,\text{Csc}[c+d x] \sqrt{a+b\,\text{Sin}[c+d x]}}{12 a^2 d}-\frac{\text{Cot}[c+d x]\,\text{Csc}[c+d x]^2 \sqrt{a+b\,\text{Sin}[c+d x]}}{3 a d}+\frac{\left(32 a^2-15 b^2\right) \text{EllipticE}\left[\frac{1}{2}\left(c-\frac{\pi}{2}+d x\right),\frac{2 b}{a+b}\right] \sqrt{a+b\,\text{Sin}[c+d x]}}{24 a^3 d \sqrt{\frac{a+b\,\text{Sin}[c+d x]}{a+b}}}+\frac{\left(16 a^2+5 b^2\right) \text{EllipticF}\left[\frac{1}{2}\left(c-\frac{\pi}{2}+d x\right),\frac{2 b}{a+b}\right] \sqrt{\frac{a+b\,\text{Sin}[c+d x]}{a+b}}}{24 a^2 d \sqrt{a+b\,\text{Sin}[c+d x]}}+\frac{b\left(12 a^2-5 b^2\right) \text{EllipticPi}\left[2,\frac{1}{2}\left(c-\frac{\pi}{2}+d x\right),\frac{2 b}{a+b}\right] \sqrt{\frac{a+b\,\text{Sin}[c+d x]}{a+b}}}{8 a^3 d \sqrt{a+b\,\text{Sin}[c+d x]}}$$

Result (type 4, 596 leaves):

$$\frac{\left(\frac{(32 a^2 \mathrm{Cos}[c+d x]-15 b^2 \mathrm{Cos}[c+d x]) \mathrm{Csc}[c+d x]}{24 a^3}+\frac{5 b \mathrm{Cot}[c+d x] \mathrm{Csc}[c+d x]}{12 a^2}-\frac{\mathrm{Cot}[c+d x] \mathrm{Csc}[c+d x]^2}{3 a}\right)\sqrt{a+b \mathrm{Sin}[c+d x]}}{d}+$$

$$\frac{1}{96 a^3 d}\left(-\frac{2 (96 a^3-20 a b^2) \mathrm{EllipticF}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right),\frac{2 b}{a+b}\right]\sqrt{\frac{a+b \mathrm{Sin}[c+d x]}{a+b}}}{\sqrt{a+b \mathrm{Sin}[c+d x]}}-\right.$$

$$\frac{2 (104 a^2 b-45 b^3) \mathrm{EllipticPi}\left[2,\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right),\frac{2 b}{a+b}\right]\sqrt{\frac{a+b \mathrm{Sin}[c+d x]}{a+b}}}{\sqrt{a+b \mathrm{Sin}[c+d x]}}-\left(2 i (-32 a^2 b+15 b^3) \mathrm{Cos}[c+d x] \mathrm{Cos}[2 (c+d x)]\right.$$

$$\left(2 a (a-b) \mathrm{EllipticE}\left[i \mathrm{ArcSinh}\left[\sqrt{-\frac{1}{a+b}}\sqrt{a+b \mathrm{Sin}[c+d x]}\right],\frac{a+b}{a-b}\right]+b\left(2 a \mathrm{EllipticF}\left[i \mathrm{ArcSinh}\left[\sqrt{-\frac{1}{a+b}}\sqrt{a+b \mathrm{Sin}[c+d x]}\right],\right.\right.\right.$$

$$\left.\left.\left.\frac{a+b}{a-b}\right]-b \mathrm{EllipticPi}\left[\frac{a+b}{a},i \mathrm{ArcSinh}\left[\sqrt{-\frac{1}{a+b}}\sqrt{a+b \mathrm{Sin}[c+d x]}\right],\frac{a+b}{a-b}\right]\right)\right)\sqrt{\frac{b-b \mathrm{Sin}[c+d x]}{a+b}}\sqrt{-\frac{b+b \mathrm{Sin}[c+d x]}{a-b}}\Bigg)\Bigg/$$

$$\left(a\sqrt{-\frac{1}{a+b}}\sqrt{1-\mathrm{Sin}[c+d x]^2}\left(-2 a^2+b^2+4 a (a+b \mathrm{Sin}[c+d x])-2 (a+b \mathrm{Sin}[c+d x])^2\right)\right.$$

$$\left.\left.\sqrt{-\frac{a^2-b^2-2 a (a+b \mathrm{Sin}[c+d x])+(a+b \mathrm{Sin}[c+d x])^2}{b^2}}\right)\right)$$

- **Problem 1175: Result unnecessarily involves imaginary or complex numbers.**

$$\int \frac{\mathrm{Cot}[c+d x]^4 \mathrm{Csc}[c+d x]}{\sqrt{a+b \mathrm{Sin}[c+d x]}}\,dx$$

Optimal (type 4, 412 leaves, 11 steps) :

$$-\frac{b\left(188 a^2-105 b^2\right) \text{Cot}[c+d x] \sqrt{a+b \text{Sin}[c+d x]}}{192 a^4 d}+\frac{5\left(12 a^2-7 b^2\right) \text{Cot}[c+d x] \text{Csc}[c+d x] \sqrt{a+b \text{Sin}[c+d x]}}{96 a^3 d}+$$

$$\frac{7 b \text{Cot}[c+d x] \text{Csc}[c+d x]^2 \sqrt{a+b \text{Sin}[c+d x]}}{24 a^2 d}-\frac{\text{Cot}[c+d x] \text{Csc}[c+d x]^3 \sqrt{a+b \text{Sin}[c+d x]}}{4 a d}-$$

$$\frac{b\left(188 a^2-105 b^2\right) \text{EllipticE}\left[\frac{1}{2}\left(c-\frac{\pi}{2}+d x\right), \frac{2 b}{a+b}\right] \sqrt{a+b \text{Sin}[c+d x]}}{192 a^4 d \sqrt{\frac{a+b \text{Sin}[c+d x]}{a+b}}}+\frac{b\left(68 a^2-35 b^2\right) \text{EllipticF}\left[\frac{1}{2}\left(c-\frac{\pi}{2}+d x\right), \frac{2 b}{a+b}\right] \sqrt{\frac{a+b \text{Sin}[c+d x]}{a+b}}}{192 a^3 d \sqrt{a+b \text{Sin}[c+d x]}}+$$

$$\frac{\left(48 a^4-72 a^2 b^2+35 b^4\right) \text{EllipticPi}\left[2, \frac{1}{2}\left(c-\frac{\pi}{2}+d x\right), \frac{2 b}{a+b}\right] \sqrt{\frac{a+b \text{Sin}[c+d x]}{a+b}}}{64 a^4 d \sqrt{a+b \text{Sin}[c+d x]}}$$

Result (type 4, 647 leaves) :

$$\frac{1}{d}\left(\frac{\left(-188\, a^2\, b\, \text{Cos}[c+d\, x]+105\, b^3\, \text{Cos}[c+d\, x]\right)\, \text{Csc}[c+d\, x]}{192\, a^4}+\frac{5\, \left(12\, a^2\, \text{Cos}[c+d\, x]-7\, b^2\, \text{Cos}[c+d\, x]\right)\, \text{Csc}[c+d\, x]^2}{96\, a^3}+\frac{7\, b\, \text{Cot}[c+d\, x]\, \text{Csc}[c+d\, x]^2}{24\, a^2}-\frac{\text{Cot}[c+d\, x]\, \text{Csc}[c+d\, x]^3}{4\, a}\right)\sqrt{a+b\, \text{Sin}[c+d\, x]}+$$

$$\frac{1}{768\, a^4\, d}\left(-\frac{2\, \left(-240\, a^3\, b+140\, a\, b^3\right)\, \text{EllipticF}\left[\frac{1}{2}\, \left(-c+\frac{\pi}{2}-d\, x\right),\, \frac{2\, b}{a+b}\right]\, \sqrt{\frac{a+b\, \text{Sin}[c+d\, x]}{a+b}}}{\sqrt{a+b\, \text{Sin}[c+d\, x]}}-\frac{2\, \left(288\, a^4-620\, a^2\, b^2+315\, b^4\right)\, \text{EllipticPi}\left[2,\, \frac{1}{2}\, \left(-c+\frac{\pi}{2}-d\, x\right),\, \frac{2\, b}{a+b}\right]\, \sqrt{\frac{a+b\, \text{Sin}[c+d\, x]}{a+b}}}{\sqrt{a+b\, \text{Sin}[c+d\, x]}}-\right.$$

$$\left(2\, i\, \left(188\, a^2\, b^2-105\, b^4\right)\, \text{Cos}[c+d\, x]\, \text{Cos}[2\, (c+d\, x)]\, \left(2\, a\, (a-b)\, \text{EllipticE}\left[i\, \text{ArcSinh}\left[\sqrt{-\frac{1}{a+b}}\, \sqrt{a+b\, \text{Sin}[c+d\, x]}\right],\, \frac{a+b}{a-b}\right]+\right.\right.$$

$$b\, \left(2\, a\, \text{EllipticF}\left[i\, \text{ArcSinh}\left[\sqrt{-\frac{1}{a+b}}\, \sqrt{a+b\, \text{Sin}[c+d\, x]}\right],\, \frac{a+b}{a-b}\right]-b\, \text{EllipticPi}\left[\frac{a+b}{a},\, i\, \text{ArcSinh}\left[\sqrt{-\frac{1}{a+b}}\, \sqrt{a+b\, \text{Sin}[c+d\, x]}\right],\right.\right.$$

$$\left.\left.\left.\frac{a+b}{a-b}\right]\right)\right)\, \sqrt{\frac{b-b\, \text{Sin}[c+d\, x]}{a+b}}\, \sqrt{-\frac{b+b\, \text{Sin}[c+d\, x]}{a-b}}\right)\Bigg/\left(a\, \sqrt{-\frac{1}{a+b}}\, \sqrt{1-\text{Sin}[c+d\, x]^2}\right.$$

$$\left.\left.\left(-2\, a^2+b^2+4\, a\, (a+b\, \text{Sin}[c+d\, x])-2\, (a+b\, \text{Sin}[c+d\, x])^2\right)\, \sqrt{-\frac{a^2-b^2-2\, a\, (a+b\, \text{Sin}[c+d\, x])+(a+b\, \text{Sin}[c+d\, x])^2}{b^2}}\right)\right)$$

- **Problem 1179: Result unnecessarily involves imaginary or complex numbers.**

$$\int \frac{\text{Cos}[c+d\, x]^3\, \text{Cot}[c+d\, x]}{(a+b\, \text{Sin}[c+d\, x])^{3/2}}\, dx$$

Optimal (type 4, 296 leaves, 9 steps) :

$$-\frac{2\left(a^2-b^2\right)\text{Cos}[c+d x]}{a b^2 d\sqrt{a+b\,\text{Sin}[c+d x]}}-\frac{2\,\text{Cos}[c+d x]\sqrt{a+b\,\text{Sin}[c+d x]}}{3 b^2 d}-\frac{2\left(8 a^2-3 b^2\right)\text{EllipticE}\left[\frac{1}{2}\left(c-\frac{\pi}{2}+d x\right),\frac{2 b}{a+b}\right]\sqrt{a+b\,\text{Sin}[c+d x]}}{3 a b^3 d\sqrt{\frac{a+b\,\text{Sin}[c+d x]}{a+b}}}+\frac{2\left(8 a^2-5 b^2\right)\text{EllipticF}\left[\frac{1}{2}\left(c-\frac{\pi}{2}+d x\right),\frac{2 b}{a+b}\right]\sqrt{\frac{a+b\,\text{Sin}[c+d x]}{a+b}}}{3 b^3 d\sqrt{a+b\,\text{Sin}[c+d x]}}+\frac{2\,\text{EllipticPi}\left[2,\frac{1}{2}\left(c-\frac{\pi}{2}+d x\right),\frac{2 b}{a+b}\right]\sqrt{\frac{a+b\,\text{Sin}[c+d x]}{a+b}}}{a d\sqrt{a+b\,\text{Sin}[c+d x]}}$$

Result (type 4, 565 leaves) :

$$\frac{\sqrt{a+b\,\text{Sin}[c+d x]}\left(-\frac{2\,\text{Cos}[c+d x]}{3 b^2}-\frac{2\left(a^2\,\text{Cos}[c+d x]-b^2\,\text{Cos}[c+d x]\right)}{a b^2\left(a+b\,\text{Sin}[c+d x]\right)}\right)}{d}+\frac{1}{6 a b^2 d}\left(\frac{8 a b\,\text{EllipticF}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right),\frac{2 b}{a+b}\right]\sqrt{\frac{a+b\,\text{Sin}[c+d x]}{a+b}}}{\sqrt{a+b\,\text{Sin}[c+d x]}}-\frac{2\left(-8 a^2+9 b^2\right)\text{EllipticPi}\left[2,\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right),\frac{2 b}{a+b}\right]\sqrt{\frac{a+b\,\text{Sin}[c+d x]}{a+b}}}{\sqrt{a+b\,\text{Sin}[c+d x]}}-\left(2\,i\left(8 a^2-3 b^2\right)\text{Cos}[c+d x]\,\text{Cos}[2(c+d x)]\left(2 a(a-b)\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[\sqrt{-\frac{1}{a+b}}\sqrt{a+b\,\text{Sin}[c+d x]}\right],\frac{a+b}{a-b}\right]+b\left(2 a\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[\sqrt{-\frac{1}{a+b}}\sqrt{a+b\,\text{Sin}[c+d x]}\right],\frac{a+b}{a-b}\right]-b\,\text{EllipticPi}\left[\frac{a+b}{a},i\,\text{ArcSinh}\left[\sqrt{-\frac{1}{a+b}}\sqrt{a+b\,\text{Sin}[c+d x]}\right],\frac{a+b}{a-b}\right]\right)\right)\sqrt{\frac{b-b\,\text{Sin}[c+d x]}{a+b}}\sqrt{-\frac{b+b\,\text{Sin}[c+d x]}{a-b}}\right)\Big/\left(a\sqrt{-\frac{1}{a+b}}\sqrt{1-\text{Sin}[c+d x]^2}\left(-2 a^2+b^2+4 a\left(a+b\,\text{Sin}[c+d x]\right)-2\left(a+b\,\text{Sin}[c+d x]\right)^2\right)\sqrt{-\frac{a^2-b^2-2 a\left(a+b\,\text{Sin}[c+d x]\right)+\left(a+b\,\text{Sin}[c+d x]\right)^2}{b^2}}\right)\right)$$

- **Problem 1180: Result unnecessarily involves imaginary or complex numbers.**

$$\int\frac{\text{Cos}[c+d x]^2\,\text{Cot}[c+d x]^2}{\left(a+b\,\text{Sin}[c+d x]\right)^{3/2}}\,dx$$

Optimal (type 4, 294 leaves, 9 steps) :

$$\frac{(2a^2-3b^2)\,\mathrm{Cos}[c+dx]}{a^2 b d\sqrt{a+b\,\mathrm{Sin}[c+dx]}}-\frac{\mathrm{Cot}[c+dx]}{a d\sqrt{a+b\,\mathrm{Sin}[c+dx]}}+\frac{(4a^2-3b^2)\,\mathrm{EllipticE}\left[\frac{1}{2}\left(c-\frac{\pi}{2}+dx\right),\frac{2b}{a+b}\right]\sqrt{a+b\,\mathrm{Sin}[c+dx]}}{a^2 b^2 d\sqrt{\frac{a+b\,\mathrm{Sin}[c+dx]}{a+b}}}-$$

$$\frac{(4a^2-b^2)\,\mathrm{EllipticF}\left[\frac{1}{2}\left(c-\frac{\pi}{2}+dx\right),\frac{2b}{a+b}\right]\sqrt{\frac{a+b\,\mathrm{Sin}[c+dx]}{a+b}}}{a b^2 d\sqrt{a+b\,\mathrm{Sin}[c+dx]}}-\frac{3b\,\mathrm{EllipticPi}\left[2,\frac{1}{2}\left(c-\frac{\pi}{2}+dx\right),\frac{2b}{a+b}\right]\sqrt{\frac{a+b\,\mathrm{Sin}[c+dx]}{a+b}}}{a^2 d\sqrt{a+b\,\mathrm{Sin}[c+dx]}}$$

Result (type 4, 563 leaves):

$$\frac{\sqrt{a+b\,\mathrm{Sin}[c+dx]}\left(-\frac{\mathrm{Cot}[c+dx]}{a^2}+\frac{2\left(a^2\,\mathrm{Cos}[c+dx]-b^2\,\mathrm{Cos}[c+dx]\right)}{a^2 b\,(a+b\,\mathrm{Sin}[c+dx])}\right)}{d}-$$

$$\frac{1}{4a^2 b d}\left(-\frac{8ab\,\mathrm{EllipticF}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-dx\right),\frac{2b}{a+b}\right]\sqrt{\frac{a+b\,\mathrm{Sin}[c+dx]}{a+b}}}{\sqrt{a+b\,\mathrm{Sin}[c+dx]}}-\frac{2\left(-4a^2+9b^2\right)\mathrm{EllipticPi}\left[2,\frac{1}{2}\left(-c+\frac{\pi}{2}-dx\right),\frac{2b}{a+b}\right]\sqrt{\frac{a+b\,\mathrm{Sin}[c+dx]}{a+b}}}{\sqrt{a+b\,\mathrm{Sin}[c+dx]}}-\right.$$

$$\left(2\,i\,(4a^2-3b^2)\,\mathrm{Cos}[c+dx]\,\mathrm{Cos}[2(c+dx)]\left(2a(a-b)\,\mathrm{EllipticE}\left[i\,\mathrm{ArcSinh}\left[\sqrt{-\frac{1}{a+b}}\sqrt{a+b\,\mathrm{Sin}[c+dx]}\right],\frac{a+b}{a-b}\right]+b\left(2a\,\mathrm{EllipticF}\left[\right.\right.\right.\right.$$

$$\left.\left.\left.i\,\mathrm{ArcSinh}\left[\sqrt{-\frac{1}{a+b}}\sqrt{a+b\,\mathrm{Sin}[c+dx]}\right],\frac{a+b}{a-b}\right]-b\,\mathrm{EllipticPi}\left[\frac{a+b}{a},i\,\mathrm{ArcSinh}\left[\sqrt{-\frac{1}{a+b}}\sqrt{a+b\,\mathrm{Sin}[c+dx]}\right],\frac{a+b}{a-b}\right]\right)\right)$$

$$\left.\sqrt{\frac{b-b\,\mathrm{Sin}[c+dx]}{a+b}}\sqrt{-\frac{b+b\,\mathrm{Sin}[c+dx]}{a-b}}\right)\Big/\left(a\sqrt{-\frac{1}{a+b}}\sqrt{1-\mathrm{Sin}[c+dx]^2}\left(-2a^2+b^2+4a\,(a+b\,\mathrm{Sin}[c+dx])-2\,(a+b\,\mathrm{Sin}[c+dx])^2\right)\right.$$

$$\left.\left.\sqrt{-\frac{a^2-b^2-2a\,(a+b\,\mathrm{Sin}[c+dx])+(a+b\,\mathrm{Sin}[c+dx])^2}{b^2}}\right)\right)$$

- **Problem 1181: Result unnecessarily involves imaginary or complex numbers.**

$$\int\frac{\mathrm{Cos}[c+dx]\,\mathrm{Cot}[c+dx]^3}{(a+b\,\mathrm{Sin}[c+dx])^{3/2}}\,dx$$

Optimal (type 4, 366 leaves, 10 steps):

$$\frac{\left(4 a^2-5 b^2\right) \text{Cot}[c+d x]}{2 a^2 b d \sqrt{a+b \text{Sin}[c+d x]}}-\frac{\text{Cot}[c+d x] \text{Csc}[c+d x]}{2 a d \sqrt{a+b \text{Sin}[c+d x]}}-$$

$$\frac{\left(8 a^2-15 b^2\right) \text{Cot}[c+d x] \sqrt{a+b \text{Sin}[c+d x]}}{4 a^3 b d}-\frac{\left(8 a^2-15 b^2\right) \text{EllipticE}\left[\frac{1}{2} \left(c-\frac{\pi}{2}+d x\right),\frac{2 b}{a+b}\right] \sqrt{a+b \text{Sin}[c+d x]}}{4 a^3 b d \sqrt{\frac{a+b \text{Sin}[c+d x]}{a+b}}}+$$

$$\frac{\left(8 a^2-5 b^2\right) \text{EllipticF}\left[\frac{1}{2} \left(c-\frac{\pi}{2}+d x\right),\frac{2 b}{a+b}\right] \sqrt{\frac{a+b \text{Sin}[c+d x]}{a+b}}}{4 a^2 b d \sqrt{a+b \text{Sin}[c+d x]}}-\frac{3 \left(4 a^2-5 b^2\right) \text{EllipticPi}\left[2,\frac{1}{2} \left(c-\frac{\pi}{2}+d x\right),\frac{2 b}{a+b}\right] \sqrt{\frac{a+b \text{Sin}[c+d x]}{a+b}}}{4 a^3 d \sqrt{a+b \text{Sin}[c+d x]}}$$

Result (type 4, 579 leaves):

$$\frac{\sqrt{a+b \text{Sin}[c+d x]} \left(\frac{7 b \text{Cot}[c+d x]}{4 a^3}-\frac{\text{Cot}[c+d x] \text{Csc}[c+d x]}{2 a^2}-\frac{2 \left(a^2 \text{Cos}[c+d x]-b^2 \text{Cos}[c+d x]\right)}{a^3 (a+b \text{Sin}[c+d x])}\right)}{d}+$$

$$\frac{1}{16 a^3 d}\left(-\frac{40 a b \text{EllipticF}\left[\frac{1}{2} \left(-c+\frac{\pi}{2}-d x\right),\frac{2 b}{a+b}\right] \sqrt{\frac{a+b \text{Sin}[c+d x]}{a+b}}}{\sqrt{a+b \text{Sin}[c+d x]}}-\frac{2 \left(-32 a^2+45 b^2\right) \text{EllipticPi}\left[2,\frac{1}{2} \left(-c+\frac{\pi}{2}-d x\right),\frac{2 b}{a+b}\right] \sqrt{\frac{a+b \text{Sin}[c+d x]}{a+b}}}{\sqrt{a+b \text{Sin}[c+d x]}}-\right.$$

$$\left(2 i \left(8 a^2-15 b^2\right) \text{Cos}[c+d x] \text{Cos}[2 (c+d x)]\right) \left(2 a (a-b) \text{EllipticE}\left[i \text{ArcSinh}\left[\sqrt{-\frac{1}{a+b}} \sqrt{a+b \text{Sin}[c+d x]}\right],\frac{a+b}{a-b}\right]+b \left(2 a \text{EllipticF}\left[\right.\right.\right.$$

$$\left.\left.\left. i \text{ArcSinh}\left[\sqrt{-\frac{1}{a+b}} \sqrt{a+b \text{Sin}[c+d x]}\right],\frac{a+b}{a-b}\right]-b \text{EllipticPi}\left[\frac{a+b}{a},i \text{ArcSinh}\left[\sqrt{-\frac{1}{a+b}} \sqrt{a+b \text{Sin}[c+d x]}\right],\frac{a+b}{a-b}\right]\right)\right)$$

$$\left.\sqrt{\frac{b-b \text{Sin}[c+d x]}{a+b}} \sqrt{-\frac{b+b \text{Sin}[c+d x]}{a-b}}\right) \Big/ \left(a \sqrt{-\frac{1}{a+b}} \sqrt{1-\text{Sin}[c+d x]^2} \left(-2 a^2+b^2+4 a (a+b \text{Sin}[c+d x])-2 (a+b \text{Sin}[c+d x])^2\right)\right.$$

$$\left.\left.\sqrt{-\frac{a^2-b^2-2 a (a+b \text{Sin}[c+d x])+(a+b \text{Sin}[c+d x])^2}{b^2}}\right)\right)$$

Problem 1182: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{\text{Cot}[c+d x]^4}{(a+b \text{Sin}[c+d x])^{3/2}} \, dx$$

Optimal (type 4, 416 leaves, 11 steps):

$$\frac{\left(6 a^2-7 b^2\right) \text{Cot}[c+d x] \text{Csc}[c+d x]}{3 a^2 b d \sqrt{a+b \text{Sin}[c+d x]}}-\frac{\text{Cot}[c+d x] \text{Csc}[c+d x]^2}{3 a d \sqrt{a+b \text{Sin}[c+d x]}}+\frac{5 \left(16 a^2-21 b^2\right) \text{Cot}[c+d x] \sqrt{a+b \text{Sin}[c+d x]}}{24 a^4 d}-$$
$$\frac{\left(24 a^2-35 b^2\right) \text{Cot}[c+d x] \text{Csc}[c+d x] \sqrt{a+b \text{Sin}[c+d x]}}{12 a^3 b d}+\frac{5 \left(16 a^2-21 b^2\right) \text{EllipticE}\left[\frac{1}{2} \left(c-\frac{\pi}{2}+d x\right), \frac{2 b}{a+b}\right] \sqrt{a+b \text{Sin}[c+d x]}}{24 a^4 d \sqrt{\frac{a+b \text{Sin}[c+d x]}{a+b}}}-$$
$$\frac{\left(32 a^2-35 b^2\right) \text{EllipticF}\left[\frac{1}{2} \left(c-\frac{\pi}{2}+d x\right), \frac{2 b}{a+b}\right] \sqrt{\frac{a+b \text{Sin}[c+d x]}{a+b}}}{24 a^3 d \sqrt{a+b \text{Sin}[c+d x]}}+\frac{b \left(36 a^2-35 b^2\right) \text{EllipticPi}\left[2, \frac{1}{2} \left(c-\frac{\pi}{2}+d x\right), \frac{2 b}{a+b}\right] \sqrt{\frac{a+b \text{Sin}[c+d x]}{a+b}}}{8 a^4 d \sqrt{a+b \text{Sin}[c+d x]}}$$

Result (type 4, 636 leaves):

$$\frac{1}{d}\sqrt{a+b\,\mathrm{Sin}[c+d\,x]}\left(\frac{\left(32\,a^2\,\mathrm{Cos}[c+d\,x]-57\,b^2\,\mathrm{Cos}[c+d\,x]\right)\mathrm{Csc}[c+d\,x]}{24\,a^4}+\frac{11\,b\,\mathrm{Cot}[c+d\,x]\,\mathrm{Csc}[c+d\,x]}{12\,a^3}-\frac{\mathrm{Cot}[c+d\,x]\,\mathrm{Csc}[c+d\,x]^2}{3\,a^2}+\frac{2\left(a^2\,b\,\mathrm{Cos}[c+d\,x]-b^3\,\mathrm{Cos}[c+d\,x]\right)}{a^4\,(a+b\,\mathrm{Sin}[c+d\,x])}\right)+$$

$$\frac{1}{96\,a^4\,d}\left(-\frac{2\left(96\,a^3-140\,a\,b^2\right)\mathrm{EllipticF}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right),\frac{2\,b}{a+b}\right]\sqrt{\frac{a+b\,\mathrm{Sin}[c+d\,x]}{a+b}}}{\sqrt{a+b\,\mathrm{Sin}[c+d\,x]}}-\frac{2\left(296\,a^2\,b-315\,b^3\right)\mathrm{EllipticPi}\left[2,\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right),\frac{2\,b}{a+b}\right]\sqrt{\frac{a+b\,\mathrm{Sin}[c+d\,x]}{a+b}}}{\sqrt{a+b\,\mathrm{Sin}[c+d\,x]}}-\right.$$

$$\left(2\,i\left(-80\,a^2\,b+105\,b^3\right)\mathrm{Cos}[c+d\,x]\,\mathrm{Cos}[2\,(c+d\,x)]\left(2\,a\,(a-b)\,\mathrm{EllipticE}\left[i\,\mathrm{ArcSinh}\left[\sqrt{-\frac{1}{a+b}}\sqrt{a+b\,\mathrm{Sin}[c+d\,x]}\right],\frac{a+b}{a-b}\right]+\right.\right.$$

$$b\left(2\,a\,\mathrm{EllipticF}\left[i\,\mathrm{ArcSinh}\left[\sqrt{-\frac{1}{a+b}}\sqrt{a+b\,\mathrm{Sin}[c+d\,x]}\right],\frac{a+b}{a-b}\right]-b\,\mathrm{EllipticPi}\left[\frac{a+b}{a},i\,\mathrm{ArcSinh}\left[\sqrt{-\frac{1}{a+b}}\sqrt{a+b\,\mathrm{Sin}[c+d\,x]}\right],\right.\right.$$

$$\left.\left.\left.\frac{a+b}{a-b}\right]\right)\right)\sqrt{\frac{b-b\,\mathrm{Sin}[c+d\,x]}{a+b}}\sqrt{-\frac{b+b\,\mathrm{Sin}[c+d\,x]}{a-b}}\right)\Big/\left(a\sqrt{-\frac{1}{a+b}}\sqrt{1-\mathrm{Sin}[c+d\,x]^2}\right.$$

$$\left.\left.\left(-2\,a^2+b^2+4\,a\,(a+b\,\mathrm{Sin}[c+d\,x])-2\,(a+b\,\mathrm{Sin}[c+d\,x])^2\right)\sqrt{-\frac{a^2-b^2-2\,a\,(a+b\,\mathrm{Sin}[c+d\,x])+(a+b\,\mathrm{Sin}[c+d\,x])^2}{b^2}}\right)\right)$$

■ Problem 1183: Result more than twice size of optimal antiderivative.

$$\int\frac{\mathrm{Cos}[c+d\,x]^4\,\mathrm{Sin}[c+d\,x]^3}{(a+b\,\mathrm{Sin}[c+d\,x])^{5/2}}\,dx$$

Optimal (type 4, 469 leaves, 10 steps):

$$-\frac{2\left(a^2-b^2\right)\mathrm{Cos}[c+d\,x]\,\mathrm{Sin}[c+d\,x]^4}{3\,a\,b^2\,d\,(a+b\,\mathrm{Sin}[c+d\,x])^{3/2}}+\frac{2\left(13\,a^2-5\,b^2\right)\mathrm{Cos}[c+d\,x]\,\mathrm{Sin}[c+d\,x]^4}{3\,a^2\,b^2\,d\sqrt{a+b\,\mathrm{Sin}[c+d\,x]}}+\frac{128\,a\left(40\,a^2-19\,b^2\right)\mathrm{Cos}[c+d\,x]\sqrt{a+b\,\mathrm{Sin}[c+d\,x]}}{315\,b^6\,d}-$$

$$\frac{8\left(480\,a^2-203\,b^2\right)\mathrm{Cos}[c+d\,x]\,\mathrm{Sin}[c+d\,x]\sqrt{a+b\,\mathrm{Sin}[c+d\,x]}}{315\,b^5\,d}+\frac{4\left(160\,a^2-63\,b^2\right)\mathrm{Cos}[c+d\,x]\,\mathrm{Sin}[c+d\,x]^2\sqrt{a+b\,\mathrm{Sin}[c+d\,x]}}{63\,a\,b^4\,d}-$$

$$\frac{10\left(8\,a^2-3\,b^2\right)\mathrm{Cos}[c+d\,x]\,\mathrm{Sin}[c+d\,x]^3\sqrt{a+b\,\mathrm{Sin}[c+d\,x]}}{9\,a^2\,b^3\,d}+\frac{8\left(1280\,a^4-768\,a^2\,b^2+21\,b^4\right)\mathrm{EllipticE}\left[\frac{1}{2}\left(c-\frac{\pi}{2}+d\,x\right),\frac{2\,b}{a+b}\right]\sqrt{a+b\,\mathrm{Sin}[c+d\,x]}}{315\,b^7\,d\sqrt{\frac{a+b\,\mathrm{Sin}[c+d\,x]}{a+b}}}-$$

$$\frac{8\,a\left(1280\,a^4-1088\,a^2\,b^2+123\,b^4\right)\mathrm{EllipticF}\left[\frac{1}{2}\left(c-\frac{\pi}{2}+d\,x\right),\frac{2\,b}{a+b}\right]\sqrt{\frac{a+b\,\mathrm{Sin}[c+d\,x]}{a+b}}}{315\,b^7\,d\sqrt{a+b\,\mathrm{Sin}[c+d\,x]}}$$

Result (type 4, 1044 leaves) :

$$\frac{1}{10080\, d\, (a+b\,\mathrm{Sin}[c+d\,x])^{3/2}}$$

$$\Bigg(315\left(\frac{1}{(a-b)^2 b}\left(\left(a^2+3b^2\right)\mathrm{EllipticE}\left[\frac{1}{4}(-2c+\pi-2dx),\frac{2b}{a+b}\right]+a(-a+b)\,\mathrm{EllipticF}\left[\frac{1}{4}(-2c+\pi-2dx),\frac{2b}{a+b}\right]\right)\left(\frac{a+b\,\mathrm{Sin}[c+dx]}{a+b}\right)^{3/2}-\right.$$

$$\left.\frac{\mathrm{Cos}[c+dx]\left(2a\left(a^2+b^2\right)+b\left(a^2+3b^2\right)\mathrm{Sin}[c+dx]\right)}{\left(a^2-b^2\right)^2}\right)+\frac{1}{b^3}315\left(1/(a-b)^2\left(\left(32a^4-57a^2b^2+21b^4\right)\mathrm{EllipticE}\left[\frac{1}{4}(-2c+\pi-2dx),\frac{2b}{a+b}\right]+\right.\right.$$

$$\left.a\left(-32a^3+32a^2b+33ab^2-33b^3\right)\mathrm{EllipticF}\left[\frac{1}{4}(-2c+\pi-2dx),\frac{2b}{a+b}\right]\right)\left(\frac{a+b\,\mathrm{Sin}[c+dx]}{a+b}\right)^{3/2}-$$

$$\left.\frac{b\left(4a\left(8a^4-13a^2b^2+3b^4\right)\mathrm{Cos}[c+dx]+b\left(20a^4-33a^2b^2+9b^4\right)\mathrm{Sin}[2(c+dx)]\right)}{2\left(a^2-b^2\right)^2}\right)-\frac{1}{b^5}$$

$$21\left(1/(a-b)^2\left(\left(-2048a^6+4192a^4b^2-2355a^2b^4+231b^6\right)\mathrm{EllipticE}\left[\frac{1}{4}(-2c+\pi-2dx),\frac{2b}{a+b}\right]+\right.\right.$$

$$\left.a\left(2048a^5-2048a^4b-2656a^3b^2+2656a^2b^3+603ab^4-603b^5\right)\mathrm{EllipticF}\left[\frac{1}{4}(-2c+\pi-2dx),\frac{2b}{a+b}\right]\right)\left(\frac{a+b\,\mathrm{Sin}[c+dx]}{a+b}\right)^{3/2}+$$

$$1/\left(a^2-b^2\right)^2 b\,\mathrm{Cos}[c+dx]\left(-64ab^2\left(a^2-b^2\right)^2\mathrm{Cos}[2(c+dx)]+b\left(1280a^6-2536a^4b^2+1347a^2b^4-111b^6\right)\mathrm{Sin}[c+dx]+\right.$$

$$\left.\left.2\left(512a^7-952a^5b^2+423a^3b^4+7ab^6+6b^3\left(a^2-b^2\right)^2\mathrm{Sin}[3(c+dx)]\right)\right)\right)-$$

$$\frac{1}{b^7}5\,(a+b\,\mathrm{Sin}[c+dx])\left(\frac{1}{(a-b)^2(a+b)^2}\left(-4b\left(-4096a^7b+8960a^5b^3-5884a^3b^5+1041ab^7\right)\mathrm{EllipticF}\left[\frac{1}{4}(-2c+\pi-2dx),\frac{2b}{a+b}\right]+\right.\right.$$

$$\left(65536a^8-161792a^6b^2+129664a^4b^4-35109a^2b^6+1617b^8\right)$$

$$\left.\left((a+b)\,\mathrm{EllipticE}\left[\frac{1}{4}(-2c+\pi-2dx),\frac{2b}{a+b}\right]-a\,\mathrm{EllipticF}\left[\frac{1}{4}(-2c+\pi-2dx),\frac{2b}{a+b}\right]\right)\right)\sqrt{\frac{a+b\,\mathrm{Sin}[c+dx]}{a+b}}+$$

$$b\,(a+b\,\mathrm{Sin}[c+dx])\left(-128a\left(88a^2-27b^2\right)\mathrm{Cos}[c+dx]+416ab^2\mathrm{Cos}[3(c+dx)]+\frac{21a\left(64a^6-112a^4b^2+56a^2b^4-7b^6\right)\mathrm{Cos}[c+dx]}{\left(a^2-b^2\right)(a+b\,\mathrm{Sin}[c+dx])^2}-\right.$$

$$\left.\left.\left.\frac{21\left(1088a^8-2576a^6b^2+1960a^4b^4-497a^2b^6+21b^8\right)\mathrm{Cos}[c+dx]}{\left(a^2-b^2\right)^2(a+b\,\mathrm{Sin}[c+dx])}-8b\left(-276a^2+35b^2\right)\mathrm{Sin}[2(c+dx)]-56b^3\mathrm{Sin}[4(c+dx)]\right)\right)\right)$$

- **Problem 1186: Result unnecessarily involves imaginary or complex numbers.**

$$\int\frac{\mathrm{Cos}[c+dx]^3\,\mathrm{Cot}[c+dx]}{(a+b\,\mathrm{Sin}[c+dx])^{5/2}}\,dx$$

Optimal (type 4, 313 leaves, 9 steps):

$$-\frac{2\left(a^2-b^2\right)\cos[c+d x]}{3 a b^2 d\,(a+b\sin[c+d x])^{3/2}}+\frac{2\left(5 a^2+3 b^2\right)\cos[c+d x]}{3 a^2 b^2 d\sqrt{a+b\sin[c+d x]}}+\frac{2\left(8 a^2+3 b^2\right)\text{EllipticE}\left[\frac{1}{2}\left(c-\frac{\pi}{2}+d x\right),\frac{2 b}{a+b}\right]\sqrt{a+b\sin[c+d x]}}{3 a^2 b^3 d\sqrt{\frac{a+b\sin[c+d x]}{a+b}}}-\frac{2\left(8 a^2+b^2\right)\text{EllipticF}\left[\frac{1}{2}\left(c-\frac{\pi}{2}+d x\right),\frac{2 b}{a+b}\right]\sqrt{\frac{a+b\sin[c+d x]}{a+b}}}{3 a b^3 d\sqrt{a+b\sin[c+d x]}}+\frac{2\,\text{EllipticPi}\left[2,\frac{1}{2}\left(c-\frac{\pi}{2}+d x\right),\frac{2 b}{a+b}\right]\sqrt{\frac{a+b\sin[c+d x]}{a+b}}}{a^2 d\sqrt{a+b\sin[c+d x]}}$$

Result (type 4, 599 leaves):

$$\frac{\sqrt{a+b\sin[c+d x]}\left(-\frac{2\left(a^2\cos[c+d x]-b^2\cos[c+d x]\right)}{3 a b^2\,(a+b\sin[c+d x])^2}+\frac{2\left(5 a^2\cos[c+d x]+3 b^2\cos[c+d x]\right)}{3 a^2 b^2\,(a+b\sin[c+d x])}\right)}{d}-$$

$$\frac{1}{6 a^2 b^2 d}\left(\frac{8 a b\,\text{EllipticF}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right),\frac{2 b}{a+b}\right]\sqrt{\frac{a+b\sin[c+d x]}{a+b}}}{\sqrt{a+b\sin[c+d x]}}-\frac{2\left(-8 a^2-9 b^2\right)\text{EllipticPi}\left[2,\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right),\frac{2 b}{a+b}\right]\sqrt{\frac{a+b\sin[c+d x]}{a+b}}}{\sqrt{a+b\sin[c+d x]}}-\right.$$

$$\left(2\,i\left(8 a^2+3 b^2\right)\cos[c+d x]\cos[2(c+d x)]\left(2 a(a-b)\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[\sqrt{-\frac{1}{a+b}}\sqrt{a+b\sin[c+d x]}\right],\frac{a+b}{a-b}\right]+b\left(2 a\,\text{EllipticF}\left[\right.\right.\right.\right.$$

$$\left.\left.\left.i\,\text{ArcSinh}\left[\sqrt{-\frac{1}{a+b}}\sqrt{a+b\sin[c+d x]}\right],\frac{a+b}{a-b}\right]-b\,\text{EllipticPi}\left[\frac{a+b}{a},i\,\text{ArcSinh}\left[\sqrt{-\frac{1}{a+b}}\sqrt{a+b\sin[c+d x]}\right],\frac{a+b}{a-b}\right]\right)\right)$$

$$\left.\sqrt{\frac{b-b\sin[c+d x]}{a+b}}\sqrt{-\frac{b+b\sin[c+d x]}{a-b}}\right)\Bigg/\left(a\sqrt{-\frac{1}{a+b}}\sqrt{1-\sin[c+d x]^2}\left(-2 a^2+b^2+4 a(a+b\sin[c+d x])-2(a+b\sin[c+d x])^2\right)\right.$$

$$\left.\left.\sqrt{-\frac{a^2-b^2-2 a(a+b\sin[c+d x])+(a+b\sin[c+d x])^2}{b^2}}\right)\right)$$

Problem 1187: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{\cos[c+d x]^2\cot[c+d x]^2}{(a+b\sin[c+d x])^{5/2}}\,dx$$

Optimal (type 4, 346 leaves, 10 steps):

$$\frac{\left(2 a^2-5 b^2\right) \operatorname{Cos}[c+d x]}{3 a^2 b d (a+b \operatorname{Sin}[c+d x])^{3/2}}-\frac{\operatorname{Cot}[c+d x]}{a d (a+b \operatorname{Sin}[c+d x])^{3/2}}-\frac{\left(4 a^2+15 b^2\right) \operatorname{Cos}[c+d x]}{3 a^3 b d \sqrt{a+b \operatorname{Sin}[c+d x]}}-\frac{\left(4 a^2+15 b^2\right) \operatorname{EllipticE}\left[\frac{1}{2}\left(c-\frac{\pi}{2}+d x\right), \frac{2 b}{a+b}\right] \sqrt{a+b \operatorname{Sin}[c+d x]}}{3 a^3 b^2 d \sqrt{\frac{a+b \operatorname{Sin}[c+d x]}{a+b}}}+\frac{\left(4 a^2+5 b^2\right) \operatorname{EllipticF}\left[\frac{1}{2}\left(c-\frac{\pi}{2}+d x\right), \frac{2 b}{a+b}\right] \sqrt{\frac{a+b \operatorname{Sin}[c+d x]}{a+b}}}{3 a^2 b^2 d \sqrt{a+b \operatorname{Sin}[c+d x]}}-\frac{5 b \operatorname{EllipticPi}\left[2, \frac{1}{2}\left(c-\frac{\pi}{2}+d x\right), \frac{2 b}{a+b}\right] \sqrt{\frac{a+b \operatorname{Sin}[c+d x]}{a+b}}}{a^3 d \sqrt{a+b \operatorname{Sin}[c+d x]}}$$

Result (type 4, 609 leaves):

$$\frac{\sqrt{a+b \operatorname{Sin}[c+d x]}\left(-\frac{\operatorname{Cot}[c+d x]}{a^3}+\frac{2\left(a^2 \operatorname{Cos}[c+d x]-b^2 \operatorname{Cos}[c+d x]\right)}{3 a^2 b (a+b \operatorname{Sin}[c+d x])^2}-\frac{4\left(a^2 \operatorname{Cos}[c+d x]+3 b^2 \operatorname{Cos}[c+d x]\right)}{3 a^3 b (a+b \operatorname{Sin}[c+d x])}\right)}{d}+$$

$$\frac{1}{12 a^3 b d}\left(\frac{40 a b \operatorname{EllipticF}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right), \frac{2 b}{a+b}\right] \sqrt{\frac{a+b \operatorname{Sin}[c+d x]}{a+b}}}{\sqrt{a+b \operatorname{Sin}[c+d x]}}-\frac{2\left(-4 a^2-45 b^2\right) \operatorname{EllipticPi}\left[2, \frac{1}{2}\left(-c+\frac{\pi}{2}-d x\right), \frac{2 b}{a+b}\right] \sqrt{\frac{a+b \operatorname{Sin}[c+d x]}{a+b}}}{\sqrt{a+b \operatorname{Sin}[c+d x]}}-\right.$$

$$\left(2 i\left(4 a^2+15 b^2\right) \operatorname{Cos}[c+d x] \operatorname{Cos}[2(c+d x)]\left(2 a (a-b) \operatorname{EllipticE}\left[i \operatorname{ArcSinh}\left[\sqrt{-\frac{1}{a+b}} \sqrt{a+b \operatorname{Sin}[c+d x]}\right], \frac{a+b}{a-b}\right]+b\left(2 a \operatorname{EllipticF}\left[\right.\right.\right.\right.$$

$$\left.\left.\left. i \operatorname{ArcSinh}\left[\sqrt{-\frac{1}{a+b}} \sqrt{a+b \operatorname{Sin}[c+d x]}\right], \frac{a+b}{a-b}\right]-b \operatorname{EllipticPi}\left[\frac{a+b}{a}, i \operatorname{ArcSinh}\left[\sqrt{-\frac{1}{a+b}} \sqrt{a+b \operatorname{Sin}[c+d x]}\right], \frac{a+b}{a-b}\right]\right)\right)$$

$$\left.\sqrt{\frac{b-b \operatorname{Sin}[c+d x]}{a+b}} \sqrt{-\frac{b+b \operatorname{Sin}[c+d x]}{a-b}}\right) \Big/ \left(a \sqrt{-\frac{1}{a+b}} \sqrt{1-\operatorname{Sin}[c+d x]^2}\left(-2 a^2+b^2+4 a (a+b \operatorname{Sin}[c+d x])-2(a+b \operatorname{Sin}[c+d x])^2\right)\right.$$

$$\left.\left.\sqrt{-\frac{a^2-b^2-2 a (a+b \operatorname{Sin}[c+d x])+(a+b \operatorname{Sin}[c+d x])^2}{b^2}}\right)\right)$$

Problem 1188: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{\text{Cos}[c+d x]\,\text{Cot}[c+d x]^3}{(a+b\,\text{Sin}[c+d x])^{5/2}}\,dx$$

Optimal (type 4, 407 leaves, 11 steps):

$$\frac{\left(4 a^2-7 b^2\right) \text{Cot}[c+d x]}{6 a^2 b d\,(a+b\,\text{Sin}[c+d x])^{3/2}}-\frac{\text{Cot}[c+d x]\,\text{Csc}[c+d x]}{2 a d\,(a+b\,\text{Sin}[c+d x])^{3/2}}-\frac{\left(8 a^2-105 b^2\right) \text{Cos}[c+d x]}{12 a^4 d \sqrt{a+b\,\text{Sin}[c+d x]}}-$$
$$\frac{\left(8 a^2-35 b^2\right) \text{Cot}[c+d x]}{12 a^3 b d \sqrt{a+b\,\text{Sin}[c+d x]}}-\frac{\left(8 a^2-105 b^2\right) \text{EllipticE}\left[\frac{1}{2}\left(c-\frac{\pi}{2}+d x\right),\frac{2 b}{a+b}\right] \sqrt{a+b\,\text{Sin}[c+d x]}}{12 a^4 b d \sqrt{\frac{a+b\,\text{Sin}[c+d x]}{a+b}}}+$$
$$\frac{\left(8 a^2-35 b^2\right) \text{EllipticF}\left[\frac{1}{2}\left(c-\frac{\pi}{2}+d x\right),\frac{2 b}{a+b}\right] \sqrt{\frac{a+b\,\text{Sin}[c+d x]}{a+b}}}{12 a^3 b d \sqrt{a+b\,\text{Sin}[c+d x]}}-\frac{\left(12 a^2-35 b^2\right) \text{EllipticPi}\left[2,\frac{1}{2}\left(c-\frac{\pi}{2}+d x\right),\frac{2 b}{a+b}\right] \sqrt{\frac{a+b\,\text{Sin}[c+d x]}{a+b}}}{4 a^4 d \sqrt{a+b\,\text{Sin}[c+d x]}}$$

Result (type 4, 622 leaves):

$$\frac{1}{d}\sqrt{a+b\,\text{Sin}[c+d\,x]}\,\left(\frac{11\,b\,\text{Cot}[c+d\,x]}{4\,a^4}-\frac{\text{Cot}[c+d\,x]\,\text{Csc}[c+d\,x]}{2\,a^3}-\frac{2\,\left(a^2\,\text{Cos}[c+d\,x]-b^2\,\text{Cos}[c+d\,x]\right)}{3\,a^3\,(a+b\,\text{Sin}[c+d\,x])^2}-\frac{2\,\left(a^2\,\text{Cos}[c+d\,x]-9\,b^2\,\text{Cos}[c+d\,x]\right)}{3\,a^4\,(a+b\,\text{Sin}[c+d\,x])}\right)+$$

$$\frac{1}{48\,a^4\,d}\left(-\frac{280\,a\,b\,\text{EllipticF}\left[\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right),\frac{2\,b}{a+b}\right]\sqrt{\frac{a+b\,\text{Sin}[c+d\,x]}{a+b}}}{\sqrt{a+b\,\text{Sin}[c+d\,x]}}-\frac{2\,\left(-80\,a^2+315\,b^2\right)\,\text{EllipticPi}\left[2,\frac{1}{2}\left(-c+\frac{\pi}{2}-d\,x\right),\frac{2\,b}{a+b}\right]\sqrt{\frac{a+b\,\text{Sin}[c+d\,x]}{a+b}}}{\sqrt{a+b\,\text{Sin}[c+d\,x]}}-\right.$$

$$\left(2\,i\,\left(8\,a^2-105\,b^2\right)\,\text{Cos}[c+d\,x]\,\text{Cos}[2\,(c+d\,x)]\,\left(2\,a\,(a-b)\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[\sqrt{-\frac{1}{a+b}}\,\sqrt{a+b\,\text{Sin}[c+d\,x]}\right],\frac{a+b}{a-b}\right]+b\,\left(2\,a\,\text{EllipticF}\left[\right.\right.\right.\right.$$

$$\left.\left.\left. i\,\text{ArcSinh}\left[\sqrt{-\frac{1}{a+b}}\,\sqrt{a+b\,\text{Sin}[c+d\,x]}\right],\frac{a+b}{a-b}\right]-b\,\text{EllipticPi}\left[\frac{a+b}{a},i\,\text{ArcSinh}\left[\sqrt{-\frac{1}{a+b}}\,\sqrt{a+b\,\text{Sin}[c+d\,x]}\right],\frac{a+b}{a-b}\right]\right)\right)$$

$$\left.\sqrt{\frac{b-b\,\text{Sin}[c+d\,x]}{a+b}}\,\sqrt{-\frac{b+b\,\text{Sin}[c+d\,x]}{a-b}}\right)\Big/\left(a\,\sqrt{-\frac{1}{a+b}}\,\sqrt{1-\text{Sin}[c+d\,x]^2}\,\left(-2\,a^2+b^2+4\,a\,(a+b\,\text{Sin}[c+d\,x])-2\,(a+b\,\text{Sin}[c+d\,x])^2\right)\right.$$

$$\left.\left.\sqrt{-\frac{a^2-b^2-2\,a\,(a+b\,\text{Sin}[c+d\,x])+(a+b\,\text{Sin}[c+d\,x])^2}{b^2}}\right)\right)$$

- **Problem 1189: Result unnecessarily involves imaginary or complex numbers.**

$$\int\frac{\text{Cot}[c+d\,x]^4}{(a+b\,\text{Sin}[c+d\,x])^{5/2}}\,dx$$

Optimal (type 4, 458 leaves, 12 steps) :

$$\frac{\left(2\,a^2-3\,b^2\right)\,\text{Cot}[c+d\,x]\,\text{Csc}[c+d\,x]}{3\,a^2\,b\,d\,(a+b\,\text{Sin}[c+d\,x])^{3/2}}-\frac{\text{Cot}[c+d\,x]\,\text{Csc}[c+d\,x]^2}{3\,a\,d\,(a+b\,\text{Sin}[c+d\,x])^{3/2}}+\frac{b\,\left(32\,a^2-105\,b^2\right)\,\text{Cos}[c+d\,x]}{8\,a^5\,d\,\sqrt{a+b\,\text{Sin}[c+d\,x]}}+\frac{\left(16\,a^2-35\,b^2\right)\,\text{Cot}[c+d\,x]}{8\,a^4\,d\,\sqrt{a+b\,\text{Sin}[c+d\,x]}}-$$

$$\frac{\left(8\,a^2-21\,b^2\right)\,\text{Cot}[c+d\,x]\,\text{Csc}[c+d\,x]}{12\,a^3\,b\,d\,\sqrt{a+b\,\text{Sin}[c+d\,x]}}+\frac{\left(32\,a^2-105\,b^2\right)\,\text{EllipticE}\left[\frac{1}{2}\left(c-\frac{\pi}{2}+d\,x\right),\frac{2\,b}{a+b}\right]\,\sqrt{a+b\,\text{Sin}[c+d\,x]}}{8\,a^5\,d\,\sqrt{\frac{a+b\,\text{Sin}[c+d\,x]}{a+b}}}-$$

$$\frac{\left(16\,a^2-35\,b^2\right)\,\text{EllipticF}\left[\frac{1}{2}\left(c-\frac{\pi}{2}+d\,x\right),\frac{2\,b}{a+b}\right]\,\sqrt{\frac{a+b\,\text{Sin}[c+d\,x]}{a+b}}}{8\,a^4\,d\,\sqrt{a+b\,\text{Sin}[c+d\,x]}}+\frac{15\,b\,\left(4\,a^2-7\,b^2\right)\,\text{EllipticPi}\left[2,\frac{1}{2}\left(c-\frac{\pi}{2}+d\,x\right),\frac{2\,b}{a+b}\right]\,\sqrt{\frac{a+b\,\text{Sin}[c+d\,x]}{a+b}}}{8\,a^5\,d\,\sqrt{a+b\,\text{Sin}[c+d\,x]}}$$

Result (type 4, 680 leaves) :

$$\frac{1}{d}\sqrt{a+b\,\text{Sin}[c+d\,x]}\left(\frac{\left(32\,a^2\,\text{Cos}[c+d\,x]-123\,b^2\,\text{Cos}[c+d\,x]\right)\,\text{Csc}[c+d\,x]}{24\,a^5}+\frac{17\,b\,\text{Cot}[c+d\,x]\,\text{Csc}[c+d\,x]}{12\,a^4}-\frac{\text{Cot}[c+d\,x]\,\text{Csc}[c+d\,x]^2}{3\,a^3}+\frac{2\,\left(a^2\,b\,\text{Cos}[c+d\,x]-b^3\,\text{Cos}[c+d\,x]\right)}{3\,a^4\,\left(a+b\,\text{Sin}[c+d\,x]\right)^2}+\frac{8\,\left(a^2\,b\,\text{Cos}[c+d\,x]-3\,b^3\,\text{Cos}[c+d\,x]\right)}{3\,a^5\,\left(a+b\,\text{Sin}[c+d\,x]\right)}\right)+$$

$$\frac{1}{32\,a^5\,d}\left(-\frac{2\,\left(32\,a^3-140\,a\,b^2\right)\,\text{EllipticF}\left[\frac{1}{2}\,\left(-c+\frac{\pi}{2}-d\,x\right),\frac{2\,b}{a+b}\right]\,\sqrt{\frac{a+b\,\text{Sin}[c+d\,x]}{a+b}}}{\sqrt{a+b\,\text{Sin}[c+d\,x]}}-\frac{2\,\left(152\,a^2\,b-315\,b^3\right)\,\text{EllipticPi}\left[2,\frac{1}{2}\,\left(-c+\frac{\pi}{2}-d\,x\right),\frac{2\,b}{a+b}\right]\,\sqrt{\frac{a+b\,\text{Sin}[c+d\,x]}{a+b}}}{\sqrt{a+b\,\text{Sin}[c+d\,x]}}-\right.$$

$$\left(2\,i\,\left(-32\,a^2\,b+105\,b^3\right)\,\text{Cos}[c+d\,x]\,\text{Cos}[2\,(c+d\,x)]\,\left(2\,a\,(a-b)\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[\sqrt{-\frac{1}{a+b}}\,\sqrt{a+b\,\text{Sin}[c+d\,x]}\right],\frac{a+b}{a-b}\right]+b\,\left(2\,a\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[\sqrt{-\frac{1}{a+b}}\,\sqrt{a+b\,\text{Sin}[c+d\,x]}\right],\frac{a+b}{a-b}\right]-b\,\text{EllipticPi}\left[\frac{a+b}{a},i\,\text{ArcSinh}\left[\sqrt{-\frac{1}{a+b}}\,\sqrt{a+b\,\text{Sin}[c+d\,x]}\right],\frac{a+b}{a-b}\right]\right)\right)\,\sqrt{\frac{b-b\,\text{Sin}[c+d\,x]}{a+b}}\,\sqrt{-\frac{b+b\,\text{Sin}[c+d\,x]}{a-b}}\right)\Bigg/\left(a\,\sqrt{-\frac{1}{a+b}}\,\sqrt{1-\text{Sin}[c+d\,x]^2}\right.$$

$$\left.\left.\left(-2\,a^2+b^2+4\,a\,\left(a+b\,\text{Sin}[c+d\,x]\right)-2\,\left(a+b\,\text{Sin}[c+d\,x]\right)^2\right)\,\sqrt{-\frac{a^2-b^2-2\,a\,\left(a+b\,\text{Sin}[c+d\,x]\right)+\left(a+b\,\text{Sin}[c+d\,x]\right)^2}{b^2}}\right)\right)$$

Problem 1190: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int\frac{\text{Cos}[e+f\,x]^4}{\sqrt{d\,\text{Sin}[e+f\,x]}\,\left(a+b\,\text{Sin}[e+f\,x]\right)^{9/2}}\,dx$$

Optimal (type 4, 510 leaves, 8 steps) :

$$\frac{2\,\text{Cos}[e+f\,x]^3\,\sqrt{d\,\text{Sin}[e+f\,x]}}{7\,a\,d\,f\,(a+b\,\text{Sin}[e+f\,x])^{7/2}}+\frac{12\,\text{Cos}[e+f\,x]\,\sqrt{d\,\text{Sin}[e+f\,x]}}{35\,a^2\,d\,f\,(a+b\,\text{Sin}[e+f\,x])^{5/2}}+$$

$$\frac{8\,\left(a^2-2\,b^2\right)\,\text{Cos}[e+f\,x]\,\sqrt{d\,\text{Sin}[e+f\,x]}}{35\,a^3\,\left(a^2-b^2\right)\,d\,f\,(a+b\,\text{Sin}[e+f\,x])^{3/2}}+\frac{32\,b\,\left(2\,a^2-b^2\right)\,\text{Cos}[e+f\,x]}{35\,a^3\,\left(a^2-b^2\right)^2\,f\,\sqrt{d\,\text{Sin}[e+f\,x]}\,\sqrt{a+b\,\text{Sin}[e+f\,x]}}-$$

$$\left(32\,b\,\left(2\,a^2-b^2\right)\,\sqrt{\frac{a\,(1-\text{Csc}[e+f\,x])}{a+b}}\,\sqrt{\frac{a\,(1+\text{Csc}[e+f\,x])}{a-b}}\,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{d}\,\sqrt{a+b\,\text{Sin}[e+f\,x]}}{\sqrt{a+b}\,\sqrt{d\,\text{Sin}[e+f\,x]}}\right],-\frac{a+b}{a-b}\right]\,\text{Tan}[e+f\,x]\right)\Big/$$

$$\left(35\,a^5\,(a-b)\,(a+b)^{3/2}\,\sqrt{d}\,f\right)-$$

$$\left(8\,\left(5\,a^2-3\,a\,b-4\,b^2\right)\,\sqrt{\frac{a\,(1-\text{Csc}[e+f\,x])}{a+b}}\,\sqrt{\frac{a\,(1+\text{Csc}[e+f\,x])}{a-b}}\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{d}\,\sqrt{a+b\,\text{Sin}[e+f\,x]}}{\sqrt{a+b}\,\sqrt{d\,\text{Sin}[e+f\,x]}}\right],-\frac{a+b}{a-b}\right]\,\text{Tan}[e+f\,x]\right)\Big/$$

$$\left(35\,a^4\,(a-b)\,(a+b)^{3/2}\,\sqrt{d}\,f\right)$$

Result (type 4, 1670 leaves):

$$\frac{1}{f\,\sqrt{d\,\text{Sin}[e+f\,x]}}\text{Sin}[e+f\,x]\,\sqrt{a+b\,\text{Sin}[e+f\,x]}$$

$$\left(-\frac{2\,\left(a^2\,\text{Cos}[e+f\,x]-b^2\,\text{Cos}[e+f\,x]\right)}{7\,a\,b^2\,(a+b\,\text{Sin}[e+f\,x])^4}+\frac{4\,\left(5\,a^2\,\text{Cos}[e+f\,x]+3\,b^2\,\text{Cos}[e+f\,x]\right)}{35\,a^2\,b^2\,(a+b\,\text{Sin}[e+f\,x])^3}-\frac{2\,\left(5\,a^4\,\text{Cos}[e+f\,x]-9\,a^2\,b^2\,\text{Cos}[e+f\,x]+8\,b^4\,\text{Cos}[e+f\,x]\right)}{35\,a^3\,b^2\,\left(a^2-b^2\right)\,(a+b\,\text{Sin}[e+f\,x])^2}-\right.$$

$$\left.\frac{32\,\left(2\,a^2\,b^2\,\text{Cos}[e+f\,x]-b^4\,\text{Cos}[e+f\,x]\right)}{35\,a^4\,\left(a^2-b^2\right)^2\,(a+b\,\text{Sin}[e+f\,x])}\right)+\frac{1}{35\,a^4\,(a-b)^2\,(a+b)^2\,f\,\sqrt{d\,\text{Sin}[e+f\,x]}}$$

$$4\,\sqrt{\text{Sin}[e+f\,x]}\left(\left(4\,a\,\left(5\,a^4-9\,a^2\,b^2+4\,b^4\right)\,\sqrt{\frac{(a+b)\,\text{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{-a+b}}\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{\frac{\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(a+b\,\text{Sin}[e+f\,x])}{a}}}{\sqrt{2}}\right],-\frac{2\,a}{-a+b}\right]\right.\right.$$

$$\text{Sec}[e+f\,x]\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\,\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,\text{Sin}[e+f\,x]}{a}}\,\sqrt{\frac{\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(a+b\,\text{Sin}[e+f\,x])}{a}}\right)\Big/$$

$$\left((a+b)\,\sqrt{\text{Sin}[e+f\,x]}\,\sqrt{a+b\,\text{Sin}[e+f\,x]}\right)+4\,a\,\left(-8\,a^3\,b+4\,a\,b^3\right)$$

$$\left(\left(\sqrt{\frac{(a+b)\,\text{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{-a+b}}\;\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{\frac{\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2(a+b\,\text{Sin}[e+f\,x])}{a}}}{\sqrt{2}}\right],-\frac{2\,a}{-a+b}\right]\text{Sec}[e+f\,x]\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\right.\right.$$

$$\left.\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Sin}[e+f\,x]}{a}}\;\sqrt{\frac{\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2(a+b\,\text{Sin}[e+f\,x])}{a}}\right)\Big/\left((a+b)\sqrt{\text{Sin}[e+f\,x]}\right.$$

$$\left.\sqrt{a+b\,\text{Sin}[e+f\,x]}\right)-\left(\sqrt{\frac{(a+b)\,\text{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{-a+b}}\;\text{EllipticPi}\left[-\frac{a}{b},\text{ArcSin}\left[\frac{\sqrt{\frac{\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2(a+b\,\text{Sin}[e+f\,x])}{a}}}{\sqrt{2}}\right],-\frac{2\,a}{-a+b}\right]\right.$$

$$\left.\text{Sec}[e+f\,x]\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Sin}[e+f\,x]}{a}}\;\sqrt{\frac{\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2(a+b\,\text{Sin}[e+f\,x])}{a}}\right)\Big/$$

$$\left.\left(b\sqrt{\text{Sin}[e+f\,x]}\;\sqrt{a+b\,\text{Sin}[e+f\,x]}\right)\right)+2\left(8\,a^2\,b^2-4\,b^4\right)\left(\frac{\text{Cos}[e+f\,x]\sqrt{a+b\,\text{Sin}[e+f\,x]}}{b\sqrt{\text{Sin}[e+f\,x]}}+\right.$$

$$\left(i\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\text{Csc}[e+f\,x]\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[\frac{\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]}{\sqrt{\text{Sin}[e+f\,x]}}\right],-\frac{2\,a}{-a-b}\right]\sqrt{a+b\,\text{Sin}[e+f\,x]}\right)\Big/$$

$$\left(b\sqrt{\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Csc}[e+f\,x]}\;\sqrt{\frac{\text{Csc}[e+f\,x]\,(a+b\,\text{Sin}[e+f\,x])}{a+b}}\right)+$$

$$\frac{1}{b}\,2\,a\left(\left(a\sqrt{\frac{(a+b)\,\text{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{-a+b}}\;\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{\frac{\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2(a+b\,\text{Sin}[e+f\,x])}{a}}}{\sqrt{2}}\right],\right.\right.$$

$$-\frac{2\,a}{-a+b}\Big]\ \text{Sec}[e+f\,x]\ \text{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^4\sqrt{-\frac{(a+b)\ \text{Csc}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f\,x\big)\big]^2\ \text{Sin}[e+f\,x]}{a}}$$

$$\left.\sqrt{\frac{\text{Csc}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f\,x\big)\big]^2\ (a+b\ \text{Sin}[e+f\,x])}{a}}\right)\Big/\left((a+b)\ \sqrt{\text{Sin}[e+f\,x]}\ \sqrt{a+b\ \text{Sin}[e+f\,x]}\right)-$$

$$\left(a\sqrt{\frac{(a+b)\ \text{Cot}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f\,x\big)\big]^2}{-a+b}}\ \text{EllipticPi}\Big[-\frac{a}{b},\ \text{ArcSin}\Big[\frac{\sqrt{\frac{\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\ (a+b\ \text{Sin}[e+f\,x])}{a}}}{\sqrt{2}}\Big],\ -\frac{2\,a}{-a+b}\Big]\ \text{Sec}[\right.$$

$$e+f\,x]\ \text{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^4\sqrt{-\frac{(a+b)\ \text{Csc}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f\,x\big)\big]^2\ \text{Sin}[e+f\,x]}{a}}$$

$$\left.\left.\left.\sqrt{\frac{\text{Csc}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f\,x\big)\big]^2\ (a+b\ \text{Sin}[e+f\,x])}{a}}\right)\Big/\left(b\ \sqrt{\text{Sin}[e+f\,x]}\ \sqrt{a+b\ \text{Sin}[e+f\,x]}\right)\right)\right)\right)$$

- **Problem 1208: Result more than twice size of optimal antiderivative.**

$$\int \text{Cot}[c+d\,x]^5\ \text{Csc}[c+d\,x]\ (a+b\ \text{Sin}[c+d\,x])\ dx$$

Optimal (type 3, 86 leaves, 4 steps):

$$-\frac{a\ \text{Csc}[c+d\,x]}{d}+\frac{b\ \text{Csc}[c+d\,x]^2}{d}+\frac{2\,a\ \text{Csc}[c+d\,x]^3}{3\,d}-\frac{b\ \text{Csc}[c+d\,x]^4}{4\,d}-\frac{a\ \text{Csc}[c+d\,x]^5}{5\,d}+\frac{b\ \text{Log}[\text{Sin}[c+d\,x]]}{d}$$

Result (type 3, 198 leaves):

$$-\frac{89\,a\ \text{Cot}\big[\frac{1}{2}(c+d\,x)\big]}{240\,d}+\frac{31\,a\ \text{Cot}\big[\frac{1}{2}(c+d\,x)\big]\ \text{Csc}\big[\frac{1}{2}(c+d\,x)\big]^2}{480\,d}-\frac{a\ \text{Cot}\big[\frac{1}{2}(c+d\,x)\big]\ \text{Csc}\big[\frac{1}{2}(c+d\,x)\big]^4}{160\,d}+\frac{b\ \text{Csc}[c+d\,x]^2}{d}-\frac{b\ \text{Csc}[c+d\,x]^4}{4\,d}+$$

$$\frac{b\ \text{Log}[\text{Sin}[c+d\,x]]}{d}-\frac{89\,a\ \text{Tan}\big[\frac{1}{2}(c+d\,x)\big]}{240\,d}+\frac{31\,a\ \text{Sec}\big[\frac{1}{2}(c+d\,x)\big]^2\ \text{Tan}\big[\frac{1}{2}(c+d\,x)\big]}{480\,d}-\frac{a\ \text{Sec}\big[\frac{1}{2}(c+d\,x)\big]^4\ \text{Tan}\big[\frac{1}{2}(c+d\,x)\big]}{160\,d}$$

- **Problem 1209: Result more than twice size of optimal antiderivative.**

$$\int \text{Cot}[c+d\,x]^5\ \text{Csc}[c+d\,x]^2\ (a+b\ \text{Sin}[c+d\,x])\ dx$$

Optimal (type 3, 61 leaves, 6 steps):

$$-\frac{a\,\text{Cot}[c+d\,x]^6}{6\,d}-\frac{b\,\text{Csc}[c+d\,x]}{d}+\frac{2\,b\,\text{Csc}[c+d\,x]^3}{3\,d}-\frac{b\,\text{Csc}[c+d\,x]^5}{5\,d}$$

Result (type 3, 173 leaves):

$$-\frac{89\,b\,\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]}{240\,d}-\frac{a\,\text{Cot}[c+d\,x]^6}{6\,d}+\frac{31\,b\,\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\text{Csc}\left[\frac{1}{2}(c+d\,x)\right]^2}{480\,d}-\frac{b\,\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\text{Csc}\left[\frac{1}{2}(c+d\,x)\right]^4}{160\,d}-\frac{89\,b\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{240\,d}+\frac{31\,b\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{480\,d}-\frac{b\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^4\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{160\,d}$$

Problem 1210: Result more than twice size of optimal antiderivative.

$$\int \text{Cot}[c+d\,x]^5\,\text{Csc}[c+d\,x]^3\,(a+b\,\text{Sin}[c+d\,x])\,dx$$

Optimal (type 3, 65 leaves, 6 steps):

$$-\frac{b\,\text{Cot}[c+d\,x]^6}{6\,d}-\frac{a\,\text{Csc}[c+d\,x]^3}{3\,d}+\frac{2\,a\,\text{Csc}[c+d\,x]^5}{5\,d}-\frac{a\,\text{Csc}[c+d\,x]^7}{7\,d}$$

Result (type 3, 233 leaves):

$$-\frac{103\,a\,\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]}{3360\,d}-\frac{b\,\text{Cot}[c+d\,x]^6}{6\,d}-\frac{103\,a\,\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\text{Csc}\left[\frac{1}{2}(c+d\,x)\right]^2}{6720\,d}+\frac{9\,a\,\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\text{Csc}\left[\frac{1}{2}(c+d\,x)\right]^4}{1120\,d}-\frac{a\,\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\text{Csc}\left[\frac{1}{2}(c+d\,x)\right]^6}{896\,d}-\frac{103\,a\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{3360\,d}-\frac{103\,a\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{6720\,d}+\frac{9\,a\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^4\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{1120\,d}-\frac{a\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^6\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{896\,d}$$

Problem 1211: Result more than twice size of optimal antiderivative.

$$\int \text{Cot}[c+d\,x]^5\,\text{Csc}[c+d\,x]^4\,(a+b\,\text{Sin}[c+d\,x])\,dx$$

Optimal (type 3, 81 leaves, 7 steps):

$$-\frac{a\,\text{Cot}[c+d\,x]^6}{6\,d}-\frac{a\,\text{Cot}[c+d\,x]^8}{8\,d}-\frac{b\,\text{Csc}[c+d\,x]^3}{3\,d}+\frac{2\,b\,\text{Csc}[c+d\,x]^5}{5\,d}-\frac{b\,\text{Csc}[c+d\,x]^7}{7\,d}$$

Result (type 3, 265 leaves):

$$-\frac{103\,b\,\mathrm{Cot}\left[\frac{1}{2}(c+d\,x)\right]}{3360\,d}-\frac{103\,b\,\mathrm{Cot}\left[\frac{1}{2}(c+d\,x)\right]\mathrm{Csc}\left[\frac{1}{2}(c+d\,x)\right]^2}{6720\,d}+\frac{9\,b\,\mathrm{Cot}\left[\frac{1}{2}(c+d\,x)\right]\mathrm{Csc}\left[\frac{1}{2}(c+d\,x)\right]^4}{1120\,d}-\frac{b\,\mathrm{Cot}\left[\frac{1}{2}(c+d\,x)\right]\mathrm{Csc}\left[\frac{1}{2}(c+d\,x)\right]^6}{896\,d}-\frac{a\,\mathrm{Csc}[c+d\,x]^4}{4\,d}+\frac{a\,\mathrm{Csc}[c+d\,x]^6}{3\,d}-\frac{a\,\mathrm{Csc}[c+d\,x]^8}{8\,d}-\frac{103\,b\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{3360\,d}-\frac{103\,b\,\mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{6720\,d}+\frac{9\,b\,\mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]^4\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{1120\,d}-\frac{b\,\mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]^6\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{896\,d}$$

- **Problem 1212: Result more than twice size of optimal antiderivative.**

$$\int \mathrm{Cot}[c+d\,x]^5\,\mathrm{Csc}[c+d\,x]^5\,(a+b\,\mathrm{Sin}[c+d\,x])\,dx$$

Optimal (type 3, 81 leaves, 7 steps):

$$-\frac{b\,\mathrm{Cot}[c+d\,x]^6}{6\,d}-\frac{b\,\mathrm{Cot}[c+d\,x]^8}{8\,d}-\frac{a\,\mathrm{Csc}[c+d\,x]^5}{5\,d}+\frac{2\,a\,\mathrm{Csc}[c+d\,x]^7}{7\,d}-\frac{a\,\mathrm{Csc}[c+d\,x]^9}{9\,d}$$

Result (type 3, 325 leaves):

$$-\frac{649\,a\,\mathrm{Cot}\left[\frac{1}{2}(c+d\,x)\right]}{80640\,d}-\frac{649\,a\,\mathrm{Cot}\left[\frac{1}{2}(c+d\,x)\right]\mathrm{Csc}\left[\frac{1}{2}(c+d\,x)\right]^2}{161280\,d}-\frac{31\,a\,\mathrm{Cot}\left[\frac{1}{2}(c+d\,x)\right]\mathrm{Csc}\left[\frac{1}{2}(c+d\,x)\right]^4}{53760\,d}+\frac{37\,a\,\mathrm{Cot}\left[\frac{1}{2}(c+d\,x)\right]\mathrm{Csc}\left[\frac{1}{2}(c+d\,x)\right]^6}{32256\,d}-\frac{a\,\mathrm{Cot}\left[\frac{1}{2}(c+d\,x)\right]\mathrm{Csc}\left[\frac{1}{2}(c+d\,x)\right]^8}{4608\,d}-\frac{b\,\mathrm{Csc}[c+d\,x]^4}{4\,d}+\frac{b\,\mathrm{Csc}[c+d\,x]^6}{3\,d}-\frac{b\,\mathrm{Csc}[c+d\,x]^8}{8\,d}-\frac{649\,a\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{80640\,d}-\frac{649\,a\,\mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{161280\,d}-\frac{31\,a\,\mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]^4\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{53760\,d}+\frac{37\,a\,\mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]^6\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{32256\,d}-\frac{a\,\mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]^8\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{4608\,d}$$

- **Problem 1213: Result more than twice size of optimal antiderivative.**

$$\int \mathrm{Cot}[c+d\,x]^5\,\mathrm{Csc}[c+d\,x]^6\,(a+b\,\mathrm{Sin}[c+d\,x])\,dx$$

Optimal (type 3, 97 leaves, 4 steps):

$$-\frac{b\,\mathrm{Csc}[c+d\,x]^5}{5\,d}-\frac{a\,\mathrm{Csc}[c+d\,x]^6}{6\,d}+\frac{2\,b\,\mathrm{Csc}[c+d\,x]^7}{7\,d}+\frac{a\,\mathrm{Csc}[c+d\,x]^8}{4\,d}-\frac{b\,\mathrm{Csc}[c+d\,x]^9}{9\,d}-\frac{a\,\mathrm{Csc}[c+d\,x]^{10}}{10\,d}$$

Result (type 3, 325 leaves):

$$-\frac{649\,b\,\mathrm{Cot}\left[\frac{1}{2}(c+d\,x)\right]}{80640\,d}-\frac{649\,b\,\mathrm{Cot}\left[\frac{1}{2}(c+d\,x)\right]\mathrm{Csc}\left[\frac{1}{2}(c+d\,x)\right]^2}{161280\,d}-\frac{31\,b\,\mathrm{Cot}\left[\frac{1}{2}(c+d\,x)\right]\mathrm{Csc}\left[\frac{1}{2}(c+d\,x)\right]^4}{53760\,d}+$$
$$\frac{37\,b\,\mathrm{Cot}\left[\frac{1}{2}(c+d\,x)\right]\mathrm{Csc}\left[\frac{1}{2}(c+d\,x)\right]^6}{32256\,d}-\frac{b\,\mathrm{Cot}\left[\frac{1}{2}(c+d\,x)\right]\mathrm{Csc}\left[\frac{1}{2}(c+d\,x)\right]^8}{4608\,d}-\frac{a\,\mathrm{Csc}[c+d\,x]^6}{6\,d}+$$
$$\frac{a\,\mathrm{Csc}[c+d\,x]^8}{4\,d}-\frac{a\,\mathrm{Csc}[c+d\,x]^{10}}{10\,d}-\frac{649\,b\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{80640\,d}-\frac{649\,b\,\mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{161280\,d}-$$
$$\frac{31\,b\,\mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]^4\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{53760\,d}+\frac{37\,b\,\mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]^6\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{32256\,d}-\frac{b\,\mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]^8\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{4608\,d}$$

Problem 1214: Result more than twice size of optimal antiderivative.

$$\int \mathrm{Cot}[c+d\,x]^5\,\mathrm{Csc}[c+d\,x]^7\,(a+b\,\mathrm{Sin}[c+d\,x])\,dx$$

Optimal (type 3, 97 leaves, 4 steps):

$$-\frac{b\,\mathrm{Csc}[c+d\,x]^6}{6\,d}-\frac{a\,\mathrm{Csc}[c+d\,x]^7}{7\,d}+\frac{b\,\mathrm{Csc}[c+d\,x]^8}{4\,d}+\frac{2\,a\,\mathrm{Csc}[c+d\,x]^9}{9\,d}-\frac{b\,\mathrm{Csc}[c+d\,x]^{10}}{10\,d}-\frac{a\,\mathrm{Csc}[c+d\,x]^{11}}{11\,d}$$

Result (type 3, 385 leaves):

$$-\frac{1109\,a\,\mathrm{Cot}\left[\frac{1}{2}(c+d\,x)\right]}{354816\,d}-\frac{1109\,a\,\mathrm{Cot}\left[\frac{1}{2}(c+d\,x)\right]\mathrm{Csc}\left[\frac{1}{2}(c+d\,x)\right]^2}{709632\,d}-\frac{13\,a\,\mathrm{Cot}\left[\frac{1}{2}(c+d\,x)\right]\mathrm{Csc}\left[\frac{1}{2}(c+d\,x)\right]^4}{29568\,d}+$$
$$\frac{173\,a\,\mathrm{Cot}\left[\frac{1}{2}(c+d\,x)\right]\mathrm{Csc}\left[\frac{1}{2}(c+d\,x)\right]^6}{1419264\,d}+\frac{17\,a\,\mathrm{Cot}\left[\frac{1}{2}(c+d\,x)\right]\mathrm{Csc}\left[\frac{1}{2}(c+d\,x)\right]^8}{101376\,d}-\frac{a\,\mathrm{Cot}\left[\frac{1}{2}(c+d\,x)\right]\mathrm{Csc}\left[\frac{1}{2}(c+d\,x)\right]^{10}}{22528\,d}-\frac{b\,\mathrm{Csc}[c+d\,x]^6}{6\,d}+$$
$$\frac{b\,\mathrm{Csc}[c+d\,x]^8}{4\,d}-\frac{b\,\mathrm{Csc}[c+d\,x]^{10}}{10\,d}-\frac{1109\,a\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{354816\,d}-\frac{1109\,a\,\mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{709632\,d}-\frac{13\,a\,\mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]^4\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{29568\,d}+$$
$$\frac{173\,a\,\mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]^6\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{1419264\,d}+\frac{17\,a\,\mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]^8\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{101376\,d}-\frac{a\,\mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]^{10}\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{22528\,d}$$

Problem 1232: Result more than twice size of optimal antiderivative.

$$\int \frac{\mathrm{Cos}[c+d\,x]\,\mathrm{Cot}[c+d\,x]^4}{(a+b\,\mathrm{Sin}[c+d\,x])^2}\,dx$$

Optimal (type 3, 147 leaves, 4 steps):

$$\frac{\left(2\,a^2-3\,b^2\right)\mathrm{Csc}[c+d\,x]}{a^4\,d}+\frac{b\,\mathrm{Csc}[c+d\,x]^2}{a^3\,d}-\frac{\mathrm{Csc}[c+d\,x]^3}{3\,a^2\,d}+$$
$$\frac{4\,b\,\left(a^2-b^2\right)\mathrm{Log}[\mathrm{Sin}[c+d\,x]]}{a^5\,d}-\frac{4\,b\,\left(a^2-b^2\right)\mathrm{Log}[a+b\,\mathrm{Sin}[c+d\,x]]}{a^5\,d}-\frac{\left(a^2-b^2\right)^2}{a^4\,b\,d\,(a+b\,\mathrm{Sin}[c+d\,x])}$$

Result (type 3, 304 leaves):

$$\frac{\left(11 a^2 \text{Cos}\left[\frac{1}{2}(c+d x)\right]-18 b^2 \text{Cos}\left[\frac{1}{2}(c+d x)\right]\right) \text{Csc}\left[\frac{1}{2}(c+d x)\right]}{12 a^4 d}+\frac{b\, \text{Csc}\left[\frac{1}{2}(c+d x)\right]^2}{4 a^3 d}-\frac{\text{Cot}\left[\frac{1}{2}(c+d x)\right] \text{Csc}\left[\frac{1}{2}(c+d x)\right]^2}{24 a^2 d}+\frac{4\left(a^2 b-b^3\right) \text{Log}[\text{Sin}[c+d x]]}{a^5 d}-\frac{4\left(a^2 b-b^3\right) \text{Log}[a+b \text{Sin}[c+d x]]}{a^5 d}+\frac{b\, \text{Sec}\left[\frac{1}{2}(c+d x)\right]^2}{4 a^3 d}+\frac{\text{Sec}\left[\frac{1}{2}(c+d x)\right]\left(11 a^2 \text{Sin}\left[\frac{1}{2}(c+d x)\right]-18 b^2 \text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)}{12 a^4 d}-\frac{(a-b)^2 (a+b)^2}{a^4 b d (a+b \text{Sin}[c+d x])}-\frac{\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{2}(c+d x)\right]}{24 a^2 d}$$

Problem 1233: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Cot}[c+d x]^5}{(a+b \text{Sin}[c+d x])^2} \, dx$$

Optimal (type 3, 188 leaves, 3 steps):

$$-\frac{4 b\left(a^2-b^2\right) \text{Csc}[c+d x]}{a^5 d}+\frac{\left(2 a^2-3 b^2\right) \text{Csc}[c+d x]^2}{2 a^4 d}+\frac{2 b\, \text{Csc}[c+d x]^3}{3 a^3 d}-\frac{\text{Csc}[c+d x]^4}{4 a^2 d}+\frac{\left(a^4-6 a^2 b^2+5 b^4\right) \text{Log}[\text{Sin}[c+d x]]}{a^6 d}-\frac{\left(a^4-6 a^2 b^2+5 b^4\right) \text{Log}[a+b \text{Sin}[c+d x]]}{a^6 d}+\frac{\left(a^2-b^2\right)^2}{a^5 d (a+b \text{Sin}[c+d x])}$$

Result (type 3, 380 leaves):

$$\frac{\left(-11 a^2 b \text{Cos}\left[\frac{1}{2}(c+d x)\right]+12 b^3 \text{Cos}\left[\frac{1}{2}(c+d x)\right]\right) \text{Csc}\left[\frac{1}{2}(c+d x)\right]}{6 a^5 d}+\frac{\left(7 a^2-12 b^2\right) \text{Csc}\left[\frac{1}{2}(c+d x)\right]^2}{32 a^4 d}+\frac{b\, \text{Cot}\left[\frac{1}{2}(c+d x)\right] \text{Csc}\left[\frac{1}{2}(c+d x)\right]^2}{12 a^3 d}-\frac{\text{Csc}\left[\frac{1}{2}(c+d x)\right]^4}{64 a^2 d}+\frac{\left(a^4-6 a^2 b^2+5 b^4\right) \text{Log}[\text{Sin}[c+d x]]}{a^6 d}+\frac{\left(-a^4+6 a^2 b^2-5 b^4\right) \text{Log}[a+b \text{Sin}[c+d x]]}{a^6 d}+\frac{\left(7 a^2-12 b^2\right) \text{Sec}\left[\frac{1}{2}(c+d x)\right]^2}{32 a^4 d}-\frac{\text{Sec}\left[\frac{1}{2}(c+d x)\right]^4}{64 a^2 d}+\frac{\text{Sec}\left[\frac{1}{2}(c+d x)\right]\left(-11 a^2 b \text{Sin}\left[\frac{1}{2}(c+d x)\right]+12 b^3 \text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)}{6 a^5 d}+\frac{(a-b)^2 (a+b)^2}{a^5 d (a+b \text{Sin}[c+d x])}+\frac{b\, \text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{2}(c+d x)\right]}{12 a^3 d}$$

Problem 1235: Result more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d x]^5 \text{Sin}[c+d x]^n (a+b \text{Sin}[c+d x])^2 \, dx$$

Optimal (type 3, 170 leaves, 3 steps):

$$\frac{a^2 \text{Sin}[c+d x]^{1+n}}{d (1+n)}+\frac{2 a b \text{Sin}[c+d x]^{2+n}}{d (2+n)}-\frac{\left(2 a^2-b^2\right) \text{Sin}[c+d x]^{3+n}}{d (3+n)}-\frac{4 a b \text{Sin}[c+d x]^{4+n}}{d (4+n)}+\frac{\left(a^2-2 b^2\right) \text{Sin}[c+d x]^{5+n}}{d (5+n)}+\frac{2 a b \text{Sin}[c+d x]^{6+n}}{d (6+n)}+\frac{b^2 \text{Sin}[c+d x]^{7+n}}{d (7+n)}$$

Result (type 3, 648 leaves) :

$$\frac{1}{32 d (1+n) (2+n) (3+n) (4+n) (5+n) (6+n) (7+n)} \text{Sin}[c+d x]^{1+n} \left(119616 a^2+9888 b^2+164368 a^2 n+20488 b^2 n+89472 a^2 n^2+14576 b^2 n^2+25372 a^2 n^3+4654 b^2 n^3+4020 a^2 n^4+734 b^2 n^4+340 a^2 n^5+58 b^2 n^5+12 a^2 n^6+2 b^2 n^6+\left(48+92 n+56 n^2+13 n^3+n^4\right) \left(16 a^2 (7+n)^2+b^2 \left(-113+8 n+n^2\right)\right) \text{Cos}[2 (c+d x)]+2 \left(144+324 n+260 n^2+95 n^3+16 n^4+n^5\right) \left(2 a^2 (7+n)-b^2 (13+n)\right) \text{Cos}[4 (c+d x)]-720 b^2 \text{Cos}[6 (c+d x)]-1764 b^2 n \text{Cos}[6 (c+d x)]-1624 b^2 n^2 \text{Cos}[6 (c+d x)]-735 b^2 n^3 \text{Cos}[6 (c+d x)]-175 b^2 n^4 \text{Cos}[6 (c+d x)]-21 b^2 n^5 \text{Cos}[6 (c+d x)]-b^2 n^6 \text{Cos}[6 (c+d x)]+73920 a b \text{Sin}[c+d x]+135664 a b n \text{Sin}[c+d x]+81096 a b n^2 \text{Sin}[c+d x]+22304 a b n^3 \text{Sin}[c+d x]+3184 a b n^4 \text{Sin}[c+d x]+240 a b n^5 \text{Sin}[c+d x]+8 a b n^6 \text{Sin}[c+d x]+23520 a b \text{Sin}[3 (c+d x)]+53704 a b n \text{Sin}[3 (c+d x)]+44460 a b n^2 \text{Sin}[3 (c+d x)]+17392 a b n^3 \text{Sin}[3 (c+d x)]+3432 a b n^4 \text{Sin}[3 (c+d x)]+328 a b n^5 \text{Sin}[3 (c+d x)]+12 a b n^6 \text{Sin}[3 (c+d x)]+3360 a b \text{Sin}[5 (c+d x)]+8152 a b n \text{Sin}[5 (c+d x)]+7396 a b n^2 \text{Sin}[5 (c+d x)]+3280 a b n^3 \text{Sin}[5 (c+d x)]+760 a b n^4 \text{Sin}[5 (c+d x)]+88 a b n^5 \text{Sin}[5 (c+d x)]+4 a b n^6 \text{Sin}[5 (c+d x)]\right)$$

Problem 1236: Result more than twice size of optimal antiderivative.

$$\int \text{Cos}[c+d x]^5 \text{Sin}[c+d x]^n (a+b \text{Sin}[c+d x]) \, dx$$

Optimal (type 3, 123 leaves, 3 steps) :

$$\frac{a \text{Sin}[c+d x]^{1+n}}{d (1+n)}+\frac{b \text{Sin}[c+d x]^{2+n}}{d (2+n)}-\frac{2 a \text{Sin}[c+d x]^{3+n}}{d (3+n)}-\frac{2 b \text{Sin}[c+d x]^{4+n}}{d (4+n)}+\frac{a \text{Sin}[c+d x]^{5+n}}{d (5+n)}+\frac{b \text{Sin}[c+d x]^{6+n}}{d (6+n)}$$

Result (type 3, 371 leaves) :

$$\frac{1}{16 d (1+n) (2+n) (3+n) (4+n) (5+n) (6+n)} \text{Sin}[c+d x]^{1+n} \left(8544 a+10520 a n+4888 a n^2+1114 a n^3+128 a n^4+6 a n^5+8 a \left(336+692 n+484 n^2+147 n^3+20 n^4+n^5\right) \text{Cos}[2 (c+d x)]+2 a \left(144+324 n+260 n^2+95 n^3+16 n^4+n^5\right) \text{Cos}[4 (c+d x)]+2640 b \text{Sin}[c+d x]+4468 b n \text{Sin}[c+d x]+2258 b n^2 \text{Sin}[c+d x]+474 b n^3 \text{Sin}[c+d x]+46 b n^4 \text{Sin}[c+d x]+2 b n^5 \text{Sin}[c+d x]+840 b \text{Sin}[3 (c+d x)]+1798 b n \text{Sin}[3 (c+d x)]+1331 b n^2 \text{Sin}[3 (c+d x)]+431 b n^3 \text{Sin}[3 (c+d x)]+61 b n^4 \text{Sin}[3 (c+d x)]+3 b n^5 \text{Sin}[3 (c+d x)]+120 b \text{Sin}[5 (c+d x)]+274 b n \text{Sin}[5 (c+d x)]+225 b n^2 \text{Sin}[5 (c+d x)]+85 b n^3 \text{Sin}[5 (c+d x)]+15 b n^4 \text{Sin}[5 (c+d x)]+b n^5 \text{Sin}[5 (c+d x)]\right)$$

Problem 1237: Unable to integrate problem.

$$\int \frac{\text{Cos}[c+d x]^5 \text{Sin}[c+d x]^n}{a+b \text{Sin}[c+d x]} \, dx$$

Optimal (type 5, 167 leaves, 5 steps) :

$$-\frac{a\left(a^2-2b^2\right)\operatorname{Sin}[c+dx]^{1+n}}{b^4 d(1+n)}+\frac{\left(a^2-b^2\right)^2\operatorname{Hypergeometric2F1}\left[1,1+n,2+n,-\frac{b\operatorname{Sin}[c+dx]}{a}\right]\operatorname{Sin}[c+dx]^{1+n}}{a b^4 d(1+n)}+\frac{\left(a^2-2b^2\right)\operatorname{Sin}[c+dx]^{2+n}}{b^3 d(2+n)}-\frac{a\operatorname{Sin}[c+dx]^{3+n}}{b^2 d(3+n)}+\frac{\operatorname{Sin}[c+dx]^{4+n}}{b d(4+n)}$$

Result (type 8, 31 leaves):

$$\int\frac{\operatorname{Cos}[c+dx]^5\operatorname{Sin}[c+dx]^n}{a+b\operatorname{Sin}[c+dx]}\,dx$$

Problem 1238: Unable to integrate problem.

$$\int\frac{\operatorname{Cos}[c+dx]^5\operatorname{Sin}[c+dx]^n}{(a+b\operatorname{Sin}[c+dx])^2}\,dx$$

Optimal (type 5, 191 leaves, 5 steps):

$$\frac{\left(3a^2-2b^2\right)\operatorname{Sin}[c+dx]^{1+n}}{b^4 d(1+n)}+\frac{\left(a^2-b^2\right)\left(b^2 n-a^2(4+n)\right)\operatorname{Hypergeometric2F1}\left[1,1+n,2+n,-\frac{b\operatorname{Sin}[c+dx]}{a}\right]\operatorname{Sin}[c+dx]^{1+n}}{a^2 b^4 d(1+n)}-\frac{2a\operatorname{Sin}[c+dx]^{2+n}}{b^3 d(2+n)}+\frac{\operatorname{Sin}[c+dx]^{3+n}}{b^2 d(3+n)}+\frac{\left(a^2-b^2\right)^2\operatorname{Sin}[c+dx]^{1+n}}{a b^4 d(a+b\operatorname{Sin}[c+dx])}$$

Result (type 8, 31 leaves):

$$\int\frac{\operatorname{Cos}[c+dx]^5\operatorname{Sin}[c+dx]^n}{(a+b\operatorname{Sin}[c+dx])^2}\,dx$$

Problem 1250: Result more than twice size of optimal antiderivative.

$$\int\operatorname{Cot}[c+dx]^6\operatorname{Csc}[c+dx]\,(a+b\operatorname{Sin}[c+dx])^2\,dx$$

Optimal (type 3, 175 leaves, 11 steps):

$$-2abx+\frac{5\left(a^2-6b^2\right)\operatorname{ArcTanh}[\operatorname{Cos}[c+dx]]}{16d}+\frac{b^2\operatorname{Cos}[c+dx]}{d}-\frac{2ab\operatorname{Cot}[c+dx]}{d}+\frac{2ab\operatorname{Cot}[c+dx]^3}{3d}-\frac{2ab\operatorname{Cot}[c+dx]^5}{5d}-\frac{\left(11a^2-18b^2\right)\operatorname{Cot}[c+dx]\operatorname{Csc}[c+dx]}{16d}+\frac{\left(13a^2-6b^2\right)\operatorname{Cot}[c+dx]\operatorname{Csc}[c+dx]^3}{24d}-\frac{a^2\operatorname{Cot}[c+dx]\operatorname{Csc}[c+dx]^5}{6d}$$

Result (type 3, 384 leaves):

$$\frac{1}{1920\, d}\left(-3840\, a\, b\, c-3840\, a\, b\, d\, x+1920\, b^2 \cos[c+d\, x]-2944\, a\, b \cot\left[\frac{1}{2}(c+d\, x)\right]-330\, a^2 \csc\left[\frac{1}{2}(c+d\, x)\right]^2+540\, b^2 \csc\left[\frac{1}{2}(c+d\, x)\right]^2+\right.$$
$$60\, a^2 \csc\left[\frac{1}{2}(c+d\, x)\right]^4-30\, b^2 \csc\left[\frac{1}{2}(c+d\, x)\right]^4-5\, a^2 \csc\left[\frac{1}{2}(c+d\, x)\right]^6+600\, a^2 \operatorname{Log}\left[\cos\left[\frac{1}{2}(c+d\, x)\right]\right]-3600\, b^2 \operatorname{Log}\left[\cos\left[\frac{1}{2}(c+d\, x)\right]\right]-$$
$$600\, a^2 \operatorname{Log}\left[\sin\left[\frac{1}{2}(c+d\, x)\right]\right]+3600\, b^2 \operatorname{Log}\left[\sin\left[\frac{1}{2}(c+d\, x)\right]\right]+330\, a^2 \sec\left[\frac{1}{2}(c+d\, x)\right]^2-540\, b^2 \sec\left[\frac{1}{2}(c+d\, x)\right]^2-$$
$$60\, a^2 \sec\left[\frac{1}{2}(c+d\, x)\right]^4+30\, b^2 \sec\left[\frac{1}{2}(c+d\, x)\right]^4+5\, a^2 \sec\left[\frac{1}{2}(c+d\, x)\right]^6-2624\, a\, b \csc[c+d\, x]^3 \sin\left[\frac{1}{2}(c+d\, x)\right]^4+$$
$$\left.768\, a\, b \csc[c+d\, x]^5 \sin\left[\frac{1}{2}(c+d\, x)\right]^6+164\, a\, b \csc\left[\frac{1}{2}(c+d\, x)\right]^4 \sin[c+d\, x]-12\, a\, b \csc\left[\frac{1}{2}(c+d\, x)\right]^6 \sin[c+d\, x]+2944\, a\, b \tan\left[\frac{1}{2}(c+d\, x)\right]\right)$$

- **Problem 1256: Result more than twice size of optimal antiderivative.**

$$\int \frac{\cos[c+d\, x]^6 \sin[c+d\, x]^3}{(a+b \sin[c+d\, x])^2}\, dx$$

Optimal (type 3, 525 leaves, 11 steps):

$$\frac{a\left(64\, a^6-120\, a^4 b^2+60\, a^2 b^4-5\, b^6\right) x}{8\, b^9}-\frac{2\, a^2\left(8\, a^2-3\, b^2\right)\left(a^2-b^2\right)^{3/2} \operatorname{ArcTan}\left[\frac{b+a \tan\left[\frac{1}{2}(c+d\, x)\right]}{\sqrt{a^2-b^2}}\right]}{b^9\, d}+\frac{\left(840\, a^6-1435\, a^4 b^2+588\, a^2 b^4-15\, b^6\right) \cos[c+d\, x]}{105\, b^8\, d}-$$
$$\frac{a\left(32\, a^4-52\, a^2 b^2+19\, b^4\right) \cos[c+d\, x] \sin[c+d\, x]}{8\, b^7\, d}+\frac{\left(280\, a^4-441\, a^2 b^2+150\, b^4\right) \cos[c+d\, x] \sin[c+d\, x]^2}{105\, b^6\, d}-$$
$$\frac{\left(24\, a^4-37\, a^2 b^2+12\, b^4\right) \cos[c+d\, x] \sin[c+d\, x]^3}{12\, a\, b^5\, d}+\frac{\left(224\, a^4-340\, a^2 b^2+105\, b^4\right) \cos[c+d\, x] \sin[c+d\, x]^4}{140\, a^2 b^4\, d}+\frac{\cos[c+d\, x] \sin[c+d\, x]^4}{4\, a\, d\,(a+b \sin[c+d\, x])}-$$
$$\frac{3\, b \cos[c+d\, x] \sin[c+d\, x]^5}{20\, a^2\, d\,(a+b \sin[c+d\, x])}-\frac{\left(20\, a^4-30\, a^2 b^2+9\, b^4\right) \cos[c+d\, x] \sin[c+d\, x]^5}{15\, a^2 b^3\, d\,(a+b \sin[c+d\, x])}-\frac{4\, a \cos[c+d\, x] \sin[c+d\, x]^6}{21\, b^2\, d\,(a+b \sin[c+d\, x])}+\frac{\cos[c+d\, x] \sin[c+d\, x]^7}{7\, b\, d\,(a+b \sin[c+d\, x])}$$

Result (type 3, 1223 leaves):

$$\frac{3\left(\frac{2\,b\,\text{ArcTan}\left[\frac{b+a\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{\sqrt{a^2-b^2}}\right]}{\sqrt{a^2-b^2}}+\frac{a\,\text{Cos}[c+d\,x]}{a+b\,\text{Sin}[c+d\,x]}\right)}{128\,(-a+b)\,(a+b)\,d}+\frac{8\,a\,(c+d\,x)-\frac{2\,(8\,a^4-12\,a^2\,b^2+3\,b^4)\,\text{ArcTan}\left[\frac{b+a\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{\sqrt{a^2-b^2}}\right]}{(a^2-b^2)^{3/2}}+4\,b\,\text{Cos}[c+d\,x]+\frac{a\,b\,(4\,a^2-3\,b^2)\,\text{Cos}[c+d\,x]}{(a-b)\,(a+b)\,(a+b\,\text{Sin}[c+d\,x])}}{32\,b^3\,d}-$$

$$\frac{1}{1280\,b^7\,d}\left(240\,a\,(24\,a^4-20\,a^2\,b^2+3\,b^4)\,(c+d\,x)-\frac{30\,(384\,a^8-896\,a^6\,b^2+672\,a^4\,b^4-168\,a^2\,b^6+7\,b^8)\,\text{ArcTan}\left[\frac{b+a\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{\sqrt{a^2-b^2}}\right]}{(a^2-b^2)^{3/2}}+\right.$$

$$60\,b\,(80\,a^4-48\,a^2\,b^2+3\,b^4)\,\text{Cos}[c+d\,x]+40\,b^3\,(-6\,a^2+b^2)\,\text{Cos}[3\,(c+d\,x)]+12\,b^5\,\text{Cos}[5\,(c+d\,x)]+$$

$$\left.\frac{15\,a\,b\,(64\,a^6-112\,a^4\,b^2+56\,a^2\,b^4-7\,b^6)\,\text{Cos}[c+d\,x]}{(a-b)\,(a+b)\,(a+b\,\text{Sin}[c+d\,x])}-120\,a\,b^2\,(8\,a^2-3\,b^2)\,\text{Sin}[2\,(c+d\,x)]+60\,a\,b^4\,\text{Sin}[4\,(c+d\,x)]\right)+$$

$$\frac{1}{256}\left(-\frac{1}{b^9\,(a^2-b^2)^{3/2}\,d}2\,(2048\,a^{10}-5760\,a^8\,b^2+5760\,a^6\,b^4-2400\,a^4\,b^6+360\,a^2\,b^8-9\,b^{10})\right.$$

$$\text{ArcTan}\left[\frac{\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]\left(b\,\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+a\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)}{\sqrt{a^2-b^2}}\right]+\frac{1}{105\,b^9\,(-a^2+b^2)\,d\,(a+b\,\text{Sin}[c+d\,x])}$$

$$(-215040\,a^{10}\,(c+d\,x)+497280\,a^8\,b^2\,(c+d\,x)-383040\,a^6\,b^4\,(c+d\,x)+109200\,a^4\,b^6\,(c+d\,x)-8400\,a^2\,b^8\,(c+d\,x)-215040\,a^9\,b\,\text{Cos}[c+d\,x]+$$
$$470400\,a^7\,b^3\,\text{Cos}[c+d\,x]-334320\,a^5\,b^5\,\text{Cos}[c+d\,x]+84000\,a^3\,b^7\,\text{Cos}[c+d\,x]-5145\,a\,b^9\,\text{Cos}[c+d\,x]-8960\,a^7\,b^3\,\text{Cos}[3\,(c+d\,x)]+$$
$$17360\,a^5\,b^5\,\text{Cos}[3\,(c+d\,x)]-9870\,a^3\,b^7\,\text{Cos}[3\,(c+d\,x)]+1470\,a\,b^9\,\text{Cos}[3\,(c+d\,x)]+672\,a^5\,b^5\,\text{Cos}[5\,(c+d\,x)]-$$
$$994\,a^3\,b^7\,\text{Cos}[5\,(c+d\,x)]+322\,a\,b^9\,\text{Cos}[5\,(c+d\,x)]-80\,a^3\,b^7\,\text{Cos}[7\,(c+d\,x)]+80\,a\,b^9\,\text{Cos}[7\,(c+d\,x)]-215040\,a^9\,b\,(c+d\,x)\,\text{Sin}[c+d\,x]+$$
$$497280\,a^7\,b^3\,(c+d\,x)\,\text{Sin}[c+d\,x]-383040\,a^5\,b^5\,(c+d\,x)\,\text{Sin}[c+d\,x]+109200\,a^3\,b^7\,(c+d\,x)\,\text{Sin}[c+d\,x]-8400\,a\,b^9\,(c+d\,x)\,\text{Sin}[c+d\,x]-$$
$$53760\,a^8\,b^2\,\text{Sin}[2\,(c+d\,x)]+115360\,a^6\,b^4\,\text{Sin}[2\,(c+d\,x)]-78400\,a^4\,b^6\,\text{Sin}[2\,(c+d\,x)]+17430\,a^2\,b^8\,\text{Sin}[2\,(c+d\,x)]-$$
$$630\,b^{10}\,\text{Sin}[2\,(c+d\,x)]+2240\,a^6\,b^4\,\text{Sin}[4\,(c+d\,x)]-3836\,a^4\,b^6\,\text{Sin}[4\,(c+d\,x)]+1722\,a^2\,b^8\,\text{Sin}[4\,(c+d\,x)]-126\,b^{10}\,\text{Sin}[4\,(c+d\,x)]-$$
$$\left.224\,a^4\,b^6\,\text{Sin}[6\,(c+d\,x)]+278\,a^2\,b^8\,\text{Sin}[6\,(c+d\,x)]-54\,b^{10}\,\text{Sin}[6\,(c+d\,x)]+30\,a^2\,b^8\,\text{Sin}[8\,(c+d\,x)]-30\,b^{10}\,\text{Sin}[8\,(c+d\,x)])\right)$$

Problem 1257: Result more than twice size of optimal antiderivative.

$$\int\frac{\text{Cos}[c+d\,x]^6\,\text{Sin}[c+d\,x]^2}{(a+b\,\text{Sin}[c+d\,x])^2}\,dx$$

Optimal (type 3, 471 leaves, 10 steps):

$$-\frac{\left(112 a^6-200 a^4 b^2+90 a^2 b^4-5 b^6\right) x}{16 b^8}+\frac{2 a \left(7 a^2-2 b^2\right) \left(a^2-b^2\right)^{3/2} \text{ArcTan}\left[\frac{b+a \text{Tan}\left[\frac{1}{2} (c+d x)\right]}{\sqrt{a^2-b^2}}\right]}{b^8 d}-\frac{a \left(105 a^4-170 a^2 b^2+61 b^4\right) \text{Cos}[c+d x]}{15 b^7 d}+$$

$$\frac{\left(56 a^4-86 a^2 b^2+27 b^4\right) \text{Cos}[c+d x] \text{Sin}[c+d x]}{16 b^6 d}-\frac{\left(35 a^4-52 a^2 b^2+15 b^4\right) \text{Cos}[c+d x] \text{Sin}[c+d x]^2}{15 a b^5 d}+$$

$$\frac{\left(42 a^4-61 a^2 b^2+16 b^4\right) \text{Cos}[c+d x] \text{Sin}[c+d x]^3}{24 a^2 b^4 d}+\frac{\text{Cos}[c+d x] \text{Sin}[c+d x]^3}{3 a d (a+b \text{Sin}[c+d x])}-\frac{b \text{Cos}[c+d x] \text{Sin}[c+d x]^4}{6 a^2 d (a+b \text{Sin}[c+d x])}-$$

$$\frac{\left(14 a^4-20 a^2 b^2+5 b^4\right) \text{Cos}[c+d x] \text{Sin}[c+d x]^4}{10 a^2 b^3 d (a+b \text{Sin}[c+d x])}-\frac{7 a \text{Cos}[c+d x] \text{Sin}[c+d x]^5}{30 b^2 d (a+b \text{Sin}[c+d x])}+\frac{\text{Cos}[c+d x] \text{Sin}[c+d x]^6}{6 b d (a+b \text{Sin}[c+d x])}$$

Result (type 3, 1110 leaves) :

$$\frac{5 \left(\frac{2 a \text{ArcTan}\left[\frac{b+a \text{Tan}\left[\frac{1}{2} (c+d x)\right]}{\sqrt{a^2-b^2}}\right]}{\left(a^2-b^2\right)^{3/2}}+\frac{b \text{Cos}[c+d x]}{(a-b) (a+b) (a+b \text{Sin}[c+d x])}\right)}{128 d}+\frac{-2 (c+d x)+\frac{2 a \left(2 a^2-3 b^2\right) \text{ArcTan}\left[\frac{b+a \text{Tan}\left[\frac{1}{2} (c+d x)\right]}{\sqrt{a^2-b^2}}\right]}{\left(a^2-b^2\right)^{3/2}}+\frac{b \left(-2 a^2+b^2\right) \text{Cos}[c+d x]}{(a-b) (a+b) (a+b \text{Sin}[c+d x])}}{32 b^2 d}-$$

$$\frac{1}{32 b^4 d}\left(-4 \left(-6 a^2+b^2\right) (c+d x)-\frac{2 a \left(24 a^4-40 a^2 b^2+15 b^4\right) \text{ArcTan}\left[\frac{b+a \text{Tan}\left[\frac{1}{2} (c+d x)\right]}{\sqrt{a^2-b^2}}\right]}{\left(a^2-b^2\right)^{3/2}}+\right.$$

$$\left.16 a b \text{Cos}[c+d x]+\frac{b \left(8 a^4-8 a^2 b^2+b^4\right) \text{Cos}[c+d x]}{(a-b) (a+b) (a+b \text{Sin}[c+d x])}-2 b^2 \text{Sin}[2 (c+d x)]\right)-\frac{1}{96 b^6 d}$$

$$\left(-6 \left(80 a^4-48 a^2 b^2+3 b^4\right) (c+d x)+\frac{6 a \left(160 a^6-336 a^4 b^2+210 a^2 b^4-35 b^6\right) \text{ArcTan}\left[\frac{b+a \text{Tan}\left[\frac{1}{2} (c+d x)\right]}{\sqrt{a^2-b^2}}\right]}{\left(a^2-b^2\right)^{3/2}}-48 a b \left(8 a^2-3 b^2\right) \text{Cos}[c+d x]+\right.$$

$$\left.16 a b^3 \text{Cos}[3 (c+d x)]+\frac{3 b \left(-32 a^6+48 a^4 b^2-18 a^2 b^4+b^6\right) \text{Cos}[c+d x]}{(a-b) (a+b) (a+b \text{Sin}[c+d x])}-12 b^2 \left(-6 a^2+b^2\right) \text{Sin}[2 (c+d x)]-3 b^4 \text{Sin}[4 (c+d x)]\right)-$$

$$\frac{1}{1920\, b^8\, d}\left(-\frac{30\, a\,\left(896\, a^8-2304\, a^6\, b^2+2016\, a^4\, b^4-672\, a^2\, b^6+63\, b^8\right)\, \text{ArcTan}\left[\frac{b+a\, \text{Tan}\left[\frac{1}{2}\,(c+d\, x)\right]}{\sqrt{a^2-b^2}}\right]}{\left(a^2-b^2\right)^{3/2}}+\right.$$

$$\frac{1}{\left(a^2-b^2\right)\,(a+b\, \text{Sin}[c+d\, x])}\left(15\, b\,\left(896\, a^8-1744\, a^6\, b^2+1024\, a^4\, b^4-179\, a^2\, b^6+4\, b^8\right)\, \text{Cos}[c+d\, x]+\right.$$

$$\left(a^2-b^2\right)\,\left(13\,440\, a^7\, c-14\,400\, a^5\, b^2\, c+3600\, a^3\, b^4\, c-120\, a\, b^6\, c+13\,440\, a^7\, d\, x-14\,400\, a^5\, b^2\, d\, x+3600\, a^3\, b^4\, d\, x-\right.$$

$$120\, a\, b^6\, d\, x+10\,\left(56\, a^4\, b^3-39\, a^2\, b^5+3\, b^7\right)\, \text{Cos}[3\,(c+d\, x)]+\left(-42\, a^2\, b^5+10\, b^7\right)\, \text{Cos}[5\,(c+d\, x)]+5\, b^7\, \text{Cos}[7\,(c+d\, x)]+$$

$$13\,440\, a^6\, b\, c\, \text{Sin}[c+d\, x]-14\,400\, a^4\, b^3\, c\, \text{Sin}[c+d\, x]+3600\, a^2\, b^5\, c\, \text{Sin}[c+d\, x]-120\, b^7\, c\, \text{Sin}[c+d\, x]+13\,440\, a^6\, b\, d\, x\, \text{Sin}[c+d\, x]-$$

$$14\,400\, a^4\, b^3\, d\, x\, \text{Sin}[c+d\, x]+3600\, a^2\, b^5\, d\, x\, \text{Sin}[c+d\, x]-120\, b^7\, d\, x\, \text{Sin}[c+d\, x]+3360\, a^5\, b^2\, \text{Sin}[2\,(c+d\, x)]-$$

$$\left.\left.\left.3040\, a^3\, b^4\, \text{Sin}[2\,(c+d\, x)]+510\, a\, b^6\, \text{Sin}[2\,(c+d\, x)]-140\, a^3\, b^4\, \text{Sin}[4\,(c+d\, x)]+66\, a\, b^6\, \text{Sin}[4\,(c+d\, x)]+14\, a\, b^6\, \text{Sin}[6\,(c+d\, x)]\right)\right)\right)$$

Problem 1266: Result more than twice size of optimal antiderivative.

$$\int\frac{\text{Cos}[c+d\, x]^6\, \text{Sin}[c+d\, x]^3}{(a+b\, \text{Sin}[c+d\, x])^3}\, dx$$

Optimal (type 3, 536 leaves, 11 steps):

$$-\frac{\left(448\, a^6-600\, a^4\, b^2+180\, a^2\, b^4-5\, b^6\right)\, x}{16\, b^9}+\frac{a\,\sqrt{a^2-b^2}\,\left(56\, a^4-47\, a^2\, b^2+6\, b^4\right)\, \text{ArcTan}\left[\frac{b+a\, \text{Tan}\left[\frac{1}{2}\,(c+d\, x)\right]}{\sqrt{a^2-b^2}}\right]}{b^9\, d}-$$

$$\frac{a\,\left(840\, a^4-985\, a^2\, b^2+213\, b^4\right)\, \text{Cos}[c+d\, x]}{30\, b^8\, d}+\frac{\left(224\, a^4-244\, a^2\, b^2+43\, b^4\right)\, \text{Cos}[c+d\, x]\, \text{Sin}[c+d\, x]}{16\, b^7\, d}-$$

$$\frac{\left(280\, a^4-291\, a^2\, b^2+45\, b^4\right)\, \text{Cos}[c+d\, x]\, \text{Sin}[c+d\, x]^2}{30\, a\, b^6\, d}+\frac{\left(168\, a^4-169\, a^2\, b^2+24\, b^4\right)\, \text{Cos}[c+d\, x]\, \text{Sin}[c+d\, x]^3}{24\, a^2\, b^5\, d}+$$

$$\frac{\text{Cos}[c+d\, x]\, \text{Sin}[c+d\, x]^4}{4\, a\, d\,(a+b\, \text{Sin}[c+d\, x])^2}-\frac{b\, \text{Cos}[c+d\, x]\, \text{Sin}[c+d\, x]^5}{10\, a^2\, d\,(a+b\, \text{Sin}[c+d\, x])^2}-\frac{\left(56\, a^4-60\, a^2\, b^2+9\, b^4\right)\, \text{Cos}[c+d\, x]\, \text{Sin}[c+d\, x]^5}{60\, a^2\, b^3\, d\,(a+b\, \text{Sin}[c+d\, x])^2}-$$

$$\frac{4\, a\, \text{Cos}[c+d\, x]\, \text{Sin}[c+d\, x]^6}{15\, b^2\, d\,(a+b\, \text{Sin}[c+d\, x])^2}+\frac{\text{Cos}[c+d\, x]\, \text{Sin}[c+d\, x]^7}{6\, b\, d\,(a+b\, \text{Sin}[c+d\, x])^2}-\frac{\left(112\, a^4-110\, a^2\, b^2+15\, b^4\right)\, \text{Cos}[c+d\, x]\, \text{Sin}[c+d\, x]^4}{20\, a^2\, b^4\, d\,(a+b\, \text{Sin}[c+d\, x])}$$

Result (type 3, 2044 leaves):

$$\frac{1}{64\, b^3\, d}$$

$$\left(-8\,(c+d\,x)+\frac{2\,a\,\left(8\,a^4-20\,a^2\,b^2+15\,b^4\right)\,\text{ArcTan}\left[\frac{b+a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]}{\sqrt{a^2-b^2}}\right]}{\left(a^2-b^2\right)^{5/2}}+\frac{a\,b\,\left(4\,a^2-3\,b^2\right)\,\text{Cos}[c+d\,x]}{(a-b)\,(a+b)\,(a+b\,\text{Sin}[c+d\,x])^2}-\frac{3\,b\,\left(4\,a^4-7\,a^2\,b^2+2\,b^4\right)\,\text{Cos}[c+d\,x]}{(a-b)^2\,(a+b)^2\,(a+b\,\text{Sin}[c+d\,x])}\right)-$$

$$\frac{3\left(\frac{6\,a\,b\,\text{ArcTan}\left[\frac{b+a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]}{\sqrt{a^2-b^2}}\right]}{\sqrt{a^2-b^2}}+\frac{\text{Cos}[c+d\,x]\,\left(a\,\left(2\,a^2+b^2\right)+b\,\left(a^2+2\,b^2\right)\,\text{Sin}[c+d\,x]\right)}{(a+b\,\text{Sin}[c+d\,x])^2}\right)}{256\,(a-b)^2\,(a+b)^2\,d}-$$

$$\frac{1}{1024\,b^7\,d}3\left(\frac{12\,a\,\left(640\,a^8-1920\,a^6\,b^2+2016\,a^4\,b^4-840\,a^2\,b^6+105\,b^8\right)\,\text{ArcTan}\left[\frac{b+a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]}{\sqrt{a^2-b^2}}\right]}{\left(a^2-b^2\right)^{5/2}}+\right.$$

$$\frac{1}{\left(a^2-b^2\right)^2\,(a+b\,\text{Sin}[c+d\,x])^2}\left(-3840\,a^{10}\,(c+d\,x)+7680\,a^8\,b^2\,(c+d\,x)-2976\,a^6\,b^4\,(c+d\,x)-1776\,a^4\,b^6\,(c+d\,x)+\right.$$
$$960\,a^2\,b^8\,(c+d\,x)-48\,b^{10}\,(c+d\,x)-3840\,a^9\,b\,\text{Cos}[c+d\,x]+8640\,a^7\,b^3\,\text{Cos}[c+d\,x]-5696\,a^5\,b^5\,\text{Cos}[c+d\,x]+$$
$$788\,a^3\,b^7\,\text{Cos}[c+d\,x]+114\,a\,b^9\,\text{Cos}[c+d\,x]+1920\,a^8\,b^2\,(c+d\,x)\,\text{Cos}[2\,(c+d\,x)]-4800\,a^6\,b^4\,(c+d\,x)\,\text{Cos}[2\,(c+d\,x)]+$$
$$3888\,a^4\,b^6\,(c+d\,x)\,\text{Cos}[2\,(c+d\,x)]-1056\,a^2\,b^8\,(c+d\,x)\,\text{Cos}[2\,(c+d\,x)]+48\,b^{10}\,(c+d\,x)\,\text{Cos}[2\,(c+d\,x)]+320\,a^7\,b^3\,\text{Cos}[3\,(c+d\,x)]-$$
$$760\,a^5\,b^5\,\text{Cos}[3\,(c+d\,x)]+560\,a^3\,b^7\,\text{Cos}[3\,(c+d\,x)]-120\,a\,b^9\,\text{Cos}[3\,(c+d\,x)]-8\,a^5\,b^5\,\text{Cos}[5\,(c+d\,x)]+16\,a^3\,b^7\,\text{Cos}[5\,(c+d\,x)]-$$
$$8\,a\,b^9\,\text{Cos}[5\,(c+d\,x)]-7680\,a^9\,b\,(c+d\,x)\,\text{Sin}[c+d\,x]+19\,200\,a^7\,b^3\,(c+d\,x)\,\text{Sin}[c+d\,x]-15\,552\,a^5\,b^5\,(c+d\,x)\,\text{Sin}[c+d\,x]+$$
$$4224\,a^3\,b^7\,(c+d\,x)\,\text{Sin}[c+d\,x]-192\,a\,b^9\,(c+d\,x)\,\text{Sin}[c+d\,x]-2880\,a^8\,b^2\,\text{Sin}[2\,(c+d\,x)]+6880\,a^6\,b^4\,\text{Sin}[2\,(c+d\,x)]-$$
$$5182\,a^4\,b^6\,\text{Sin}[2\,(c+d\,x)]+1221\,a^2\,b^8\,\text{Sin}[2\,(c+d\,x)]-36\,b^{10}\,\text{Sin}[2\,(c+d\,x)]-40\,a^6\,b^4\,\text{Sin}[4\,(c+d\,x)]+88\,a^4\,b^6\,\text{Sin}[4\,(c+d\,x)]-$$
$$\left.\left.56\,a^2\,b^8\,\text{Sin}[4\,(c+d\,x)]+8\,b^{10}\,\text{Sin}[4\,(c+d\,x)]+2\,a^4\,b^6\,\text{Sin}[6\,(c+d\,x)]-4\,a^2\,b^8\,\text{Sin}[6\,(c+d\,x)]+2\,b^{10}\,\text{Sin}[6\,(c+d\,x)]\right)\right)+$$

$$\frac{1}{256}\left(\frac{1}{b^9\,\left(a^2-b^2\right)^{5/2}\,d}a\,\left(14\,336\,a^{10}-49\,280\,a^8\,b^2+63\,360\,a^6\,b^4-36\,960\,a^4\,b^6+9240\,a^2\,b^8-693\,b^{10}\right)\right.$$
$$\text{ArcTan}\left[\frac{\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]\,\left(b\,\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+a\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)}{\sqrt{a^2-b^2}}\right]-\frac{1}{60\,b^9\,\left(-a^2+b^2\right)^2\,d\,(a+b\,\text{Sin}[c+d\,x])^2}$$
$$\left(430\,080\,a^{12}\,(c+d\,x)-1\,048\,320\,a^{10}\,b^2\,(c+d\,x)+691\,200\,a^8\,b^4\,(c+d\,x)+83\,040\,a^6\,b^6\,(c+d\,x)-198\,000\,a^4\,b^8\,(c+d\,x)+43\,200\,a^2\,b^{10}\,(c+d\,x)-\right.$$
$$1200\,b^{12}\,(c+d\,x)+430\,080\,a^{11}\,b\,\text{Cos}[c+d\,x]-1\,155\,840\,a^9\,b^3\,\text{Cos}[c+d\,x]+1\,042\,880\,a^7\,b^5\,\text{Cos}[c+d\,x]-332\,800\,a^5\,b^7\,\text{Cos}[c+d\,x]+$$
$$11\,060\,a^3\,b^9\,\text{Cos}[c+d\,x]+4530\,a\,b^{11}\,\text{Cos}[c+d\,x]-215\,040\,a^{10}\,b^2\,(c+d\,x)\,\text{Cos}[2\,(c+d\,x)]+631\,680\,a^8\,b^4\,(c+d\,x)\,\text{Cos}[2\,(c+d\,x)]-$$
$$661\,440\,a^6\,b^6\,(c+d\,x)\,\text{Cos}[2\,(c+d\,x)]+289\,200\,a^4\,b^8\,(c+d\,x)\,\text{Cos}[2\,(c+d\,x)]-45\,600\,a^2\,b^{10}\,(c+d\,x)\,\text{Cos}[2\,(c+d\,x)]+$$

$$1200\, b^{12} (c+d x) \text{Cos}[2 (c+d x)] - 35840\, a^9 b^3 \text{Cos}[3 (c+d x)] + 100800\, a^7 b^5 \text{Cos}[3 (c+d x)] - 98424\, a^5 b^7 \text{Cos}[3 (c+d x)] + 37808\, a^3 b^9 \text{Cos}[3 (c+d x)] - 4344\, a\, b^{11} \text{Cos}[3 (c+d x)] + 896\, a^7 b^5 \text{Cos}[5 (c+d x)] - 2184\, a^5 b^7 \text{Cos}[5 (c+d x)] + 1680\, a^3 b^9 \text{Cos}[5 (c+d x)] - 392\, a\, b^{11} \text{Cos}[5 (c+d x)] - 64\, a^5 b^7 \text{Cos}[7 (c+d x)] + 128\, a^3 b^9 \text{Cos}[7 (c+d x)] - 64\, a\, b^{11} \text{Cos}[7 (c+d x)] + 860160\, a^{11} b (c+d x) \text{Sin}[c+d x] - 2526720\, a^9 b^3 (c+d x) \text{Sin}[c+d x] + 2645760\, a^7 b^5 (c+d x) \text{Sin}[c+d x] - 1156800\, a^5 b^7 (c+d x) \text{Sin}[c+d x] + 182400\, a^3 b^9 (c+d x) \text{Sin}[c+d x] - 4800\, a\, b^{11} (c+d x) \text{Sin}[c+d x] + 322560\, a^{10} b^2 \text{Sin}[2 (c+d x)] - 911680\, a^8 b^4 \text{Sin}[2 (c+d x)] + 903680\, a^6 b^6 \text{Sin}[2 (c+d x)] - 362830\, a^4 b^8 \text{Sin}[2 (c+d x)] + 49125\, a^2 b^{10} \text{Sin}[2 (c+d x)] - 900\, b^{12} \text{Sin}[2 (c+d x)] + 4480\, a^8 b^4 \text{Sin}[4 (c+d x)] - 11816\, a^6 b^6 \text{Sin}[4 (c+d x)] + 10392\, a^4 b^8 \text{Sin}[4 (c+d x)] - 3256\, a^2 b^{10} \text{Sin}[4 (c+d x)] + 200\, b^{12} \text{Sin}[4 (c+d x)] - 224\, a^6 b^6 \text{Sin}[6 (c+d x)] + 498\, a^4 b^8 \text{Sin}[6 (c+d x)] - 324\, a^2 b^{10} \text{Sin}[6 (c+d x)] + 50\, b^{12} \text{Sin}[6 (c+d x)] + 20\, a^4 b^8 \text{Sin}[8 (c+d x)] - 40\, a^2 b^{10} \text{Sin}[8 (c+d x)] + 20\, b^{12} \text{Sin}[8 (c+d x)]\Big)$$

Problem 1267: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Cos}[c+d x]^6 \text{Sin}[c+d x]^2}{(a+b \text{Sin}[c+d x])^3} \, dx$$

Optimal (type 3, 485 leaves, 10 steps):

$$\frac{a \left(168 a^4-200 a^2 b^2+45 b^4\right) x}{8 b^8}-\frac{\sqrt{a^2-b^2} \left(42 a^4-29 a^2 b^2+2 b^4\right) \text{ArcTan}\left[\frac{b+a \text{Tan}\left[\frac{1}{2} (c+d x)\right]}{\sqrt{a^2-b^2}}\right]}{b^8 d}+\frac{\left(630 a^4-645 a^2 b^2+91 b^4\right) \text{Cos}[c+d x]}{30 b^7 d}-\frac{\left(84 a^4-79 a^2 b^2+8 b^4\right) \text{Cos}[c+d x] \text{Sin}[c+d x]}{8 a b^6 d}+\frac{\left(210 a^4-187 a^2 b^2+15 b^4\right) \text{Cos}[c+d x] \text{Sin}[c+d x]^2}{30 a^2 b^5 d}+\frac{\text{Cos}[c+d x] \text{Sin}[c+d x]^3}{3 a d (a+b \text{Sin}[c+d x])^2}-\frac{b \text{Cos}[c+d x] \text{Sin}[c+d x]^4}{12 a^2 d (a+b \text{Sin}[c+d x])^2}-\frac{\left(63 a^4-60 a^2 b^2+5 b^4\right) \text{Cos}[c+d x] \text{Sin}[c+d x]^4}{60 a^2 b^3 d (a+b \text{Sin}[c+d x])^2}-\frac{7 a \text{Cos}[c+d x] \text{Sin}[c+d x]^5}{20 b^2 d (a+b \text{Sin}[c+d x])^2}+\frac{\text{Cos}[c+d x] \text{Sin}[c+d x]^6}{5 b d (a+b \text{Sin}[c+d x])^2}-\frac{\left(63 a^4-54 a^2 b^2+4 b^4\right) \text{Cos}[c+d x] \text{Sin}[c+d x]^3}{12 a^2 b^4 d (a+b \text{Sin}[c+d x])}$$

Result (type 3, 1913 leaves):

$$-\frac{1}{64 b^4 d}\left(-48 a (c+d x)+\frac{6 \left(16 a^6-40 a^4 b^2+30 a^2 b^4-5 b^6\right) \text{ArcTan}\left[\frac{b+a \text{Tan}\left[\frac{1}{2} (c+d x)\right]}{\sqrt{a^2-b^2}}\right]}{\left(a^2-b^2\right)^{5/2}}-16 b \text{Cos}[c+d x]+\frac{b \left(8 a^4-8 a^2 b^2+b^4\right) \text{Cos}[c+d x]}{(a-b) (a+b) (a+b \text{Sin}[c+d x])^2}+\frac{a b \left(-40 a^4+72 a^2 b^2-29 b^4\right) \text{Cos}[c+d x]}{(a-b)^2 (a+b)^2 (a+b \text{Sin}[c+d x])}+\right.$$

$$\frac{5\left(\frac{2\left(2a^2+b^2\right)\text{ArcTan}\left[\frac{b+a\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{\sqrt{a^2-b^2}}\right]}{\left(a^2-b^2\right)^{5/2}}+\frac{b\,\text{Cos}[c+d\,x]\left(4a^2-b^2+3\,a\,b\,\text{Sin}[c+d\,x]\right)}{(a-b)^2(a+b)^2(a+b\,\text{Sin}[c+d\,x])^2}\right)}{256\,d}+\frac{-\frac{6b^2\,\text{ArcTan}\left[\frac{b+a\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{\sqrt{a^2-b^2}}\right]}{\sqrt{a^2-b^2}}+\frac{\text{Cos}[c+d\,x]\left(-b\left(2a^2+b^2\right)+a\left(2a^2-5b^2\right)\text{Sin}[c+d\,x]\right)}{(a+b\,\text{Sin}[c+d\,x])^2}}{64\,(a-b)^2(a+b)^2\,d}-$$

$$\frac{1}{384\,b^6\,d}\left(-\frac{12\left(640a^8-1792a^6b^2+1680a^4b^4-560a^2b^6+35b^8\right)\text{ArcTan}\left[\frac{b+a\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{\sqrt{a^2-b^2}}\right]}{\left(a^2-b^2\right)^{5/2}}+\right.$$

$$\frac{1}{\left(a^2-b^2\right)^2(a+b\,\text{Sin}[c+d\,x])^2}\left(3840a^9(c+d\,x)-6912a^7b^2(c+d\,x)+1728a^5b^4(c+d\,x)+1920a^3b^6(c+d\,x)-576\,a\,b^8(c+d\,x)+\right.$$
$$3840a^8\,b\,\text{Cos}[c+d\,x]-7872a^6b^3\,\text{Cos}[c+d\,x]+4256a^4b^5\,\text{Cos}[c+d\,x]-172a^2b^7\,\text{Cos}[c+d\,x]-70b^9\,\text{Cos}[c+d\,x]-$$
$$1920a^7b^2(c+d\,x)\,\text{Cos}[2(c+d\,x)]+4416a^5b^4(c+d\,x)\,\text{Cos}[2(c+d\,x)]-3072a^3b^6(c+d\,x)\,\text{Cos}[2(c+d\,x)]+$$
$$576\,a\,b^8(c+d\,x)\,\text{Cos}[2(c+d\,x)]-320a^6b^3\,\text{Cos}[3(c+d\,x)]+696a^4b^5\,\text{Cos}[3(c+d\,x)]-432a^2b^7\,\text{Cos}[3(c+d\,x)]+56b^9\,\text{Cos}[3(c+d\,x)]+$$
$$8a^4b^5\,\text{Cos}[5(c+d\,x)]-16a^2b^7\,\text{Cos}[5(c+d\,x)]+8b^9\,\text{Cos}[5(c+d\,x)]+7680a^8\,b\,(c+d\,x)\,\text{Sin}[c+d\,x]-17664a^6b^3(c+d\,x)\,\text{Sin}[c+d\,x]+$$
$$12288a^4b^5(c+d\,x)\,\text{Sin}[c+d\,x]-2304a^2b^7(c+d\,x)\,\text{Sin}[c+d\,x]+2880a^7b^2\,\text{Sin}[2(c+d\,x)]-6304a^5b^4\,\text{Sin}[2(c+d\,x)]+$$
$$\left.\left.4022a^3b^6\,\text{Sin}[2(c+d\,x)]-607\,a\,b^8\,\text{Sin}[2(c+d\,x)]+40a^5b^4\,\text{Sin}[4(c+d\,x)]-80a^3b^6\,\text{Sin}[4(c+d\,x)]+40\,a\,b^8\,\text{Sin}[4(c+d\,x)]\right)\right)+$$

$$\frac{1}{128}\left(-\frac{1}{b^8\left(a^2-b^2\right)^{5/2}d}3\left(1792a^{10}-5760a^8b^2+6720a^6b^4-3360a^4b^6+630a^2b^8-21b^{10}\right)\right.$$
$$\text{ArcTan}\left[\frac{\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]\left(b\,\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+a\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)}{\sqrt{a^2-b^2}}\right]-$$

$$\frac{1}{20\,b^8\left(-a^2+b^2\right)^2d\,(a+b\,\text{Sin}[c+d\,x])^2}\left(-53760a^{11}(c+d\,x)+119040a^9b^2(c+d\,x)-62400a^7b^4(c+d\,x)-19680a^5b^6(c+d\,x)+\right.$$
$$19200a^3b^8(c+d\,x)-2400\,a\,b^{10}(c+d\,x)-53760a^{10}\,b\,\text{Cos}[c+d\,x]+132480a^8b^3\,\text{Cos}[c+d\,x]-103360a^6b^5\,\text{Cos}[c+d\,x]+$$
$$23800a^4b^7\,\text{Cos}[c+d\,x]+1080a^2b^9\,\text{Cos}[c+d\,x]-210b^{11}\,\text{Cos}[c+d\,x]+26880a^9b^2(c+d\,x)\,\text{Cos}[2(c+d\,x)]-$$
$$72960a^7b^4(c+d\,x)\,\text{Cos}[2(c+d\,x)]+67680a^5b^6(c+d\,x)\,\text{Cos}[2(c+d\,x)]-24000a^3b^8(c+d\,x)\,\text{Cos}[2(c+d\,x)]+$$
$$2400\,a\,b^{10}(c+d\,x)\,\text{Cos}[2(c+d\,x)]+4480a^8b^3\,\text{Cos}[3(c+d\,x)]-11600a^6b^5\,\text{Cos}[3(c+d\,x)]+9928a^4b^7\,\text{Cos}[3(c+d\,x)]-$$
$$2976a^2b^9\,\text{Cos}[3(c+d\,x)]+168b^{11}\,\text{Cos}[3(c+d\,x)]-112a^6b^5\,\text{Cos}[5(c+d\,x)]+248a^4b^7\,\text{Cos}[5(c+d\,x)]-160a^2b^9\,\text{Cos}[5(c+d\,x)]+$$
$$24b^{11}\,\text{Cos}[5(c+d\,x)]+8a^4b^7\,\text{Cos}[7(c+d\,x)]-16a^2b^9\,\text{Cos}[7(c+d\,x)]+8b^{11}\,\text{Cos}[7(c+d\,x)]-107520a^{10}\,b\,(c+d\,x)\,\text{Sin}[c+d\,x]+$$
$$291840a^8b^3(c+d\,x)\,\text{Sin}[c+d\,x]-270720a^6b^5(c+d\,x)\,\text{Sin}[c+d\,x]+96000a^4b^7(c+d\,x)\,\text{Sin}[c+d\,x]-$$
$$9600a^2b^9(c+d\,x)\,\text{Sin}[c+d\,x]-40320a^9b^2\,\text{Sin}[2(c+d\,x)]+104960a^7b^4\,\text{Sin}[2(c+d\,x)]-91460a^5b^6\,\text{Sin}[2(c+d\,x)]+$$

$$29160 a^3 b^8 \sin[2 (c+d x)] - 2325 a b^{10} \sin[2 (c+d x)] - 560 a^7 b^4 \sin[4 (c+d x)] + 1352 a^5 b^6 \sin[4 (c+d x)] - 1024 a^3 b^8 \sin[4 (c+d x)] + 232 a b^{10} \sin[4 (c+d x)] + 28 a^5 b^6 \sin[6 (c+d x)] - 56 a^3 b^8 \sin[6 (c+d x)] + 28 a b^{10} \sin[6 (c+d x)]\Big)$$

- **Problem 1268: Result more than twice size of optimal antiderivative.**

$$\int \frac{\cos[c+d x]^6 \sin[c+d x]}{(a+b \sin[c+d x])^3} \, dx$$

Optimal (type 3, 237 leaves, 7 steps):

$$-\frac{15 \left(8 a^4-8 a^2 b^2+b^4\right) x}{8 b^7}+\frac{15 a \left(2 a^4-3 a^2 b^2+b^4\right) \text{ArcTan}\left[\frac{b+a \tan\left[\frac{1}{2} (c+d x)\right]}{\sqrt{a^2-b^2}}\right]}{b^7 \sqrt{a^2-b^2}\, d}+\frac{\cos[c+d x]^5 (3 a+b \sin[c+d x])}{4 b^2 d (a+b \sin[c+d x])^2}+\frac{5 \cos[c+d x]^3 \left(4 a^2-b^2+a b \sin[c+d x]\right)}{4 b^4 d (a+b \sin[c+d x])}-\frac{15 \cos[c+d x] \left(4 a \left(2 a^2-b^2\right)-b \left(4 a^2-b^2\right) \sin[c+d x]\right)}{8 b^6 d}$$

Result (type 3, 1250 leaves):

$$\frac{1}{256 d}\left(\frac{1}{b^3}18 \left(-8 (c+d x)+\frac{2 a \left(8 a^4-20 a^2 b^2+15 b^4\right) \text{ArcTan}\left[\frac{b+a \tan\left[\frac{1}{2} (c+d x)\right]}{\sqrt{a^2-b^2}}\right]}{\left(a^2-b^2\right)^{5/2}}+\frac{a b \left(4 a^2-3 b^2\right) \cos[c+d x]}{(a-b) (a+b) (a+b \sin[c+d x])^2}-\frac{3 b \left(4 a^4-7 a^2 b^2+2 b^4\right) \cos[c+d x]}{(a-b)^2 (a+b)^2 (a+b \sin[c+d x])}\right)-\frac{10 \left(\frac{6 a b \text{ArcTan}\left[\frac{b+a \tan\left[\frac{1}{2} (c+d x)\right]}{\sqrt{a^2-b^2}}\right]}{\sqrt{a^2-b^2}}+\frac{\cos[c+d x] \left(a \left(2 a^2+b^2\right)+b \left(a^2+2 b^2\right) \sin[c+d x]\right)}{(a+b \sin[c+d x])^2}\right)}{(a-b)^2 (a+b)^2}+\frac{1}{b^5}\right.$$

$$10 \left(-24 \left(-8 a^2+b^2\right) (c+d x)-\frac{6 a \left(64 a^6-168 a^4 b^2+140 a^2 b^4-35 b^6\right) \text{ArcTan}\left[\frac{b+a \tan\left[\frac{1}{2} (c+d x)\right]}{\sqrt{a^2-b^2}}\right]}{\left(a^2-b^2\right)^{5/2}}+96 a b \cos[c+d x]+\right.$$

$$\frac{a\,b\left(-16 a^4+20 a^2 b^2-5 b^4\right) \mathrm{Cos}[c+d x]}{(a-b)\,(a+b)\,(a+b\,\mathrm{Sin}[c+d x])^2}+\frac{b\left(112 a^6-220 a^4 b^2+115 a^2 b^4-10 b^6\right) \mathrm{Cos}[c+d x]}{(a-b)^2\,(a+b)^2\,(a+b\,\mathrm{Sin}[c+d x])}-8 b^2\,\mathrm{Sin}[2\,(c+d x)]\Bigg)+$$

$$\frac{1}{b^7}\left(\frac{12\,a\left(640 a^8-1920 a^6 b^2+2016 a^4 b^4-840 a^2 b^6+105 b^8\right) \mathrm{ArcTan}\left[\frac{b+a\,\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]}{\sqrt{a^2-b^2}}\right]}{\left(a^2-b^2\right)^{5/2}}+\right.$$

$$\frac{1}{\left(a^2-b^2\right)^2\,(a+b\,\mathrm{Sin}[c+d x])^2}\Big(-3840 a^{10}\,(c+d x)+7680 a^8 b^2\,(c+d x)-2976 a^6 b^4\,(c+d x)-1776 a^4 b^6\,(c+d x)+$$
$$960 a^2 b^8\,(c+d x)-48 b^{10}\,(c+d x)-3840 a^9 b\,\mathrm{Cos}[c+d x]+8640 a^7 b^3\,\mathrm{Cos}[c+d x]-5696 a^5 b^5\,\mathrm{Cos}[c+d x]+$$
$$788 a^3 b^7\,\mathrm{Cos}[c+d x]+114\,a\,b^9\,\mathrm{Cos}[c+d x]+1920 a^8 b^2\,(c+d x)\,\mathrm{Cos}[2\,(c+d x)]-4800 a^6 b^4\,(c+d x)\,\mathrm{Cos}[2\,(c+d x)]+$$
$$3888 a^4 b^6\,(c+d x)\,\mathrm{Cos}[2\,(c+d x)]-1056 a^2 b^8\,(c+d x)\,\mathrm{Cos}[2\,(c+d x)]+48 b^{10}\,(c+d x)\,\mathrm{Cos}[2\,(c+d x)]+320 a^7 b^3\,\mathrm{Cos}[3\,(c+d x)]-$$
$$760 a^5 b^5\,\mathrm{Cos}[3\,(c+d x)]+560 a^3 b^7\,\mathrm{Cos}[3\,(c+d x)]-120\,a\,b^9\,\mathrm{Cos}[3\,(c+d x)]-8 a^5 b^5\,\mathrm{Cos}[5\,(c+d x)]+16 a^3 b^7\,\mathrm{Cos}[5\,(c+d x)]-$$
$$8\,a\,b^9\,\mathrm{Cos}[5\,(c+d x)]-7680 a^9 b\,(c+d x)\,\mathrm{Sin}[c+d x]+19200 a^7 b^3\,(c+d x)\,\mathrm{Sin}[c+d x]-15552 a^5 b^5\,(c+d x)\,\mathrm{Sin}[c+d x]+$$
$$4224 a^3 b^7\,(c+d x)\,\mathrm{Sin}[c+d x]-192\,a\,b^9\,(c+d x)\,\mathrm{Sin}[c+d x]-2880 a^8 b^2\,\mathrm{Sin}[2\,(c+d x)]+6880 a^6 b^4\,\mathrm{Sin}[2\,(c+d x)]-$$
$$5182 a^4 b^6\,\mathrm{Sin}[2\,(c+d x)]+1221 a^2 b^8\,\mathrm{Sin}[2\,(c+d x)]-36 b^{10}\,\mathrm{Sin}[2\,(c+d x)]-40 a^6 b^4\,\mathrm{Sin}[4\,(c+d x)]+88 a^4 b^6\,\mathrm{Sin}[4\,(c+d x)]-$$
$$\left.56 a^2 b^8\,\mathrm{Sin}[4\,(c+d x)]+8 b^{10}\,\mathrm{Sin}[4\,(c+d x)]+2 a^4 b^6\,\mathrm{Sin}[6\,(c+d x)]-4 a^2 b^8\,\mathrm{Sin}[6\,(c+d x)]+2 b^{10}\,\mathrm{Sin}[6\,(c+d x)]\Big)\right)$$

- **Problem 1276: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int \frac{\mathrm{Cos}[e+f x]^6}{\sqrt{d\,\mathrm{Sin}[e+f x]}\,(a+b\,\mathrm{Sin}[e+f x])^{13/2}}\,dx$$

Optimal (type 4, 712 leaves, 8 steps):

$$\frac{2\,\text{Cos}[e+f\,x]^5\,\sqrt{d\,\text{Sin}[e+f\,x]}}{11\,a\,d\,f\,(a+b\,\text{Sin}[e+f\,x])^{11/2}}-\frac{20\,\left(a^2-b^2\right)\,\text{Cos}[e+f\,x]\,\sqrt{d\,\text{Sin}[e+f\,x]}}{99\,a^2\,b^2\,d\,f\,(a+b\,\text{Sin}[e+f\,x])^{9/2}}+$$

$$\frac{80\,\left(3\,a^2+2\,b^2\right)\,\text{Cos}[e+f\,x]\,\sqrt{d\,\text{Sin}[e+f\,x]}}{693\,a^3\,b^2\,d\,f\,(a+b\,\text{Sin}[e+f\,x])^{7/2}}-\frac{4\,\left(5\,a^4-17\,a^2\,b^2+16\,b^4\right)\,\text{Cos}[e+f\,x]\,\sqrt{d\,\text{Sin}[e+f\,x]}}{231\,a^4\,b^2\,\left(a^2-b^2\right)\,d\,f\,(a+b\,\text{Sin}[e+f\,x])^{5/2}}-$$

$$\frac{8\,\left(5\,a^6-22\,a^4\,b^2+65\,a^2\,b^4-32\,b^6\right)\,\text{Cos}[e+f\,x]\,\sqrt{d\,\text{Sin}[e+f\,x]}}{693\,a^5\,b^2\,\left(a^2-b^2\right)^2\,d\,f\,(a+b\,\text{Sin}[e+f\,x])^{3/2}}+\frac{16\,b\,\left(93\,a^4-93\,a^2\,b^2+32\,b^4\right)\,\text{Cos}[e+f\,x]}{693\,a^5\,\left(a^2-b^2\right)^3\,f\,\sqrt{d\,\text{Sin}[e+f\,x]}\,\sqrt{a+b\,\text{Sin}[e+f\,x]}}-$$

$$\left(16\,b\,\left(93\,a^4-93\,a^2\,b^2+32\,b^4\right)\,\sqrt{\frac{a\,(1-\text{Csc}[e+f\,x])}{a+b}}\,\sqrt{\frac{a\,(1+\text{Csc}[e+f\,x])}{a-b}}\,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{d}\,\sqrt{a+b\,\text{Sin}[e+f\,x]}}{\sqrt{a+b}\,\sqrt{d\,\text{Sin}[e+f\,x]}}\right],-\frac{a+b}{a-b}\right]\,\text{Tan}[e+f\,x]\right)\Big/$$

$$\left(693\,a^7\,(a-b)^2\,(a+b)^{5/2}\,\sqrt{d}\,f\right)-\left(16\,\left(45\,a^4-48\,a^3\,b-69\,a^2\,b^2+24\,a\,b^3+32\,b^4\right)\,\sqrt{\frac{a\,(1-\text{Csc}[e+f\,x])}{a+b}}\right.$$

$$\left.\sqrt{\frac{a\,(1+\text{Csc}[e+f\,x])}{a-b}}\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{d}\,\sqrt{a+b\,\text{Sin}[e+f\,x]}}{\sqrt{a+b}\,\sqrt{d\,\text{Sin}[e+f\,x]}}\right],-\frac{a+b}{a-b}\right]\,\text{Tan}[e+f\,x]\right)\Big/\left(693\,a^6\,(a-b)^2\,(a+b)^{5/2}\,\sqrt{d}\,f\right)$$

Result (type 4, 1906 leaves) :

$$\frac{1}{f\,\sqrt{d\,\text{Sin}[e+f\,x]}}\text{Sin}[e+f\,x]\,\sqrt{a+b\,\text{Sin}[e+f\,x]}\,\left(\frac{2\,\left(a^4\,\text{Cos}[e+f\,x]-2\,a^2\,b^2\,\text{Cos}[e+f\,x]+b^4\,\text{Cos}[e+f\,x]\right)}{11\,a\,b^4\,(a+b\,\text{Sin}[e+f\,x])^6}-\right.$$

$$\frac{4\,\left(18\,a^4\,\text{Cos}[e+f\,x]-13\,a^2\,b^2\,\text{Cos}[e+f\,x]-5\,b^4\,\text{Cos}[e+f\,x]\right)}{99\,a^2\,b^4\,(a+b\,\text{Sin}[e+f\,x])^5}+\frac{4\,\left(189\,a^4\,\text{Cos}[e+f\,x]-3\,a^2\,b^2\,\text{Cos}[e+f\,x]+40\,b^4\,\text{Cos}[e+f\,x]\right)}{693\,a^3\,b^4\,(a+b\,\text{Sin}[e+f\,x])^4}-$$

$$\frac{4\,\left(42\,a^6\,\text{Cos}[e+f\,x]-37\,a^4\,b^2\,\text{Cos}[e+f\,x]-17\,a^2\,b^4\,\text{Cos}[e+f\,x]+16\,b^6\,\text{Cos}[e+f\,x]\right)}{231\,a^4\,b^4\,\left(a^2-b^2\right)\,(a+b\,\text{Sin}[e+f\,x])^3}+$$

$$\left(2\,\left(63\,a^8\,\text{Cos}[e+f\,x]-146\,a^6\,b^2\,\text{Cos}[e+f\,x]+151\,a^4\,b^4\,\text{Cos}[e+f\,x]-260\,a^2\,b^6\,\text{Cos}[e+f\,x]+128\,b^8\,\text{Cos}[e+f\,x]\right)\right)\Big/$$

$$\left.\left(693\,a^5\,b^4\,\left(a^2-b^2\right)^2\,(a+b\,\text{Sin}[e+f\,x])^2\right)-\frac{16\,\left(93\,a^4\,b^2\,\text{Cos}[e+f\,x]-93\,a^2\,b^4\,\text{Cos}[e+f\,x]+32\,b^6\,\text{Cos}[e+f\,x]\right)}{693\,a^6\,\left(a^2-b^2\right)^3\,(a+b\,\text{Sin}[e+f\,x])}\right)+$$

$$\frac{1}{693\,a^6\,(a-b)^3\,(a+b)^3\,f\,\sqrt{d\,\text{Sin}[e+f\,x]}}\,8\,\sqrt{\text{Sin}[e+f\,x]}$$

$$\Bigg(\Bigg(4\,a\,\left(45\,a^6-114\,a^4\,b^2+101\,a^2\,b^4-32\,b^6\right)\sqrt{\frac{(a+b)\,\text{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{-a+b}}\;\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{\frac{\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2(a+b\,\text{Sin}[e+f\,x])}{a}}}{\sqrt{2}}\right],-\frac{2\,a}{-a+b}\right]$$

$$\text{Sec}[e+f\,x]\;\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Sin}[e+f\,x]}{a}}\;\sqrt{\frac{\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2(a+b\,\text{Sin}[e+f\,x])}{a}}\Bigg)\Bigg/$$

$$\left((a+b)\sqrt{\text{Sin}[e+f\,x]}\;\sqrt{a+b\,\text{Sin}[e+f\,x]}\right)+4\,a\left(-93\,a^5\,b+93\,a^3\,b^3-32\,a\,b^5\right)$$

$$\Bigg(\Bigg(\sqrt{\frac{(a+b)\,\text{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{-a+b}}\;\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{\frac{\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2(a+b\,\text{Sin}[e+f\,x])}{a}}}{\sqrt{2}}\right],-\frac{2\,a}{-a+b}\right]\text{Sec}[e+f\,x]\;\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4$$

$$\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Sin}[e+f\,x]}{a}}\;\sqrt{\frac{\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2(a+b\,\text{Sin}[e+f\,x])}{a}}\Bigg)\Bigg/\Bigg((a+b)\sqrt{\text{Sin}[e+f\,x]}$$

$$\sqrt{a+b\,\text{Sin}[e+f\,x]}\Bigg)-\Bigg(\sqrt{\frac{(a+b)\,\text{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{-a+b}}\;\text{EllipticPi}\left[-\frac{a}{b},\text{ArcSin}\left[\frac{\sqrt{\frac{\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2(a+b\,\text{Sin}[e+f\,x])}{a}}}{\sqrt{2}}\right],-\frac{2\,a}{-a+b}\right]$$

$$\text{Sec}[e+f\,x]\;\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Sin}[e+f\,x]}{a}}\;\sqrt{\frac{\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2(a+b\,\text{Sin}[e+f\,x])}{a}}\Bigg)\Bigg/$$

$$\left(b\sqrt{\text{Sin}[e+f\,x]}\;\sqrt{a+b\,\text{Sin}[e+f\,x]}\right)\Bigg)+2\left(93\,a^4\,b^2-93\,a^2\,b^4+32\,b^6\right)\Bigg(\frac{\text{Cos}[e+f\,x]\sqrt{a+b\,\text{Sin}[e+f\,x]}}{b\sqrt{\text{Sin}[e+f\,x]}}+$$

$$\left(\mathrm{i}\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\,\text{Csc}[e+f\,x]\,\text{EllipticE}\left[\mathrm{i}\,\text{ArcSinh}\left[\frac{\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]}{\sqrt{\text{Sin}[e+f\,x]}}\right],-\frac{2\,a}{-a-b}\right]\sqrt{a+b\,\text{Sin}[e+f\,x]}\right)\Bigg/$$

$$\left(b\,\sqrt{\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Csc}[e+f\,x]}\,\sqrt{\frac{\text{Csc}[e+f\,x]\,(a+b\,\text{Sin}[e+f\,x])}{a+b}}\right)+$$

$$\frac{1}{b}\,2\,a\left(\left(\left(a\,\sqrt{\frac{(a+b)\,\text{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{-a+b}}\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{\frac{\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2(a+b\,\text{Sin}[e+f\,x])}{a}}}{\sqrt{2}}\right],\right.\right.\right.\right.$$

$$\left.-\frac{2\,a}{-a+b}\right]\text{Sec}[e+f\,x]\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Sin}[e+f\,x]}{a}}$$

$$\left.\sqrt{\frac{\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2(a+b\,\text{Sin}[e+f\,x])}{a}}\right)\Bigg/\left((a+b)\,\sqrt{\text{Sin}[e+f\,x]}\,\sqrt{a+b\,\text{Sin}[e+f\,x]}\right)-$$

$$\left(a\,\sqrt{\frac{(a+b)\,\text{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{-a+b}}\,\text{EllipticPi}\left[-\frac{a}{b},\text{ArcSin}\left[\frac{\sqrt{\frac{\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2(a+b\,\text{Sin}[e+f\,x])}{a}}}{\sqrt{2}}\right],-\frac{2\,a}{-a+b}\right]\text{Sec}[\right.$$

$$e+f\,x]\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Sin}[e+f\,x]}{a}}$$

$$\left.\left.\left.\left.\sqrt{\frac{\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2(a+b\,\text{Sin}[e+f\,x])}{a}}\right)\Bigg/\left(b\,\sqrt{\text{Sin}[e+f\,x]}\,\sqrt{a+b\,\text{Sin}[e+f\,x]}\right)\right)\right)\right)$$

- **Problem 1277: Result unnecessarily involves higher level functions.**

$$\int\frac{(a+b\,\text{Sin}[e+f\,x])^2}{(g\,\text{Cos}[e+f\,x])^{5/2}\sqrt{d\,\text{Sin}[e+f\,x]}}\,dx$$

Optimal (type 4, 159 leaves, 9 steps) :

$$\frac{2\left(a^2+b^2\right)\sqrt{d\,\text{Sin}[e+f\,x]}}{3\,d\,f\,g\,(g\,\text{Cos}[e+f\,x])^{3/2}}+\frac{4\,a\,b\,(d\,\text{Sin}[e+f\,x])^{3/2}}{3\,d^2\,f\,g\,(g\,\text{Cos}[e+f\,x])^{3/2}}+\frac{\left(2\,a^2-b^2\right)\text{EllipticF}\left[\frac{1}{4}\,(4\,e-\pi)+f\,x,\,2\right]\sqrt{\text{Sin}[2\,e+2\,f\,x]}}{3\,f\,g^2\,\sqrt{g\,\text{Cos}[e+f\,x]}\,\sqrt{d\,\text{Sin}[e+f\,x]}}$$

Result (type 5, 142 leaves) :

$$\left(2\left(-2\left(2\,a^2-b^2\right)\text{Cos}[e+f\,x]^2\,\text{Hypergeometric2F1}\left[-\frac{1}{4},\,\frac{1}{4},\,\frac{5}{4},\,\text{Cos}[e+f\,x]^2\right]+\left(\text{Sin}[e+f\,x]^2\right)^{1/4}\left(a^2+b^2+\left(2\,a^2-b^2\right)\text{Cos}[e+f\,x]^2+2\,a\,b\,\text{Sin}[e+f\,x]\right)\right)\text{Tan}[e+f\,x]\right)\Big/\left(3\,f\,g^2\,\sqrt{g\,\text{Cos}[e+f\,x]}\,\sqrt{d\,\text{Sin}[e+f\,x]}\,\left(\text{Sin}[e+f\,x]^2\right)^{1/4}\right)$$

- **Problem 1278: Result unnecessarily involves higher level functions.**

$$\int\frac{(a+b\,\text{Sin}[e+f\,x])^2}{(g\,\text{Cos}[e+f\,x])^{7/2}\,\sqrt{d\,\text{Sin}[e+f\,x]}}\,dx$$

Optimal (type 4, 193 leaves, 6 steps) :

$$\frac{8\,a^2\,\sqrt{d\,\text{Sin}[e+f\,x]}}{5\,d\,f\,g^3\,\sqrt{g\,\text{Cos}[e+f\,x]}}+\frac{8\,a\,b\,(d\,\text{Sin}[e+f\,x])^{3/2}}{5\,d^2\,f\,g^3\,\sqrt{g\,\text{Cos}[e+f\,x]}}+\frac{2\,\sqrt{d\,\text{Sin}[e+f\,x]}\,(a+b\,\text{Sin}[e+f\,x])^2}{5\,d\,f\,g\,(g\,\text{Cos}[e+f\,x])^{5/2}}-\frac{8\,a\,b\,\sqrt{g\,\text{Cos}[e+f\,x]}\,\text{EllipticE}\left[e-\frac{\pi}{4}+f\,x,\,2\right]\sqrt{d\,\text{Sin}[e+f\,x]}}{5\,d\,f\,g^4\,\sqrt{\text{Sin}[2\,e+2\,f\,x]}}$$

Result (type 5, 156 leaves) :

$$\left(4\,a\,b\,\text{Hypergeometric2F1}\left[\frac{1}{4},\,\frac{3}{4},\,\frac{7}{4},\,\text{Cos}[e+f\,x]^2\right]\text{Sin}[2\,(e+f\,x)]^2+3\,\text{Sec}[e+f\,x]\,\left(\text{Sin}[e+f\,x]^2\right)^{3/4}\left(6\,a^2+b^2+\left(4\,a^2-b^2\right)\text{Cos}[2\,(e+f\,x)]+6\,a\,b\,\text{Sin}[e+f\,x]+2\,a\,b\,\text{Sin}[3\,(e+f\,x)]\right)\text{Tan}[e+f\,x]\right)\Big/\left(15\,f\,g^3\,\sqrt{g\,\text{Cos}[e+f\,x]}\,\sqrt{d\,\text{Sin}[e+f\,x]}\,\left(\text{Sin}[e+f\,x]^2\right)^{3/4}\right)$$

- **Problem 1292: Result more than twice size of optimal antiderivative.**

$$\int\frac{\text{Cot}[c+d\,x]^2\,\text{Csc}[c+d\,x]^2}{a+b\,\text{Sin}[c+d\,x]}\,dx$$

Optimal (type 3, 153 leaves, 9 steps) :

$$-\frac{2 b^2 \sqrt{a^2-b^2}\ \text{ArcTan}\left[\frac{b+a \text{Tan}\left[\frac{1}{2}(c+d x)\right]}{\sqrt{a^2-b^2}}\right]}{a^4 d}-\frac{b\left(a^2-2 b^2\right) \text{ArcTanh}[\text{Cos}[c+d x]]}{2 a^4 d}+\frac{\left(a^2-3 b^2\right) \text{Cot}[c+d x]}{3 a^3 d}+\frac{b \text{Cot}[c+d x] \text{Csc}[c+d x]}{2 a^2 d}-\frac{\text{Cot}[c+d x] \text{Csc}[c+d x]^2}{3 a d}$$

Result (type 3, 351 leaves) :

$$-\frac{2 b^2 \sqrt{a^2-b^2}\ \text{ArcTan}\left[\frac{\text{Sec}\left[\frac{1}{2}(c+d x)\right]\left(b \text{Cos}\left[\frac{1}{2}(c+d x)\right]+a \text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)}{\sqrt{a^2-b^2}}\right]}{a^4 d}+\frac{\left(a^2 \text{Cos}\left[\frac{1}{2}(c+d x)\right]-3 b^2 \text{Cos}\left[\frac{1}{2}(c+d x)\right]\right) \text{Csc}\left[\frac{1}{2}(c+d x)\right]}{6 a^3 d}+\frac{b \text{Csc}\left[\frac{1}{2}(c+d x)\right]^2}{8 a^2 d}-\frac{\text{Cot}\left[\frac{1}{2}(c+d x)\right] \text{Csc}\left[\frac{1}{2}(c+d x)\right]^2}{24 a d}+\frac{\left(-a^2 b+2 b^3\right) \text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right]}{2 a^4 d}+\frac{\left(a^2 b-2 b^3\right) \text{Log}\left[\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]}{2 a^4 d}-\frac{b \text{Sec}\left[\frac{1}{2}(c+d x)\right]^2}{8 a^2 d}+\frac{\text{Sec}\left[\frac{1}{2}(c+d x)\right]\left(-a^2 \text{Sin}\left[\frac{1}{2}(c+d x)\right]+3 b^2 \text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)}{6 a^3 d}+\frac{\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{2}(c+d x)\right]}{24 a d}$$

- **Problem 1293: Result more than twice size of optimal antiderivative.**

$$\int \frac{\text{Cot}[c+d x]^2 \text{Csc}[c+d x]^3}{a+b \text{Sin}[c+d x]}\, dx$$

Optimal (type 3, 194 leaves, 10 steps) :

$$\frac{2 b^3 \sqrt{a^2-b^2}\ \text{ArcTan}\left[\frac{b+a \text{Tan}\left[\frac{1}{2}(c+d x)\right]}{\sqrt{a^2-b^2}}\right]}{a^5 d}+\frac{\left(a^4+4 a^2 b^2-8 b^4\right) \text{ArcTanh}[\text{Cos}[c+d x]]}{8 a^5 d}-\frac{b\left(a^2-3 b^2\right) \text{Cot}[c+d x]}{3 a^4 d}+\frac{\left(a^2-4 b^2\right) \text{Cot}[c+d x] \text{Csc}[c+d x]}{8 a^3 d}+\frac{b \text{Cot}[c+d x] \text{Csc}[c+d x]^2}{3 a^2 d}-\frac{\text{Cot}[c+d x] \text{Csc}[c+d x]^3}{4 a d}$$

Result (type 3, 430 leaves) :

$$\frac{2 b^3 \sqrt{a^2-b^2}\ \text{ArcTan}\left[\frac{\text{Sec}\left[\frac{1}{2}(c+d x)\right]\left(b \text{Cos}\left[\frac{1}{2}(c+d x)\right]+a \text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)}{\sqrt{a^2-b^2}}\right]}{a^5 d}+\frac{\left(-a^2 b \text{Cos}\left[\frac{1}{2}(c+d x)\right]+3 b^3 \text{Cos}\left[\frac{1}{2}(c+d x)\right]\right) \text{Csc}\left[\frac{1}{2}(c+d x)\right]}{6 a^4 d}+\frac{\left(a^2-4 b^2\right) \text{Csc}\left[\frac{1}{2}(c+d x)\right]^2}{32 a^3 d}+\frac{b \text{Cot}\left[\frac{1}{2}(c+d x)\right] \text{Csc}\left[\frac{1}{2}(c+d x)\right]^2}{24 a^2 d}-\frac{\text{Csc}\left[\frac{1}{2}(c+d x)\right]^4}{64 a d}+\frac{\left(a^4+4 a^2 b^2-8 b^4\right) \text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right]}{8 a^5 d}+\frac{\left(-a^4-4 a^2 b^2+8 b^4\right) \text{Log}\left[\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]}{8 a^5 d}+\frac{\left(-a^2+4 b^2\right) \text{Sec}\left[\frac{1}{2}(c+d x)\right]^2}{32 a^3 d}+\frac{\text{Sec}\left[\frac{1}{2}(c+d x)\right]^4}{64 a d}+\frac{\text{Sec}\left[\frac{1}{2}(c+d x)\right]\left(a^2 b \text{Sin}\left[\frac{1}{2}(c+d x)\right]-3 b^3 \text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)}{6 a^4 d}-\frac{b \text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{2}(c+d x)\right]}{24 a^2 d}$$

Problem 1294: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Cot}[c+d x]^2 \,\text{Csc}[c+d x]^4}{a+b \,\text{Sin}[c+d x]} \, dx$$

Optimal (type 3, 238 leaves, 11 steps):

$$-\frac{2 b^4 \sqrt{a^2-b^2} \,\text{ArcTan}\left[\frac{b+a \,\text{Tan}\left[\frac{1}{2} (c+d x)\right]}{\sqrt{a^2-b^2}}\right]}{a^6 d}-\frac{b \left(a^4+4 a^2 b^2-8 b^4\right) \text{ArcTanh}[\text{Cos}[c+d x]]}{8 a^6 d}+\frac{\left(2 a^4+5 a^2 b^2-15 b^4\right) \text{Cot}[c+d x]}{15 a^5 d}-\frac{b \left(a^2-4 b^2\right) \text{Cot}[c+d x] \,\text{Csc}[c+d x]}{8 a^4 d}+\frac{\left(a^2-5 b^2\right) \text{Cot}[c+d x] \,\text{Csc}[c+d x]^2}{15 a^3 d}+\frac{b \,\text{Cot}[c+d x] \,\text{Csc}[c+d x]^3}{4 a^2 d}-\frac{\text{Cot}[c+d x] \,\text{Csc}[c+d x]^4}{5 a d}$$

Result (type 3, 506 leaves):

$$\frac{1}{960 a^6 d}\left(-1920 b^4 \sqrt{a^2-b^2} \,\text{ArcTan}\left[\frac{b+a \,\text{Tan}\left[\frac{1}{2} (c+d x)\right]}{\sqrt{a^2-b^2}}\right]+32 \left(2 a^5+5 a^3 b^2-15 a b^4\right) \text{Cot}\left[\frac{1}{2} (c+d x)\right]-30 a^4 b \,\text{Csc}\left[\frac{1}{2} (c+d x)\right]^2+120 a^2 b^3 \,\text{Csc}\left[\frac{1}{2} (c+d x)\right]^2+15 a^4 b \,\text{Csc}\left[\frac{1}{2} (c+d x)\right]^4-120 a^4 b \,\text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]\right]-480 a^2 b^3 \,\text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]\right]+960 b^5 \,\text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]\right]+120 a^4 b \,\text{Log}\left[\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right]+480 a^2 b^3 \,\text{Log}\left[\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right]-960 b^5 \,\text{Log}\left[\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right]+30 a^4 b \,\text{Sec}\left[\frac{1}{2} (c+d x)\right]^2-120 a^2 b^3 \,\text{Sec}\left[\frac{1}{2} (c+d x)\right]^2-15 a^4 b \,\text{Sec}\left[\frac{1}{2} (c+d x)\right]^4-16 a^5 \,\text{Csc}[c+d x]^3 \,\text{Sin}\left[\frac{1}{2} (c+d x)\right]^4+320 a^3 b^2 \,\text{Csc}[c+d x]^3 \,\text{Sin}\left[\frac{1}{2} (c+d x)\right]^4+a^5 \,\text{Csc}\left[\frac{1}{2} (c+d x)\right]^4 \text{Sin}[c+d x]-20 a^3 b^2 \,\text{Csc}\left[\frac{1}{2} (c+d x)\right]^4 \text{Sin}[c+d x]-3 a^5 \,\text{Csc}\left[\frac{1}{2} (c+d x)\right]^6 \text{Sin}[c+d x]-64 a^5 \,\text{Tan}\left[\frac{1}{2} (c+d x)\right]-160 a^3 b^2 \,\text{Tan}\left[\frac{1}{2} (c+d x)\right]+480 a b^4 \,\text{Tan}\left[\frac{1}{2} (c+d x)\right]+6 a^5 \,\text{Sec}\left[\frac{1}{2} (c+d x)\right]^4 \text{Tan}\left[\frac{1}{2} (c+d x)\right]\right)$$

Problem 1307: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Cot}[c+d x]^4}{a+b \,\text{Sin}[c+d x]} \, dx$$

Optimal (type 3, 154 leaves, 7 steps):

$$\frac{2 \left(a^2-b^2\right)^{3/2} \text{ArcTan}\left[\frac{b+a \,\text{Tan}\left[\frac{1}{2} (c+d x)\right]}{\sqrt{a^2-b^2}}\right]}{a^4 d}-\frac{b \left(3 a^2-2 b^2\right) \text{ArcTanh}[\text{Cos}[c+d x]]}{2 a^4 d}+\frac{\left(4 a^2-3 b^2\right) \text{Cot}[c+d x]}{3 a^3 d}+\frac{b \,\text{Cot}[c+d x] \,\text{Csc}[c+d x]}{2 a^2 d}-\frac{\text{Cot}[c+d x] \,\text{Csc}[c+d x]^2}{3 a d}$$

Result (type 3, 350 leaves) :

$$\frac{2\left(a^2-b^2\right)^{3/2}\text{ArcTan}\left[\frac{\text{Sec}\left[\frac{1}{2}(c+d x)\right]\left(b\,\text{Cos}\left[\frac{1}{2}(c+d x)\right]+a\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)}{\sqrt{a^2-b^2}}\right]}{a^4 d}+\frac{\left(4 a^2\,\text{Cos}\left[\frac{1}{2}(c+d x)\right]-3 b^2\,\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right)\text{Csc}\left[\frac{1}{2}(c+d x)\right]}{6 a^3 d}+$$
$$\frac{b\,\text{Csc}\left[\frac{1}{2}(c+d x)\right]^2}{8 a^2 d}-\frac{\text{Cot}\left[\frac{1}{2}(c+d x)\right]\text{Csc}\left[\frac{1}{2}(c+d x)\right]^2}{24 a d}+\frac{\left(-3 a^2 b+2 b^3\right)\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right]}{2 a^4 d}+\frac{\left(3 a^2 b-2 b^3\right)\text{Log}\left[\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]}{2 a^4 d}-$$
$$\frac{b\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2}{8 a^2 d}+\frac{\text{Sec}\left[\frac{1}{2}(c+d x)\right]\left(-4 a^2\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]+3 b^2\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)}{6 a^3 d}+\frac{\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]}{24 a d}$$

- **Problem 1308: Result more than twice size of optimal antiderivative.**

$$\int\frac{\text{Cot}[c+d x]^4\,\text{Csc}[c+d x]}{a+b\,\text{Sin}[c+d x]}\,dx$$

Optimal (type 3, 198 leaves, 8 steps) :

$$-\frac{2 b\left(a^2-b^2\right)^{3/2}\text{ArcTan}\left[\frac{b+a\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]}{\sqrt{a^2-b^2}}\right]}{a^5 d}-\frac{\left(3 a^4-12 a^2 b^2+8 b^4\right)\text{ArcTanh}[\text{Cos}[c+d x]]}{8 a^5 d}-$$
$$\frac{b\left(4 a^2-3 b^2\right)\text{Cot}[c+d x]}{3 a^4 d}+\frac{\left(5 a^2-4 b^2\right)\text{Cot}[c+d x]\,\text{Csc}[c+d x]}{8 a^3 d}+\frac{b\,\text{Cot}[c+d x]\,\text{Csc}[c+d x]^2}{3 a^2 d}-\frac{\text{Cot}[c+d x]\,\text{Csc}[c+d x]^3}{4 a d}$$

Result (type 3, 433 leaves) :

$$-\frac{2 b\left(a^2-b^2\right)^{3/2}\text{ArcTan}\left[\frac{\text{Sec}\left[\frac{1}{2}(c+d x)\right]\left(b\,\text{Cos}\left[\frac{1}{2}(c+d x)\right]+a\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)}{\sqrt{a^2-b^2}}\right]}{a^5 d}+\frac{\left(-4 a^2 b\,\text{Cos}\left[\frac{1}{2}(c+d x)\right]+3 b^3\,\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right)\text{Csc}\left[\frac{1}{2}(c+d x)\right]}{6 a^4 d}+$$
$$\frac{\left(5 a^2-4 b^2\right)\text{Csc}\left[\frac{1}{2}(c+d x)\right]^2}{32 a^3 d}+\frac{b\,\text{Cot}\left[\frac{1}{2}(c+d x)\right]\text{Csc}\left[\frac{1}{2}(c+d x)\right]^2}{24 a^2 d}-\frac{\text{Csc}\left[\frac{1}{2}(c+d x)\right]^4}{64 a d}+$$
$$\frac{\left(-3 a^4+12 a^2 b^2-8 b^4\right)\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right]}{8 a^5 d}+\frac{\left(3 a^4-12 a^2 b^2+8 b^4\right)\text{Log}\left[\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]}{8 a^5 d}+\frac{\left(-5 a^2+4 b^2\right)\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2}{32 a^3 d}+$$
$$\frac{\text{Sec}\left[\frac{1}{2}(c+d x)\right]^4}{64 a d}+\frac{\text{Sec}\left[\frac{1}{2}(c+d x)\right]\left(4 a^2 b\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]-3 b^3\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)}{6 a^4 d}-\frac{b\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]}{24 a^2 d}$$

- **Problem 1309: Result more than twice size of optimal antiderivative.**

$$\int\frac{\text{Cot}[c+d x]^4\,\text{Csc}[c+d x]^2}{a+b\,\text{Sin}[c+d x]}\,dx$$

Optimal (type 3, 244 leaves, 9 steps) :

$$\frac{2 b^2 \left(a^2-b^2\right)^{3/2} \text{ArcTan}\left[\frac{b+a \text{Tan}\left[\frac{1}{2} (c+d x)\right]}{\sqrt{a^2-b^2}}\right]}{a^6 d}+\frac{b \left(3 a^4-12 a^2 b^2+8 b^4\right) \text{ArcTanh}[\text{Cos}[c+d x]]}{8 a^6 d}-\frac{\left(3 a^4-20 a^2 b^2+15 b^4\right) \text{Cot}[c+d x]}{15 a^5 d}-$$
$$\frac{b \left(5 a^2-4 b^2\right) \text{Cot}[c+d x] \text{Csc}[c+d x]}{8 a^4 d}+\frac{\left(6 a^2-5 b^2\right) \text{Cot}[c+d x] \text{Csc}[c+d x]^2}{15 a^3 d}+\frac{b \text{Cot}[c+d x] \text{Csc}[c+d x]^3}{4 a^2 d}-\frac{\text{Cot}[c+d x] \text{Csc}[c+d x]^4}{5 a d}$$

Result (type 3, 507 leaves):

$$\frac{1}{960 a^6 d}\left(1920 b^2 \left(a^2-b^2\right)^{3/2} \text{ArcTan}\left[\frac{b+a \text{Tan}\left[\frac{1}{2} (c+d x)\right]}{\sqrt{a^2-b^2}}\right]-32 \left(3 a^5-20 a^3 b^2+15 a b^4\right) \text{Cot}\left[\frac{1}{2} (c+d x)\right]-\right.$$
$$150 a^4 b \text{Csc}\left[\frac{1}{2} (c+d x)\right]^2+120 a^2 b^3 \text{Csc}\left[\frac{1}{2} (c+d x)\right]^2+15 a^4 b \text{Csc}\left[\frac{1}{2} (c+d x)\right]^4+360 a^4 b \text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]\right]-$$
$$1440 a^2 b^3 \text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]\right]+960 b^5 \text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]\right]-360 a^4 b \text{Log}\left[\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right]+$$
$$1440 a^2 b^3 \text{Log}\left[\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right]-960 b^5 \text{Log}\left[\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right]+150 a^4 b \text{Sec}\left[\frac{1}{2} (c+d x)\right]^2-120 a^2 b^3 \text{Sec}\left[\frac{1}{2} (c+d x)\right]^2-$$
$$15 a^4 b \text{Sec}\left[\frac{1}{2} (c+d x)\right]^4-336 a^5 \text{Csc}[c+d x]^3 \text{Sin}\left[\frac{1}{2} (c+d x)\right]^4+320 a^3 b^2 \text{Csc}[c+d x]^3 \text{Sin}\left[\frac{1}{2} (c+d x)\right]^4+$$
$$21 a^5 \text{Csc}\left[\frac{1}{2} (c+d x)\right]^4 \text{Sin}[c+d x]-20 a^3 b^2 \text{Csc}\left[\frac{1}{2} (c+d x)\right]^4 \text{Sin}[c+d x]-3 a^5 \text{Csc}\left[\frac{1}{2} (c+d x)\right]^6 \text{Sin}[c+d x]+$$
$$\left.96 a^5 \text{Tan}\left[\frac{1}{2} (c+d x)\right]-640 a^3 b^2 \text{Tan}\left[\frac{1}{2} (c+d x)\right]+480 a b^4 \text{Tan}\left[\frac{1}{2} (c+d x)\right]+6 a^5 \text{Sec}\left[\frac{1}{2} (c+d x)\right]^4 \text{Tan}\left[\frac{1}{2} (c+d x)\right]\right)$$

- **Problem 1316: Result more than twice size of optimal antiderivative.**

$$\int \frac{\text{Cos}[c+d x] \text{Cot}[c+d x]^4}{a+b \text{Sin}[c+d x]} \, dx$$

Optimal (type 3, 120 leaves, 4 steps):

$$\frac{\left(2 a^2-b^2\right) \text{Csc}[c+d x]}{a^3 d}+\frac{b \text{Csc}[c+d x]^2}{2 a^2 d}-\frac{\text{Csc}[c+d x]^3}{3 a d}+\frac{b \left(2 a^2-b^2\right) \text{Log}[\text{Sin}[c+d x]]}{a^4 d}+\frac{\left(a^2-b^2\right)^2 \text{Log}[a+b \text{Sin}[c+d x]]}{a^4 b d}$$

Result (type 3, 275 leaves):

$$\frac{\left(11 a^2 \cos\left[\frac{1}{2}(c+d x)\right]-6 b^2 \cos\left[\frac{1}{2}(c+d x)\right]\right) \csc\left[\frac{1}{2}(c+d x)\right]}{12 a^3 d}+\frac{b \csc\left[\frac{1}{2}(c+d x)\right]^2}{8 a^2 d}-\frac{\cot\left[\frac{1}{2}(c+d x)\right] \csc\left[\frac{1}{2}(c+d x)\right]^2}{24 a d}+\frac{\left(2 a^2 b-b^3\right) \text{Log}[\sin[c+d x]]}{a^4 d}+\frac{\left(a^4-2 a^2 b^2+b^4\right) \text{Log}[a+b \sin[c+d x]]}{a^4 b d}+\frac{b \sec\left[\frac{1}{2}(c+d x)\right]^2}{8 a^2 d}+\frac{\sec\left[\frac{1}{2}(c+d x)\right] \left(11 a^2 \sin\left[\frac{1}{2}(c+d x)\right]-6 b^2 \sin\left[\frac{1}{2}(c+d x)\right]\right)}{12 a^3 d}-\frac{\sec\left[\frac{1}{2}(c+d x)\right]^2 \tan\left[\frac{1}{2}(c+d x)\right]}{24 a d}$$

- **Problem 1317: Result more than twice size of optimal antiderivative.**

$$\int \frac{\cot[c+d x]^5}{a+b \sin[c+d x]} \, dx$$

Optimal (type 3, 148 leaves, 3 steps):

$$-\frac{b \left(2 a^2-b^2\right) \csc[c+d x]}{a^4 d}+\frac{\left(2 a^2-b^2\right) \csc[c+d x]^2}{2 a^3 d}+\frac{b \csc[c+d x]^3}{3 a^2 d}-\frac{\csc[c+d x]^4}{4 a d}+\frac{\left(a^2-b^2\right)^2 \text{Log}[\sin[c+d x]]}{a^5 d}-\frac{\left(a^2-b^2\right)^2 \text{Log}[a+b \sin[c+d x]]}{a^5 d}$$

Result (type 3, 347 leaves):

$$\frac{\left(-11 a^2 b \cos\left[\frac{1}{2}(c+d x)\right]+6 b^3 \cos\left[\frac{1}{2}(c+d x)\right]\right) \csc\left[\frac{1}{2}(c+d x)\right]}{12 a^4 d}+\frac{\left(7 a^2-4 b^2\right) \csc\left[\frac{1}{2}(c+d x)\right]^2}{32 a^3 d}+\frac{b \cot\left[\frac{1}{2}(c+d x)\right] \csc\left[\frac{1}{2}(c+d x)\right]^2}{24 a^2 d}-\frac{\csc\left[\frac{1}{2}(c+d x)\right]^4}{64 a d}+\frac{\left(a^4-2 a^2 b^2+b^4\right) \text{Log}[\sin[c+d x]]}{a^5 d}+\frac{\left(-a^4+2 a^2 b^2-b^4\right) \text{Log}[a+b \sin[c+d x]]}{a^5 d}+\frac{\left(7 a^2-4 b^2\right) \sec\left[\frac{1}{2}(c+d x)\right]^2}{32 a^3 d}-\frac{\sec\left[\frac{1}{2}(c+d x)\right]^4}{64 a d}+\frac{\sec\left[\frac{1}{2}(c+d x)\right] \left(-11 a^2 b \sin\left[\frac{1}{2}(c+d x)\right]+6 b^3 \sin\left[\frac{1}{2}(c+d x)\right]\right)}{12 a^4 d}+\frac{b \sec\left[\frac{1}{2}(c+d x)\right]^2 \tan\left[\frac{1}{2}(c+d x)\right]}{24 a^2 d}$$

- **Problem 1318: Result more than twice size of optimal antiderivative.**

$$\int \frac{\cot[c+d x]^5 \csc[c+d x]}{a+b \sin[c+d x]} \, dx$$

Optimal (type 3, 179 leaves, 4 steps):

$$-\frac{\left(a^2-b^2\right)^2 \csc[c+d x]}{a^5 d}-\frac{b \left(2 a^2-b^2\right) \csc[c+d x]^2}{2 a^4 d}+\frac{\left(2 a^2-b^2\right) \csc[c+d x]^3}{3 a^3 d}+\frac{b \csc[c+d x]^4}{4 a^2 d}-\frac{\csc[c+d x]^5}{5 a d}-\frac{b \left(a^2-b^2\right)^2 \text{Log}[\sin[c+d x]]}{a^6 d}+\frac{b \left(a^2-b^2\right)^2 \text{Log}[a+b \sin[c+d x]]}{a^6 d}$$

Result (type 3, 492 leaves):

$$\frac{\left(-89 a^4 \operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+220 a^2 b^2 \operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]-120 b^4 \operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]\right) \operatorname{Csc}\left[\frac{1}{2}(c+d x)\right]}{240 a^5 d}+$$

$$\frac{\left(-7 a^2 b+4 b^3\right) \operatorname{Csc}\left[\frac{1}{2}(c+d x)\right]^2}{32 a^4 d}+\frac{\left(31 a^2 \operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]-20 b^2 \operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]\right) \operatorname{Csc}\left[\frac{1}{2}(c+d x)\right]^3}{480 a^3 d}+\frac{b \operatorname{Csc}\left[\frac{1}{2}(c+d x)\right]^4}{64 a^2 d}-$$

$$\frac{\operatorname{Cot}\left[\frac{1}{2}(c+d x)\right] \operatorname{Csc}\left[\frac{1}{2}(c+d x)\right]^4}{160 a d}+\frac{\left(-a^4 b+2 a^2 b^3-b^5\right) \operatorname{Log}[\operatorname{Sin}[c+d x]]}{a^6 d}+\frac{\left(a^4 b-2 a^2 b^3+b^5\right) \operatorname{Log}[a+b \operatorname{Sin}[c+d x]]}{a^6 d}+$$

$$\frac{\left(-7 a^2 b+4 b^3\right) \operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^2}{32 a^4 d}+\frac{b \operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^4}{64 a^2 d}+\frac{\operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^3\left(31 a^2 \operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]-20 b^2 \operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)}{480 a^3 d}+$$

$$\frac{\operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]\left(-89 a^4 \operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]+220 a^2 b^2 \operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]-120 b^4 \operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)}{240 a^5 d}-\frac{\operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^4 \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]}{160 a d}$$

- **Problem 1319: Result more than twice size of optimal antiderivative.**

$$\int \frac{\operatorname{Cot}[c+d x]^5 \operatorname{Csc}[c+d x]^2}{a+b \operatorname{Sin}[c+d x]} \, dx$$

Optimal (type 3, 212 leaves, 4 steps):

$$\frac{b\left(a^2-b^2\right)^2 \operatorname{Csc}[c+d x]}{a^6 d}-\frac{\left(a^2-b^2\right)^2 \operatorname{Csc}[c+d x]^2}{2 a^5 d}-\frac{b\left(2 a^2-b^2\right) \operatorname{Csc}[c+d x]^3}{3 a^4 d}+\frac{\left(2 a^2-b^2\right) \operatorname{Csc}[c+d x]^4}{4 a^3 d}+$$

$$\frac{b \operatorname{Csc}[c+d x]^5}{5 a^2 d}-\frac{\operatorname{Csc}[c+d x]^6}{6 a d}+\frac{b^2\left(a^2-b^2\right)^2 \operatorname{Log}[\operatorname{Sin}[c+d x]]}{a^7 d}-\frac{b^2\left(a^2-b^2\right)^2 \operatorname{Log}[a+b \operatorname{Sin}[c+d x]]}{a^7 d}$$

Result (type 3, 493 leaves):

$$\frac{1}{1920 a^7 d}\left(8\left(89 a^5 b-220 a^3 b^3+120 a b^5\right) \operatorname{Cot}\left[\frac{1}{2}(c+d x)\right]-30\left(5 a^6-14 a^4 b^2+8 a^2 b^4\right) \operatorname{Csc}\left[\frac{1}{2}(c+d x)\right]^2+\right.$$
$$1920 a^4 b^2 \operatorname{Log}[\operatorname{Sin}[c+d x]]-3840 a^2 b^4 \operatorname{Log}[\operatorname{Sin}[c+d x]]+1920 b^6 \operatorname{Log}[\operatorname{Sin}[c+d x]]-1920 a^4 b^2 \operatorname{Log}[a+b \operatorname{Sin}[c+d x]]+$$
$$3840 a^2 b^4 \operatorname{Log}[a+b \operatorname{Sin}[c+d x]]-1920 b^6 \operatorname{Log}[a+b \operatorname{Sin}[c+d x]]-150 a^6 \operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^2+420 a^4 b^2 \operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^2-$$
$$240 a^2 b^4 \operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^2+45 a^6 \operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^4-30 a^4 b^2 \operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^4-5 a^6 \operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^6-$$
$$992 a^5 b \operatorname{Csc}[c+d x]^3 \operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]^4+640 a^3 b^3 \operatorname{Csc}[c+d x]^3 \operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]^4+384 a^5 b \operatorname{Csc}[c+d x]^5 \operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]^6+$$
$$a^5 \operatorname{Csc}\left[\frac{1}{2}(c+d x)\right]^6(-5 a+6 b \operatorname{Sin}[c+d x])+a^3 \operatorname{Csc}\left[\frac{1}{2}(c+d x)\right]^4\left(45 a^3-30 a b^2+\left(-62 a^2 b+40 b^3\right) \operatorname{Sin}[c+d x]\right)+$$
$$\left.712 a^5 b \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]-1760 a^3 b^3 \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]+960 a b^5 \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]\right)$$

Problem 1327: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Cos}[c+d x]\,\text{Cot}[c+d x]^5}{a+b\,\text{Sin}[c+d x]}\,dx$$

Optimal (type 3, 195 leaves, 15 steps):

$$-\frac{x}{b}+\frac{2\left(a^2-b^2\right)^{5/2}\text{ArcTan}\left[\frac{b+a\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]}{\sqrt{a^2-b^2}}\right]}{a^5 b d}-\frac{\left(15 a^4-20 a^2 b^2+8 b^4\right)\text{ArcTanh}[\text{Cos}[c+d x]]}{8 a^5 d}+\frac{b\left(-2 a^2+b^2\right)\text{Cot}[c+d x]}{a^4 d}+\frac{b\,\text{Cot}[c+d x]^3}{3 a^2 d}+\frac{\left(7 a^2-4 b^2\right)\text{Cot}[c+d x]\,\text{Csc}[c+d x]}{8 a^3 d}-\frac{\text{Cot}[c+d x]^3\,\text{Csc}[c+d x]}{4 a d}$$

Result (type 3, 448 leaves):

$$-\frac{c+d x}{b d}+\frac{2\left(a^2-b^2\right)^{5/2}\text{ArcTan}\left[\frac{\text{Sec}\left[\frac{1}{2}(c+d x)\right]\left(b\,\text{Cos}\left[\frac{1}{2}(c+d x)\right]+a\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)}{\sqrt{a^2-b^2}}\right]}{a^5 b d}+\frac{\left(-7 a^2 b\,\text{Cos}\left[\frac{1}{2}(c+d x)\right]+3 b^3\,\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right)\text{Csc}\left[\frac{1}{2}(c+d x)\right]}{6 a^4 d}+\frac{\left(9 a^2-4 b^2\right)\text{Csc}\left[\frac{1}{2}(c+d x)\right]^2}{32 a^3 d}+\frac{b\,\text{Cot}\left[\frac{1}{2}(c+d x)\right]\text{Csc}\left[\frac{1}{2}(c+d x)\right]^2}{24 a^2 d}-\frac{\text{Csc}\left[\frac{1}{2}(c+d x)\right]^4}{64 a d}+\frac{\left(-15 a^4+20 a^2 b^2-8 b^4\right)\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right]}{8 a^5 d}+\frac{\left(15 a^4-20 a^2 b^2+8 b^4\right)\text{Log}\left[\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]}{8 a^5 d}+\frac{\left(-9 a^2+4 b^2\right)\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2}{32 a^3 d}+\frac{\text{Sec}\left[\frac{1}{2}(c+d x)\right]^4}{64 a d}+\frac{\text{Sec}\left[\frac{1}{2}(c+d x)\right]\left(7 a^2 b\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]-3 b^3\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)}{6 a^4 d}-\frac{b\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]}{24 a^2 d}$$

Problem 1328: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Cot}[c+d x]^6}{a+b\,\text{Sin}[c+d x]}\,dx$$

Optimal (type 3, 241 leaves, 9 steps):

$$-\frac{2\left(a^2-b^2\right)^{5/2}\text{ArcTan}\left[\frac{b+a\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]}{\sqrt{a^2-b^2}}\right]}{a^6 d}+\frac{b\left(15 a^4-20 a^2 b^2+8 b^4\right)\text{ArcTanh}[\text{Cos}[c+d x]]}{8 a^6 d}-\frac{\left(23 a^4-35 a^2 b^2+15 b^4\right)\text{Cot}[c+d x]}{15 a^5 d}+\frac{b\left(-9 a^2+4 b^2\right)\text{Cot}[c+d x]\,\text{Csc}[c+d x]}{8 a^4 d}+\frac{\left(11 a^2-5 b^2\right)\text{Cot}[c+d x]\,\text{Csc}[c+d x]^2}{15 a^3 d}+\frac{b\,\text{Cot}[c+d x]\,\text{Csc}[c+d x]^3}{4 a^2 d}-\frac{\text{Cot}[c+d x]\,\text{Csc}[c+d x]^4}{5 a d}$$

Result (type 3, 504 leaves):

$$\frac{1}{960 a^6 d}\left(-1920 \left(a^2-b^2\right)^{5/2} \text{ArcTan}\left[\frac{b+a \tan\left[\frac{1}{2}(c+d x)\right]}{\sqrt{a^2-b^2}}\right]-32 \left(23 a^5-35 a^3 b^2+15 a b^4\right) \cot\left[\frac{1}{2}(c+d x)\right]-270 a^4 b \csc\left[\frac{1}{2}(c+d x)\right]^2+120 a^2 b^3 \csc\left[\frac{1}{2}(c+d x)\right]^2+15 a^4 b \csc\left[\frac{1}{2}(c+d x)\right]^4+1800 a^4 b \log\left[\cos\left[\frac{1}{2}(c+d x)\right]\right]-2400 a^2 b^3 \log\left[\cos\left[\frac{1}{2}(c+d x)\right]\right]+960 b^5 \log\left[\cos\left[\frac{1}{2}(c+d x)\right]\right]-1800 a^4 b \log\left[\sin\left[\frac{1}{2}(c+d x)\right]\right]+2400 a^2 b^3 \log\left[\sin\left[\frac{1}{2}(c+d x)\right]\right]-960 b^5 \log\left[\sin\left[\frac{1}{2}(c+d x)\right]\right]+270 a^4 b \sec\left[\frac{1}{2}(c+d x)\right]^2-120 a^2 b^3 \sec\left[\frac{1}{2}(c+d x)\right]^2-15 a^4 b \sec\left[\frac{1}{2}(c+d x)\right]^4-656 a^5 \csc[c+d x]^3 \sin\left[\frac{1}{2}(c+d x)\right]^4+320 a^3 b^2 \csc[c+d x]^3 \sin\left[\frac{1}{2}(c+d x)\right]^4+41 a^5 \csc\left[\frac{1}{2}(c+d x)\right]^4 \sin[c+d x]-20 a^3 b^2 \csc\left[\frac{1}{2}(c+d x)\right]^4 \sin[c+d x]-3 a^5 \csc\left[\frac{1}{2}(c+d x)\right]^6 \sin[c+d x]+736 a^5 \tan\left[\frac{1}{2}(c+d x)\right]-1120 a^3 b^2 \tan\left[\frac{1}{2}(c+d x)\right]+480 a b^4 \tan\left[\frac{1}{2}(c+d x)\right]+6 a^5 \sec\left[\frac{1}{2}(c+d x)\right]^4 \tan\left[\frac{1}{2}(c+d x)\right]\right)$$

Problem 1356: Result more than twice size of optimal antiderivative.

$$\int \frac{\csc[c+d x] \sec[c+d x]^4}{a+b \sin[c+d x]} \, dx$$

Optimal (type 3, 194 leaves, 12 steps):

$$-\frac{2 b^5 \text{ArcTan}\left[\frac{b+a \tan\left[\frac{1}{2}(c+d x)\right]}{\sqrt{a^2-b^2}}\right]}{a \left(a^2-b^2\right)^{5/2} d}-\frac{\text{ArcTanh}[\cos[c+d x]]}{a d}+\frac{\sec[c+d x]}{a d}+\frac{\sec[c+d x]^3}{3 a d}+\frac{b \sec[c+d x]^3 (b-a \sin[c+d x])}{3 a \left(a^2-b^2\right) d}-\frac{b \sec[c+d x] \left(3 b^3+a \left(2 a^2-5 b^2\right) \sin[c+d x]\right)}{3 a \left(a^2-b^2\right)^2 d}$$

Result (type 3, 408 leaves):

$$-\frac{2 b^5 \operatorname{ArcTan}\left[\frac{\operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]\left(b \operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+a \operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)}{\sqrt{a^2-b^2}}\right]}{a\left(a^2-b^2\right)^{5/2} d}-\frac{\operatorname{Log}\left[\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]\right]}{a d}+\frac{\operatorname{Log}\left[\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right]}{a d}+$$
$$\frac{1}{12(a+b) d\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]-\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2}+\frac{\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]}{6(a+b) d\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]-\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3}-$$
$$\frac{\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]}{6(a-b) d\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3}+\frac{1}{12(a-b) d\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2}+$$
$$\frac{-7 a \operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]+10 b \operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]}{6(a-b)^2 d\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)}+\frac{7 a \operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]+10 b \operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]}{6(a+b)^2 d\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]-\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)}$$

Problem 1357: Result more than twice size of optimal antiderivative.

$$\int \frac{\operatorname{Csc}[c+d x]^2 \operatorname{Sec}[c+d x]^4}{a+b \operatorname{Sin}[c+d x]} \, dx$$

Optimal (type 3, 220 leaves, 15 steps):

$$\frac{2 b^6 \operatorname{ArcTan}\left[\frac{b+a \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]}{\sqrt{a^2-b^2}}\right]}{a^2\left(a^2-b^2\right)^{5/2} d}+\frac{b \operatorname{ArcTanh}[\operatorname{Cos}[c+d x]]}{a^2 d}-\frac{\operatorname{Cot}[c+d x]}{a d}+$$
$$\frac{b\left(-a^2+2 b^2\right) \operatorname{Sec}[c+d x]}{\left(a^2-b^2\right)^2 d}+\frac{b \operatorname{Sec}[c+d x]^3(-a+b \operatorname{Sin}[c+d x])}{3 a\left(a^2-b^2\right) d}+\frac{\left(6 a^4-10 a^2 b^2+b^4\right) \operatorname{Tan}[c+d x]}{3 a\left(a^2-b^2\right)^2 d}+\frac{\operatorname{Tan}[c+d x]^3}{3 a d}$$

Result (type 3, 450 leaves):

$$\frac{2 b^6 \operatorname{ArcTan}\left[\frac{\operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]\left(b \operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+a \operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)}{\sqrt{a^2-b^2}}\right]}{a^2\left(a^2-b^2\right)^{5/2} d}-\frac{\operatorname{Cot}\left[\frac{1}{2}(c+d x)\right]}{2 a d}+\frac{b \operatorname{Log}\left[\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]\right]}{a^2 d}-$$
$$\frac{b \operatorname{Log}\left[\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right]}{a^2 d}+\frac{1}{12(a+b) d\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]-\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2}+\frac{\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]}{6(a+b) d\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]-\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3}+$$
$$\frac{\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]}{6(a-b) d\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3}-\frac{1}{12(a-b) d\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2}+$$
$$\frac{10 a \operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]-13 b \operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]}{6(a-b)^2 d\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)}+\frac{10 a \operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]+13 b \operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]}{6(a+b)^2 d\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]-\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)}+\frac{\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]}{2 a d}$$

Problem 1358: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Csc}[c+d x]^3 \,\text{Sec}[c+d x]^4}{a+b \,\text{Sin}[c+d x]} \, dx$$

Optimal (type 3, 332 leaves, 20 steps):

$$-\frac{2 b^7 \,\text{ArcTan}\left[\frac{b+a \,\text{Tan}\left[\frac{1}{2} (c+d x)\right]}{\sqrt{a^2-b^2}}\right]}{a^3 \left(a^2-b^2\right)^{5/2} d}-\frac{5 \,\text{ArcTanh}[\text{Cos}[c+d x]]}{2 a d}-\frac{b^2 \,\text{ArcTanh}[\text{Cos}[c+d x]]}{a^3 d}+\frac{b \,\text{Cot}[c+d x]}{a^2 d}+\frac{5 \,\text{Sec}[c+d x]}{2 a d}+\frac{b^2 \,\text{Sec}[c+d x]}{a^3 d}+\frac{5 \,\text{Sec}[c+d x]^3}{6 a d}+\frac{b^2 \,\text{Sec}[c+d x]^3}{3 a^3 d}-\frac{\text{Csc}[c+d x]^2 \,\text{Sec}[c+d x]^3}{2 a d}+\frac{b^3 \,\text{Sec}[c+d x]^3 (b-a \,\text{Sin}[c+d x])}{3 a^3 \left(a^2-b^2\right) d}-\frac{b^3 \,\text{Sec}[c+d x] \left(3 b^3+a \left(2 a^2-5 b^2\right) \text{Sin}[c+d x]\right)}{3 a^3 \left(a^2-b^2\right)^2 d}-\frac{2 b \,\text{Tan}[c+d x]}{a^2 d}-\frac{b \,\text{Tan}[c+d x]^3}{3 a^2 d}$$

Result (type 3, 947 leaves):

$$16\left(\frac{a\left(13a^2-19b^2\right)\text{Csc}[c+dx]\,(a+b\,\text{Sin}[c+dx])}{96\left(a^2-b^2\right)^2 d\,(b+a\,\text{Csc}[c+dx])}-\right.$$

$$\frac{b^7\,\text{ArcTan}\left[\frac{\text{Sec}\left[\frac{1}{2}(c+dx)\right]\left(b\,\text{Cos}\left[\frac{1}{2}(c+dx)\right]+a\,\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right)}{\sqrt{a^2-b^2}}\right]\text{Csc}[c+dx]\,(a+b\,\text{Sin}[c+dx])}{8a^3\left(a^2-b^2\right)^{5/2}d\,(b+a\,\text{Csc}[c+dx])}+\frac{b\,\text{Cot}\left[\frac{1}{2}(c+dx)\right]\text{Csc}[c+dx]\,(a+b\,\text{Sin}[c+dx])}{32a^2 d\,(b+a\,\text{Csc}[c+dx])}-$$

$$\frac{\text{Csc}\left[\frac{1}{2}(c+dx)\right]^2\text{Csc}[c+dx]\,(a+b\,\text{Sin}[c+dx])}{128\,a\,d\,(b+a\,\text{Csc}[c+dx])}+\frac{\left(-5a^2-2b^2\right)\text{Csc}[c+dx]\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+dx)\right]\right](a+b\,\text{Sin}[c+dx])}{32a^3 d\,(b+a\,\text{Csc}[c+dx])}+$$

$$\frac{\left(5a^2+2b^2\right)\text{Csc}[c+dx]\,\text{Log}\left[\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right](a+b\,\text{Sin}[c+dx])}{32a^3 d\,(b+a\,\text{Csc}[c+dx])}+\frac{\text{Csc}[c+dx]\,\text{Sec}\left[\frac{1}{2}(c+dx)\right]^2(a+b\,\text{Sin}[c+dx])}{128\,a\,d\,(b+a\,\text{Csc}[c+dx])}+$$

$$\frac{\text{Csc}[c+dx]\,(a+b\,\text{Sin}[c+dx])}{192\,(a+b)\,d\,(b+a\,\text{Csc}[c+dx])\left(\text{Cos}\left[\frac{1}{2}(c+dx)\right]-\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right)^2}+\frac{\text{Csc}[c+dx]\,\text{Sin}\left[\frac{1}{2}(c+dx)\right](a+b\,\text{Sin}[c+dx])}{96\,(a+b)\,d\,(b+a\,\text{Csc}[c+dx])\left(\text{Cos}\left[\frac{1}{2}(c+dx)\right]-\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right)^3}-$$

$$\frac{\text{Csc}[c+dx]\,\text{Sin}\left[\frac{1}{2}(c+dx)\right](a+b\,\text{Sin}[c+dx])}{96\,(a-b)\,d\,(b+a\,\text{Csc}[c+dx])\left(\text{Cos}\left[\frac{1}{2}(c+dx)\right]+\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right)^3}+\frac{\text{Csc}[c+dx]\,(a+b\,\text{Sin}[c+dx])}{192\,(a-b)\,d\,(b+a\,\text{Csc}[c+dx])\left(\text{Cos}\left[\frac{1}{2}(c+dx)\right]+\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right)^2}+$$

$$\frac{\text{Csc}[c+dx]\left(-13\,a\,\text{Sin}\left[\frac{1}{2}(c+dx)\right]+16\,b\,\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right)(a+b\,\text{Sin}[c+dx])}{96\,(a-b)^2 d\,(b+a\,\text{Csc}[c+dx])\left(\text{Cos}\left[\frac{1}{2}(c+dx)\right]+\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right)}+$$

$$\left.\frac{\text{Csc}[c+dx]\left(13\,a\,\text{Sin}\left[\frac{1}{2}(c+dx)\right]+16\,b\,\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right)(a+b\,\text{Sin}[c+dx])}{96\,(a+b)^2 d\,(b+a\,\text{Csc}[c+dx])\left(\text{Cos}\left[\frac{1}{2}(c+dx)\right]-\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right)}-\frac{b\,\text{Csc}[c+dx]\,(a+b\,\text{Sin}[c+dx])\,\text{Tan}\left[\frac{1}{2}(c+dx)\right]}{32a^2 d\,(b+a\,\text{Csc}[c+dx])}\right)$$

- **Problem 1359: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int\frac{\text{Sin}[c+dx]^3\,\text{Tan}[c+dx]^5}{a+b\,\text{Sin}[c+dx]}\,dx$$

Optimal (type 3, 240 leaves, 6 steps):

$$-\frac{\left(35a^2+57ab+24b^2\right)\text{Log}[1-\text{Sin}[c+dx]]}{16\,(a+b)^3 d}+\frac{\left(35a^2-57ab+24b^2\right)\text{Log}[1+\text{Sin}[c+dx]]}{16\,(a-b)^3 d}-\frac{a^8\,\text{Log}[a+b\,\text{Sin}[c+dx]]}{b^3\left(a^2-b^2\right)^3 d}+$$

$$\frac{a\,\text{Sin}[c+dx]}{b^2 d}-\frac{\text{Sin}[c+dx]^2}{2\,b\,d}-\frac{\text{Sec}[c+dx]^4\,(b-a\,\text{Sin}[c+dx])}{4\left(a^2-b^2\right)d}+\frac{\text{Sec}[c+dx]^2\left(4b\left(4a^2-3b^2\right)-a\left(13a^2-9b^2\right)\text{Sin}[c+dx]\right)}{8\left(a^2-b^2\right)^2 d}$$

Result (type 3, 542 leaves):

$$\frac{2\,i\,\left(6\,a^4\,b-8\,a^2\,b^3+3\,b^5\right)\,(c+d\,x)}{(a-b)^3\,(a+b)^3\,d}+\frac{1}{8\,(a+b)^3\,d}$$
$$i\,\left(-35\,a^2-57\,a\,b-24\,b^2\right)\,\text{ArcTan}\left[\text{Csc}[c+d\,x]\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\right]+\frac{1}{8\,(a-b)^3\,d}$$
$$i\,\left(35\,a^2-57\,a\,b+24\,b^2\right)\,\text{ArcTan}\left[\text{Csc}[c+d\,x]\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\right]+\frac{\text{Cos}[2\,(c+d\,x)]}{4\,b\,d}+$$
$$\frac{\left(-35\,a^2-57\,a\,b-24\,b^2\right)\,\text{Log}\left[\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2\right]}{16\,(a+b)^3\,d}+\frac{\left(35\,a^2-57\,a\,b+24\,b^2\right)\,\text{Log}\left[\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2\right]}{16\,(a-b)^3\,d}-$$
$$\frac{a^8\,\text{Log}[a+b\,\text{Sin}[c+d\,x]]}{b^3\,\left(a^2-b^2\right)^3\,d}+\frac{1}{16\,(a+b)\,d\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^4}+\frac{-13\,a-11\,b}{16\,(a+b)^2\,d\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}-$$
$$\frac{1}{16\,(a-b)\,d\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^4}+\frac{13\,a-11\,b}{16\,(a-b)^2\,d\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}+\frac{a\,\text{Sin}[c+d\,x]}{b^2\,d}$$

- **Problem 1360: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int\frac{\text{Sin}[c+d\,x]^2\,\text{Tan}[c+d\,x]^5}{a+b\,\text{Sin}[c+d\,x]}\,dx$$

Optimal (type 3, 221 leaves, 6 steps):

$$-\frac{\left(24\,a^2+37\,a\,b+15\,b^2\right)\,\text{Log}[1-\text{Sin}[c+d\,x]]}{16\,(a+b)^3\,d}-\frac{\left(24\,a^2-37\,a\,b+15\,b^2\right)\,\text{Log}[1+\text{Sin}[c+d\,x]]}{16\,(a-b)^3\,d}+\frac{a^7\,\text{Log}[a+b\,\text{Sin}[c+d\,x]]}{b^2\,\left(a^2-b^2\right)^3\,d}-$$
$$\frac{\text{Sin}[c+d\,x]}{b\,d}+\frac{\text{Sec}[c+d\,x]^4\,(a-b\,\text{Sin}[c+d\,x])}{4\,\left(a^2-b^2\right)\,d}-\frac{\text{Sec}[c+d\,x]^2\,\left(4\,a\,\left(3\,a^2-2\,b^2\right)-b\,\left(13\,a^2-9\,b^2\right)\,\text{Sin}[c+d\,x]\right)}{8\,\left(a^2-b^2\right)^2\,d}$$

Result (type 3, 522 leaves):

$$-\frac{2\,i\,\left(3\,a^5-3\,a^3\,b^2+a\,b^4\right)\,(c+d\,x)}{(a-b)^3\,(a+b)^3\,d}+\frac{1}{8\,(a+b)^3\,d}$$

$$i\,\left(-24\,a^2-37\,a\,b-15\,b^2\right)\,\text{ArcTan}\left[\text{Csc}[c+d\,x]\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\right]+$$

$$\frac{1}{8\,(a-b)^3\,d}i\,\left(-24\,a^2+37\,a\,b-15\,b^2\right)\,\text{ArcTan}\left[\text{Csc}[c+d\,x]\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\right]+$$

$$\frac{\left(-24\,a^2-37\,a\,b-15\,b^2\right)\,\text{Log}\left[\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2\right]}{16\,(a+b)^3\,d}+\frac{\left(-24\,a^2+37\,a\,b-15\,b^2\right)\,\text{Log}\left[\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2\right]}{16\,(a-b)^3\,d}+$$

$$\frac{a^7\,\text{Log}[a+b\,\text{Sin}[c+d\,x]]}{b^2\,\left(a^2-b^2\right)^3\,d}+\frac{1}{16\,(a+b)\,d\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^4}+\frac{-11\,a-9\,b}{16\,(a+b)^2\,d\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}+$$

$$\frac{1}{16\,(a-b)\,d\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^4}+\frac{-11\,a+9\,b}{16\,(a-b)^2\,d\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}-\frac{\text{Sin}[c+d\,x]}{b\,d}$$

- **Problem 1361: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int\frac{\text{Sin}[c+d\,x]\,\text{Tan}[c+d\,x]^5}{a+b\,\text{Sin}[c+d\,x]}\,dx$$

Optimal (type 3, 208 leaves, 6 steps):

$$-\frac{\left(15\,a^2+21\,a\,b+8\,b^2\right)\,\text{Log}[1-\text{Sin}[c+d\,x]]}{16\,(a+b)^3\,d}+\frac{\left(15\,a^2-21\,a\,b+8\,b^2\right)\,\text{Log}[1+\text{Sin}[c+d\,x]]}{16\,(a-b)^3\,d}-$$

$$\frac{a^6\,\text{Log}[a+b\,\text{Sin}[c+d\,x]]}{b\,\left(a^2-b^2\right)^3\,d}-\frac{\text{Sec}[c+d\,x]^4\,(b-a\,\text{Sin}[c+d\,x])}{4\,\left(a^2-b^2\right)\,d}+\frac{\text{Sec}[c+d\,x]^2\,\left(4\,b\,\left(3\,a^2-2\,b^2\right)-a\,\left(9\,a^2-5\,b^2\right)\,\text{Sin}[c+d\,x]\right)}{8\,\left(a^2-b^2\right)^2\,d}$$

Result (type 3, 508 leaves):

$$\frac{2\,i\,(3 a^4 b-3 a^2 b^3+b^5)\,(c+d x)}{(a-b)^3\,(a+b)^3\,d}+\frac{1}{8\,(a+b)^3\,d}$$
$$i\,(-15 a^2-21 a b-8 b^2)\,\text{ArcTan}\left[\text{Csc}[c+d x]\,\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)\,\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)\right]+$$
$$\frac{1}{8\,(a-b)^3\,d}\,i\,(15 a^2-21 a b+8 b^2)\,\text{ArcTan}\left[\text{Csc}[c+d x]\,\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)\,\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)\right]+$$
$$\frac{(-15 a^2-21 a b-8 b^2)\,\text{Log}\left[\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2\right]}{16\,(a+b)^3\,d}+\frac{(15 a^2-21 a b+8 b^2)\,\text{Log}\left[\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2\right]}{16\,(a-b)^3\,d}-$$
$$\frac{a^6\,\text{Log}[a+b\,\text{Sin}[c+d x]]}{b\,(a^2-b^2)^3\,d}+\frac{1}{16\,(a+b)\,d\,\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^4}+\frac{-9 a-7 b}{16\,(a+b)^2\,d\,\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2}-$$
$$\frac{1}{16\,(a-b)\,d\,\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^4}+\frac{9 a-7 b}{16\,(a-b)^2\,d\,\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2}$$

- **Problem 1367: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int \frac{\text{Csc}[c+d x]\,\text{Sec}[c+d x]^5}{a+b\,\text{Sin}[c+d x]}\,dx$$

Optimal (type 3, 233 leaves, 4 steps) :

$$-\frac{(8 a^2+21 a b+15 b^2)\,\text{Log}[1-\text{Sin}[c+d x]]}{16\,(a+b)^3\,d}+\frac{\text{Log}[\text{Sin}[c+d x]]}{a\,d}-\frac{(8 a^2-21 a b+15 b^2)\,\text{Log}[1+\text{Sin}[c+d x]]}{16\,(a-b)^3\,d}+\frac{b^6\,\text{Log}[a+b\,\text{Sin}[c+d x]]}{a\,(a^2-b^2)^3\,d}+$$
$$\frac{1}{16\,(a+b)\,d\,(1-\text{Sin}[c+d x])^2}+\frac{5 a+7 b}{16\,(a+b)^2\,d\,(1-\text{Sin}[c+d x])}+\frac{1}{16\,(a-b)\,d\,(1+\text{Sin}[c+d x])^2}+\frac{5 a-7 b}{16\,(a-b)^2\,d\,(1+\text{Sin}[c+d x])}$$

Result (type 3, 521 leaves) :

$$-\frac{2\,i\,(a^5-3a^3b^2+3ab^4)\,(c+dx)}{(a-b)^3\,(a+b)^3\,d}+\frac{1}{8\,(a+b)^3\,d}$$
$$i\,(-8a^2-21ab-15b^2)\,\text{ArcTan}\left[\text{Csc}[c+dx]\left(\text{Cos}\left[\frac{1}{2}(c+dx)\right]-\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right)\left(\text{Cos}\left[\frac{1}{2}(c+dx)\right]+\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right)\right]+$$
$$\frac{1}{8\,(a-b)^3\,d}\,i\,(-8a^2+21ab-15b^2)\,\text{ArcTan}\left[\text{Csc}[c+dx]\left(\text{Cos}\left[\frac{1}{2}(c+dx)\right]-\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right)\left(\text{Cos}\left[\frac{1}{2}(c+dx)\right]+\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right)\right]+$$
$$\frac{(-8a^2-21ab-15b^2)\,\text{Log}\left[\left(\text{Cos}\left[\frac{1}{2}(c+dx)\right]-\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right)^2\right]}{16\,(a+b)^3\,d}+$$
$$\frac{(-8a^2+21ab-15b^2)\,\text{Log}\left[\left(\text{Cos}\left[\frac{1}{2}(c+dx)\right]+\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right)^2\right]}{16\,(a-b)^3\,d}+\frac{\text{Log}[\text{Sin}[c+dx]]}{a\,d}+\frac{b^6\,\text{Log}[a+b\,\text{Sin}[c+dx]]}{a\,(a^2-b^2)^3\,d}+$$
$$\frac{1}{16\,(a+b)\,d\,\left(\text{Cos}\left[\frac{1}{2}(c+dx)\right]-\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right)^4}+\frac{5a+7b}{16\,(a+b)^2\,d\,\left(\text{Cos}\left[\frac{1}{2}(c+dx)\right]-\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right)^2}+$$
$$\frac{1}{16\,(a-b)\,d\,\left(\text{Cos}\left[\frac{1}{2}(c+dx)\right]+\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right)^4}+\frac{5a-7b}{16\,(a-b)^2\,d\,\left(\text{Cos}\left[\frac{1}{2}(c+dx)\right]+\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right)^2}$$

- **Problem 1368: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int\frac{\text{Csc}[c+dx]^2\,\text{Sec}[c+dx]^5}{a+b\,\text{Sin}[c+dx]}\,dx$$

Optimal (type 3, 250 leaves, 4 steps):

$$-\frac{\text{Csc}[c+dx]}{a\,d}-\frac{(15a^2+37ab+24b^2)\,\text{Log}[1-\text{Sin}[c+dx]]}{16\,(a+b)^3\,d}-\frac{b\,\text{Log}[\text{Sin}[c+dx]]}{a^2\,d}+$$
$$\frac{(15a^2-37ab+24b^2)\,\text{Log}[1+\text{Sin}[c+dx]]}{16\,(a-b)^3\,d}-\frac{b^7\,\text{Log}[a+b\,\text{Sin}[c+dx]]}{a^2\,(a^2-b^2)^3\,d}+\frac{1}{16\,(a+b)\,d\,(1-\text{Sin}[c+dx])^2}+$$
$$\frac{7a+9b}{16\,(a+b)^2\,d\,(1-\text{Sin}[c+dx])}-\frac{1}{16\,(a-b)\,d\,(1+\text{Sin}[c+dx])^2}-\frac{7a-9b}{16\,(a-b)^2\,d\,(1+\text{Sin}[c+dx])}$$

Result (type 3, 565 leaves):

$$\frac{2\,i\,\left(a^4 b-3 a^2 b^3+3 b^5\right)(c+d x)}{(a-b)^3 (a+b)^3 d}+\frac{1}{8 (a+b)^3 d}$$
$$i\left(-15 a^2-37 a b-24 b^2\right)\text{ArcTan}\left[\text{Csc}[c+d x]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)\right]+$$
$$\frac{1}{8 (a-b)^3 d}i\left(15 a^2-37 a b+24 b^2\right)\text{ArcTan}\left[\text{Csc}[c+d x]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)\right]-$$
$$\frac{\text{Cot}\left[\frac{1}{2}(c+d x)\right]}{2 a d}+\frac{\left(-15 a^2-37 a b-24 b^2\right)\text{Log}\left[\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2\right]}{16 (a+b)^3 d}+$$
$$\frac{\left(15 a^2-37 a b+24 b^2\right)\text{Log}\left[\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2\right]}{16 (a-b)^3 d}-\frac{b\,\text{Log}[\text{Sin}[c+d x]]}{a^2 d}-\frac{b^7\,\text{Log}[a+b\,\text{Sin}[c+d x]]}{a^2\left(a^2-b^2\right)^3 d}+$$
$$\frac{1}{16 (a+b) d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^4}+\frac{7 a+9 b}{16 (a+b)^2 d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2}-$$
$$\frac{1}{16 (a-b) d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^4}+\frac{-7 a+9 b}{16 (a-b)^2 d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2}-\frac{\text{Tan}\left[\frac{1}{2}(c+d x)\right]}{2 a d}$$

- **Problem 1369: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int\frac{\text{Csc}[c+d x]^3\,\text{Sec}[c+d x]^5}{a+b\,\text{Sin}[c+d x]}\,dx$$

Optimal (type 3, 274 leaves, 4 steps):

$$\frac{b\,\text{Csc}[c+d x]}{a^2 d}-\frac{\text{Csc}[c+d x]^2}{2 a d}-\frac{\left(24 a^2+57 a b+35 b^2\right)\text{Log}[1-\text{Sin}[c+d x]]}{16 (a+b)^3 d}+\frac{\left(3 a^2+b^2\right)\text{Log}[\text{Sin}[c+d x]]}{a^3 d}-$$
$$\frac{\left(24 a^2-57 a b+35 b^2\right)\text{Log}[1+\text{Sin}[c+d x]]}{16 (a-b)^3 d}+\frac{b^8\,\text{Log}[a+b\,\text{Sin}[c+d x]]}{a^3\left(a^2-b^2\right)^3 d}+\frac{1}{16 (a+b) d (1-\text{Sin}[c+d x])^2}+$$
$$\frac{9 a+11 b}{16 (a+b)^2 d (1-\text{Sin}[c+d x])}+\frac{1}{16 (a-b) d (1+\text{Sin}[c+d x])^2}+\frac{9 a-11 b}{16 (a-b)^2 d (1+\text{Sin}[c+d x])}$$

Result (type 3, 618 leaves):

$$-\frac{2\,i\,\left(3a^5-8a^3b^2+6ab^4\right)(c+dx)}{(a-b)^3(a+b)^3 d}+\frac{1}{8(a+b)^3 d}$$

$$i\left(-24a^2-57ab-35b^2\right)\text{ArcTan}\left[\text{Csc}[c+dx]\left(\text{Cos}\left[\frac{1}{2}(c+dx)\right]-\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right)\left(\text{Cos}\left[\frac{1}{2}(c+dx)\right]+\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right)\right]+$$

$$\frac{1}{8(a-b)^3 d}i\left(-24a^2+57ab-35b^2\right)\text{ArcTan}\left[\text{Csc}[c+dx]\left(\text{Cos}\left[\frac{1}{2}(c+dx)\right]-\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right)\left(\text{Cos}\left[\frac{1}{2}(c+dx)\right]+\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right)\right]+$$

$$\frac{b\,\text{Cot}\left[\frac{1}{2}(c+dx)\right]}{2a^2 d}-\frac{\text{Csc}\left[\frac{1}{2}(c+dx)\right]^2}{8ad}+\frac{\left(-24a^2-57ab-35b^2\right)\text{Log}\left[\left(\text{Cos}\left[\frac{1}{2}(c+dx)\right]-\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right)^2\right]}{16(a+b)^3 d}+$$

$$\frac{\left(-24a^2+57ab-35b^2\right)\text{Log}\left[\left(\text{Cos}\left[\frac{1}{2}(c+dx)\right]+\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right)^2\right]}{16(a-b)^3 d}+\frac{\left(3a^2+b^2\right)\text{Log}[\text{Sin}[c+dx]]}{a^3 d}+\frac{b^8\,\text{Log}[a+b\,\text{Sin}[c+dx]]}{a^3\left(a^2-b^2\right)^3 d}-$$

$$\frac{\text{Sec}\left[\frac{1}{2}(c+dx)\right]^2}{8ad}+\frac{1}{16(a+b)\,d\left(\text{Cos}\left[\frac{1}{2}(c+dx)\right]-\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right)^4}+\frac{9a+11b}{16(a+b)^2 d\left(\text{Cos}\left[\frac{1}{2}(c+dx)\right]-\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right)^2}+$$

$$\frac{1}{16(a-b)\,d\left(\text{Cos}\left[\frac{1}{2}(c+dx)\right]+\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right)^4}+\frac{9a-11b}{16(a-b)^2 d\left(\text{Cos}\left[\frac{1}{2}(c+dx)\right]+\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right)^2}+\frac{b\,\text{Tan}\left[\frac{1}{2}(c+dx)\right]}{2a^2 d}$$

- **Problem 1370: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int\frac{\sqrt{g\,\text{Cos}[e+fx]}\,\text{Sin}[e+fx]^4}{a+b\,\text{Sin}[e+fx]}\,dx$$

Optimal (type 4, 500 leaves, 21 steps) :

$$\frac{a^4 \sqrt{g}\, \text{ArcTan}\left[\frac{\sqrt{b}\, \sqrt{g\, \text{Cos}[e+f x]}}{\left(-a^2+b^2\right)^{1/4} \sqrt{g}}\right]}{b^{9/2} \left(-a^2+b^2\right)^{1/4} f} - \frac{a^4 \sqrt{g}\, \text{ArcTanh}\left[\frac{\sqrt{b}\, \sqrt{g\, \text{Cos}[e+f x]}}{\left(-a^2+b^2\right)^{1/4} \sqrt{g}}\right]}{b^{9/2} \left(-a^2+b^2\right)^{1/4} f} - \frac{2 a^2 \left(g\, \text{Cos}[e+f x]\right)^{3/2}}{3 b^3 f g} -$$

$$\frac{2 \left(g\, \text{Cos}[e+f x]\right)^{3/2}}{3 b f g} + \frac{2 \left(g\, \text{Cos}[e+f x]\right)^{7/2}}{7 b f g^3} - \frac{2 a^3 \sqrt{g\, \text{Cos}[e+f x]}\, \text{EllipticE}\left[\frac{1}{2} (e+f x), 2\right]}{b^4 f \sqrt{\text{Cos}[e+f x]}} -$$

$$\frac{4 a \sqrt{g\, \text{Cos}[e+f x]}\, \text{EllipticE}\left[\frac{1}{2} (e+f x), 2\right]}{5 b^2 f \sqrt{\text{Cos}[e+f x]}} + \frac{a^5 g \sqrt{\text{Cos}[e+f x]}\, \text{EllipticPi}\left[\frac{2 b}{b-\sqrt{-a^2+b^2}}, \frac{1}{2} (e+f x), 2\right]}{b^5 \left(b-\sqrt{-a^2+b^2}\right) f \sqrt{g\, \text{Cos}[e+f x]}} +$$

$$\frac{a^5 g \sqrt{\text{Cos}[e+f x]}\, \text{EllipticPi}\left[\frac{2 b}{b+\sqrt{-a^2+b^2}}, \frac{1}{2} (e+f x), 2\right]}{b^5 \left(b+\sqrt{-a^2+b^2}\right) f \sqrt{g\, \text{Cos}[e+f x]}} + \frac{2 a \left(g\, \text{Cos}[e+f x]\right)^{3/2} \text{Sin}[e+f x]}{5 b^2 f g}$$

Result (type 6, 1210 leaves) :

$$-\frac{1}{5 b^3 f \sqrt{\text{Cos}[e+f x]}}\, a \sqrt{g\, \text{Cos}[e+f x]}$$

$$\left(\frac{1}{6 \sqrt{1-\text{Cos}[e+f x]^2}\, (a+b\, \text{Sin}[e+f x])}\, a b \left(a+b \sqrt{1-\text{Cos}[e+f x]^2}\right) \left(-\left(56 a \left(a^2-b^2\right) \text{AppellF1}\left[\frac{3}{4}, \frac{1}{2}, 1, \frac{7}{4}, \text{Cos}[e+f x]^2,\right.\right.\right.\right.$$

$$\left.\frac{b^2 \text{Cos}[e+f x]^2}{-a^2+b^2}\right] \text{Cos}[e+f x]^{3/2}\Big) \Big/ \left(\sqrt{1-\text{Cos}[e+f x]^2} \left(7 \left(a^2-b^2\right) \text{AppellF1}\left[\frac{3}{4}, \frac{1}{2}, 1, \frac{7}{4}, \text{Cos}[e+f x]^2, \frac{b^2 \text{Cos}[e+f x]^2}{-a^2+b^2}\right] -\right.\right.$$

$$2 \left(2 b^2 \text{AppellF1}\left[\frac{7}{4}, \frac{1}{2}, 2, \frac{11}{4}, \text{Cos}[e+f x]^2, \frac{b^2 \text{Cos}[e+f x]^2}{-a^2+b^2}\right] + \left(-a^2+b^2\right) \text{AppellF1}\left[\frac{7}{4}, \frac{3}{2}, 1, \frac{11}{4},\right.\right.$$

$$\left.\left.\left.\left.\text{Cos}[e+f x]^2, \frac{b^2 \text{Cos}[e+f x]^2}{-a^2+b^2}\right]\right) \text{Cos}[e+f x]^2\right) \left(a^2+b^2 \left(-1+\text{Cos}[e+f x]^2\right)\right)\right) - \frac{1}{\sqrt{b} \left(-a^2+b^2\right)^{1/4}}$$

$$(3+3\, i) \left(2\, \text{ArcTan}\left[1-\frac{(1+i) \sqrt{b}\, \sqrt{\text{Cos}[e+f x]}}{\left(-a^2+b^2\right)^{1/4}}\right] - 2\, \text{ArcTan}\left[1+\frac{(1+i) \sqrt{b}\, \sqrt{\text{Cos}[e+f x]}}{\left(-a^2+b^2\right)^{1/4}}\right] - \text{Log}\left[\sqrt{-a^2+b^2} - (1+i) \sqrt{b}\right.\right.$$

$$\left.\left.\left.\left(-a^2+b^2\right)^{1/4} \sqrt{\text{Cos}[e+f x]} + i\, b\, \text{Cos}[e+f x]\right] + \text{Log}\left[\sqrt{-a^2+b^2} + (1+i) \sqrt{b}\, \left(-a^2+b^2\right)^{1/4} \sqrt{\text{Cos}[e+f x]} + i\, b\, \text{Cos}[e+f x]\right]\right)\right)$$

$$\text{Sin}[e+f x] - \frac{1}{\left(1-\text{Cos}[e+f x]^2\right) (a+b\, \text{Sin}[e+f x])}\, 2 \left(5 a^2+2 b^2\right) \left(a+b \sqrt{1-\text{Cos}[e+f x]^2}\right)$$

$$\left(\left(7\,b\,(a^2-b^2)\,\text{AppellF1}\left[\frac{3}{4},-\frac{1}{2},1,\frac{7}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]\text{Cos}[e+f\,x]^{3/2}\sqrt{1-\text{Cos}[e+f\,x]^2}\right)\Big/\right.$$

$$\left(3\left(-7\,(a^2-b^2)\,\text{AppellF1}\left[\frac{3}{4},-\frac{1}{2},1,\frac{7}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]+2\left(2\,b^2\,\text{AppellF1}\left[\frac{7}{4},-\frac{1}{2},2,\frac{11}{4},\text{Cos}[e+f\,x]^2,\right.\right.\right.\right.$$

$$\left.\left.\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]+(a^2-b^2)\,\text{AppellF1}\left[\frac{7}{4},\frac{1}{2},1,\frac{11}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]\right)\text{Cos}[e+f\,x]^2\right)$$

$$\left.\left.(a^2+b^2\,(-1+\text{Cos}[e+f\,x]^2))\right)\right)+\frac{1}{4\sqrt{2}\,b^{3/2}\,(a^2-b^2)^{1/4}}a\left(-2\,\text{ArcTan}\left[1-\frac{\sqrt{2}\,\sqrt{b}\,\sqrt{\text{Cos}[e+f\,x]}}{(a^2-b^2)^{1/4}}\right]+\right.$$

$$2\,\text{ArcTan}\left[1+\frac{\sqrt{2}\,\sqrt{b}\,\sqrt{\text{Cos}[e+f\,x]}}{(a^2-b^2)^{1/4}}\right]+\text{Log}\left[\sqrt{a^2-b^2}-\sqrt{2}\,\sqrt{b}\,(a^2-b^2)^{1/4}\sqrt{\text{Cos}[e+f\,x]}+b\,\text{Cos}[e+f\,x]\right]-$$

$$\left.\left.\left.\text{Log}\left[\sqrt{a^2-b^2}+\sqrt{2}\,\sqrt{b}\,(a^2-b^2)^{1/4}\sqrt{\text{Cos}[e+f\,x]}+b\,\text{Cos}[e+f\,x]\right]\right)\right)\text{Sin}[e+f\,x]^2\right)+$$

$$\frac{\sqrt{g\,\text{Cos}[e+f\,x]}\left(-\frac{(28\,a^2+19\,b^2)\,\text{Cos}[e+f\,x]}{42\,b^3}+\frac{\text{Cos}[3\,(e+f\,x)]}{14\,b}+\frac{a\,\text{Sin}[2\,(e+f\,x)]}{5\,b^2}\right)}{f}$$

- **Problem 1371: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int\frac{\sqrt{g\,\text{Cos}[e+f\,x]}\,\text{Sin}[e+f\,x]^3}{a+b\,\text{Sin}[e+f\,x]}\,dx$$

Optimal (type 4, 448 leaves, 18 steps):

$$-\frac{a^3\sqrt{g}\,\text{ArcTan}\left[\frac{\sqrt{b}\,\sqrt{g\,\text{Cos}[e+f\,x]}}{(-a^2+b^2)^{1/4}\sqrt{g}}\right]}{b^{7/2}\,(-a^2+b^2)^{1/4}\,f}+\frac{a^3\sqrt{g}\,\text{ArcTanh}\left[\frac{\sqrt{b}\,\sqrt{g\,\text{Cos}[e+f\,x]}}{(-a^2+b^2)^{1/4}\sqrt{g}}\right]}{b^{7/2}\,(-a^2+b^2)^{1/4}\,f}+\frac{2\,a\,(g\,\text{Cos}[e+f\,x])^{3/2}}{3\,b^2\,f\,g}+\frac{2\,a^2\sqrt{g\,\text{Cos}[e+f\,x]}\,\text{EllipticE}\left[\frac{1}{2}(e+f\,x),2\right]}{b^3\,f\sqrt{\text{Cos}[e+f\,x]}}+$$

$$\frac{4\sqrt{g\,\text{Cos}[e+f\,x]}\,\text{EllipticE}\left[\frac{1}{2}(e+f\,x),2\right]}{5\,b\,f\sqrt{\text{Cos}[e+f\,x]}}-\frac{a^4\,g\sqrt{\text{Cos}[e+f\,x]}\,\text{EllipticPi}\left[\frac{2\,b}{b-\sqrt{-a^2+b^2}},\frac{1}{2}(e+f\,x),2\right]}{b^4\left(b-\sqrt{-a^2+b^2}\right)f\sqrt{g\,\text{Cos}[e+f\,x]}}-$$

$$\frac{a^4\,g\sqrt{\text{Cos}[e+f\,x]}\,\text{EllipticPi}\left[\frac{2\,b}{b+\sqrt{-a^2+b^2}},\frac{1}{2}(e+f\,x),2\right]}{b^4\left(b+\sqrt{-a^2+b^2}\right)f\sqrt{g\,\text{Cos}[e+f\,x]}}-\frac{2\,(g\,\text{Cos}[e+f\,x])^{3/2}\,\text{Sin}[e+f\,x]}{5\,b\,f\,g}$$

Result (type 6, 1183 leaves):

$$\frac{1}{5 b^2 f \sqrt{\text{Cos}[e+f x]}} \sqrt{g \text{Cos}[e+f x]} \left(\frac{1}{6 \sqrt{1-\text{Cos}[e+f x]^2}\ (a+b \text{Sin}[e+f x])} \right.$$

$$a b \left(a+b \sqrt{1-\text{Cos}[e+f x]^2}\right) \left(-\left(56 a \left(a^2-b^2\right) \text{AppellF1}\left[\frac{3}{4}, \frac{1}{2}, 1, \frac{7}{4}, \text{Cos}[e+f x]^2, \frac{b^2 \text{Cos}[e+f x]^2}{-a^2+b^2}\right] \text{Cos}[e+f x]^{3/2}\right) \Big/ \right.$$

$$\left(\sqrt{1-\text{Cos}[e+f x]^2} \left(7 \left(a^2-b^2\right) \text{AppellF1}\left[\frac{3}{4}, \frac{1}{2}, 1, \frac{7}{4}, \text{Cos}[e+f x]^2, \frac{b^2 \text{Cos}[e+f x]^2}{-a^2+b^2}\right] - 2 \left(2 b^2 \text{AppellF1}\left[\frac{7}{4}, \frac{1}{2}, 2, \frac{11}{4}, \right.\right.\right.$$

$$\left.\left.\text{Cos}[e+f x]^2, \frac{b^2 \text{Cos}[e+f x]^2}{-a^2+b^2}\right] + \left(-a^2+b^2\right) \text{AppellF1}\left[\frac{7}{4}, \frac{3}{2}, 1, \frac{11}{4}, \text{Cos}[e+f x]^2, \frac{b^2 \text{Cos}[e+f x]^2}{-a^2+b^2}\right]\right) \text{Cos}[e+f x]^2\Big)$$

$$\left.\left(a^2+b^2 \left(-1+\text{Cos}[e+f x]^2\right)\right)\right) - \frac{1}{\sqrt{b}\ \left(-a^2+b^2\right)^{1/4}} (3+3 i) \left(2 \text{ArcTan}\left[1-\frac{(1+i) \sqrt{b} \sqrt{\text{Cos}[e+f x]}}{\left(-a^2+b^2\right)^{1/4}}\right] - \right.$$

$$2 \text{ArcTan}\left[1+\frac{(1+i) \sqrt{b} \sqrt{\text{Cos}[e+f x]}}{\left(-a^2+b^2\right)^{1/4}}\right] - \text{Log}\left[\sqrt{-a^2+b^2} - (1+i) \sqrt{b} \left(-a^2+b^2\right)^{1/4} \sqrt{\text{Cos}[e+f x]} + i b \text{Cos}[e+f x]\right] +$$

$$\left.\left.\text{Log}\left[\sqrt{-a^2+b^2} + (1+i) \sqrt{b} \left(-a^2+b^2\right)^{1/4} \sqrt{\text{Cos}[e+f x]} + i b \text{Cos}[e+f x]\right]\right)\right) \text{Sin}[e+f x] -$$

$$\frac{1}{\left(1-\text{Cos}[e+f x]^2\right) (a+b \text{Sin}[e+f x])} 2 \left(5 a^2+2 b^2\right) \left(a+b \sqrt{1-\text{Cos}[e+f x]^2}\right)$$

$$\left(\left(7 b \left(a^2-b^2\right) \text{AppellF1}\left[\frac{3}{4}, -\frac{1}{2}, 1, \frac{7}{4}, \text{Cos}[e+f x]^2, \frac{b^2 \text{Cos}[e+f x]^2}{-a^2+b^2}\right] \text{Cos}[e+f x]^{3/2} \sqrt{1-\text{Cos}[e+f x]^2}\right) \Big/ \right.$$

$$\left(3 \left(-7 \left(a^2-b^2\right) \text{AppellF1}\left[\frac{3}{4}, -\frac{1}{2}, 1, \frac{7}{4}, \text{Cos}[e+f x]^2, \frac{b^2 \text{Cos}[e+f x]^2}{-a^2+b^2}\right] + 2 \left(2 b^2 \text{AppellF1}\left[\frac{7}{4}, -\frac{1}{2}, 2, \frac{11}{4}, \text{Cos}[e+f x]^2, \right.\right.\right.$$

$$\left.\left.\frac{b^2 \text{Cos}[e+f x]^2}{-a^2+b^2}\right] + \left(a^2-b^2\right) \text{AppellF1}\left[\frac{7}{4}, \frac{1}{2}, 1, \frac{11}{4}, \text{Cos}[e+f x]^2, \frac{b^2 \text{Cos}[e+f x]^2}{-a^2+b^2}\right]\right) \text{Cos}[e+f x]^2\Big)$$

$$\left.\left(a^2+b^2 \left(-1+\text{Cos}[e+f x]^2\right)\right)\right) + \frac{1}{4 \sqrt{2}\ b^{3/2} \left(a^2-b^2\right)^{1/4}} a \left(-2 \text{ArcTan}\left[1-\frac{\sqrt{2} \sqrt{b} \sqrt{\text{Cos}[e+f x]}}{\left(a^2-b^2\right)^{1/4}}\right] + \right.$$

$$2 \text{ArcTan}\left[1+\frac{\sqrt{2} \sqrt{b} \sqrt{\text{Cos}[e+f x]}}{\left(a^2-b^2\right)^{1/4}}\right] + \text{Log}\left[\sqrt{a^2-b^2} - \sqrt{2} \sqrt{b} \left(a^2-b^2\right)^{1/4} \sqrt{\text{Cos}[e+f x]} + b \text{Cos}[e+f x]\right] -$$

$$\left.\left.\left.\text{Log}\left[\sqrt{a^2-b^2} + \sqrt{2} \sqrt{b} \left(a^2-b^2\right)^{1/4} \sqrt{\text{Cos}[e+f x]} + b \text{Cos}[e+f x]\right]\right)\right) \text{Sin}[e+f x]^2\right) + \frac{\sqrt{g \text{Cos}[e+f x]} \left(\frac{2 a \text{Cos}[e+f x]}{3 b^2} - \frac{\text{Sin}[2 (e+f x)]}{5 b}\right)}{f}$$

Problem 1372: Result unnecessarily involves higher level functions.

$$\int \frac{\sqrt{g \operatorname{Cos}[e+f x]}\ \operatorname{Sin}[e+f x]^2}{a+b \operatorname{Sin}[e+f x]}\, dx$$

Optimal (type 4, 369 leaves, 15 steps):

$$\frac{a^2 \sqrt{g}\ \operatorname{ArcTan}\left[\frac{\sqrt{b}\ \sqrt{g \operatorname{Cos}[e+f x]}}{(-a^2+b^2)^{1/4} \sqrt{g}}\right]}{b^{5/2} \left(-a^2+b^2\right)^{1/4} f}-\frac{a^2 \sqrt{g}\ \operatorname{ArcTanh}\left[\frac{\sqrt{b}\ \sqrt{g \operatorname{Cos}[e+f x]}}{(-a^2+b^2)^{1/4} \sqrt{g}}\right]}{b^{5/2} \left(-a^2+b^2\right)^{1/4} f}-\frac{2 (g \operatorname{Cos}[e+f x])^{3/2}}{3 b f g}-\frac{2 a \sqrt{g \operatorname{Cos}[e+f x]}\ \operatorname{EllipticE}\left[\frac{1}{2} (e+f x), 2\right]}{b^2 f \sqrt{\operatorname{Cos}[e+f x]}}+$$
$$\frac{a^3 g \sqrt{\operatorname{Cos}[e+f x]}\ \operatorname{EllipticPi}\left[\frac{2 b}{b-\sqrt{-a^2+b^2}}, \frac{1}{2} (e+f x), 2\right]}{b^3 \left(b-\sqrt{-a^2+b^2}\right) f \sqrt{g \operatorname{Cos}[e+f x]}}+\frac{a^3 g \sqrt{\operatorname{Cos}[e+f x]}\ \operatorname{EllipticPi}\left[\frac{2 b}{b+\sqrt{-a^2+b^2}}, \frac{1}{2} (e+f x), 2\right]}{b^3 \left(b+\sqrt{-a^2+b^2}\right) f \sqrt{g \operatorname{Cos}[e+f x]}}$$

Result (type 6, 608 leaves):

$$-\frac{2 \operatorname{Cos}[e+f x] \sqrt{g \operatorname{Cos}[e+f x]}}{3 b f}+\frac{1}{b f \sqrt{\operatorname{Cos}[e+f x]}\ \left(1-\operatorname{Cos}[e+f x]^2\right) (a+b \operatorname{Sin}[e+f x])} 2 a \sqrt{g \operatorname{Cos}[e+f x]}\ \left(a+b \sqrt{1-\operatorname{Cos}[e+f x]^2}\right)$$
$$\left(\left(7 b \left(a^2-b^2\right) \operatorname{AppellF1}\left[\frac{3}{4}, -\frac{1}{2}, 1, \frac{7}{4}, \operatorname{Cos}[e+f x]^2, \frac{b^2 \operatorname{Cos}[e+f x]^2}{-a^2+b^2}\right] \operatorname{Cos}[e+f x]^{3/2} \sqrt{1-\operatorname{Cos}[e+f x]^2}\right)\Big/\right.$$
$$\left(3 \left(-7 \left(a^2-b^2\right) \operatorname{AppellF1}\left[\frac{3}{4}, -\frac{1}{2}, 1, \frac{7}{4}, \operatorname{Cos}[e+f x]^2, \frac{b^2 \operatorname{Cos}[e+f x]^2}{-a^2+b^2}\right]+2\right.\right.$$
$$\left(2 b^2 \operatorname{AppellF1}\left[\frac{7}{4}, -\frac{1}{2}, 2, \frac{11}{4}, \operatorname{Cos}[e+f x]^2, \frac{b^2 \operatorname{Cos}[e+f x]^2}{-a^2+b^2}\right]+\left(a^2-b^2\right) \operatorname{AppellF1}\left[\frac{7}{4}, \frac{1}{2}, 1, \frac{11}{4}, \operatorname{Cos}[e+f x]^2, \frac{b^2 \operatorname{Cos}[e+f x]^2}{-a^2+b^2}\right]\right)$$
$$\left.\left.\operatorname{Cos}[e+f x]^2\right) \left(a^2+b^2 \left(-1+\operatorname{Cos}[e+f x]^2\right)\right)\right)+\frac{1}{4 \sqrt{2}\ b^{3/2} \left(a^2-b^2\right)^{1/4}}$$
$$a \left(-2 \operatorname{ArcTan}\left[1-\frac{\sqrt{2}\ \sqrt{b}\ \sqrt{\operatorname{Cos}[e+f x]}}{\left(a^2-b^2\right)^{1/4}}\right]+2 \operatorname{ArcTan}\left[1+\frac{\sqrt{2}\ \sqrt{b}\ \sqrt{\operatorname{Cos}[e+f x]}}{\left(a^2-b^2\right)^{1/4}}\right]+\operatorname{Log}\left[\sqrt{a^2-b^2}-\sqrt{2}\ \sqrt{b}\ \left(a^2-b^2\right)^{1/4} \sqrt{\operatorname{Cos}[e+f x]}+\right.\right.$$
$$\left.\left.\left. b \operatorname{Cos}[e+f x]\right]-\operatorname{Log}\left[\sqrt{a^2-b^2}+\sqrt{2}\ \sqrt{b}\ \left(a^2-b^2\right)^{1/4} \sqrt{\operatorname{Cos}[e+f x]}+b \operatorname{Cos}[e+f x]\right]\right)\right) \operatorname{Sin}[e+f x]^2$$

Problem 1373: Result unnecessarily involves higher level functions.

$$\int \frac{\sqrt{g \operatorname{Cos}[e+f x]}\ \operatorname{Sin}[e+f x]}{a+b \operatorname{Sin}[e+f x]}\, dx$$

Optimal (type 4, 341 leaves, 12 steps):

$$-\frac{a\sqrt{g}\,\text{ArcTan}\left[\frac{\sqrt{b}\,\sqrt{g\,\text{Cos}[e+f\,x]}}{(-a^2+b^2)^{1/4}\sqrt{g}}\right]}{b^{3/2}\,(-a^2+b^2)^{1/4}\,f}+\frac{a\sqrt{g}\,\text{ArcTanh}\left[\frac{\sqrt{b}\,\sqrt{g\,\text{Cos}[e+f\,x]}}{(-a^2+b^2)^{1/4}\sqrt{g}}\right]}{b^{3/2}\,(-a^2+b^2)^{1/4}\,f}+\frac{2\sqrt{g\,\text{Cos}[e+f\,x]}\,\text{EllipticE}\left[\frac{1}{2}(e+f\,x),2\right]}{b\,f\,\sqrt{\text{Cos}[e+f\,x]}}-$$

$$\frac{a^2\,g\,\sqrt{\text{Cos}[e+f\,x]}\,\text{EllipticPi}\left[\frac{2\,b}{b-\sqrt{-a^2+b^2}},\frac{1}{2}(e+f\,x),2\right]}{b^2\left(b-\sqrt{-a^2+b^2}\right)f\sqrt{g\,\text{Cos}[e+f\,x]}}-\frac{a^2\,g\,\sqrt{\text{Cos}[e+f\,x]}\,\text{EllipticPi}\left[\frac{2\,b}{b+\sqrt{-a^2+b^2}},\frac{1}{2}(e+f\,x),2\right]}{b^2\left(b+\sqrt{-a^2+b^2}\right)f\sqrt{g\,\text{Cos}[e+f\,x]}}$$

Result (type 6, 548 leaves):

$$-\frac{1}{f\sqrt{\text{Cos}[e+f\,x]}\,(a+b\,\text{Sin}[e+f\,x])}\,2\sqrt{g\,\text{Cos}[e+f\,x]}\,\left(a+b\sqrt{\text{Sin}[e+f\,x]^2}\right)$$

$$\left(\frac{1}{4\sqrt{2}\,b^{3/2}\,(a^2-b^2)^{1/4}}a\left(-2\,\text{ArcTan}\left[1-\frac{\sqrt{2}\,\sqrt{b}\,\sqrt{\text{Cos}[e+f\,x]}}{(a^2-b^2)^{1/4}}\right]+2\,\text{ArcTan}\left[1+\frac{\sqrt{2}\,\sqrt{b}\,\sqrt{\text{Cos}[e+f\,x]}}{(a^2-b^2)^{1/4}}\right]+\text{Log}\left[\right.\right.\right.$$

$$\left.\left.\sqrt{a^2-b^2}-\sqrt{2}\,\sqrt{b}\,(a^2-b^2)^{1/4}\sqrt{\text{Cos}[e+f\,x]}+b\,\text{Cos}[e+f\,x]\right]-\text{Log}\left[\sqrt{a^2-b^2}+\sqrt{2}\,\sqrt{b}\,(a^2-b^2)^{1/4}\sqrt{\text{Cos}[e+f\,x]}+b\,\text{Cos}[e+f\,x]\right]\right)+$$

$$\left(7\,b\,(a^2-b^2)\,\text{AppellF1}\left[\frac{3}{4},-\frac{1}{2},1,\frac{7}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]\text{Cos}[e+f\,x]^{3/2}\sqrt{\text{Sin}[e+f\,x]^2}\right)\Big/$$

$$\left(3\left(a^2-b^2+b^2\,\text{Cos}[e+f\,x]^2\right)\left(-7\,(a^2-b^2)\,\text{AppellF1}\left[\frac{3}{4},-\frac{1}{2},1,\frac{7}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]+2\left(2\,b^2\,\text{AppellF1}\left[\frac{7}{4},-\frac{1}{2},2,\frac{11}{4},\right.\right.\right.\right.$$

$$\left.\left.\left.\left.\left.\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]+(a^2-b^2)\,\text{AppellF1}\left[\frac{7}{4},\frac{1}{2},1,\frac{11}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]\right)\text{Cos}[e+f\,x]^2\right)\right)\right)$$

Problem 1374: Result unnecessarily involves higher level functions.

$$\int\frac{\sqrt{g\,\text{Cos}[e+f\,x]}\,\text{Csc}[e+f\,x]}{a+b\,\text{Sin}[e+f\,x]}\,dx$$

Optimal (type 4, 355 leaves, 16 steps):

$$\frac{\sqrt{g}\,\text{ArcTan}\left[\frac{\sqrt{g\,\text{Cos}[e+f\,x]}}{\sqrt{g}}\right]}{a\,f}-\frac{\sqrt{b}\,\sqrt{g}\,\text{ArcTan}\left[\frac{\sqrt{b}\,\sqrt{g\,\text{Cos}[e+f\,x]}}{(-a^2+b^2)^{1/4}\sqrt{g}}\right]}{a\,(-a^2+b^2)^{1/4}\,f}-\frac{\sqrt{g}\,\text{ArcTanh}\left[\frac{\sqrt{g\,\text{Cos}[e+f\,x]}}{\sqrt{g}}\right]}{a\,f}+\frac{\sqrt{b}\,\sqrt{g}\,\text{ArcTanh}\left[\frac{\sqrt{b}\,\sqrt{g\,\text{Cos}[e+f\,x]}}{(-a^2+b^2)^{1/4}\sqrt{g}}\right]}{a\,(-a^2+b^2)^{1/4}\,f}-$$

$$\frac{g\,\sqrt{\text{Cos}[e+f\,x]}\,\text{EllipticPi}\left[\frac{2\,b}{b-\sqrt{-a^2+b^2}},\frac{1}{2}(e+f\,x),2\right]}{\left(b-\sqrt{-a^2+b^2}\right)f\sqrt{g\,\text{Cos}[e+f\,x]}}-\frac{g\,\sqrt{\text{Cos}[e+f\,x]}\,\text{EllipticPi}\left[\frac{2\,b}{b+\sqrt{-a^2+b^2}},\frac{1}{2}(e+f\,x),2\right]}{\left(b+\sqrt{-a^2+b^2}\right)f\sqrt{g\,\text{Cos}[e+f\,x]}}$$

Result (type 6, 700 leaves):

$$-\frac{1}{f\sqrt{\text{Cos}[e+f x]}\left(1-\text{Cos}[e+f x]^2\right)(b+a\,\text{Csc}[e+f x])}2\sqrt{g\,\text{Cos}[e+f x]}\left(-1+\text{Cos}[e+f x]^2\right)\left(a+b\sqrt{1-\text{Cos}[e+f x]^2}\right)$$
$$\text{Csc}[e+f x]\left(\left(7 b\left(a^2-b^2\right)\text{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]\text{Cos}[e+f x]^{3/2}\right)\Big/\left(3\sqrt{1-\text{Cos}[e+f x]^2}\right.\right.$$
$$\left(7\left(a^2-b^2\right)\text{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]-2\left(2 b^2\,\text{AppellF1}\left[\frac{7}{4},\frac{1}{2},2,\frac{11}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]+\right.\right.$$
$$\left.\left.\left.\left(-a^2+b^2\right)\text{AppellF1}\left[\frac{7}{4},\frac{3}{2},1,\frac{11}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]\right)\text{Cos}[e+f x]^2\right)\left(a^2+b^2\left(-1+\text{Cos}[e+f x]^2\right)\right)\right)+$$
$$\frac{1}{8 a\left(a^2-b^2\right)^{1/4}}\left(2\sqrt{2}\sqrt{b}\,\text{ArcTan}\left[1-\frac{\sqrt{2}\sqrt{b}\sqrt{\text{Cos}[e+f x]}}{\left(a^2-b^2\right)^{1/4}}\right]-2\sqrt{2}\sqrt{b}\,\text{ArcTan}\left[1+\frac{\sqrt{2}\sqrt{b}\sqrt{\text{Cos}[e+f x]}}{\left(a^2-b^2\right)^{1/4}}\right]+\right.$$
$$4\left(a^2-b^2\right)^{1/4}\text{ArcTan}\left[\sqrt{\text{Cos}[e+f x]}\right]+2\left(a^2-b^2\right)^{1/4}\text{Log}\left[1-\sqrt{\text{Cos}[e+f x]}\right]-$$
$$2\left(a^2-b^2\right)^{1/4}\text{Log}\left[1+\sqrt{\text{Cos}[e+f x]}\right]-\sqrt{2}\sqrt{b}\,\text{Log}\left[\sqrt{a^2-b^2}-\sqrt{2}\sqrt{b}\left(a^2-b^2\right)^{1/4}\sqrt{\text{Cos}[e+f x]}+b\,\text{Cos}[e+f x]\right]+$$
$$\left.\left.\sqrt{2}\sqrt{b}\,\text{Log}\left[\sqrt{a^2-b^2}+\sqrt{2}\sqrt{b}\left(a^2-b^2\right)^{1/4}\sqrt{\text{Cos}[e+f x]}+b\,\text{Cos}[e+f x]\right]\right)\right)$$

- **Problem 1375: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int\frac{\sqrt{g\,\text{Cos}[e+f x]}\,\text{Csc}[e+f x]^2}{a+b\,\text{Sin}[e+f x]}\,dx$$

Optimal (type 4, 433 leaves, 19 steps):

$$-\frac{b\sqrt{g}\,\text{ArcTan}\left[\frac{\sqrt{g\,\text{Cos}[e+f x]}}{\sqrt{g}}\right]}{a^2 f}+\frac{b^{3/2}\sqrt{g}\,\text{ArcTan}\left[\frac{\sqrt{b}\sqrt{g\,\text{Cos}[e+f x]}}{\left(-a^2+b^2\right)^{1/4}\sqrt{g}}\right]}{a^2\left(-a^2+b^2\right)^{1/4}f}+\frac{b\sqrt{g}\,\text{ArcTanh}\left[\frac{\sqrt{g\,\text{Cos}[e+f x]}}{\sqrt{g}}\right]}{a^2 f}-$$
$$\frac{b^{3/2}\sqrt{g}\,\text{ArcTanh}\left[\frac{\sqrt{b}\sqrt{g\,\text{Cos}[e+f x]}}{\left(-a^2+b^2\right)^{1/4}\sqrt{g}}\right]}{a^2\left(-a^2+b^2\right)^{1/4}f}-\frac{(g\,\text{Cos}[e+f x])^{3/2}\,\text{Csc}[e+f x]}{a f g}-\frac{\sqrt{g\,\text{Cos}[e+f x]}\,\text{EllipticE}\left[\frac{1}{2}(e+f x),2\right]}{a f\sqrt{\text{Cos}[e+f x]}}+$$
$$\frac{b g\sqrt{\text{Cos}[e+f x]}\,\text{EllipticPi}\left[\frac{2 b}{b-\sqrt{-a^2+b^2}},\frac{1}{2}(e+f x),2\right]}{a\left(b-\sqrt{-a^2+b^2}\right)f\sqrt{g\,\text{Cos}[e+f x]}}+\frac{b g\sqrt{\text{Cos}[e+f x]}\,\text{EllipticPi}\left[\frac{2 b}{b+\sqrt{-a^2+b^2}},\frac{1}{2}(e+f x),2\right]}{a\left(b+\sqrt{-a^2+b^2}\right)f\sqrt{g\,\text{Cos}[e+f x]}}$$

Result (type 6, 2385 leaves):

$$-\frac{\sqrt{g\,\text{Cos}[e+f\,x]}\ \text{Cot}[e+f\,x]}{a\,f}+$$

$$\frac{1}{4\,a\,f\,\sqrt{\text{Cos}[e+f\,x]}}\sqrt{g\,\text{Cos}[e+f\,x]}\ \left(-\frac{1}{6\,\sqrt{1-\text{Cos}[e+f\,x]^2}\ (b+a\,\text{Csc}[e+f\,x])}\,a\,\left(a+b\,\sqrt{1-\text{Cos}[e+f\,x]^2}\right)\,\left(-\left(56\,a\,\left(a^2-b^2\right)\right.\right.\right.$$

$$\left.\text{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]\text{Cos}[e+f\,x]^{3/2}\right)\Big/\left(\sqrt{1-\text{Cos}[e+f\,x]^2}\ \left(7\,\left(a^2-b^2\right)\,\text{AppellF1}\left[\frac{3}{4},\frac{1}{2},\right.\right.\right.$$

$$\left.1,\frac{7}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]-2\,\left(2\,b^2\,\text{AppellF1}\left[\frac{7}{4},\frac{1}{2},2,\frac{11}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]+\left(-a^2+b^2\right)\right.$$

$$\left.\left.\left.\left.\text{AppellF1}\left[\frac{7}{4},\frac{3}{2},1,\frac{11}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]\right)\text{Cos}[e+f\,x]^2\right)\,\left(a^2+b^2\,\left(-1+\text{Cos}[e+f\,x]^2\right)\right)\right)-\frac{1}{\sqrt{b}\ \left(-a^2+b^2\right)^{1/4}}$$

$$(3+3\,i)\,\left(2\,\text{ArcTan}\left[1-\frac{(1+i)\,\sqrt{b}\ \sqrt{\text{Cos}[e+f\,x]}}{\left(-a^2+b^2\right)^{1/4}}\right]-2\,\text{ArcTan}\left[1+\frac{(1+i)\,\sqrt{b}\ \sqrt{\text{Cos}[e+f\,x]}}{\left(-a^2+b^2\right)^{1/4}}\right]-\text{Log}\left[\sqrt{-a^2+b^2}-(1+i)\,\sqrt{b}\right.\right.$$

$$\left.\left.\left.\left(-a^2+b^2\right)^{1/4}\sqrt{\text{Cos}[e+f\,x]}+i\,b\,\text{Cos}[e+f\,x]\right]+\text{Log}\left[\sqrt{-a^2+b^2}+(1+i)\,\sqrt{b}\ \left(-a^2+b^2\right)^{1/4}\sqrt{\text{Cos}[e+f\,x]}+i\,b\,\text{Cos}[e+f\,x]\right]\right)\right)-$$

$$\frac{1}{\left(1-\text{Cos}[e+f\,x]^2\right)\,\left(-1+2\,\text{Cos}[e+f\,x]^2\right)\,(b+a\,\text{Csc}[e+f\,x])}\,2\,b\,\left(-1+\text{Cos}[e+f\,x]^2\right)\,\left(a+b\,\sqrt{1-\text{Cos}[e+f\,x]^2}\right)$$

$$\text{Cos}[2\,(e+f\,x)]\,\text{Csc}[e+f\,x]$$

$$\left(\frac{\left(a^2-b^2\right)^{3/4}\left(-2\,a^2+b^2\right)\text{ArcTan}\left[\frac{-\sqrt{2}\,\left(a^2-b^2\right)^{1/4}+2\,\sqrt{b}\,\sqrt{\text{Cos}[e+f\,x]}}{\sqrt{2}\,\left(a^2-b^2\right)^{1/4}}\right]}{2\,\sqrt{2}\,a\,b^{3/2}\left(-a^2+b^2\right)}+\frac{\left(a^2-b^2\right)^{3/4}\left(-2\,a^2+b^2\right)\text{ArcTan}\left[\frac{\sqrt{2}\,\left(a^2-b^2\right)^{1/4}+2\,\sqrt{b}\,\sqrt{\text{Cos}[e+f\,x]}}{\sqrt{2}\,\left(a^2-b^2\right)^{1/4}}\right]}{2\,\sqrt{2}\,a\,b^{3/2}\left(-a^2+b^2\right)}+\right.$$

$$\frac{\text{ArcTan}\left[\sqrt{\text{Cos}[e+f\,x]}\right]}{2\,a}-\left(7\,b\,\left(a^2-b^2\right)\,\text{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]\text{Cos}[e+f\,x]^{3/2}\right)\Big/$$

$$\left(3\,\sqrt{1-\text{Cos}[e+f\,x]^2}\ \left(7\,\left(a^2-b^2\right)\,\text{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]-2\,\left(2\,b^2\,\text{AppellF1}\left[\frac{7}{4},\frac{1}{2},2,\frac{11}{4},\right.\right.\right.\right.$$

$$\left.\left.\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]+\left(-a^2+b^2\right)\,\text{AppellF1}\left[\frac{7}{4},\frac{3}{2},1,\frac{11}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]\right)\text{Cos}[e+f\,x]^2\right)$$

$$\left.\left(a^2+b^2\,\left(-1+\text{Cos}[e+f\,x]^2\right)\right)\right)+\left(22\,b\,\left(a^2-b^2\right)\,\text{AppellF1}\left[\frac{7}{4},\frac{1}{2},1,\frac{11}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]\text{Cos}[e+f\,x]^{7/2}\right)\Big/$$

$$\Bigg(7\sqrt{1-\text{Cos}[e+f\,x]^2}\;\Bigg(11\,(a^2-b^2)\,\text{AppellF1}\Big[\frac{7}{4},\,\frac{1}{2},\,1,\,\frac{11}{4},\,\text{Cos}[e+f\,x]^2,\,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\Big]-$$

$$2\,\Big(2\,b^2\,\text{AppellF1}\Big[\frac{11}{4},\,\frac{1}{2},\,2,\,\frac{15}{4},\,\text{Cos}[e+f\,x]^2,\,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\Big]+(-a^2+b^2)\,\text{AppellF1}\Big[\frac{11}{4},\,\frac{3}{2},\,1,\,\frac{15}{4},$$

$$\text{Cos}[e+f\,x]^2,\,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\Big]\Big)\,\text{Cos}[e+f\,x]^2\Bigg)\,\big(a^2+b^2\,(-1+\text{Cos}[e+f\,x]^2)\big)\Bigg)+\frac{\text{Log}\Big[1-\sqrt{\text{Cos}[e+f\,x]}\Big]}{4\,a}-$$

$$\frac{\text{Log}\Big[1+\sqrt{\text{Cos}[e+f\,x]}\Big]}{4\,a}+\frac{(a^2-b^2)^{3/4}\,(-2\,a^2+b^2)\,\text{Log}\Big[\sqrt{a^2-b^2}-\sqrt{2}\,\sqrt{b}\,(a^2-b^2)^{1/4}\sqrt{\text{Cos}[e+f\,x]}+b\,\text{Cos}[e+f\,x]\Big]}{4\,\sqrt{2}\,a\,b^{3/2}\,(-a^2+b^2)}-$$

$$\frac{(a^2-b^2)^{3/4}\,(-2\,a^2+b^2)\,\text{Log}\Big[\sqrt{a^2-b^2}+\sqrt{2}\,\sqrt{b}\,(a^2-b^2)^{1/4}\sqrt{\text{Cos}[e+f\,x]}+b\,\text{Cos}[e+f\,x]\Big]}{4\,\sqrt{2}\,a\,b^{3/2}\,(-a^2+b^2)}\Bigg)+$$

$$\frac{1}{(1-\text{Cos}[e+f\,x]^2)\,(b+a\,\text{Csc}[e+f\,x])}\,10\,b\,(-1+\text{Cos}[e+f\,x]^2)\,\Big(a+b\sqrt{1-\text{Cos}[e+f\,x]^2}\Big)\,\text{Csc}[e+f\,x]$$

$$\Bigg(\Bigg(7\,b\,(a^2-b^2)\,\text{AppellF1}\Big[\frac{3}{4},\,\frac{1}{2},\,1,\,\frac{7}{4},\,\text{Cos}[e+f\,x]^2,\,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\Big]\,\text{Cos}[e+f\,x]^{3/2}\Bigg)\Bigg/$$

$$\Bigg(3\sqrt{1-\text{Cos}[e+f\,x]^2}\;\Bigg(7\,(a^2-b^2)\,\text{AppellF1}\Big[\frac{3}{4},\,\frac{1}{2},\,1,\,\frac{7}{4},\,\text{Cos}[e+f\,x]^2,\,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\Big]-2\,\Big(2\,b^2\,\text{AppellF1}\Big[\frac{7}{4},\,\frac{1}{2},\,2,\,\frac{11}{4},$$

$$\text{Cos}[e+f\,x]^2,\,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\Big]+(-a^2+b^2)\,\text{AppellF1}\Big[\frac{7}{4},\,\frac{3}{2},\,1,\,\frac{11}{4},\,\text{Cos}[e+f\,x]^2,\,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\Big]\Big)\,\text{Cos}[e+f\,x]^2\Bigg)$$

$$\big(a^2+b^2\,(-1+\text{Cos}[e+f\,x]^2)\big)\Bigg)+\frac{1}{8\,a\,(a^2-b^2)^{1/4}}\,\Bigg(2\,\sqrt{2}\,\sqrt{b}\,\text{ArcTan}\Big[1-\frac{\sqrt{2}\,\sqrt{b}\,\sqrt{\text{Cos}[e+f\,x]}}{(a^2-b^2)^{1/4}}\Big]-$$

$$2\,\sqrt{2}\,\sqrt{b}\,\text{ArcTan}\Big[1+\frac{\sqrt{2}\,\sqrt{b}\,\sqrt{\text{Cos}[e+f\,x]}}{(a^2-b^2)^{1/4}}\Big]+4\,(a^2-b^2)^{1/4}\,\text{ArcTan}\Big[\sqrt{\text{Cos}[e+f\,x]}\Big]+2\,(a^2-b^2)^{1/4}\,\text{Log}\Big[1-\sqrt{\text{Cos}[e+f\,x]}\Big]-$$

$$2\,(a^2-b^2)^{1/4}\,\text{Log}\Big[1+\sqrt{\text{Cos}[e+f\,x]}\Big]-\sqrt{2}\,\sqrt{b}\,\text{Log}\Big[\sqrt{a^2-b^2}-\sqrt{2}\,\sqrt{b}\,(a^2-b^2)^{1/4}\sqrt{\text{Cos}[e+f\,x]}+b\,\text{Cos}[e+f\,x]\Big]+$$

$$\sqrt{2}\,\sqrt{b}\,\text{Log}\Big[\sqrt{a^2-b^2}+\sqrt{2}\,\sqrt{b}\,(a^2-b^2)^{1/4}\sqrt{\text{Cos}[e+f\,x]}+b\,\text{Cos}[e+f\,x]\Big]\Bigg)\Bigg)\Bigg)$$

- **Problem 1376: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int \frac{\sqrt{g \operatorname{Cos}[e+f x]} \operatorname{Csc}[e+f x]^3}{a+b \operatorname{Sin}[e+f x]} \, dx$$

Optimal (type 4, 544 leaves, 25 steps):

$$\frac{\sqrt{g} \operatorname{ArcTan}\left[\frac{\sqrt{g \operatorname{Cos}[e+f x]}}{\sqrt{g}}\right]}{4 a f}+\frac{b^2 \sqrt{g} \operatorname{ArcTan}\left[\frac{\sqrt{g \operatorname{Cos}[e+f x]}}{\sqrt{g}}\right]}{a^3 f}-\frac{b^{5/2} \sqrt{g} \operatorname{ArcTan}\left[\frac{\sqrt{b} \sqrt{g \operatorname{Cos}[e+f x]}}{\left(-a^2+b^2\right)^{1/4} \sqrt{g}}\right]}{a^3 \left(-a^2+b^2\right)^{1/4} f}-$$

$$\frac{\sqrt{g} \operatorname{ArcTanh}\left[\frac{\sqrt{g \operatorname{Cos}[e+f x]}}{\sqrt{g}}\right]}{4 a f}-\frac{b^2 \sqrt{g} \operatorname{ArcTanh}\left[\frac{\sqrt{g \operatorname{Cos}[e+f x]}}{\sqrt{g}}\right]}{a^3 f}+\frac{b^{5/2} \sqrt{g} \operatorname{ArcTanh}\left[\frac{\sqrt{b} \sqrt{g \operatorname{Cos}[e+f x]}}{\left(-a^2+b^2\right)^{1/4} \sqrt{g}}\right]}{a^3 \left(-a^2+b^2\right)^{1/4} f}+$$

$$\frac{b \left(g \operatorname{Cos}[e+f x]\right)^{3/2} \operatorname{Csc}[e+f x]}{a^2 f g}-\frac{\left(g \operatorname{Cos}[e+f x]\right)^{3/2} \operatorname{Csc}[e+f x]^2}{2 a f g}+\frac{b \sqrt{g \operatorname{Cos}[e+f x]} \operatorname{EllipticE}\left[\frac{1}{2} (e+f x), 2\right]}{a^2 f \sqrt{\operatorname{Cos}[e+f x]}}-$$

$$\frac{b^2 g \sqrt{\operatorname{Cos}[e+f x]} \operatorname{EllipticPi}\left[\frac{2 b}{b-\sqrt{-a^2+b^2}}, \frac{1}{2} (e+f x), 2\right]}{a^2 \left(b-\sqrt{-a^2+b^2}\right) f \sqrt{g \operatorname{Cos}[e+f x]}}-\frac{b^2 g \sqrt{\operatorname{Cos}[e+f x]} \operatorname{EllipticPi}\left[\frac{2 b}{b+\sqrt{-a^2+b^2}}, \frac{1}{2} (e+f x), 2\right]}{a^2 \left(b+\sqrt{-a^2+b^2}\right) f \sqrt{g \operatorname{Cos}[e+f x]}}$$

Result (type 6, 2419 leaves):

$$\frac{\sqrt{g \operatorname{Cos}[e+f x]} \left(\frac{b \operatorname{Cot}[e+f x]}{a^2}-\frac{\operatorname{Cot}[e+f x] \operatorname{Csc}[e+f x]}{2 a}\right)}{f}-$$

$$\frac{1}{4 a^2 f \sqrt{\operatorname{Cos}[e+f x]}} \sqrt{g \operatorname{Cos}[e+f x]} \left(-\frac{1}{4 \sqrt{1-\operatorname{Cos}[e+f x]^2} \left(b+a \operatorname{Csc}[e+f x]\right)} a b \left(a+b \sqrt{1-\operatorname{Cos}[e+f x]^2}\right)\right.$$

$$\left(-\left(56 a \left(a^2-b^2\right) \operatorname{AppellF1}\left[\frac{3}{4}, \frac{1}{2}, 1, \frac{7}{4}, \operatorname{Cos}[e+f x]^2, \frac{b^2 \operatorname{Cos}[e+f x]^2}{-a^2+b^2}\right] \operatorname{Cos}[e+f x]^{3/2}\right) \Big/ \left(\sqrt{1-\operatorname{Cos}[e+f x]^2} \left(7 \left(a^2-b^2\right) \operatorname{AppellF1}\left[\frac{3}{4},\right.\right.\right.\right.$$

$$\frac{1}{2}, 1, \frac{7}{4}, \operatorname{Cos}[e+f x]^2, \frac{b^2 \operatorname{Cos}[e+f x]^2}{-a^2+b^2}\right]-2 \left(2 b^2 \operatorname{AppellF1}\left[\frac{7}{4}, \frac{1}{2}, 2, \frac{11}{4}, \operatorname{Cos}[e+f x]^2, \frac{b^2 \operatorname{Cos}[e+f x]^2}{-a^2+b^2}\right]+\left(-a^2+b^2\right)\right.$$

$$\left.\left.\left.\operatorname{AppellF1}\left[\frac{7}{4}, \frac{3}{2}, 1, \frac{11}{4}, \operatorname{Cos}[e+f x]^2, \frac{b^2 \operatorname{Cos}[e+f x]^2}{-a^2+b^2}\right]\right) \operatorname{Cos}[e+f x]^2\right) \left(a^2+b^2 \left(-1+\operatorname{Cos}[e+f x]^2\right)\right)\right)-\frac{1}{\sqrt{b} \left(-a^2+b^2\right)^{1/4}}$$

$$(3+3 i) \left(2 \operatorname{ArcTan}\left[1-\frac{(1+i) \sqrt{b} \sqrt{\operatorname{Cos}[e+f x]}}{\left(-a^2+b^2\right)^{1/4}}\right]-2 \operatorname{ArcTan}\left[1+\frac{(1+i) \sqrt{b} \sqrt{\operatorname{Cos}[e+f x]}}{\left(-a^2+b^2\right)^{1/4}}\right]-\operatorname{Log}\left[\sqrt{-a^2+b^2}-(1+i) \sqrt{b}\right.\right.$$

$$\left(-a^2+b^2\right)^{1/4}\sqrt{\text{Cos}[e+f x]}+i\, b\,\text{Cos}[e+f x]\Big]+\text{Log}\Big[\sqrt{-a^2+b^2}+(1+i)\sqrt{b}\left(-a^2+b^2\right)^{1/4}\sqrt{\text{Cos}[e+f x]}+i\, b\,\text{Cos}[e+f x]\Big]\Bigg)\Bigg)-$$

$$\frac{1}{\left(1-\text{Cos}[e+f x]^2\right)\left(-1+2\,\text{Cos}[e+f x]^2\right)(b+a\,\text{Csc}[e+f x])}\,2\,b^2\left(-1+\text{Cos}[e+f x]^2\right)\left(a+b\sqrt{1-\text{Cos}[e+f x]^2}\right)\text{Cos}[2(e+f x)]$$

$$\text{Csc}[e+f x]\left(\frac{\left(a^2-b^2\right)^{3/4}\left(-2a^2+b^2\right)\text{ArcTan}\left[\frac{-\sqrt{2}\left(a^2-b^2\right)^{1/4}+2\sqrt{b}\sqrt{\text{Cos}[e+f x]}}{\sqrt{2}\left(a^2-b^2\right)^{1/4}}\right]}{2\sqrt{2}\,a\,b^{3/2}\left(-a^2+b^2\right)}+\frac{\left(a^2-b^2\right)^{3/4}\left(-2a^2+b^2\right)\text{ArcTan}\left[\frac{\sqrt{2}\left(a^2-b^2\right)^{1/4}+2\sqrt{b}\sqrt{\text{Cos}[e+f x]}}{\sqrt{2}\left(a^2-b^2\right)^{1/4}}\right]}{2\sqrt{2}\,a\,b^{3/2}\left(-a^2+b^2\right)}+\right.$$

$$\frac{\text{ArcTan}\left[\sqrt{\text{Cos}[e+f x]}\right]}{2a}-\left(7\,b\left(a^2-b^2\right)\text{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]\text{Cos}[e+f x]^{3/2}\right)\Bigg/$$

$$\left(3\sqrt{1-\text{Cos}[e+f x]^2}\left(7\left(a^2-b^2\right)\text{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]-2\left(2\,b^2\,\text{AppellF1}\left[\frac{7}{4},\frac{1}{2},2,\frac{11}{4},\right.\right.\right.$$

$$\left.\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]+\left(-a^2+b^2\right)\text{AppellF1}\left[\frac{7}{4},\frac{3}{2},1,\frac{11}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]\Bigg)\text{Cos}[e+f x]^2\Bigg)$$

$$\left.\left(a^2+b^2\left(-1+\text{Cos}[e+f x]^2\right)\right)\right)+\left(22\,b\left(a^2-b^2\right)\text{AppellF1}\left[\frac{7}{4},\frac{1}{2},1,\frac{11}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]\text{Cos}[e+f x]^{7/2}\right)\Bigg/$$

$$\left(7\sqrt{1-\text{Cos}[e+f x]^2}\left(11\left(a^2-b^2\right)\text{AppellF1}\left[\frac{7}{4},\frac{1}{2},1,\frac{11}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]-\right.\right.$$

$$2\left(2\,b^2\,\text{AppellF1}\left[\frac{11}{4},\frac{1}{2},2,\frac{15}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]+\left(-a^2+b^2\right)\text{AppellF1}\left[\frac{11}{4},\frac{3}{2},1,\frac{15}{4},\right.\right.$$

$$\left.\left.\left.\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]\right)\text{Cos}[e+f x]^2\right)\left(a^2+b^2\left(-1+\text{Cos}[e+f x]^2\right)\right)\Bigg)+\frac{\text{Log}\left[1-\sqrt{\text{Cos}[e+f x]}\right]}{4a}-$$

$$\frac{\text{Log}\left[1+\sqrt{\text{Cos}[e+f x]}\right]}{4a}+\frac{\left(a^2-b^2\right)^{3/4}\left(-2a^2+b^2\right)\text{Log}\left[\sqrt{a^2-b^2}-\sqrt{2}\sqrt{b}\left(a^2-b^2\right)^{1/4}\sqrt{\text{Cos}[e+f x]}+b\,\text{Cos}[e+f x]\right]}{4\sqrt{2}\,a\,b^{3/2}\left(-a^2+b^2\right)}-$$

$$\left.\frac{\left(a^2-b^2\right)^{3/4}\left(-2a^2+b^2\right)\text{Log}\left[\sqrt{a^2-b^2}+\sqrt{2}\sqrt{b}\left(a^2-b^2\right)^{1/4}\sqrt{\text{Cos}[e+f x]}+b\,\text{Cos}[e+f x]\right]}{4\sqrt{2}\,a\,b^{3/2}\left(-a^2+b^2\right)}\right)-$$

$$\frac{1}{\left(1-\text{Cos}[e+f x]^2\right)(b+a\,\text{Csc}[e+f x])}\,2\left(-a^2-5b^2\right)\left(-1+\text{Cos}[e+f x]^2\right)\left(a+b\sqrt{1-\text{Cos}[e+f x]^2}\right)\text{Csc}[e+f x]$$

$$\left(\left(7\,b\,\left(a^2-b^2\right)\,\text{AppellF1}\left[\frac{3}{4},\,\frac{1}{2},\,1,\,\frac{7}{4},\,\text{Cos}[e+f\,x]^2,\,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]\,\text{Cos}[e+f\,x]^{3/2}\right)\Big/\right.$$

$$\left(3\,\sqrt{1-\text{Cos}[e+f\,x]^2}\,\left(7\,\left(a^2-b^2\right)\,\text{AppellF1}\left[\frac{3}{4},\,\frac{1}{2},\,1,\,\frac{7}{4},\,\text{Cos}[e+f\,x]^2,\,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]-2\,\left(2\,b^2\,\text{AppellF1}\left[\frac{7}{4},\,\frac{1}{2},\,2,\,\frac{11}{4},\right.\right.\right.$$

$$\left.\left.\text{Cos}[e+f\,x]^2,\,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]+\left(-a^2+b^2\right)\,\text{AppellF1}\left[\frac{7}{4},\,\frac{3}{2},\,1,\,\frac{11}{4},\,\text{Cos}[e+f\,x]^2,\,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]\right)\,\text{Cos}[e+f\,x]^2\Big)$$

$$\left.\left(a^2+b^2\,\left(-1+\text{Cos}[e+f\,x]^2\right)\right)\right)+\frac{1}{8\,a\,\left(a^2-b^2\right)^{1/4}}\,\left(2\,\sqrt{2}\,\sqrt{b}\,\text{ArcTan}\left[1-\frac{\sqrt{2}\,\sqrt{b}\,\sqrt{\text{Cos}[e+f\,x]}}{\left(a^2-b^2\right)^{1/4}}\right]-\right.$$

$$2\,\sqrt{2}\,\sqrt{b}\,\text{ArcTan}\left[1+\frac{\sqrt{2}\,\sqrt{b}\,\sqrt{\text{Cos}[e+f\,x]}}{\left(a^2-b^2\right)^{1/4}}\right]+4\,\left(a^2-b^2\right)^{1/4}\,\text{ArcTan}\left[\sqrt{\text{Cos}[e+f\,x]}\right]+2\,\left(a^2-b^2\right)^{1/4}\,\text{Log}\left[1-\sqrt{\text{Cos}[e+f\,x]}\right]-$$

$$2\,\left(a^2-b^2\right)^{1/4}\,\text{Log}\left[1+\sqrt{\text{Cos}[e+f\,x]}\right]-\sqrt{2}\,\sqrt{b}\,\text{Log}\left[\sqrt{a^2-b^2}-\sqrt{2}\,\sqrt{b}\,\left(a^2-b^2\right)^{1/4}\,\sqrt{\text{Cos}[e+f\,x]}+b\,\text{Cos}[e+f\,x]\right]+$$

$$\left.\left.\sqrt{2}\,\sqrt{b}\,\text{Log}\left[\sqrt{a^2-b^2}+\sqrt{2}\,\sqrt{b}\,\left(a^2-b^2\right)^{1/4}\,\sqrt{\text{Cos}[e+f\,x]}+b\,\text{Cos}[e+f\,x]\right]\right)\right)$$

- **Problem 1377: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int\frac{(g\,\text{Cos}[e+f\,x])^{3/2}\,\text{Sin}[e+f\,x]^3}{a+b\,\text{Sin}[e+f\,x]}\,dx$$

Optimal (type 4, 621 leaves, 24 steps) :

$$\frac{a^3\left(-a^2+b^2\right)^{1/4}g^{3/2}\,\text{ArcTan}\left[\frac{\sqrt{b}\,\sqrt{g\,\text{Cos}[e+f\,x]}}{\left(-a^2+b^2\right)^{1/4}\sqrt{g}}\right]}{b^{9/2}\,f}+\frac{a^3\left(-a^2+b^2\right)^{1/4}g^{3/2}\,\text{ArcTanh}\left[\frac{\sqrt{b}\,\sqrt{g\,\text{Cos}[e+f\,x]}}{\left(-a^2+b^2\right)^{1/4}\sqrt{g}}\right]}{b^{9/2}\,f}-$$

$$\frac{2\,a^3\,g\,\sqrt{g\,\text{Cos}[e+f\,x]}}{b^4\,f}+\frac{2\,a\,(g\,\text{Cos}[e+f\,x])^{5/2}}{5\,b^2\,f\,g}-\frac{2\,a^4\,g^2\,\sqrt{\text{Cos}[e+f\,x]}\,\text{EllipticF}\left[\frac{1}{2}(e+f\,x),2\right]}{b^5\,f\,\sqrt{g\,\text{Cos}[e+f\,x]}}+$$

$$\frac{2\,a^2\,g^2\,\sqrt{\text{Cos}[e+f\,x]}\,\text{EllipticF}\left[\frac{1}{2}(e+f\,x),2\right]}{3\,b^3\,f\,\sqrt{g\,\text{Cos}[e+f\,x]}}+\frac{4\,g^2\,\sqrt{\text{Cos}[e+f\,x]}\,\text{EllipticF}\left[\frac{1}{2}(e+f\,x),2\right]}{21\,b\,f\,\sqrt{g\,\text{Cos}[e+f\,x]}}+$$

$$\frac{a^4\left(a^2-b^2\right)g^2\,\sqrt{\text{Cos}[e+f\,x]}\,\text{EllipticPi}\left[\frac{2\,b}{b-\sqrt{-a^2+b^2}},\frac{1}{2}(e+f\,x),2\right]}{b^5\left(a^2-b\left(b-\sqrt{-a^2+b^2}\right)\right)f\,\sqrt{g\,\text{Cos}[e+f\,x]}}+\frac{a^4\left(a^2-b^2\right)g^2\,\sqrt{\text{Cos}[e+f\,x]}\,\text{EllipticPi}\left[\frac{2\,b}{b+\sqrt{-a^2+b^2}},\frac{1}{2}(e+f\,x),2\right]}{b^5\left(a^2-b\left(b+\sqrt{-a^2+b^2}\right)\right)f\,\sqrt{g\,\text{Cos}[e+f\,x]}}+$$

$$\frac{2\,a^2\,g\,\sqrt{g\,\text{Cos}[e+f\,x]}\,\text{Sin}[e+f\,x]}{3\,b^3\,f}+\frac{4\,g\,\sqrt{g\,\text{Cos}[e+f\,x]}\,\text{Sin}[e+f\,x]}{21\,b\,f}-\frac{2\,(g\,\text{Cos}[e+f\,x])^{5/2}\,\text{Sin}[e+f\,x]}{7\,b\,f\,g}$$

Result (type 6, 2191 leaves) :

$$-\frac{1}{420\,b^3\,f\,\text{Cos}[e+f\,x]^{3/2}}\,(g\,\text{Cos}[e+f\,x])^{3/2}$$

$$\left(-\frac{1}{\sqrt{1-\text{Cos}[e+f\,x]^2}\,(a+b\,\text{Sin}[e+f\,x])}\,2\left(70\,a^3-19\,a\,b^2\right)\left(a+b\,\sqrt{1-\text{Cos}[e+f\,x]^2}\right)\left(\left(5\,a\left(a^2-b^2\right)\text{AppellF1}\left[\frac{1}{4},\frac{1}{2},1,\frac{5}{4},\text{Cos}[e+f\,x]^2,\right.\right.\right.\right.$$

$$\left.\left.\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]\sqrt{\text{Cos}[e+f\,x]}\right)\Big/\left(\sqrt{1-\text{Cos}[e+f\,x]^2}\left(5\left(a^2-b^2\right)\text{AppellF1}\left[\frac{1}{4},\frac{1}{2},1,\frac{5}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]-\right.\right.$$

$$2\left(2\,b^2\,\text{AppellF1}\left[\frac{5}{4},\frac{1}{2},2,\frac{9}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]+\left(-a^2+b^2\right)\text{AppellF1}\left[\frac{5}{4},\frac{3}{2},1,\frac{9}{4},\right.\right.$$

$$\left.\left.\left.\left.\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]\right)\text{Cos}[e+f\,x]^2\right)\left(a^2+b^2\left(-1+\text{Cos}[e+f\,x]^2\right)\right)\right)-\frac{1}{\left(-a^2+b^2\right)^{3/4}}\left(\frac{1}{8}-\frac{i}{8}\right)\sqrt{b}$$

$$\left(2\,\text{ArcTan}\left[1-\frac{(1+i)\sqrt{b}\,\sqrt{\text{Cos}[e+f\,x]}}{\left(-a^2+b^2\right)^{1/4}}\right]-2\,\text{ArcTan}\left[1+\frac{(1+i)\sqrt{b}\,\sqrt{\text{Cos}[e+f\,x]}}{\left(-a^2+b^2\right)^{1/4}}\right]+\text{Log}\left[\sqrt{-a^2+b^2}-(1+i)\sqrt{b}\left(-a^2+b^2\right)^{1/4}\right.\right.$$

$$\left.\left.\sqrt{\text{Cos}[e+f\,x]}+i\,b\,\text{Cos}[e+f\,x]\right]-\text{Log}\left[\sqrt{-a^2+b^2}+(1+i)\sqrt{b}\left(-a^2+b^2\right)^{1/4}\sqrt{\text{Cos}[e+f\,x]}+i\,b\,\text{Cos}[e+f\,x]\right]\right)\right)\text{Sin}[e+f\,x]+$$

$$\frac{1}{\sqrt{1-\text{Cos}[e+f x]^2}\,\left(-1+2\,\text{Cos}[e+f x]^2\right)\,(a+b\,\text{Sin}[e+f x])}\left(210\,a^3-21\,a\,b^2\right)\left(a+b\sqrt{1-\text{Cos}[e+f x]^2}\right)\text{Cos}[2\,(e+f x)]$$

$$\Bigg(\frac{\left(\frac{1}{2}-\frac{i}{2}\right)\left(-2\,a^2+b^2\right)\text{ArcTan}\left[1-\frac{(1+i)\sqrt{b}\,\sqrt{\text{Cos}[e+f x]}}{\left(-a^2+b^2\right)^{1/4}}\right]}{b^{3/2}\left(-a^2+b^2\right)^{3/4}}-\frac{\left(\frac{1}{2}-\frac{i}{2}\right)\left(-2\,a^2+b^2\right)\text{ArcTan}\left[1+\frac{(1+i)\sqrt{b}\,\sqrt{\text{Cos}[e+f x]}}{\left(-a^2+b^2\right)^{1/4}}\right]}{b^{3/2}\left(-a^2+b^2\right)^{3/4}}+\frac{4\sqrt{\text{Cos}[e+f x]}}{b}+$$

$$\Bigg(10\,a\left(a^2-b^2\right)\text{AppellF1}\left[\frac{1}{4},\frac{1}{2},1,\frac{5}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]\sqrt{\text{Cos}[e+f x]}\Bigg)\Bigg/\Bigg(\sqrt{1-\text{Cos}[e+f x]^2}\,\Bigg(5\left(a^2-b^2\right)$$

$$\text{AppellF1}\left[\frac{1}{4},\frac{1}{2},1,\frac{5}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]-2\,\Bigg(2\,b^2\,\text{AppellF1}\left[\frac{5}{4},\frac{1}{2},2,\frac{9}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]+$$

$$\left(-a^2+b^2\right)\text{AppellF1}\left[\frac{5}{4},\frac{3}{2},1,\frac{9}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]\Bigg)\text{Cos}[e+f x]^2\Bigg)\left(a^2+b^2\left(-1+\text{Cos}[e+f x]^2\right)\right)\Bigg)-$$

$$\Bigg(36\,a\left(a^2-b^2\right)\text{AppellF1}\left[\frac{5}{4},\frac{1}{2},1,\frac{9}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]\text{Cos}[e+f x]^{5/2}\Bigg)\Bigg/\Bigg(5\sqrt{1-\text{Cos}[e+f x]^2}\,\Bigg(9\left(a^2-b^2\right)$$

$$\text{AppellF1}\left[\frac{5}{4},\frac{1}{2},1,\frac{9}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]-2\,\Bigg(2\,b^2\,\text{AppellF1}\left[\frac{9}{4},\frac{1}{2},2,\frac{13}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]+$$

$$\left(-a^2+b^2\right)\text{AppellF1}\left[\frac{9}{4},\frac{3}{2},1,\frac{13}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]\Bigg)\text{Cos}[e+f x]^2\Bigg)\left(a^2+b^2\left(-1+\text{Cos}[e+f x]^2\right)\right)\Bigg)+$$

$$\frac{1}{b^{3/2}\left(-a^2+b^2\right)^{3/4}}\left(\frac{1}{4}-\frac{i}{4}\right)\left(-2\,a^2+b^2\right)\text{Log}\left[\sqrt{-a^2+b^2}-(1+i)\sqrt{b}\left(-a^2+b^2\right)^{1/4}\sqrt{\text{Cos}[e+f x]}+i\,b\,\text{Cos}[e+f x]\right]-$$

$$\frac{1}{b^{3/2}\left(-a^2+b^2\right)^{3/4}}\left(\frac{1}{4}-\frac{i}{4}\right)\left(-2\,a^2+b^2\right)\text{Log}\left[\sqrt{-a^2+b^2}+(1+i)\sqrt{b}\left(-a^2+b^2\right)^{1/4}\sqrt{\text{Cos}[e+f x]}+i\,b\,\text{Cos}[e+f x]\right]\Bigg)\text{Sin}[e+f x]-$$

$$\frac{1}{\left(1-\text{Cos}[e+f x]^2\right)(a+b\,\text{Sin}[e+f x])}\,2\left(-98\,a^2\,b-40\,b^3\right)\left(a+b\sqrt{1-\text{Cos}[e+f x]^2}\right)$$

$$\Bigg(\Bigg(5\,b\left(a^2-b^2\right)\text{AppellF1}\left[\frac{1}{4},-\frac{1}{2},1,\frac{5}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]\sqrt{\text{Cos}[e+f x]}\,\sqrt{1-\text{Cos}[e+f x]^2}\Bigg)\Bigg/$$

$$\Bigg(\Bigg(-5\left(a^2-b^2\right)\text{AppellF1}\left[\frac{1}{4},-\frac{1}{2},1,\frac{5}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]+2\,\Bigg(2\,b^2\,\text{AppellF1}\left[\frac{5}{4},-\frac{1}{2},2,\frac{9}{4},\text{Cos}[e+f x]^2,\right.$$

$$\left.\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]+\left(a^2-b^2\right)\text{AppellF1}\left[\frac{5}{4},\frac{1}{2},1,\frac{9}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]\Bigg)\text{Cos}[e+f x]^2\Bigg)$$

$$\left(a^2+b^2\left(-1+\text{Cos}[e+f x]^2\right)\right)\Bigg)+\frac{1}{4\sqrt{2}\sqrt{b}\left(a^2-b^2\right)^{3/4}}a\left(-2\,\text{ArcTan}\left[1-\frac{\sqrt{2}\sqrt{b}\sqrt{\text{Cos}[e+f x]}}{\left(a^2-b^2\right)^{1/4}}\right]+\right.$$

$$2\,\text{ArcTan}\left[1+\frac{\sqrt{2}\sqrt{b}\sqrt{\text{Cos}[e+f x]}}{\left(a^2-b^2\right)^{1/4}}\right]-\text{Log}\left[\sqrt{a^2-b^2}-\sqrt{2}\sqrt{b}\left(a^2-b^2\right)^{1/4}\sqrt{\text{Cos}[e+f x]}+b\,\text{Cos}[e+f x]\right]+$$

$$\left.\text{Log}\left[\sqrt{a^2-b^2}+\sqrt{2}\sqrt{b}\left(a^2-b^2\right)^{1/4}\sqrt{\text{Cos}[e+f x]}+b\,\text{Cos}[e+f x]\right]\right)\Bigg)\,\text{Sin}[e+f x]^2\Bigg)+$$

$$\frac{(g\,\text{Cos}[e+f x])^{3/2}\,\text{Sec}[e+f x]\left(\frac{a\,\text{Cos}[2(e+f x)]}{5 b^2}+\frac{\left(28 a^2+5 b^2\right)\text{Sin}[e+f x]}{42 b^3}-\frac{\text{Sin}[3(e+f x)]}{14 b}\right)}{f}$$

- **Problem 1378: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int\frac{(g\,\text{Cos}[e+f x])^{3/2}\,\text{Sin}[e+f x]^2}{a+b\,\text{Sin}[e+f x]}\,dx$$

Optimal (type 4, 514 leaves, 20 steps):

$$-\frac{a^2\left(-a^2+b^2\right)^{1/4}g^{3/2}\,\text{ArcTan}\left[\frac{\sqrt{b}\sqrt{g\,\text{Cos}[e+f x]}}{\left(-a^2+b^2\right)^{1/4}\sqrt{g}}\right]}{b^{7/2}f}-\frac{a^2\left(-a^2+b^2\right)^{1/4}g^{3/2}\,\text{ArcTanh}\left[\frac{\sqrt{b}\sqrt{g\,\text{Cos}[e+f x]}}{\left(-a^2+b^2\right)^{1/4}\sqrt{g}}\right]}{b^{7/2}f}+$$

$$\frac{2 a^2 g\sqrt{g\,\text{Cos}[e+f x]}}{b^3 f}-\frac{2(g\,\text{Cos}[e+f x])^{5/2}}{5 b f g}+\frac{2 a^3 g^2\sqrt{\text{Cos}[e+f x]}\,\text{EllipticF}\left[\frac{1}{2}(e+f x),2\right]}{b^4 f\sqrt{g\,\text{Cos}[e+f x]}}-$$

$$\frac{2 a g^2\sqrt{\text{Cos}[e+f x]}\,\text{EllipticF}\left[\frac{1}{2}(e+f x),2\right]}{3 b^2 f\sqrt{g\,\text{Cos}[e+f x]}}-\frac{a^3\left(a^2-b^2\right)g^2\sqrt{\text{Cos}[e+f x]}\,\text{EllipticPi}\left[\frac{2 b}{b-\sqrt{-a^2+b^2}},\frac{1}{2}(e+f x),2\right]}{b^4\left(a^2-b\left(b-\sqrt{-a^2+b^2}\right)\right)f\sqrt{g\,\text{Cos}[e+f x]}}-$$

$$\frac{a^3\left(a^2-b^2\right)g^2\sqrt{\text{Cos}[e+f x]}\,\text{EllipticPi}\left[\frac{2 b}{b+\sqrt{-a^2+b^2}},\frac{1}{2}(e+f x),2\right]}{b^4\left(a^2-b\left(b+\sqrt{-a^2+b^2}\right)\right)f\sqrt{g\,\text{Cos}[e+f x]}}-\frac{2 a g\sqrt{g\,\text{Cos}[e+f x]}\,\text{Sin}[e+f x]}{3 b^2 f}$$

Result (type 6, 2153 leaves):

$$\frac{(g\,\text{Cos}[e+f x])^{3/2}\,\text{Sec}[e+f x]\left(-\frac{\text{Cos}[2(e+f x)]}{5 b}-\frac{2 a\,\text{Sin}[e+f x]}{3 b^2}\right)}{f}+$$

$$\frac{1}{60\, b^2\, f\, \text{Cos}[e+f\,x]^{3/2}} (g\, \text{Cos}[e+f\,x])^{3/2} \Bigg(-\frac{1}{\sqrt{1-\text{Cos}[e+f\,x]^2}\, (a+b\, \text{Sin}[e+f\,x])} 2\, (10\, a^2+3\, b^2) \left(a+b\sqrt{1-\text{Cos}[e+f\,x]^2}\right)$$

$$\Bigg(\Bigg(5\, a\, (a^2-b^2)\, \text{AppellF1}\Big[\frac{1}{4}, \frac{1}{2}, 1, \frac{5}{4}, \text{Cos}[e+f\,x]^2, \frac{b^2\, \text{Cos}[e+f\,x]^2}{-a^2+b^2}\Big] \sqrt{\text{Cos}[e+f\,x]}\Bigg) \Big/ \Bigg(\sqrt{1-\text{Cos}[e+f\,x]^2}\, \Big(5\, (a^2-b^2)$$

$$\text{AppellF1}\Big[\frac{1}{4}, \frac{1}{2}, 1, \frac{5}{4}, \text{Cos}[e+f\,x]^2, \frac{b^2\, \text{Cos}[e+f\,x]^2}{-a^2+b^2}\Big] - 2\, \Big(2\, b^2\, \text{AppellF1}\Big[\frac{5}{4}, \frac{1}{2}, 2, \frac{9}{4}, \text{Cos}[e+f\,x]^2, \frac{b^2\, \text{Cos}[e+f\,x]^2}{-a^2+b^2}\Big] +$$

$$(-a^2+b^2)\, \text{AppellF1}\Big[\frac{5}{4}, \frac{3}{2}, 1, \frac{9}{4}, \text{Cos}[e+f\,x]^2, \frac{b^2\, \text{Cos}[e+f\,x]^2}{-a^2+b^2}\Big]\Big)\, \text{Cos}[e+f\,x]^2\Big) \left(a^2+b^2\, (-1+\text{Cos}[e+f\,x]^2)\right)\Bigg) -$$

$$\frac{1}{(-a^2+b^2)^{3/4}} \left(\frac{1}{8}-\frac{i}{8}\right) \sqrt{b}\, \Bigg(2\, \text{ArcTan}\Big[1-\frac{(1+i)\, \sqrt{b}\, \sqrt{\text{Cos}[e+f\,x]}}{(-a^2+b^2)^{1/4}}\Big] - 2\, \text{ArcTan}\Big[1+\frac{(1+i)\, \sqrt{b}\, \sqrt{\text{Cos}[e+f\,x]}}{(-a^2+b^2)^{1/4}}\Big] +$$

$$\text{Log}\Big[\sqrt{-a^2+b^2} - (1+i)\, \sqrt{b}\, (-a^2+b^2)^{1/4} \sqrt{\text{Cos}[e+f\,x]} + i\, b\, \text{Cos}[e+f\,x]\Big] -$$

$$\text{Log}\Big[\sqrt{-a^2+b^2} + (1+i)\, \sqrt{b}\, (-a^2+b^2)^{1/4} \sqrt{\text{Cos}[e+f\,x]} + i\, b\, \text{Cos}[e+f\,x]\Big]\Bigg)\Bigg)\, \text{Sin}[e+f\,x] +$$

$$\frac{1}{\sqrt{1-\text{Cos}[e+f\,x]^2}\, (-1+2\, \text{Cos}[e+f\,x]^2)\, (a+b\, \text{Sin}[e+f\,x])} (30\, a^2-3\, b^2) \left(a+b\sqrt{1-\text{Cos}[e+f\,x]^2}\right) \text{Cos}[2\, (e+f\,x)]$$

$$\Bigg(\frac{\left(\frac{1}{2}-\frac{i}{2}\right) (-2\, a^2+b^2)\, \text{ArcTan}\Big[1-\frac{(1+i)\, \sqrt{b}\, \sqrt{\text{Cos}[e+f\,x]}}{(-a^2+b^2)^{1/4}}\Big]}{b^{3/2}\, (-a^2+b^2)^{3/4}} - \frac{\left(\frac{1}{2}-\frac{i}{2}\right) (-2\, a^2+b^2)\, \text{ArcTan}\Big[1+\frac{(1+i)\, \sqrt{b}\, \sqrt{\text{Cos}[e+f\,x]}}{(-a^2+b^2)^{1/4}}\Big]}{b^{3/2}\, (-a^2+b^2)^{3/4}} +$$

$$\frac{4\sqrt{\text{Cos}[e+f\,x]}}{b} + \Bigg(10\, a\, (a^2-b^2)\, \text{AppellF1}\Big[\frac{1}{4}, \frac{1}{2}, 1, \frac{5}{4}, \text{Cos}[e+f\,x]^2, \frac{b^2\, \text{Cos}[e+f\,x]^2}{-a^2+b^2}\Big] \sqrt{\text{Cos}[e+f\,x]}\Bigg) \Big/$$

$$\Bigg(\sqrt{1-\text{Cos}[e+f\,x]^2}\, \Big(5\, (a^2-b^2)\, \text{AppellF1}\Big[\frac{1}{4}, \frac{1}{2}, 1, \frac{5}{4}, \text{Cos}[e+f\,x]^2, \frac{b^2\, \text{Cos}[e+f\,x]^2}{-a^2+b^2}\Big] - 2\, \Big(2\, b^2\, \text{AppellF1}\Big[\frac{5}{4}, \frac{1}{2}, 2, \frac{9}{4},$$

$$\text{Cos}[e+f\,x]^2, \frac{b^2\, \text{Cos}[e+f\,x]^2}{-a^2+b^2}\Big] + (-a^2+b^2)\, \text{AppellF1}\Big[\frac{5}{4}, \frac{3}{2}, 1, \frac{9}{4}, \text{Cos}[e+f\,x]^2, \frac{b^2\, \text{Cos}[e+f\,x]^2}{-a^2+b^2}\Big]\Big)\, \text{Cos}[e+f\,x]^2\Big)$$

$$\left(a^2+b^2\, (-1+\text{Cos}[e+f\,x]^2)\right)\Bigg) - \Bigg(36\, a\, (a^2-b^2)\, \text{AppellF1}\Big[\frac{5}{4}, \frac{1}{2}, 1, \frac{9}{4}, \text{Cos}[e+f\,x]^2, \frac{b^2\, \text{Cos}[e+f\,x]^2}{-a^2+b^2}\Big]\, \text{Cos}[e+f\,x]^{5/2}\Bigg) \Big/$$

$$\Bigg(5\sqrt{1-\text{Cos}[e+f\,x]^2}\, \Big(9\, (a^2-b^2)\, \text{AppellF1}\Big[\frac{5}{4}, \frac{1}{2}, 1, \frac{9}{4}, \text{Cos}[e+f\,x]^2, \frac{b^2\, \text{Cos}[e+f\,x]^2}{-a^2+b^2}\Big] -$$

$$2\left(2b^2\,\text{AppellF1}\left[\frac{9}{4},\frac{1}{2},2,\frac{13}{4},\text{Cos}[e+fx]^2,\frac{b^2\,\text{Cos}[e+fx]^2}{-a^2+b^2}\right]+\left(-a^2+b^2\right)\text{AppellF1}\left[\frac{9}{4},\frac{3}{2},1,\frac{13}{4},\text{Cos}[e+fx]^2,\frac{b^2\,\text{Cos}[e+fx]^2}{-a^2+b^2}\right]\right)\text{Cos}[e+fx]^2\Big)\left(a^2+b^2\left(-1+\text{Cos}[e+fx]^2\right)\right)\Big)+$$

$$\frac{1}{b^{3/2}\left(-a^2+b^2\right)^{3/4}}\left(\frac{1}{4}-\frac{i}{4}\right)\left(-2a^2+b^2\right)\text{Log}\left[\sqrt{-a^2+b^2}-(1+i)\sqrt{b}\left(-a^2+b^2\right)^{1/4}\sqrt{\text{Cos}[e+fx]}+i\,b\,\text{Cos}[e+fx]\right]-$$

$$\left.\frac{1}{b^{3/2}\left(-a^2+b^2\right)^{3/4}}\left(\frac{1}{4}-\frac{i}{4}\right)\left(-2a^2+b^2\right)\text{Log}\left[\sqrt{-a^2+b^2}+(1+i)\sqrt{b}\left(-a^2+b^2\right)^{1/4}\sqrt{\text{Cos}[e+fx]}+i\,b\,\text{Cos}[e+fx]\right]\right)\text{Sin}[e+fx]+$$

$$\frac{1}{\left(1-\text{Cos}[e+fx]^2\right)(a+b\,\text{Sin}[e+fx])}28\,a\,b\left(a+b\sqrt{1-\text{Cos}[e+fx]^2}\right)$$

$$\left(\left(5b\left(a^2-b^2\right)\text{AppellF1}\left[\frac{1}{4},-\frac{1}{2},1,\frac{5}{4},\text{Cos}[e+fx]^2,\frac{b^2\,\text{Cos}[e+fx]^2}{-a^2+b^2}\right]\sqrt{\text{Cos}[e+fx]}\sqrt{1-\text{Cos}[e+fx]^2}\right)\Big/\right.$$

$$\left(\left(-5\left(a^2-b^2\right)\text{AppellF1}\left[\frac{1}{4},-\frac{1}{2},1,\frac{5}{4},\text{Cos}[e+fx]^2,\frac{b^2\,\text{Cos}[e+fx]^2}{-a^2+b^2}\right]+2\left(2b^2\,\text{AppellF1}\left[\frac{5}{4},-\frac{1}{2},2,\frac{9}{4},\text{Cos}[e+fx]^2,\right.\right.\right.\right.$$

$$\left.\left.\frac{b^2\,\text{Cos}[e+fx]^2}{-a^2+b^2}\right]+\left(a^2-b^2\right)\text{AppellF1}\left[\frac{5}{4},\frac{1}{2},1,\frac{9}{4},\text{Cos}[e+fx]^2,\frac{b^2\,\text{Cos}[e+fx]^2}{-a^2+b^2}\right]\right)\text{Cos}[e+fx]^2\Big)$$

$$\left.\left(a^2+b^2\left(-1+\text{Cos}[e+fx]^2\right)\right)\right)+\frac{1}{4\sqrt{2}\sqrt{b}\left(a^2-b^2\right)^{3/4}}a\left(-2\,\text{ArcTan}\left[1-\frac{\sqrt{2}\sqrt{b}\sqrt{\text{Cos}[e+fx]}}{\left(a^2-b^2\right)^{1/4}}\right]+\right.$$

$$2\,\text{ArcTan}\left[1+\frac{\sqrt{2}\sqrt{b}\sqrt{\text{Cos}[e+fx]}}{\left(a^2-b^2\right)^{1/4}}\right]-\text{Log}\left[\sqrt{a^2-b^2}-\sqrt{2}\sqrt{b}\left(a^2-b^2\right)^{1/4}\sqrt{\text{Cos}[e+fx]}+b\,\text{Cos}[e+fx]\right]+$$

$$\left.\left.\text{Log}\left[\sqrt{a^2-b^2}+\sqrt{2}\sqrt{b}\left(a^2-b^2\right)^{1/4}\sqrt{\text{Cos}[e+fx]}+b\,\text{Cos}[e+fx]\right]\right)\right)\text{Sin}[e+fx]^2\Bigg)$$

- **Problem 1379: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int\frac{(g\,\text{Cos}[e+fx])^{3/2}\,\text{Sin}[e+fx]}{a+b\,\text{Sin}[e+fx]}\,dx$$

Optimal (type 4, 426 leaves, 13 steps) :

$$\frac{a\left(-a^2+b^2\right)^{1/4} g^{3/2} \operatorname{ArcTan}\left[\frac{\sqrt{b}\sqrt{g\operatorname{Cos}[e+f x]}}{\left(-a^2+b^2\right)^{1/4}\sqrt{g}}\right]}{b^{5/2} f}+\frac{a\left(-a^2+b^2\right)^{1/4} g^{3/2} \operatorname{ArcTanh}\left[\frac{\sqrt{b}\sqrt{g\operatorname{Cos}[e+f x]}}{\left(-a^2+b^2\right)^{1/4}\sqrt{g}}\right]}{b^{5/2} f}-$$

$$\frac{2\left(3 a^2-b^2\right) g^2 \sqrt{\operatorname{Cos}[e+f x]}\ \operatorname{EllipticF}\left[\frac{1}{2}(e+f x), 2\right]}{3 b^3 f \sqrt{g \operatorname{Cos}[e+f x]}}+\frac{a^2\left(a^2-b^2\right) g^2 \sqrt{\operatorname{Cos}[e+f x]}\ \operatorname{EllipticPi}\left[\frac{2 b}{b-\sqrt{-a^2+b^2}}, \frac{1}{2}(e+f x), 2\right]}{b^3\left(a^2-b\left(b-\sqrt{-a^2+b^2}\right)\right) f \sqrt{g \operatorname{Cos}[e+f x]}}+$$

$$\frac{a^2\left(a^2-b^2\right) g^2 \sqrt{\operatorname{Cos}[e+f x]}\ \operatorname{EllipticPi}\left[\frac{2 b}{b+\sqrt{-a^2+b^2}}, \frac{1}{2}(e+f x), 2\right]}{b^3\left(a^2-b\left(b+\sqrt{-a^2+b^2}\right)\right) f \sqrt{g \operatorname{Cos}[e+f x]}}-\frac{2 g \sqrt{g \operatorname{Cos}[e+f x]}\ (3 a-b \operatorname{Sin}[e+f x])}{3 b^2 f}$$

Result (type 6, 2109 leaves) :

$$-\frac{1}{6 b f \operatorname{Cos}[e+f x]^{3/2}} (g \operatorname{Cos}[e+f x])^{3/2}$$

$$\left(-\frac{1}{\sqrt{1-\operatorname{Cos}[e+f x]^2}\ (a+b \operatorname{Sin}[e+f x])} 2 a \left(a+b\sqrt{1-\operatorname{Cos}[e+f x]^2}\right)\left(\left(5 a\left(a^2-b^2\right) \operatorname{AppellF1}\left[\frac{1}{4}, \frac{1}{2}, 1, \frac{5}{4}, \operatorname{Cos}[e+f x]^2, \frac{b^2 \operatorname{Cos}[e+f x]^2}{-a^2+b^2}\right]\right.\right.\right.$$

$$\left.\sqrt{\operatorname{Cos}[e+f x]}\right) \Big/ \left(\sqrt{1-\operatorname{Cos}[e+f x]^2}\left(5\left(a^2-b^2\right) \operatorname{AppellF1}\left[\frac{1}{4}, \frac{1}{2}, 1, \frac{5}{4}, \operatorname{Cos}[e+f x]^2, \frac{b^2 \operatorname{Cos}[e+f x]^2}{-a^2+b^2}\right]-\right.\right.$$

$$2\left(2 b^2 \operatorname{AppellF1}\left[\frac{5}{4}, \frac{1}{2}, 2, \frac{9}{4}, \operatorname{Cos}[e+f x]^2, \frac{b^2 \operatorname{Cos}[e+f x]^2}{-a^2+b^2}\right]+\left(-a^2+b^2\right) \operatorname{AppellF1}\left[\frac{5}{4}, \frac{3}{2}, 1, \frac{9}{4},\right.\right.$$

$$\left.\left.\left.\operatorname{Cos}[e+f x]^2, \frac{b^2 \operatorname{Cos}[e+f x]^2}{-a^2+b^2}\right]\right) \operatorname{Cos}[e+f x]^2\right)\left(a^2+b^2\left(-1+\operatorname{Cos}[e+f x]^2\right)\right)\right)-\frac{1}{\left(-a^2+b^2\right)^{3/4}}\left(\frac{1}{8}-\frac{i}{8}\right) \sqrt{b}$$

$$\left(2 \operatorname{ArcTan}\left[1-\frac{(1+i) \sqrt{b} \sqrt{\operatorname{Cos}[e+f x]}}{\left(-a^2+b^2\right)^{1/4}}\right]-2 \operatorname{ArcTan}\left[1+\frac{(1+i) \sqrt{b} \sqrt{\operatorname{Cos}[e+f x]}}{\left(-a^2+b^2\right)^{1/4}}\right]+\operatorname{Log}\left[\sqrt{-a^2+b^2}-(1+i) \sqrt{b}\left(-a^2+b^2\right)^{1/4}\right.\right.$$

$$\left.\left.\left.\sqrt{\operatorname{Cos}[e+f x]}+i b \operatorname{Cos}[e+f x]\right]-\operatorname{Log}\left[\sqrt{-a^2+b^2}+(1+i) \sqrt{b}\left(-a^2+b^2\right)^{1/4} \sqrt{\operatorname{Cos}[e+f x]}+i b \operatorname{Cos}[e+f x]\right]\right)\right) \operatorname{Sin}[e+f x]+$$

$$\frac{1}{\sqrt{1-\operatorname{Cos}[e+f x]^2}\left(-1+2 \operatorname{Cos}[e+f x]^2\right)(a+b \operatorname{Sin}[e+f x])} 3 a\left(a+b \sqrt{1-\operatorname{Cos}[e+f x]^2}\right) \operatorname{Cos}[2(e+f x)]$$

$$\left(\frac{\left(\frac{1}{2}-\frac{i}{2}\right)\left(-2 a^2+b^2\right) \operatorname{ArcTan}\left[1-\frac{(1+i) \sqrt{b} \sqrt{\operatorname{Cos}[e+f x]}}{\left(-a^2+b^2\right)^{1/4}}\right]}{b^{3/2}\left(-a^2+b^2\right)^{3/4}}-\frac{\left(\frac{1}{2}-\frac{i}{2}\right)\left(-2 a^2+b^2\right) \operatorname{ArcTan}\left[1+\frac{(1+i) \sqrt{b} \sqrt{\operatorname{Cos}[e+f x]}}{\left(-a^2+b^2\right)^{1/4}}\right]}{b^{3/2}\left(-a^2+b^2\right)^{3/4}}+\frac{4 \sqrt{\operatorname{Cos}[e+f x]}}{b}+\right.$$

$$\left(10\,a\,(a^2-b^2)\,\text{AppellF1}\left[\frac{1}{4},\frac{1}{2},1,\frac{5}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]\sqrt{\text{Cos}[e+f\,x]}\right)\Bigg/\left(\sqrt{1-\text{Cos}[e+f\,x]^2}\,\left(5\,(a^2-b^2)\,\text{AppellF1}\left[\frac{1}{4},\frac{1}{2},1,\frac{5}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]-2\left(2\,b^2\,\text{AppellF1}\left[\frac{5}{4},\frac{1}{2},2,\frac{9}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]+(-a^2+b^2)\,\text{AppellF1}\left[\frac{5}{4},\frac{3}{2},1,\frac{9}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]\right)\text{Cos}[e+f\,x]^2\right)\left(a^2+b^2\left(-1+\text{Cos}[e+f\,x]^2\right)\right)\right)-$$

$$\left(36\,a\,(a^2-b^2)\,\text{AppellF1}\left[\frac{5}{4},\frac{1}{2},1,\frac{9}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]\text{Cos}[e+f\,x]^{5/2}\right)\Bigg/\left(5\sqrt{1-\text{Cos}[e+f\,x]^2}\,\left(9\,(a^2-b^2)\,\text{AppellF1}\left[\frac{5}{4},\frac{1}{2},1,\frac{9}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]-2\left(2\,b^2\,\text{AppellF1}\left[\frac{9}{4},\frac{1}{2},2,\frac{13}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]+(-a^2+b^2)\,\text{AppellF1}\left[\frac{9}{4},\frac{3}{2},1,\frac{13}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]\right)\text{Cos}[e+f\,x]^2\right)\left(a^2+b^2\left(-1+\text{Cos}[e+f\,x]^2\right)\right)\right)+$$

$$\frac{1}{b^{3/2}\,(-a^2+b^2)^{3/4}}\left(\frac{1}{4}-\frac{i}{4}\right)(-2\,a^2+b^2)\,\text{Log}\left[\sqrt{-a^2+b^2}-(1+i)\sqrt{b}\,(-a^2+b^2)^{1/4}\sqrt{\text{Cos}[e+f\,x]}+i\,b\,\text{Cos}[e+f\,x]\right]-$$

$$\left.\frac{1}{b^{3/2}\,(-a^2+b^2)^{3/4}}\left(\frac{1}{4}-\frac{i}{4}\right)(-2\,a^2+b^2)\,\text{Log}\left[\sqrt{-a^2+b^2}+(1+i)\sqrt{b}\,(-a^2+b^2)^{1/4}\sqrt{\text{Cos}[e+f\,x]}+i\,b\,\text{Cos}[e+f\,x]\right]\right)\text{Sin}[e+f\,x]+$$

$$\frac{1}{\left(1-\text{Cos}[e+f\,x]^2\right)(a+b\,\text{Sin}[e+f\,x])}\,4\,b\left(a+b\sqrt{1-\text{Cos}[e+f\,x]^2}\right)$$

$$\left(\left(5\,b\,(a^2-b^2)\,\text{AppellF1}\left[\frac{1}{4},-\frac{1}{2},1,\frac{5}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]\sqrt{\text{Cos}[e+f\,x]}\,\sqrt{1-\text{Cos}[e+f\,x]^2}\right)\Bigg/\right.$$

$$\left(\left(-5\,(a^2-b^2)\,\text{AppellF1}\left[\frac{1}{4},-\frac{1}{2},1,\frac{5}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]+2\left(2\,b^2\,\text{AppellF1}\left[\frac{5}{4},-\frac{1}{2},2,\frac{9}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]+(a^2-b^2)\,\text{AppellF1}\left[\frac{5}{4},\frac{1}{2},1,\frac{9}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]\right)\text{Cos}[e+f\,x]^2\right)\left(a^2+b^2\left(-1+\text{Cos}[e+f\,x]^2\right)\right)\right)+\frac{1}{4\sqrt{2}\,\sqrt{b}\,(a^2-b^2)^{3/4}}\,a\left(-2\,\text{ArcTan}\left[1-\frac{\sqrt{2}\,\sqrt{b}\,\sqrt{\text{Cos}[e+f\,x]}}{(a^2-b^2)^{1/4}}\right]+\right.$$

$$2\,\text{ArcTan}\left[1+\frac{\sqrt{2}\,\sqrt{b}\,\sqrt{\text{Cos}[e+f\,x]}}{(a^2-b^2)^{1/4}}\right]-\text{Log}\left[\sqrt{a^2-b^2}-\sqrt{2}\,\sqrt{b}\,(a^2-b^2)^{1/4}\sqrt{\text{Cos}[e+f\,x]}+b\,\text{Cos}[e+f\,x]\right]+$$

$$\left.\left.\left.\text{Log}\left[\sqrt{a^2-b^2}+\sqrt{2}\,\sqrt{b}\,\left(a^2-b^2\right)^{1/4}\sqrt{\text{Cos}[e+f\,x]}+b\,\text{Cos}[e+f\,x]\right]\right)\right)\text{Sin}[e+f\,x]^2\right)+\frac{2\,(g\,\text{Cos}[e+f\,x])^{3/2}\,\text{Tan}[e+f\,x]}{3\,b\,f}$$

- **Problem 1380: Result unnecessarily involves higher level functions.**

$$\int\frac{(g\,\text{Cos}[e+f\,x])^{3/2}\,\text{Csc}[e+f\,x]}{a+b\,\text{Sin}[e+f\,x]}\,dx$$

Optimal (type 4, 439 leaves, 21 steps):

$$-\frac{g^{3/2}\,\text{ArcTan}\left[\frac{\sqrt{g\,\text{Cos}[e+f\,x]}}{\sqrt{g}}\right]}{a\,f}+\frac{\left(-a^2+b^2\right)^{1/4}g^{3/2}\,\text{ArcTan}\left[\frac{\sqrt{b}\,\sqrt{g\,\text{Cos}[e+f\,x]}}{\left(-a^2+b^2\right)^{1/4}\sqrt{g}}\right]}{a\,\sqrt{b}\,f}-\frac{g^{3/2}\,\text{ArcTanh}\left[\frac{\sqrt{g\,\text{Cos}[e+f\,x]}}{\sqrt{g}}\right]}{a\,f}+$$

$$\frac{\left(-a^2+b^2\right)^{1/4}g^{3/2}\,\text{ArcTanh}\left[\frac{\sqrt{b}\,\sqrt{g\,\text{Cos}[e+f\,x]}}{\left(-a^2+b^2\right)^{1/4}\sqrt{g}}\right]}{a\,\sqrt{b}\,f}-\frac{2\,g^2\,\sqrt{\text{Cos}[e+f\,x]}\,\text{EllipticF}\left[\frac{1}{2}\,(e+f\,x),\,2\right]}{b\,f\,\sqrt{g\,\text{Cos}[e+f\,x]}}+$$

$$\frac{\left(a^2-b^2\right)g^2\,\sqrt{\text{Cos}[e+f\,x]}\,\text{EllipticPi}\left[\frac{2\,b}{b-\sqrt{-a^2+b^2}},\,\frac{1}{2}\,(e+f\,x),\,2\right]}{b\left(a^2-b\left(b-\sqrt{-a^2+b^2}\right)\right)f\,\sqrt{g\,\text{Cos}[e+f\,x]}}+\frac{\left(a^2-b^2\right)g^2\,\sqrt{\text{Cos}[e+f\,x]}\,\text{EllipticPi}\left[\frac{2\,b}{b+\sqrt{-a^2+b^2}},\,\frac{1}{2}\,(e+f\,x),\,2\right]}{b\left(a^2-b\left(b+\sqrt{-a^2+b^2}\right)\right)f\,\sqrt{g\,\text{Cos}[e+f\,x]}}$$

Result (type 6, 700 leaves):

$$-\frac{1}{f\,\mathrm{Cos}[e+f x]^{3/2}\left(1-\mathrm{Cos}[e+f x]^2\right)\left(b+a\,\mathrm{Csc}[e+f x]\right)}\,2\,(g\,\mathrm{Cos}[e+f x])^{3/2}\left(-1+\mathrm{Cos}[e+f x]^2\right)\left(a+b\sqrt{1-\mathrm{Cos}[e+f x]^2}\right)$$

$$\mathrm{Csc}[e+f x]\left(\left(9\,b\left(a^2-b^2\right)\mathrm{AppellF1}\left[\frac{5}{4},\frac{1}{2},1,\frac{9}{4},\mathrm{Cos}[e+f x]^2,\frac{b^2\,\mathrm{Cos}[e+f x]^2}{-a^2+b^2}\right]\mathrm{Cos}[e+f x]^{5/2}\right)\Big/\left(5\sqrt{1-\mathrm{Cos}[e+f x]^2}\right.\right.$$

$$\left(9\left(a^2-b^2\right)\mathrm{AppellF1}\left[\frac{5}{4},\frac{1}{2},1,\frac{9}{4},\mathrm{Cos}[e+f x]^2,\frac{b^2\,\mathrm{Cos}[e+f x]^2}{-a^2+b^2}\right]-2\left(2\,b^2\,\mathrm{AppellF1}\left[\frac{9}{4},\frac{1}{2},2,\frac{13}{4},\mathrm{Cos}[e+f x]^2,\frac{b^2\,\mathrm{Cos}[e+f x]^2}{-a^2+b^2}\right]+\right.\right.$$

$$\left.\left.\left.\left(-a^2+b^2\right)\mathrm{AppellF1}\left[\frac{9}{4},\frac{3}{2},1,\frac{13}{4},\mathrm{Cos}[e+f x]^2,\frac{b^2\,\mathrm{Cos}[e+f x]^2}{-a^2+b^2}\right]\right)\mathrm{Cos}[e+f x]^2\right)\left(a^2+b^2\left(-1+\mathrm{Cos}[e+f x]^2\right)\right)\right)-$$

$$\frac{1}{8\,a\sqrt{b}}\left(2\sqrt{2}\left(a^2-b^2\right)^{1/4}\mathrm{ArcTan}\left[1-\frac{\sqrt{2}\sqrt{b}\sqrt{\mathrm{Cos}[e+f x]}}{\left(a^2-b^2\right)^{1/4}}\right]-2\sqrt{2}\left(a^2-b^2\right)^{1/4}\mathrm{ArcTan}\left[1+\frac{\sqrt{2}\sqrt{b}\sqrt{\mathrm{Cos}[e+f x]}}{\left(a^2-b^2\right)^{1/4}}\right]+\right.$$

$$4\sqrt{b}\,\mathrm{ArcTan}\left[\sqrt{\mathrm{Cos}[e+f x]}\right]-2\sqrt{b}\,\mathrm{Log}\left[1-\sqrt{\mathrm{Cos}[e+f x]}\right]+2\sqrt{b}\,\mathrm{Log}\left[1+\sqrt{\mathrm{Cos}[e+f x]}\right]+$$

$$\sqrt{2}\left(a^2-b^2\right)^{1/4}\mathrm{Log}\left[\sqrt{a^2-b^2}-\sqrt{2}\sqrt{b}\left(a^2-b^2\right)^{1/4}\sqrt{\mathrm{Cos}[e+f x]}+b\,\mathrm{Cos}[e+f x]\right]-$$

$$\left.\left.\sqrt{2}\left(a^2-b^2\right)^{1/4}\mathrm{Log}\left[\sqrt{a^2-b^2}+\sqrt{2}\sqrt{b}\left(a^2-b^2\right)^{1/4}\sqrt{\mathrm{Cos}[e+f x]}+b\,\mathrm{Cos}[e+f x]\right]\right)\right)$$

- **Problem 1381: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int\frac{(g\,\mathrm{Cos}[e+f x])^{3/2}\,\mathrm{Csc}[e+f x]^2}{a+b\,\mathrm{Sin}[e+f x]}\,dx$$

Optimal (type 4, 469 leaves, 24 steps):

$$\frac{b\,g^{3/2}\,\mathrm{ArcTan}\left[\frac{\sqrt{g\,\mathrm{Cos}[e+f x]}}{\sqrt{g}}\right]}{a^2 f}-\frac{\sqrt{b}\left(-a^2+b^2\right)^{1/4}g^{3/2}\,\mathrm{ArcTan}\left[\frac{\sqrt{b}\sqrt{g\,\mathrm{Cos}[e+f x]}}{\left(-a^2+b^2\right)^{1/4}\sqrt{g}}\right]}{a^2 f}+\frac{b\,g^{3/2}\,\mathrm{ArcTanh}\left[\frac{\sqrt{g\,\mathrm{Cos}[e+f x]}}{\sqrt{g}}\right]}{a^2 f}-$$

$$\frac{\sqrt{b}\left(-a^2+b^2\right)^{1/4}g^{3/2}\,\mathrm{ArcTanh}\left[\frac{\sqrt{b}\sqrt{g\,\mathrm{Cos}[e+f x]}}{\left(-a^2+b^2\right)^{1/4}\sqrt{g}}\right]}{a^2 f}-\frac{g\sqrt{g\,\mathrm{Cos}[e+f x]}\,\mathrm{Csc}[e+f x]}{a f}+\frac{g^2\sqrt{\mathrm{Cos}[e+f x]}\,\mathrm{EllipticF}\left[\frac{1}{2}(e+f x),2\right]}{a f\sqrt{g\,\mathrm{Cos}[e+f x]}}-$$

$$\frac{\left(a^2-b^2\right)g^2\sqrt{\mathrm{Cos}[e+f x]}\,\mathrm{EllipticPi}\left[\frac{2 b}{b-\sqrt{-a^2+b^2}},\frac{1}{2}(e+f x),2\right]}{a\left(a^2-b\left(b-\sqrt{-a^2+b^2}\right)\right)f\sqrt{g\,\mathrm{Cos}[e+f x]}}-\frac{\left(a^2-b^2\right)g^2\sqrt{\mathrm{Cos}[e+f x]}\,\mathrm{EllipticPi}\left[\frac{2 b}{b+\sqrt{-a^2+b^2}},\frac{1}{2}(e+f x),2\right]}{a\left(a^2-b\left(b+\sqrt{-a^2+b^2}\right)\right)f\sqrt{g\,\mathrm{Cos}[e+f x]}}$$

Result (type 6, 2381 leaves):

$$-\frac{1}{4\,a\,f\,\mathrm{Cos}[e+f x]^{3/2}}\,(g\,\mathrm{Cos}[e+f x])^{3/2}$$

$$\Bigg(-\frac{1}{\sqrt{1-\text{Cos}[e+f x]^2}\ (b+a\,\text{Csc}[e+f x])}\,4\,a\left(a+b\sqrt{1-\text{Cos}[e+f x]^2}\right)\Bigg(\Bigg(5\,a\left(a^2-b^2\right)\text{AppellF1}\left[\frac{1}{4},\frac{1}{2},1,\frac{5}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]$$

$$\sqrt{\text{Cos}[e+f x]}\Bigg)\Bigg/\Bigg(\sqrt{1-\text{Cos}[e+f x]^2}\,\Bigg(5\left(a^2-b^2\right)\text{AppellF1}\left[\frac{1}{4},\frac{1}{2},1,\frac{5}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]-$$

$$2\Bigg(2\,b^2\,\text{AppellF1}\left[\frac{5}{4},\frac{1}{2},2,\frac{9}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]+\left(-a^2+b^2\right)\text{AppellF1}\Bigg[\frac{5}{4},\frac{3}{2},1,\frac{9}{4},$$

$$\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\Bigg]\Bigg)\text{Cos}[e+f x]^2\Bigg)\left(a^2+b^2\left(-1+\text{Cos}[e+f x]^2\right)\right)\Bigg)-\frac{1}{\left(-a^2+b^2\right)^{3/4}}$$

$$\left(\frac{1}{8}-\frac{i}{8}\right)\sqrt{b}\,\Bigg(2\,\text{ArcTan}\left[1-\frac{(1+i)\sqrt{b}\,\sqrt{\text{Cos}[e+f x]}}{\left(-a^2+b^2\right)^{1/4}}\right]-2\,\text{ArcTan}\left[1+\frac{(1+i)\sqrt{b}\,\sqrt{\text{Cos}[e+f x]}}{\left(-a^2+b^2\right)^{1/4}}\right]+\text{Log}\Big[\sqrt{-a^2+b^2}-(1+i)\sqrt{b}$$

$$\left(-a^2+b^2\right)^{1/4}\sqrt{\text{Cos}[e+f x]}+i\,b\,\text{Cos}[e+f x]\Big]-\text{Log}\left[\sqrt{-a^2+b^2}+(1+i)\sqrt{b}\left(-a^2+b^2\right)^{1/4}\sqrt{\text{Cos}[e+f x]}+i\,b\,\text{Cos}[e+f x]\right]\Bigg)\Bigg)-$$

$$\frac{1}{\left(1-\text{Cos}[e+f x]^2\right)\left(-1+2\,\text{Cos}[e+f x]^2\right)(b+a\,\text{Csc}[e+f x])}\,b\left(-1+\text{Cos}[e+f x]^2\right)\left(a+b\sqrt{1-\text{Cos}[e+f x]^2}\right)\text{Cos}[2\,(e+f x)]$$

$$\text{Csc}[e+f x]\Bigg(\frac{\left(a^2-b^2\right)^{1/4}\left(-2\,a^2+b^2\right)\text{ArcTan}\left[\frac{-\sqrt{2}\,\left(a^2-b^2\right)^{1/4}+2\sqrt{b}\,\sqrt{\text{Cos}[e+f x]}}{\sqrt{2}\,\left(a^2-b^2\right)^{1/4}}\right]}{\sqrt{2}\,a\sqrt{b}\left(-a^2+b^2\right)}+\frac{\left(a^2-b^2\right)^{1/4}\left(-2\,a^2+b^2\right)\text{ArcTan}\left[\frac{\sqrt{2}\,\left(a^2-b^2\right)^{1/4}+2\sqrt{b}\,\sqrt{\text{Cos}[e+f x]}}{\sqrt{2}\,\left(a^2-b^2\right)^{1/4}}\right]}{\sqrt{2}\,a\sqrt{b}\left(-a^2+b^2\right)}-$$

$$\frac{\text{ArcTan}\left[\sqrt{\text{Cos}[e+f x]}\right]}{a}-\Bigg(10\,b\left(a^2-b^2\right)\text{AppellF1}\left[\frac{1}{4},\frac{1}{2},1,\frac{5}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]\sqrt{\text{Cos}[e+f x]}\Bigg)\Bigg/$$

$$\Bigg(\sqrt{1-\text{Cos}[e+f x]^2}\,\Bigg(5\left(a^2-b^2\right)\text{AppellF1}\left[\frac{1}{4},\frac{1}{2},1,\frac{5}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]-2\Bigg(2\,b^2\,\text{AppellF1}\Bigg[\frac{5}{4},\frac{1}{2},2,\frac{9}{4},$$

$$\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\Bigg]+\left(-a^2+b^2\right)\text{AppellF1}\left[\frac{5}{4},\frac{3}{2},1,\frac{9}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]\Bigg)\text{Cos}[e+f x]^2\Bigg)$$

$$\left(a^2+b^2\left(-1+\text{Cos}[e+f x]^2\right)\right)\Bigg)+\Bigg(36\,b\left(a^2-b^2\right)\text{AppellF1}\left[\frac{5}{4},\frac{1}{2},1,\frac{9}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]\text{Cos}[e+f x]^{5/2}\Bigg)\Bigg/$$

$$\Bigg(5\sqrt{1-\text{Cos}[e+f x]^2}\,\Bigg(9\left(a^2-b^2\right)\text{AppellF1}\left[\frac{5}{4},\frac{1}{2},1,\frac{9}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]-2$$

$$\Bigg(2\,b^2\,\text{AppellF1}\left[\frac{9}{4},\frac{1}{2},2,\frac{13}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]+\left(-a^2+b^2\right)\text{AppellF1}\Bigg[\frac{9}{4},\frac{3}{2},1,\frac{13}{4},$$

$$\left.\left.\left.\text{Cos}[e+f x]^2,\ \frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]\right)\text{Cos}[e+f x]^2\right)\left(a^2+b^2\left(-1+\text{Cos}[e+f x]^2\right)\right)\right)+\frac{\text{Log}\left[1-\sqrt{\text{Cos}[e+f x]}\right]}{2 a}-$$

$$\frac{\text{Log}\left[1+\sqrt{\text{Cos}[e+f x]}\right]}{2 a}-\frac{\left(a^2-b^2\right)^{1/4}\left(-2 a^2+b^2\right)\text{Log}\left[\sqrt{a^2-b^2}-\sqrt{2}\,\sqrt{b}\,\left(a^2-b^2\right)^{1/4}\sqrt{\text{Cos}[e+f x]}+b\,\text{Cos}[e+f x]\right]}{2\sqrt{2}\,a\sqrt{b}\,\left(-a^2+b^2\right)}+$$

$$\left.\frac{\left(a^2-b^2\right)^{1/4}\left(-2 a^2+b^2\right)\text{Log}\left[\sqrt{a^2-b^2}+\sqrt{2}\,\sqrt{b}\,\left(a^2-b^2\right)^{1/4}\sqrt{\text{Cos}[e+f x]}+b\,\text{Cos}[e+f x]\right]}{2\sqrt{2}\,a\sqrt{b}\,\left(-a^2+b^2\right)}\right)-$$

$$\frac{1}{\left(1-\text{Cos}[e+f x]^2\right)\left(b+a\,\text{Csc}[e+f x]\right)}\,6\,b\left(-1+\text{Cos}[e+f x]^2\right)\left(a+b\sqrt{1-\text{Cos}[e+f x]^2}\right)\text{Csc}[e+f x]$$

$$\left(\left(5\,b\left(a^2-b^2\right)\text{AppellF1}\left[\frac{1}{4},\frac{1}{2},1,\frac{5}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]\sqrt{\text{Cos}[e+f x]}\right)\Big/\left(\sqrt{1-\text{Cos}[e+f x]^2}\left(5\left(a^2-b^2\right)\right.\right.\right.$$

$$\text{AppellF1}\left[\frac{1}{4},\frac{1}{2},1,\frac{5}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]-2\left(2\,b^2\,\text{AppellF1}\left[\frac{5}{4},\frac{1}{2},2,\frac{9}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]+\right.$$

$$\left.\left.\left.\left(-a^2+b^2\right)\text{AppellF1}\left[\frac{5}{4},\frac{3}{2},1,\frac{9}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]\right)\text{Cos}[e+f x]^2\right)\left(a^2+b^2\left(-1+\text{Cos}[e+f x]^2\right)\right)\right)-$$

$$\frac{1}{8 a\left(a^2-b^2\right)^{3/4}}\left(-2\sqrt{2}\,b^{3/2}\,\text{ArcTan}\left[1-\frac{\sqrt{2}\,\sqrt{b}\,\sqrt{\text{Cos}[e+f x]}}{\left(a^2-b^2\right)^{1/4}}\right]+2\sqrt{2}\,b^{3/2}\,\text{ArcTan}\left[1+\frac{\sqrt{2}\,\sqrt{b}\,\sqrt{\text{Cos}[e+f x]}}{\left(a^2-b^2\right)^{1/4}}\right]+\right.$$

$$4\left(a^2-b^2\right)^{3/4}\text{ArcTan}\left[\sqrt{\text{Cos}[e+f x]}\right]-2\left(a^2-b^2\right)^{3/4}\text{Log}\left[1-\sqrt{\text{Cos}[e+f x]}\right]+$$

$$2\left(a^2-b^2\right)^{3/4}\text{Log}\left[1+\sqrt{\text{Cos}[e+f x]}\right]-\sqrt{2}\,b^{3/2}\,\text{Log}\left[\sqrt{a^2-b^2}-\sqrt{2}\,\sqrt{b}\,\left(a^2-b^2\right)^{1/4}\sqrt{\text{Cos}[e+f x]}+b\,\text{Cos}[e+f x]\right]+$$

$$\left.\left.\left.\sqrt{2}\,b^{3/2}\,\text{Log}\left[\sqrt{a^2-b^2}+\sqrt{2}\,\sqrt{b}\,\left(a^2-b^2\right)^{1/4}\sqrt{\text{Cos}[e+f x]}+b\,\text{Cos}[e+f x]\right]\right)\right)\right)-\frac{\left(g\,\text{Cos}[e+f x]\right)^{3/2}\text{Csc}[e+f x]\,\text{Sec}[e+f x]}{a f}$$

- **Problem 1382: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int\frac{\left(g\,\text{Cos}[e+f x]\right)^{3/2}\text{Csc}[e+f x]^3}{a+b\,\text{Sin}[e+f x]}\,dx$$

Optimal (type 4, 574 leaves, 30 steps) :

$$\frac{g^{3/2}\,\text{ArcTan}\left[\frac{\sqrt{g\,\text{Cos}[e+f\,x]}}{\sqrt{g}}\right]}{4\,a\,f}-\frac{b^2\,g^{3/2}\,\text{ArcTan}\left[\frac{\sqrt{g\,\text{Cos}[e+f\,x]}}{\sqrt{g}}\right]}{a^3\,f}+\frac{b^{3/2}\,\left(-a^2+b^2\right)^{1/4}\,g^{3/2}\,\text{ArcTan}\left[\frac{\sqrt{b}\,\sqrt{g\,\text{Cos}[e+f\,x]}}{\left(-a^2+b^2\right)^{1/4}\,\sqrt{g}}\right]}{a^3\,f}+$$

$$\frac{g^{3/2}\,\text{ArcTanh}\left[\frac{\sqrt{g\,\text{Cos}[e+f\,x]}}{\sqrt{g}}\right]}{4\,a\,f}-\frac{b^2\,g^{3/2}\,\text{ArcTanh}\left[\frac{\sqrt{g\,\text{Cos}[e+f\,x]}}{\sqrt{g}}\right]}{a^3\,f}+\frac{b^{3/2}\,\left(-a^2+b^2\right)^{1/4}\,g^{3/2}\,\text{ArcTanh}\left[\frac{\sqrt{b}\,\sqrt{g\,\text{Cos}[e+f\,x]}}{\left(-a^2+b^2\right)^{1/4}\,\sqrt{g}}\right]}{a^3\,f}+$$

$$\frac{b\,g\,\sqrt{g\,\text{Cos}[e+f\,x]}\,\text{Csc}[e+f\,x]}{a^2\,f}-\frac{g\,\sqrt{g\,\text{Cos}[e+f\,x]}\,\text{Csc}[e+f\,x]^2}{2\,a\,f}-\frac{b\,g^2\,\sqrt{\text{Cos}[e+f\,x]}\,\text{EllipticF}\left[\frac{1}{2}\,(e+f\,x),2\right]}{a^2\,f\,\sqrt{g\,\text{Cos}[e+f\,x]}}+$$

$$\frac{b\,\left(a^2-b^2\right)\,g^2\,\sqrt{\text{Cos}[e+f\,x]}\,\text{EllipticPi}\left[\frac{2\,b}{b-\sqrt{-a^2+b^2}},\frac{1}{2}\,(e+f\,x),2\right]}{a^2\,\left(a^2-b\,\left(b-\sqrt{-a^2+b^2}\right)\right)\,f\,\sqrt{g\,\text{Cos}[e+f\,x]}}+\frac{b\,\left(a^2-b^2\right)\,g^2\,\sqrt{\text{Cos}[e+f\,x]}\,\text{EllipticPi}\left[\frac{2\,b}{b+\sqrt{-a^2+b^2}},\frac{1}{2}\,(e+f\,x),2\right]}{a^2\,\left(a^2-b\,\left(b+\sqrt{-a^2+b^2}\right)\right)\,f\,\sqrt{g\,\text{Cos}[e+f\,x]}}$$

Result (type 6, 2411 leaves) :

$$\frac{1}{4\,a^2\,f\,\text{Cos}[e+f\,x]^{3/2}}(g\,\text{Cos}[e+f\,x])^{3/2}\left(-\frac{1}{\sqrt{1-\text{Cos}[e+f\,x]^2}\,(b+a\,\text{Csc}[e+f\,x])}2\,a\,b\,\left(a+b\,\sqrt{1-\text{Cos}[e+f\,x]^2}\right)\left(\left(5\,a\,\left(a^2-b^2\right)\,\text{AppellF1}\left[\frac{1}{4},\frac{1}{2},1,\frac{5}{4},\text{Cos}[e+f\,x]^2,\right.\right.\right.\right.$$

$$\left.\left.\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]\sqrt{\text{Cos}[e+f\,x]}\right)\Big/\left(\sqrt{1-\text{Cos}[e+f\,x]^2}\,\left(5\,\left(a^2-b^2\right)\,\text{AppellF1}\left[\frac{1}{4},\frac{1}{2},1,\frac{5}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]-2\right.\right.$$

$$\left(2\,b^2\,\text{AppellF1}\left[\frac{5}{4},\frac{1}{2},2,\frac{9}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]+\left(-a^2+b^2\right)\,\text{AppellF1}\left[\frac{5}{4},\frac{3}{2},1,\frac{9}{4},\right.\right.$$

$$\left.\left.\left.\left.\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]\right)\text{Cos}[e+f\,x]^2\right)\left(a^2+b^2\,\left(-1+\text{Cos}[e+f\,x]^2\right)\right)\right)-\frac{1}{\left(-a^2+b^2\right)^{3/4}}$$

$$\left(\frac{1}{8}-\frac{i}{8}\right)\sqrt{b}\,\left(2\,\text{ArcTan}\left[1-\frac{(1+i)\,\sqrt{b}\,\sqrt{\text{Cos}[e+f\,x]}}{\left(-a^2+b^2\right)^{1/4}}\right]-2\,\text{ArcTan}\left[1+\frac{(1+i)\,\sqrt{b}\,\sqrt{\text{Cos}[e+f\,x]}}{\left(-a^2+b^2\right)^{1/4}}\right]+\text{Log}\left[\sqrt{-a^2+b^2}-(1+i)\,\sqrt{b}\right.\right.$$

$$\left.\left.\left.\left(-a^2+b^2\right)^{1/4}\sqrt{\text{Cos}[e+f\,x]}+i\,b\,\text{Cos}[e+f\,x]\right]-\text{Log}\left[\sqrt{-a^2+b^2}+(1+i)\,\sqrt{b}\,\left(-a^2+b^2\right)^{1/4}\sqrt{\text{Cos}[e+f\,x]}+i\,b\,\text{Cos}[e+f\,x]\right]\right)\right)-$$

$$\frac{1}{\left(1-\text{Cos}[e+f\,x]^2\right)\,\left(-1+2\,\text{Cos}[e+f\,x]^2\right)\,(b+a\,\text{Csc}[e+f\,x])}b^2\,\left(-1+\text{Cos}[e+f\,x]^2\right)\,\left(a+b\,\sqrt{1-\text{Cos}[e+f\,x]^2}\right)$$

$$\text{Cos}[2\,(e+f\,x)]\,\text{Csc}[e+f\,x]$$

$$\Bigg(\frac{\left(a^2-b^2\right)^{1/4}\left(-2\,a^2+b^2\right)\,\text{ArcTan}\left[\frac{-\sqrt{2}\,\left(a^2-b^2\right)^{1/4}+2\,\sqrt{b}\,\sqrt{\text{Cos}[e+f\,x]}}{\sqrt{2}\,\left(a^2-b^2\right)^{1/4}}\right]}{\sqrt{2}\,a\,\sqrt{b}\,\left(-a^2+b^2\right)}+\frac{\left(a^2-b^2\right)^{1/4}\left(-2\,a^2+b^2\right)\,\text{ArcTan}\left[\frac{\sqrt{2}\,\left(a^2-b^2\right)^{1/4}+2\,\sqrt{b}\,\sqrt{\text{Cos}[e+f\,x]}}{\sqrt{2}\,\left(a^2-b^2\right)^{1/4}}\right]}{\sqrt{2}\,a\,\sqrt{b}\,\left(-a^2+b^2\right)}-$$

$$\frac{\text{ArcTan}\left[\sqrt{\text{Cos}[e+f\,x]}\right]}{a}-\Bigg(10\,b\,\left(a^2-b^2\right)\,\text{AppellF1}\left[\frac{1}{4},\frac{1}{2},1,\frac{5}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]\,\sqrt{\text{Cos}[e+f\,x]}\Bigg)\Big/$$

$$\Bigg(\sqrt{1-\text{Cos}[e+f\,x]^2}\,\Bigg(5\,\left(a^2-b^2\right)\,\text{AppellF1}\left[\frac{1}{4},\frac{1}{2},1,\frac{5}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]-2\,\Bigg(2\,b^2\,\text{AppellF1}\left[\frac{5}{4},\frac{1}{2},2,\frac{9}{4},\right.$$

$$\left.\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]+\left(-a^2+b^2\right)\,\text{AppellF1}\left[\frac{5}{4},\frac{3}{2},1,\frac{9}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]\Bigg)\,\text{Cos}[e+f\,x]^2\Bigg)$$

$$\left(a^2+b^2\,\left(-1+\text{Cos}[e+f\,x]^2\right)\right)\Bigg)+\Bigg(36\,b\,\left(a^2-b^2\right)\,\text{AppellF1}\left[\frac{5}{4},\frac{1}{2},1,\frac{9}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]\,\text{Cos}[e+f\,x]^{5/2}\Bigg)\Big/$$

$$\Bigg(5\,\sqrt{1-\text{Cos}[e+f\,x]^2}\,\Bigg(9\,\left(a^2-b^2\right)\,\text{AppellF1}\left[\frac{5}{4},\frac{1}{2},1,\frac{9}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]-$$

$$2\,\Bigg(2\,b^2\,\text{AppellF1}\left[\frac{9}{4},\frac{1}{2},2,\frac{13}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]+\left(-a^2+b^2\right)\,\text{AppellF1}\left[\frac{9}{4},\frac{3}{2},1,\frac{13}{4},\right.$$

$$\left.\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]\Bigg)\,\text{Cos}[e+f\,x]^2\Bigg)\,\left(a^2+b^2\,\left(-1+\text{Cos}[e+f\,x]^2\right)\right)\Bigg)+\frac{\text{Log}\left[1-\sqrt{\text{Cos}[e+f\,x]}\right]}{2\,a}-$$

$$\frac{\text{Log}\left[1+\sqrt{\text{Cos}[e+f\,x]}\right]}{2\,a}-\frac{\left(a^2-b^2\right)^{1/4}\left(-2\,a^2+b^2\right)\,\text{Log}\left[\sqrt{a^2-b^2}-\sqrt{2}\,\sqrt{b}\,\left(a^2-b^2\right)^{1/4}\sqrt{\text{Cos}[e+f\,x]}+b\,\text{Cos}[e+f\,x]\right]}{2\,\sqrt{2}\,a\,\sqrt{b}\,\left(-a^2+b^2\right)}+$$

$$\frac{\left(a^2-b^2\right)^{1/4}\left(-2\,a^2+b^2\right)\,\text{Log}\left[\sqrt{a^2-b^2}+\sqrt{2}\,\sqrt{b}\,\left(a^2-b^2\right)^{1/4}\sqrt{\text{Cos}[e+f\,x]}+b\,\text{Cos}[e+f\,x]\right]}{2\,\sqrt{2}\,a\,\sqrt{b}\,\left(-a^2+b^2\right)}\Bigg)-$$

$$\frac{1}{\left(1-\text{Cos}[e+f\,x]^2\right)\,\left(b+a\,\text{Csc}[e+f\,x]\right)}\,2\,\left(-a^2+3\,b^2\right)\,\left(-1+\text{Cos}[e+f\,x]^2\right)\,\left(a+b\,\sqrt{1-\text{Cos}[e+f\,x]^2}\right)\,\text{Csc}[e+f\,x]$$

$$\Bigg(\Bigg(5\,b\,\left(a^2-b^2\right)\,\text{AppellF1}\left[\frac{1}{4},\frac{1}{2},1,\frac{5}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]\,\sqrt{\text{Cos}[e+f\,x]}\Bigg)\Big/$$

$$\Bigg(\sqrt{1-\text{Cos}[e+f\,x]^2}\,\Bigg(5\,\left(a^2-b^2\right)\,\text{AppellF1}\left[\frac{1}{4},\frac{1}{2},1,\frac{5}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]-2\,\Bigg(2\,b^2\,\text{AppellF1}\left[\frac{5}{4},\frac{1}{2},2,\frac{9}{4},\right.$$

$$\left.\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]+\left(-a^2+b^2\right)\,\text{AppellF1}\left[\frac{5}{4},\frac{3}{2},1,\frac{9}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]\Bigg)\,\text{Cos}[e+f\,x]^2\Bigg)$$

$$\left(a^2+b^2\left(-1+\text{Cos}[e+f x]^2\right)\right)\Bigg)-\frac{1}{8 a\left(a^2-b^2\right)^{3/4}}\left(-2\sqrt{2}\, b^{3/2}\,\text{ArcTan}\left[1-\frac{\sqrt{2}\sqrt{b}\sqrt{\text{Cos}[e+f x]}}{\left(a^2-b^2\right)^{1/4}}\right]+\right.$$

$$2\sqrt{2}\, b^{3/2}\,\text{ArcTan}\left[1+\frac{\sqrt{2}\sqrt{b}\sqrt{\text{Cos}[e+f x]}}{\left(a^2-b^2\right)^{1/4}}\right]+4\left(a^2-b^2\right)^{3/4}\text{ArcTan}\left[\sqrt{\text{Cos}[e+f x]}\right]-2\left(a^2-b^2\right)^{3/4}\text{Log}\left[1-\sqrt{\text{Cos}[e+f x]}\right]+$$

$$2\left(a^2-b^2\right)^{3/4}\text{Log}\left[1+\sqrt{\text{Cos}[e+f x]}\right]-\sqrt{2}\, b^{3/2}\,\text{Log}\left[\sqrt{a^2-b^2}-\sqrt{2}\sqrt{b}\left(a^2-b^2\right)^{1/4}\sqrt{\text{Cos}[e+f x]}+b\,\text{Cos}[e+f x]\right]+\sqrt{2}\, b^{3/2}$$

$$\left.\text{Log}\left[\sqrt{a^2-b^2}+\sqrt{2}\sqrt{b}\left(a^2-b^2\right)^{1/4}\sqrt{\text{Cos}[e+f x]}+b\,\text{Cos}[e+f x]\right]\right)\Bigg)\Bigg)+\frac{(g\,\text{Cos}[e+f x])^{3/2}\left(\frac{b\,\text{Csc}[e+f x]}{a^2}-\frac{\text{Csc}[e+f x]^2}{2 a}\right)\text{Sec}[e+f x]}{f}$$

Problem 1383: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{(g\,\text{Cos}[e+f x])^{5/2}\,\text{Sin}[e+f x]^3}{a+b\,\text{Sin}[e+f x]}\,dx$$

Optimal (type 4, 610 leaves, 24 steps):

$$-\frac{a^3\left(-a^2+b^2\right)^{3/4} g^{5/2}\,\text{ArcTan}\left[\frac{\sqrt{b}\sqrt{g\,\text{Cos}[e+f x]}}{\left(-a^2+b^2\right)^{1/4}\sqrt{g}}\right]}{b^{11/2} f}+\frac{a^3\left(-a^2+b^2\right)^{3/4} g^{5/2}\,\text{ArcTanh}\left[\frac{\sqrt{b}\sqrt{g\,\text{Cos}[e+f x]}}{\left(-a^2+b^2\right)^{1/4}\sqrt{g}}\right]}{b^{11/2} f}-$$

$$\frac{2 a^3 g\,(g\,\text{Cos}[e+f x])^{3/2}}{3 b^4 f}+\frac{2 a\,(g\,\text{Cos}[e+f x])^{7/2}}{7 b^2 f g}-\frac{2 a^4 g^2\sqrt{g\,\text{Cos}[e+f x]}\,\text{EllipticE}\left[\frac{1}{2}(e+f x),2\right]}{b^5 f\sqrt{\text{Cos}[e+f x]}}+$$

$$\frac{6 a^2 g^2\sqrt{g\,\text{Cos}[e+f x]}\,\text{EllipticE}\left[\frac{1}{2}(e+f x),2\right]}{5 b^3 f\sqrt{\text{Cos}[e+f x]}}+\frac{4 g^2\sqrt{g\,\text{Cos}[e+f x]}\,\text{EllipticE}\left[\frac{1}{2}(e+f x),2\right]}{15 b f\sqrt{\text{Cos}[e+f x]}}+$$

$$\frac{a^4\left(a^2-b^2\right) g^3\sqrt{\text{Cos}[e+f x]}\,\text{EllipticPi}\left[\frac{2 b}{b-\sqrt{-a^2+b^2}},\frac{1}{2}(e+f x),2\right]}{b^6\left(b-\sqrt{-a^2+b^2}\right) f\sqrt{g\,\text{Cos}[e+f x]}}+\frac{a^4\left(a^2-b^2\right) g^3\sqrt{\text{Cos}[e+f x]}\,\text{EllipticPi}\left[\frac{2 b}{b+\sqrt{-a^2+b^2}},\frac{1}{2}(e+f x),2\right]}{b^6\left(b+\sqrt{-a^2+b^2}\right) f\sqrt{g\,\text{Cos}[e+f x]}}+$$

$$\frac{2 a^2 g\,(g\,\text{Cos}[e+f x])^{3/2}\,\text{Sin}[e+f x]}{5 b^3 f}+\frac{4 g\,(g\,\text{Cos}[e+f x])^{3/2}\,\text{Sin}[e+f x]}{45 b f}-\frac{2\,(g\,\text{Cos}[e+f x])^{7/2}\,\text{Sin}[e+f x]}{9 b f g}$$

Result (type 6, 1261 leaves):

$$-\frac{1}{15 b^4 f\,\text{Cos}[e+f x]^{5/2}}(g\,\text{Cos}[e+f x])^{5/2}\left(\frac{1}{12\sqrt{1-\text{Cos}[e+f x]^2}\,(a+b\,\text{Sin}[e+f x])}\left(6 a^3 b-2 a b^3\right)\left(a+b\sqrt{1-\text{Cos}[e+f x]^2}\right)\right.$$

$$\left(-\left(56\,a\,(a^2-b^2)\,\text{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]\text{Cos}[e+f\,x]^{3/2}\right)\Big/\left(\sqrt{1-\text{Cos}[e+f\,x]^2}\,\left(7\,(a^2-b^2)\right.\right.\right.$$

$$\text{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]-2\left(2\,b^2\,\text{AppellF1}\left[\frac{7}{4},\frac{1}{2},2,\frac{11}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]+\right.$$

$$\left.\left.\left.(-a^2+b^2)\,\text{AppellF1}\left[\frac{7}{4},\frac{3}{2},1,\frac{11}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]\right)\text{Cos}[e+f\,x]^2\right)\left(a^2+b^2\,(-1+\text{Cos}[e+f\,x]^2)\right)\right)-$$

$$\frac{1}{\sqrt{b}\,(-a^2+b^2)^{1/4}}(3+3\,i)\left(2\,\text{ArcTan}\left[1-\frac{(1+i)\,\sqrt{b}\,\sqrt{\text{Cos}[e+f\,x]}}{(-a^2+b^2)^{1/4}}\right]-2\,\text{ArcTan}\left[1+\frac{(1+i)\,\sqrt{b}\,\sqrt{\text{Cos}[e+f\,x]}}{(-a^2+b^2)^{1/4}}\right]-\right.$$

$$\text{Log}\left[\sqrt{-a^2+b^2}-(1+i)\,\sqrt{b}\,(-a^2+b^2)^{1/4}\,\sqrt{\text{Cos}[e+f\,x]}+i\,b\,\text{Cos}[e+f\,x]\right]+$$

$$\left.\left.\text{Log}\left[\sqrt{-a^2+b^2}+(1+i)\,\sqrt{b}\,(-a^2+b^2)^{1/4}\,\sqrt{\text{Cos}[e+f\,x]}+i\,b\,\text{Cos}[e+f\,x]\right]\right)\right)\text{Sin}[e+f\,x]-$$

$$\frac{1}{(1-\text{Cos}[e+f\,x]^2)\,(a+b\,\text{Sin}[e+f\,x])}\,2\,(15\,a^4-9\,a^2\,b^2-2\,b^4)\left(a+b\,\sqrt{1-\text{Cos}[e+f\,x]^2}\right)$$

$$\left(\left(7\,b\,(a^2-b^2)\,\text{AppellF1}\left[\frac{3}{4},-\frac{1}{2},1,\frac{7}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]\text{Cos}[e+f\,x]^{3/2}\,\sqrt{1-\text{Cos}[e+f\,x]^2}\right)\Big/\right.$$

$$\left(3\left(-7\,(a^2-b^2)\,\text{AppellF1}\left[\frac{3}{4},-\frac{1}{2},1,\frac{7}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]+2\left(2\,b^2\,\text{AppellF1}\left[\frac{7}{4},-\frac{1}{2},2,\frac{11}{4},\text{Cos}[e+f\,x]^2,\right.\right.\right.\right.$$

$$\left.\left.\left.\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]+(a^2-b^2)\,\text{AppellF1}\left[\frac{7}{4},\frac{1}{2},1,\frac{11}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]\right)\text{Cos}[e+f\,x]^2\right)$$

$$\left.\left(a^2+b^2\,(-1+\text{Cos}[e+f\,x]^2)\right)\right)+\frac{1}{4\,\sqrt{2}\,b^{3/2}\,(a^2-b^2)^{1/4}}a\left(-2\,\text{ArcTan}\left[1-\frac{\sqrt{2}\,\sqrt{b}\,\sqrt{\text{Cos}[e+f\,x]}}{(a^2-b^2)^{1/4}}\right]+\right.$$

$$2\,\text{ArcTan}\left[1+\frac{\sqrt{2}\,\sqrt{b}\,\sqrt{\text{Cos}[e+f\,x]}}{(a^2-b^2)^{1/4}}\right]+\text{Log}\left[\sqrt{a^2-b^2}-\sqrt{2}\,\sqrt{b}\,(a^2-b^2)^{1/4}\,\sqrt{\text{Cos}[e+f\,x]}+b\,\text{Cos}[e+f\,x]\right]-$$

$$\left.\left.\text{Log}\left[\sqrt{a^2-b^2}+\sqrt{2}\,\sqrt{b}\,(a^2-b^2)^{1/4}\,\sqrt{\text{Cos}[e+f\,x]}+b\,\text{Cos}[e+f\,x]\right]\right)\text{Sin}[e+f\,x]^2\right)+$$

$$\frac{1}{f}(g\,\text{Cos}[e+f\,x])^{5/2}\,\text{Sec}[e+f\,x]^2\left(-\frac{a\,(28\,a^2-9\,b^2)\,\text{Cos}[e+f\,x]}{42\,b^4}+\frac{a\,\text{Cos}[3\,(e+f\,x)]}{14\,b^2}-\right.$$

$$\frac{(-18\,a^2+b^2)\,\text{Sin}[2\,(e+f\,x)]}{90\,b^3}-$$

$$\left.\frac{\text{Sin}[4\,(e+f\,x)]}{36\,b}\right)$$

Problem 1384: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{(g\,\text{Cos}[e+f\,x])^{5/2}\,\text{Sin}[e+f\,x]^2}{a+b\,\text{Sin}[e+f\,x]}\,dx$$

Optimal (type 4, 501 leaves, 20 steps):

$$\frac{a^2\left(-a^2+b^2\right)^{3/4} g^{5/2}\,\text{ArcTan}\left[\frac{\sqrt{b}\,\sqrt{g\,\text{Cos}[e+f\,x]}}{\left(-a^2+b^2\right)^{1/4}\sqrt{g}}\right]}{b^{9/2}\,f}-\frac{a^2\left(-a^2+b^2\right)^{3/4} g^{5/2}\,\text{ArcTanh}\left[\frac{\sqrt{b}\,\sqrt{g\,\text{Cos}[e+f\,x]}}{\left(-a^2+b^2\right)^{1/4}\sqrt{g}}\right]}{b^{9/2}\,f}+$$

$$\frac{2\,a^2\,g\,(g\,\text{Cos}[e+f\,x])^{3/2}}{3\,b^3\,f}-\frac{2\,(g\,\text{Cos}[e+f\,x])^{7/2}}{7\,b\,f\,g}+\frac{2\,a^3\,g^2\,\sqrt{g\,\text{Cos}[e+f\,x]}\,\text{EllipticE}\left[\frac{1}{2}\,(e+f\,x),\,2\right]}{b^4\,f\,\sqrt{\text{Cos}[e+f\,x]}}-$$

$$\frac{6\,a\,g^2\,\sqrt{g\,\text{Cos}[e+f\,x]}\,\text{EllipticE}\left[\frac{1}{2}\,(e+f\,x),\,2\right]}{5\,b^2\,f\,\sqrt{\text{Cos}[e+f\,x]}}-\frac{a^3\left(a^2-b^2\right) g^3\,\sqrt{\text{Cos}[e+f\,x]}\,\text{EllipticPi}\left[\frac{2\,b}{b-\sqrt{-a^2+b^2}},\,\frac{1}{2}\,(e+f\,x),\,2\right]}{b^5\left(b-\sqrt{-a^2+b^2}\right) f\,\sqrt{g\,\text{Cos}[e+f\,x]}}-$$

$$\frac{a^3\left(a^2-b^2\right) g^3\,\sqrt{\text{Cos}[e+f\,x]}\,\text{EllipticPi}\left[\frac{2\,b}{b+\sqrt{-a^2+b^2}},\,\frac{1}{2}\,(e+f\,x),\,2\right]}{b^5\left(b+\sqrt{-a^2+b^2}\right) f\,\sqrt{g\,\text{Cos}[e+f\,x]}}-\frac{2\,a\,g\,(g\,\text{Cos}[e+f\,x])^{3/2}\,\text{Sin}[e+f\,x]}{5\,b^2\,f}$$

Result (type 6, 1218 leaves):

$$\frac{1}{5\,b^3\,f\,\text{Cos}[e+f\,x]^{5/2}}\,a\,(g\,\text{Cos}[e+f\,x])^{5/2}\left(\frac{1}{6\,\sqrt{1-\text{Cos}[e+f\,x]^2}\,(a+b\,\text{Sin}[e+f\,x])}\right.$$

$$a\,b\left(a+b\,\sqrt{1-\text{Cos}[e+f\,x]^2}\right)\left(-\left(56\,a\left(a^2-b^2\right)\text{AppellF1}\left[\frac{3}{4},\,\frac{1}{2},\,1,\,\frac{7}{4},\,\text{Cos}[e+f\,x]^2,\,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]\text{Cos}[e+f\,x]^{3/2}\right)\Big/\right.$$

$$\left(\sqrt{1-\text{Cos}[e+f\,x]^2}\,\left(7\left(a^2-b^2\right)\text{AppellF1}\left[\frac{3}{4},\,\frac{1}{2},\,1,\,\frac{7}{4},\,\text{Cos}[e+f\,x]^2,\,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]-2\left(2\,b^2\,\text{AppellF1}\left[\frac{7}{4},\,\frac{1}{2},\,2,\,\frac{11}{4},\right.\right.\right.$$

$$\left.\left.\text{Cos}[e+f\,x]^2,\,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]+\left(-a^2+b^2\right)\text{AppellF1}\left[\frac{7}{4},\,\frac{3}{2},\,1,\,\frac{11}{4},\,\text{Cos}[e+f\,x]^2,\,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]\right)\text{Cos}[e+f\,x]^2\right)$$

$$\left.\left(a^2+b^2\left(-1+\text{Cos}[e+f\,x]^2\right)\right)\right)-\frac{1}{\sqrt{b}\,\left(-a^2+b^2\right)^{1/4}}\,(3+3\,i)\left(2\,\text{ArcTan}\left[1-\frac{(1+i)\,\sqrt{b}\,\sqrt{\text{Cos}[e+f\,x]}}{\left(-a^2+b^2\right)^{1/4}}\right]-\right.$$

$$2\,\text{ArcTan}\Big[1+\frac{(1+i)\sqrt{b}\,\sqrt{\text{Cos}[e+f x]}}{(-a^2+b^2)^{1/4}}\Big]-\text{Log}\Big[\sqrt{-a^2+b^2}-(1+i)\sqrt{b}\,(-a^2+b^2)^{1/4}\sqrt{\text{Cos}[e+f x]}+i\,b\,\text{Cos}[e+f x]\Big]+$$

$$\text{Log}\Big[\sqrt{-a^2+b^2}+(1+i)\sqrt{b}\,(-a^2+b^2)^{1/4}\sqrt{\text{Cos}[e+f x]}+i\,b\,\text{Cos}[e+f x]\Big]\Big)\Big)\,\text{Sin}[e+f x]-$$

$$\frac{1}{(1-\text{Cos}[e+f x]^2)\,(a+b\,\text{Sin}[e+f x])}\,2\,(5a^2-3b^2)\,\Big(a+b\sqrt{1-\text{Cos}[e+f x]^2}\Big)$$

$$\Big(\Big(7b\,(a^2-b^2)\,\text{AppellF1}\Big[\frac{3}{4},-\frac{1}{2},1,\frac{7}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\Big]\,\text{Cos}[e+f x]^{3/2}\sqrt{1-\text{Cos}[e+f x]^2}\Big)\Big/$$

$$\Big(3\,\Big(-7\,(a^2-b^2)\,\text{AppellF1}\Big[\frac{3}{4},-\frac{1}{2},1,\frac{7}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\Big]+2\,\Big(2b^2\,\text{AppellF1}\Big[\frac{7}{4},-\frac{1}{2},2,\frac{11}{4},\text{Cos}[e+f x]^2,$$

$$\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\Big]+(a^2-b^2)\,\text{AppellF1}\Big[\frac{7}{4},\frac{1}{2},1,\frac{11}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\Big]\Big)\,\text{Cos}[e+f x]^2\Big)$$

$$\big(a^2+b^2\,(-1+\text{Cos}[e+f x]^2)\big)\Big)+\frac{1}{4\sqrt{2}\,b^{3/2}\,(a^2-b^2)^{1/4}}a\,\Big(-2\,\text{ArcTan}\Big[1-\frac{\sqrt{2}\sqrt{b}\sqrt{\text{Cos}[e+f x]}}{(a^2-b^2)^{1/4}}\Big]+$$

$$2\,\text{ArcTan}\Big[1+\frac{\sqrt{2}\sqrt{b}\sqrt{\text{Cos}[e+f x]}}{(a^2-b^2)^{1/4}}\Big]+\text{Log}\Big[\sqrt{a^2-b^2}-\sqrt{2}\sqrt{b}\,(a^2-b^2)^{1/4}\sqrt{\text{Cos}[e+f x]}+b\,\text{Cos}[e+f x]\Big]-$$

$$\text{Log}\Big[\sqrt{a^2-b^2}+\sqrt{2}\sqrt{b}\,(a^2-b^2)^{1/4}\sqrt{\text{Cos}[e+f x]}+b\,\text{Cos}[e+f x]\Big]\Big)\Big)\,\text{Sin}[e+f x]^2\Big)+$$

$$\frac{(g\,\text{Cos}[e+f x])^{5/2}\,\text{Sec}[e+f x]^2\left(-\frac{(-28a^2+9b^2)\,\text{Cos}[e+f x]}{42\,b^3}-\frac{\text{Cos}[3\,(e+f x)]}{14\,b}-\frac{a\,\text{Sin}[2\,(e+f x)]}{5\,b^2}\right)}{f}$$

- **Problem 1385: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int\frac{(g\,\text{Cos}[e+f x])^{5/2}\,\text{Sin}[e+f x]}{a+b\,\text{Sin}[e+f x]}\,dx$$

Optimal (type 4, 413 leaves, 13 steps):

$$-\frac{a\left(-a^2+b^2\right)^{3/4} g^{5/2} \operatorname{ArcTan}\left[\frac{\sqrt{b}\sqrt{g \operatorname{Cos}[e+f x]}}{\left(-a^2+b^2\right)^{1/4}\sqrt{g}}\right]}{b^{7/2} f}+\frac{a\left(-a^2+b^2\right)^{3/4} g^{5/2} \operatorname{ArcTanh}\left[\frac{\sqrt{b}\sqrt{g \operatorname{Cos}[e+f x]}}{\left(-a^2+b^2\right)^{1/4}\sqrt{g}}\right]}{b^{7/2} f}-$$

$$\frac{2\left(5 a^2-3 b^2\right) g^2 \sqrt{g \operatorname{Cos}[e+f x]}\ \operatorname{EllipticE}\left[\frac{1}{2}(e+f x), 2\right]}{5 b^3 f \sqrt{\operatorname{Cos}[e+f x]}}+\frac{a^2\left(a^2-b^2\right) g^3 \sqrt{\operatorname{Cos}[e+f x]}\ \operatorname{EllipticPi}\left[\frac{2 b}{b-\sqrt{-a^2+b^2}}, \frac{1}{2}(e+f x), 2\right]}{b^4\left(b-\sqrt{-a^2+b^2}\right) f \sqrt{g \operatorname{Cos}[e+f x]}}+$$

$$\frac{a^2\left(a^2-b^2\right) g^3 \sqrt{\operatorname{Cos}[e+f x]}\ \operatorname{EllipticPi}\left[\frac{2 b}{b+\sqrt{-a^2+b^2}}, \frac{1}{2}(e+f x), 2\right]}{b^4\left(b+\sqrt{-a^2+b^2}\right) f \sqrt{g \operatorname{Cos}[e+f x]}}-\frac{2 g (g \operatorname{Cos}[e+f x])^{3/2}(5 a-3 b \operatorname{Sin}[e+f x])}{15 b^2 f}$$

Result (type 6, 1191 leaves) :

$$-\frac{1}{5 b^2 f \text{Cos}[e+f x]^{5/2}}(g \text{Cos}[e+f x])^{5/2}$$

$$\left(\frac{1}{6 \sqrt{1-\text{Cos}[e+f x]^2}\,(a+b \text{Sin}[e+f x])} a b \left(a+b \sqrt{1-\text{Cos}[e+f x]^2}\right) \left(-\left(56 a \left(a^2-b^2\right) \text{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},\text{Cos}[e+f x]^2,\right.\right.\right.\right.$$

$$\left.\left.\frac{b^2 \text{Cos}[e+f x]^2}{-a^2+b^2}\right] \text{Cos}[e+f x]^{3/2}\right) \Big/ \left(\sqrt{1-\text{Cos}[e+f x]^2} \left(7 \left(a^2-b^2\right) \text{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},\text{Cos}[e+f x]^2,\frac{b^2 \text{Cos}[e+f x]^2}{-a^2+b^2}\right]-\right.\right.$$

$$2 \left(2 b^2 \text{AppellF1}\left[\frac{7}{4},\frac{1}{2},2,\frac{11}{4},\text{Cos}[e+f x]^2,\frac{b^2 \text{Cos}[e+f x]^2}{-a^2+b^2}\right]+\left(-a^2+b^2\right) \text{AppellF1}\left[\frac{7}{4},\frac{3}{2},1,\frac{11}{4},\right.\right.$$

$$\left.\left.\left.\text{Cos}[e+f x]^2,\frac{b^2 \text{Cos}[e+f x]^2}{-a^2+b^2}\right]\right) \text{Cos}[e+f x]^2\right) \left(a^2+b^2 \left(-1+\text{Cos}[e+f x]^2\right)\right)\right)-\frac{1}{\sqrt{b}\,\left(-a^2+b^2\right)^{1/4}}$$

$$(3+3 i) \left(2 \text{ArcTan}\left[1-\frac{(1+i) \sqrt{b} \sqrt{\text{Cos}[e+f x]}}{\left(-a^2+b^2\right)^{1/4}}\right]-2 \text{ArcTan}\left[1+\frac{(1+i) \sqrt{b} \sqrt{\text{Cos}[e+f x]}}{\left(-a^2+b^2\right)^{1/4}}\right]-\text{Log}\left[\sqrt{-a^2+b^2}-(1+i) \sqrt{b}\right.\right.$$

$$\left.\left.\left.\left(-a^2+b^2\right)^{1/4} \sqrt{\text{Cos}[e+f x]}+i b \text{Cos}[e+f x]\right]+\text{Log}\left[\sqrt{-a^2+b^2}+(1+i) \sqrt{b}\,\left(-a^2+b^2\right)^{1/4} \sqrt{\text{Cos}[e+f x]}+i b \text{Cos}[e+f x]\right]\right)\right)$$

$$\text{Sin}[e+f x]-\frac{1}{\left(1-\text{Cos}[e+f x]^2\right) (a+b \text{Sin}[e+f x])} 2 \left(5 a^2-3 b^2\right) \left(a+b \sqrt{1-\text{Cos}[e+f x]^2}\right)$$

$$\left(\left(7 b \left(a^2-b^2\right) \text{AppellF1}\left[\frac{3}{4},-\frac{1}{2},1,\frac{7}{4},\text{Cos}[e+f x]^2,\frac{b^2 \text{Cos}[e+f x]^2}{-a^2+b^2}\right] \text{Cos}[e+f x]^{3/2} \sqrt{1-\text{Cos}[e+f x]^2}\right) \Big/ \left(3 \left(-7 \left(a^2-b^2\right)\right.\right.\right.$$

$$\text{AppellF1}\left[\frac{3}{4},-\frac{1}{2},1,\frac{7}{4},\text{Cos}[e+f x]^2,\frac{b^2 \text{Cos}[e+f x]^2}{-a^2+b^2}\right]+2 \left(2 b^2 \text{AppellF1}\left[\frac{7}{4},-\frac{1}{2},2,\frac{11}{4},\text{Cos}[e+f x]^2,\frac{b^2 \text{Cos}[e+f x]^2}{-a^2+b^2}\right]+\right.$$

$$\left.\left.\left.\left(a^2-b^2\right) \text{AppellF1}\left[\frac{7}{4},\frac{1}{2},1,\frac{11}{4},\text{Cos}[e+f x]^2,\frac{b^2 \text{Cos}[e+f x]^2}{-a^2+b^2}\right]\right) \text{Cos}[e+f x]^2\right) \left(a^2+b^2 \left(-1+\text{Cos}[e+f x]^2\right)\right)\right)+$$

$$\frac{1}{4 \sqrt{2}\, b^{3/2} \left(a^2-b^2\right)^{1/4}} a \left(-2 \text{ArcTan}\left[1-\frac{\sqrt{2} \sqrt{b} \sqrt{\text{Cos}[e+f x]}}{\left(a^2-b^2\right)^{1/4}}\right]+2 \text{ArcTan}\left[1+\frac{\sqrt{2} \sqrt{b} \sqrt{\text{Cos}[e+f x]}}{\left(a^2-b^2\right)^{1/4}}\right]+\text{Log}\left[\sqrt{a^2-b^2}-\right.\right.$$

$$\left.\left.\left.\sqrt{2} \sqrt{b}\,\left(a^2-b^2\right)^{1/4} \sqrt{\text{Cos}[e+f x]}+b \text{Cos}[e+f x]\right]-\text{Log}\left[\sqrt{a^2-b^2}+\sqrt{2} \sqrt{b}\,\left(a^2-b^2\right)^{1/4} \sqrt{\text{Cos}[e+f x]}+b \text{Cos}[e+f x]\right]\right)\right)$$

$$\left.\text{Sin}[e+f x]^2\right)+\frac{(g \text{Cos}[e+f x])^{5/2} \text{Sec}[e+f x]^2 \left(-\frac{2 a \text{Cos}[e+f x]}{3 b^2}+\frac{\text{Sin}[2 (e+f x)]}{5 b}\right)}{f}$$

Problem 1386: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{(g \cos[e+f x])^{5/2} \csc[e+f x]}{a+b \sin[e+f x]} \, dx$$

Optimal (type 4, 425 leaves, 21 steps):

$$\frac{g^{5/2} \text{ArcTan}\left[\frac{\sqrt{g \cos[e+f x]}}{\sqrt{g}}\right]}{a f}-\frac{\left(-a^2+b^2\right)^{3/4} g^{5/2} \text{ArcTan}\left[\frac{\sqrt{b} \sqrt{g \cos[e+f x]}}{\left(-a^2+b^2\right)^{1/4} \sqrt{g}}\right]}{a b^{3/2} f}-\frac{g^{5/2} \text{ArcTanh}\left[\frac{\sqrt{g \cos[e+f x]}}{\sqrt{g}}\right]}{a f}+$$
$$\frac{\left(-a^2+b^2\right)^{3/4} g^{5/2} \text{ArcTanh}\left[\frac{\sqrt{b} \sqrt{g \cos[e+f x]}}{\left(-a^2+b^2\right)^{1/4} \sqrt{g}}\right]}{a b^{3/2} f}-\frac{2 g^2 \sqrt{g \cos[e+f x]} \, \text{EllipticE}\left[\frac{1}{2} (e+f x), 2\right]}{b f \sqrt{\cos[e+f x]}}+$$
$$\frac{\left(a^2-b^2\right) g^3 \sqrt{\cos[e+f x]} \, \text{EllipticPi}\left[\frac{2 b}{b-\sqrt{-a^2+b^2}}, \frac{1}{2} (e+f x), 2\right]}{b^2 \left(b-\sqrt{-a^2+b^2}\right) f \sqrt{g \cos[e+f x]}}+\frac{\left(a^2-b^2\right) g^3 \sqrt{\cos[e+f x]} \, \text{EllipticPi}\left[\frac{2 b}{b+\sqrt{-a^2+b^2}}, \frac{1}{2} (e+f x), 2\right]}{b^2 \left(b+\sqrt{-a^2+b^2}\right) f \sqrt{g \cos[e+f x]}}$$

Result (type 6, 1818 leaves):

$$\frac{1}{2 f \cos[e+f x]^{5/2}}$$
$$(g \cos[e+f x])^{5/2} \left(-\frac{1}{\left(1-\cos[e+f x]^2\right) \left(-1+2 \cos[e+f x]^2\right) (b+a \csc[e+f x])} 2 \left(-1+\cos[e+f x]^2\right) \left(a+b \sqrt{1-\cos[e+f x]^2}\right) \cos[2 (e+f x)]\right.$$
$$\csc[e+f x] \left(\frac{\left(a^2-b^2\right)^{3/4} \left(-2 a^2+b^2\right) \text{ArcTan}\left[\frac{-\sqrt{2} \left(a^2-b^2\right)^{1/4}+2 \sqrt{b} \sqrt{\cos[e+f x]}}{\sqrt{2} \left(a^2-b^2\right)^{1/4}}\right]}{2 \sqrt{2} a b^{3/2} \left(-a^2+b^2\right)}+\frac{\left(a^2-b^2\right)^{3/4} \left(-2 a^2+b^2\right) \text{ArcTan}\left[\frac{\sqrt{2} \left(a^2-b^2\right)^{1/4}+2 \sqrt{b} \sqrt{\cos[e+f x]}}{\sqrt{2} \left(a^2-b^2\right)^{1/4}}\right]}{2 \sqrt{2} a b^{3/2} \left(-a^2+b^2\right)}+\right.$$
$$\frac{\text{ArcTan}\left[\sqrt{\cos[e+f x]}\right]}{2 a}-\left(7 b \left(a^2-b^2\right) \text{AppellF1}\left[\frac{3}{4}, \frac{1}{2}, 1, \frac{7}{4}, \cos[e+f x]^2, \frac{b^2 \cos[e+f x]^2}{-a^2+b^2}\right] \cos[e+f x]^{3/2}\right) \Big/$$
$$\left(3 \sqrt{1-\cos[e+f x]^2} \left(7 \left(a^2-b^2\right) \text{AppellF1}\left[\frac{3}{4}, \frac{1}{2}, 1, \frac{7}{4}, \cos[e+f x]^2, \frac{b^2 \cos[e+f x]^2}{-a^2+b^2}\right]-2 \left(2 b^2 \text{AppellF1}\left[\frac{7}{4}, \frac{1}{2}, 2, \frac{11}{4},\right.\right.\right.\right.$$
$$\left.\cos[e+f x]^2, \frac{b^2 \cos[e+f x]^2}{-a^2+b^2}\right]+\left(-a^2+b^2\right) \text{AppellF1}\left[\frac{7}{4}, \frac{3}{2}, 1, \frac{11}{4}, \cos[e+f x]^2, \frac{b^2 \cos[e+f x]^2}{-a^2+b^2}\right]\right) \cos[e+f x]^2\Bigg)$$
$$\left.\left(a^2+b^2 \left(-1+\cos[e+f x]^2\right)\right)\right)+\left(22 b \left(a^2-b^2\right) \text{AppellF1}\left[\frac{7}{4}, \frac{1}{2}, 1, \frac{11}{4}, \cos[e+f x]^2, \frac{b^2 \cos[e+f x]^2}{-a^2+b^2}\right] \cos[e+f x]^{7/2}\right) \Big/$$

$$\left(7 \sqrt{1-\text{Cos}[e+f x]^2}\ \left(11 \left(a^2-b^2\right) \text{AppellF1}\left[\frac{7}{4}, \frac{1}{2}, 1, \frac{11}{4}, \text{Cos}[e+f x]^2, \frac{b^2 \text{Cos}[e+f x]^2}{-a^2+b^2}\right] -\right.\right.$$

$$2 \left(2 b^2 \text{AppellF1}\left[\frac{11}{4}, \frac{1}{2}, 2, \frac{15}{4}, \text{Cos}[e+f x]^2, \frac{b^2 \text{Cos}[e+f x]^2}{-a^2+b^2}\right] + \left(-a^2+b^2\right) \text{AppellF1}\left[\frac{11}{4}, \frac{3}{2}, 1, \frac{15}{4},\right.\right.$$

$$\left.\left.\left.\text{Cos}[e+f x]^2, \frac{b^2 \text{Cos}[e+f x]^2}{-a^2+b^2}\right]\right) \text{Cos}[e+f x]^2\right) \left(a^2+b^2 \left(-1+\text{Cos}[e+f x]^2\right)\right)\Big) + \frac{\text{Log}\left[1-\sqrt{\text{Cos}[e+f x]}\right]}{4 a} -$$

$$\frac{\text{Log}\left[1+\sqrt{\text{Cos}[e+f x]}\right]}{4 a} + \frac{\left(a^2-b^2\right)^{3/4} \left(-2 a^2+b^2\right) \text{Log}\left[\sqrt{a^2-b^2}-\sqrt{2} \sqrt{b} \left(a^2-b^2\right)^{1/4} \sqrt{\text{Cos}[e+f x]}+b \text{Cos}[e+f x]\right]}{4 \sqrt{2}\, a\, b^{3/2} \left(-a^2+b^2\right)} -$$

$$\left.\frac{\left(a^2-b^2\right)^{3/4} \left(-2 a^2+b^2\right) \text{Log}\left[\sqrt{a^2-b^2}+\sqrt{2} \sqrt{b} \left(a^2-b^2\right)^{1/4} \sqrt{\text{Cos}[e+f x]}+b \text{Cos}[e+f x]\right]}{4 \sqrt{2}\, a\, b^{3/2} \left(-a^2+b^2\right)}\right) -$$

$$\frac{1}{\left(1-\text{Cos}[e+f x]^2\right) (b+a \text{Csc}[e+f x])} 2 \left(-1+\text{Cos}[e+f x]^2\right) \left(a+b \sqrt{1-\text{Cos}[e+f x]^2}\right) \text{Csc}[e+f x]$$

$$\left(\left(7 b \left(a^2-b^2\right) \text{AppellF1}\left[\frac{3}{4}, \frac{1}{2}, 1, \frac{7}{4}, \text{Cos}[e+f x]^2, \frac{b^2 \text{Cos}[e+f x]^2}{-a^2+b^2}\right] \text{Cos}[e+f x]^{3/2}\right) \Big/\right.$$

$$\left(3 \sqrt{1-\text{Cos}[e+f x]^2}\ \left(7 \left(a^2-b^2\right) \text{AppellF1}\left[\frac{3}{4}, \frac{1}{2}, 1, \frac{7}{4}, \text{Cos}[e+f x]^2, \frac{b^2 \text{Cos}[e+f x]^2}{-a^2+b^2}\right] - 2 \left(2 b^2 \text{AppellF1}\left[\frac{7}{4}, \frac{1}{2}, 2, \frac{11}{4},\right.\right.\right.\right.$$

$$\left.\left.\text{Cos}[e+f x]^2, \frac{b^2 \text{Cos}[e+f x]^2}{-a^2+b^2}\right] + \left(-a^2+b^2\right) \text{AppellF1}\left[\frac{7}{4}, \frac{3}{2}, 1, \frac{11}{4}, \text{Cos}[e+f x]^2, \frac{b^2 \text{Cos}[e+f x]^2}{-a^2+b^2}\right]\right) \text{Cos}[e+f x]^2\Big)$$

$$\left(a^2+b^2 \left(-1+\text{Cos}[e+f x]^2\right)\right)\Big) + \frac{1}{8 a \left(a^2-b^2\right)^{1/4}} \left(2 \sqrt{2} \sqrt{b}\, \text{ArcTan}\left[1-\frac{\sqrt{2} \sqrt{b} \sqrt{\text{Cos}[e+f x]}}{\left(a^2-b^2\right)^{1/4}}\right] -\right.$$

$$2 \sqrt{2} \sqrt{b}\, \text{ArcTan}\left[1+\frac{\sqrt{2} \sqrt{b} \sqrt{\text{Cos}[e+f x]}}{\left(a^2-b^2\right)^{1/4}}\right] + 4 \left(a^2-b^2\right)^{1/4} \text{ArcTan}\left[\sqrt{\text{Cos}[e+f x]}\right] + 2 \left(a^2-b^2\right)^{1/4} \text{Log}\left[1-\sqrt{\text{Cos}[e+f x]}\right] -$$

$$2 \left(a^2-b^2\right)^{1/4} \text{Log}\left[1+\sqrt{\text{Cos}[e+f x]}\right] - \sqrt{2} \sqrt{b}\, \text{Log}\left[\sqrt{a^2-b^2}-\sqrt{2} \sqrt{b} \left(a^2-b^2\right)^{1/4} \sqrt{\text{Cos}[e+f x]}+b \text{Cos}[e+f x]\right] +$$

$$\left.\left.\left.\sqrt{2} \sqrt{b}\, \text{Log}\left[\sqrt{a^2-b^2}+\sqrt{2} \sqrt{b} \left(a^2-b^2\right)^{1/4} \sqrt{\text{Cos}[e+f x]}+b \text{Cos}[e+f x]\right]\right)\right)\right)$$

- **Problem 1387: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int \frac{(g\,\mathrm{Cos}[e+f\,x])^{5/2}\,\mathrm{Csc}[e+f\,x]^2}{a+b\,\mathrm{Sin}[e+f\,x]}\,dx$$

Optimal (type 4, 462 leaves, 24 steps):

$$-\frac{b\,g^{5/2}\,\mathrm{ArcTan}\left[\frac{\sqrt{g\,\mathrm{Cos}[e+f\,x]}}{\sqrt{g}}\right]}{a^2\,f}+\frac{\left(-a^2+b^2\right)^{3/4}\,g^{5/2}\,\mathrm{ArcTan}\left[\frac{\sqrt{b}\,\sqrt{g\,\mathrm{Cos}[e+f\,x]}}{\left(-a^2+b^2\right)^{1/4}\,\sqrt{g}}\right]}{a^2\,\sqrt{b}\,f}+\frac{b\,g^{5/2}\,\mathrm{ArcTanh}\left[\frac{\sqrt{g\,\mathrm{Cos}[e+f\,x]}}{\sqrt{g}}\right]}{a^2\,f}-\frac{\left(-a^2+b^2\right)^{3/4}\,g^{5/2}\,\mathrm{ArcTanh}\left[\frac{\sqrt{b}\,\sqrt{g\,\mathrm{Cos}[e+f\,x]}}{\left(-a^2+b^2\right)^{1/4}\,\sqrt{g}}\right]}{a^2\,\sqrt{b}\,f}-\frac{g\,(g\,\mathrm{Cos}[e+f\,x])^{3/2}\,\mathrm{Csc}[e+f\,x]}{a\,f}-\frac{g^2\,\sqrt{g\,\mathrm{Cos}[e+f\,x]}\,\mathrm{EllipticE}\left[\frac{1}{2}\,(e+f\,x),2\right]}{a\,f\,\sqrt{\mathrm{Cos}[e+f\,x]}}-\frac{\left(a^2-b^2\right)\,g^3\,\sqrt{\mathrm{Cos}[e+f\,x]}\,\mathrm{EllipticPi}\left[\frac{2\,b}{b-\sqrt{-a^2+b^2}},\frac{1}{2}\,(e+f\,x),2\right]}{a\,b\,\left(b-\sqrt{-a^2+b^2}\right)\,f\,\sqrt{g\,\mathrm{Cos}[e+f\,x]}}-\frac{\left(a^2-b^2\right)\,g^3\,\sqrt{\mathrm{Cos}[e+f\,x]}\,\mathrm{EllipticPi}\left[\frac{2\,b}{b+\sqrt{-a^2+b^2}},\frac{1}{2}\,(e+f\,x),2\right]}{a\,b\,\left(b+\sqrt{-a^2+b^2}\right)\,f\,\sqrt{g\,\mathrm{Cos}[e+f\,x]}}$$

Result (type 6, 2391 leaves):

$$\frac{1}{4\,a\,f\,\mathrm{Cos}[e+f\,x]^{5/2}}\,(g\,\mathrm{Cos}[e+f\,x])^{5/2}\,\Bigg(-\frac{1}{2\,\sqrt{1-\mathrm{Cos}[e+f\,x]^2}\,(b+a\,\mathrm{Csc}[e+f\,x])}\,a\,\left(a+b\,\sqrt{1-\mathrm{Cos}[e+f\,x]^2}\right)\,\Bigg(-\Bigg(56\,a\,\left(a^2-b^2\right)\,\mathrm{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},\mathrm{Cos}[e+f\,x]^2,\frac{b^2\,\mathrm{Cos}[e+f\,x]^2}{-a^2+b^2}\right]\,\mathrm{Cos}[e+f\,x]^{3/2}\Bigg)\Bigg/\Bigg(\sqrt{1-\mathrm{Cos}[e+f\,x]^2}\,\Bigg(7\,\left(a^2-b^2\right)\,\mathrm{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},\mathrm{Cos}[e+f\,x]^2,\frac{b^2\,\mathrm{Cos}[e+f\,x]^2}{-a^2+b^2}\right]-2\,\Bigg(2\,b^2\,\mathrm{AppellF1}\left[\frac{7}{4},\frac{1}{2},2,\frac{11}{4},\mathrm{Cos}[e+f\,x]^2,\frac{b^2\,\mathrm{Cos}[e+f\,x]^2}{-a^2+b^2}\right]+\left(-a^2+b^2\right)\,\mathrm{AppellF1}\left[\frac{7}{4},\frac{3}{2},1,\frac{11}{4},\mathrm{Cos}[e+f\,x]^2,\frac{b^2\,\mathrm{Cos}[e+f\,x]^2}{-a^2+b^2}\right]\Bigg)\,\mathrm{Cos}[e+f\,x]^2\Bigg)\,\left(a^2+b^2\,\left(-1+\mathrm{Cos}[e+f\,x]^2\right)\right)\Bigg)-\frac{1}{\sqrt{b}\,\left(-a^2+b^2\right)^{1/4}}\,(3+3\,i)\,\Bigg(2\,\mathrm{ArcTan}\left[1-\frac{(1+i)\,\sqrt{b}\,\sqrt{\mathrm{Cos}[e+f\,x]}}{\left(-a^2+b^2\right)^{1/4}}\right]-2\,\mathrm{ArcTan}\left[1+\frac{(1+i)\,\sqrt{b}\,\sqrt{\mathrm{Cos}[e+f\,x]}}{\left(-a^2+b^2\right)^{1/4}}\right]-\mathrm{Log}\left[\sqrt{-a^2+b^2}-(1+i)\,\sqrt{b}\,\left(-a^2+b^2\right)^{1/4}\,\sqrt{\mathrm{Cos}[e+f\,x]}+i\,b\,\mathrm{Cos}[e+f\,x]\right]+\mathrm{Log}\left[\sqrt{-a^2+b^2}+(1+i)\,\sqrt{b}\,\left(-a^2+b^2\right)^{1/4}\,\sqrt{\mathrm{Cos}[e+f\,x]}+i\,b\,\mathrm{Cos}[e+f\,x]\right]\Bigg)\Bigg)-$$

$$\frac{1}{\left(1-\mathrm{Cos}[e+f\,x]^2\right)\,\left(-1+2\,\mathrm{Cos}[e+f\,x]^2\right)\,(b+a\,\mathrm{Csc}[e+f\,x])}\,2\,b\,\left(-1+\mathrm{Cos}[e+f\,x]^2\right)\,\left(a+b\,\sqrt{1-\mathrm{Cos}[e+f\,x]^2}\right)$$

$$\text{Cos}[2\,(e+f\,x)]\,\text{Csc}[e+f\,x]$$

$$\left(\frac{\left(a^2-b^2\right)^{3/4}\left(-2\,a^2+b^2\right)\text{ArcTan}\left[\frac{-\sqrt{2}\,\left(a^2-b^2\right)^{1/4}+2\,\sqrt{b}\,\sqrt{\text{Cos}[e+f\,x]}}{\sqrt{2}\,\left(a^2-b^2\right)^{1/4}}\right]}{2\,\sqrt{2}\,a\,b^{3/2}\left(-a^2+b^2\right)}+\frac{\left(a^2-b^2\right)^{3/4}\left(-2\,a^2+b^2\right)\text{ArcTan}\left[\frac{\sqrt{2}\,\left(a^2-b^2\right)^{1/4}+2\,\sqrt{b}\,\sqrt{\text{Cos}[e+f\,x]}}{\sqrt{2}\,\left(a^2-b^2\right)^{1/4}}\right]}{2\,\sqrt{2}\,a\,b^{3/2}\left(-a^2+b^2\right)}+\right.$$

$$\frac{\text{ArcTan}\left[\sqrt{\text{Cos}[e+f\,x]}\right]}{2\,a}-\left(7\,b\,\left(a^2-b^2\right)\text{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]\text{Cos}[e+f\,x]^{3/2}\right)\Big/$$

$$\left(3\,\sqrt{1-\text{Cos}[e+f\,x]^2}\,\left(7\,\left(a^2-b^2\right)\text{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]-2\,\left(2\,b^2\,\text{AppellF1}\left[\frac{7}{4},\frac{1}{2},2,\frac{11}{4},\right.\right.\right.$$

$$\left.\left.\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]+\left(-a^2+b^2\right)\text{AppellF1}\left[\frac{7}{4},\frac{3}{2},1,\frac{11}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]\right)\text{Cos}[e+f\,x]^2\Big)$$

$$\left.\left(a^2+b^2\,\left(-1+\text{Cos}[e+f\,x]^2\right)\right)\right)+\left(22\,b\,\left(a^2-b^2\right)\text{AppellF1}\left[\frac{7}{4},\frac{1}{2},1,\frac{11}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]\text{Cos}[e+f\,x]^{7/2}\right)\Big/$$

$$\left(7\,\sqrt{1-\text{Cos}[e+f\,x]^2}\,\left(11\,\left(a^2-b^2\right)\text{AppellF1}\left[\frac{7}{4},\frac{1}{2},1,\frac{11}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]-\right.\right.$$

$$2\,\left(2\,b^2\,\text{AppellF1}\left[\frac{11}{4},\frac{1}{2},2,\frac{15}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]+\left(-a^2+b^2\right)\text{AppellF1}\left[\frac{11}{4},\frac{3}{2},1,\frac{15}{4},\right.\right.$$

$$\left.\left.\left.\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]\right)\text{Cos}[e+f\,x]^2\right)\left(a^2+b^2\,\left(-1+\text{Cos}[e+f\,x]^2\right)\right)\Big)+\frac{\text{Log}\left[1-\sqrt{\text{Cos}[e+f\,x]}\right]}{4\,a}-$$

$$\frac{\text{Log}\left[1+\sqrt{\text{Cos}[e+f\,x]}\right]}{4\,a}+\frac{\left(a^2-b^2\right)^{3/4}\left(-2\,a^2+b^2\right)\text{Log}\left[\sqrt{a^2-b^2}-\sqrt{2}\,\sqrt{b}\,\left(a^2-b^2\right)^{1/4}\sqrt{\text{Cos}[e+f\,x]}+b\,\text{Cos}[e+f\,x]\right]}{4\,\sqrt{2}\,a\,b^{3/2}\left(-a^2+b^2\right)}-$$

$$\left.\frac{\left(a^2-b^2\right)^{3/4}\left(-2\,a^2+b^2\right)\text{Log}\left[\sqrt{a^2-b^2}+\sqrt{2}\,\sqrt{b}\,\left(a^2-b^2\right)^{1/4}\sqrt{\text{Cos}[e+f\,x]}+b\,\text{Cos}[e+f\,x]\right]}{4\,\sqrt{2}\,a\,b^{3/2}\left(-a^2+b^2\right)}\right)+$$

$$\frac{1}{\left(1-\text{Cos}[e+f\,x]^2\right)\left(b+a\,\text{Csc}[e+f\,x]\right)}10\,b\,\left(-1+\text{Cos}[e+f\,x]^2\right)\left(a+b\,\sqrt{1-\text{Cos}[e+f\,x]^2}\right)\text{Csc}[e+f\,x]$$

$$\left(\left(7\,b\,\left(a^2-b^2\right)\text{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]\text{Cos}[e+f\,x]^{3/2}\right)\Big/\right.$$

$$\left(3\,\sqrt{1-\text{Cos}[e+f\,x]^2}\,\left(7\,\left(a^2-b^2\right)\text{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]-2\,\left(2\,b^2\,\text{AppellF1}\left[\frac{7}{4},\frac{1}{2},2,\frac{11}{4},\right.\right.\right.$$

$$\text{Cos}[e+f x]^2,\frac{b^2\text{Cos}[e+f x]^2}{-a^2+b^2}\Big]+\left(-a^2+b^2\right)\text{AppellF1}\Big[\frac{7}{4},\frac{3}{2},1,\frac{11}{4},\text{Cos}[e+f x]^2,\frac{b^2\text{Cos}[e+f x]^2}{-a^2+b^2}\Big]\Big)\text{Cos}[e+f x]^2\Big)$$

$$\left(a^2+b^2\left(-1+\text{Cos}[e+f x]^2\right)\right)\Big)+\frac{1}{8a\left(a^2-b^2\right)^{1/4}}\Big(2\sqrt{2}\sqrt{b}\,\text{ArcTan}\Big[1-\frac{\sqrt{2}\sqrt{b}\sqrt{\text{Cos}[e+f x]}}{\left(a^2-b^2\right)^{1/4}}\Big]-$$

$$2\sqrt{2}\sqrt{b}\,\text{ArcTan}\Big[1+\frac{\sqrt{2}\sqrt{b}\sqrt{\text{Cos}[e+f x]}}{\left(a^2-b^2\right)^{1/4}}\Big]+4\left(a^2-b^2\right)^{1/4}\text{ArcTan}\Big[\sqrt{\text{Cos}[e+f x]}\Big]+2\left(a^2-b^2\right)^{1/4}\text{Log}\Big[1-\sqrt{\text{Cos}[e+f x]}\Big]-$$

$$2\left(a^2-b^2\right)^{1/4}\text{Log}\Big[1+\sqrt{\text{Cos}[e+f x]}\Big]-\sqrt{2}\sqrt{b}\,\text{Log}\Big[\sqrt{a^2-b^2}-\sqrt{2}\sqrt{b}\left(a^2-b^2\right)^{1/4}\sqrt{\text{Cos}[e+f x]}+b\,\text{Cos}[e+f x]\Big]+$$

$$\sqrt{2}\sqrt{b}\,\text{Log}\Big[\sqrt{a^2-b^2}+\sqrt{2}\sqrt{b}\left(a^2-b^2\right)^{1/4}\sqrt{\text{Cos}[e+f x]}+b\,\text{Cos}[e+f x]\Big]\Big)\Big)\Bigg)-\frac{(g\,\text{Cos}[e+f x])^{5/2}\text{Csc}[e+f x]\,\text{Sec}[e+f x]}{a f}$$

- **Problem 1388: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int\frac{(g\,\text{Cos}[e+f x])^{5/2}\text{Csc}[e+f x]^3}{a+b\,\text{Sin}[e+f x]}\,dx$$

Optimal (type 4, 557 leaves, 30 steps):

$$-\frac{3g^{5/2}\text{ArcTan}\Big[\frac{\sqrt{g\,\text{Cos}[e+f x]}}{\sqrt{g}}\Big]}{4af}+\frac{b^2g^{5/2}\text{ArcTan}\Big[\frac{\sqrt{g\,\text{Cos}[e+f x]}}{\sqrt{g}}\Big]}{a^3f}-\frac{\sqrt{b}\left(-a^2+b^2\right)^{3/4}g^{5/2}\text{ArcTan}\Big[\frac{\sqrt{b}\sqrt{g\,\text{Cos}[e+f x]}}{\left(-a^2+b^2\right)^{1/4}\sqrt{g}}\Big]}{a^3f}+$$

$$\frac{3g^{5/2}\text{ArcTanh}\Big[\frac{\sqrt{g\,\text{Cos}[e+f x]}}{\sqrt{g}}\Big]}{4af}-\frac{b^2g^{5/2}\text{ArcTanh}\Big[\frac{\sqrt{g\,\text{Cos}[e+f x]}}{\sqrt{g}}\Big]}{a^3f}+\frac{\sqrt{b}\left(-a^2+b^2\right)^{3/4}g^{5/2}\text{ArcTanh}\Big[\frac{\sqrt{b}\sqrt{g\,\text{Cos}[e+f x]}}{\left(-a^2+b^2\right)^{1/4}\sqrt{g}}\Big]}{a^3f}+$$

$$\frac{b\,g\,(g\,\text{Cos}[e+f x])^{3/2}\text{Csc}[e+f x]}{a^2f}-\frac{g\,(g\,\text{Cos}[e+f x])^{3/2}\text{Csc}[e+f x]^2}{2af}+\frac{b\,g^2\sqrt{g\,\text{Cos}[e+f x]}\,\text{EllipticE}\Big[\frac{1}{2}(e+f x),2\Big]}{a^2f\sqrt{\text{Cos}[e+f x]}}+$$

$$\frac{\left(a^2-b^2\right)g^3\sqrt{\text{Cos}[e+f x]}\,\text{EllipticPi}\Big[\frac{2b}{b-\sqrt{-a^2+b^2}},\frac{1}{2}(e+f x),2\Big]}{a^2\left(b-\sqrt{-a^2+b^2}\right)f\sqrt{g\,\text{Cos}[e+f x]}}+\frac{\left(a^2-b^2\right)g^3\sqrt{\text{Cos}[e+f x]}\,\text{EllipticPi}\Big[\frac{2b}{b+\sqrt{-a^2+b^2}},\frac{1}{2}(e+f x),2\Big]}{a^2\left(b+\sqrt{-a^2+b^2}\right)f\sqrt{g\,\text{Cos}[e+f x]}}$$

Result (type 6, 2427 leaves):

$$-\frac{1}{4a^2f\,\text{Cos}[e+f x]^{5/2}}(g\,\text{Cos}[e+f x])^{5/2}$$

$$\Bigg(-\frac{1}{4\sqrt{1-\text{Cos}[e+f x]^2}\;(b+a\,\text{Csc}[e+f x])}\,a\,b\,\left(a+b\sqrt{1-\text{Cos}[e+f x]^2}\right)\Bigg(-\Bigg(56\,a\,(a^2-b^2)\,\text{AppellF1}\Big[\frac{3}{4},\,\frac{1}{2},\,1,\,\frac{7}{4},\,\text{Cos}[e+f x]^2,$$

$$\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\Big]\,\text{Cos}[e+f x]^{3/2}\Bigg)\Big/\Bigg(\sqrt{1-\text{Cos}[e+f x]^2}\;\Bigg(7\,(a^2-b^2)\,\text{AppellF1}\Big[\frac{3}{4},\,\frac{1}{2},\,1,\,\frac{7}{4},\,\text{Cos}[e+f x]^2,\,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\Big]-$$

$$2\,\Bigg(2\,b^2\,\text{AppellF1}\Big[\frac{7}{4},\,\frac{1}{2},\,2,\,\frac{11}{4},\,\text{Cos}[e+f x]^2,\,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\Big]+(-a^2+b^2)\,\text{AppellF1}\Big[\frac{7}{4},\,\frac{3}{2},\,1,\,\frac{11}{4},$$

$$\text{Cos}[e+f x]^2,\,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\Big]\Bigg)\,\text{Cos}[e+f x]^2\Bigg)\,\left(a^2+b^2\,\left(-1+\text{Cos}[e+f x]^2\right)\right)\Bigg)-\frac{1}{\sqrt{b}\,\left(-a^2+b^2\right)^{1/4}}$$

$$(3+3\,i)\,\Bigg(2\,\text{ArcTan}\Big[1-\frac{(1+i)\,\sqrt{b}\,\sqrt{\text{Cos}[e+f x]}}{\left(-a^2+b^2\right)^{1/4}}\Big]-2\,\text{ArcTan}\Big[1+\frac{(1+i)\,\sqrt{b}\,\sqrt{\text{Cos}[e+f x]}}{\left(-a^2+b^2\right)^{1/4}}\Big]-\text{Log}\Big[\sqrt{-a^2+b^2}-(1+i)\,\sqrt{b}$$

$$\left(-a^2+b^2\right)^{1/4}\sqrt{\text{Cos}[e+f x]}+i\,b\,\text{Cos}[e+f x]\Big]+\text{Log}\Big[\sqrt{-a^2+b^2}+(1+i)\,\sqrt{b}\,\left(-a^2+b^2\right)^{1/4}\sqrt{\text{Cos}[e+f x]}+i\,b\,\text{Cos}[e+f x]\Big]\Bigg)\Bigg)\Bigg)-$$

$$\frac{1}{\left(1-\text{Cos}[e+f x]^2\right)\,\left(-1+2\,\text{Cos}[e+f x]^2\right)\,(b+a\,\text{Csc}[e+f x])}\,2\,b^2\,\left(-1+\text{Cos}[e+f x]^2\right)\,\left(a+b\sqrt{1-\text{Cos}[e+f x]^2}\right)$$

$$\text{Cos}[2\,(e+f x)]\,\text{Csc}[e+f x]$$

$$\Bigg(\frac{\left(a^2-b^2\right)^{3/4}\left(-2\,a^2+b^2\right)\,\text{ArcTan}\Big[\frac{-\sqrt{2}\,(a^2-b^2)^{1/4}+2\sqrt{b}\,\sqrt{\text{Cos}[e+f x]}}{\sqrt{2}\,(a^2-b^2)^{1/4}}\Big]}{2\sqrt{2}\,a\,b^{3/2}\,\left(-a^2+b^2\right)}+\frac{\left(a^2-b^2\right)^{3/4}\left(-2\,a^2+b^2\right)\,\text{ArcTan}\Big[\frac{\sqrt{2}\,(a^2-b^2)^{1/4}+2\sqrt{b}\,\sqrt{\text{Cos}[e+f x]}}{\sqrt{2}\,(a^2-b^2)^{1/4}}\Big]}{2\sqrt{2}\,a\,b^{3/2}\,\left(-a^2+b^2\right)}+$$

$$\frac{\text{ArcTan}\Big[\sqrt{\text{Cos}[e+f x]}\Big]}{2\,a}-\Bigg(7\,b\,(a^2-b^2)\,\text{AppellF1}\Big[\frac{3}{4},\,\frac{1}{2},\,1,\,\frac{7}{4},\,\text{Cos}[e+f x]^2,\,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\Big]\,\text{Cos}[e+f x]^{3/2}\Bigg)\Big/$$

$$\Bigg(3\sqrt{1-\text{Cos}[e+f x]^2}\;\Bigg(7\,(a^2-b^2)\,\text{AppellF1}\Big[\frac{3}{4},\,\frac{1}{2},\,1,\,\frac{7}{4},\,\text{Cos}[e+f x]^2,\,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\Big]-2\,\Bigg(2\,b^2\,\text{AppellF1}\Big[\frac{7}{4},\,\frac{1}{2},\,2,\,\frac{11}{4},$$

$$\text{Cos}[e+f x]^2,\,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\Big]+(-a^2+b^2)\,\text{AppellF1}\Big[\frac{7}{4},\,\frac{3}{2},\,1,\,\frac{11}{4},\,\text{Cos}[e+f x]^2,\,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\Big]\Bigg)\,\text{Cos}[e+f x]^2\Bigg)$$

$$\left(a^2+b^2\,\left(-1+\text{Cos}[e+f x]^2\right)\right)\Bigg)+\Bigg(22\,b\,(a^2-b^2)\,\text{AppellF1}\Big[\frac{7}{4},\,\frac{1}{2},\,1,\,\frac{11}{4},\,\text{Cos}[e+f x]^2,\,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\Big]\,\text{Cos}[e+f x]^{7/2}\Bigg)\Big/$$

$$\Bigg(7\sqrt{1-\text{Cos}[e+f x]^2}\;\Bigg(11\,(a^2-b^2)\,\text{AppellF1}\Big[\frac{7}{4},\,\frac{1}{2},\,1,\,\frac{11}{4},\,\text{Cos}[e+f x]^2,\,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\Big]-2$$

$$\left(2\,b^2\,\text{AppellF1}\left[\frac{11}{4},\frac{1}{2},2,\frac{15}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]+\left(-a^2+b^2\right)\text{AppellF1}\left[\frac{11}{4},\frac{3}{2},1,\frac{15}{4},\right.\right.$$

$$\left.\left.\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]\right)\text{Cos}[e+f x]^2\Big)\left(a^2+b^2\left(-1+\text{Cos}[e+f x]^2\right)\right)\Big)+\frac{\text{Log}\left[1-\sqrt{\text{Cos}[e+f x]}\right]}{4\,a}-$$

$$\frac{\text{Log}\left[1+\sqrt{\text{Cos}[e+f x]}\right]}{4\,a}+\frac{\left(a^2-b^2\right)^{3/4}\left(-2\,a^2+b^2\right)\text{Log}\left[\sqrt{a^2-b^2}-\sqrt{2}\,\sqrt{b}\,\left(a^2-b^2\right)^{1/4}\sqrt{\text{Cos}[e+f x]}+b\,\text{Cos}[e+f x]\right]}{4\,\sqrt{2}\,a\,b^{3/2}\left(-a^2+b^2\right)}-$$

$$\left.\frac{\left(a^2-b^2\right)^{3/4}\left(-2\,a^2+b^2\right)\text{Log}\left[\sqrt{a^2-b^2}+\sqrt{2}\,\sqrt{b}\,\left(a^2-b^2\right)^{1/4}\sqrt{\text{Cos}[e+f x]}+b\,\text{Cos}[e+f x]\right]}{4\,\sqrt{2}\,a\,b^{3/2}\left(-a^2+b^2\right)}\right)-$$

$$\frac{1}{\left(1-\text{Cos}[e+f x]^2\right)\left(b+a\,\text{Csc}[e+f x]\right)}2\left(3\,a^2-5\,b^2\right)\left(-1+\text{Cos}[e+f x]^2\right)\left(a+b\sqrt{1-\text{Cos}[e+f x]^2}\right)\text{Csc}[e+f x]$$

$$\left(\left(\left(7\,b\left(a^2-b^2\right)\text{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]\text{Cos}[e+f x]^{3/2}\right)\Big/\left(3\sqrt{1-\text{Cos}[e+f x]^2}\left(7\left(a^2-b^2\right)\right.\right.\right.\right.$$

$$\text{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]-2\left(2\,b^2\,\text{AppellF1}\left[\frac{7}{4},\frac{1}{2},2,\frac{11}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]+\right.$$

$$\left.\left.\left.\left(-a^2+b^2\right)\text{AppellF1}\left[\frac{7}{4},\frac{3}{2},1,\frac{11}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]\right)\text{Cos}[e+f x]^2\right)\left(a^2+b^2\left(-1+\text{Cos}[e+f x]^2\right)\right)\right)+$$

$$\frac{1}{8\,a\left(a^2-b^2\right)^{1/4}}\left(2\sqrt{2}\,\sqrt{b}\,\text{ArcTan}\left[1-\frac{\sqrt{2}\,\sqrt{b}\,\sqrt{\text{Cos}[e+f x]}}{\left(a^2-b^2\right)^{1/4}}\right]-2\sqrt{2}\,\sqrt{b}\,\text{ArcTan}\left[1+\frac{\sqrt{2}\,\sqrt{b}\,\sqrt{\text{Cos}[e+f x]}}{\left(a^2-b^2\right)^{1/4}}\right]+\right.$$

$$4\left(a^2-b^2\right)^{1/4}\text{ArcTan}\left[\sqrt{\text{Cos}[e+f x]}\right]+2\left(a^2-b^2\right)^{1/4}\text{Log}\left[1-\sqrt{\text{Cos}[e+f x]}\right]-$$

$$2\left(a^2-b^2\right)^{1/4}\text{Log}\left[1+\sqrt{\text{Cos}[e+f x]}\right]-\sqrt{2}\,\sqrt{b}\,\text{Log}\left[\sqrt{a^2-b^2}-\sqrt{2}\,\sqrt{b}\left(a^2-b^2\right)^{1/4}\sqrt{\text{Cos}[e+f x]}+b\,\text{Cos}[e+f x]\right]+$$

$$\left.\left.\sqrt{2}\,\sqrt{b}\,\text{Log}\left[\sqrt{a^2-b^2}+\sqrt{2}\,\sqrt{b}\left(a^2-b^2\right)^{1/4}\sqrt{\text{Cos}[e+f x]}+b\,\text{Cos}[e+f x]\right]\right)\right)\right)+$$

$$\frac{\left(g\,\text{Cos}[e+f x]\right)^{5/2}\left(\frac{b\,\text{Cot}[e+f x]}{a^2}-\frac{\text{Cot}[e+f x]\,\text{Csc}[e+f x]}{2\,a}\right)\text{Sec}[e+f x]^2}{f}$$

- **Problem 1389: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int \frac{\text{Sin}[e+f x]^4}{\sqrt{g \text{Cos}[e+f x]}\,(a+b \text{Sin}[e+f x])}\,dx$$

Optimal (type 4, 509 leaves, 23 steps):

$$-\frac{a^4 \text{ArcTan}\left[\frac{\sqrt{b}\,\sqrt{g \text{Cos}[e+f x]}}{(-a^2+b^2)^{1/4}\sqrt{g}}\right]}{b^{7/2}\,(-a^2+b^2)^{3/4} f \sqrt{g}}-\frac{a^4 \text{ArcTanh}\left[\frac{\sqrt{b}\,\sqrt{g \text{Cos}[e+f x]}}{(-a^2+b^2)^{1/4}\sqrt{g}}\right]}{b^{7/2}\,(-a^2+b^2)^{3/4} f \sqrt{g}}-\frac{2 a^2 \sqrt{g \text{Cos}[e+f x]}}{b^3 f g}-$$

$$\frac{2 \sqrt{g \text{Cos}[e+f x]}}{b f g}+\frac{2 (g \text{Cos}[e+f x])^{5/2}}{5 b f g^3}-\frac{2 a^3 \sqrt{\text{Cos}[e+f x]}\, \text{EllipticF}\left[\frac{1}{2}(e+f x), 2\right]}{b^4 f \sqrt{g \text{Cos}[e+f x]}}-$$

$$\frac{4 a \sqrt{\text{Cos}[e+f x]}\, \text{EllipticF}\left[\frac{1}{2}(e+f x), 2\right]}{3 b^2 f \sqrt{g \text{Cos}[e+f x]}}+\frac{a^5 \sqrt{\text{Cos}[e+f x]}\, \text{EllipticPi}\left[\frac{2 b}{b-\sqrt{-a^2+b^2}}, \frac{1}{2}(e+f x), 2\right]}{b^4 \left(a^2-b\left(b-\sqrt{-a^2+b^2}\right)\right) f \sqrt{g \text{Cos}[e+f x]}}+$$

$$\frac{a^5 \sqrt{\text{Cos}[e+f x]}\, \text{EllipticPi}\left[\frac{2 b}{b+\sqrt{-a^2+b^2}}, \frac{1}{2}(e+f x), 2\right]}{b^4 \left(a^2-b\left(b+\sqrt{-a^2+b^2}\right)\right) f \sqrt{g \text{Cos}[e+f x]}}+\frac{2 a \sqrt{g \text{Cos}[e+f x]}\, \text{Sin}[e+f x]}{3 b^2 f g}$$

Result (type 6, 2153 leaves):

$$\frac{\text{Cos}[e+f x]\left(\frac{\text{Cos}[2 (e+f x)]}{5 b}+\frac{2 a \text{Sin}[e+f x]}{3 b^2}\right)}{f \sqrt{g \text{Cos}[e+f x]}}-$$

$$\frac{1}{60 b^2 f \sqrt{g \text{Cos}[e+f x]}} \sqrt{\text{Cos}[e+f x]} \left(-\frac{1}{\sqrt{1-\text{Cos}[e+f x]^2}\,(a+b \text{Sin}[e+f x])} 2 \left(10 a^2-27 b^2\right) \left(a+b \sqrt{1-\text{Cos}[e+f x]^2}\right)\right.$$

$$\left(\left(5 a (a^2-b^2) \text{AppellF1}\left[\frac{1}{4}, \frac{1}{2}, 1, \frac{5}{4}, \text{Cos}[e+f x]^2, \frac{b^2 \text{Cos}[e+f x]^2}{-a^2+b^2}\right] \sqrt{\text{Cos}[e+f x]}\right) \Big/ \left(\sqrt{1-\text{Cos}[e+f x]^2} \left(5 (a^2-b^2)\right.\right.\right.$$

$$\text{AppellF1}\left[\frac{1}{4}, \frac{1}{2}, 1, \frac{5}{4}, \text{Cos}[e+f x]^2, \frac{b^2 \text{Cos}[e+f x]^2}{-a^2+b^2}\right]-2 \left(2 b^2 \text{AppellF1}\left[\frac{5}{4}, \frac{1}{2}, 2, \frac{9}{4}, \text{Cos}[e+f x]^2, \frac{b^2 \text{Cos}[e+f x]^2}{-a^2+b^2}\right]+\right.$$

$$\left.\left.\left.(-a^2+b^2) \text{AppellF1}\left[\frac{5}{4}, \frac{3}{2}, 1, \frac{9}{4}, \text{Cos}[e+f x]^2, \frac{b^2 \text{Cos}[e+f x]^2}{-a^2+b^2}\right]\right) \text{Cos}[e+f x]^2\right) \left(a^2+b^2 \left(-1+\text{Cos}[e+f x]^2\right)\right)\right)-$$

$$\frac{1}{(-a^2+b^2)^{3/4}} \left(\frac{1}{8}-\frac{i}{8}\right) \sqrt{b} \left(2 \text{ArcTan}\left[1-\frac{(1+i) \sqrt{b}\, \sqrt{\text{Cos}[e+f x]}}{(-a^2+b^2)^{1/4}}\right]-2 \text{ArcTan}\left[1+\frac{(1+i) \sqrt{b}\, \sqrt{\text{Cos}[e+f x]}}{(-a^2+b^2)^{1/4}}\right]+\right.$$

$$\text{Log}\left[\sqrt{-a^2+b^2}-(1+i)\sqrt{b}\left(-a^2+b^2\right)^{1/4}\sqrt{\text{Cos}[e+f x]}+i\,b\,\text{Cos}[e+f x]\right]-$$

$$\left.\left.\text{Log}\left[\sqrt{-a^2+b^2}+(1+i)\sqrt{b}\left(-a^2+b^2\right)^{1/4}\sqrt{\text{Cos}[e+f x]}+i\,b\,\text{Cos}[e+f x]\right]\right)\right)\text{Sin}[e+f x]+$$

$$\frac{1}{\sqrt{1-\text{Cos}[e+f x]^2}\left(-1+2\,\text{Cos}[e+f x]^2\right)(a+b\,\text{Sin}[e+f x])}\left(30 a^2+27 b^2\right)\left(a+b\sqrt{1-\text{Cos}[e+f x]^2}\right)\text{Cos}[2(e+f x)]$$

$$\left(\frac{\left(\frac{1}{2}-\frac{i}{2}\right)\left(-2 a^2+b^2\right)\text{ArcTan}\left[1-\frac{(1+i)\sqrt{b}\sqrt{\text{Cos}[e+f x]}}{\left(-a^2+b^2\right)^{1/4}}\right]}{b^{3/2}\left(-a^2+b^2\right)^{3/4}}-\frac{\left(\frac{1}{2}-\frac{i}{2}\right)\left(-2 a^2+b^2\right)\text{ArcTan}\left[1+\frac{(1+i)\sqrt{b}\sqrt{\text{Cos}[e+f x]}}{\left(-a^2+b^2\right)^{1/4}}\right]}{b^{3/2}\left(-a^2+b^2\right)^{3/4}}+\right.$$

$$\frac{4\sqrt{\text{Cos}[e+f x]}}{b}+\left(10 a\left(a^2-b^2\right)\text{AppellF1}\left[\frac{1}{4},\frac{1}{2},1,\frac{5}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]\sqrt{\text{Cos}[e+f x]}\right)\Big/$$

$$\left(\sqrt{1-\text{Cos}[e+f x]^2}\left(5\left(a^2-b^2\right)\text{AppellF1}\left[\frac{1}{4},\frac{1}{2},1,\frac{5}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]-2\left(2 b^2\,\text{AppellF1}\left[\frac{5}{4},\frac{1}{2},2,\frac{9}{4},\right.\right.\right.\right.$$

$$\left.\left.\left.\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]+\left(-a^2+b^2\right)\text{AppellF1}\left[\frac{5}{4},\frac{3}{2},1,\frac{9}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]\right)\text{Cos}[e+f x]^2\right)$$

$$\left.\left(a^2+b^2\left(-1+\text{Cos}[e+f x]^2\right)\right)\right)-\left(36 a\left(a^2-b^2\right)\text{AppellF1}\left[\frac{5}{4},\frac{1}{2},1,\frac{9}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]\text{Cos}[e+f x]^{5/2}\right)\Big/$$

$$\left(5\sqrt{1-\text{Cos}[e+f x]^2}\left(9\left(a^2-b^2\right)\text{AppellF1}\left[\frac{5}{4},\frac{1}{2},1,\frac{9}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]-\right.\right.$$

$$2\left(2 b^2\,\text{AppellF1}\left[\frac{9}{4},\frac{1}{2},2,\frac{13}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]+\right.$$

$$\left.\left.\left.\left(-a^2+b^2\right)\text{AppellF1}\left[\frac{9}{4},\frac{3}{2},1,\frac{13}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]\right)\text{Cos}[e+f x]^2\right)\left(a^2+b^2\left(-1+\text{Cos}[e+f x]^2\right)\right)\right)+$$

$$\frac{1}{b^{3/2}\left(-a^2+b^2\right)^{3/4}}\left(\frac{1}{4}-\frac{i}{4}\right)\left(-2 a^2+b^2\right)\text{Log}\left[\sqrt{-a^2+b^2}-(1+i)\sqrt{b}\left(-a^2+b^2\right)^{1/4}\sqrt{\text{Cos}[e+f x]}+i\,b\,\text{Cos}[e+f x]\right]-$$

$$\left.\frac{1}{b^{3/2}\left(-a^2+b^2\right)^{3/4}}\left(\frac{1}{4}-\frac{i}{4}\right)\left(-2 a^2+b^2\right)\text{Log}\left[\sqrt{-a^2+b^2}+(1+i)\sqrt{b}\left(-a^2+b^2\right)^{1/4}\sqrt{\text{Cos}[e+f x]}+i\,b\,\text{Cos}[e+f x]\right]\right)\text{Sin}[e+f x]+$$

$$\frac{1}{\left(1-\text{Cos}[e+f x]^2\right)(a+b\,\text{Sin}[e+f x])}\,28\,a\,b\left(a+b\sqrt{1-\text{Cos}[e+f x]^2}\right)$$

$$\left(\left(5\,b\,(a^2-b^2)\,\text{AppellF1}\left[\frac{1}{4},-\frac{1}{2},1,\frac{5}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]\sqrt{\text{Cos}[e+f\,x]}\,\sqrt{1-\text{Cos}[e+f\,x]^2}\right)\Big/\right.$$
$$\left(\left(-5\,(a^2-b^2)\,\text{AppellF1}\left[\frac{1}{4},-\frac{1}{2},1,\frac{5}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]+2\left(2\,b^2\,\text{AppellF1}\left[\frac{5}{4},-\frac{1}{2},2,\frac{9}{4},\text{Cos}[e+f\,x]^2,\right.\right.\right.\right.$$
$$\left.\left.\left.\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]+(a^2-b^2)\,\text{AppellF1}\left[\frac{5}{4},\frac{1}{2},1,\frac{9}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]\right)\text{Cos}[e+f\,x]^2\right)$$
$$\left.\left(a^2+b^2\,(-1+\text{Cos}[e+f\,x]^2)\right)\right)+\frac{1}{4\sqrt{2}\,\sqrt{b}\,(a^2-b^2)^{3/4}}a\left(-2\,\text{ArcTan}\left[1-\frac{\sqrt{2}\,\sqrt{b}\,\sqrt{\text{Cos}[e+f\,x]}}{(a^2-b^2)^{1/4}}\right]+\right.$$
$$2\,\text{ArcTan}\left[1+\frac{\sqrt{2}\,\sqrt{b}\,\sqrt{\text{Cos}[e+f\,x]}}{(a^2-b^2)^{1/4}}\right]-\text{Log}\left[\sqrt{a^2-b^2}-\sqrt{2}\,\sqrt{b}\,(a^2-b^2)^{1/4}\sqrt{\text{Cos}[e+f\,x]}+b\,\text{Cos}[e+f\,x]\right]+$$
$$\left.\left.\text{Log}\left[\sqrt{a^2-b^2}+\sqrt{2}\,\sqrt{b}\,(a^2-b^2)^{1/4}\sqrt{\text{Cos}[e+f\,x]}+b\,\text{Cos}[e+f\,x]\right]\right)\right)\text{Sin}[e+f\,x]^2\Bigg)$$

■ Problem 1390: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{\text{Sin}[e+f\,x]^3}{\sqrt{g\,\text{Cos}[e+f\,x]}\,(a+b\,\text{Sin}[e+f\,x])}\,dx$$

Optimal (type 4, 457 leaves, 19 steps):

$$\frac{a^3\,\text{ArcTan}\left[\frac{\sqrt{b}\,\sqrt{g\,\text{Cos}[e+f\,x]}}{(-a^2+b^2)^{1/4}\sqrt{g}}\right]}{b^{5/2}\,(-a^2+b^2)^{3/4}\,f\,\sqrt{g}}+\frac{a^3\,\text{ArcTanh}\left[\frac{\sqrt{b}\,\sqrt{g\,\text{Cos}[e+f\,x]}}{(-a^2+b^2)^{1/4}\sqrt{g}}\right]}{b^{5/2}\,(-a^2+b^2)^{3/4}\,f\,\sqrt{g}}+\frac{2\,a\,\sqrt{g\,\text{Cos}[e+f\,x]}}{b^2\,f\,g}+\frac{2\,a^2\,\sqrt{\text{Cos}[e+f\,x]}\,\text{EllipticF}\left[\frac{1}{2}(e+f\,x),2\right]}{b^3\,f\,\sqrt{g\,\text{Cos}[e+f\,x]}}+$$
$$\frac{4\,\sqrt{\text{Cos}[e+f\,x]}\,\text{EllipticF}\left[\frac{1}{2}(e+f\,x),2\right]}{3\,b\,f\,\sqrt{g\,\text{Cos}[e+f\,x]}}-\frac{a^4\,\sqrt{\text{Cos}[e+f\,x]}\,\text{EllipticPi}\left[\frac{2\,b}{b-\sqrt{-a^2+b^2}},\frac{1}{2}(e+f\,x),2\right]}{b^3\,\left(a^2-b\left(b-\sqrt{-a^2+b^2}\right)\right)f\,\sqrt{g\,\text{Cos}[e+f\,x]}}-$$
$$\frac{a^4\,\sqrt{\text{Cos}[e+f\,x]}\,\text{EllipticPi}\left[\frac{2\,b}{b+\sqrt{-a^2+b^2}},\frac{1}{2}(e+f\,x),2\right]}{b^3\,\left(a^2-b\left(b+\sqrt{-a^2+b^2}\right)\right)f\,\sqrt{g\,\text{Cos}[e+f\,x]}}-\frac{2\,\sqrt{g\,\text{Cos}[e+f\,x]}\,\text{Sin}[e+f\,x]}{3\,b\,f\,g}$$

Result (type 6, 2115 leaves):

$$-\frac{2\,\text{Cos}[e+f\,x]\,\text{Sin}[e+f\,x]}{3\,b\,f\,\sqrt{g\,\text{Cos}[e+f\,x]}}+$$

$$\frac{1}{6\,b\,f\,\sqrt{g\,\text{Cos}[e+f\,x]}}\sqrt{\text{Cos}[e+f\,x]}\left(-\frac{1}{\sqrt{1-\text{Cos}[e+f\,x]^2}\;(a+b\,\text{Sin}[e+f\,x])}\,2\,a\left(a+b\sqrt{1-\text{Cos}[e+f\,x]^2}\right)\left(\left(5\,a\,(a^2-b^2)\right.\right.\right.$$

$$\text{AppellF1}\Big[\frac{1}{4},\frac{1}{2},1,\frac{5}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\Big]\sqrt{\text{Cos}[e+f\,x]}\Big)\Big/\left(\sqrt{1-\text{Cos}[e+f\,x]^2}\left(5\,(a^2-b^2)\,\text{AppellF1}\Big[\frac{1}{4},\frac{1}{2},\right.\right.$$

$$1,\frac{5}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\Big]-2\left(2\,b^2\,\text{AppellF1}\Big[\frac{5}{4},\frac{1}{2},2,\frac{9}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\Big]+\right.$$

$$\left.\left.(-a^2+b^2)\,\text{AppellF1}\Big[\frac{5}{4},\frac{3}{2},1,\frac{9}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\Big]\right)\text{Cos}[e+f\,x]^2\right)\left(a^2+b^2\left(-1+\text{Cos}[e+f\,x]^2\right)\right)\Big)-$$

$$\frac{1}{(-a^2+b^2)^{3/4}}\left(\frac{1}{8}-\frac{i}{8}\right)\sqrt{b}\left(2\,\text{ArcTan}\Big[1-\frac{(1+i)\sqrt{b}\,\sqrt{\text{Cos}[e+f\,x]}}{(-a^2+b^2)^{1/4}}\Big]-2\,\text{ArcTan}\Big[1+\frac{(1+i)\sqrt{b}\,\sqrt{\text{Cos}[e+f\,x]}}{(-a^2+b^2)^{1/4}}\Big]+\right.$$

$$\text{Log}\Big[\sqrt{-a^2+b^2}-(1+i)\sqrt{b}\,(-a^2+b^2)^{1/4}\sqrt{\text{Cos}[e+f\,x]}+i\,b\,\text{Cos}[e+f\,x]\Big]-$$

$$\left.\left.\text{Log}\Big[\sqrt{-a^2+b^2}+(1+i)\sqrt{b}\,(-a^2+b^2)^{1/4}\sqrt{\text{Cos}[e+f\,x]}+i\,b\,\text{Cos}[e+f\,x]\Big]\right)\right)\text{Sin}[e+f\,x]+$$

$$\frac{1}{\sqrt{1-\text{Cos}[e+f\,x]^2}\;\left(-1+2\,\text{Cos}[e+f\,x]^2\right)\,(a+b\,\text{Sin}[e+f\,x])}\,3\,a\left(a+b\sqrt{1-\text{Cos}[e+f\,x]^2}\right)\text{Cos}[2\,(e+f\,x)]$$

$$\left(\frac{\left(\frac{1}{2}-\frac{i}{2}\right)(-2\,a^2+b^2)\,\text{ArcTan}\Big[1-\frac{(1+i)\sqrt{b}\,\sqrt{\text{Cos}[e+f\,x]}}{(-a^2+b^2)^{1/4}}\Big]}{b^{3/2}\,(-a^2+b^2)^{3/4}}-\frac{\left(\frac{1}{2}-\frac{i}{2}\right)(-2\,a^2+b^2)\,\text{ArcTan}\Big[1+\frac{(1+i)\sqrt{b}\,\sqrt{\text{Cos}[e+f\,x]}}{(-a^2+b^2)^{1/4}}\Big]}{b^{3/2}\,(-a^2+b^2)^{3/4}}+\right.$$

$$\frac{4\sqrt{\text{Cos}[e+f\,x]}}{b}+\left(10\,a\,(a^2-b^2)\,\text{AppellF1}\Big[\frac{1}{4},\frac{1}{2},1,\frac{5}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\Big]\sqrt{\text{Cos}[e+f\,x]}\right)\Big/$$

$$\left(\sqrt{1-\text{Cos}[e+f\,x]^2}\left(5\,(a^2-b^2)\,\text{AppellF1}\Big[\frac{1}{4},\frac{1}{2},1,\frac{5}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\Big]-2\left(2\,b^2\,\text{AppellF1}\Big[\frac{5}{4},\frac{1}{2},2,\frac{9}{4},\right.\right.\right.$$

$$\left.\left.\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\Big]+(-a^2+b^2)\,\text{AppellF1}\Big[\frac{5}{4},\frac{3}{2},1,\frac{9}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\Big]\right)\text{Cos}[e+f\,x]^2\right)$$

$$\left.\left(a^2+b^2\left(-1+\text{Cos}[e+f\,x]^2\right)\right)\right)-\left(36\,a\,(a^2-b^2)\,\text{AppellF1}\Big[\frac{5}{4},\frac{1}{2},1,\frac{9}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\Big]\text{Cos}[e+f\,x]^{5/2}\right)\Big/$$

$$\left(5\sqrt{1-\text{Cos}[e+f\,x]^2}\left(9\,(a^2-b^2)\,\text{AppellF1}\Big[\frac{5}{4},\frac{1}{2},1,\frac{9}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\Big]-\right.\right.$$

$$2\left(2\,b^2\,\text{AppellF1}\Big[\frac{9}{4},\frac{1}{2},2,\frac{13}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\Big]+\right.$$

$$\left(-a^2+b^2\right) \text{AppellF1}\left[\frac{9}{4},\frac{3}{2},1,\frac{13}{4},\text{Cos}[e+f x]^2,\frac{b^2 \text{Cos}[e+f x]^2}{-a^2+b^2}\right]\Big) \text{Cos}[e+f x]^2\Big) \left(a^2+b^2 \left(-1+\text{Cos}[e+f x]^2\right)\right)\Big)+$$

$$\frac{1}{b^{3/2} \left(-a^2+b^2\right)^{3/4}}\left(\frac{1}{4}-\frac{i}{4}\right) \left(-2 a^2+b^2\right) \text{Log}\left[\sqrt{-a^2+b^2}-(1+i) \sqrt{b} \left(-a^2+b^2\right)^{1/4} \sqrt{\text{Cos}[e+f x]}+i b \text{Cos}[e+f x]\right]-$$

$$\frac{1}{b^{3/2} \left(-a^2+b^2\right)^{3/4}}\left(\frac{1}{4}-\frac{i}{4}\right) \left(-2 a^2+b^2\right) \text{Log}\left[\sqrt{-a^2+b^2}+(1+i) \sqrt{b} \left(-a^2+b^2\right)^{1/4} \sqrt{\text{Cos}[e+f x]}+i b \text{Cos}[e+f x]\right]\Bigg) \text{Sin}[e+f x]-$$

$$\frac{1}{\left(1-\text{Cos}[e+f x]^2\right) (a+b \text{Sin}[e+f x])}8 b \left(a+b \sqrt{1-\text{Cos}[e+f x]^2}\right)$$

$$\Bigg(\Bigg(5 b \left(a^2-b^2\right) \text{AppellF1}\left[\frac{1}{4},-\frac{1}{2},1,\frac{5}{4},\text{Cos}[e+f x]^2,\frac{b^2 \text{Cos}[e+f x]^2}{-a^2+b^2}\right] \sqrt{\text{Cos}[e+f x]} \sqrt{1-\text{Cos}[e+f x]^2}\Bigg)\Bigg/$$

$$\Bigg(\Bigg(-5 \left(a^2-b^2\right) \text{AppellF1}\left[\frac{1}{4},-\frac{1}{2},1,\frac{5}{4},\text{Cos}[e+f x]^2,\frac{b^2 \text{Cos}[e+f x]^2}{-a^2+b^2}\right]+2 \Bigg(2 b^2 \text{AppellF1}\left[\frac{5}{4},-\frac{1}{2},2,\frac{9}{4},\text{Cos}[e+f x]^2,\right.$$

$$\left.\frac{b^2 \text{Cos}[e+f x]^2}{-a^2+b^2}\right]+\left(a^2-b^2\right) \text{AppellF1}\left[\frac{5}{4},\frac{1}{2},1,\frac{9}{4},\text{Cos}[e+f x]^2,\frac{b^2 \text{Cos}[e+f x]^2}{-a^2+b^2}\right]\Bigg) \text{Cos}[e+f x]^2\Bigg)$$

$$\left(a^2+b^2 \left(-1+\text{Cos}[e+f x]^2\right)\right)\Bigg)+\frac{1}{4 \sqrt{2} \sqrt{b} \left(a^2-b^2\right)^{3/4}}a \Bigg(-2 \text{ArcTan}\left[1-\frac{\sqrt{2} \sqrt{b} \sqrt{\text{Cos}[e+f x]}}{\left(a^2-b^2\right)^{1/4}}\right]+$$

$$2 \text{ArcTan}\left[1+\frac{\sqrt{2} \sqrt{b} \sqrt{\text{Cos}[e+f x]}}{\left(a^2-b^2\right)^{1/4}}\right]-\text{Log}\left[\sqrt{a^2-b^2}-\sqrt{2} \sqrt{b} \left(a^2-b^2\right)^{1/4} \sqrt{\text{Cos}[e+f x]}+b \text{Cos}[e+f x]\right]+$$

$$\text{Log}\left[\sqrt{a^2-b^2}+\sqrt{2} \sqrt{b} \left(a^2-b^2\right)^{1/4} \sqrt{\text{Cos}[e+f x]}+b \text{Cos}[e+f x]\right]\Bigg)\Bigg) \text{Sin}[e+f x]^2\Bigg)$$

- **Problem 1391: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int \frac{\text{Sin}[e+f x]^2}{\sqrt{g \text{Cos}[e+f x]} (a+b \text{Sin}[e+f x])} \, dx$$

Optimal (type 4, 380 leaves, 15 steps) :

$$-\frac{a^2\,\text{ArcTan}\left[\frac{\sqrt{b}\,\sqrt{g\,\text{Cos}[e+f\,x]}}{(-a^2+b^2)^{1/4}\,\sqrt{g}}\right]}{b^{3/2}\,(-a^2+b^2)^{3/4}\,f\,\sqrt{g}}-\frac{a^2\,\text{ArcTanh}\left[\frac{\sqrt{b}\,\sqrt{g\,\text{Cos}[e+f\,x]}}{(-a^2+b^2)^{1/4}\,\sqrt{g}}\right]}{b^{3/2}\,(-a^2+b^2)^{3/4}\,f\,\sqrt{g}}-\frac{2\,\sqrt{g\,\text{Cos}[e+f\,x]}}{b\,f\,g}-\frac{2\,a\,\sqrt{\text{Cos}[e+f\,x]}\,\text{EllipticF}\left[\frac{1}{2}\,(e+f\,x),\,2\right]}{b^2\,f\,\sqrt{g\,\text{Cos}[e+f\,x]}}+$$

$$\frac{a^3\,\sqrt{\text{Cos}[e+f\,x]}\,\text{EllipticPi}\left[\frac{2\,b}{b-\sqrt{-a^2+b^2}},\,\frac{1}{2}\,(e+f\,x),\,2\right]}{b^2\,\left(a^2-b\,\left(b-\sqrt{-a^2+b^2}\right)\right)\,f\,\sqrt{g\,\text{Cos}[e+f\,x]}}+\frac{a^3\,\sqrt{\text{Cos}[e+f\,x]}\,\text{EllipticPi}\left[\frac{2\,b}{b+\sqrt{-a^2+b^2}},\,\frac{1}{2}\,(e+f\,x),\,2\right]}{b^2\,\left(a^2-b\,\left(b+\sqrt{-a^2+b^2}\right)\right)\,f\,\sqrt{g\,\text{Cos}[e+f\,x]}}$$

Result (type 6, 1526 leaves) :

$$\frac{1}{2\,f\,\sqrt{g\,\text{Cos}[e+f\,x]}}\sqrt{\text{Cos}[e+f\,x]}$$

$$\left(-\frac{1}{\sqrt{1-\text{Cos}[e+f\,x]^2}\,(a+b\,\text{Sin}[e+f\,x])}\,2\,\left(a+b\,\sqrt{1-\text{Cos}[e+f\,x]^2}\right)\,\left(\left(5\,a\,(a^2-b^2)\,\text{AppellF1}\left[\frac{1}{4},\,\frac{1}{2},\,1,\,\frac{5}{4},\,\text{Cos}[e+f\,x]^2,\,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]\right.\right.\right.$$

$$\left.\sqrt{\text{Cos}[e+f\,x]}\right)\Big/\left(\sqrt{1-\text{Cos}[e+f\,x]^2}\,\left(5\,(a^2-b^2)\,\text{AppellF1}\left[\frac{1}{4},\,\frac{1}{2},\,1,\,\frac{5}{4},\,\text{Cos}[e+f\,x]^2,\,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]-2\,\left(2\,b^2\,\text{AppellF1}\left[\frac{5}{4},\,\frac{1}{2},\right.\right.\right.$$

$$\left.\left.2,\,\frac{9}{4},\,\text{Cos}[e+f\,x]^2,\,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]+(-a^2+b^2)\,\text{AppellF1}\left[\frac{5}{4},\,\frac{3}{2},\,1,\,\frac{9}{4},\,\text{Cos}[e+f\,x]^2,\,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]\right)\,\text{Cos}[e+f\,x]^2\right)$$

$$\left.\left.\left(a^2+b^2\,(-1+\text{Cos}[e+f\,x]^2)\right)\right)\right)-\frac{1}{(-a^2+b^2)^{3/4}}\left(\frac{1}{8}-\frac{i}{8}\right)\sqrt{b}\,\left(2\,\text{ArcTan}\left[1-\frac{(1+i)\,\sqrt{b}\,\sqrt{\text{Cos}[e+f\,x]}}{(-a^2+b^2)^{1/4}}\right]-\right.$$

$$2\,\text{ArcTan}\left[1+\frac{(1+i)\,\sqrt{b}\,\sqrt{\text{Cos}[e+f\,x]}}{(-a^2+b^2)^{1/4}}\right]+\text{Log}\left[\sqrt{-a^2+b^2}-(1+i)\,\sqrt{b}\,(-a^2+b^2)^{1/4}\,\sqrt{\text{Cos}[e+f\,x]}+i\,b\,\text{Cos}[e+f\,x]\right]-$$

$$\left.\left.\text{Log}\left[\sqrt{-a^2+b^2}+(1+i)\,\sqrt{b}\,(-a^2+b^2)^{1/4}\,\sqrt{\text{Cos}[e+f\,x]}+i\,b\,\text{Cos}[e+f\,x]\right]\right)\right)\,\text{Sin}[e+f\,x]-$$

$$\frac{1}{\sqrt{1-\text{Cos}[e+f\,x]^2}\,(-1+2\,\text{Cos}[e+f\,x]^2)\,(a+b\,\text{Sin}[e+f\,x])}\left(a+b\,\sqrt{1-\text{Cos}[e+f\,x]^2}\right)\,\text{Cos}[2\,(e+f\,x)]$$

$$\left(\frac{\left(\frac{1}{2}-\frac{i}{2}\right)\,(-2\,a^2+b^2)\,\text{ArcTan}\left[1-\frac{(1+i)\,\sqrt{b}\,\sqrt{\text{Cos}[e+f\,x]}}{(-a^2+b^2)^{1/4}}\right]}{b^{3/2}\,(-a^2+b^2)^{3/4}}-\frac{\left(\frac{1}{2}-\frac{i}{2}\right)\,(-2\,a^2+b^2)\,\text{ArcTan}\left[1+\frac{(1+i)\,\sqrt{b}\,\sqrt{\text{Cos}[e+f\,x]}}{(-a^2+b^2)^{1/4}}\right]}{b^{3/2}\,(-a^2+b^2)^{3/4}}+\right.$$

$$\frac{4\,\sqrt{\text{Cos}[e+f\,x]}}{b}+\left(10\,a\,(a^2-b^2)\,\text{AppellF1}\left[\frac{1}{4},\,\frac{1}{2},\,1,\,\frac{5}{4},\,\text{Cos}[e+f\,x]^2,\,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]\,\sqrt{\text{Cos}[e+f\,x]}\right)\Big/$$

$$\left(\sqrt{1-\text{Cos}[e+f x]^2}\,\left(5\left(a^2-b^2\right)\text{AppellF1}\left[\frac{1}{4},\frac{1}{2},1,\frac{5}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]-2\left(2\,b^2\,\text{AppellF1}\left[\frac{5}{4},\frac{1}{2},2,\frac{9}{4},\right.\right.\right.\right.$$

$$\left.\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]+\left(-a^2+b^2\right)\text{AppellF1}\left[\frac{5}{4},\frac{3}{2},1,\frac{9}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]\Big)\,\text{Cos}[e+f x]^2\Big)$$

$$\left.\left(a^2+b^2\left(-1+\text{Cos}[e+f x]^2\right)\right)\right)-\left(36\,a\left(a^2-b^2\right)\text{AppellF1}\left[\frac{5}{4},\frac{1}{2},1,\frac{9}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]\text{Cos}[e+f x]^{5/2}\right)\Big/$$

$$\left(5\sqrt{1-\text{Cos}[e+f x]^2}\,\left(9\left(a^2-b^2\right)\text{AppellF1}\left[\frac{5}{4},\frac{1}{2},1,\frac{9}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]-2\left(2\,b^2\,\text{AppellF1}\left[\frac{9}{4},\frac{1}{2},2,\frac{13}{4},\right.\right.\right.\right.$$

$$\left.\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]+\left(-a^2+b^2\right)\text{AppellF1}\left[\frac{9}{4},\frac{3}{2},1,\frac{13}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]\Big)\,\text{Cos}[e+f x]^2\Big)$$

$$\left.\left(a^2+b^2\left(-1+\text{Cos}[e+f x]^2\right)\right)\right)+\frac{\left(\frac{1}{4}-\frac{i}{4}\right)\left(-2\,a^2+b^2\right)\text{Log}\left[\sqrt{-a^2+b^2}-(1+i)\sqrt{b}\left(-a^2+b^2\right)^{1/4}\sqrt{\text{Cos}[e+f x]}+i\,b\,\text{Cos}[e+f x]\right]}{b^{3/2}\left(-a^2+b^2\right)^{3/4}}-$$

$$\left.\frac{\left(\frac{1}{4}-\frac{i}{4}\right)\left(-2\,a^2+b^2\right)\text{Log}\left[\sqrt{-a^2+b^2}+(1+i)\sqrt{b}\left(-a^2+b^2\right)^{1/4}\sqrt{\text{Cos}[e+f x]}+i\,b\,\text{Cos}[e+f x]\right]}{b^{3/2}\left(-a^2+b^2\right)^{3/4}}\right)\text{Sin}[e+f x]\Bigg)$$

Problem 1392: Result unnecessarily involves higher level functions.

$$\int\frac{\text{Sin}[e+f x]}{\sqrt{g\,\text{Cos}[e+f x]}\,\left(a+b\,\text{Sin}[e+f x]\right)}\,dx$$

Optimal (type 4, 352 leaves, 12 steps):

$$\frac{a\,\text{ArcTan}\left[\frac{\sqrt{b}\,\sqrt{g\,\text{Cos}[e+f x]}}{\left(-a^2+b^2\right)^{1/4}\sqrt{g}}\right]}{\sqrt{b}\left(-a^2+b^2\right)^{3/4}f\sqrt{g}}+\frac{a\,\text{ArcTanh}\left[\frac{\sqrt{b}\,\sqrt{g\,\text{Cos}[e+f x]}}{\left(-a^2+b^2\right)^{1/4}\sqrt{g}}\right]}{\sqrt{b}\left(-a^2+b^2\right)^{3/4}f\sqrt{g}}+\frac{2\sqrt{\text{Cos}[e+f x]}\,\text{EllipticF}\left[\frac{1}{2}(e+f x),2\right]}{b\,f\sqrt{g\,\text{Cos}[e+f x]}}-$$

$$\frac{a^2\sqrt{\text{Cos}[e+f x]}\,\text{EllipticPi}\left[\frac{2\,b}{b-\sqrt{-a^2+b^2}},\frac{1}{2}(e+f x),2\right]}{b\left(a^2-b^2+b\sqrt{-a^2+b^2}\right)f\sqrt{g\,\text{Cos}[e+f x]}}-\frac{a^2\sqrt{\text{Cos}[e+f x]}\,\text{EllipticPi}\left[\frac{2\,b}{b+\sqrt{-a^2+b^2}},\frac{1}{2}(e+f x),2\right]}{b\left(a^2-b\left(b+\sqrt{-a^2+b^2}\right)\right)f\sqrt{g\,\text{Cos}[e+f x]}}$$

Result (type 6, 573 leaves):

$$-\frac{1}{f\sqrt{g\,\text{Cos}[e+f x]}\,\left(1-\text{Cos}[e+f x]^2\right)\,(a+b\,\text{Sin}[e+f x])}2\sqrt{\text{Cos}[e+f x]}\,\left(a+b\sqrt{1-\text{Cos}[e+f x]^2}\right)$$

$$\left(\left(5\,b\,\left(a^2-b^2\right)\text{AppellF1}\left[\frac{1}{4},-\frac{1}{2},1,\frac{5}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]\sqrt{\text{Cos}[e+f x]}\,\sqrt{1-\text{Cos}[e+f x]^2}\right)\Big/\right.$$

$$\left(\left(-5\,\left(a^2-b^2\right)\text{AppellF1}\left[\frac{1}{4},-\frac{1}{2},1,\frac{5}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]+2\left(2\,b^2\,\text{AppellF1}\left[\frac{5}{4},-\frac{1}{2},2,\frac{9}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]+\right.\right.\right.$$

$$\left.\left.\left.\left(a^2-b^2\right)\text{AppellF1}\left[\frac{5}{4},\frac{1}{2},1,\frac{9}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]\right)\text{Cos}[e+f x]^2\right)\left(a^2+b^2\left(-1+\text{Cos}[e+f x]^2\right)\right)\right)+$$

$$\frac{1}{4\sqrt{2}\,\sqrt{b}\,\left(a^2-b^2\right)^{3/4}}a\left(-2\,\text{ArcTan}\left[1-\frac{\sqrt{2}\,\sqrt{b}\,\sqrt{\text{Cos}[e+f x]}}{\left(a^2-b^2\right)^{1/4}}\right]+2\,\text{ArcTan}\left[1+\frac{\sqrt{2}\,\sqrt{b}\,\sqrt{\text{Cos}[e+f x]}}{\left(a^2-b^2\right)^{1/4}}\right]-\right.$$

$$\text{Log}\left[\sqrt{a^2-b^2}-\sqrt{2}\,\sqrt{b}\,\left(a^2-b^2\right)^{1/4}\sqrt{\text{Cos}[e+f x]}+b\,\text{Cos}[e+f x]\right]+$$

$$\left.\left.\text{Log}\left[\sqrt{a^2-b^2}+\sqrt{2}\,\sqrt{b}\,\left(a^2-b^2\right)^{1/4}\sqrt{\text{Cos}[e+f x]}+b\,\text{Cos}[e+f x]\right]\right)\right)\text{Sin}[e+f x]^2$$

- **Problem 1393: Result unnecessarily involves higher level functions.**

$$\int\frac{\text{Csc}[e+f x]}{\sqrt{g\,\text{Cos}[e+f x]}\,(a+b\,\text{Sin}[e+f x])}\,dx$$

Optimal (type 4, 369 leaves, 16 steps):

$$-\frac{\text{ArcTan}\left[\frac{\sqrt{g\,\text{Cos}[e+f x]}}{\sqrt{g}}\right]}{a\,f\sqrt{g}}+\frac{b^{3/2}\,\text{ArcTan}\left[\frac{\sqrt{b}\,\sqrt{g\,\text{Cos}[e+f x]}}{\left(-a^2+b^2\right)^{1/4}\sqrt{g}}\right]}{a\left(-a^2+b^2\right)^{3/4}f\sqrt{g}}-\frac{\text{ArcTanh}\left[\frac{\sqrt{g\,\text{Cos}[e+f x]}}{\sqrt{g}}\right]}{a\,f\sqrt{g}}+\frac{b^{3/2}\,\text{ArcTanh}\left[\frac{\sqrt{b}\,\sqrt{g\,\text{Cos}[e+f x]}}{\left(-a^2+b^2\right)^{1/4}\sqrt{g}}\right]}{a\left(-a^2+b^2\right)^{3/4}f\sqrt{g}}-$$

$$\frac{b\sqrt{\text{Cos}[e+f x]}\,\text{EllipticPi}\left[\frac{2\,b}{b-\sqrt{-a^2+b^2}},\frac{1}{2}(e+f x),2\right]}{\left(a^2-b\left(b-\sqrt{-a^2+b^2}\right)\right)f\sqrt{g\,\text{Cos}[e+f x]}}-\frac{b\sqrt{\text{Cos}[e+f x]}\,\text{EllipticPi}\left[\frac{2\,b}{b+\sqrt{-a^2+b^2}},\frac{1}{2}(e+f x),2\right]}{\left(a^2-b\left(b+\sqrt{-a^2+b^2}\right)\right)f\sqrt{g\,\text{Cos}[e+f x]}}$$

Result (type 6, 698 leaves):

$$-\frac{1}{f\sqrt{g\,\text{Cos}[e+f\,x]}\,\left(1-\text{Cos}[e+f\,x]^2\right)\,(b+a\,\text{Csc}[e+f\,x])}\,2\sqrt{\text{Cos}[e+f\,x]}\,\left(-1+\text{Cos}[e+f\,x]^2\right)\left(a+b\sqrt{1-\text{Cos}[e+f\,x]^2}\right)$$

$$\text{Csc}[e+f\,x]\left(\left(5\,b\,\left(a^2-b^2\right)\text{AppellF1}\left[\frac{1}{4},\frac{1}{2},1,\frac{5}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]\sqrt{\text{Cos}[e+f\,x]}\right)\Big/\left(\sqrt{1-\text{Cos}[e+f\,x]^2}\right.\right.$$

$$\left(5\left(a^2-b^2\right)\text{AppellF1}\left[\frac{1}{4},\frac{1}{2},1,\frac{5}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]-2\left(2\,b^2\,\text{AppellF1}\left[\frac{5}{4},\frac{1}{2},2,\frac{9}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]+\right.\right.$$

$$\left.\left.\left.\left(-a^2+b^2\right)\text{AppellF1}\left[\frac{5}{4},\frac{3}{2},1,\frac{9}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]\right)\text{Cos}[e+f\,x]^2\right)\left(a^2+b^2\left(-1+\text{Cos}[e+f\,x]^2\right)\right)\right)-$$

$$\frac{1}{8\,a\left(a^2-b^2\right)^{3/4}}\left(-2\sqrt{2}\,b^{3/2}\,\text{ArcTan}\left[1-\frac{\sqrt{2}\sqrt{b}\sqrt{\text{Cos}[e+f\,x]}}{\left(a^2-b^2\right)^{1/4}}\right]+2\sqrt{2}\,b^{3/2}\,\text{ArcTan}\left[1+\frac{\sqrt{2}\sqrt{b}\sqrt{\text{Cos}[e+f\,x]}}{\left(a^2-b^2\right)^{1/4}}\right]+\right.$$

$$4\left(a^2-b^2\right)^{3/4}\text{ArcTan}\left[\sqrt{\text{Cos}[e+f\,x]}\right]-2\left(a^2-b^2\right)^{3/4}\text{Log}\left[1-\sqrt{\text{Cos}[e+f\,x]}\right]+$$

$$2\left(a^2-b^2\right)^{3/4}\text{Log}\left[1+\sqrt{\text{Cos}[e+f\,x]}\right]-\sqrt{2}\,b^{3/2}\,\text{Log}\left[\sqrt{a^2-b^2}-\sqrt{2}\sqrt{b}\left(a^2-b^2\right)^{1/4}\sqrt{\text{Cos}[e+f\,x]}+b\,\text{Cos}[e+f\,x]\right]+$$

$$\left.\left.\sqrt{2}\,b^{3/2}\,\text{Log}\left[\sqrt{a^2-b^2}+\sqrt{2}\sqrt{b}\left(a^2-b^2\right)^{1/4}\sqrt{\text{Cos}[e+f\,x]}+b\,\text{Cos}[e+f\,x]\right]\right)\right)$$

- **Problem 1394: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int\frac{\text{Csc}[e+f\,x]^2}{\sqrt{g\,\text{Cos}[e+f\,x]}\,(a+b\,\text{Sin}[e+f\,x])}\,dx$$

Optimal (type 4, 448 leaves, 19 steps):

$$\frac{b\,\text{ArcTan}\left[\frac{\sqrt{g\,\text{Cos}[e+f\,x]}}{\sqrt{g}}\right]}{a^2\,f\sqrt{g}}-\frac{b^{5/2}\,\text{ArcTan}\left[\frac{\sqrt{b}\sqrt{g\,\text{Cos}[e+f\,x]}}{\left(-a^2+b^2\right)^{1/4}\sqrt{g}}\right]}{a^2\left(-a^2+b^2\right)^{3/4}f\sqrt{g}}+\frac{b\,\text{ArcTanh}\left[\frac{\sqrt{g\,\text{Cos}[e+f\,x]}}{\sqrt{g}}\right]}{a^2\,f\sqrt{g}}-$$

$$\frac{b^{5/2}\,\text{ArcTanh}\left[\frac{\sqrt{b}\sqrt{g\,\text{Cos}[e+f\,x]}}{\left(-a^2+b^2\right)^{1/4}\sqrt{g}}\right]}{a^2\left(-a^2+b^2\right)^{3/4}f\sqrt{g}}-\frac{\sqrt{g\,\text{Cos}[e+f\,x]}\,\text{Csc}[e+f\,x]}{a\,f\,g}+\frac{\sqrt{\text{Cos}[e+f\,x]}\,\text{EllipticF}\left[\frac{1}{2}(e+f\,x),2\right]}{a\,f\sqrt{g\,\text{Cos}[e+f\,x]}}+$$

$$\frac{b^2\sqrt{\text{Cos}[e+f\,x]}\,\text{EllipticPi}\left[\frac{2\,b}{b-\sqrt{-a^2+b^2}},\frac{1}{2}(e+f\,x),2\right]}{a\left(a^2-b^2+b\sqrt{-a^2+b^2}\right)f\sqrt{g\,\text{Cos}[e+f\,x]}}+\frac{b^2\sqrt{\text{Cos}[e+f\,x]}\,\text{EllipticPi}\left[\frac{2\,b}{b+\sqrt{-a^2+b^2}},\frac{1}{2}(e+f\,x),2\right]}{a\left(a^2-b\left(b+\sqrt{-a^2+b^2}\right)\right)f\sqrt{g\,\text{Cos}[e+f\,x]}}$$

Result (type 6, 2375 leaves):

$$-\frac{\text{Cot}[e+f x]}{a f \sqrt{g \text{Cos}[e+f x]}}-\frac{1}{4 a f \sqrt{g \text{Cos}[e+f x]}}\sqrt{\text{Cos}[e+f x]}$$

$$\left(\frac{1}{\sqrt{1-\text{Cos}[e+f x]^2}\ (b+a \text{Csc}[e+f x])} 4 a \left(a+b \sqrt{1-\text{Cos}[e+f x]^2}\right) \left(\left(5 a \left(a^2-b^2\right) \text{AppellF1}\left[\frac{1}{4}, \frac{1}{2}, 1, \frac{5}{4}, \text{Cos}[e+f x]^2, \frac{b^2 \text{Cos}[e+f x]^2}{-a^2+b^2}\right]\right.\right.\right.$$

$$\left.\sqrt{\text{Cos}[e+f x]}\right) \Big/ \left(\sqrt{1-\text{Cos}[e+f x]^2} \left(5 \left(a^2-b^2\right) \text{AppellF1}\left[\frac{1}{4}, \frac{1}{2}, 1, \frac{5}{4}, \text{Cos}[e+f x]^2, \frac{b^2 \text{Cos}[e+f x]^2}{-a^2+b^2}\right]-2 \left(2 b^2 \text{AppellF1}\left[\frac{5}{4}, \frac{1}{2},\right.\right.\right.\right.$$

$$\left.\left.\left.2, \frac{9}{4}, \text{Cos}[e+f x]^2, \frac{b^2 \text{Cos}[e+f x]^2}{-a^2+b^2}\right]+\left(-a^2+b^2\right) \text{AppellF1}\left[\frac{5}{4}, \frac{3}{2}, 1, \frac{9}{4}, \text{Cos}[e+f x]^2, \frac{b^2 \text{Cos}[e+f x]^2}{-a^2+b^2}\right]\right) \text{Cos}[e+f x]^2\right)$$

$$\left.\left(a^2+b^2 \left(-1+\text{Cos}[e+f x]^2\right)\right)\right)-\frac{1}{\left(-a^2+b^2\right)^{3/4}}\left(\frac{1}{8}-\frac{i}{8}\right) \sqrt{b} \left(2 \text{ArcTan}\left[1-\frac{(1+i) \sqrt{b} \sqrt{\text{Cos}[e+f x]}}{\left(-a^2+b^2\right)^{1/4}}\right]-\right.$$

$$2 \text{ArcTan}\left[1+\frac{(1+i) \sqrt{b} \sqrt{\text{Cos}[e+f x]}}{\left(-a^2+b^2\right)^{1/4}}\right]+\text{Log}\left[\sqrt{-a^2+b^2}-(1+i) \sqrt{b} \left(-a^2+b^2\right)^{1/4} \sqrt{\text{Cos}[e+f x]}+i b \text{Cos}[e+f x]\right]-$$

$$\left.\left.\text{Log}\left[\sqrt{-a^2+b^2}+(1+i) \sqrt{b} \left(-a^2+b^2\right)^{1/4} \sqrt{\text{Cos}[e+f x]}+i b \text{Cos}[e+f x]\right]\right)\right)-$$

$$\frac{1}{\left(1-\text{Cos}[e+f x]^2\right) \left(-1+2 \text{Cos}[e+f x]^2\right) (b+a \text{Csc}[e+f x])} b \left(-1+\text{Cos}[e+f x]^2\right) \left(a+b \sqrt{1-\text{Cos}[e+f x]^2}\right) \text{Cos}[2 (e+f x)]$$

$$\text{Csc}[e+f x] \left(\frac{\left(a^2-b^2\right)^{1/4} \left(-2 a^2+b^2\right) \text{ArcTan}\left[\frac{-\sqrt{2} \left(a^2-b^2\right)^{1/4}+2 \sqrt{b} \sqrt{\text{Cos}[e+f x]}}{\sqrt{2} \left(a^2-b^2\right)^{1/4}}\right]}{\sqrt{2} a \sqrt{b} \left(-a^2+b^2\right)}+\frac{\left(a^2-b^2\right)^{1/4} \left(-2 a^2+b^2\right) \text{ArcTan}\left[\frac{\sqrt{2} \left(a^2-b^2\right)^{1/4}+2 \sqrt{b} \sqrt{\text{Cos}[e+f x]}}{\sqrt{2} \left(a^2-b^2\right)^{1/4}}\right]}{\sqrt{2} a \sqrt{b} \left(-a^2+b^2\right)}-\right.$$

$$\frac{\text{ArcTan}\left[\sqrt{\text{Cos}[e+f x]}\right]}{a}-\left(10 b \left(a^2-b^2\right) \text{AppellF1}\left[\frac{1}{4}, \frac{1}{2}, 1, \frac{5}{4}, \text{Cos}[e+f x]^2, \frac{b^2 \text{Cos}[e+f x]^2}{-a^2+b^2}\right] \sqrt{\text{Cos}[e+f x]}\right) \Big/$$

$$\left(\sqrt{1-\text{Cos}[e+f x]^2} \left(5 \left(a^2-b^2\right) \text{AppellF1}\left[\frac{1}{4}, \frac{1}{2}, 1, \frac{5}{4}, \text{Cos}[e+f x]^2, \frac{b^2 \text{Cos}[e+f x]^2}{-a^2+b^2}\right]-2 \left(2 b^2 \text{AppellF1}\left[\frac{5}{4}, \frac{1}{2}, 2, \frac{9}{4},\right.\right.\right.\right.$$

$$\left.\left.\left.\text{Cos}[e+f x]^2, \frac{b^2 \text{Cos}[e+f x]^2}{-a^2+b^2}\right]+\left(-a^2+b^2\right) \text{AppellF1}\left[\frac{5}{4}, \frac{3}{2}, 1, \frac{9}{4}, \text{Cos}[e+f x]^2, \frac{b^2 \text{Cos}[e+f x]^2}{-a^2+b^2}\right]\right) \text{Cos}[e+f x]^2\right)$$

$$\left.\left(a^2+b^2 \left(-1+\text{Cos}[e+f x]^2\right)\right)\right)+\left(36 b \left(a^2-b^2\right) \text{AppellF1}\left[\frac{5}{4}, \frac{1}{2}, 1, \frac{9}{4}, \text{Cos}[e+f x]^2, \frac{b^2 \text{Cos}[e+f x]^2}{-a^2+b^2}\right] \text{Cos}[e+f x]^{5/2}\right) \Big/$$

$$\left(5 \sqrt{1-\text{Cos}[e+f x]^2} \left(9 \left(a^2-b^2\right) \text{AppellF1}\left[\frac{5}{4}, \frac{1}{2}, 1, \frac{9}{4}, \text{Cos}[e+f x]^2, \frac{b^2 \text{Cos}[e+f x]^2}{-a^2+b^2}\right]-\right.\right.$$

$$2\left(2\,b^2\,\text{AppellF1}\left[\frac{9}{4},\,\frac{1}{2},\,2,\,\frac{13}{4},\,\text{Cos}[e+f\,x]^2,\,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]+\left(-a^2+b^2\right)\,\text{AppellF1}\left[\frac{9}{4},\,\frac{3}{2},\,1,\,\frac{13}{4},\right.\right.$$

$$\left.\left.\text{Cos}[e+f\,x]^2,\,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]\right)\,\text{Cos}[e+f\,x]^2\Big)\,\left(a^2+b^2\,\left(-1+\text{Cos}[e+f\,x]^2\right)\right)\Big)+\frac{\text{Log}\left[1-\sqrt{\text{Cos}[e+f\,x]}\right]}{2\,a}-$$

$$\frac{\text{Log}\left[1+\sqrt{\text{Cos}[e+f\,x]}\right]}{2\,a}-\frac{\left(a^2-b^2\right)^{1/4}\,\left(-2\,a^2+b^2\right)\,\text{Log}\left[\sqrt{a^2-b^2}-\sqrt{2}\,\sqrt{b}\,\left(a^2-b^2\right)^{1/4}\,\sqrt{\text{Cos}[e+f\,x]}+b\,\text{Cos}[e+f\,x]\right]}{2\,\sqrt{2}\,a\,\sqrt{b}\,\left(-a^2+b^2\right)}+$$

$$\left.\frac{\left(a^2-b^2\right)^{1/4}\,\left(-2\,a^2+b^2\right)\,\text{Log}\left[\sqrt{a^2-b^2}+\sqrt{2}\,\sqrt{b}\,\left(a^2-b^2\right)^{1/4}\,\sqrt{\text{Cos}[e+f\,x]}+b\,\text{Cos}[e+f\,x]\right]}{2\,\sqrt{2}\,a\,\sqrt{b}\,\left(-a^2+b^2\right)}\right)-$$

$$\frac{1}{\left(1-\text{Cos}[e+f\,x]^2\right)\,\left(b+a\,\text{Csc}[e+f\,x]\right)}\,6\,b\,\left(-1+\text{Cos}[e+f\,x]^2\right)\,\left(a+b\,\sqrt{1-\text{Cos}[e+f\,x]^2}\right)\,\text{Csc}[e+f\,x]$$

$$\left(\left(5\,b\,\left(a^2-b^2\right)\,\text{AppellF1}\left[\frac{1}{4},\,\frac{1}{2},\,1,\,\frac{5}{4},\,\text{Cos}[e+f\,x]^2,\,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]\,\sqrt{\text{Cos}[e+f\,x]}\right)\Big/\right.$$

$$\left(\sqrt{1-\text{Cos}[e+f\,x]^2}\,\left(5\,\left(a^2-b^2\right)\,\text{AppellF1}\left[\frac{1}{4},\,\frac{1}{2},\,1,\,\frac{5}{4},\,\text{Cos}[e+f\,x]^2,\,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]-2\,\left(2\,b^2\,\text{AppellF1}\left[\frac{5}{4},\,\frac{1}{2},\,2,\,\frac{9}{4},\right.\right.\right.\right.$$

$$\left.\left.\text{Cos}[e+f\,x]^2,\,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]+\left(-a^2+b^2\right)\,\text{AppellF1}\left[\frac{5}{4},\,\frac{3}{2},\,1,\,\frac{9}{4},\,\text{Cos}[e+f\,x]^2,\,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]\right)\,\text{Cos}[e+f\,x]^2\Big)$$

$$\left.\left(a^2+b^2\,\left(-1+\text{Cos}[e+f\,x]^2\right)\right)\right)-\frac{1}{8\,a\,\left(a^2-b^2\right)^{3/4}}\,\left(-2\,\sqrt{2}\,b^{3/2}\,\text{ArcTan}\left[1-\frac{\sqrt{2}\,\sqrt{b}\,\sqrt{\text{Cos}[e+f\,x]}}{\left(a^2-b^2\right)^{1/4}}\right]+\right.$$

$$2\,\sqrt{2}\,b^{3/2}\,\text{ArcTan}\left[1+\frac{\sqrt{2}\,\sqrt{b}\,\sqrt{\text{Cos}[e+f\,x]}}{\left(a^2-b^2\right)^{1/4}}\right]+4\,\left(a^2-b^2\right)^{3/4}\,\text{ArcTan}\left[\sqrt{\text{Cos}[e+f\,x]}\right]-2\,\left(a^2-b^2\right)^{3/4}\,\text{Log}\left[1-\sqrt{\text{Cos}[e+f\,x]}\right]+$$

$$2\,\left(a^2-b^2\right)^{3/4}\,\text{Log}\left[1+\sqrt{\text{Cos}[e+f\,x]}\right]-\sqrt{2}\,b^{3/2}\,\text{Log}\left[\sqrt{a^2-b^2}-\sqrt{2}\,\sqrt{b}\,\left(a^2-b^2\right)^{1/4}\,\sqrt{\text{Cos}[e+f\,x]}+b\,\text{Cos}[e+f\,x]\right]+$$

$$\left.\left.\sqrt{2}\,b^{3/2}\,\text{Log}\left[\sqrt{a^2-b^2}+\sqrt{2}\,\sqrt{b}\,\left(a^2-b^2\right)^{1/4}\,\sqrt{\text{Cos}[e+f\,x]}+b\,\text{Cos}[e+f\,x]\right]\right)\right)$$

- **Problem 1395: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int\frac{\text{Csc}[e+f\,x]^3}{\sqrt{g\,\text{Cos}[e+f\,x]}\,\left(a+b\,\text{Sin}[e+f\,x]\right)}\,dx$$

Optimal (type 4, 557 leaves, 25 steps):

$$-\frac{3\,\text{ArcTan}\left[\frac{\sqrt{g\,\text{Cos}[e+f\,x]}}{\sqrt{g}}\right]}{4\,a\,f\,\sqrt{g}}-\frac{b^2\,\text{ArcTan}\left[\frac{\sqrt{g\,\text{Cos}[e+f\,x]}}{\sqrt{g}}\right]}{a^3\,f\,\sqrt{g}}+\frac{b^{7/2}\,\text{ArcTan}\left[\frac{\sqrt{b}\,\sqrt{g\,\text{Cos}[e+f\,x]}}{(-a^2+b^2)^{1/4}\,\sqrt{g}}\right]}{a^3\,(-a^2+b^2)^{3/4}\,f\,\sqrt{g}}-\frac{3\,\text{ArcTanh}\left[\frac{\sqrt{g\,\text{Cos}[e+f\,x]}}{\sqrt{g}}\right]}{4\,a\,f\,\sqrt{g}}-\frac{b^2\,\text{ArcTanh}\left[\frac{\sqrt{g\,\text{Cos}[e+f\,x]}}{\sqrt{g}}\right]}{a^3\,f\,\sqrt{g}}+$$

$$\frac{b^{7/2}\,\text{ArcTanh}\left[\frac{\sqrt{b}\,\sqrt{g\,\text{Cos}[e+f\,x]}}{(-a^2+b^2)^{1/4}\,\sqrt{g}}\right]}{a^3\,(-a^2+b^2)^{3/4}\,f\,\sqrt{g}}+\frac{b\,\sqrt{g\,\text{Cos}[e+f\,x]}\,\text{Csc}[e+f\,x]}{a^2\,f\,g}-\frac{\sqrt{g\,\text{Cos}[e+f\,x]}\,\text{Csc}[e+f\,x]^2}{2\,a\,f\,g}-\frac{b\,\sqrt{\text{Cos}[e+f\,x]}\,\text{EllipticF}\left[\frac{1}{2}\,(e+f\,x),2\right]}{a^2\,f\,\sqrt{g\,\text{Cos}[e+f\,x]}}-$$

$$\frac{b^3\,\sqrt{\text{Cos}[e+f\,x]}\,\text{EllipticPi}\left[\frac{2\,b}{b-\sqrt{-a^2+b^2}},\frac{1}{2}\,(e+f\,x),2\right]}{a^2\,\left(a^2-b\,\left(b-\sqrt{-a^2+b^2}\right)\right)\,f\,\sqrt{g\,\text{Cos}[e+f\,x]}}-\frac{b^3\,\sqrt{\text{Cos}[e+f\,x]}\,\text{EllipticPi}\left[\frac{2\,b}{b+\sqrt{-a^2+b^2}},\frac{1}{2}\,(e+f\,x),2\right]}{a^2\,\left(a^2-b\,\left(b+\sqrt{-a^2+b^2}\right)\right)\,f\,\sqrt{g\,\text{Cos}[e+f\,x]}}$$

Result (type 6, 2411 leaves):

$$\frac{\text{Cos}[e+f\,x]\,\left(\frac{b\,\text{Csc}[e+f\,x]}{a^2}-\frac{\text{Csc}[e+f\,x]^2}{2\,a}\right)}{f\,\sqrt{g\,\text{Cos}[e+f\,x]}}+$$

$$\frac{1}{4\,a^2\,f\,\sqrt{g\,\text{Cos}[e+f\,x]}}\sqrt{\text{Cos}[e+f\,x]}\,\left(-\frac{1}{\sqrt{1-\text{Cos}[e+f\,x]^2}\,(b+a\,\text{Csc}[e+f\,x])}2\,a\,b\,\left(a+b\,\sqrt{1-\text{Cos}[e+f\,x]^2}\right)\right.$$

$$\left(\left(5\,a\,(a^2-b^2)\,\text{AppellF1}\left[\frac{1}{4},\frac{1}{2},1,\frac{5}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]\sqrt{\text{Cos}[e+f\,x]}\right)\Big/\left(\sqrt{1-\text{Cos}[e+f\,x]^2}\,\left(5\,(a^2-b^2)\,\text{AppellF1}\left[\frac{1}{4},\right.\right.\right.\right.$$

$$\frac{1}{2},1,\frac{5}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\Big]-2\,\left(2\,b^2\,\text{AppellF1}\left[\frac{5}{4},\frac{1}{2},2,\frac{9}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]+(-a^2+b^2)\right.$$

$$\left.\left.\left.\text{AppellF1}\left[\frac{5}{4},\frac{3}{2},1,\frac{9}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]\right)\text{Cos}[e+f\,x]^2\right)\,\left(a^2+b^2\,(-1+\text{Cos}[e+f\,x]^2)\right)\right)-\frac{1}{(-a^2+b^2)^{3/4}}$$

$$\left(\frac{1}{8}-\frac{i}{8}\right)\sqrt{b}\,\left(2\,\text{ArcTan}\left[1-\frac{(1+i)\,\sqrt{b}\,\sqrt{\text{Cos}[e+f\,x]}}{(-a^2+b^2)^{1/4}}\right]-2\,\text{ArcTan}\left[1+\frac{(1+i)\,\sqrt{b}\,\sqrt{\text{Cos}[e+f\,x]}}{(-a^2+b^2)^{1/4}}\right]+\text{Log}\left[\sqrt{-a^2+b^2}-(1+i)\,\sqrt{b}\right.\right.$$

$$\left.\left.\left.(-a^2+b^2)^{1/4}\,\sqrt{\text{Cos}[e+f\,x]}+i\,b\,\text{Cos}[e+f\,x]\right]-\text{Log}\left[\sqrt{-a^2+b^2}+(1+i)\,\sqrt{b}\,(-a^2+b^2)^{1/4}\,\sqrt{\text{Cos}[e+f\,x]}+i\,b\,\text{Cos}[e+f\,x]\right]\right)\right)-$$

$$\frac{1}{(1-\text{Cos}[e+f\,x]^2)\,(-1+2\,\text{Cos}[e+f\,x]^2)\,(b+a\,\text{Csc}[e+f\,x])}b^2\,(-1+\text{Cos}[e+f\,x]^2)\,\left(a+b\,\sqrt{1-\text{Cos}[e+f\,x]^2}\right)\,\text{Cos}[2\,(e+f\,x)]$$

$$\text{Csc}[e+f x]\left(\frac{\left(a^2-b^2\right)^{1/4}\left(-2 a^2+b^2\right)\text{ArcTan}\left[\frac{-\sqrt{2}\left(a^2-b^2\right)^{1/4}+2\sqrt{b}\sqrt{\text{Cos}[e+f x]}}{\sqrt{2}\left(a^2-b^2\right)^{1/4}}\right]}{\sqrt{2}\,a\sqrt{b}\left(-a^2+b^2\right)}+\frac{\left(a^2-b^2\right)^{1/4}\left(-2 a^2+b^2\right)\text{ArcTan}\left[\frac{\sqrt{2}\left(a^2-b^2\right)^{1/4}+2\sqrt{b}\sqrt{\text{Cos}[e+f x]}}{\sqrt{2}\left(a^2-b^2\right)^{1/4}}\right]}{\sqrt{2}\,a\sqrt{b}\left(-a^2+b^2\right)}-\right.$$

$$\frac{\text{ArcTan}\left[\sqrt{\text{Cos}[e+f x]}\right]}{a}-\left(10\,b\left(a^2-b^2\right)\text{AppellF1}\left[\frac{1}{4},\frac{1}{2},1,\frac{5}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]\sqrt{\text{Cos}[e+f x]}\right)\Big/$$

$$\left(\sqrt{1-\text{Cos}[e+f x]^2}\left(5\left(a^2-b^2\right)\text{AppellF1}\left[\frac{1}{4},\frac{1}{2},1,\frac{5}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]-2\left(2\,b^2\,\text{AppellF1}\left[\frac{5}{4},\frac{1}{2},2,\frac{9}{4},\right.\right.\right.$$

$$\left.\left.\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]+\left(-a^2+b^2\right)\text{AppellF1}\left[\frac{5}{4},\frac{3}{2},1,\frac{9}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]\right)\text{Cos}[e+f x]^2\right)$$

$$\left.\left(a^2+b^2\left(-1+\text{Cos}[e+f x]^2\right)\right)\right)+\left(36\,b\left(a^2-b^2\right)\text{AppellF1}\left[\frac{5}{4},\frac{1}{2},1,\frac{9}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]\text{Cos}[e+f x]^{5/2}\right)\Big/$$

$$\left(5\sqrt{1-\text{Cos}[e+f x]^2}\left(9\left(a^2-b^2\right)\text{AppellF1}\left[\frac{5}{4},\frac{1}{2},1,\frac{9}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]-\right.\right.$$

$$2\left(2\,b^2\,\text{AppellF1}\left[\frac{9}{4},\frac{1}{2},2,\frac{13}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]+\left(-a^2+b^2\right)\text{AppellF1}\left[\frac{9}{4},\frac{3}{2},1,\frac{13}{4},\right.\right.$$

$$\left.\left.\left.\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]\right)\text{Cos}[e+f x]^2\right)\left(a^2+b^2\left(-1+\text{Cos}[e+f x]^2\right)\right)\right)+\frac{\text{Log}\left[1-\sqrt{\text{Cos}[e+f x]}\right]}{2\,a}-$$

$$\frac{\text{Log}\left[1+\sqrt{\text{Cos}[e+f x]}\right]}{2\,a}-\frac{\left(a^2-b^2\right)^{1/4}\left(-2 a^2+b^2\right)\text{Log}\left[\sqrt{a^2-b^2}-\sqrt{2}\sqrt{b}\left(a^2-b^2\right)^{1/4}\sqrt{\text{Cos}[e+f x]}+b\,\text{Cos}[e+f x]\right]}{2\sqrt{2}\,a\sqrt{b}\left(-a^2+b^2\right)}+$$

$$\left.\frac{\left(a^2-b^2\right)^{1/4}\left(-2 a^2+b^2\right)\text{Log}\left[\sqrt{a^2-b^2}+\sqrt{2}\sqrt{b}\left(a^2-b^2\right)^{1/4}\sqrt{\text{Cos}[e+f x]}+b\,\text{Cos}[e+f x]\right]}{2\sqrt{2}\,a\sqrt{b}\left(-a^2+b^2\right)}\right)-$$

$$\frac{1}{\left(1-\text{Cos}[e+f x]^2\right)\left(b+a\,\text{Csc}[e+f x]\right)}2\left(3 a^2+3 b^2\right)\left(-1+\text{Cos}[e+f x]^2\right)\left(a+b\sqrt{1-\text{Cos}[e+f x]^2}\right)\text{Csc}[e+f x]$$

$$\left(\left(5\,b\left(a^2-b^2\right)\text{AppellF1}\left[\frac{1}{4},\frac{1}{2},1,\frac{5}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]\sqrt{\text{Cos}[e+f x]}\right)\Big/\right.$$

$$\left(\sqrt{1-\text{Cos}[e+f x]^2}\left(5\left(a^2-b^2\right)\text{AppellF1}\left[\frac{1}{4},\frac{1}{2},1,\frac{5}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]-2\left(2\,b^2\,\text{AppellF1}\left[\frac{5}{4},\frac{1}{2},2,\frac{9}{4},\right.\right.\right.$$

$$\left.\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]+\left(-a^2+b^2\right)\text{AppellF1}\left[\frac{5}{4},\frac{3}{2},1,\frac{9}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]\right)\text{Cos}[e+f x]^2\Big)$$

$$\left(a^2+b^2\left(-1+\text{Cos}[e+f x]^2\right)\right)\Bigg)-\frac{1}{8\,a\left(a^2-b^2\right)^{3/4}}\left(-2\sqrt{2}\,b^{3/2}\,\text{ArcTan}\left[1-\frac{\sqrt{2}\,\sqrt{b}\,\sqrt{\text{Cos}[e+f x]}}{\left(a^2-b^2\right)^{1/4}}\right]+\right.$$

$$2\sqrt{2}\,b^{3/2}\,\text{ArcTan}\left[1+\frac{\sqrt{2}\,\sqrt{b}\,\sqrt{\text{Cos}[e+f x]}}{\left(a^2-b^2\right)^{1/4}}\right]+4\left(a^2-b^2\right)^{3/4}\text{ArcTan}\left[\sqrt{\text{Cos}[e+f x]}\right]-2\left(a^2-b^2\right)^{3/4}\text{Log}\left[1-\sqrt{\text{Cos}[e+f x]}\right]+$$

$$2\left(a^2-b^2\right)^{3/4}\text{Log}\left[1+\sqrt{\text{Cos}[e+f x]}\right]-\sqrt{2}\,b^{3/2}\,\text{Log}\left[\sqrt{a^2-b^2}-\sqrt{2}\,\sqrt{b}\left(a^2-b^2\right)^{1/4}\sqrt{\text{Cos}[e+f x]}+b\,\text{Cos}[e+f x]\right]+$$

$$\left.\left.\sqrt{2}\,b^{3/2}\,\text{Log}\left[\sqrt{a^2-b^2}+\sqrt{2}\,\sqrt{b}\left(a^2-b^2\right)^{1/4}\sqrt{\text{Cos}[e+f x]}+b\,\text{Cos}[e+f x]\right]\right)\right)$$

Problem 1396: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{\text{Sin}[e+f x]^4}{(g\,\text{Cos}[e+f x])^{3/2}\,(a+b\,\text{Sin}[e+f x])}\,dx$$

Optimal (type 4, 584 leaves, 22 steps):

$$\frac{a^4\,\text{ArcTan}\left[\frac{\sqrt{b}\,\sqrt{g\,\text{Cos}[e+f x]}}{\left(-a^2+b^2\right)^{1/4}\sqrt{g}}\right]}{b^{5/2}\left(-a^2+b^2\right)^{5/4}f\,g^{3/2}}-\frac{a^4\,\text{ArcTanh}\left[\frac{\sqrt{b}\,\sqrt{g\,\text{Cos}[e+f x]}}{\left(-a^2+b^2\right)^{1/4}\sqrt{g}}\right]}{b^{5/2}\left(-a^2+b^2\right)^{5/4}f\,g^{3/2}}-\frac{2\,b}{\left(a^2-b^2\right)f\,g\,\sqrt{g\,\text{Cos}[e+f x]}}+\frac{2\,a^2\,(g\,\text{Cos}[e+f x])^{3/2}}{3\,b\left(a^2-b^2\right)f\,g^3}-$$

$$\frac{2\,b\,(g\,\text{Cos}[e+f x])^{3/2}}{3\left(a^2-b^2\right)f\,g^3}-\frac{4\,a\,\sqrt{g\,\text{Cos}[e+f x]}\,\text{EllipticE}\left[\frac{1}{2}(e+f x),2\right]}{\left(a^2-b^2\right)f\,g^2\,\sqrt{\text{Cos}[e+f x]}}+\frac{2\,a^3\,\sqrt{g\,\text{Cos}[e+f x]}\,\text{EllipticE}\left[\frac{1}{2}(e+f x),2\right]}{b^2\left(a^2-b^2\right)f\,g^2\,\sqrt{\text{Cos}[e+f x]}}-$$

$$\frac{a^5\,\sqrt{\text{Cos}[e+f x]}\,\text{EllipticPi}\left[\frac{2\,b}{b-\sqrt{-a^2+b^2}},\frac{1}{2}(e+f x),2\right]}{b^3\left(a^2-b^2\right)\left(b-\sqrt{-a^2+b^2}\right)f\,g\,\sqrt{g\,\text{Cos}[e+f x]}}-\frac{a^5\,\sqrt{\text{Cos}[e+f x]}\,\text{EllipticPi}\left[\frac{2\,b}{b+\sqrt{-a^2+b^2}},\frac{1}{2}(e+f x),2\right]}{b^3\left(a^2-b^2\right)\left(b+\sqrt{-a^2+b^2}\right)f\,g\,\sqrt{g\,\text{Cos}[e+f x]}}+\frac{2\,a\,\text{Sin}[e+f x]}{\left(a^2-b^2\right)f\,g\,\sqrt{g\,\text{Cos}[e+f x]}}$$

Result (type 6, 1214 leaves):

$$\frac{\text{Cos}[e+f x]^2\left(\frac{2\,\text{Cos}[e+f x]}{3\,b}+\frac{2\,\text{Sec}[e+f x]\,(-b+a\,\text{Sin}[e+f x])}{a^2-b^2}\right)}{f\,(g\,\text{Cos}[e+f x])^{3/2}}+$$

$$\frac{1}{(a-b)\,b\,(a+b)\,f\,(g\,\text{Cos}[e+f x])^{3/2}}\,a\,\text{Cos}[e+f x]^{3/2}\left(-\frac{1}{6\sqrt{1-\text{Cos}[e+f x]^2}\,(a+b\,\text{Sin}[e+f x])}\,a\,b\left(a+b\sqrt{1-\text{Cos}[e+f x]^2}\right)\right.$$

$$\left(-\left(56\,a\left(a^2-b^2\right)\text{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]\text{Cos}[e+f x]^{3/2}\right)\Big/\left(\sqrt{1-\text{Cos}[e+f x]^2}\left(7\left(a^2-b^2\right)\right.\right.\right.$$

$$\text{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},\text{Cos}[e+f x]^2,\frac{b^2 \text{Cos}[e+f x]^2}{-a^2+b^2}\right]-2\left(2 b^2 \text{AppellF1}\left[\frac{7}{4},\frac{1}{2},2,\frac{11}{4},\text{Cos}[e+f x]^2,\frac{b^2 \text{Cos}[e+f x]^2}{-a^2+b^2}\right]+\left(-a^2+b^2\right) \text{AppellF1}\left[\frac{7}{4},\frac{3}{2},1,\frac{11}{4},\text{Cos}[e+f x]^2,\frac{b^2 \text{Cos}[e+f x]^2}{-a^2+b^2}\right]\right) \text{Cos}[e+f x]^2\right)\left(a^2+b^2\left(-1+\text{Cos}[e+f x]^2\right)\right)\Bigg)-$$

$$\frac{1}{\sqrt{b}\left(-a^2+b^2\right)^{1/4}}(3+3\,i)\left(2\,\text{ArcTan}\left[1-\frac{(1+i)\sqrt{b}\sqrt{\text{Cos}[e+f x]}}{\left(-a^2+b^2\right)^{1/4}}\right]-2\,\text{ArcTan}\left[1+\frac{(1+i)\sqrt{b}\sqrt{\text{Cos}[e+f x]}}{\left(-a^2+b^2\right)^{1/4}}\right]-\text{Log}\left[\sqrt{-a^2+b^2}-(1+i)\sqrt{b}\left(-a^2+b^2\right)^{1/4}\sqrt{\text{Cos}[e+f x]}+i\,b\,\text{Cos}[e+f x]\right]+\text{Log}\left[\sqrt{-a^2+b^2}+(1+i)\sqrt{b}\left(-a^2+b^2\right)^{1/4}\sqrt{\text{Cos}[e+f x]}+i\,b\,\text{Cos}[e+f x]\right]\right)\Bigg)\text{Sin}[e+f x]-$$

$$\frac{1}{\left(1-\text{Cos}[e+f x]^2\right)(a+b\,\text{Sin}[e+f x])}2\left(a^2-2 b^2\right)\left(a+b\sqrt{1-\text{Cos}[e+f x]^2}\right)\Bigg(\left(7 b\left(a^2-b^2\right)\text{AppellF1}\left[\frac{3}{4},-\frac{1}{2},1,\frac{7}{4},\text{Cos}[e+f x]^2,\frac{b^2 \text{Cos}[e+f x]^2}{-a^2+b^2}\right]\text{Cos}[e+f x]^{3/2}\sqrt{1-\text{Cos}[e+f x]^2}\right)\Big/$$

$$\left(3\left(-7\left(a^2-b^2\right)\text{AppellF1}\left[\frac{3}{4},-\frac{1}{2},1,\frac{7}{4},\text{Cos}[e+f x]^2,\frac{b^2 \text{Cos}[e+f x]^2}{-a^2+b^2}\right]+2\left(2 b^2 \text{AppellF1}\left[\frac{7}{4},-\frac{1}{2},2,\frac{11}{4},\text{Cos}[e+f x]^2,\frac{b^2 \text{Cos}[e+f x]^2}{-a^2+b^2}\right]+\left(a^2-b^2\right)\text{AppellF1}\left[\frac{7}{4},\frac{1}{2},1,\frac{11}{4},\text{Cos}[e+f x]^2,\frac{b^2 \text{Cos}[e+f x]^2}{-a^2+b^2}\right]\right)\text{Cos}[e+f x]^2\right)\left(a^2+b^2\left(-1+\text{Cos}[e+f x]^2\right)\right)\right)+\frac{1}{4\sqrt{2}\,b^{3/2}\left(a^2-b^2\right)^{1/4}}a\left(-2\,\text{ArcTan}\left[1-\frac{\sqrt{2}\sqrt{b}\sqrt{\text{Cos}[e+f x]}}{\left(a^2-b^2\right)^{1/4}}\right]+\right.$$

$$\left.2\,\text{ArcTan}\left[1+\frac{\sqrt{2}\sqrt{b}\sqrt{\text{Cos}[e+f x]}}{\left(a^2-b^2\right)^{1/4}}\right]+\text{Log}\left[\sqrt{a^2-b^2}-\sqrt{2}\sqrt{b}\left(a^2-b^2\right)^{1/4}\sqrt{\text{Cos}[e+f x]}+b\,\text{Cos}[e+f x]\right]-\text{Log}\left[\sqrt{a^2-b^2}+\sqrt{2}\sqrt{b}\left(a^2-b^2\right)^{1/4}\sqrt{\text{Cos}[e+f x]}+b\,\text{Cos}[e+f x]\right]\right)\text{Sin}[e+f x]^2\Bigg)$$

- **Problem 1397: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int\frac{\text{Sin}[e+f x]^3}{(g\,\text{Cos}[e+f x])^{3/2}(a+b\,\text{Sin}[e+f x])}\,dx$$

Optimal (type 4, 509 leaves, 18 steps):

$$-\frac{a^3 \operatorname{ArcTan}\left[\frac{\sqrt{b}\,\sqrt{g \operatorname{Cos}[e+f x]}}{\left(-a^2+b^2\right)^{1/4}\sqrt{g}}\right]}{b^{3/2}\left(-a^2+b^2\right)^{5/4} f g^{3/2}}+\frac{a^3 \operatorname{ArcTanh}\left[\frac{\sqrt{b}\,\sqrt{g \operatorname{Cos}[e+f x]}}{\left(-a^2+b^2\right)^{1/4}\sqrt{g}}\right]}{b^{3/2}\left(-a^2+b^2\right)^{5/4} f g^{3/2}}+\frac{2 a}{\left(a^2-b^2\right) f g \sqrt{g \operatorname{Cos}[e+f x]}}-$$

$$\frac{2 a^2 \sqrt{g \operatorname{Cos}[e+f x]}\ \operatorname{EllipticE}\left[\frac{1}{2}(e+f x),2\right]}{b\left(a^2-b^2\right) f g^2 \sqrt{\operatorname{Cos}[e+f x]}}+\frac{4 b \sqrt{g \operatorname{Cos}[e+f x]}\ \operatorname{EllipticE}\left[\frac{1}{2}(e+f x),2\right]}{\left(a^2-b^2\right) f g^2 \sqrt{\operatorname{Cos}[e+f x]}}+$$

$$\frac{a^4 \sqrt{\operatorname{Cos}[e+f x]}\ \operatorname{EllipticPi}\left[\frac{2 b}{b-\sqrt{-a^2+b^2}},\frac{1}{2}(e+f x),2\right]}{b^2\left(a^2-b^2\right)\left(b-\sqrt{-a^2+b^2}\right) f g \sqrt{g \operatorname{Cos}[e+f x]}}+\frac{a^4 \sqrt{\operatorname{Cos}[e+f x]}\ \operatorname{EllipticPi}\left[\frac{2 b}{b+\sqrt{-a^2+b^2}},\frac{1}{2}(e+f x),2\right]}{b^2\left(a^2-b^2\right)\left(b+\sqrt{-a^2+b^2}\right) f g \sqrt{g \operatorname{Cos}[e+f x]}}-\frac{2 b \operatorname{Sin}[e+f x]}{\left(a^2-b^2\right) f g \sqrt{g \operatorname{Cos}[e+f x]}}$$

Result (type 6, 1187 leaves) :

$$\frac{2\,\text{Cos}[e+f\,x]\,(a-b\,\text{Sin}[e+f\,x])}{\left(a^2-b^2\right)f\,(g\,\text{Cos}[e+f\,x])^{3/2}}-$$

$$\frac{1}{(a-b)\,(a+b)\,f\,(g\,\text{Cos}[e+f\,x])^{3/2}}\text{Cos}[e+f\,x]^{3/2}\Bigg(-\frac{1}{6\sqrt{1-\text{Cos}[e+f\,x]^2}\,(a+b\,\text{Sin}[e+f\,x])}a\,b\left(a+b\sqrt{1-\text{Cos}[e+f\,x]^2}\right)$$

$$\Bigg(-\left(56\,a\left(a^2-b^2\right)\text{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]\text{Cos}[e+f\,x]^{3/2}\right)\Big/\Bigg(\sqrt{1-\text{Cos}[e+f\,x]^2}\,\Bigg(7\left(a^2-b^2\right)$$

$$\text{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]-2\Bigg(2\,b^2\,\text{AppellF1}\left[\frac{7}{4},\frac{1}{2},2,\frac{11}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]+$$

$$\left(-a^2+b^2\right)\text{AppellF1}\left[\frac{7}{4},\frac{3}{2},1,\frac{11}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]\Bigg)\text{Cos}[e+f\,x]^2\Bigg)\left(a^2+b^2\left(-1+\text{Cos}[e+f\,x]^2\right)\right)\Bigg)-$$

$$\frac{1}{\sqrt{b}\left(-a^2+b^2\right)^{1/4}}(3+3\,i)\Bigg(2\,\text{ArcTan}\left[1-\frac{(1+i)\sqrt{b}\sqrt{\text{Cos}[e+f\,x]}}{\left(-a^2+b^2\right)^{1/4}}\right]-2\,\text{ArcTan}\left[1+\frac{(1+i)\sqrt{b}\sqrt{\text{Cos}[e+f\,x]}}{\left(-a^2+b^2\right)^{1/4}}\right]-$$

$$\text{Log}\left[\sqrt{-a^2+b^2}-(1+i)\sqrt{b}\left(-a^2+b^2\right)^{1/4}\sqrt{\text{Cos}[e+f\,x]}+i\,b\,\text{Cos}[e+f\,x]\right]+$$

$$\text{Log}\left[\sqrt{-a^2+b^2}+(1+i)\sqrt{b}\left(-a^2+b^2\right)^{1/4}\sqrt{\text{Cos}[e+f\,x]}+i\,b\,\text{Cos}[e+f\,x]\right]\Bigg)\Bigg)\text{Sin}[e+f\,x]-$$

$$\frac{1}{\left(1-\text{Cos}[e+f\,x]^2\right)(a+b\,\text{Sin}[e+f\,x])}2\left(a^2-2\,b^2\right)\left(a+b\sqrt{1-\text{Cos}[e+f\,x]^2}\right)$$

$$\Bigg(\Bigg(7\,b\left(a^2-b^2\right)\text{AppellF1}\left[\frac{3}{4},-\frac{1}{2},1,\frac{7}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]\text{Cos}[e+f\,x]^{3/2}\sqrt{1-\text{Cos}[e+f\,x]^2}\Bigg)\Big/$$

$$\Bigg(3\Bigg(-7\left(a^2-b^2\right)\text{AppellF1}\left[\frac{3}{4},-\frac{1}{2},1,\frac{7}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]+2\Bigg(2\,b^2\,\text{AppellF1}\left[\frac{7}{4},-\frac{1}{2},2,\frac{11}{4},\text{Cos}[e+f\,x]^2,\right.$$

$$\left.\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]+\left(a^2-b^2\right)\text{AppellF1}\left[\frac{7}{4},\frac{1}{2},1,\frac{11}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]\Bigg)\text{Cos}[e+f\,x]^2\Bigg)$$

$$\left(a^2+b^2\left(-1+\text{Cos}[e+f\,x]^2\right)\right)\Bigg)+\frac{1}{4\sqrt{2}\,b^{3/2}\left(a^2-b^2\right)^{1/4}}a\Bigg(-2\,\text{ArcTan}\left[1-\frac{\sqrt{2}\sqrt{b}\sqrt{\text{Cos}[e+f\,x]}}{\left(a^2-b^2\right)^{1/4}}\right]+$$

$$2\,\text{ArcTan}\left[1+\frac{\sqrt{2}\sqrt{b}\sqrt{\text{Cos}[e+f\,x]}}{\left(a^2-b^2\right)^{1/4}}\right]+\text{Log}\left[\sqrt{a^2-b^2}-\sqrt{2}\sqrt{b}\left(a^2-b^2\right)^{1/4}\sqrt{\text{Cos}[e+f\,x]}+b\,\text{Cos}[e+f\,x]\right]-$$

$$\text{Log}\left[\sqrt{a^2-b^2}+\sqrt{2}\sqrt{b}\left(a^2-b^2\right)^{1/4}\sqrt{\text{Cos}[e+f\,x]}+b\,\text{Cos}[e+f\,x]\right]\Bigg)\Bigg)\text{Sin}[e+f\,x]^2\Bigg)$$

- **Problem 1398: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int \frac{\text{Sin}[e+f x]^2}{(g\,\text{Cos}[e+f x])^{3/2}\,(a+b\,\text{Sin}[e+f x])}\,dx$$

Optimal (type 4, 453 leaves, 15 steps):

$$\frac{a^2\,\text{ArcTan}\left[\frac{\sqrt{b}\,\sqrt{g\,\text{Cos}[e+f x]}}{\left(-a^2+b^2\right)^{1/4}\sqrt{g}}\right]}{\sqrt{b}\,\left(-a^2+b^2\right)^{5/4} f\,g^{3/2}}-\frac{a^2\,\text{ArcTanh}\left[\frac{\sqrt{b}\,\sqrt{g\,\text{Cos}[e+f x]}}{\left(-a^2+b^2\right)^{1/4}\sqrt{g}}\right]}{\sqrt{b}\,\left(-a^2+b^2\right)^{5/4} f\,g^{3/2}}-\frac{2\,b}{\left(a^2-b^2\right) f\,g\,\sqrt{g\,\text{Cos}[e+f x]}}-\frac{2\,a\,\sqrt{g\,\text{Cos}[e+f x]}\,\text{EllipticE}\left[\frac{1}{2}(e+f x),2\right]}{\left(a^2-b^2\right) f\,g^2\,\sqrt{\text{Cos}[e+f x]}}-$$

$$\frac{a^3\,\sqrt{\text{Cos}[e+f x]}\,\text{EllipticPi}\left[\frac{2\,b}{b-\sqrt{-a^2+b^2}},\frac{1}{2}(e+f x),2\right]}{b\,\left(a^2-b^2\right)\left(b-\sqrt{-a^2+b^2}\right) f\,g\,\sqrt{g\,\text{Cos}[e+f x]}}-\frac{a^3\,\sqrt{\text{Cos}[e+f x]}\,\text{EllipticPi}\left[\frac{2\,b}{b+\sqrt{-a^2+b^2}},\frac{1}{2}(e+f x),2\right]}{b\,\left(a^2-b^2\right)\left(b+\sqrt{-a^2+b^2}\right) f\,g\,\sqrt{g\,\text{Cos}[e+f x]}}+\frac{2\,a\,\text{Sin}[e+f x]}{\left(a^2-b^2\right) f\,g\,\sqrt{g\,\text{Cos}[e+f x]}}$$

Result (type 6, 1180 leaves):

$$\frac{2\,\mathrm{Cos}[e+f\,x]\,(-b+a\,\mathrm{Sin}[e+f\,x])}{\left(a^2-b^2\right)f\,(g\,\mathrm{Cos}[e+f\,x])^{3/2}}-$$

$$\frac{1}{(a-b)\,(a+b)\,f\,(g\,\mathrm{Cos}[e+f\,x])^{3/2}}\,a\,\mathrm{Cos}[e+f\,x]^{3/2}\left(\frac{1}{6\sqrt{1-\mathrm{Cos}[e+f\,x]^2}\,(a+b\,\mathrm{Sin}[e+f\,x])}\,a\left(a+b\sqrt{1-\mathrm{Cos}[e+f\,x]^2}\right)\right.$$

$$\left(-\left(56\,a\left(a^2-b^2\right)\mathrm{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},\mathrm{Cos}[e+f\,x]^2,\frac{b^2\,\mathrm{Cos}[e+f\,x]^2}{-a^2+b^2}\right]\mathrm{Cos}[e+f\,x]^{3/2}\right)\Big/\left(\sqrt{1-\mathrm{Cos}[e+f\,x]^2}\,\left(7\left(a^2-b^2\right)\right.\right.\right.$$

$$\mathrm{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},\mathrm{Cos}[e+f\,x]^2,\frac{b^2\,\mathrm{Cos}[e+f\,x]^2}{-a^2+b^2}\right]-2\left(2\,b^2\,\mathrm{AppellF1}\left[\frac{7}{4},\frac{1}{2},2,\frac{11}{4},\mathrm{Cos}[e+f\,x]^2,\frac{b^2\,\mathrm{Cos}[e+f\,x]^2}{-a^2+b^2}\right]+\right.$$

$$\left.\left.\left.\left(-a^2+b^2\right)\mathrm{AppellF1}\left[\frac{7}{4},\frac{3}{2},1,\frac{11}{4},\mathrm{Cos}[e+f\,x]^2,\frac{b^2\,\mathrm{Cos}[e+f\,x]^2}{-a^2+b^2}\right]\right)\mathrm{Cos}[e+f\,x]^2\right)\left(a^2+b^2\left(-1+\mathrm{Cos}[e+f\,x]^2\right)\right)\right)-$$

$$\frac{1}{\sqrt{b}\left(-a^2+b^2\right)^{1/4}}(3+3\,i)\left(2\,\mathrm{ArcTan}\left[1-\frac{(1+i)\sqrt{b}\sqrt{\mathrm{Cos}[e+f\,x]}}{\left(-a^2+b^2\right)^{1/4}}\right]-2\,\mathrm{ArcTan}\left[1+\frac{(1+i)\sqrt{b}\sqrt{\mathrm{Cos}[e+f\,x]}}{\left(-a^2+b^2\right)^{1/4}}\right]-\right.$$

$$\mathrm{Log}\left[\sqrt{-a^2+b^2}-(1+i)\sqrt{b}\left(-a^2+b^2\right)^{1/4}\sqrt{\mathrm{Cos}[e+f\,x]}+i\,b\,\mathrm{Cos}[e+f\,x]\right]+$$

$$\left.\left.\mathrm{Log}\left[\sqrt{-a^2+b^2}+(1+i)\sqrt{b}\left(-a^2+b^2\right)^{1/4}\sqrt{\mathrm{Cos}[e+f\,x]}+i\,b\,\mathrm{Cos}[e+f\,x]\right]\right)\right)\mathrm{Sin}[e+f\,x]-\frac{1}{\left(1-\mathrm{Cos}[e+f\,x]^2\right)(a+b\,\mathrm{Sin}[e+f\,x])}$$

$$2\,b\left(a+b\sqrt{1-\mathrm{Cos}[e+f\,x]^2}\right)\left(\left(7\,b\left(a^2-b^2\right)\mathrm{AppellF1}\left[\frac{3}{4},-\frac{1}{2},1,\frac{7}{4},\mathrm{Cos}[e+f\,x]^2,\frac{b^2\,\mathrm{Cos}[e+f\,x]^2}{-a^2+b^2}\right]\mathrm{Cos}[e+f\,x]^{3/2}\sqrt{1-\mathrm{Cos}[e+f\,x]^2}\right)\Big/\right.$$

$$\left(3\left(-7\left(a^2-b^2\right)\mathrm{AppellF1}\left[\frac{3}{4},-\frac{1}{2},1,\frac{7}{4},\mathrm{Cos}[e+f\,x]^2,\frac{b^2\,\mathrm{Cos}[e+f\,x]^2}{-a^2+b^2}\right]+2\left(2\,b^2\,\mathrm{AppellF1}\left[\frac{7}{4},-\frac{1}{2},2,\frac{11}{4},\mathrm{Cos}[e+f\,x]^2,\right.\right.\right.\right.$$

$$\left.\left.\left.\frac{b^2\,\mathrm{Cos}[e+f\,x]^2}{-a^2+b^2}\right]+\left(a^2-b^2\right)\mathrm{AppellF1}\left[\frac{7}{4},\frac{1}{2},1,\frac{11}{4},\mathrm{Cos}[e+f\,x]^2,\frac{b^2\,\mathrm{Cos}[e+f\,x]^2}{-a^2+b^2}\right]\right)\mathrm{Cos}[e+f\,x]^2\right)$$

$$\left.\left(a^2+b^2\left(-1+\mathrm{Cos}[e+f\,x]^2\right)\right)\right)+\frac{1}{4\sqrt{2}\,b^{3/2}\left(a^2-b^2\right)^{1/4}}a\left(-2\,\mathrm{ArcTan}\left[1-\frac{\sqrt{2}\sqrt{b}\sqrt{\mathrm{Cos}[e+f\,x]}}{\left(a^2-b^2\right)^{1/4}}\right]+\right.$$

$$2\,\mathrm{ArcTan}\left[1+\frac{\sqrt{2}\sqrt{b}\sqrt{\mathrm{Cos}[e+f\,x]}}{\left(a^2-b^2\right)^{1/4}}\right]+\mathrm{Log}\left[\sqrt{a^2-b^2}-\sqrt{2}\sqrt{b}\left(a^2-b^2\right)^{1/4}\sqrt{\mathrm{Cos}[e+f\,x]}+b\,\mathrm{Cos}[e+f\,x]\right]-$$

$$\left.\left.\left.\mathrm{Log}\left[\sqrt{a^2-b^2}+\sqrt{2}\sqrt{b}\left(a^2-b^2\right)^{1/4}\sqrt{\mathrm{Cos}[e+f\,x]}+b\,\mathrm{Cos}[e+f\,x]\right]\right)\right)\mathrm{Sin}[e+f\,x]^2\right)$$

- **Problem 1399: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int \frac{\text{Sin}[e+f x]}{(g \,\text{Cos}[e+f x])^{3/2} (a+b \,\text{Sin}[e+f x])} \, dx$$

Optimal (type 4, 413 leaves, 13 steps):

$$-\frac{a \sqrt{b} \,\text{ArcTan}\left[\frac{\sqrt{b} \sqrt{g \,\text{Cos}[e+f x]}}{\left(-a^2+b^2\right)^{1/4} \sqrt{g}}\right]}{\left(-a^2+b^2\right)^{5/4} f g^{3/2}}+\frac{a \sqrt{b} \,\text{ArcTanh}\left[\frac{\sqrt{b} \sqrt{g \,\text{Cos}[e+f x]}}{\left(-a^2+b^2\right)^{1/4} \sqrt{g}}\right]}{\left(-a^2+b^2\right)^{5/4} f g^{3/2}}+\frac{2 b \sqrt{g \,\text{Cos}[e+f x]} \,\text{EllipticE}\left[\frac{1}{2} (e+f x), 2\right]}{\left(a^2-b^2\right) f g^2 \sqrt{\text{Cos}[e+f x]}}+$$

$$\frac{a^2 \sqrt{\text{Cos}[e+f x]} \,\text{EllipticPi}\left[\frac{2 b}{b-\sqrt{-a^2+b^2}}, \frac{1}{2} (e+f x), 2\right]}{\left(a^2-b^2\right) \left(b-\sqrt{-a^2+b^2}\right) f g \sqrt{g \,\text{Cos}[e+f x]}}+\frac{a^2 \sqrt{\text{Cos}[e+f x]} \,\text{EllipticPi}\left[\frac{2 b}{b+\sqrt{-a^2+b^2}}, \frac{1}{2} (e+f x), 2\right]}{\left(a^2-b^2\right) \left(b+\sqrt{-a^2+b^2}\right) f g \sqrt{g \,\text{Cos}[e+f x]}}+\frac{2 (a-b \,\text{Sin}[e+f x])}{\left(a^2-b^2\right) f g \sqrt{g \,\text{Cos}[e+f x]}}$$

Result (type 6, 1178 leaves):

$$\frac{2\,\text{Cos}[e+f\,x]\,(a-b\,\text{Sin}[e+f\,x])}{\left(a^2-b^2\right)f\,(g\,\text{Cos}[e+f\,x])^{3/2}}+$$

$$\frac{1}{(a-b)\,(a+b)\,f\,(g\,\text{Cos}[e+f\,x])^{3/2}}\,b\,\text{Cos}[e+f\,x]^{3/2}\,\Bigg(\frac{1}{6\sqrt{1-\text{Cos}[e+f\,x]^2}\,(a+b\,\text{Sin}[e+f\,x])}\,a\left(a+b\sqrt{1-\text{Cos}[e+f\,x]^2}\right)$$

$$\Bigg(-\Bigg(56\,a\left(a^2-b^2\right)\text{AppellF1}\Big[\frac{3}{4},\,\frac{1}{2},\,1,\,\frac{7}{4},\,\text{Cos}[e+f\,x]^2,\,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\Big]\,\text{Cos}[e+f\,x]^{3/2}\Bigg)\Big/\Bigg(\sqrt{1-\text{Cos}[e+f\,x]^2}\,\Bigg(7\left(a^2-b^2\right)$$

$$\text{AppellF1}\Big[\frac{3}{4},\,\frac{1}{2},\,1,\,\frac{7}{4},\,\text{Cos}[e+f\,x]^2,\,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\Big]-2\,\Bigg(2\,b^2\,\text{AppellF1}\Big[\frac{7}{4},\,\frac{1}{2},\,2,\,\frac{11}{4},\,\text{Cos}[e+f\,x]^2,\,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\Big]+$$

$$\left(-a^2+b^2\right)\text{AppellF1}\Big[\frac{7}{4},\,\frac{3}{2},\,1,\,\frac{11}{4},\,\text{Cos}[e+f\,x]^2,\,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\Big]\Bigg)\,\text{Cos}[e+f\,x]^2\Bigg)\,\left(a^2+b^2\left(-1+\text{Cos}[e+f\,x]^2\right)\right)\Bigg)-$$

$$\frac{1}{\sqrt{b}\,\left(-a^2+b^2\right)^{1/4}}\,(3+3\,i)\,\Bigg(2\,\text{ArcTan}\Big[1-\frac{(1+i)\,\sqrt{b}\,\sqrt{\text{Cos}[e+f\,x]}}{\left(-a^2+b^2\right)^{1/4}}\Big]-2\,\text{ArcTan}\Big[1+\frac{(1+i)\,\sqrt{b}\,\sqrt{\text{Cos}[e+f\,x]}}{\left(-a^2+b^2\right)^{1/4}}\Big]-$$

$$\text{Log}\Big[\sqrt{-a^2+b^2}-(1+i)\,\sqrt{b}\,\left(-a^2+b^2\right)^{1/4}\sqrt{\text{Cos}[e+f\,x]}+i\,b\,\text{Cos}[e+f\,x]\Big]+$$

$$\text{Log}\Big[\sqrt{-a^2+b^2}+(1+i)\,\sqrt{b}\,\left(-a^2+b^2\right)^{1/4}\sqrt{\text{Cos}[e+f\,x]}+i\,b\,\text{Cos}[e+f\,x]\Big]\Bigg)\Bigg)\,\text{Sin}[e+f\,x]-\frac{1}{\left(1-\text{Cos}[e+f\,x]^2\right)\,(a+b\,\text{Sin}[e+f\,x])}$$

$$2\,b\left(a+b\sqrt{1-\text{Cos}[e+f\,x]^2}\right)\Bigg(\Bigg(7\,b\left(a^2-b^2\right)\text{AppellF1}\Big[\frac{3}{4},\,-\frac{1}{2},\,1,\,\frac{7}{4},\,\text{Cos}[e+f\,x]^2,\,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\Big]\,\text{Cos}[e+f\,x]^{3/2}\sqrt{1-\text{Cos}[e+f\,x]^2}\Bigg)\Big/$$

$$\Bigg(3\,\Bigg(-7\left(a^2-b^2\right)\text{AppellF1}\Big[\frac{3}{4},\,-\frac{1}{2},\,1,\,\frac{7}{4},\,\text{Cos}[e+f\,x]^2,\,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\Big]+2\,\Bigg(2\,b^2\,\text{AppellF1}\Big[\frac{7}{4},\,-\frac{1}{2},\,2,\,\frac{11}{4},\,\text{Cos}[e+f\,x]^2,$$

$$\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\Big]+\left(a^2-b^2\right)\text{AppellF1}\Big[\frac{7}{4},\,\frac{1}{2},\,1,\,\frac{11}{4},\,\text{Cos}[e+f\,x]^2,\,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\Big]\Bigg)\,\text{Cos}[e+f\,x]^2\Bigg)$$

$$\left(a^2+b^2\left(-1+\text{Cos}[e+f\,x]^2\right)\right)\Bigg)+\frac{1}{4\sqrt{2}\,b^{3/2}\left(a^2-b^2\right)^{1/4}}\,a\,\Bigg(-2\,\text{ArcTan}\Big[1-\frac{\sqrt{2}\,\sqrt{b}\,\sqrt{\text{Cos}[e+f\,x]}}{\left(a^2-b^2\right)^{1/4}}\Big]+$$

$$2\,\text{ArcTan}\Big[1+\frac{\sqrt{2}\,\sqrt{b}\,\sqrt{\text{Cos}[e+f\,x]}}{\left(a^2-b^2\right)^{1/4}}\Big]+\text{Log}\Big[\sqrt{a^2-b^2}-\sqrt{2}\,\sqrt{b}\,\left(a^2-b^2\right)^{1/4}\sqrt{\text{Cos}[e+f\,x]}+b\,\text{Cos}[e+f\,x]\Big]-$$

$$\text{Log}\Big[\sqrt{a^2-b^2}+\sqrt{2}\,\sqrt{b}\,\left(a^2-b^2\right)^{1/4}\sqrt{\text{Cos}[e+f\,x]}+b\,\text{Cos}[e+f\,x]\Big]\Bigg)\Bigg)\,\text{Sin}[e+f\,x]^2\Bigg)$$

- **Problem 1400: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int \frac{\text{Csc}[e+f x]}{(g \text{Cos}[e+f x])^{3/2} (a+b \text{Sin}[e+f x])} \, dx$$

Optimal (type 4, 507 leaves, 21 steps):

$$\frac{\text{ArcTan}\left[\frac{\sqrt{g \text{Cos}[e+f x]}}{\sqrt{g}}\right]}{a f g^{3/2}}-\frac{b^{5/2} \text{ArcTan}\left[\frac{\sqrt{b} \sqrt{g \text{Cos}[e+f x]}}{\left(-a^2+b^2\right)^{1/4} \sqrt{g}}\right]}{a \left(-a^2+b^2\right)^{5/4} f g^{3/2}}-\frac{\text{ArcTanh}\left[\frac{\sqrt{g \text{Cos}[e+f x]}}{\sqrt{g}}\right]}{a f g^{3/2}}+\frac{b^{5/2} \text{ArcTanh}\left[\frac{\sqrt{b} \sqrt{g \text{Cos}[e+f x]}}{\left(-a^2+b^2\right)^{1/4} \sqrt{g}}\right]}{a \left(-a^2+b^2\right)^{5/4} f g^{3/2}}+$$

$$\frac{2}{a f g \sqrt{g \text{Cos}[e+f x]}}+\frac{2 b \sqrt{g \text{Cos}[e+f x]} \text{EllipticE}\left[\frac{1}{2} (e+f x), 2\right]}{\left(a^2-b^2\right) f g^2 \sqrt{\text{Cos}[e+f x]}}+\frac{b^2 \sqrt{\text{Cos}[e+f x]} \text{EllipticPi}\left[\frac{2 b}{b-\sqrt{-a^2+b^2}}, \frac{1}{2} (e+f x), 2\right]}{\left(a^2-b^2\right) \left(b-\sqrt{-a^2+b^2}\right) f g \sqrt{g \text{Cos}[e+f x]}}+$$

$$\frac{b^2 \sqrt{\text{Cos}[e+f x]} \text{EllipticPi}\left[\frac{2 b}{b+\sqrt{-a^2+b^2}}, \frac{1}{2} (e+f x), 2\right]}{\left(a^2-b^2\right) \left(b+\sqrt{-a^2+b^2}\right) f g \sqrt{g \text{Cos}[e+f x]}}+\frac{2 b (b-a \text{Sin}[e+f x])}{a \left(a^2-b^2\right) f g \sqrt{g \text{Cos}[e+f x]}}$$

Result (type 6, 2424 leaves):

$$-\frac{1}{2 (a-b) (a+b) f (g \text{Cos}[e+f x])^{3/2}}$$

$$\text{Cos}[e+f x]^{3/2} \left(-\frac{1}{3 \sqrt{1-\text{Cos}[e+f x]^2} (b+a \text{Csc}[e+f x])} a b \left(a+b \sqrt{1-\text{Cos}[e+f x]^2}\right) \left(-\left(56 a \left(a^2-b^2\right) \text{AppellF1}\left[\frac{3}{4}, \frac{1}{2}, 1, \frac{7}{4}, \text{Cos}[e+f x]^2,\right.\right.\right.\right.$$

$$\left.\left.\frac{b^2 \text{Cos}[e+f x]^2}{-a^2+b^2}\right] \text{Cos}[e+f x]^{3/2}\right) \Big/ \left(\sqrt{1-\text{Cos}[e+f x]^2} \left(7 \left(a^2-b^2\right) \text{AppellF1}\left[\frac{3}{4}, \frac{1}{2}, 1, \frac{7}{4}, \text{Cos}[e+f x]^2, \frac{b^2 \text{Cos}[e+f x]^2}{-a^2+b^2}\right]-\right.\right.$$

$$2 \left(2 b^2 \text{AppellF1}\left[\frac{7}{4}, \frac{1}{2}, 2, \frac{11}{4}, \text{Cos}[e+f x]^2, \frac{b^2 \text{Cos}[e+f x]^2}{-a^2+b^2}\right]+\left(-a^2+b^2\right) \text{AppellF1}\left[\frac{7}{4}, \frac{3}{2}, 1, \frac{11}{4},\right.\right.$$

$$\left.\left.\left.\left.\text{Cos}[e+f x]^2, \frac{b^2 \text{Cos}[e+f x]^2}{-a^2+b^2}\right]\right) \text{Cos}[e+f x]^2\right) \left(a^2+b^2 \left(-1+\text{Cos}[e+f x]^2\right)\right)\right)-\frac{1}{\sqrt{b} \left(-a^2+b^2\right)^{1/4}}$$

$$(3+3 i) \left(2 \text{ArcTan}\left[1-\frac{(1+i) \sqrt{b} \sqrt{\text{Cos}[e+f x]}}{\left(-a^2+b^2\right)^{1/4}}\right]-2 \text{ArcTan}\left[1+\frac{(1+i) \sqrt{b} \sqrt{\text{Cos}[e+f x]}}{\left(-a^2+b^2\right)^{1/4}}\right]-\text{Log}\left[\sqrt{-a^2+b^2}-(1+i) \sqrt{b}\right.\right.$$

$$\left.\left.\left.\left(-a^2+b^2\right)^{1/4} \sqrt{\text{Cos}[e+f x]}+i b \text{Cos}[e+f x]\right]+\text{Log}\left[\sqrt{-a^2+b^2}+(1+i) \sqrt{b} \left(-a^2+b^2\right)^{1/4} \sqrt{\text{Cos}[e+f x]}+i b \text{Cos}[e+f x]\right]\right)\right)-$$

$$\frac{1}{\left(1-\text{Cos}[e+f x]^2\right)\left(-1+2\,\text{Cos}[e+f x]^2\right)(b+a\,\text{Csc}[e+f x])} 2 b^2\left(-1+\text{Cos}[e+f x]^2\right)\left(a+b\sqrt{1-\text{Cos}[e+f x]^2}\right)$$

$$\text{Cos}[2\,(e+f x)]\,\text{Csc}[e+f x]$$

$$\left(\frac{\left(a^2-b^2\right)^{3/4}\left(-2 a^2+b^2\right)\text{ArcTan}\left[\frac{-\sqrt{2}\,\left(a^2-b^2\right)^{1/4}+2\sqrt{b}\,\sqrt{\text{Cos}[e+f x]}}{\sqrt{2}\,\left(a^2-b^2\right)^{1/4}}\right]}{2\sqrt{2}\,a\,b^{3/2}\left(-a^2+b^2\right)}+\frac{\left(a^2-b^2\right)^{3/4}\left(-2 a^2+b^2\right)\text{ArcTan}\left[\frac{\sqrt{2}\,\left(a^2-b^2\right)^{1/4}+2\sqrt{b}\,\sqrt{\text{Cos}[e+f x]}}{\sqrt{2}\,\left(a^2-b^2\right)^{1/4}}\right]}{2\sqrt{2}\,a\,b^{3/2}\left(-a^2+b^2\right)}+\right.$$

$$\frac{\text{ArcTan}\left[\sqrt{\text{Cos}[e+f x]}\right]}{2 a}-\left(7 b\left(a^2-b^2\right)\text{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]\text{Cos}[e+f x]^{3/2}\right)\Big/$$

$$\left(3\sqrt{1-\text{Cos}[e+f x]^2}\left(7\left(a^2-b^2\right)\text{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]-2\left(2 b^2\,\text{AppellF1}\left[\frac{7}{4},\frac{1}{2},2,\frac{11}{4},\right.\right.\right.$$

$$\left.\left.\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]+\left(-a^2+b^2\right)\text{AppellF1}\left[\frac{7}{4},\frac{3}{2},1,\frac{11}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]\right)\text{Cos}[e+f x]^2\Big)$$

$$\left.\left(a^2+b^2\left(-1+\text{Cos}[e+f x]^2\right)\right)\right)+\left(22 b\left(a^2-b^2\right)\text{AppellF1}\left[\frac{7}{4},\frac{1}{2},1,\frac{11}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]\text{Cos}[e+f x]^{7/2}\right)\Big/$$

$$\left(7\sqrt{1-\text{Cos}[e+f x]^2}\left(11\left(a^2-b^2\right)\text{AppellF1}\left[\frac{7}{4},\frac{1}{2},1,\frac{11}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]-2\right.\right.$$

$$\left(2 b^2\,\text{AppellF1}\left[\frac{11}{4},\frac{1}{2},2,\frac{15}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]+\left(-a^2+b^2\right)\text{AppellF1}\left[\frac{11}{4},\frac{3}{2},1,\frac{15}{4},\right.\right.$$

$$\left.\left.\left.\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]\right)\text{Cos}[e+f x]^2\right)\left(a^2+b^2\left(-1+\text{Cos}[e+f x]^2\right)\right)\Big)+\frac{\text{Log}\left[1-\sqrt{\text{Cos}[e+f x]}\right]}{4 a}-$$

$$\frac{\text{Log}\left[1+\sqrt{\text{Cos}[e+f x]}\right]}{4 a}+\frac{\left(a^2-b^2\right)^{3/4}\left(-2 a^2+b^2\right)\text{Log}\left[\sqrt{a^2-b^2}-\sqrt{2}\,\sqrt{b}\,\left(a^2-b^2\right)^{1/4}\sqrt{\text{Cos}[e+f x]}+b\,\text{Cos}[e+f x]\right]}{4\sqrt{2}\,a\,b^{3/2}\left(-a^2+b^2\right)}-$$

$$\left.\frac{\left(a^2-b^2\right)^{3/4}\left(-2 a^2+b^2\right)\text{Log}\left[\sqrt{a^2-b^2}+\sqrt{2}\,\sqrt{b}\,\left(a^2-b^2\right)^{1/4}\sqrt{\text{Cos}[e+f x]}+b\,\text{Cos}[e+f x]\right]}{4\sqrt{2}\,a\,b^{3/2}\left(-a^2+b^2\right)}\right)-$$

$$\frac{1}{\left(1-\text{Cos}[e+f x]^2\right)(b+a\,\text{Csc}[e+f x])} 2\left(-2 a^2+b^2\right)\left(-1+\text{Cos}[e+f x]^2\right)\left(a+b\sqrt{1-\text{Cos}[e+f x]^2}\right)\text{Csc}[e+f x]$$

$$\left(\left(7 b\left(a^2-b^2\right)\text{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]\text{Cos}[e+f x]^{3/2}\right)\Big/\left(3\sqrt{1-\text{Cos}[e+f x]^2}\left(7\left(a^2-b^2\right)\right.\right.\right.$$

$$\text{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]-2\left(2\,b^2\,\text{AppellF1}\left[\frac{7}{4},\frac{1}{2},2,\frac{11}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]+\right.$$

$$\left.\left.\left(-a^2+b^2\right)\text{AppellF1}\left[\frac{7}{4},\frac{3}{2},1,\frac{11}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]\right)\text{Cos}[e+f x]^2\right)\left(a^2+b^2\left(-1+\text{Cos}[e+f x]^2\right)\right)\Bigg)+$$

$$\frac{1}{8\,a\left(a^2-b^2\right)^{1/4}}\left(2\sqrt{2}\sqrt{b}\,\text{ArcTan}\left[1-\frac{\sqrt{2}\sqrt{b}\sqrt{\text{Cos}[e+f x]}}{\left(a^2-b^2\right)^{1/4}}\right]-2\sqrt{2}\sqrt{b}\,\text{ArcTan}\left[1+\frac{\sqrt{2}\sqrt{b}\sqrt{\text{Cos}[e+f x]}}{\left(a^2-b^2\right)^{1/4}}\right]+\right.$$

$$4\left(a^2-b^2\right)^{1/4}\text{ArcTan}\left[\sqrt{\text{Cos}[e+f x]}\right]+2\left(a^2-b^2\right)^{1/4}\text{Log}\left[1-\sqrt{\text{Cos}[e+f x]}\right]-$$

$$2\left(a^2-b^2\right)^{1/4}\text{Log}\left[1+\sqrt{\text{Cos}[e+f x]}\right]-\sqrt{2}\sqrt{b}\,\text{Log}\left[\sqrt{a^2-b^2}-\sqrt{2}\sqrt{b}\left(a^2-b^2\right)^{1/4}\sqrt{\text{Cos}[e+f x]}+b\,\text{Cos}[e+f x]\right]+$$

$$\left.\left.\left.\sqrt{2}\sqrt{b}\,\text{Log}\left[\sqrt{a^2-b^2}+\sqrt{2}\sqrt{b}\left(a^2-b^2\right)^{1/4}\sqrt{\text{Cos}[e+f x]}+b\,\text{Cos}[e+f x]\right]\right)\right)\right)+\frac{2\,\text{Cos}[e+f x]\,(a-b\,\text{Sin}[e+f x])}{\left(a^2-b^2\right)f\,(g\,\text{Cos}[e+f x])^{3/2}}$$

- **Problem 1401: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int\frac{\text{Csc}[e+f x]^2}{(g\,\text{Cos}[e+f x])^{3/2}\,(a+b\,\text{Sin}[e+f x])}\,dx$$

Optimal (type 4, 627 leaves, 25 steps):

$$-\frac{b\,\text{ArcTan}\left[\frac{\sqrt{g\,\text{Cos}[e+f x]}}{\sqrt{g}}\right]}{a^2 f g^{3/2}}+\frac{b^{7/2}\,\text{ArcTan}\left[\frac{\sqrt{b}\sqrt{g\,\text{Cos}[e+f x]}}{\left(-a^2+b^2\right)^{1/4}\sqrt{g}}\right]}{a^2\left(-a^2+b^2\right)^{5/4}f g^{3/2}}+\frac{b\,\text{ArcTanh}\left[\frac{\sqrt{g\,\text{Cos}[e+f x]}}{\sqrt{g}}\right]}{a^2 f g^{3/2}}-\frac{b^{7/2}\,\text{ArcTanh}\left[\frac{\sqrt{b}\sqrt{g\,\text{Cos}[e+f x]}}{\left(-a^2+b^2\right)^{1/4}\sqrt{g}}\right]}{a^2\left(-a^2+b^2\right)^{5/4}f g^{3/2}}-$$

$$\frac{2\,b}{a^2 f g\sqrt{g\,\text{Cos}[e+f x]}}-\frac{\text{Csc}[e+f x]}{a f g\sqrt{g\,\text{Cos}[e+f x]}}-\frac{3\sqrt{g\,\text{Cos}[e+f x]}\,\text{EllipticE}\left[\frac{1}{2}(e+f x),2\right]}{a f g^2\sqrt{\text{Cos}[e+f x]}}-$$

$$\frac{2\,b^2\sqrt{g\,\text{Cos}[e+f x]}\,\text{EllipticE}\left[\frac{1}{2}(e+f x),2\right]}{a\left(a^2-b^2\right)f g^2\sqrt{\text{Cos}[e+f x]}}-\frac{b^3\sqrt{\text{Cos}[e+f x]}\,\text{EllipticPi}\left[\frac{2\,b}{b-\sqrt{-a^2+b^2}},\frac{1}{2}(e+f x),2\right]}{a\left(a^2-b^2\right)\left(b-\sqrt{-a^2+b^2}\right)f g\sqrt{g\,\text{Cos}[e+f x]}}-$$

$$\frac{b^3\sqrt{\text{Cos}[e+f x]}\,\text{EllipticPi}\left[\frac{2\,b}{b+\sqrt{-a^2+b^2}},\frac{1}{2}(e+f x),2\right]}{a\left(a^2-b^2\right)\left(b+\sqrt{-a^2+b^2}\right)f g\sqrt{g\,\text{Cos}[e+f x]}}+\frac{3\,\text{Sin}[e+f x]}{a f g\sqrt{g\,\text{Cos}[e+f x]}}-\frac{2\,b^2\,(b-a\,\text{Sin}[e+f x])}{a^2\left(a^2-b^2\right)f g\sqrt{g\,\text{Cos}[e+f x]}}$$

Result (type 6, 2469 leaves):

$$-\frac{1}{4\,a\,(a-b)\,(a+b)\,f\,(g\,\text{Cos}[e+f x])^{3/2}}$$

$$\text{Cos}[e+f x]^{3/2} \Bigg(\frac{1}{12 \sqrt{1-\text{Cos}[e+f x]^2}\; (b+a\,\text{Csc}[e+f x])} \left(6 a^3+2 a b^2\right) \left(a+b \sqrt{1-\text{Cos}[e+f x]^2}\right) \Bigg(-\Bigg(56 a \left(a^2-b^2\right)$$

$$\text{AppellF1}\left[\frac{3}{4}, \frac{1}{2}, 1, \frac{7}{4}, \text{Cos}[e+f x]^2, \frac{b^2 \text{Cos}[e+f x]^2}{-a^2+b^2}\right] \text{Cos}[e+f x]^{3/2}\Bigg) \Big/ \Bigg(\sqrt{1-\text{Cos}[e+f x]^2} \; \Bigg(7 \left(a^2-b^2\right) \text{AppellF1}\Big[\frac{3}{4}, \frac{1}{2}, 1,$$

$$\frac{7}{4}, \text{Cos}[e+f x]^2, \frac{b^2 \text{Cos}[e+f x]^2}{-a^2+b^2}\Big] - 2 \Bigg(2 b^2 \text{AppellF1}\left[\frac{7}{4}, \frac{1}{2}, 2, \frac{11}{4}, \text{Cos}[e+f x]^2, \frac{b^2 \text{Cos}[e+f x]^2}{-a^2+b^2}\right] + \left(-a^2+b^2\right) \text{AppellF1}\Big[$$

$$\frac{7}{4}, \frac{3}{2}, 1, \frac{11}{4}, \text{Cos}[e+f x]^2, \frac{b^2 \text{Cos}[e+f x]^2}{-a^2+b^2}\Big]\Bigg) \text{Cos}[e+f x]^2\Bigg) \left(a^2+b^2 \left(-1+\text{Cos}[e+f x]^2\right)\right)\Bigg) - \frac{1}{\sqrt{b}\; \left(-a^2+b^2\right)^{1/4}}$$

$$(3+3 i) \Bigg(2 \text{ArcTan}\left[1-\frac{(1+i) \sqrt{b}\, \sqrt{\text{Cos}[e+f x]}}{\left(-a^2+b^2\right)^{1/4}}\right] - 2 \text{ArcTan}\left[1+\frac{(1+i) \sqrt{b}\, \sqrt{\text{Cos}[e+f x]}}{\left(-a^2+b^2\right)^{1/4}}\right] - \text{Log}\Big[\sqrt{-a^2+b^2} - (1+i) \sqrt{b}$$

$$\left(-a^2+b^2\right)^{1/4} \sqrt{\text{Cos}[e+f x]} + i\, b\, \text{Cos}[e+f x]\Big] + \text{Log}\left[\sqrt{-a^2+b^2} + (1+i) \sqrt{b}\, \left(-a^2+b^2\right)^{1/4} \sqrt{\text{Cos}[e+f x]} + i\, b\, \text{Cos}[e+f x]\right]\Bigg)\Bigg) -$$

$$\frac{1}{\left(1-\text{Cos}[e+f x]^2\right) \left(-1+2 \text{Cos}[e+f x]^2\right) (b+a\,\text{Csc}[e+f x])} 2 \left(-3 a^2 b+b^3\right) \left(-1+\text{Cos}[e+f x]^2\right) \left(a+b \sqrt{1-\text{Cos}[e+f x]^2}\right)$$

$$\text{Cos}[2 (e+f x)]\, \text{Csc}[e+f x]$$

$$\Bigg(\frac{\left(a^2-b^2\right)^{3/4} \left(-2 a^2+b^2\right) \text{ArcTan}\left[\frac{-\sqrt{2}\, \left(a^2-b^2\right)^{1/4}+2 \sqrt{b}\, \sqrt{\text{Cos}[e+f x]}}{\sqrt{2}\, \left(a^2-b^2\right)^{1/4}}\right]}{2 \sqrt{2}\, a\, b^{3/2} \left(-a^2+b^2\right)} + \frac{\left(a^2-b^2\right)^{3/4} \left(-2 a^2+b^2\right) \text{ArcTan}\left[\frac{\sqrt{2}\, \left(a^2-b^2\right)^{1/4}+2 \sqrt{b}\, \sqrt{\text{Cos}[e+f x]}}{\sqrt{2}\, \left(a^2-b^2\right)^{1/4}}\right]}{2 \sqrt{2}\, a\, b^{3/2} \left(-a^2+b^2\right)} +$$

$$\frac{\text{ArcTan}\left[\sqrt{\text{Cos}[e+f x]}\right]}{2 a} - \Bigg(7 b \left(a^2-b^2\right) \text{AppellF1}\left[\frac{3}{4}, \frac{1}{2}, 1, \frac{7}{4}, \text{Cos}[e+f x]^2, \frac{b^2 \text{Cos}[e+f x]^2}{-a^2+b^2}\right] \text{Cos}[e+f x]^{3/2}\Bigg) \Big/$$

$$\Bigg(3 \sqrt{1-\text{Cos}[e+f x]^2} \; \Bigg(7 \left(a^2-b^2\right) \text{AppellF1}\left[\frac{3}{4}, \frac{1}{2}, 1, \frac{7}{4}, \text{Cos}[e+f x]^2, \frac{b^2 \text{Cos}[e+f x]^2}{-a^2+b^2}\right] - 2 \Bigg(2 b^2 \text{AppellF1}\Big[\frac{7}{4}, \frac{1}{2}, 2, \frac{11}{4},$$

$$\text{Cos}[e+f x]^2, \frac{b^2 \text{Cos}[e+f x]^2}{-a^2+b^2}\Big] + \left(-a^2+b^2\right) \text{AppellF1}\left[\frac{7}{4}, \frac{3}{2}, 1, \frac{11}{4}, \text{Cos}[e+f x]^2, \frac{b^2 \text{Cos}[e+f x]^2}{-a^2+b^2}\right]\Bigg) \text{Cos}[e+f x]^2\Bigg)$$

$$\left(a^2+b^2 \left(-1+\text{Cos}[e+f x]^2\right)\right)\Bigg) + \Bigg(22 b \left(a^2-b^2\right) \text{AppellF1}\left[\frac{7}{4}, \frac{1}{2}, 1, \frac{11}{4}, \text{Cos}[e+f x]^2, \frac{b^2 \text{Cos}[e+f x]^2}{-a^2+b^2}\right] \text{Cos}[e+f x]^{7/2}\Bigg) \Big/$$

$$\Bigg(7 \sqrt{1-\text{Cos}[e+f x]^2} \; \Bigg(11 \left(a^2-b^2\right) \text{AppellF1}\left[\frac{7}{4}, \frac{1}{2}, 1, \frac{11}{4}, \text{Cos}[e+f x]^2, \frac{b^2 \text{Cos}[e+f x]^2}{-a^2+b^2}\right] - 2$$

$$\left(2 b^2 \text{AppellF1}\left[\frac{11}{4}, \frac{1}{2}, 2, \frac{15}{4}, \text{Cos}[e+f x]^2, \frac{b^2 \text{Cos}[e+f x]^2}{-a^2+b^2}\right] + \left(-a^2+b^2\right) \text{AppellF1}\left[\frac{11}{4}, \frac{3}{2}, 1, \frac{15}{4}, \text{Cos}[e+f x]^2, \frac{b^2 \text{Cos}[e+f x]^2}{-a^2+b^2}\right]\right) \text{Cos}[e+f x]^2\Bigg) \left(a^2+b^2\left(-1+\text{Cos}[e+f x]^2\right)\right)\Bigg) + \frac{\text{Log}\left[1-\sqrt{\text{Cos}[e+f x]}\right]}{4 a} -$$

$$\frac{\text{Log}\left[1+\sqrt{\text{Cos}[e+f x]}\right]}{4 a} + \frac{\left(a^2-b^2\right)^{3/4}\left(-2 a^2+b^2\right) \text{Log}\left[\sqrt{a^2-b^2} - \sqrt{2}\sqrt{b}\left(a^2-b^2\right)^{1/4}\sqrt{\text{Cos}[e+f x]} + b \text{Cos}[e+f x]\right]}{4\sqrt{2}\, a\, b^{3/2}\left(-a^2+b^2\right)} -$$

$$\left.\frac{\left(a^2-b^2\right)^{3/4}\left(-2 a^2+b^2\right) \text{Log}\left[\sqrt{a^2-b^2} + \sqrt{2}\sqrt{b}\left(a^2-b^2\right)^{1/4}\sqrt{\text{Cos}[e+f x]} + b \text{Cos}[e+f x]\right]}{4\sqrt{2}\, a\, b^{3/2}\left(-a^2+b^2\right)}\right) -$$

$$\frac{1}{\left(1-\text{Cos}[e+f x]^2\right)\left(b+a \text{Csc}[e+f x]\right)} 2\left(7 a^2 b-5 b^3\right)\left(-1+\text{Cos}[e+f x]^2\right)\left(a+b\sqrt{1-\text{Cos}[e+f x]^2}\right) \text{Csc}[e+f x]$$

$$\Bigg(\Bigg(7 b\left(a^2-b^2\right) \text{AppellF1}\left[\frac{3}{4}, \frac{1}{2}, 1, \frac{7}{4}, \text{Cos}[e+f x]^2, \frac{b^2 \text{Cos}[e+f x]^2}{-a^2+b^2}\right] \text{Cos}[e+f x]^{3/2}\Bigg) \Bigg/ \Bigg(3\sqrt{1-\text{Cos}[e+f x]^2}\, \Bigg(7\left(a^2-b^2\right)$$

$$\text{AppellF1}\left[\frac{3}{4}, \frac{1}{2}, 1, \frac{7}{4}, \text{Cos}[e+f x]^2, \frac{b^2 \text{Cos}[e+f x]^2}{-a^2+b^2}\right] - 2\Bigg(2 b^2 \text{AppellF1}\left[\frac{7}{4}, \frac{1}{2}, 2, \frac{11}{4}, \text{Cos}[e+f x]^2, \frac{b^2 \text{Cos}[e+f x]^2}{-a^2+b^2}\right] +$$

$$\left(-a^2+b^2\right) \text{AppellF1}\left[\frac{7}{4}, \frac{3}{2}, 1, \frac{11}{4}, \text{Cos}[e+f x]^2, \frac{b^2 \text{Cos}[e+f x]^2}{-a^2+b^2}\right]\Bigg) \text{Cos}[e+f x]^2\Bigg)\left(a^2+b^2\left(-1+\text{Cos}[e+f x]^2\right)\right)\Bigg) +$$

$$\frac{1}{8 a\left(a^2-b^2\right)^{1/4}}\Bigg(2\sqrt{2}\sqrt{b} \text{ArcTan}\left[1-\frac{\sqrt{2}\sqrt{b}\sqrt{\text{Cos}[e+f x]}}{\left(a^2-b^2\right)^{1/4}}\right] - 2\sqrt{2}\sqrt{b} \text{ArcTan}\left[1+\frac{\sqrt{2}\sqrt{b}\sqrt{\text{Cos}[e+f x]}}{\left(a^2-b^2\right)^{1/4}}\right] +$$

$$4\left(a^2-b^2\right)^{1/4} \text{ArcTan}\left[\sqrt{\text{Cos}[e+f x]}\right] + 2\left(a^2-b^2\right)^{1/4} \text{Log}\left[1-\sqrt{\text{Cos}[e+f x]}\right] - 2\left(a^2-b^2\right)^{1/4} \text{Log}\left[1+\sqrt{\text{Cos}[e+f x]}\right] -$$

$$\sqrt{2}\sqrt{b} \text{Log}\left[\sqrt{a^2-b^2} - \sqrt{2}\sqrt{b}\left(a^2-b^2\right)^{1/4}\sqrt{\text{Cos}[e+f x]} + b \text{Cos}[e+f x]\right] + \sqrt{2}\sqrt{b}$$

$$\text{Log}\left[\sqrt{a^2-b^2} + \sqrt{2}\sqrt{b}\left(a^2-b^2\right)^{1/4}\sqrt{\text{Cos}[e+f x]} + b \text{Cos}[e+f x]\right]\Bigg)\Bigg)\Bigg) + \frac{\text{Cos}[e+f x]^2\left(-\frac{\text{Cot}[e+f x]}{a} + \frac{2 \text{Sec}[e+f x]\left(-b+a \text{Sin}[e+f x]\right)}{a^2-b^2}\right)}{f\left(g \text{Cos}[e+f x]\right)^{3/2}}$$

Problem 1402: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{\text{Sin}[e+f x]^4}{\left(g \text{Cos}[e+f x]\right)^{5/2}\left(a+b \text{Sin}[e+f x]\right)} \, dx$$

Optimal (type 4, 601 leaves, 22 steps):

$$-\frac{a^4 \text{ArcTan}\left[\frac{\sqrt{b}\sqrt{g \text{Cos}[e+f x]}}{(-a^2+b^2)^{1/4}\sqrt{g}}\right]}{b^{3/2}(-a^2+b^2)^{7/4} f g^{5/2}} - \frac{a^4 \text{ArcTanh}\left[\frac{\sqrt{b}\sqrt{g \text{Cos}[e+f x]}}{(-a^2+b^2)^{1/4}\sqrt{g}}\right]}{b^{3/2}(-a^2+b^2)^{7/4} f g^{5/2}} - \frac{2 b}{3(a^2-b^2) f g (g \text{Cos}[e+f x])^{3/2}} +$$

$$\frac{2 a^2 \sqrt{g \text{Cos}[e+f x]}}{b (a^2-b^2) f g^3} - \frac{2 b \sqrt{g \text{Cos}[e+f x]}}{(a^2-b^2) f g^3} - \frac{4 a \sqrt{\text{Cos}[e+f x]} \text{ EllipticF}\left[\frac{1}{2}(e+f x), 2\right]}{3 (a^2-b^2) f g^2 \sqrt{g \text{Cos}[e+f x]}} +$$

$$\frac{2 a^3 \sqrt{\text{Cos}[e+f x]} \text{ EllipticF}\left[\frac{1}{2}(e+f x), 2\right]}{b^2 (a^2-b^2) f g^2 \sqrt{g \text{Cos}[e+f x]}} - \frac{a^5 \sqrt{\text{Cos}[e+f x]} \text{ EllipticPi}\left[\frac{2 b}{b-\sqrt{-a^2+b^2}}, \frac{1}{2}(e+f x), 2\right]}{b^2 (a^2-b^2)\left(a^2-b\left(b-\sqrt{-a^2+b^2}\right)\right) f g^2 \sqrt{g \text{Cos}[e+f x]}} -$$

$$\frac{a^5 \sqrt{\text{Cos}[e+f x]} \text{ EllipticPi}\left[\frac{2 b}{b+\sqrt{-a^2+b^2}}, \frac{1}{2}(e+f x), 2\right]}{b^2 (a^2-b^2)\left(a^2-b\left(b+\sqrt{-a^2+b^2}\right)\right) f g^2 \sqrt{g \text{Cos}[e+f x]}} + \frac{2 a \text{Sin}[e+f x]}{3 (a^2-b^2) f g (g \text{Cos}[e+f x])^{3/2}}$$

Result (type 6, 2158 leaves) :

$$\frac{2 \text{Cos}[e+f x] (-b+a \text{Sin}[e+f x])}{3 (a^2-b^2) f (g \text{Cos}[e+f x])^{5/2}} +$$

$$\frac{1}{6 (a-b) (a+b) f (g \text{Cos}[e+f x])^{5/2}} \text{Cos}[e+f x]^{5/2} \left(-\frac{1}{\sqrt{1-\text{Cos}[e+f x]^2} (a+b \text{Sin}[e+f x])} 2 (-7 a^2+3 b^2) \left(a+b\sqrt{1-\text{Cos}[e+f x]^2}\right)\right.$$

$$\left(\left(5 a (a^2-b^2) \text{AppellF1}\left[\frac{1}{4}, \frac{1}{2}, 1, \frac{5}{4}, \text{Cos}[e+f x]^2, \frac{b^2 \text{Cos}[e+f x]^2}{-a^2+b^2}\right] \sqrt{\text{Cos}[e+f x]}\right) \Big/ \left(\sqrt{1-\text{Cos}[e+f x]^2} \left(5 (a^2-b^2)\right.\right.\right.$$

$$\text{AppellF1}\left[\frac{1}{4}, \frac{1}{2}, 1, \frac{5}{4}, \text{Cos}[e+f x]^2, \frac{b^2 \text{Cos}[e+f x]^2}{-a^2+b^2}\right] - 2 \left(2 b^2 \text{AppellF1}\left[\frac{5}{4}, \frac{1}{2}, 2, \frac{9}{4}, \text{Cos}[e+f x]^2, \frac{b^2 \text{Cos}[e+f x]^2}{-a^2+b^2}\right] +\right.$$

$$\left.\left.\left.\left.(-a^2+b^2) \text{AppellF1}\left[\frac{5}{4}, \frac{3}{2}, 1, \frac{9}{4}, \text{Cos}[e+f x]^2, \frac{b^2 \text{Cos}[e+f x]^2}{-a^2+b^2}\right]\right) \text{Cos}[e+f x]^2\right) \left(a^2+b^2 (-1+\text{Cos}[e+f x]^2)\right)\right) -$$

$$\frac{1}{(-a^2+b^2)^{3/4}} \left(\frac{1}{8}-\frac{i}{8}\right) \sqrt{b} \left(2 \text{ArcTan}\left[1-\frac{(1+i)\sqrt{b}\sqrt{\text{Cos}[e+f x]}}{(-a^2+b^2)^{1/4}}\right] - 2 \text{ArcTan}\left[1+\frac{(1+i)\sqrt{b}\sqrt{\text{Cos}[e+f x]}}{(-a^2+b^2)^{1/4}}\right] +\right.$$

$$\text{Log}\left[\sqrt{-a^2+b^2} - (1+i)\sqrt{b} (-a^2+b^2)^{1/4} \sqrt{\text{Cos}[e+f x]} + i b \text{Cos}[e+f x]\right] -$$

$$\left.\left.\text{Log}\left[\sqrt{-a^2+b^2} + (1+i)\sqrt{b} (-a^2+b^2)^{1/4} \sqrt{\text{Cos}[e+f x]} + i b \text{Cos}[e+f x]\right]\right)\right) \text{Sin}[e+f x] +$$

$$\frac{1}{\sqrt{1-\text{Cos}[e+f x]^2}\ \left(-1+2\,\text{Cos}[e+f x]^2\right)\ (a+b\,\text{Sin}[e+f x])}\left(3\,a^2-3\,b^2\right)\left(a+b\sqrt{1-\text{Cos}[e+f x]^2}\right)\text{Cos}[2\,(e+f x)]$$

$$\left(\frac{\left(\frac{1}{2}-\frac{i}{2}\right)\left(-2\,a^2+b^2\right)\text{ArcTan}\left[1-\frac{(1+i)\sqrt{b}\sqrt{\text{Cos}[e+f x]}}{\left(-a^2+b^2\right)^{1/4}}\right]}{b^{3/2}\left(-a^2+b^2\right)^{3/4}}-\frac{\left(\frac{1}{2}-\frac{i}{2}\right)\left(-2\,a^2+b^2\right)\text{ArcTan}\left[1+\frac{(1+i)\sqrt{b}\sqrt{\text{Cos}[e+f x]}}{\left(-a^2+b^2\right)^{1/4}}\right]}{b^{3/2}\left(-a^2+b^2\right)^{3/4}}+\right.$$

$$\frac{4\sqrt{\text{Cos}[e+f x]}}{b}+\left(10\,a\left(a^2-b^2\right)\text{AppellF1}\left[\frac{1}{4},\frac{1}{2},1,\frac{5}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]\sqrt{\text{Cos}[e+f x]}\right)\Big/$$

$$\left(\sqrt{1-\text{Cos}[e+f x]^2}\left(5\left(a^2-b^2\right)\text{AppellF1}\left[\frac{1}{4},\frac{1}{2},1,\frac{5}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]-2\left(2\,b^2\,\text{AppellF1}\left[\frac{5}{4},\frac{1}{2},2,\frac{9}{4},\right.\right.\right.\right.$$

$$\left.\left.\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]+\left(-a^2+b^2\right)\text{AppellF1}\left[\frac{5}{4},\frac{3}{2},1,\frac{9}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]\right)\text{Cos}[e+f x]^2\Big)$$

$$\left.\left(a^2+b^2\left(-1+\text{Cos}[e+f x]^2\right)\right)\right)-\left(36\,a\left(a^2-b^2\right)\text{AppellF1}\left[\frac{5}{4},\frac{1}{2},1,\frac{9}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]\text{Cos}[e+f x]^{5/2}\right)\Big/$$

$$\left(5\sqrt{1-\text{Cos}[e+f x]^2}\left(9\left(a^2-b^2\right)\text{AppellF1}\left[\frac{5}{4},\frac{1}{2},1,\frac{9}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]-\right.\right.$$

$$2\left(2\,b^2\,\text{AppellF1}\left[\frac{9}{4},\frac{1}{2},2,\frac{13}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]+\right.$$

$$\left.\left.\left.\left(-a^2+b^2\right)\text{AppellF1}\left[\frac{9}{4},\frac{3}{2},1,\frac{13}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]\right)\text{Cos}[e+f x]^2\right)\left(a^2+b^2\left(-1+\text{Cos}[e+f x]^2\right)\right)\right)+$$

$$\frac{1}{b^{3/2}\left(-a^2+b^2\right)^{3/4}}\left(\frac{1}{4}-\frac{i}{4}\right)\left(-2\,a^2+b^2\right)\text{Log}\left[\sqrt{-a^2+b^2}-(1+i)\sqrt{b}\left(-a^2+b^2\right)^{1/4}\sqrt{\text{Cos}[e+f x]}+i\,b\,\text{Cos}[e+f x]\right]-$$

$$\left.\frac{1}{b^{3/2}\left(-a^2+b^2\right)^{3/4}}\left(\frac{1}{4}-\frac{i}{4}\right)\left(-2\,a^2+b^2\right)\text{Log}\left[\sqrt{-a^2+b^2}+(1+i)\sqrt{b}\left(-a^2+b^2\right)^{1/4}\sqrt{\text{Cos}[e+f x]}+i\,b\,\text{Cos}[e+f x]\right]\right)\text{Sin}[e+f x]-$$

$$\frac{1}{\left(1-\text{Cos}[e+f x]^2\right)(a+b\,\text{Sin}[e+f x])}4\,a\,b\left(a+b\sqrt{1-\text{Cos}[e+f x]^2}\right)$$

$$\left(\left(5\,b\left(a^2-b^2\right)\text{AppellF1}\left[\frac{1}{4},-\frac{1}{2},1,\frac{5}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]\sqrt{\text{Cos}[e+f x]}\sqrt{1-\text{Cos}[e+f x]^2}\right)\Big/\right.$$

$$\left(\left(-5\left(a^2-b^2\right)\text{AppellF1}\left[\frac{1}{4},-\frac{1}{2},1,\frac{5}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]+2\left(2\,b^2\,\text{AppellF1}\left[\frac{5}{4},-\frac{1}{2},2,\frac{9}{4},\text{Cos}[e+f x]^2,\right.\right.\right.\right.$$

$$\left.\left.\left.\frac{b^2 \operatorname{Cos}[e+f x]^2}{-a^2+b^2}\right]+\left(a^2-b^2\right) \operatorname{AppellF1}\left[\frac{5}{4}, \frac{1}{2}, 1, \frac{9}{4}, \operatorname{Cos}[e+f x]^2, \frac{b^2 \operatorname{Cos}[e+f x]^2}{-a^2+b^2}\right]\right) \operatorname{Cos}[e+f x]^2\right)$$

$$\left.\left(a^2+b^2\left(-1+\operatorname{Cos}[e+f x]^2\right)\right)\right)+\frac{1}{4 \sqrt{2} \sqrt{b}\left(a^2-b^2\right)^{3/4}} a\left(-2 \operatorname{ArcTan}\left[1-\frac{\sqrt{2} \sqrt{b} \sqrt{\operatorname{Cos}[e+f x]}}{\left(a^2-b^2\right)^{1/4}}\right]+\right.$$

$$2 \operatorname{ArcTan}\left[1+\frac{\sqrt{2} \sqrt{b} \sqrt{\operatorname{Cos}[e+f x]}}{\left(a^2-b^2\right)^{1/4}}\right]-\operatorname{Log}\left[\sqrt{a^2-b^2}-\sqrt{2} \sqrt{b}\left(a^2-b^2\right)^{1/4} \sqrt{\operatorname{Cos}[e+f x]}+b \operatorname{Cos}[e+f x]\right]+$$

$$\left.\left.\left.\operatorname{Log}\left[\sqrt{a^2-b^2}+\sqrt{2} \sqrt{b}\left(a^2-b^2\right)^{1/4} \sqrt{\operatorname{Cos}[e+f x]}+b \operatorname{Cos}[e+f x]\right]\right)\right) \operatorname{Sin}[e+f x]^2\right)$$

- **Problem 1403: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int \frac{\operatorname{Sin}[e+f x]^3}{(g \operatorname{Cos}[e+f x])^{5/2}(a+b \operatorname{Sin}[e+f x])} \, dx$$

Optimal (type 4, 528 leaves, 18 steps):

$$\frac{a^3 \operatorname{ArcTan}\left[\frac{\sqrt{b} \sqrt{g \operatorname{Cos}[e+f x]}}{\left(-a^2+b^2\right)^{1/4} \sqrt{g}}\right]}{\sqrt{b}\left(-a^2+b^2\right)^{7/4} f g^{5/2}}+\frac{a^3 \operatorname{ArcTanh}\left[\frac{\sqrt{b} \sqrt{g \operatorname{Cos}[e+f x]}}{\left(-a^2+b^2\right)^{1/4} \sqrt{g}}\right]}{\sqrt{b}\left(-a^2+b^2\right)^{7/4} f g^{5/2}}+\frac{2 a}{3\left(a^2-b^2\right) f g(g \operatorname{Cos}[e+f x])^{3/2}}-\frac{2 a^2 \sqrt{\operatorname{Cos}[e+f x]} \operatorname{EllipticF}\left[\frac{1}{2}(e+f x), 2\right]}{b\left(a^2-b^2\right) f g^2 \sqrt{g \operatorname{Cos}[e+f x]}}+$$

$$\frac{4 b \sqrt{\operatorname{Cos}[e+f x]} \operatorname{EllipticF}\left[\frac{1}{2}(e+f x), 2\right]}{3\left(a^2-b^2\right) f g^2 \sqrt{g \operatorname{Cos}[e+f x]}}+\frac{a^4 \sqrt{\operatorname{Cos}[e+f x]} \operatorname{EllipticPi}\left[\frac{2 b}{b-\sqrt{-a^2+b^2}}, \frac{1}{2}(e+f x), 2\right]}{b\left(a^2-b^2\right)\left(a^2-b\left(b-\sqrt{-a^2+b^2}\right)\right) f g^2 \sqrt{g \operatorname{Cos}[e+f x]}}+$$

$$\frac{a^4 \sqrt{\operatorname{Cos}[e+f x]} \operatorname{EllipticPi}\left[\frac{2 b}{b+\sqrt{-a^2+b^2}}, \frac{1}{2}(e+f x), 2\right]}{b\left(a^2-b^2\right)\left(a^2-b\left(b+\sqrt{-a^2+b^2}\right)\right) f g^2 \sqrt{g \operatorname{Cos}[e+f x]}}-\frac{2 b \operatorname{Sin}[e+f x]}{3\left(a^2-b^2\right) f g(g \operatorname{Cos}[e+f x])^{3/2}}$$

Result (type 6, 1193 leaves):

$$\frac{2 \operatorname{Cos}[e+f x](a-b \operatorname{Sin}[e+f x])}{3\left(a^2-b^2\right) f(g \operatorname{Cos}[e+f x])^{5/2}}-$$

$$\frac{1}{3(a-b)(a+b) f(g \operatorname{Cos}[e+f x])^{5/2}} \operatorname{Cos}[e+f x]^{5/2}\left(\frac{1}{\sqrt{1-\operatorname{Cos}[e+f x]^2}(a+b \operatorname{Sin}[e+f x])} 4 a b\left(a+b \sqrt{1-\operatorname{Cos}[e+f x]^2}\right)\right.$$

$$\left(\left(5 a\left(a^2-b^2\right) \operatorname{AppellF1}\left[\frac{1}{4}, \frac{1}{2}, 1, \frac{5}{4}, \operatorname{Cos}[e+f x]^2, \frac{b^2 \operatorname{Cos}[e+f x]^2}{-a^2+b^2}\right] \sqrt{\operatorname{Cos}[e+f x]}\right) \right/$$

$$\left(\sqrt{1-\text{Cos}[e+f x]^2}\left(5\left(a^2-b^2\right)\text{AppellF1}\left[\frac{1}{4},\frac{1}{2},1,\frac{5}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]-2\left(2\,b^2\,\text{AppellF1}\left[\frac{5}{4},\frac{1}{2},2,\frac{9}{4},\right.\right.\right.\right.$$

$$\left.\left.\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]+\left(-a^2+b^2\right)\text{AppellF1}\left[\frac{5}{4},\frac{3}{2},1,\frac{9}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]\right)\text{Cos}[e+f x]^2\Big)$$

$$\left.\left(a^2+b^2\left(-1+\text{Cos}[e+f x]^2\right)\right)\right)-\frac{1}{\left(-a^2+b^2\right)^{3/4}}\left(\frac{1}{8}-\frac{i}{8}\right)\sqrt{b}\left(2\,\text{ArcTan}\left[1-\frac{(1+i)\sqrt{b}\,\sqrt{\text{Cos}[e+f x]}}{\left(-a^2+b^2\right)^{1/4}}\right]-\right.$$

$$2\,\text{ArcTan}\left[1+\frac{(1+i)\sqrt{b}\,\sqrt{\text{Cos}[e+f x]}}{\left(-a^2+b^2\right)^{1/4}}\right]+\text{Log}\left[\sqrt{-a^2+b^2}-(1+i)\sqrt{b}\left(-a^2+b^2\right)^{1/4}\sqrt{\text{Cos}[e+f x]}+i\,b\,\text{Cos}[e+f x]\right]-$$

$$\left.\left.\text{Log}\left[\sqrt{-a^2+b^2}+(1+i)\sqrt{b}\left(-a^2+b^2\right)^{1/4}\sqrt{\text{Cos}[e+f x]}+i\,b\,\text{Cos}[e+f x]\right]\right)\right)\text{Sin}[e+f x]-$$

$$\frac{1}{\left(1-\text{Cos}[e+f x]^2\right)(a+b\,\text{Sin}[e+f x])}\,2\left(3\,a^2-2\,b^2\right)\left(a+b\sqrt{1-\text{Cos}[e+f x]^2}\right)$$

$$\left(\left(5\,b\left(a^2-b^2\right)\text{AppellF1}\left[\frac{1}{4},-\frac{1}{2},1,\frac{5}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]\sqrt{\text{Cos}[e+f x]}\,\sqrt{1-\text{Cos}[e+f x]^2}\right)\Big/\right.$$

$$\left(\left(-5\left(a^2-b^2\right)\text{AppellF1}\left[\frac{1}{4},-\frac{1}{2},1,\frac{5}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]+2\left(2\,b^2\,\text{AppellF1}\left[\frac{5}{4},-\frac{1}{2},2,\frac{9}{4},\text{Cos}[e+f x]^2,\right.\right.\right.\right.$$

$$\left.\left.\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]+\left(a^2-b^2\right)\text{AppellF1}\left[\frac{5}{4},\frac{1}{2},1,\frac{9}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]\right)\text{Cos}[e+f x]^2\Big)$$

$$\left.\left(a^2+b^2\left(-1+\text{Cos}[e+f x]^2\right)\right)\right)+\frac{1}{4\sqrt{2}\,\sqrt{b}\left(a^2-b^2\right)^{3/4}}a\left(-2\,\text{ArcTan}\left[1-\frac{\sqrt{2}\,\sqrt{b}\,\sqrt{\text{Cos}[e+f x]}}{\left(a^2-b^2\right)^{1/4}}\right]+\right.$$

$$2\,\text{ArcTan}\left[1+\frac{\sqrt{2}\,\sqrt{b}\,\sqrt{\text{Cos}[e+f x]}}{\left(a^2-b^2\right)^{1/4}}\right]-\text{Log}\left[\sqrt{a^2-b^2}-\sqrt{2}\,\sqrt{b}\left(a^2-b^2\right)^{1/4}\sqrt{\text{Cos}[e+f x]}+b\,\text{Cos}[e+f x]\right]+$$

$$\left.\left.\left.\text{Log}\left[\sqrt{a^2-b^2}+\sqrt{2}\,\sqrt{b}\left(a^2-b^2\right)^{1/4}\sqrt{\text{Cos}[e+f x]}+b\,\text{Cos}[e+f x]\right]\right)\right)\text{Sin}[e+f x]^2\right)$$

- **Problem 1404: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int\frac{\text{Sin}[e+f x]^2}{(g\,\text{Cos}[e+f x])^{5/2}\,(a+b\,\text{Sin}[e+f x])}\,dx$$

Optimal (type 4, 468 leaves, 15 steps):

$$-\frac{a^2 \sqrt{b}\, \text{ArcTan}\left[\frac{\sqrt{b}\, \sqrt{g\, \text{Cos}[e+f\, x]}}{\left(-a^2+b^2\right)^{1/4} \sqrt{g}}\right]}{\left(-a^2+b^2\right)^{7/4} f\, g^{5/2}}-\frac{a^2 \sqrt{b}\, \text{ArcTanh}\left[\frac{\sqrt{b}\, \sqrt{g\, \text{Cos}[e+f\, x]}}{\left(-a^2+b^2\right)^{1/4} \sqrt{g}}\right]}{\left(-a^2+b^2\right)^{7/4} f\, g^{5/2}}-\frac{2\, b}{3 \left(a^2-b^2\right) f\, g\, (g\, \text{Cos}[e+f\, x])^{3/2}}+$$

$$\frac{2\, a \sqrt{\text{Cos}[e+f\, x]}\, \text{EllipticF}\left[\frac{1}{2} (e+f\, x), 2\right]}{3 \left(a^2-b^2\right) f\, g^2 \sqrt{g\, \text{Cos}[e+f\, x]}}-\frac{a^3 \sqrt{\text{Cos}[e+f\, x]}\, \text{EllipticPi}\left[\frac{2\, b}{b-\sqrt{-a^2+b^2}}, \frac{1}{2} (e+f\, x), 2\right]}{\left(a^2-b^2\right) \left(a^2-b \left(b-\sqrt{-a^2+b^2}\right)\right) f\, g^2 \sqrt{g\, \text{Cos}[e+f\, x]}}-$$

$$\frac{a^3 \sqrt{\text{Cos}[e+f\, x]}\, \text{EllipticPi}\left[\frac{2\, b}{b+\sqrt{-a^2+b^2}}, \frac{1}{2} (e+f\, x), 2\right]}{\left(a^2-b^2\right) \left(a^2-b \left(b+\sqrt{-a^2+b^2}\right)\right) f\, g^2 \sqrt{g\, \text{Cos}[e+f\, x]}}+\frac{2\, a\, \text{Sin}[e+f\, x]}{3 \left(a^2-b^2\right) f\, g\, (g\, \text{Cos}[e+f\, x])^{3/2}}$$

Result (type 6, 1184 leaves) :

$$\frac{2\,\text{Cos}[e+f\,x]\,(-b+a\,\text{Sin}[e+f\,x])}{3\left(a^2-b^2\right)f\,(g\,\text{Cos}[e+f\,x])^{5/2}}-$$

$$\frac{1}{3\,(a-b)\,(a+b)\,f\,(g\,\text{Cos}[e+f\,x])^{5/2}}\,a\,\text{Cos}[e+f\,x]^{5/2}\left(-\frac{1}{\sqrt{1-\text{Cos}[e+f\,x]^2}\,(a+b\,\text{Sin}[e+f\,x])}\,4\,a\left(a+b\sqrt{1-\text{Cos}[e+f\,x]^2}\right)\right.$$

$$\left(\left(5\,a\left(a^2-b^2\right)\text{AppellF1}\left[\frac{1}{4},\frac{1}{2},1,\frac{5}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]\sqrt{\text{Cos}[e+f\,x]}\right)\Big/\left(\sqrt{1-\text{Cos}[e+f\,x]^2}\left(5\left(a^2-b^2\right)\right.\right.\right.$$

$$\text{AppellF1}\left[\frac{1}{4},\frac{1}{2},1,\frac{5}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]-2\left(2\,b^2\,\text{AppellF1}\left[\frac{5}{4},\frac{1}{2},2,\frac{9}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]+\right.$$

$$\left.\left.\left.\left(-a^2+b^2\right)\text{AppellF1}\left[\frac{5}{4},\frac{3}{2},1,\frac{9}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]\right)\text{Cos}[e+f\,x]^2\right)\left(a^2+b^2\left(-1+\text{Cos}[e+f\,x]^2\right)\right)\right)-$$

$$\frac{1}{\left(-a^2+b^2\right)^{3/4}}\left(\frac{1}{8}-\frac{i}{8}\right)\sqrt{b}\left(2\,\text{ArcTan}\left[1-\frac{(1+i)\sqrt{b}\sqrt{\text{Cos}[e+f\,x]}}{\left(-a^2+b^2\right)^{1/4}}\right]-2\,\text{ArcTan}\left[1+\frac{(1+i)\sqrt{b}\sqrt{\text{Cos}[e+f\,x]}}{\left(-a^2+b^2\right)^{1/4}}\right]+\right.$$

$$\text{Log}\left[\sqrt{-a^2+b^2}-(1+i)\sqrt{b}\left(-a^2+b^2\right)^{1/4}\sqrt{\text{Cos}[e+f\,x]}+i\,b\,\text{Cos}[e+f\,x]\right]-$$

$$\left.\left.\text{Log}\left[\sqrt{-a^2+b^2}+(1+i)\sqrt{b}\left(-a^2+b^2\right)^{1/4}\sqrt{\text{Cos}[e+f\,x]}+i\,b\,\text{Cos}[e+f\,x]\right]\right)\right)\text{Sin}[e+f\,x]+\frac{1}{\left(1-\text{Cos}[e+f\,x]^2\right)(a+b\,\text{Sin}[e+f\,x])}$$

$$2\,b\left(a+b\sqrt{1-\text{Cos}[e+f\,x]^2}\right)\left(\left(5\,b\left(a^2-b^2\right)\text{AppellF1}\left[\frac{1}{4},-\frac{1}{2},1,\frac{5}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]\sqrt{\text{Cos}[e+f\,x]}\sqrt{1-\text{Cos}[e+f\,x]^2}\right)\Big/\right.$$

$$\left(\left(-5\left(a^2-b^2\right)\text{AppellF1}\left[\frac{1}{4},-\frac{1}{2},1,\frac{5}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]+2\left(2\,b^2\,\text{AppellF1}\left[\frac{5}{4},-\frac{1}{2},2,\frac{9}{4},\text{Cos}[e+f\,x]^2,\right.\right.\right.\right.$$

$$\left.\left.\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]+\left(a^2-b^2\right)\text{AppellF1}\left[\frac{5}{4},\frac{1}{2},1,\frac{9}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]\right)\text{Cos}[e+f\,x]^2\right)$$

$$\left.\left(a^2+b^2\left(-1+\text{Cos}[e+f\,x]^2\right)\right)\right)+\frac{1}{4\sqrt{2}\sqrt{b}\left(a^2-b^2\right)^{3/4}}a\left(-2\,\text{ArcTan}\left[1-\frac{\sqrt{2}\sqrt{b}\sqrt{\text{Cos}[e+f\,x]}}{\left(a^2-b^2\right)^{1/4}}\right]+\right.$$

$$2\,\text{ArcTan}\left[1+\frac{\sqrt{2}\sqrt{b}\sqrt{\text{Cos}[e+f\,x]}}{\left(a^2-b^2\right)^{1/4}}\right]-\text{Log}\left[\sqrt{a^2-b^2}-\sqrt{2}\sqrt{b}\left(a^2-b^2\right)^{1/4}\sqrt{\text{Cos}[e+f\,x]}+b\,\text{Cos}[e+f\,x]\right]+$$

$$\left.\left.\left.\text{Log}\left[\sqrt{a^2-b^2}+\sqrt{2}\sqrt{b}\left(a^2-b^2\right)^{1/4}\sqrt{\text{Cos}[e+f\,x]}+b\,\text{Cos}[e+f\,x]\right]\right)\right)\text{Sin}[e+f\,x]^2\right)$$

- **Problem 1405: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int \frac{\text{Sin}[e+f x]}{(g\,\text{Cos}[e+f x])^{5/2}\,(a+b\,\text{Sin}[e+f x])}\,dx$$

Optimal (type 4, 432 leaves, 13 steps):

$$\frac{a\,b^{3/2}\,\text{ArcTan}\left[\frac{\sqrt{b}\,\sqrt{g\,\text{Cos}[e+f x]}}{\left(-a^2+b^2\right)^{1/4}\sqrt{g}}\right]}{\left(-a^2+b^2\right)^{7/4} f\,g^{5/2}}+\frac{a\,b^{3/2}\,\text{ArcTanh}\left[\frac{\sqrt{b}\,\sqrt{g\,\text{Cos}[e+f x]}}{\left(-a^2+b^2\right)^{1/4}\sqrt{g}}\right]}{\left(-a^2+b^2\right)^{7/4} f\,g^{5/2}}-$$

$$\frac{2\,b\,\sqrt{\text{Cos}[e+f x]}\,\text{EllipticF}\left[\frac{1}{2}\,(e+f x),2\right]}{3\left(a^2-b^2\right) f\,g^2\sqrt{g\,\text{Cos}[e+f x]}}+\frac{a^2\,b\,\sqrt{\text{Cos}[e+f x]}\,\text{EllipticPi}\left[\frac{2\,b}{b-\sqrt{-a^2+b^2}},\frac{1}{2}\,(e+f x),2\right]}{\left(a^2-b^2\right)\left(a^2-b\left(b-\sqrt{-a^2+b^2}\right)\right) f\,g^2\sqrt{g\,\text{Cos}[e+f x]}}+$$

$$\frac{a^2\,b\,\sqrt{\text{Cos}[e+f x]}\,\text{EllipticPi}\left[\frac{2\,b}{b+\sqrt{-a^2+b^2}},\frac{1}{2}\,(e+f x),2\right]}{\left(a^2-b^2\right)\left(a^2-b\left(b+\sqrt{-a^2+b^2}\right)\right) f\,g^2\sqrt{g\,\text{Cos}[e+f x]}}+\frac{2\,(a-b\,\text{Sin}[e+f x])}{3\left(a^2-b^2\right) f\,g\,(g\,\text{Cos}[e+f x])^{3/2}}$$

Result (type 6, 1183 leaves):

$$\frac{2\,\text{Cos}[e+f x]\,(a-b\,\text{Sin}[e+f x])}{3\,(a^2-b^2)\,f\,(g\,\text{Cos}[e+f x])^{5/2}}+$$

$$\frac{1}{3\,(a-b)\,(a+b)\,f\,(g\,\text{Cos}[e+f x])^{5/2}}\,b\,\text{Cos}[e+f x]^{5/2}\left(-\frac{1}{\sqrt{1-\text{Cos}[e+f x]^2}\,(a+b\,\text{Sin}[e+f x])}\,4\,a\left(a+b\sqrt{1-\text{Cos}[e+f x]^2}\right)\right.$$
$$\left(\left(5\,a\,(a^2-b^2)\,\text{AppellF1}\left[\frac{1}{4},\frac{1}{2},1,\frac{5}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]\sqrt{\text{Cos}[e+f x]}\right)\Big/\left(\sqrt{1-\text{Cos}[e+f x]^2}\,\left(5\,(a^2-b^2)\right.\right.\right.$$
$$\text{AppellF1}\left[\frac{1}{4},\frac{1}{2},1,\frac{5}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]-2\left(2\,b^2\,\text{AppellF1}\left[\frac{5}{4},\frac{1}{2},2,\frac{9}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]+\right.$$
$$\left.\left.\left.(-a^2+b^2)\,\text{AppellF1}\left[\frac{5}{4},\frac{3}{2},1,\frac{9}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]\right)\text{Cos}[e+f x]^2\right)\left(a^2+b^2\left(-1+\text{Cos}[e+f x]^2\right)\right)\right)-$$
$$\frac{1}{(-a^2+b^2)^{3/4}}\left(\frac{1}{8}-\frac{i}{8}\right)\sqrt{b}\left(2\,\text{ArcTan}\left[1-\frac{(1+i)\sqrt{b}\,\sqrt{\text{Cos}[e+f x]}}{(-a^2+b^2)^{1/4}}\right]-2\,\text{ArcTan}\left[1+\frac{(1+i)\sqrt{b}\,\sqrt{\text{Cos}[e+f x]}}{(-a^2+b^2)^{1/4}}\right]+\right.$$
$$\text{Log}\left[\sqrt{-a^2+b^2}-(1+i)\sqrt{b}\,(-a^2+b^2)^{1/4}\sqrt{\text{Cos}[e+f x]}+i\,b\,\text{Cos}[e+f x]\right]-$$
$$\left.\left.\text{Log}\left[\sqrt{-a^2+b^2}+(1+i)\sqrt{b}\,(-a^2+b^2)^{1/4}\sqrt{\text{Cos}[e+f x]}+i\,b\,\text{Cos}[e+f x]\right]\right)\right)\text{Sin}[e+f x]+\frac{1}{\left(1-\text{Cos}[e+f x]^2\right)\,(a+b\,\text{Sin}[e+f x])}$$
$$2\,b\left(a+b\sqrt{1-\text{Cos}[e+f x]^2}\right)\left(\left(5\,b\,(a^2-b^2)\,\text{AppellF1}\left[\frac{1}{4},-\frac{1}{2},1,\frac{5}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]\sqrt{\text{Cos}[e+f x]}\,\sqrt{1-\text{Cos}[e+f x]^2}\right)\Big/\right.$$
$$\left(\left(-5\,(a^2-b^2)\,\text{AppellF1}\left[\frac{1}{4},-\frac{1}{2},1,\frac{5}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]+2\left(2\,b^2\,\text{AppellF1}\left[\frac{5}{4},-\frac{1}{2},2,\frac{9}{4},\text{Cos}[e+f x]^2,\right.\right.\right.\right.$$
$$\left.\left.\left.\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]+(a^2-b^2)\,\text{AppellF1}\left[\frac{5}{4},\frac{1}{2},1,\frac{9}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]\right)\text{Cos}[e+f x]^2\right)$$
$$\left.\left(a^2+b^2\left(-1+\text{Cos}[e+f x]^2\right)\right)\right)+\frac{1}{4\sqrt{2}\,\sqrt{b}\,(a^2-b^2)^{3/4}}a\left(-2\,\text{ArcTan}\left[1-\frac{\sqrt{2}\,\sqrt{b}\,\sqrt{\text{Cos}[e+f x]}}{(a^2-b^2)^{1/4}}\right]+\right.$$
$$2\,\text{ArcTan}\left[1+\frac{\sqrt{2}\,\sqrt{b}\,\sqrt{\text{Cos}[e+f x]}}{(a^2-b^2)^{1/4}}\right]-\text{Log}\left[\sqrt{a^2-b^2}-\sqrt{2}\,\sqrt{b}\,(a^2-b^2)^{1/4}\sqrt{\text{Cos}[e+f x]}+b\,\text{Cos}[e+f x]\right]+$$
$$\left.\left.\left.\text{Log}\left[\sqrt{a^2-b^2}+\sqrt{2}\,\sqrt{b}\,(a^2-b^2)^{1/4}\sqrt{\text{Cos}[e+f x]}+b\,\text{Cos}[e+f x]\right]\right)\right)\text{Sin}[e+f x]^2\right)$$

Problem 1406: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{\text{Csc}[e+f x]}{(g \text{Cos}[e+f x])^{5/2} (a+b \text{Sin}[e+f x])} \, dx$$

Optimal (type 4, 527 leaves, 21 steps):

$$-\frac{\text{ArcTan}\left[\frac{\sqrt{g \text{Cos}[e+f x]}}{\sqrt{g}}\right]}{a f g^{5/2}}+\frac{b^{7/2} \text{ArcTan}\left[\frac{\sqrt{b} \sqrt{g \text{Cos}[e+f x]}}{\left(-a^2+b^2\right)^{1/4} \sqrt{g}}\right]}{a \left(-a^2+b^2\right)^{7/4} f g^{5/2}}-\frac{\text{ArcTanh}\left[\frac{\sqrt{g \text{Cos}[e+f x]}}{\sqrt{g}}\right]}{a f g^{5/2}}+\frac{b^{7/2} \text{ArcTanh}\left[\frac{\sqrt{b} \sqrt{g \text{Cos}[e+f x]}}{\left(-a^2+b^2\right)^{1/4} \sqrt{g}}\right]}{a \left(-a^2+b^2\right)^{7/4} f g^{5/2}}+$$

$$\frac{2}{3 a f g (g \text{Cos}[e+f x])^{3/2}}-\frac{2 b \sqrt{\text{Cos}[e+f x]} \text{EllipticF}\left[\frac{1}{2} (e+f x),2\right]}{3 \left(a^2-b^2\right) f g^2 \sqrt{g \text{Cos}[e+f x]}}+\frac{b^3 \sqrt{\text{Cos}[e+f x]} \text{EllipticPi}\left[\frac{2 b}{b-\sqrt{-a^2+b^2}},\frac{1}{2} (e+f x),2\right]}{\left(a^2-b^2\right) \left(a^2-b \left(b-\sqrt{-a^2+b^2}\right)\right) f g^2 \sqrt{g \text{Cos}[e+f x]}}+$$

$$\frac{b^3 \sqrt{\text{Cos}[e+f x]} \text{EllipticPi}\left[\frac{2 b}{b+\sqrt{-a^2+b^2}},\frac{1}{2} (e+f x),2\right]}{\left(a^2-b^2\right) \left(a^2-b \left(b+\sqrt{-a^2+b^2}\right)\right) f g^2 \sqrt{g \text{Cos}[e+f x]}}+\frac{2 b (b-a \text{Sin}[e+f x])}{3 a \left(a^2-b^2\right) f g (g \text{Cos}[e+f x])^{3/2}}$$

Result (type 6, 2418 leaves):

$$\frac{1}{6 (a-b) (a+b) f (g \text{Cos}[e+f x])^{5/2}}$$

$$\text{Cos}[e+f x]^{5/2} \left(-\frac{1}{\sqrt{1-\text{Cos}[e+f x]^2} (b+a \text{Csc}[e+f x])} 8 a b \left(a+b \sqrt{1-\text{Cos}[e+f x]^2}\right) \left(\left(5 a \left(a^2-b^2\right) \text{AppellF1}\left[\frac{1}{4},\frac{1}{2},1,\frac{5}{4},\text{Cos}[e+f x]^2,\right.\right.\right.\right.$$

$$\left.\left.\frac{b^2 \text{Cos}[e+f x]^2}{-a^2+b^2}\right] \sqrt{\text{Cos}[e+f x]}\right) \Big/ \left(\sqrt{1-\text{Cos}[e+f x]^2} \left(5 \left(a^2-b^2\right) \text{AppellF1}\left[\frac{1}{4},\frac{1}{2},1,\frac{5}{4},\text{Cos}[e+f x]^2,\frac{b^2 \text{Cos}[e+f x]^2}{-a^2+b^2}\right]-2\right.\right.$$

$$\left(2 b^2 \text{AppellF1}\left[\frac{5}{4},\frac{1}{2},2,\frac{9}{4},\text{Cos}[e+f x]^2,\frac{b^2 \text{Cos}[e+f x]^2}{-a^2+b^2}\right]+\left(-a^2+b^2\right) \text{AppellF1}\left[\frac{5}{4},\frac{3}{2},1,\frac{9}{4},\right.\right.$$

$$\left.\left.\left.\left.\text{Cos}[e+f x]^2,\frac{b^2 \text{Cos}[e+f x]^2}{-a^2+b^2}\right]\right) \text{Cos}[e+f x]^2\right) \left(a^2+b^2 \left(-1+\text{Cos}[e+f x]^2\right)\right)\right)-\frac{1}{\left(-a^2+b^2\right)^{3/4}}$$

$$\left(\frac{1}{8}-\frac{i}{8}\right) \sqrt{b} \left(2 \text{ArcTan}\left[1-\frac{(1+i) \sqrt{b} \sqrt{\text{Cos}[e+f x]}}{\left(-a^2+b^2\right)^{1/4}}\right]-2 \text{ArcTan}\left[1+\frac{(1+i) \sqrt{b} \sqrt{\text{Cos}[e+f x]}}{\left(-a^2+b^2\right)^{1/4}}\right]+\text{Log}\left[\sqrt{-a^2+b^2}-(1+i) \sqrt{b}\right.\right.$$

$$\left.\left.\left.\left(-a^2+b^2\right)^{1/4} \sqrt{\text{Cos}[e+f x]}+i b \text{Cos}[e+f x]\right]-\text{Log}\left[\sqrt{-a^2+b^2}+(1+i) \sqrt{b} \left(-a^2+b^2\right)^{1/4} \sqrt{\text{Cos}[e+f x]}+i b \text{Cos}[e+f x]\right]\right)\right)-$$

$$\frac{1}{\left(1-\text{Cos}[e+f x]^2\right)\left(-1+2\,\text{Cos}[e+f x]^2\right)(b+a\,\text{Csc}[e+f x])} b^2\left(-1+\text{Cos}[e+f x]^2\right)\left(a+b\sqrt{1-\text{Cos}[e+f x]^2}\right)$$

$$\text{Cos}[2(e+f x)]\,\text{Csc}[e+f x]$$

$$\left(\frac{\left(a^2-b^2\right)^{1/4}\left(-2a^2+b^2\right)\text{ArcTan}\left[\frac{-\sqrt{2}\left(a^2-b^2\right)^{1/4}+2\sqrt{b}\sqrt{\text{Cos}[e+f x]}}{\sqrt{2}\left(a^2-b^2\right)^{1/4}}\right]}{\sqrt{2}\,a\sqrt{b}\left(-a^2+b^2\right)}+\frac{\left(a^2-b^2\right)^{1/4}\left(-2a^2+b^2\right)\text{ArcTan}\left[\frac{\sqrt{2}\left(a^2-b^2\right)^{1/4}+2\sqrt{b}\sqrt{\text{Cos}[e+f x]}}{\sqrt{2}\left(a^2-b^2\right)^{1/4}}\right]}{\sqrt{2}\,a\sqrt{b}\left(-a^2+b^2\right)}-\right.$$

$$\frac{\text{ArcTan}\left[\sqrt{\text{Cos}[e+f x]}\right]}{a}-\left(10\,b\left(a^2-b^2\right)\text{AppellF1}\left[\frac{1}{4},\frac{1}{2},1,\frac{5}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]\sqrt{\text{Cos}[e+f x]}\right)\Big/$$

$$\left(\sqrt{1-\text{Cos}[e+f x]^2}\left(5\left(a^2-b^2\right)\text{AppellF1}\left[\frac{1}{4},\frac{1}{2},1,\frac{5}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]-2\left(2b^2\,\text{AppellF1}\left[\frac{5}{4},\frac{1}{2},2,\frac{9}{4},\right.\right.\right.\right.$$

$$\left.\left.\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]+\left(-a^2+b^2\right)\text{AppellF1}\left[\frac{5}{4},\frac{3}{2},1,\frac{9}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]\right)\text{Cos}[e+f x]^2\right)$$

$$\left.\left(a^2+b^2\left(-1+\text{Cos}[e+f x]^2\right)\right)\right)+\left(36\,b\left(a^2-b^2\right)\text{AppellF1}\left[\frac{5}{4},\frac{1}{2},1,\frac{9}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]\text{Cos}[e+f x]^{5/2}\right)\Big/$$

$$\left(5\sqrt{1-\text{Cos}[e+f x]^2}\left(9\left(a^2-b^2\right)\text{AppellF1}\left[\frac{5}{4},\frac{1}{2},1,\frac{9}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]-\right.\right.$$

$$2\left(2b^2\,\text{AppellF1}\left[\frac{9}{4},\frac{1}{2},2,\frac{13}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]+\left(-a^2+b^2\right)\text{AppellF1}\left[\frac{9}{4},\frac{3}{2},1,\frac{13}{4},\right.\right.$$

$$\left.\left.\left.\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]\right)\text{Cos}[e+f x]^2\right)\left(a^2+b^2\left(-1+\text{Cos}[e+f x]^2\right)\right)\right)+\frac{\text{Log}\left[1-\sqrt{\text{Cos}[e+f x]}\right]}{2a}-$$

$$\frac{\text{Log}\left[1+\sqrt{\text{Cos}[e+f x]}\right]}{2a}-\frac{\left(a^2-b^2\right)^{1/4}\left(-2a^2+b^2\right)\text{Log}\left[\sqrt{a^2-b^2}-\sqrt{2}\sqrt{b}\left(a^2-b^2\right)^{1/4}\sqrt{\text{Cos}[e+f x]}+b\,\text{Cos}[e+f x]\right]}{2\sqrt{2}\,a\sqrt{b}\left(-a^2+b^2\right)}+$$

$$\left.\frac{\left(a^2-b^2\right)^{1/4}\left(-2a^2+b^2\right)\text{Log}\left[\sqrt{a^2-b^2}+\sqrt{2}\sqrt{b}\left(a^2-b^2\right)^{1/4}\sqrt{\text{Cos}[e+f x]}+b\,\text{Cos}[e+f x]\right]}{2\sqrt{2}\,a\sqrt{b}\left(-a^2+b^2\right)}\right)-$$

$$\frac{1}{\left(1-\text{Cos}[e+f x]^2\right)(b+a\,\text{Csc}[e+f x])}2\left(6a^2-7b^2\right)\left(-1+\text{Cos}[e+f x]^2\right)\left(a+b\sqrt{1-\text{Cos}[e+f x]^2}\right)\text{Csc}[e+f x]$$

$$\left(\left(5\,b\left(a^2-b^2\right)\text{AppellF1}\left[\frac{1}{4},\frac{1}{2},1,\frac{5}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]\sqrt{\text{Cos}[e+f x]}\right)\Big/\right.$$

$$\left(\sqrt{1-\cos[e+f x]^2}\left(5\left(a^2-b^2\right)\text{AppellF1}\left[\frac{1}{4},\frac{1}{2},1,\frac{5}{4},\cos[e+f x]^2,\frac{b^2\cos[e+f x]^2}{-a^2+b^2}\right]-2\left(2 b^2\text{AppellF1}\left[\frac{5}{4},\frac{1}{2},2,\frac{9}{4},\cos[e+f x]^2,\frac{b^2\cos[e+f x]^2}{-a^2+b^2}\right]+\left(-a^2+b^2\right)\text{AppellF1}\left[\frac{5}{4},\frac{3}{2},1,\frac{9}{4},\cos[e+f x]^2,\frac{b^2\cos[e+f x]^2}{-a^2+b^2}\right]\right)\cos[e+f x]^2\right)\left(a^2+b^2\left(-1+\cos[e+f x]^2\right)\right)\right)-\frac{1}{8 a\left(a^2-b^2\right)^{3/4}}\left(-2\sqrt{2}\, b^{3/2}\text{ArcTan}\left[1-\frac{\sqrt{2}\sqrt{b}\sqrt{\cos[e+f x]}}{\left(a^2-b^2\right)^{1/4}}\right]+2\sqrt{2}\, b^{3/2}\text{ArcTan}\left[1+\frac{\sqrt{2}\sqrt{b}\sqrt{\cos[e+f x]}}{\left(a^2-b^2\right)^{1/4}}\right]+4\left(a^2-b^2\right)^{3/4}\text{ArcTan}\left[\sqrt{\cos[e+f x]}\right]-2\left(a^2-b^2\right)^{3/4}\text{Log}\left[1-\sqrt{\cos[e+f x]}\right]+2\left(a^2-b^2\right)^{3/4}\text{Log}\left[1+\sqrt{\cos[e+f x]}\right]-\sqrt{2}\, b^{3/2}\text{Log}\left[\sqrt{a^2-b^2}-\sqrt{2}\sqrt{b}\left(a^2-b^2\right)^{1/4}\sqrt{\cos[e+f x]}+b\cos[e+f x]\right]+\sqrt{2}\, b^{3/2}\text{Log}\left[\sqrt{a^2-b^2}+\sqrt{2}\sqrt{b}\left(a^2-b^2\right)^{1/4}\sqrt{\cos[e+f x]}+b\cos[e+f x]\right]\right)\Bigg)+\frac{2\cos[e+f x]\,(a-b\sin[e+f x])}{3\left(a^2-b^2\right) f\,(g\cos[e+f x])^{5/2}}$$

- **Problem 1407: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int\frac{\csc[e+f x]^2}{(g\cos[e+f x])^{5/2}\,(a+b\sin[e+f x])}\,dx$$

Optimal (type 4, 651 leaves, 25 steps):

$$\frac{b\,\text{ArcTan}\left[\frac{\sqrt{g\cos[e+f x]}}{\sqrt{g}}\right]}{a^2 f g^{5/2}}-\frac{b^{9/2}\text{ArcTan}\left[\frac{\sqrt{b}\sqrt{g\cos[e+f x]}}{\left(-a^2+b^2\right)^{1/4}\sqrt{g}}\right]}{a^2\left(-a^2+b^2\right)^{7/4} f g^{5/2}}+\frac{b\,\text{ArcTanh}\left[\frac{\sqrt{g\cos[e+f x]}}{\sqrt{g}}\right]}{a^2 f g^{5/2}}-\frac{b^{9/2}\text{ArcTanh}\left[\frac{\sqrt{b}\sqrt{g\cos[e+f x]}}{\left(-a^2+b^2\right)^{1/4}\sqrt{g}}\right]}{a^2\left(-a^2+b^2\right)^{7/4} f g^{5/2}}-\frac{2 b}{3 a^2 f g\,(g\cos[e+f x])^{3/2}}-\frac{\csc[e+f x]}{a f g\,(g\cos[e+f x])^{3/2}}+\frac{5\sqrt{\cos[e+f x]}\,\text{EllipticF}\left[\frac{1}{2}(e+f x),2\right]}{3 a f g^2\sqrt{g\cos[e+f x]}}+\frac{2 b^2\sqrt{\cos[e+f x]}\,\text{EllipticF}\left[\frac{1}{2}(e+f x),2\right]}{3 a\left(a^2-b^2\right) f g^2\sqrt{g\cos[e+f x]}}-\frac{b^4\sqrt{\cos[e+f x]}\,\text{EllipticPi}\left[\frac{2 b}{b-\sqrt{-a^2+b^2}},\frac{1}{2}(e+f x),2\right]}{a\left(a^2-b^2\right)\left(a^2-b\left(b-\sqrt{-a^2+b^2}\right)\right) f g^2\sqrt{g\cos[e+f x]}}-\frac{b^4\sqrt{\cos[e+f x]}\,\text{EllipticPi}\left[\frac{2 b}{b+\sqrt{-a^2+b^2}},\frac{1}{2}(e+f x),2\right]}{a\left(a^2-b^2\right)\left(a^2-b\left(b+\sqrt{-a^2+b^2}\right)\right) f g^2\sqrt{g\cos[e+f x]}}+\frac{5\sin[e+f x]}{3 a f g\,(g\cos[e+f x])^{3/2}}-\frac{2 b^2\,(b-a\sin[e+f x])}{3 a^2\left(a^2-b^2\right) f g\,(g\cos[e+f x])^{3/2}}$$

Result (type 6, 2465 leaves):

$$\frac{1}{12\,a\,(a-b)\,(a+b)\,f\,(g\,\text{Cos}[e+f\,x])^{5/2}}$$

$$\text{Cos}[e+f\,x]^{5/2}\left(-\frac{1}{\sqrt{1-\text{Cos}[e+f\,x]^2}\,(b+a\,\text{Csc}[e+f\,x])}\,2\left(10\,a^3-18\,a\,b^2\right)\left(a+b\sqrt{1-\text{Cos}[e+f\,x]^2}\right)\left(\left(5\,a\left(a^2-b^2\right)\right.\right.\right.$$

$$\left.\text{AppellF1}\left[\frac{1}{4},\frac{1}{2},1,\frac{5}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]\sqrt{\text{Cos}[e+f\,x]}\right)\Big/\left(\sqrt{1-\text{Cos}[e+f\,x]^2}\left(5\left(a^2-b^2\right)\text{AppellF1}\left[\frac{1}{4},\frac{1}{2},\right.\right.\right.$$

$$\left.1,\frac{5}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]-2\left(2\,b^2\,\text{AppellF1}\left[\frac{5}{4},\frac{1}{2},2,\frac{9}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]+\left(-a^2+b^2\right)\right.$$

$$\left.\left.\left.\text{AppellF1}\left[\frac{5}{4},\frac{3}{2},1,\frac{9}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]\right)\text{Cos}[e+f\,x]^2\right)\left(a^2+b^2\left(-1+\text{Cos}[e+f\,x]^2\right)\right)\right)-\frac{1}{\left(-a^2+b^2\right)^{3/4}}$$

$$\left(\frac{1}{8}-\frac{i}{8}\right)\sqrt{b}\left(2\,\text{ArcTan}\left[1-\frac{(1+i)\sqrt{b}\sqrt{\text{Cos}[e+f\,x]}}{\left(-a^2+b^2\right)^{1/4}}\right]-2\,\text{ArcTan}\left[1+\frac{(1+i)\sqrt{b}\sqrt{\text{Cos}[e+f\,x]}}{\left(-a^2+b^2\right)^{1/4}}\right]+\text{Log}\left[\sqrt{-a^2+b^2}-(1+i)\sqrt{b}\right.\right.$$

$$\left.\left.\left.\left(-a^2+b^2\right)^{1/4}\sqrt{\text{Cos}[e+f\,x]}+i\,b\,\text{Cos}[e+f\,x]\right]-\text{Log}\left[\sqrt{-a^2+b^2}+(1+i)\sqrt{b}\left(-a^2+b^2\right)^{1/4}\sqrt{\text{Cos}[e+f\,x]}+i\,b\,\text{Cos}[e+f\,x]\right]\right)\right)-$$

$$\frac{1}{\left(1-\text{Cos}[e+f\,x]^2\right)\left(-1+2\,\text{Cos}[e+f\,x]^2\right)(b+a\,\text{Csc}[e+f\,x])}\left(-5\,a^2\,b+3\,b^3\right)\left(-1+\text{Cos}[e+f\,x]^2\right)\left(a+b\sqrt{1-\text{Cos}[e+f\,x]^2}\right)$$

$$\text{Cos}[2\,(e+f\,x)]\,\text{Csc}[e+f\,x]$$

$$\left(\frac{\left(a^2-b^2\right)^{1/4}\left(-2\,a^2+b^2\right)\text{ArcTan}\left[\frac{-\sqrt{2}\left(a^2-b^2\right)^{1/4}+2\sqrt{b}\sqrt{\text{Cos}[e+f\,x]}}{\sqrt{2}\left(a^2-b^2\right)^{1/4}}\right]}{\sqrt{2}\,a\sqrt{b}\left(-a^2+b^2\right)}+\frac{\left(a^2-b^2\right)^{1/4}\left(-2\,a^2+b^2\right)\text{ArcTan}\left[\frac{\sqrt{2}\left(a^2-b^2\right)^{1/4}+2\sqrt{b}\sqrt{\text{Cos}[e+f\,x]}}{\sqrt{2}\left(a^2-b^2\right)^{1/4}}\right]}{\sqrt{2}\,a\sqrt{b}\left(-a^2+b^2\right)}-\right.$$

$$\frac{\text{ArcTan}\left[\sqrt{\text{Cos}[e+f\,x]}\right]}{a}-\left(10\,b\left(a^2-b^2\right)\text{AppellF1}\left[\frac{1}{4},\frac{1}{2},1,\frac{5}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]\sqrt{\text{Cos}[e+f\,x]}\right)\Big/$$

$$\left(\sqrt{1-\text{Cos}[e+f\,x]^2}\left(5\left(a^2-b^2\right)\text{AppellF1}\left[\frac{1}{4},\frac{1}{2},1,\frac{5}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]-2\left(2\,b^2\,\text{AppellF1}\left[\frac{5}{4},\frac{1}{2},2,\frac{9}{4},\right.\right.\right.\right.$$

$$\left.\left.\left.\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]+\left(-a^2+b^2\right)\text{AppellF1}\left[\frac{5}{4},\frac{3}{2},1,\frac{9}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]\right)\text{Cos}[e+f\,x]^2\right)$$

$$\left.\left(a^2+b^2\left(-1+\text{Cos}[e+f\,x]^2\right)\right)\right)+\left(36\,b\left(a^2-b^2\right)\text{AppellF1}\left[\frac{5}{4},\frac{1}{2},1,\frac{9}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]\text{Cos}[e+f\,x]^{5/2}\right)\Big/$$

$$\left(5\sqrt{1-\text{Cos}[e+f\,x]^2}\left(9\left(a^2-b^2\right)\text{AppellF1}\left[\frac{5}{4},\frac{1}{2},1,\frac{9}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]-\right.\right.$$

$$2\,\Big(2\,b^2\,\text{AppellF1}\Big[\frac{9}{4},\,\frac{1}{2},\,2,\,\frac{13}{4},\,\text{Cos}[e+f\,x]^2,\,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\Big]+(-a^2+b^2)\,\text{AppellF1}\Big[\frac{9}{4},\,\frac{3}{2},\,1,\,\frac{13}{4},$$

$$\text{Cos}[e+f\,x]^2,\,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\Big]\Big)\,\text{Cos}[e+f\,x]^2\Big)\,\big(a^2+b^2\,(-1+\text{Cos}[e+f\,x]^2)\big)\Big)+\frac{\text{Log}\big[1-\sqrt{\text{Cos}[e+f\,x]}\big]}{2\,a}-$$

$$\frac{\text{Log}\big[1+\sqrt{\text{Cos}[e+f\,x]}\big]}{2\,a}-\frac{(a^2-b^2)^{1/4}\,(-2\,a^2+b^2)\,\text{Log}\big[\sqrt{a^2-b^2}-\sqrt{2}\,\sqrt{b}\,(a^2-b^2)^{1/4}\,\sqrt{\text{Cos}[e+f\,x]}+b\,\text{Cos}[e+f\,x]\big]}{2\,\sqrt{2}\,a\,\sqrt{b}\,(-a^2+b^2)}+$$

$$\frac{(a^2-b^2)^{1/4}\,(-2\,a^2+b^2)\,\text{Log}\big[\sqrt{a^2-b^2}+\sqrt{2}\,\sqrt{b}\,(a^2-b^2)^{1/4}\,\sqrt{\text{Cos}[e+f\,x]}+b\,\text{Cos}[e+f\,x]\big]}{2\,\sqrt{2}\,a\,\sqrt{b}\,(-a^2+b^2)}\Bigg)-$$

$$\frac{1}{(1-\text{Cos}[e+f\,x]^2)\,(b+a\,\text{Csc}[e+f\,x])}\,2\,(-7\,a^2\,b+9\,b^3)\,(-1+\text{Cos}[e+f\,x]^2)\,\Big(a+b\,\sqrt{1-\text{Cos}[e+f\,x]^2}\Big)\,\text{Csc}[e+f\,x]$$

$$\Bigg(\Big(5\,b\,(a^2-b^2)\,\text{AppellF1}\Big[\frac{1}{4},\,\frac{1}{2},\,1,\,\frac{5}{4},\,\text{Cos}[e+f\,x]^2,\,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\Big]\,\sqrt{\text{Cos}[e+f\,x]}\Big)\Big/$$

$$\Big(\sqrt{1-\text{Cos}[e+f\,x]^2}\,\Big(5\,(a^2-b^2)\,\text{AppellF1}\Big[\frac{1}{4},\,\frac{1}{2},\,1,\,\frac{5}{4},\,\text{Cos}[e+f\,x]^2,\,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\Big]-2\,\Big(2\,b^2\,\text{AppellF1}\Big[\frac{5}{4},\,\frac{1}{2},\,2,\,\frac{9}{4},$$

$$\text{Cos}[e+f\,x]^2,\,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\Big]+(-a^2+b^2)\,\text{AppellF1}\Big[\frac{5}{4},\,\frac{3}{2},\,1,\,\frac{9}{4},\,\text{Cos}[e+f\,x]^2,\,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\Big]\Big)\,\text{Cos}[e+f\,x]^2\Big)$$

$$\big(a^2+b^2\,(-1+\text{Cos}[e+f\,x]^2)\big)\Big)-\frac{1}{8\,a\,(a^2-b^2)^{3/4}}\,\Big(-2\,\sqrt{2}\,b^{3/2}\,\text{ArcTan}\Big[1-\frac{\sqrt{2}\,\sqrt{b}\,\sqrt{\text{Cos}[e+f\,x]}}{(a^2-b^2)^{1/4}}\Big]+$$

$$2\,\sqrt{2}\,b^{3/2}\,\text{ArcTan}\Big[1+\frac{\sqrt{2}\,\sqrt{b}\,\sqrt{\text{Cos}[e+f\,x]}}{(a^2-b^2)^{1/4}}\Big]+4\,(a^2-b^2)^{3/4}\,\text{ArcTan}\big[\sqrt{\text{Cos}[e+f\,x]}\big]-2\,(a^2-b^2)^{3/4}\,\text{Log}\big[1-\sqrt{\text{Cos}[e+f\,x]}\big]+$$

$$2\,(a^2-b^2)^{3/4}\,\text{Log}\big[1+\sqrt{\text{Cos}[e+f\,x]}\big]-\sqrt{2}\,b^{3/2}\,\text{Log}\big[\sqrt{a^2-b^2}-\sqrt{2}\,\sqrt{b}\,(a^2-b^2)^{1/4}\,\sqrt{\text{Cos}[e+f\,x]}+b\,\text{Cos}[e+f\,x]\big]+\sqrt{2}\,b^{3/2}$$

$$\text{Log}\big[\sqrt{a^2-b^2}+\sqrt{2}\,\sqrt{b}\,(a^2-b^2)^{1/4}\,\sqrt{\text{Cos}[e+f\,x]}+b\,\text{Cos}[e+f\,x]\big]\Big)\Bigg)\Bigg)+\frac{\text{Cos}[e+f\,x]^3\,\Big(-\frac{\text{Csc}[e+f\,x]}{a}+\frac{2\,\text{Sec}[e+f\,x]^2\,(-b+a\,\text{Sin}[e+f\,x])}{3\,(a^2-b^2)}\Big)}{f\,(g\,\text{Cos}[e+f\,x])^{5/2}}$$

- **Problem 1408: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int\frac{\sqrt{g\,\text{Cos}[e+f\,x]}\,(d\,\text{Sin}[e+f\,x])^{5/2}}{a+b\,\text{Sin}[e+f\,x]}\,dx$$

Optimal (type 4, 926 leaves, 31 steps):

$$\frac{a^2 d^{5/2}\sqrt{g}\,\mathrm{ArcTan}\left[1-\frac{\sqrt{2}\sqrt{d}\sqrt{g\,\mathrm{Cos}[e+f x]}}{\sqrt{g}\sqrt{d\,\mathrm{Sin}[e+f x]}}\right]}{\sqrt{2}\,b^3 f}+\frac{d^{5/2}\sqrt{g}\,\mathrm{ArcTan}\left[1-\frac{\sqrt{2}\sqrt{d}\sqrt{g\,\mathrm{Cos}[e+f x]}}{\sqrt{g}\sqrt{d\,\mathrm{Sin}[e+f x]}}\right]}{4\sqrt{2}\,b f}-\frac{a^2 d^{5/2}\sqrt{g}\,\mathrm{ArcTan}\left[1+\frac{\sqrt{2}\sqrt{d}\sqrt{g\,\mathrm{Cos}[e+f x]}}{\sqrt{g}\sqrt{d\,\mathrm{Sin}[e+f x]}}\right]}{\sqrt{2}\,b^3 f}-$$

$$\frac{d^{5/2}\sqrt{g}\,\mathrm{ArcTan}\left[1+\frac{\sqrt{2}\sqrt{d}\sqrt{g\,\mathrm{Cos}[e+f x]}}{\sqrt{g}\sqrt{d\,\mathrm{Sin}[e+f x]}}\right]}{4\sqrt{2}\,b f}-\frac{a^2 d^{5/2}\sqrt{g}\,\mathrm{Log}\left[\sqrt{g}+\sqrt{g}\,\mathrm{Cot}[e+f x]-\frac{\sqrt{2}\sqrt{d}\sqrt{g\,\mathrm{Cos}[e+f x]}}{\sqrt{d\,\mathrm{Sin}[e+f x]}}\right]}{2\sqrt{2}\,b^3 f}-$$

$$\frac{d^{5/2}\sqrt{g}\,\mathrm{Log}\left[\sqrt{g}+\sqrt{g}\,\mathrm{Cot}[e+f x]-\frac{\sqrt{2}\sqrt{d}\sqrt{g\,\mathrm{Cos}[e+f x]}}{\sqrt{d\,\mathrm{Sin}[e+f x]}}\right]}{8\sqrt{2}\,b f}+\frac{a^2 d^{5/2}\sqrt{g}\,\mathrm{Log}\left[\sqrt{g}+\sqrt{g}\,\mathrm{Cot}[e+f x]+\frac{\sqrt{2}\sqrt{d}\sqrt{g\,\mathrm{Cos}[e+f x]}}{\sqrt{d\,\mathrm{Sin}[e+f x]}}\right]}{2\sqrt{2}\,b^3 f}+$$

$$\frac{d^{5/2}\sqrt{g}\,\mathrm{Log}\left[\sqrt{g}+\sqrt{g}\,\mathrm{Cot}[e+f x]+\frac{\sqrt{2}\sqrt{d}\sqrt{g\,\mathrm{Cos}[e+f x]}}{\sqrt{d\,\mathrm{Sin}[e+f x]}}\right]}{8\sqrt{2}\,b f}-\frac{2\sqrt{2}\,a^3 d^3\sqrt{g}\,\mathrm{EllipticPi}\left[-\frac{\sqrt{-a+b}}{\sqrt{a+b}},\mathrm{ArcSin}\left[\frac{\sqrt{g\,\mathrm{Cos}[e+f x]}}{\sqrt{g}\sqrt{1+\mathrm{Sin}[e+f x]}}\right],-1\right]\sqrt{\mathrm{Sin}[e+f x]}}{b^3\sqrt{-a+b}\sqrt{a+b}\,f\sqrt{d\,\mathrm{Sin}[e+f x]}}+$$

$$\frac{2\sqrt{2}\,a^3 d^3\sqrt{g}\,\mathrm{EllipticPi}\left[\frac{\sqrt{-a+b}}{\sqrt{a+b}},\mathrm{ArcSin}\left[\frac{\sqrt{g\,\mathrm{Cos}[e+f x]}}{\sqrt{g}\sqrt{1+\mathrm{Sin}[e+f x]}}\right],-1\right]\sqrt{\mathrm{Sin}[e+f x]}}{b^3\sqrt{-a+b}\sqrt{a+b}\,f\sqrt{d\,\mathrm{Sin}[e+f x]}}-$$

$$\frac{d^2(g\,\mathrm{Cos}[e+f x])^{3/2}\sqrt{d\,\mathrm{Sin}[e+f x]}}{2 b f g}-\frac{a d^2\sqrt{g\,\mathrm{Cos}[e+f x]}\,\mathrm{EllipticE}\left[e-\frac{\pi}{4}+f x,2\right]\sqrt{d\,\mathrm{Sin}[e+f x]}}{b^2 f\sqrt{\mathrm{Sin}[2e+2f x]}}$$

Result (type 6, 2886 leaves):

$$-\frac{\sqrt{g\,\mathrm{Cos}[e+f x]}\,\mathrm{Cot}[e+f x]\,\mathrm{Csc}[e+f x]\,(d\,\mathrm{Sin}[e+f x])^{5/2}}{2 b f}+$$

$$\frac{1}{4 b f\sqrt{\mathrm{Cos}[e+f x]}\,\mathrm{Sin}[e+f x]^{5/2}}\sqrt{g\,\mathrm{Cos}[e+f x]}\,(d\,\mathrm{Sin}[e+f x])^{5/2}\left(-\left(\left(14 b\left(a^2-b^2\right)\mathrm{Cos}[e+f x]^{3/2}\left(a+b\sqrt{1-\mathrm{Cos}[e+f x]^2}\right)\right.\right.\right.$$

$$\left(\left(b\,\mathrm{AppellF1}\left[\frac{3}{4},-\frac{1}{4},1,\frac{7}{4},\mathrm{Cos}[e+f x]^2,\frac{b^2\mathrm{Cos}[e+f x]^2}{-a^2+b^2}\right]\sqrt{1-\mathrm{Cos}[e+f x]^2}\right)\Big/\left(-7\left(a^2-b^2\right)\mathrm{AppellF1}\left[\frac{3}{4},-\frac{1}{4},1,\frac{7}{4},\right.\right.\right.$$

$$\mathrm{Cos}[e+f x]^2,\frac{b^2\mathrm{Cos}[e+f x]^2}{-a^2+b^2}\right]+\left(4 b^2\mathrm{AppellF1}\left[\frac{7}{4},-\frac{1}{4},2,\frac{11}{4},\mathrm{Cos}[e+f x]^2,\frac{b^2\mathrm{Cos}[e+f x]^2}{-a^2+b^2}\right]+\left(a^2-b^2\right)\mathrm{AppellF1}\left[\frac{7}{4},\frac{3}{4},\right.\right.$$

$$\left.\left.1,\frac{11}{4},\mathrm{Cos}[e+f x]^2,\frac{b^2\mathrm{Cos}[e+f x]^2}{-a^2+b^2}\right]\right)\mathrm{Cos}[e+f x]^2\right)+\left(a\,\mathrm{AppellF1}\left[\frac{3}{4},\frac{1}{4},1,\frac{7}{4},\mathrm{Cos}[e+f x]^2,\frac{b^2\mathrm{Cos}[e+f x]^2}{-a^2+b^2}\right]\right)\Big/$$

$$\left(7\left(a^2-b^2\right)\text{AppellF1}\left[\frac{3}{4},\frac{1}{4},1,\frac{7}{4},\text{Cos}[e+fx]^2,\frac{b^2\,\text{Cos}[e+fx]^2}{-a^2+b^2}\right]+\left(-4\,b^2\,\text{AppellF1}\left[\frac{7}{4},\frac{1}{4},2,\frac{11}{4},\text{Cos}[e+fx]^2,\frac{b^2\,\text{Cos}[e+fx]^2}{-a^2+b^2}\right]+\left(a^2-b^2\right)\text{AppellF1}\left[\frac{7}{4},\frac{5}{4},1,\frac{11}{4},\text{Cos}[e+fx]^2,\frac{b^2\,\text{Cos}[e+fx]^2}{-a^2+b^2}\right]\right)\text{Cos}[e+fx]^2\right)\right)$$

$$\text{Sin}[e+fx]^{3/2}\Big)\Big/\left(3\left(1-\text{Cos}[e+fx]^2\right)\left(a^2+b^2\left(-1+\text{Cos}[e+fx]^2\right)\right)\left(a+b\,\text{Sin}[e+fx]\right)\right)-$$

$$\Bigg(2\,a\,\sqrt{\text{Tan}[e+fx]}\left(b\,\text{Tan}[e+fx]+a\sqrt{1+\text{Tan}[e+fx]^2}\right)\left(\frac{1}{4\sqrt{2}\sqrt{a}\left(a^2-b^2\right)^{1/4}}\left(-2\,\text{ArcTan}\left[1-\frac{\sqrt{2}\left(a^2-b^2\right)^{1/4}\sqrt{\text{Tan}[e+fx]}}{\sqrt{a}}\right]+\right.\right.$$

$$2\,\text{ArcTan}\left[1+\frac{\sqrt{2}\left(a^2-b^2\right)^{1/4}\sqrt{\text{Tan}[e+fx]}}{\sqrt{a}}\right]-\text{Log}\left[-a+\sqrt{2}\sqrt{a}\left(a^2-b^2\right)^{1/4}\sqrt{\text{Tan}[e+fx]}-\sqrt{a^2-b^2}\,\text{Tan}[e+fx]\right]+$$

$$\left.\text{Log}\left[a+\sqrt{2}\sqrt{a}\left(a^2-b^2\right)^{1/4}\sqrt{\text{Tan}[e+fx]}+\sqrt{a^2-b^2}\,\text{Tan}[e+fx]\right]\right)+$$

$$\left(7\,a^2\,b\,\text{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},-\text{Tan}[e+fx]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+fx]^2\right]\text{Tan}[e+fx]^{3/2}\right)\Big/$$

$$\left(3\sqrt{1+\text{Tan}[e+fx]^2}\left(-7\,a^2\,\text{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},-\text{Tan}[e+fx]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+fx]^2\right]+2\right.\right.$$

$$\left(2\left(a^2-b^2\right)\text{AppellF1}\left[\frac{7}{4},\frac{1}{2},2,\frac{11}{4},-\text{Tan}[e+fx]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+fx]^2\right]+a^2\,\text{AppellF1}\left[\frac{7}{4},\frac{3}{2},1,\frac{11}{4},\right.\right.$$

$$\left.\left.\left.\left.-\text{Tan}[e+fx]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+fx]^2\right]\right)\text{Tan}[e+fx]^2\right)\left(-b^2\,\text{Tan}[e+fx]^2+a^2\left(1+\text{Tan}[e+fx]^2\right)\right)\right)\right)\Bigg)\Big/$$

$$\left(\text{Cos}[e+fx]^{3/2}\sqrt{\text{Sin}[e+fx]}\left(a+b\,\text{Sin}[e+fx]\right)\left(1+\text{Tan}[e+fx]^2\right)^{3/2}\right)+\Bigg(4\,a\,\text{Cos}[2\,(e+fx)]\sqrt{\text{Tan}[e+fx]}$$

$$\left(b\,\text{Tan}[e+fx]+a\sqrt{1+\text{Tan}[e+fx]^2}\right)$$

$$\left(-\frac{a\,\text{ArcTan}\left[\frac{-\sqrt{2}+2\sqrt{\text{Tan}[e+fx]}}{\sqrt{2}}\right]}{\sqrt{2}\,b^2}-\frac{a\,\text{ArcTan}\left[\frac{\sqrt{2}+2\sqrt{\text{Tan}[e+fx]}}{\sqrt{2}}\right]}{\sqrt{2}\,b^2}+\frac{\left(2\,a^2-b^2\right)\text{ArcTan}\left[\frac{-\sqrt{2}\sqrt{a}+2\left(a^2-b^2\right)^{1/4}\sqrt{\text{Tan}[e+fx]}}{\sqrt{2}\sqrt{a}}\right]}{2\sqrt{2}\sqrt{a}\,b^2\left(a^2-b^2\right)^{1/4}}+\right.$$

$$\frac{\left(2\,a^2-b^2\right)\text{ArcTan}\left[\frac{\sqrt{2}\sqrt{a}+2\left(a^2-b^2\right)^{1/4}\sqrt{\text{Tan}[e+fx]}}{\sqrt{2}\sqrt{a}}\right]}{2\sqrt{2}\sqrt{a}\,b^2\left(a^2-b^2\right)^{1/4}}+\frac{a\,\text{Log}\left[1-\sqrt{2}\sqrt{\text{Tan}[e+fx]}+\text{Tan}[e+fx]\right]}{2\sqrt{2}\,b^2}-$$

$$\frac{a\,\text{Log}\left[1+\sqrt{2}\,\sqrt{\text{Tan}[e+f x]}+\text{Tan}[e+f x]\right]}{2\sqrt{2}\,b^2}-\frac{\left(2a^2-b^2\right)\text{Log}\left[-a+\sqrt{2}\,\sqrt{a}\,\left(a^2-b^2\right)^{1/4}\sqrt{\text{Tan}[e+f x]}-\sqrt{a^2-b^2}\,\text{Tan}[e+f x]\right]}{4\sqrt{2}\,\sqrt{a}\,b^2\left(a^2-b^2\right)^{1/4}}+$$

$$\frac{\left(2a^2-b^2\right)\text{Log}\left[a+\sqrt{2}\,\sqrt{a}\,\left(a^2-b^2\right)^{1/4}\sqrt{\text{Tan}[e+f x]}+\sqrt{a^2-b^2}\,\text{Tan}[e+f x]\right]}{4\sqrt{2}\,\sqrt{a}\,b^2\left(a^2-b^2\right)^{1/4}}+\frac{\text{Tan}[e+f x]^{3/2}}{b\sqrt{1+\text{Tan}[e+f x]^2}}+$$

$$\left(7a^4\,\text{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},-\text{Tan}[e+f x]^2,\frac{\left(-a^2+b^2\right)\text{Tan}[e+f x]^2}{a^2}\right]\text{Tan}[e+f x]^{3/2}\right)\Big/$$

$$\left(b\sqrt{1+\text{Tan}[e+f x]^2}\left(-7a^2\,\text{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+2\right.\right.$$

$$\left(2\left(a^2-b^2\right)\text{AppellF1}\left[\frac{7}{4},\frac{1}{2},2,\frac{11}{4},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+a^2\,\text{AppellF1}\left[\frac{7}{4},\frac{3}{2},1,\frac{11}{4},\right.\right.$$

$$\left.\left.\left.\left.-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]\right)\text{Tan}[e+f x]^2\right)\left(-b^2\,\text{Tan}[e+f x]^2+a^2\left(1+\text{Tan}[e+f x]^2\right)\right)\right)-$$

$$\left(7a^2\,b\,\text{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},-\text{Tan}[e+f x]^2,\frac{\left(-a^2+b^2\right)\text{Tan}[e+f x]^2}{a^2}\right]\text{Tan}[e+f x]^{3/2}\right)\Big/\left(3\sqrt{1+\text{Tan}[e+f x]^2}\right.$$

$$\left(-7a^2\,\text{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+2\left(2\left(a^2-b^2\right)\text{AppellF1}\left[\frac{7}{4},\frac{1}{2},2,\frac{11}{4},-\text{Tan}[e+f x]^2,\right.\right.\right.$$

$$\left.\left.\left.\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+a^2\,\text{AppellF1}\left[\frac{7}{4},\frac{3}{2},1,\frac{11}{4},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]\right)\text{Tan}[e+f x]^2\right)$$

$$\left.\left(-b^2\,\text{Tan}[e+f x]^2+a^2\left(1+\text{Tan}[e+f x]^2\right)\right)\right)+\left(11a^4\,\text{AppellF1}\left[\frac{7}{4},\frac{1}{2},1,\frac{11}{4},-\text{Tan}[e+f x]^2,\frac{\left(-a^2+b^2\right)\text{Tan}[e+f x]^2}{a^2}\right]\right.$$

$$\left.\text{Tan}[e+f x]^{7/2}\right)\Big/\left(7b\sqrt{1+\text{Tan}[e+f x]^2}\left(-11a^2\,\text{AppellF1}\left[\frac{7}{4},\frac{1}{2},1,\frac{11}{4},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+2\right.\right.$$

$$\left(2\left(a^2-b^2\right)\text{AppellF1}\left[\frac{11}{4},\frac{1}{2},2,\frac{15}{4},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+a^2\,\text{AppellF1}\left[\frac{11}{4},\frac{3}{2},1,\frac{15}{4},\right.\right.$$

$$\left.\left.\left.\left.-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]\right)\text{Tan}[e+f x]^2\right)\left(-b^2\,\text{Tan}[e+f x]^2+a^2\left(1+\text{Tan}[e+f x]^2\right)\right)\right)-$$

$$\left(11a^2\,b\,\text{AppellF1}\left[\frac{7}{4},\frac{1}{2},1,\frac{11}{4},-\text{Tan}[e+f x]^2,\frac{\left(-a^2+b^2\right)\text{Tan}[e+f x]^2}{a^2}\right]\text{Tan}[e+f x]^{7/2}\right)\Big/$$

$$\left(7\sqrt{1+\text{Tan}[e+f x]^2}\left(-11a^2\,\text{AppellF1}\left[\frac{7}{4},\frac{1}{2},1,\frac{11}{4},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+2\right.\right.$$

$$\left(2\left(a^2-b^2\right)\text{AppellF1}\left[\frac{11}{4},\frac{1}{2},2,\frac{15}{4},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+a^2\,\text{AppellF1}\left[\frac{11}{4},\frac{3}{2},1,\frac{15}{4},\right.\right.$$

$$\left.\left.-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]\right)\text{Tan}[e+f x]^2\right)\left(-b^2\,\text{Tan}[e+f x]^2+a^2\left(1+\text{Tan}[e+f x]^2\right)\right)\Bigg)\Bigg)\Bigg/$$

$$\left(\text{Cos}[e+f x]^{3/2}\sqrt{\text{Sin}[e+f x]}\,(a+b\,\text{Sin}[e+f x])\left(-1+\text{Tan}[e+f x]^2\right)\sqrt{1+\text{Tan}[e+f x]^2}\right)\Bigg)$$

- **Problem 1409: Result unnecessarily involves higher level functions.**

$$\int\frac{\sqrt{g\,\text{Cos}[e+f x]}\,(d\,\text{Sin}[e+f x])^{3/2}}{a+b\,\text{Sin}[e+f x]}\,dx$$

Optimal (type 4, 578 leaves, 19 steps):

$$-\frac{a\,d^{3/2}\sqrt{g}\,\text{ArcTan}\left[1-\frac{\sqrt{2}\sqrt{d}\sqrt{g\,\text{Cos}[e+f x]}}{\sqrt{g}\sqrt{d\,\text{Sin}[e+f x]}}\right]}{\sqrt{2}\,b^2 f}+\frac{a\,d^{3/2}\sqrt{g}\,\text{ArcTan}\left[1+\frac{\sqrt{2}\sqrt{d}\sqrt{g\,\text{Cos}[e+f x]}}{\sqrt{g}\sqrt{d\,\text{Sin}[e+f x]}}\right]}{\sqrt{2}\,b^2 f}+$$

$$\frac{a\,d^{3/2}\sqrt{g}\,\text{Log}\left[\sqrt{g}+\sqrt{g}\,\text{Cot}[e+f x]-\frac{\sqrt{2}\sqrt{d}\sqrt{g\,\text{Cos}[e+f x]}}{\sqrt{d\,\text{Sin}[e+f x]}}\right]}{2\sqrt{2}\,b^2 f}-\frac{a\,d^{3/2}\sqrt{g}\,\text{Log}\left[\sqrt{g}+\sqrt{g}\,\text{Cot}[e+f x]+\frac{\sqrt{2}\sqrt{d}\sqrt{g\,\text{Cos}[e+f x]}}{\sqrt{d\,\text{Sin}[e+f x]}}\right]}{2\sqrt{2}\,b^2 f}+$$

$$\frac{2\sqrt{2}\,a^2 d^2\sqrt{g}\,\text{EllipticPi}\left[-\frac{\sqrt{-a+b}}{\sqrt{a+b}},\text{ArcSin}\left[\frac{\sqrt{g\,\text{Cos}[e+f x]}}{\sqrt{g}\sqrt{1+\text{Sin}[e+f x]}}\right],-1\right]\sqrt{\text{Sin}[e+f x]}}{b^2\sqrt{-a+b}\,\sqrt{a+b}\,f\sqrt{d\,\text{Sin}[e+f x]}}-$$

$$\frac{2\sqrt{2}\,a^2 d^2\sqrt{g}\,\text{EllipticPi}\left[\frac{\sqrt{-a+b}}{\sqrt{a+b}},\text{ArcSin}\left[\frac{\sqrt{g\,\text{Cos}[e+f x]}}{\sqrt{g}\sqrt{1+\text{Sin}[e+f x]}}\right],-1\right]\sqrt{\text{Sin}[e+f x]}}{b^2\sqrt{-a+b}\,\sqrt{a+b}\,f\sqrt{d\,\text{Sin}[e+f x]}}+\frac{d\sqrt{g\,\text{Cos}[e+f x]}\,\text{EllipticE}\left[e-\frac{\pi}{4}+f x,2\right]\sqrt{d\,\text{Sin}[e+f x]}}{b f\sqrt{\text{Sin}[2 e+2 f x]}}$$

Result (type 6, 520 leaves):

$$\frac{1}{3 f (-a+b \operatorname{Sin}[e+f x]) (a+b \operatorname{Sin}[e+f x])^2} 14 \left(a^2-b^2\right) \sqrt{g \operatorname{Cos}[e+f x]} \operatorname{Cot}[e+f x] (d \operatorname{Sin}[e+f x])^{3/2} \left(a+b \sqrt{\operatorname{Sin}[e+f x]^2}\right)$$
$$\left(\left(a \operatorname{AppellF1}\left[\frac{3}{4},-\frac{1}{4},1,\frac{7}{4},\operatorname{Cos}[e+f x]^2,\frac{b^2 \operatorname{Cos}[e+f x]^2}{-a^2+b^2}\right]\right) \Big/ \left(7 \left(a^2-b^2\right) \operatorname{AppellF1}\left[\frac{3}{4},-\frac{1}{4},1,\frac{7}{4},\operatorname{Cos}[e+f x]^2,\frac{b^2 \operatorname{Cos}[e+f x]^2}{-a^2+b^2}\right]+\right.\right.$$
$$\left(-4 b^2 \operatorname{AppellF1}\left[\frac{7}{4},-\frac{1}{4},2,\frac{11}{4},\operatorname{Cos}[e+f x]^2,\frac{b^2 \operatorname{Cos}[e+f x]^2}{-a^2+b^2}\right]+\left(-a^2+b^2\right) \operatorname{AppellF1}\left[\frac{7}{4},\frac{3}{4},1,\frac{11}{4},\operatorname{Cos}[e+f x]^2,\frac{b^2 \operatorname{Cos}[e+f x]^2}{-a^2+b^2}\right]\right)$$
$$\left.\operatorname{Cos}[e+f x]^2\right)+\left(b \operatorname{AppellF1}\left[\frac{3}{4},-\frac{3}{4},1,\frac{7}{4},\operatorname{Cos}[e+f x]^2,\frac{b^2 \operatorname{Cos}[e+f x]^2}{-a^2+b^2}\right] \sqrt{\operatorname{Sin}[e+f x]^2}\right) \Big/$$
$$\left(-7 \left(a^2-b^2\right) \operatorname{AppellF1}\left[\frac{3}{4},-\frac{3}{4},1,\frac{7}{4},\operatorname{Cos}[e+f x]^2,\frac{b^2 \operatorname{Cos}[e+f x]^2}{-a^2+b^2}\right]+\left(4 b^2 \operatorname{AppellF1}\left[\frac{7}{4},-\frac{3}{4},2,\frac{11}{4},\operatorname{Cos}[e+f x]^2,\frac{b^2 \operatorname{Cos}[e+f x]^2}{-a^2+b^2}\right]+\right.\right.$$
$$\left.\left.\left.3 \left(a^2-b^2\right) \operatorname{AppellF1}\left[\frac{7}{4},\frac{1}{4},1,\frac{11}{4},\operatorname{Cos}[e+f x]^2,\frac{b^2 \operatorname{Cos}[e+f x]^2}{-a^2+b^2}\right]\right) \operatorname{Cos}[e+f x]^2\right)\right)$$

- **Problem 1410: Result unnecessarily involves imaginary or complex numbers.**

$$\int \frac{\sqrt{g \operatorname{Cos}[e+f x]} \sqrt{d \operatorname{Sin}[e+f x]}}{a+b \operatorname{Sin}[e+f x]} \, dx$$

Optimal (type 4, 509 leaves, 16 steps):

$$\frac{\sqrt{d} \sqrt{g} \operatorname{ArcTan}\left[1-\frac{\sqrt{2} \sqrt{d} \sqrt{g \operatorname{Cos}[e+f x]}}{\sqrt{g} \sqrt{d \operatorname{Sin}[e+f x]}}\right]}{\sqrt{2} b f}-\frac{\sqrt{d} \sqrt{g} \operatorname{ArcTan}\left[1+\frac{\sqrt{2} \sqrt{d} \sqrt{g \operatorname{Cos}[e+f x]}}{\sqrt{g} \sqrt{d \operatorname{Sin}[e+f x]}}\right]}{\sqrt{2} b f}-\frac{\sqrt{d} \sqrt{g} \operatorname{Log}\left[\sqrt{g}+\sqrt{g} \operatorname{Cot}[e+f x]-\frac{\sqrt{2} \sqrt{d} \sqrt{g \operatorname{Cos}[e+f x]}}{\sqrt{d \operatorname{Sin}[e+f x]}}\right]}{2 \sqrt{2} b f}+$$
$$\frac{\sqrt{d} \sqrt{g} \operatorname{Log}\left[\sqrt{g}+\sqrt{g} \operatorname{Cot}[e+f x]+\frac{\sqrt{2} \sqrt{d} \sqrt{g \operatorname{Cos}[e+f x]}}{\sqrt{d \operatorname{Sin}[e+f x]}}\right]}{2 \sqrt{2} b f}-\frac{2 \sqrt{2} a d \sqrt{g} \operatorname{EllipticPi}\left[-\frac{\sqrt{-a+b}}{\sqrt{a+b}},\operatorname{ArcSin}\left[\frac{\sqrt{g \operatorname{Cos}[e+f x]}}{\sqrt{g} \sqrt{1+\operatorname{Sin}[e+f x]}}\right],-1\right] \sqrt{\operatorname{Sin}[e+f x]}}{b \sqrt{-a+b} \sqrt{a+b} f \sqrt{d \operatorname{Sin}[e+f x]}}+$$
$$\frac{2 \sqrt{2} a d \sqrt{g} \operatorname{EllipticPi}\left[\frac{\sqrt{-a+b}}{\sqrt{a+b}},\operatorname{ArcSin}\left[\frac{\sqrt{g \operatorname{Cos}[e+f x]}}{\sqrt{g} \sqrt{1+\operatorname{Sin}[e+f x]}}\right],-1\right] \sqrt{\operatorname{Sin}[e+f x]}}{b \sqrt{-a+b} \sqrt{a+b} f \sqrt{d \operatorname{Sin}[e+f x]}}$$

Result (type 4, 201 leaves):

$$-\left(2\sqrt{2}\, d\sqrt{g\,\mathrm{Cos}[e+f\,x]}\left(\mathrm{EllipticPi}\left[-i,-\mathrm{ArcSin}\left[\sqrt{\mathrm{Tan}\left[\frac{1}{2}(e+f\,x)\right]}\right],-1\right]+\mathrm{EllipticPi}\left[i,-\mathrm{ArcSin}\left[\sqrt{\mathrm{Tan}\left[\frac{1}{2}(e+f\,x)\right]}\right],-1\right]-\mathrm{EllipticPi}\left[\frac{a}{-b+\sqrt{-a^2+b^2}},-\mathrm{ArcSin}\left[\sqrt{\mathrm{Tan}\left[\frac{1}{2}(e+f\,x)\right]}\right],-1\right]-\mathrm{EllipticPi}\left[-\frac{a}{b+\sqrt{-a^2+b^2}},-\mathrm{ArcSin}\left[\sqrt{\mathrm{Tan}\left[\frac{1}{2}(e+f\,x)\right]}\right],-1\right]\right)\sqrt{\mathrm{Tan}\left[\frac{1}{2}(e+f\,x)\right]}\right)\Bigg/\left(b\,f\sqrt{\frac{\mathrm{Cos}[e+f\,x]}{1+\mathrm{Cos}[e+f\,x]}}\sqrt{d\,\mathrm{Sin}[e+f\,x]}\right)$$

- **Problem 1411: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int \frac{\sqrt{g\,\mathrm{Cos}[e+f\,x]}}{\sqrt{d\,\mathrm{Sin}[e+f\,x]}\,(a+b\,\mathrm{Sin}[e+f\,x])}\,dx$$

Optimal (type 4, 208 leaves, 5 steps):

$$\frac{2\sqrt{2}\sqrt{g}\,\mathrm{EllipticPi}\left[-\frac{\sqrt{-a+b}}{\sqrt{a+b}},\mathrm{ArcSin}\left[\frac{\sqrt{g\,\mathrm{Cos}[e+f\,x]}}{\sqrt{g}\sqrt{1+\mathrm{Sin}[e+f\,x]}}\right],-1\right]\sqrt{\mathrm{Sin}[e+f\,x]}}{\sqrt{-a+b}\sqrt{a+b}\,f\sqrt{d\,\mathrm{Sin}[e+f\,x]}}-\frac{2\sqrt{2}\sqrt{g}\,\mathrm{EllipticPi}\left[\frac{\sqrt{-a+b}}{\sqrt{a+b}},\mathrm{ArcSin}\left[\frac{\sqrt{g\,\mathrm{Cos}[e+f\,x]}}{\sqrt{g}\sqrt{1+\mathrm{Sin}[e+f\,x]}}\right],-1\right]\sqrt{\mathrm{Sin}[e+f\,x]}}{\sqrt{-a+b}\sqrt{a+b}\,f\sqrt{d\,\mathrm{Sin}[e+f\,x]}}$$

Result (type 6, 577 leaves):

$$\frac{1}{f\sqrt{d\,\mathrm{Sin}[e+f\,x]}\,(a+b\,\mathrm{Sin}[e+f\,x])\,\left(1+\mathrm{Tan}[e+f\,x]^2\right)^{3/2}}\,2\sqrt{g\,\mathrm{Cos}[e+f\,x]}\,\mathrm{Sec}[e+f\,x]^2\sqrt{\mathrm{Tan}[e+f\,x]}\,\left(b\,\mathrm{Tan}[e+f\,x]+a\sqrt{1+\mathrm{Tan}[e+f\,x]^2}\right)$$

$$\left(\frac{1}{4\sqrt{2}\,\sqrt{a}\,(a^2-b^2)^{1/4}}\left(-2\,\mathrm{ArcTan}\left[1-\frac{\sqrt{2}\,(a^2-b^2)^{1/4}\sqrt{\mathrm{Tan}[e+f\,x]}}{\sqrt{a}}\right]+2\,\mathrm{ArcTan}\left[1+\frac{\sqrt{2}\,(a^2-b^2)^{1/4}\sqrt{\mathrm{Tan}[e+f\,x]}}{\sqrt{a}}\right]-\right.\right.$$

$$\left.\mathrm{Log}\left[-a+\sqrt{2}\,\sqrt{a}\,(a^2-b^2)^{1/4}\sqrt{\mathrm{Tan}[e+f\,x]}-\sqrt{a^2-b^2}\,\mathrm{Tan}[e+f\,x]\right]+\mathrm{Log}\left[a+\sqrt{2}\,\sqrt{a}\,(a^2-b^2)^{1/4}\sqrt{\mathrm{Tan}[e+f\,x]}+\sqrt{a^2-b^2}\,\mathrm{Tan}[e+f\,x]\right]\right)+$$

$$\left(7\,a^2\,b\,\mathrm{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},-\mathrm{Tan}[e+f\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\mathrm{Tan}[e+f\,x]^2\right]\mathrm{Tan}[e+f\,x]^{3/2}\right)\Big/$$

$$\left(3\sqrt{1+\mathrm{Tan}[e+f\,x]^2}\left(-7\,a^2\,\mathrm{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},-\mathrm{Tan}[e+f\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\mathrm{Tan}[e+f\,x]^2\right]+\right.\right.$$

$$2\left(2\,(a^2-b^2)\,\mathrm{AppellF1}\left[\frac{7}{4},\frac{1}{2},2,\frac{11}{4},-\mathrm{Tan}[e+f\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\mathrm{Tan}[e+f\,x]^2\right]+\right.$$

$$\left.\left.\left.a^2\,\mathrm{AppellF1}\left[\frac{7}{4},\frac{3}{2},1,\frac{11}{4},-\mathrm{Tan}[e+f\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\mathrm{Tan}[e+f\,x]^2\right]\right)\mathrm{Tan}[e+f\,x]^2\right)\left(-b^2\,\mathrm{Tan}[e+f\,x]^2+a^2\,\left(1+\mathrm{Tan}[e+f\,x]^2\right)\right)\right)\right)$$

- **Problem 1412: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int\frac{\sqrt{g\,\mathrm{Cos}[e+f\,x]}}{(d\,\mathrm{Sin}[e+f\,x])^{3/2}\,(a+b\,\mathrm{Sin}[e+f\,x])}\,dx$$

Optimal (type 4, 320 leaves, 9 steps):

$$-\frac{2\,(g\,\mathrm{Cos}[e+f\,x])^{3/2}}{a\,d\,f\,g\sqrt{d\,\mathrm{Sin}[e+f\,x]}}-\frac{2\sqrt{2}\,b\sqrt{g}\,\mathrm{EllipticPi}\left[-\frac{\sqrt{-a+b}}{\sqrt{a+b}},\mathrm{ArcSin}\left[\frac{\sqrt{g\,\mathrm{Cos}[e+f\,x]}}{\sqrt{g}\,\sqrt{1+\mathrm{Sin}[e+f\,x]}}\right],-1\right]\sqrt{\mathrm{Sin}[e+f\,x]}}{a\sqrt{-a+b}\,\sqrt{a+b}\,d\,f\sqrt{d\,\mathrm{Sin}[e+f\,x]}}+$$

$$\frac{2\sqrt{2}\,b\sqrt{g}\,\mathrm{EllipticPi}\left[\frac{\sqrt{-a+b}}{\sqrt{a+b}},\mathrm{ArcSin}\left[\frac{\sqrt{g\,\mathrm{Cos}[e+f\,x]}}{\sqrt{g}\,\sqrt{1+\mathrm{Sin}[e+f\,x]}}\right],-1\right]\sqrt{\mathrm{Sin}[e+f\,x]}}{a\sqrt{-a+b}\,\sqrt{a+b}\,d\,f\sqrt{d\,\mathrm{Sin}[e+f\,x]}}-\frac{2\sqrt{g\,\mathrm{Cos}[e+f\,x]}\,\mathrm{EllipticE}\left[e-\frac{\pi}{4}+f\,x,2\right]\sqrt{d\,\mathrm{Sin}[e+f\,x]}}{a\,d^2\,f\sqrt{\mathrm{Sin}[2\,e+2\,f\,x]}}$$

Result (type 6, 2881 leaves):

$$-\frac{2\,\mathrm{Cos}[e+f\,x]\sqrt{g\,\mathrm{Cos}[e+f\,x]}\,\mathrm{Sin}[e+f\,x]}{a\,f\,(d\,\mathrm{Sin}[e+f\,x])^{3/2}}+$$

$$\frac{1}{a\,f\sqrt{\mathrm{Cos}[e+f\,x]}\,(d\,\mathrm{Sin}[e+f\,x])^{3/2}}\sqrt{g\,\mathrm{Cos}[e+f\,x]}\,\mathrm{Sin}[e+f\,x]^{3/2}\left(\left(28\,a\,(a^2-b^2)\,\mathrm{Cos}[e+f\,x]^{3/2}\left(a+b\sqrt{1-\mathrm{Cos}[e+f\,x]^2}\right)\right.\right.$$

$$\Bigg(\Bigg(b\,\text{AppellF1}\Big[\frac{3}{4},-\frac{1}{4},1,\frac{7}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\Big]\sqrt{1-\text{Cos}[e+f x]^2}\Bigg)\Big/\Bigg(-7\,(a^2-b^2)\,\text{AppellF1}\Big[\frac{3}{4},-\frac{1}{4},1,\frac{7}{4},\text{Cos}[e+f x]^2,$$

$$\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\Big]+\Bigg(4\,b^2\,\text{AppellF1}\Big[\frac{7}{4},-\frac{1}{4},2,\frac{11}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\Big]+(a^2-b^2)\,\text{AppellF1}\Big[\frac{7}{4},\frac{3}{4},1,\frac{11}{4},$$

$$\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\Big]\Bigg)\,\text{Cos}[e+f x]^2\Bigg)+\Bigg(a\,\text{AppellF1}\Big[\frac{3}{4},\frac{1}{4},1,\frac{7}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\Big]\Bigg)\Big/$$

$$\Bigg(7\,(a^2-b^2)\,\text{AppellF1}\Big[\frac{3}{4},\frac{1}{4},1,\frac{7}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\Big]+\Bigg(-4\,b^2\,\text{AppellF1}\Big[\frac{7}{4},\frac{1}{4},2,\frac{11}{4},\text{Cos}[e+f x]^2,$$

$$\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\Big]+(a^2-b^2)\,\text{AppellF1}\Big[\frac{7}{4},\frac{5}{4},1,\frac{11}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\Big]\Bigg)\,\text{Cos}[e+f x]^2\Bigg)\Bigg)\,\text{Sin}[e+f x]^{3/2}\Bigg)\Big/$$

$$\Big(3\,(1-\text{Cos}[e+f x]^2)\,(a^2+b^2\,(-1+\text{Cos}[e+f x]^2))\,(a+b\,\text{Sin}[e+f x])\Big)-\Bigg(4\,b\,\sqrt{\text{Tan}[e+f x]}\,\Big(b\,\text{Tan}[e+f x]+a\sqrt{1+\text{Tan}[e+f x]^2}\Big)$$

$$\Bigg(\frac{1}{4\sqrt{2}\,\sqrt{a}\,(a^2-b^2)^{1/4}}\Bigg(-2\,\text{ArcTan}\Big[1-\frac{\sqrt{2}\,(a^2-b^2)^{1/4}\sqrt{\text{Tan}[e+f x]}}{\sqrt{a}}\Big]+2\,\text{ArcTan}\Big[1+\frac{\sqrt{2}\,(a^2-b^2)^{1/4}\sqrt{\text{Tan}[e+f x]}}{\sqrt{a}}\Big]-$$

$$\text{Log}\Big[-a+\sqrt{2}\,\sqrt{a}\,(a^2-b^2)^{1/4}\sqrt{\text{Tan}[e+f x]}-\sqrt{a^2-b^2}\,\text{Tan}[e+f x]\Big]+\text{Log}\Big[a+\sqrt{2}\,\sqrt{a}\,(a^2-b^2)^{1/4}\sqrt{\text{Tan}[e+f x]}+$$

$$\sqrt{a^2-b^2}\,\text{Tan}[e+f x]\Big]\Bigg)+\Bigg(7\,a^2\,b\,\text{AppellF1}\Big[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},-\text{Tan}[e+f x]^2,\Big(-1+\frac{b^2}{a^2}\Big)\,\text{Tan}[e+f x]^2\Big]\,\text{Tan}[e+f x]^{3/2}\Bigg)\Big/$$

$$\Bigg(3\sqrt{1+\text{Tan}[e+f x]^2}\,\Bigg(-7\,a^2\,\text{AppellF1}\Big[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},-\text{Tan}[e+f x]^2,\Big(-1+\frac{b^2}{a^2}\Big)\,\text{Tan}[e+f x]^2\Big]+2$$

$$\Bigg(2\,(a^2-b^2)\,\text{AppellF1}\Big[\frac{7}{4},\frac{1}{2},2,\frac{11}{4},-\text{Tan}[e+f x]^2,\Big(-1+\frac{b^2}{a^2}\Big)\,\text{Tan}[e+f x]^2\Big]+a^2\,\text{AppellF1}\Big[\frac{7}{4},\frac{3}{2},1,\frac{11}{4},$$

$$-\text{Tan}[e+f x]^2,\Big(-1+\frac{b^2}{a^2}\Big)\,\text{Tan}[e+f x]^2\Big]\Bigg)\,\text{Tan}[e+f x]^2\Bigg)\,\Big(-b^2\,\text{Tan}[e+f x]^2+a^2\,(1+\text{Tan}[e+f x]^2)\Big)\Bigg)\Bigg)\Bigg)\Big/$$

$$\Big(\text{Cos}[e+f x]^{3/2}\sqrt{\text{Sin}[e+f x]}\,(a+b\,\text{Sin}[e+f x])\,(1+\text{Tan}[e+f x]^2)^{3/2}\Big)+\Bigg(2\,b\,\text{Cos}[2\,(e+f x)]\,\sqrt{\text{Tan}[e+f x]}$$

$$\Big(b\,\text{Tan}[e+f x]+a\sqrt{1+\text{Tan}[e+f x]^2}\Big)$$

$$\left(-\frac{a\,\text{ArcTan}\left[\frac{-\sqrt{2}+2\sqrt{\text{Tan}[e+f x]}}{\sqrt{2}}\right]}{\sqrt{2}\,b^2}-\frac{a\,\text{ArcTan}\left[\frac{\sqrt{2}+2\sqrt{\text{Tan}[e+f x]}}{\sqrt{2}}\right]}{\sqrt{2}\,b^2}+\frac{\left(2a^2-b^2\right)\text{ArcTan}\left[\frac{-\sqrt{2}\sqrt{a}+2\left(a^2-b^2\right)^{1/4}\sqrt{\text{Tan}[e+f x]}}{\sqrt{2}\sqrt{a}}\right]}{2\sqrt{2}\sqrt{a}\,b^2\left(a^2-b^2\right)^{1/4}}+\right.$$

$$\frac{\left(2a^2-b^2\right)\text{ArcTan}\left[\frac{\sqrt{2}\sqrt{a}+2\left(a^2-b^2\right)^{1/4}\sqrt{\text{Tan}[e+f x]}}{\sqrt{2}\sqrt{a}}\right]}{2\sqrt{2}\sqrt{a}\,b^2\left(a^2-b^2\right)^{1/4}}+\frac{a\,\text{Log}\left[1-\sqrt{2}\sqrt{\text{Tan}[e+f x]}+\text{Tan}[e+f x]\right]}{2\sqrt{2}\,b^2}-$$

$$\frac{a\,\text{Log}\left[1+\sqrt{2}\sqrt{\text{Tan}[e+f x]}+\text{Tan}[e+f x]\right]}{2\sqrt{2}\,b^2}-\frac{\left(2a^2-b^2\right)\text{Log}\left[-a+\sqrt{2}\sqrt{a}\left(a^2-b^2\right)^{1/4}\sqrt{\text{Tan}[e+f x]}-\sqrt{a^2-b^2}\,\text{Tan}[e+f x]\right]}{4\sqrt{2}\sqrt{a}\,b^2\left(a^2-b^2\right)^{1/4}}+$$

$$\frac{\left(2a^2-b^2\right)\text{Log}\left[a+\sqrt{2}\sqrt{a}\left(a^2-b^2\right)^{1/4}\sqrt{\text{Tan}[e+f x]}+\sqrt{a^2-b^2}\,\text{Tan}[e+f x]\right]}{4\sqrt{2}\sqrt{a}\,b^2\left(a^2-b^2\right)^{1/4}}+\frac{\text{Tan}[e+f x]^{3/2}}{b\sqrt{1+\text{Tan}[e+f x]^2}}+$$

$$\left(7a^4\,\text{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},-\text{Tan}[e+f x]^2,\frac{\left(-a^2+b^2\right)\text{Tan}[e+f x]^2}{a^2}\right]\text{Tan}[e+f x]^{3/2}\right)\Big/$$

$$\left(b\sqrt{1+\text{Tan}[e+f x]^2}\left(-7a^2\,\text{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+2\right.\right.$$

$$\left(2\left(a^2-b^2\right)\text{AppellF1}\left[\frac{7}{4},\frac{1}{2},2,\frac{11}{4},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+a^2\,\text{AppellF1}\left[\frac{7}{4},\frac{3}{2},1,\frac{11}{4},\right.\right.$$

$$\left.\left.\left.-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]\right)\text{Tan}[e+f x]^2\right)\left(-b^2\,\text{Tan}[e+f x]^2+a^2\left(1+\text{Tan}[e+f x]^2\right)\right)\Big)-$$

$$\left(7a^2 b\,\text{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},-\text{Tan}[e+f x]^2,\frac{\left(-a^2+b^2\right)\text{Tan}[e+f x]^2}{a^2}\right]\text{Tan}[e+f x]^{3/2}\right)\Big/\left(3\sqrt{1+\text{Tan}[e+f x]^2}\right.$$

$$\left(-7a^2\,\text{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+2\left(2\left(a^2-b^2\right)\text{AppellF1}\left[\frac{7}{4},\frac{1}{2},2,\frac{11}{4},-\text{Tan}[e+f x]^2,\right.\right.\right.$$

$$\left.\left.\left.\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+a^2\,\text{AppellF1}\left[\frac{7}{4},\frac{3}{2},1,\frac{11}{4},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]\right)\text{Tan}[e+f x]^2\right)$$

$$\left.\left(-b^2\,\text{Tan}[e+f x]^2+a^2\left(1+\text{Tan}[e+f x]^2\right)\right)\right)+\left(11a^4\,\text{AppellF1}\left[\frac{7}{4},\frac{1}{2},1,\frac{11}{4},-\text{Tan}[e+f x]^2,\frac{\left(-a^2+b^2\right)\text{Tan}[e+f x]^2}{a^2}\right]\right.$$

$$\left.\text{Tan}[e+f x]^{7/2}\right)\Big/\left(7b\sqrt{1+\text{Tan}[e+f x]^2}\left(-11a^2\,\text{AppellF1}\left[\frac{7}{4},\frac{1}{2},1,\frac{11}{4},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+2\right.\right.$$

$$\left(2\left(a^2-b^2\right)\text{AppellF1}\left[\frac{11}{4},\frac{1}{2},2,\frac{15}{4},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+a^2\,\text{AppellF1}\left[\frac{11}{4},\frac{3}{2},1,\frac{15}{4},\right.\right.$$

$$-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\Big]\Big)\text{Tan}[e+f x]^2\Big)\left(-b^2\,\text{Tan}[e+f x]^2+a^2\left(1+\text{Tan}[e+f x]^2\right)\right)\Big)-$$

$$\Big(11\,a^2\,b\,\text{AppellF1}\Big[\frac{7}{4},\frac{1}{2},1,\frac{11}{4},-\text{Tan}[e+f x]^2,\frac{\left(-a^2+b^2\right)\text{Tan}[e+f x]^2}{a^2}\Big]\,\text{Tan}[e+f x]^{7/2}\Big)\Big/$$

$$\Big(7\sqrt{1+\text{Tan}[e+f x]^2}\,\Big(-11\,a^2\,\text{AppellF1}\Big[\frac{7}{4},\frac{1}{2},1,\frac{11}{4},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\Big]+2$$

$$\Big(2\left(a^2-b^2\right)\text{AppellF1}\Big[\frac{11}{4},\frac{1}{2},2,\frac{15}{4},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\Big]+a^2\,\text{AppellF1}\Big[\frac{11}{4},\frac{3}{2},1,\frac{15}{4},$$

$$-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\Big]\Big)\text{Tan}[e+f x]^2\Big)\left(-b^2\,\text{Tan}[e+f x]^2+a^2\left(1+\text{Tan}[e+f x]^2\right)\right)\Big)\Big)\Big/$$

$$\Big(\text{Cos}[e+f x]^{3/2}\sqrt{\text{Sin}[e+f x]}\,(a+b\,\text{Sin}[e+f x])\left(-1+\text{Tan}[e+f x]^2\right)\sqrt{1+\text{Tan}[e+f x]^2}\Big)\Big)$$

- **Problem 1413: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int\frac{\sqrt{g\,\text{Cos}[e+f x]}}{(d\,\text{Sin}[e+f x])^{5/2}\,(a+b\,\text{Sin}[e+f x])}\,dx$$

Optimal (type 4, 366 leaves, 11 steps):

$$-\frac{2\,(g\,\text{Cos}[e+f x])^{3/2}}{3\,a\,d\,f\,g\,(d\,\text{Sin}[e+f x])^{3/2}}+\frac{2\,b\,(g\,\text{Cos}[e+f x])^{3/2}}{a^2\,d^2\,f\,g\sqrt{d\,\text{Sin}[e+f x]}}+\frac{2\sqrt{2}\,b^2\sqrt{g}\,\text{EllipticPi}\Big[-\frac{\sqrt{-a+b}}{\sqrt{a+b}},\text{ArcSin}\Big[\frac{\sqrt{g\,\text{Cos}[e+f x]}}{\sqrt{g}\sqrt{1+\text{Sin}[e+f x]}}\Big],-1\Big]\sqrt{\text{Sin}[e+f x]}}{a^2\sqrt{-a+b}\sqrt{a+b}\,d^2\,f\sqrt{d\,\text{Sin}[e+f x]}}-$$

$$\frac{2\sqrt{2}\,b^2\sqrt{g}\,\text{EllipticPi}\Big[\frac{\sqrt{-a+b}}{\sqrt{a+b}},\text{ArcSin}\Big[\frac{\sqrt{g\,\text{Cos}[e+f x]}}{\sqrt{g}\sqrt{1+\text{Sin}[e+f x]}}\Big],-1\Big]\sqrt{\text{Sin}[e+f x]}}{a^2\sqrt{-a+b}\sqrt{a+b}\,d^2\,f\sqrt{d\,\text{Sin}[e+f x]}}+\frac{2\,b\sqrt{g\,\text{Cos}[e+f x]}\,\text{EllipticE}\Big[e-\frac{\pi}{4}+f x,2\Big]\sqrt{d\,\text{Sin}[e+f x]}}{a^2\,d^3\,f\sqrt{\text{Sin}[2e+2f x]}}$$

Result (type 6, 2907 leaves):

$$\frac{\sqrt{g\,\text{Cos}[e+f x]}\left(\frac{2\,b\,\text{Cot}[e+f x]}{a^2}-\frac{2\,\text{Cot}[e+f x]\,\text{Csc}[e+f x]}{3\,a}\right)\text{Sin}[e+f x]^3}{f\,(d\,\text{Sin}[e+f x])^{5/2}}-$$

$$\frac{1}{a^2\,f\sqrt{\text{Cos}[e+f x]}\,(d\,\text{Sin}[e+f x])^{5/2}}\,b\sqrt{g\,\text{Cos}[e+f x]}\,\text{Sin}[e+f x]^{5/2}\,\Bigg(\Big(28\,a\left(a^2-b^2\right)\text{Cos}[e+f x]^{3/2}\left(a+b\sqrt{1-\text{Cos}[e+f x]^2}\right)$$

$$\left(\left(b\,\text{AppellF1}\left[\frac{3}{4},-\frac{1}{4},1,\frac{7}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]\sqrt{1-\text{Cos}[e+f x]^2}\right)\Big/\left(-7\left(a^2-b^2\right)\text{AppellF1}\left[\frac{3}{4},-\frac{1}{4},1,\frac{7}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]+\left(4\,b^2\,\text{AppellF1}\left[\frac{7}{4},-\frac{1}{4},2,\frac{11}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]+\left(a^2-b^2\right)\text{AppellF1}\left[\frac{7}{4},\frac{3}{4},1,\frac{11}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]\right)\text{Cos}[e+f x]^2\right)+\left(a\,\text{AppellF1}\left[\frac{3}{4},\frac{1}{4},1,\frac{7}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]\right)\Big/\left(7\left(a^2-b^2\right)\text{AppellF1}\left[\frac{3}{4},\frac{1}{4},1,\frac{7}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]+\left(-4\,b^2\,\text{AppellF1}\left[\frac{7}{4},\frac{1}{4},2,\frac{11}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]+\left(a^2-b^2\right)\text{AppellF1}\left[\frac{7}{4},\frac{5}{4},1,\frac{11}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]\right)\text{Cos}[e+f x]^2\right)\right)\text{Sin}[e+f x]^{3/2}\right)\Big/$$

$$\left(3\left(1-\text{Cos}[e+f x]^2\right)\left(a^2+b^2\left(-1+\text{Cos}[e+f x]^2\right)\right)(a+b\,\text{Sin}[e+f x])\right)-\left(4\,b\,\sqrt{\text{Tan}[e+f x]}\left(b\,\text{Tan}[e+f x]+a\sqrt{1+\text{Tan}[e+f x]^2}\right)\right.$$

$$\left(\frac{1}{4\sqrt{2}\sqrt{a}\left(a^2-b^2\right)^{1/4}}\left(-2\,\text{ArcTan}\left[1-\frac{\sqrt{2}\left(a^2-b^2\right)^{1/4}\sqrt{\text{Tan}[e+f x]}}{\sqrt{a}}\right]+2\,\text{ArcTan}\left[1+\frac{\sqrt{2}\left(a^2-b^2\right)^{1/4}\sqrt{\text{Tan}[e+f x]}}{\sqrt{a}}\right]-\text{Log}\left[-a+\sqrt{2}\sqrt{a}\left(a^2-b^2\right)^{1/4}\sqrt{\text{Tan}[e+f x]}-\sqrt{a^2-b^2}\,\text{Tan}[e+f x]\right]+\text{Log}\left[a+\sqrt{2}\sqrt{a}\left(a^2-b^2\right)^{1/4}\sqrt{\text{Tan}[e+f x]}+\sqrt{a^2-b^2}\,\text{Tan}[e+f x]\right]\right)+\left(7\,a^2\,b\,\text{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]\text{Tan}[e+f x]^{3/2}\right)\Big/\left(3\sqrt{1+\text{Tan}[e+f x]^2}\left(-7\,a^2\,\text{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+2\left(2\left(a^2-b^2\right)\text{AppellF1}\left[\frac{7}{4},\frac{1}{2},2,\frac{11}{4},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+a^2\,\text{AppellF1}\left[\frac{7}{4},\frac{3}{2},1,\frac{11}{4},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]\right)\text{Tan}[e+f x]^2\right)\left(-b^2\,\text{Tan}[e+f x]^2+a^2\left(1+\text{Tan}[e+f x]^2\right)\right)\right)\right)\right)\Big/$$

$$\left(\text{Cos}[e+f x]^{3/2}\sqrt{\text{Sin}[e+f x]}\,(a+b\,\text{Sin}[e+f x])\left(1+\text{Tan}[e+f x]^2\right)^{3/2}\right)+\left(2\,b\,\text{Cos}[2\,(e+f x)]\sqrt{\text{Tan}[e+f x]}\right.$$

$$\left(b\,\text{Tan}[e+f x]+a\sqrt{1+\text{Tan}[e+f x]^2}\right)$$

$$\Bigg(-\frac{a\,\text{ArcTan}\left[\frac{-\sqrt{2}+2\sqrt{\text{Tan}[e+f x]}}{\sqrt{2}}\right]}{\sqrt{2}\,b^2}-\frac{a\,\text{ArcTan}\left[\frac{\sqrt{2}+2\sqrt{\text{Tan}[e+f x]}}{\sqrt{2}}\right]}{\sqrt{2}\,b^2}+\frac{\left(2 a^2-b^2\right)\text{ArcTan}\left[\frac{-\sqrt{2}\sqrt{a}+2\left(a^2-b^2\right)^{1/4}\sqrt{\text{Tan}[e+f x]}}{\sqrt{2}\sqrt{a}}\right]}{2\sqrt{2}\sqrt{a}\,b^2\left(a^2-b^2\right)^{1/4}}+$$

$$\frac{\left(2 a^2-b^2\right)\text{ArcTan}\left[\frac{\sqrt{2}\sqrt{a}+2\left(a^2-b^2\right)^{1/4}\sqrt{\text{Tan}[e+f x]}}{\sqrt{2}\sqrt{a}}\right]}{2\sqrt{2}\sqrt{a}\,b^2\left(a^2-b^2\right)^{1/4}}+\frac{a\,\text{Log}\left[1-\sqrt{2}\sqrt{\text{Tan}[e+f x]}+\text{Tan}[e+f x]\right]}{2\sqrt{2}\,b^2}-$$

$$\frac{a\,\text{Log}\left[1+\sqrt{2}\sqrt{\text{Tan}[e+f x]}+\text{Tan}[e+f x]\right]}{2\sqrt{2}\,b^2}-\frac{\left(2 a^2-b^2\right)\text{Log}\left[-a+\sqrt{2}\sqrt{a}\left(a^2-b^2\right)^{1/4}\sqrt{\text{Tan}[e+f x]}-\sqrt{a^2-b^2}\,\text{Tan}[e+f x]\right]}{4\sqrt{2}\sqrt{a}\,b^2\left(a^2-b^2\right)^{1/4}}+$$

$$\frac{\left(2 a^2-b^2\right)\text{Log}\left[a+\sqrt{2}\sqrt{a}\left(a^2-b^2\right)^{1/4}\sqrt{\text{Tan}[e+f x]}+\sqrt{a^2-b^2}\,\text{Tan}[e+f x]\right]}{4\sqrt{2}\sqrt{a}\,b^2\left(a^2-b^2\right)^{1/4}}+\frac{\text{Tan}[e+f x]^{3/2}}{b\sqrt{1+\text{Tan}[e+f x]^2}}+$$

$$\left(7 a^4\,\text{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},-\text{Tan}[e+f x]^2,\frac{\left(-a^2+b^2\right)\text{Tan}[e+f x]^2}{a^2}\right]\text{Tan}[e+f x]^{3/2}\right)\Big/$$

$$\left(b\sqrt{1+\text{Tan}[e+f x]^2}\left(-7 a^2\,\text{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+2\right.\right.$$

$$\left(2\left(a^2-b^2\right)\text{AppellF1}\left[\frac{7}{4},\frac{1}{2},2,\frac{11}{4},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+a^2\,\text{AppellF1}\left[\frac{7}{4},\frac{3}{2},1,\frac{11}{4},\right.\right.$$

$$\left.\left.\left.-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]\right)\text{Tan}[e+f x]^2\right)\left(-b^2\,\text{Tan}[e+f x]^2+a^2\left(1+\text{Tan}[e+f x]^2\right)\right)\Big)-$$

$$\left(7 a^2 b\,\text{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},-\text{Tan}[e+f x]^2,\frac{\left(-a^2+b^2\right)\text{Tan}[e+f x]^2}{a^2}\right]\text{Tan}[e+f x]^{3/2}\right)\Big/\left(3\sqrt{1+\text{Tan}[e+f x]^2}\right.$$

$$\left(-7 a^2\,\text{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+2\left(2\left(a^2-b^2\right)\text{AppellF1}\left[\frac{7}{4},\frac{1}{2},2,\frac{11}{4},-\text{Tan}[e+f x]^2,\right.\right.\right.$$

$$\left.\left.\left.\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+a^2\,\text{AppellF1}\left[\frac{7}{4},\frac{3}{2},1,\frac{11}{4},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]\right)\text{Tan}[e+f x]^2\right)$$

$$\left.\left(-b^2\,\text{Tan}[e+f x]^2+a^2\left(1+\text{Tan}[e+f x]^2\right)\right)\right)+\left(11 a^4\,\text{AppellF1}\left[\frac{7}{4},\frac{1}{2},1,\frac{11}{4},-\text{Tan}[e+f x]^2,\frac{\left(-a^2+b^2\right)\text{Tan}[e+f x]^2}{a^2}\right]\right.$$

$$\left.\text{Tan}[e+f x]^{7/2}\right)\Big/\left(7 b\sqrt{1+\text{Tan}[e+f x]^2}\left(-11 a^2\,\text{AppellF1}\left[\frac{7}{4},\frac{1}{2},1,\frac{11}{4},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+2\right.\right.$$

$$\left(2\left(a^2-b^2\right)\text{AppellF1}\left[\frac{11}{4},\frac{1}{2},2,\frac{15}{4},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+a^2\,\text{AppellF1}\left[\frac{11}{4},\frac{3}{2},1,\frac{15}{4},\right.\right.$$

$$-\text{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\Big]\Big) \text{Tan}[e+f x]^2\Big) \left(-b^2 \text{Tan}[e+f x]^2+a^2 \left(1+\text{Tan}[e+f x]^2\right)\right)\Big) -$$

$$\left(11 a^2 b \,\text{AppellF1}\left[\frac{7}{4}, \frac{1}{2}, 1, \frac{11}{4}, -\text{Tan}[e+f x]^2, \frac{\left(-a^2+b^2\right) \text{Tan}[e+f x]^2}{a^2}\right] \text{Tan}[e+f x]^{7/2}\right) \Big/$$

$$\Big(7 \sqrt{1+\text{Tan}[e+f x]^2} \Big(-11 a^2 \,\text{AppellF1}\left[\frac{7}{4}, \frac{1}{2}, 1, \frac{11}{4}, -\text{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\right] + 2$$

$$\Big(2 \left(a^2-b^2\right) \text{AppellF1}\left[\frac{11}{4}, \frac{1}{2}, 2, \frac{15}{4}, -\text{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\right] + a^2 \,\text{AppellF1}\Big[\frac{11}{4}, \frac{3}{2}, 1, \frac{15}{4},$$

$$-\text{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\Big]\Big) \text{Tan}[e+f x]^2\Big) \left(-b^2 \text{Tan}[e+f x]^2+a^2 \left(1+\text{Tan}[e+f x]^2\right)\right)\Big)\Big) \Big/$$

$$\left(\text{Cos}[e+f x]^{3/2} \sqrt{\text{Sin}[e+f x]} \left(a+b \,\text{Sin}[e+f x]\right) \left(-1+\text{Tan}[e+f x]^2\right) \sqrt{1+\text{Tan}[e+f x]^2}\right)\Big)$$

- **Problem 1414: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int \frac{\sqrt{g \,\text{Cos}[e+f x]}}{\left(d \,\text{Sin}[e+f x]\right)^{7/2} \left(a+b \,\text{Sin}[e+f x]\right)} \, dx$$

Optimal (type 4, 513 leaves, 16 steps):

$$-\frac{2 \left(g \,\text{Cos}[e+f x]\right)^{3/2}}{5 a d f g \left(d \,\text{Sin}[e+f x]\right)^{5/2}} + \frac{2 b \left(g \,\text{Cos}[e+f x]\right)^{3/2}}{3 a^2 d^2 f g \left(d \,\text{Sin}[e+f x]\right)^{3/2}} - \frac{4 \left(g \,\text{Cos}[e+f x]\right)^{3/2}}{5 a d^3 f g \sqrt{d \,\text{Sin}[e+f x]}} -$$

$$\frac{2 b^2 \left(g \,\text{Cos}[e+f x]\right)^{3/2}}{a^3 d^3 f g \sqrt{d \,\text{Sin}[e+f x]}} - \frac{2 \sqrt{2} \, b^3 \sqrt{g} \,\text{EllipticPi}\left[-\frac{\sqrt{-a+b}}{\sqrt{a+b}}, \text{ArcSin}\left[\frac{\sqrt{g \,\text{Cos}[e+f x]}}{\sqrt{g} \sqrt{1+\text{Sin}[e+f x]}}\right], -1\right] \sqrt{\text{Sin}[e+f x]}}{a^3 \sqrt{-a+b} \sqrt{a+b} \, d^3 f \sqrt{d \,\text{Sin}[e+f x]}} +$$

$$\frac{2 \sqrt{2} \, b^3 \sqrt{g} \,\text{EllipticPi}\left[\frac{\sqrt{-a+b}}{\sqrt{a+b}}, \text{ArcSin}\left[\frac{\sqrt{g \,\text{Cos}[e+f x]}}{\sqrt{g} \sqrt{1+\text{Sin}[e+f x]}}\right], -1\right] \sqrt{\text{Sin}[e+f x]}}{a^3 \sqrt{-a+b} \sqrt{a+b} \, d^3 f \sqrt{d \,\text{Sin}[e+f x]}} -$$

$$\frac{4 \sqrt{g \,\text{Cos}[e+f x]} \,\text{EllipticE}\left[e-\frac{\pi}{4}+f x, 2\right] \sqrt{d \,\text{Sin}[e+f x]}}{5 a d^4 f \sqrt{\text{Sin}[2 e+2 f x]}} - \frac{2 b^2 \sqrt{g \,\text{Cos}[e+f x]} \,\text{EllipticE}\left[e-\frac{\pi}{4}+f x, 2\right] \sqrt{d \,\text{Sin}[e+f x]}}{a^3 d^4 f \sqrt{\text{Sin}[2 e+2 f x]}}$$

Result (type 6, 2987 leaves):

$$\frac{1}{f\,(d\,\mathrm{Sin}[e+f\,x])^{7/2}}\sqrt{g\,\mathrm{Cos}[e+f\,x]}\left(-\frac{2\left(2\,a^2\,\mathrm{Cos}[e+f\,x]+5\,b^2\,\mathrm{Cos}[e+f\,x]\right)\mathrm{Csc}[e+f\,x]}{5\,a^3}+\frac{2\,b\,\mathrm{Cot}[e+f\,x]\,\mathrm{Csc}[e+f\,x]}{3\,a^2}-\frac{2\,\mathrm{Cot}[e+f\,x]\,\mathrm{Csc}[e+f\,x]^2}{5\,a}\right)\mathrm{Sin}[e+f\,x]^4-$$

$$\frac{1}{5\,a^3\,f\,\sqrt{\mathrm{Cos}[e+f\,x]}\,(d\,\mathrm{Sin}[e+f\,x])^{7/2}}\sqrt{g\,\mathrm{Cos}[e+f\,x]}\,\mathrm{Sin}[e+f\,x]^{7/2}$$

$$\left(-\left(\left(14\left(a^2-b^2\right)\left(4\,a^3+10\,a\,b^2\right)\mathrm{Cos}[e+f\,x]^{3/2}\left(a+b\sqrt{1-\mathrm{Cos}[e+f\,x]^2}\right)\left(\left(b\,\mathrm{AppellF1}\left[\frac{3}{4},-\frac{1}{4},1,\frac{7}{4},\mathrm{Cos}[e+f\,x]^2,\frac{b^2\,\mathrm{Cos}[e+f\,x]^2}{-a^2+b^2}\right]\right.\right.\right.\right.\right.$$

$$\left.\sqrt{1-\mathrm{Cos}[e+f\,x]^2}\right)\Big/\left(-7\left(a^2-b^2\right)\mathrm{AppellF1}\left[\frac{3}{4},-\frac{1}{4},1,\frac{7}{4},\mathrm{Cos}[e+f\,x]^2,\frac{b^2\,\mathrm{Cos}[e+f\,x]^2}{-a^2+b^2}\right]+\left(4\,b^2\,\mathrm{AppellF1}\left[\frac{7}{4},-\frac{1}{4},2,\frac{11}{4},\right.\right.\right.$$

$$\left.\left.\left.\mathrm{Cos}[e+f\,x]^2,\frac{b^2\,\mathrm{Cos}[e+f\,x]^2}{-a^2+b^2}\right]+\left(a^2-b^2\right)\mathrm{AppellF1}\left[\frac{7}{4},\frac{3}{4},1,\frac{11}{4},\mathrm{Cos}[e+f\,x]^2,\frac{b^2\,\mathrm{Cos}[e+f\,x]^2}{-a^2+b^2}\right]\right)\mathrm{Cos}[e+f\,x]^2\right)+$$

$$\left(a\,\mathrm{AppellF1}\left[\frac{3}{4},\frac{1}{4},1,\frac{7}{4},\mathrm{Cos}[e+f\,x]^2,\frac{b^2\,\mathrm{Cos}[e+f\,x]^2}{-a^2+b^2}\right]\right)\Big/\left(7\left(a^2-b^2\right)\mathrm{AppellF1}\left[\frac{3}{4},\frac{1}{4},1,\frac{7}{4},\mathrm{Cos}[e+f\,x]^2,\right.\right.$$

$$\left.\frac{b^2\,\mathrm{Cos}[e+f\,x]^2}{-a^2+b^2}\right]+\left(-4\,b^2\,\mathrm{AppellF1}\left[\frac{7}{4},\frac{1}{4},2,\frac{11}{4},\mathrm{Cos}[e+f\,x]^2,\frac{b^2\,\mathrm{Cos}[e+f\,x]^2}{-a^2+b^2}\right]+\right.$$

$$\left.\left.\left.\left.\left(a^2-b^2\right)\mathrm{AppellF1}\left[\frac{7}{4},\frac{5}{4},1,\frac{11}{4},\mathrm{Cos}[e+f\,x]^2,\frac{b^2\,\mathrm{Cos}[e+f\,x]^2}{-a^2+b^2}\right]\right)\mathrm{Cos}[e+f\,x]^2\right)\right)\mathrm{Sin}[e+f\,x]^{3/2}\right)\Big/$$

$$\left.\left(3\left(1-\mathrm{Cos}[e+f\,x]^2\right)\left(a^2+b^2\left(-1+\mathrm{Cos}[e+f\,x]^2\right)\right)(a+b\,\mathrm{Sin}[e+f\,x])\right)\right)+\left(2\left(2\,a^2\,b+10\,b^3\right)\sqrt{\mathrm{Tan}[e+f\,x]}\right.$$

$$\left(b\,\mathrm{Tan}[e+f\,x]+a\sqrt{1+\mathrm{Tan}[e+f\,x]^2}\right)$$

$$\left(\frac{1}{4\sqrt{2}\,\sqrt{a}\,\left(a^2-b^2\right)^{1/4}}\left(-2\,\mathrm{ArcTan}\left[1-\frac{\sqrt{2}\,\left(a^2-b^2\right)^{1/4}\sqrt{\mathrm{Tan}[e+f\,x]}}{\sqrt{a}}\right]+2\,\mathrm{ArcTan}\left[1+\frac{\sqrt{2}\,\left(a^2-b^2\right)^{1/4}\sqrt{\mathrm{Tan}[e+f\,x]}}{\sqrt{a}}\right]-\right.\right.$$

$$\mathrm{Log}\left[-a+\sqrt{2}\,\sqrt{a}\,\left(a^2-b^2\right)^{1/4}\sqrt{\mathrm{Tan}[e+f\,x]}-\sqrt{a^2-b^2}\,\mathrm{Tan}[e+f\,x]\right]+\mathrm{Log}\left[a+\sqrt{2}\,\sqrt{a}\,\left(a^2-b^2\right)^{1/4}\sqrt{\mathrm{Tan}[e+f\,x]}+\right.$$

$$\left.\left.\sqrt{a^2-b^2}\,\mathrm{Tan}[e+f\,x]\right]\right)+\left(7\,a^2\,b\,\mathrm{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},-\mathrm{Tan}[e+f\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\mathrm{Tan}[e+f\,x]^2\right]\mathrm{Tan}[e+f\,x]^{3/2}\right)\Big/$$

$$\left(3\sqrt{1+\mathrm{Tan}[e+f\,x]^2}\,\left(-7\,a^2\,\mathrm{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},-\mathrm{Tan}[e+f\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\mathrm{Tan}[e+f\,x]^2\right]+2\right.\right.$$

$$\left(2\left(a^2-b^2\right)\text{AppellF1}\left[\frac{7}{4},\frac{1}{2},2,\frac{11}{4},-\text{Tan}[e+fx]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+fx]^2\right]+a^2\,\text{AppellF1}\left[\frac{7}{4},\frac{3}{2},1,\frac{11}{4},\right.\right.$$

$$\left.\left.\left.\left.-\text{Tan}[e+fx]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+fx]^2\right]\right)\text{Tan}[e+fx]^2\right)\left(-b^2\,\text{Tan}[e+fx]^2+a^2\left(1+\text{Tan}[e+fx]^2\right)\right)\right)\right)\Big/$$

$$\left(\text{Cos}[e+fx]^{3/2}\sqrt{\text{Sin}[e+fx]}\,(a+b\,\text{Sin}[e+fx])\left(1+\text{Tan}[e+fx]^2\right)^{3/2}\right)+\left(2\left(-2a^2b-5b^3\right)\text{Cos}[2(e+fx)]\right.$$

$$\sqrt{\text{Tan}[e+fx]}\left(b\,\text{Tan}[e+fx]+a\sqrt{1+\text{Tan}[e+fx]^2}\right)$$

$$\left(-\frac{a\,\text{ArcTan}\left[\frac{-\sqrt{2}+2\sqrt{\text{Tan}[e+fx]}}{\sqrt{2}}\right]}{\sqrt{2}\,b^2}-\frac{a\,\text{ArcTan}\left[\frac{\sqrt{2}+2\sqrt{\text{Tan}[e+fx]}}{\sqrt{2}}\right]}{\sqrt{2}\,b^2}+\frac{\left(2a^2-b^2\right)\text{ArcTan}\left[\frac{-\sqrt{2}\sqrt{a}+2\left(a^2-b^2\right)^{1/4}\sqrt{\text{Tan}[e+fx]}}{\sqrt{2}\sqrt{a}}\right]}{2\sqrt{2}\sqrt{a}\,b^2\left(a^2-b^2\right)^{1/4}}+\right.$$

$$\frac{\left(2a^2-b^2\right)\text{ArcTan}\left[\frac{\sqrt{2}\sqrt{a}+2\left(a^2-b^2\right)^{1/4}\sqrt{\text{Tan}[e+fx]}}{\sqrt{2}\sqrt{a}}\right]}{2\sqrt{2}\sqrt{a}\,b^2\left(a^2-b^2\right)^{1/4}}+\frac{a\,\text{Log}\left[1-\sqrt{2}\sqrt{\text{Tan}[e+fx]}+\text{Tan}[e+fx]\right]}{2\sqrt{2}\,b^2}-$$

$$\frac{a\,\text{Log}\left[1+\sqrt{2}\sqrt{\text{Tan}[e+fx]}+\text{Tan}[e+fx]\right]}{2\sqrt{2}\,b^2}-\frac{\left(2a^2-b^2\right)\text{Log}\left[-a+\sqrt{2}\sqrt{a}\left(a^2-b^2\right)^{1/4}\sqrt{\text{Tan}[e+fx]}-\sqrt{a^2-b^2}\,\text{Tan}[e+fx]\right]}{4\sqrt{2}\sqrt{a}\,b^2\left(a^2-b^2\right)^{1/4}}+$$

$$\frac{\left(2a^2-b^2\right)\text{Log}\left[a+\sqrt{2}\sqrt{a}\left(a^2-b^2\right)^{1/4}\sqrt{\text{Tan}[e+fx]}+\sqrt{a^2-b^2}\,\text{Tan}[e+fx]\right]}{4\sqrt{2}\sqrt{a}\,b^2\left(a^2-b^2\right)^{1/4}}+\frac{\text{Tan}[e+fx]^{3/2}}{b\sqrt{1+\text{Tan}[e+fx]^2}}+$$

$$\left(7a^4\,\text{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},-\text{Tan}[e+fx]^2,\frac{\left(-a^2+b^2\right)\text{Tan}[e+fx]^2}{a^2}\right]\text{Tan}[e+fx]^{3/2}\right)\Big/$$

$$\left(b\sqrt{1+\text{Tan}[e+fx]^2}\left(-7a^2\,\text{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},-\text{Tan}[e+fx]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+fx]^2\right]+2\right.\right.$$

$$\left(2\left(a^2-b^2\right)\text{AppellF1}\left[\frac{7}{4},\frac{1}{2},2,\frac{11}{4},-\text{Tan}[e+fx]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+fx]^2\right]+a^2\,\text{AppellF1}\left[\frac{7}{4},\frac{3}{2},1,\frac{11}{4},\right.\right.$$

$$\left.\left.\left.\left.-\text{Tan}[e+fx]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+fx]^2\right]\right)\text{Tan}[e+fx]^2\right)\left(-b^2\,\text{Tan}[e+fx]^2+a^2\left(1+\text{Tan}[e+fx]^2\right)\right)\right)-$$

$$\left(7a^2b\,\text{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},-\text{Tan}[e+fx]^2,\frac{\left(-a^2+b^2\right)\text{Tan}[e+fx]^2}{a^2}\right]\text{Tan}[e+fx]^{3/2}\right)\Big/\left(3\sqrt{1+\text{Tan}[e+fx]^2}\right.$$

$$\left(-7 a^2 \text{AppellF1}\left[\frac{3}{4}, \frac{1}{2}, 1, \frac{7}{4}, -\text{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\right] + 2 \left(2 \left(a^2-b^2\right) \text{AppellF1}\left[\frac{7}{4}, \frac{1}{2}, 2, \frac{11}{4}, -\text{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\right] + a^2 \text{AppellF1}\left[\frac{7}{4}, \frac{3}{2}, 1, \frac{11}{4}, -\text{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\right]\right) \text{Tan}[e+f x]^2\right) \left(-b^2 \text{Tan}[e+f x]^2 + a^2 \left(1+\text{Tan}[e+f x]^2\right)\right)\Bigg) + \left(11 a^4 \text{AppellF1}\left[\frac{7}{4}, \frac{1}{2}, 1, \frac{11}{4}, -\text{Tan}[e+f x]^2, \frac{\left(-a^2+b^2\right) \text{Tan}[e+f x]^2}{a^2}\right] \text{Tan}[e+f x]^{7/2}\right) \Bigg/ \left(7 b \sqrt{1+\text{Tan}[e+f x]^2} \left(-11 a^2 \text{AppellF1}\left[\frac{7}{4}, \frac{1}{2}, 1, \frac{11}{4}, -\text{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\right] + 2 \left(2 \left(a^2-b^2\right) \text{AppellF1}\left[\frac{11}{4}, \frac{1}{2}, 2, \frac{15}{4}, -\text{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\right] + a^2 \text{AppellF1}\left[\frac{11}{4}, \frac{3}{2}, 1, \frac{15}{4}, -\text{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\right]\right) \text{Tan}[e+f x]^2\right) \left(-b^2 \text{Tan}[e+f x]^2 + a^2 \left(1+\text{Tan}[e+f x]^2\right)\right)\right) - \left(11 a^2 b \text{AppellF1}\left[\frac{7}{4}, \frac{1}{2}, 1, \frac{11}{4}, -\text{Tan}[e+f x]^2, \frac{\left(-a^2+b^2\right) \text{Tan}[e+f x]^2}{a^2}\right] \text{Tan}[e+f x]^{7/2}\right) \Bigg/ \left(7 \sqrt{1+\text{Tan}[e+f x]^2} \left(-11 a^2 \text{AppellF1}\left[\frac{7}{4}, \frac{1}{2}, 1, \frac{11}{4}, -\text{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\right] + 2 \left(2 \left(a^2-b^2\right) \text{AppellF1}\left[\frac{11}{4}, \frac{1}{2}, 2, \frac{15}{4}, -\text{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\right] + a^2 \text{AppellF1}\left[\frac{11}{4}, \frac{3}{2}, 1, \frac{15}{4}, -\text{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\right]\right) \text{Tan}[e+f x]^2\right) \left(-b^2 \text{Tan}[e+f x]^2 + a^2 \left(1+\text{Tan}[e+f x]^2\right)\right)\right)\Bigg) \Bigg/ \left(\text{Cos}[e+f x]^{3/2} \sqrt{\text{Sin}[e+f x]} \left(a+b \text{Sin}[e+f x]\right) \left(-1+\text{Tan}[e+f x]^2\right) \sqrt{1+\text{Tan}[e+f x]^2}\right)\Bigg)$$

- **Problem 1415: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int \frac{\sqrt{g \text{Cos}[e+f x]}}{\left(d \text{Sin}[e+f x]\right)^{9/2} \left(a+b \text{Sin}[e+f x]\right)} \, dx$$

Optimal (type 4, 598 leaves, 19 steps):

$$-\frac{2\,(g\,\text{Cos}[e+f\,x])^{3/2}}{7\,a\,d\,f\,g\,(d\,\text{Sin}[e+f\,x])^{7/2}}+\frac{2\,b\,(g\,\text{Cos}[e+f\,x])^{3/2}}{5\,a^2\,d^2\,f\,g\,(d\,\text{Sin}[e+f\,x])^{5/2}}-\frac{8\,(g\,\text{Cos}[e+f\,x])^{3/2}}{21\,a\,d^3\,f\,g\,(d\,\text{Sin}[e+f\,x])^{3/2}}-\frac{2\,b^2\,(g\,\text{Cos}[e+f\,x])^{3/2}}{3\,a^3\,d^3\,f\,g\,(d\,\text{Sin}[e+f\,x])^{3/2}}+$$

$$\frac{4\,b\,(g\,\text{Cos}[e+f\,x])^{3/2}}{5\,a^2\,d^4\,f\,g\,\sqrt{d\,\text{Sin}[e+f\,x]}}+\frac{2\,b^3\,(g\,\text{Cos}[e+f\,x])^{3/2}}{a^4\,d^4\,f\,g\,\sqrt{d\,\text{Sin}[e+f\,x]}}+\frac{2\,\sqrt{2}\,b^4\,\sqrt{g}\,\text{EllipticPi}\left[-\frac{\sqrt{-a+b}}{\sqrt{a+b}},\,\text{ArcSin}\left[\frac{\sqrt{g\,\text{Cos}[e+f\,x]}}{\sqrt{g}\,\sqrt{1+\text{Sin}[e+f\,x]}}\right],\,-1\right]\sqrt{\text{Sin}[e+f\,x]}}{a^4\,\sqrt{-a+b}\,\sqrt{a+b}\,d^4\,f\,\sqrt{d\,\text{Sin}[e+f\,x]}}-$$

$$\frac{2\,\sqrt{2}\,b^4\,\sqrt{g}\,\text{EllipticPi}\left[\frac{\sqrt{-a+b}}{\sqrt{a+b}},\,\text{ArcSin}\left[\frac{\sqrt{g\,\text{Cos}[e+f\,x]}}{\sqrt{g}\,\sqrt{1+\text{Sin}[e+f\,x]}}\right],\,-1\right]\sqrt{\text{Sin}[e+f\,x]}}{a^4\,\sqrt{-a+b}\,\sqrt{a+b}\,d^4\,f\,\sqrt{d\,\text{Sin}[e+f\,x]}}+$$

$$\frac{4\,b\,\sqrt{g\,\text{Cos}[e+f\,x]}\,\text{EllipticE}\left[e-\frac{\pi}{4}+f\,x,\,2\right]\sqrt{d\,\text{Sin}[e+f\,x]}}{5\,a^2\,d^5\,f\,\sqrt{\text{Sin}[2\,e+2\,f\,x]}}+\frac{2\,b^3\,\sqrt{g\,\text{Cos}[e+f\,x]}\,\text{EllipticE}\left[e-\frac{\pi}{4}+f\,x,\,2\right]\sqrt{d\,\text{Sin}[e+f\,x]}}{a^4\,d^5\,f\,\sqrt{\text{Sin}[2\,e+2\,f\,x]}}$$

Result (type 6, 3029 leaves) :

$$\frac{1}{f\,(d\,\text{Sin}[e+f\,x])^{9/2}}\sqrt{g\,\text{Cos}[e+f\,x]}\,\left(\frac{2\,(2\,a^2\,b\,\text{Cos}[e+f\,x]+5\,b^3\,\text{Cos}[e+f\,x])\,\text{Csc}[e+f\,x]}{5\,a^4}-\right.$$
$$\left.\frac{2\,(4\,a^2\,\text{Cos}[e+f\,x]+7\,b^2\,\text{Cos}[e+f\,x])\,\text{Csc}[e+f\,x]^2}{21\,a^3}+\frac{2\,b\,\text{Cot}[e+f\,x]\,\text{Csc}[e+f\,x]^2}{5\,a^2}-\frac{2\,\text{Cot}[e+f\,x]\,\text{Csc}[e+f\,x]^3}{7\,a}\right)\text{Sin}[e+f\,x]^5+$$

$$\frac{1}{5\,a^4\,f\,\sqrt{\text{Cos}[e+f\,x]}\,(d\,\text{Sin}[e+f\,x])^{9/2}}\,b\,\sqrt{g\,\text{Cos}[e+f\,x]}\,\text{Sin}[e+f\,x]^{9/2}$$
$$\left(-\left(\left(14\,(a^2-b^2)\,(4\,a^3+10\,a\,b^2)\,\text{Cos}[e+f\,x]^{3/2}\left(a+b\,\sqrt{1-\text{Cos}[e+f\,x]^2}\right)\left(\left(b\,\text{AppellF1}\left[\frac{3}{4},\,-\frac{1}{4},\,1,\,\frac{7}{4},\,\text{Cos}[e+f\,x]^2,\,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]\right.\right.\right.\right.\right.$$
$$\left.\sqrt{1-\text{Cos}[e+f\,x]^2}\right)\Big/\left(-7\,(a^2-b^2)\,\text{AppellF1}\left[\frac{3}{4},\,-\frac{1}{4},\,1,\,\frac{7}{4},\,\text{Cos}[e+f\,x]^2,\,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]+\left(4\,b^2\,\text{AppellF1}\left[\frac{7}{4},\,-\frac{1}{4},\,2,\,\frac{11}{4},\right.\right.\right.$$
$$\left.\left.\left.\text{Cos}[e+f\,x]^2,\,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]+(a^2-b^2)\,\text{AppellF1}\left[\frac{7}{4},\,\frac{3}{4},\,1,\,\frac{11}{4},\,\text{Cos}[e+f\,x]^2,\,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]\right)\text{Cos}[e+f\,x]^2\right)+$$
$$\left(a\,\text{AppellF1}\left[\frac{3}{4},\,\frac{1}{4},\,1,\,\frac{7}{4},\,\text{Cos}[e+f\,x]^2,\,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]\right)\Big/\left(7\,(a^2-b^2)\,\text{AppellF1}\left[\frac{3}{4},\,\frac{1}{4},\,1,\,\frac{7}{4},\,\text{Cos}[e+f\,x]^2,\right.\right.$$
$$\left.\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]+\left(-4\,b^2\,\text{AppellF1}\left[\frac{7}{4},\,\frac{1}{4},\,2,\,\frac{11}{4},\,\text{Cos}[e+f\,x]^2,\,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]+\right.$$
$$\left.\left.\left.\left.(a^2-b^2)\,\text{AppellF1}\left[\frac{7}{4},\,\frac{5}{4},\,1,\,\frac{11}{4},\,\text{Cos}[e+f\,x]^2,\,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]\right)\text{Cos}[e+f\,x]^2\right)\right)\text{Sin}[e+f\,x]^{3/2}\right)\Big/$$

$$\left(3\left(1-\text{Cos}[e+f x]^2\right)\left(a^2+b^2\left(-1+\text{Cos}[e+f x]^2\right)\right)(a+b\,\text{Sin}[e+f x])\right)\Big)+\Bigg(2\left(2 a^2 b+10 b^3\right)\sqrt{\text{Tan}[e+f x]}$$

$$\left(b\,\text{Tan}[e+f x]+a\sqrt{1+\text{Tan}[e+f x]^2}\right)$$

$$\left(\frac{1}{4\sqrt{2}\sqrt{a}\left(a^2-b^2\right)^{1/4}}\left(-2\,\text{ArcTan}\left[1-\frac{\sqrt{2}\left(a^2-b^2\right)^{1/4}\sqrt{\text{Tan}[e+f x]}}{\sqrt{a}}\right]+2\,\text{ArcTan}\left[1+\frac{\sqrt{2}\left(a^2-b^2\right)^{1/4}\sqrt{\text{Tan}[e+f x]}}{\sqrt{a}}\right]-\right.\right.$$

$$\text{Log}\left[-a+\sqrt{2}\sqrt{a}\left(a^2-b^2\right)^{1/4}\sqrt{\text{Tan}[e+f x]}-\sqrt{a^2-b^2}\,\text{Tan}[e+f x]\right]+\text{Log}\left[a+\sqrt{2}\sqrt{a}\left(a^2-b^2\right)^{1/4}\sqrt{\text{Tan}[e+f x]}+\right.$$

$$\left.\left.\sqrt{a^2-b^2}\,\text{Tan}[e+f x]\right]\right)+\left(7 a^2 b\,\text{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]\text{Tan}[e+f x]^{3/2}\right)\Big/$$

$$\left(3\sqrt{1+\text{Tan}[e+f x]^2}\left(-7 a^2\,\text{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+2\right.\right.$$

$$\left(2\left(a^2-b^2\right)\text{AppellF1}\left[\frac{7}{4},\frac{1}{2},2,\frac{11}{4},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+a^2\,\text{AppellF1}\left[\frac{7}{4},\frac{3}{2},1,\frac{11}{4},\right.\right.$$

$$\left.\left.\left.\left.\left.-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]\right)\text{Tan}[e+f x]^2\right)\left(-b^2\,\text{Tan}[e+f x]^2+a^2\left(1+\text{Tan}[e+f x]^2\right)\right)\right)\right)\right)\Big/$$

$$\left(\text{Cos}[e+f x]^{3/2}\sqrt{\text{Sin}[e+f x]}\,(a+b\,\text{Sin}[e+f x])\left(1+\text{Tan}[e+f x]^2\right)^{3/2}\right)+\Bigg(2\left(-2 a^2 b-5 b^3\right)\text{Cos}[2(e+f x)]$$

$$\sqrt{\text{Tan}[e+f x]}\left(b\,\text{Tan}[e+f x]+a\sqrt{1+\text{Tan}[e+f x]^2}\right)$$

$$\left(-\frac{a\,\text{ArcTan}\left[\frac{-\sqrt{2}+2\sqrt{\text{Tan}[e+f x]}}{\sqrt{2}}\right]}{\sqrt{2}\,b^2}-\frac{a\,\text{ArcTan}\left[\frac{\sqrt{2}+2\sqrt{\text{Tan}[e+f x]}}{\sqrt{2}}\right]}{\sqrt{2}\,b^2}+\frac{\left(2 a^2-b^2\right)\text{ArcTan}\left[\frac{-\sqrt{2}\sqrt{a}+2\left(a^2-b^2\right)^{1/4}\sqrt{\text{Tan}[e+f x]}}{\sqrt{2}\sqrt{a}}\right]}{2\sqrt{2}\sqrt{a}\,b^2\left(a^2-b^2\right)^{1/4}}+\right.$$

$$\frac{\left(2 a^2-b^2\right)\text{ArcTan}\left[\frac{\sqrt{2}\sqrt{a}+2\left(a^2-b^2\right)^{1/4}\sqrt{\text{Tan}[e+f x]}}{\sqrt{2}\sqrt{a}}\right]}{2\sqrt{2}\sqrt{a}\,b^2\left(a^2-b^2\right)^{1/4}}+\frac{a\,\text{Log}\left[1-\sqrt{2}\sqrt{\text{Tan}[e+f x]}+\text{Tan}[e+f x]\right]}{2\sqrt{2}\,b^2}-$$

$$\frac{a\,\text{Log}\left[1+\sqrt{2}\sqrt{\text{Tan}[e+f x]}+\text{Tan}[e+f x]\right]}{2\sqrt{2}\,b^2}-\frac{\left(2 a^2-b^2\right)\text{Log}\left[-a+\sqrt{2}\sqrt{a}\left(a^2-b^2\right)^{1/4}\sqrt{\text{Tan}[e+f x]}-\sqrt{a^2-b^2}\,\text{Tan}[e+f x]\right]}{4\sqrt{2}\sqrt{a}\,b^2\left(a^2-b^2\right)^{1/4}}+$$

$$\frac{\left(2 a^2-b^2\right) \text{Log}\left[a+\sqrt{2} \sqrt{a} \left(a^2-b^2\right)^{1/4} \sqrt{\text{Tan}[e+f x]}+\sqrt{a^2-b^2} \text{Tan}[e+f x]\right]}{4 \sqrt{2} \sqrt{a} b^2 \left(a^2-b^2\right)^{1/4}}+\frac{\text{Tan}[e+f x]^{3/2}}{b \sqrt{1+\text{Tan}[e+f x]^2}}+$$

$$\left(7 a^4 \text{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},-\text{Tan}[e+f x]^2,\frac{\left(-a^2+b^2\right) \text{Tan}[e+f x]^2}{a^2}\right] \text{Tan}[e+f x]^{3/2}\right)\Big/$$

$$\left(b \sqrt{1+\text{Tan}[e+f x]^2} \left(-7 a^2 \text{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\right]+2\right.\right.$$

$$\left(2 \left(a^2-b^2\right) \text{AppellF1}\left[\frac{7}{4},\frac{1}{2},2,\frac{11}{4},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\right]+a^2 \text{AppellF1}\left[\frac{7}{4},\frac{3}{2},1,\frac{11}{4},\right.\right.$$

$$\left.\left.\left.-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\right]\right) \text{Tan}[e+f x]^2\right) \left(-b^2 \text{Tan}[e+f x]^2+a^2 \left(1+\text{Tan}[e+f x]^2\right)\right)\right)-$$

$$\left(7 a^2 b \text{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},-\text{Tan}[e+f x]^2,\frac{\left(-a^2+b^2\right) \text{Tan}[e+f x]^2}{a^2}\right] \text{Tan}[e+f x]^{3/2}\right)\Big/\left(3 \sqrt{1+\text{Tan}[e+f x]^2}\right.$$

$$\left(-7 a^2 \text{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\right]+2 \left(2 \left(a^2-b^2\right) \text{AppellF1}\left[\frac{7}{4},\frac{1}{2},2,\frac{11}{4},-\text{Tan}[e+f x]^2,\right.\right.\right.$$

$$\left.\left.\left.\left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\right]+a^2 \text{AppellF1}\left[\frac{7}{4},\frac{3}{2},1,\frac{11}{4},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\right]\right) \text{Tan}[e+f x]^2\right)$$

$$\left.\left(-b^2 \text{Tan}[e+f x]^2+a^2 \left(1+\text{Tan}[e+f x]^2\right)\right)\right)+\left(11 a^4 \text{AppellF1}\left[\frac{7}{4},\frac{1}{2},1,\frac{11}{4},-\text{Tan}[e+f x]^2,\frac{\left(-a^2+b^2\right) \text{Tan}[e+f x]^2}{a^2}\right]\right.$$

$$\left.\text{Tan}[e+f x]^{7/2}\right)\Big/\left(7 b \sqrt{1+\text{Tan}[e+f x]^2} \left(-11 a^2 \text{AppellF1}\left[\frac{7}{4},\frac{1}{2},1,\frac{11}{4},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\right]+2\right.\right.$$

$$\left(2 \left(a^2-b^2\right) \text{AppellF1}\left[\frac{11}{4},\frac{1}{2},2,\frac{15}{4},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\right]+a^2 \text{AppellF1}\left[\frac{11}{4},\frac{3}{2},1,\frac{15}{4},\right.\right.$$

$$\left.\left.\left.-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\right]\right) \text{Tan}[e+f x]^2\right) \left(-b^2 \text{Tan}[e+f x]^2+a^2 \left(1+\text{Tan}[e+f x]^2\right)\right)\right)-$$

$$\left(11 a^2 b \text{AppellF1}\left[\frac{7}{4},\frac{1}{2},1,\frac{11}{4},-\text{Tan}[e+f x]^2,\frac{\left(-a^2+b^2\right) \text{Tan}[e+f x]^2}{a^2}\right] \text{Tan}[e+f x]^{7/2}\right)\Big/$$

$$\left(7 \sqrt{1+\text{Tan}[e+f x]^2} \left(-11 a^2 \text{AppellF1}\left[\frac{7}{4},\frac{1}{2},1,\frac{11}{4},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\right]+2\right.\right.$$

$$\left(2 \left(a^2-b^2\right) \text{AppellF1}\left[\frac{11}{4},\frac{1}{2},2,\frac{15}{4},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\right]+a^2 \text{AppellF1}\left[\frac{11}{4},\frac{3}{2},1,\frac{15}{4},\right.\right.$$

$$-\text{Tan}[e+f x]^2,\ \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\Big]\Big) \text{Tan}[e+f x]^2\Big) \left(-b^2 \text{Tan}[e+f x]^2+a^2 \left(1+\text{Tan}[e+f x]^2\right)\right)\Bigg)\Bigg)\Bigg/$$

$$\left(\text{Cos}[e+f x]^{3/2} \sqrt{\text{Sin}[e+f x]} \,(a+b \,\text{Sin}[e+f x]) \left(-1+\text{Tan}[e+f x]^2\right) \sqrt{1+\text{Tan}[e+f x]^2}\right)\Bigg)$$

- **Problem 1416: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int \frac{(g \,\text{Cos}[e+f x])^{3/2} (d \,\text{Sin}[e+f x])^{3/2}}{a+b \,\text{Sin}[e+f x]} \, dx$$

Optimal (type 4, 982 leaves, 31 steps) :

$$\frac{3 d^{3/2} g^{3/2} \text{ArcTan}\left[1-\frac{\sqrt{2}\sqrt{g}\sqrt{d \text{Sin}[e+f x]}}{\sqrt{d}\sqrt{g \text{Cos}[e+f x]}}\right]}{4\sqrt{2}\, b f}+\frac{\left(a^2-b^2\right) d^{3/2} g^{3/2} \text{ArcTan}\left[1-\frac{\sqrt{2}\sqrt{g}\sqrt{d \text{Sin}[e+f x]}}{\sqrt{d}\sqrt{g \text{Cos}[e+f x]}}\right]}{\sqrt{2}\, b^3 f}-$$

$$\frac{3 d^{3/2} g^{3/2} \text{ArcTan}\left[1+\frac{\sqrt{2}\sqrt{g}\sqrt{d \text{Sin}[e+f x]}}{\sqrt{d}\sqrt{g \text{Cos}[e+f x]}}\right]}{4\sqrt{2}\, b f}-\frac{\left(a^2-b^2\right) d^{3/2} g^{3/2} \text{ArcTan}\left[1+\frac{\sqrt{2}\sqrt{g}\sqrt{d \text{Sin}[e+f x]}}{\sqrt{d}\sqrt{g \text{Cos}[e+f x]}}\right]}{\sqrt{2}\, b^3 f}+$$

$$\frac{2\sqrt{2}\, a\sqrt{-a^2+b^2}\, d^{3/2} g^2 \sqrt{\text{Cos}[e+f x]}\ \text{EllipticPi}\left[-\frac{a}{b-\sqrt{-a^2+b^2}},\ \text{ArcSin}\left[\frac{\sqrt{d \text{Sin}[e+f x]}}{\sqrt{d}\sqrt{1+\text{Cos}[e+f x]}}\right],-1\right]}{b^3 f\sqrt{g \text{Cos}[e+f x]}}-$$

$$\frac{2\sqrt{2}\, a\sqrt{-a^2+b^2}\, d^{3/2} g^2 \sqrt{\text{Cos}[e+f x]}\ \text{EllipticPi}\left[-\frac{a}{b+\sqrt{-a^2+b^2}},\ \text{ArcSin}\left[\frac{\sqrt{d \text{Sin}[e+f x]}}{\sqrt{d}\sqrt{1+\text{Cos}[e+f x]}}\right],-1\right]}{b^3 f\sqrt{g \text{Cos}[e+f x]}}-$$

$$\frac{3 d^{3/2} g^{3/2} \text{Log}\left[\sqrt{d}-\frac{\sqrt{2}\sqrt{g}\sqrt{d \text{Sin}[e+f x]}}{\sqrt{g \text{Cos}[e+f x]}}+\sqrt{d}\ \text{Tan}[e+f x]\right]}{8\sqrt{2}\, b f}-\frac{\left(a^2-b^2\right) d^{3/2} g^{3/2} \text{Log}\left[\sqrt{d}-\frac{\sqrt{2}\sqrt{g}\sqrt{d \text{Sin}[e+f x]}}{\sqrt{g \text{Cos}[e+f x]}}+\sqrt{d}\ \text{Tan}[e+f x]\right]}{2\sqrt{2}\, b^3 f}+$$

$$\frac{3 d^{3/2} g^{3/2} \text{Log}\left[\sqrt{d}+\frac{\sqrt{2}\sqrt{g}\sqrt{d \text{Sin}[e+f x]}}{\sqrt{g \text{Cos}[e+f x]}}+\sqrt{d}\ \text{Tan}[e+f x]\right]}{8\sqrt{2}\, b f}+\frac{\left(a^2-b^2\right) d^{3/2} g^{3/2} \text{Log}\left[\sqrt{d}+\frac{\sqrt{2}\sqrt{g}\sqrt{d \text{Sin}[e+f x]}}{\sqrt{g \text{Cos}[e+f x]}}+\sqrt{d}\ \text{Tan}[e+f x]\right]}{2\sqrt{2}\, b^3 f}-$$

$$\frac{a d g\sqrt{g \text{Cos}[e+f x]}\ \sqrt{d \text{Sin}[e+f x]}}{b^2 f}+\frac{g\sqrt{g \text{Cos}[e+f x]}\ (d \text{Sin}[e+f x])^{3/2}}{2 b f}+\frac{a d^2 g^2 \text{EllipticF}\left[e-\frac{\pi}{4}+f x,2\right]\sqrt{\text{Sin}[2 e+2 f x]}}{2 b^2 f\sqrt{g \text{Cos}[e+f x]}\ \sqrt{d \text{Sin}[e+f x]}}$$

Result (type 6, 2370 leaves):

$$\frac{(g \text{Cos}[e+f x])^{3/2} \text{Sec}[e+f x]\ (d \text{Sin}[e+f x])^{3/2}}{2 b f}-$$

$$\frac{1}{4 b f \text{Cos}[e+f x]^{3/2} \text{Sin}[e+f x]^{3/2}}(g \text{Cos}[e+f x])^{3/2} (d \text{Sin}[e+f x])^{3/2}\left(\frac{1}{\left(1-\text{Cos}[e+f x]^2\right)\left(a^2+b^2\left(-1+\text{Cos}[e+f x]^2\right)\right)(a+b \text{Sin}[e+f x])}\right.$$

$$10 b\left(a^2-b^2\right)\sqrt{\text{Cos}[e+f x]}\left(a+b\sqrt{1-\text{Cos}[e+f x]^2}\right)\left(\left(b\ \text{AppellF1}\left[\frac{1}{4},-\frac{3}{4},1,\frac{5}{4},\text{Cos}[e+f x]^2,\frac{b^2 \text{Cos}[e+f x]^2}{-a^2+b^2}\right]\sqrt{1-\text{Cos}[e+f x]^2}\right)\right/$$

$$\left(-5\left(a^2-b^2\right)\text{AppellF1}\left[\frac{1}{4},-\frac{3}{4},1,\frac{5}{4},\text{Cos}[e+f x]^2,\frac{b^2 \text{Cos}[e+f x]^2}{-a^2+b^2}\right]+\left(4 b^2\ \text{AppellF1}\left[\frac{5}{4},-\frac{3}{4},2,\frac{9}{4},\text{Cos}[e+f x]^2,\right.\right.\right.$$

$$\frac{b^2 \operatorname{Cos}[e+f x]^2}{-a^2+b^2}\Big] + 3\left(a^2-b^2\right) \operatorname{AppellF1}\Big[\frac{5}{4}, \frac{1}{4}, 1, \frac{9}{4}, \operatorname{Cos}[e+f x]^2, \frac{b^2 \operatorname{Cos}[e+f x]^2}{-a^2+b^2}\Big]\Big) \operatorname{Cos}[e+f x]^2\Big) +$$

$$\left(a \operatorname{AppellF1}\Big[\frac{1}{4}, -\frac{1}{4}, 1, \frac{5}{4}, \operatorname{Cos}[e+f x]^2, \frac{b^2 \operatorname{Cos}[e+f x]^2}{-a^2+b^2}\Big]\right) \Big/ \Big(5\left(a^2-b^2\right) \operatorname{AppellF1}\Big[\frac{1}{4}, -\frac{1}{4}, 1, \frac{5}{4}, \operatorname{Cos}[e+f x]^2, \frac{b^2 \operatorname{Cos}[e+f x]^2}{-a^2+b^2}\Big] +$$

$$\Big(-4 b^2 \operatorname{AppellF1}\Big[\frac{5}{4}, -\frac{1}{4}, 2, \frac{9}{4}, \operatorname{Cos}[e+f x]^2, \frac{b^2 \operatorname{Cos}[e+f x]^2}{-a^2+b^2}\Big] + \left(-a^2+b^2\right)$$

$$\operatorname{AppellF1}\Big[\frac{5}{4}, \frac{3}{4}, 1, \frac{9}{4}, \operatorname{Cos}[e+f x]^2, \frac{b^2 \operatorname{Cos}[e+f x]^2}{-a^2+b^2}\Big]\Big) \operatorname{Cos}[e+f x]^2\Big)\Big) \operatorname{Sin}[e+f x]^{5/2} +$$

$$\Big(4 a \operatorname{Cos}[2(e+f x)] \sqrt{\operatorname{Sin}[e+f x]} \left(b \operatorname{Tan}[e+f x] + a\sqrt{1+\operatorname{Tan}[e+f x]^2}\right) \Bigg(-\frac{a \operatorname{ArcTan}\Big[\frac{-\sqrt{2}+2\sqrt{\operatorname{Tan}[e+f x]}}{\sqrt{2}}\Big]}{\sqrt{2}\, b^2} -$$

$$\frac{a \operatorname{ArcTan}\Big[\frac{\sqrt{2}+2\sqrt{\operatorname{Tan}[e+f x]}}{\sqrt{2}}\Big]}{\sqrt{2}\, b^2} + \frac{\sqrt{a}\left(2 a^2-b^2\right) \operatorname{ArcTan}\Big[\frac{-\sqrt{2}\sqrt{a}+2\left(a^2-b^2\right)^{1/4}\sqrt{\operatorname{Tan}[e+f x]}}{\sqrt{2}\sqrt{a}}\Big]}{2\sqrt{2}\, b^2\left(a^2-b^2\right)^{3/4}} +$$

$$\frac{\sqrt{a}\left(2 a^2-b^2\right) \operatorname{ArcTan}\Big[\frac{\sqrt{2}\sqrt{a}+2\left(a^2-b^2\right)^{1/4}\sqrt{\operatorname{Tan}[e+f x]}}{\sqrt{2}\sqrt{a}}\Big]}{2\sqrt{2}\, b^2\left(a^2-b^2\right)^{3/4}} - \frac{a \operatorname{Log}\Big[1-\sqrt{2}\sqrt{\operatorname{Tan}[e+f x]}+\operatorname{Tan}[e+f x]\Big]}{2\sqrt{2}\, b^2} +$$

$$\frac{a \operatorname{Log}\Big[1+\sqrt{2}\sqrt{\operatorname{Tan}[e+f x]}+\operatorname{Tan}[e+f x]\Big]}{2\sqrt{2}\, b^2} + \frac{\sqrt{a}\left(2 a^2-b^2\right) \operatorname{Log}\Big[-a+\sqrt{2}\sqrt{a}\left(a^2-b^2\right)^{1/4}\sqrt{\operatorname{Tan}[e+f x]}-\sqrt{a^2-b^2}\operatorname{Tan}[e+f x]\Big]}{4\sqrt{2}\, b^2\left(a^2-b^2\right)^{3/4}} -$$

$$\frac{\sqrt{a}\left(2 a^2-b^2\right) \operatorname{Log}\Big[a+\sqrt{2}\sqrt{a}\left(a^2-b^2\right)^{1/4}\sqrt{\operatorname{Tan}[e+f x]}+\sqrt{a^2-b^2}\operatorname{Tan}[e+f x]\Big]}{4\sqrt{2}\, b^2\left(a^2-b^2\right)^{3/4}} - \frac{\sqrt{\operatorname{Tan}[e+f x]}}{b\sqrt{1+\operatorname{Tan}[e+f x]^2}} -$$

$$\left(5 a^4 \operatorname{AppellF1}\Big[\frac{1}{4}, \frac{1}{2}, 1, \frac{5}{4}, -\operatorname{Tan}[e+f x]^2, \frac{\left(-a^2+b^2\right)\operatorname{Tan}[e+f x]^2}{a^2}\Big] \sqrt{\operatorname{Tan}[e+f x]}\right) \Big/ \Big(b\sqrt{1+\operatorname{Tan}[e+f x]^2}$$

$$\Big(-5 a^2 \operatorname{AppellF1}\Big[\frac{1}{4}, \frac{1}{2}, 1, \frac{5}{4}, -\operatorname{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right)\operatorname{Tan}[e+f x]^2\Big] + 2\Big(2\left(a^2-b^2\right) \operatorname{AppellF1}\Big[\frac{5}{4}, \frac{1}{2}, 2, \frac{9}{4}, -\operatorname{Tan}[e+f x]^2,$$

$$\left(-1+\frac{b^2}{a^2}\right)\operatorname{Tan}[e+f x]^2\Big] + a^2 \operatorname{AppellF1}\Big[\frac{5}{4}, \frac{3}{2}, 1, \frac{9}{4}, -\operatorname{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right)\operatorname{Tan}[e+f x]^2\Big]\Big) \operatorname{Tan}[e+f x]^2\Big)$$

$$\left(-b^2 \operatorname{Tan}[e+f x]^2 + a^2\left(1+\operatorname{Tan}[e+f x]^2\right)\right)\Big) + \Big(9 a^4 \operatorname{AppellF1}\Big[\frac{5}{4}, \frac{1}{2}, 1, \frac{9}{4}, -\operatorname{Tan}[e+f x]^2, \frac{\left(-a^2+b^2\right)\operatorname{Tan}[e+f x]^2}{a^2}\Big]$$

$$\text{Tan}[e+f x]^{5/2}\Bigg)\Bigg/\Bigg(5 b \sqrt{1+\text{Tan}[e+f x]^2}\ \Bigg(-9 a^2 \text{AppellF1}\Big[\frac{5}{4},\frac{1}{2},1,\frac{9}{4},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\Big]+2$$

$$\Bigg(2\left(a^2-b^2\right)\text{AppellF1}\Big[\frac{9}{4},\frac{1}{2},2,\frac{13}{4},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\Big]+a^2\,\text{AppellF1}\Big[\frac{9}{4},\frac{3}{2},1,\frac{13}{4},$$

$$-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\Big]\Bigg)\text{Tan}[e+f x]^2\Bigg)\left(-b^2\,\text{Tan}[e+f x]^2+a^2\left(1+\text{Tan}[e+f x]^2\right)\right)\Bigg)\Bigg)\Bigg/$$

$$\left(\text{Cos}[e+f x]^{5/2}\,(a+b\,\text{Sin}[e+f x])\sqrt{\text{Tan}[e+f x]}\left(-1+\text{Tan}[e+f x]^2\right)\sqrt{1+\text{Tan}[e+f x]^2}\right)+$$

$$\Bigg(2 a\sqrt{\text{Sin}[e+f x]}\left(b\,\text{Tan}[e+f x]+a\sqrt{1+\text{Tan}[e+f x]^2}\right)$$

$$\Bigg(\frac{1}{4\sqrt{2}\left(a^2-b^2\right)^{3/4}}\sqrt{a}\Bigg(-2\,\text{ArcTan}\Big[1-\frac{\sqrt{2}\left(a^2-b^2\right)^{1/4}\sqrt{\text{Tan}[e+f x]}}{\sqrt{a}}\Big]+2\,\text{ArcTan}\Big[1+\frac{\sqrt{2}\left(a^2-b^2\right)^{1/4}\sqrt{\text{Tan}[e+f x]}}{\sqrt{a}}\Big]+\text{Log}\Big[-a+\sqrt{2}\sqrt{a}$$

$$\left(a^2-b^2\right)^{1/4}\sqrt{\text{Tan}[e+f x]}-\sqrt{a^2-b^2}\,\text{Tan}[e+f x]\Big]-\text{Log}\Big[a+\sqrt{2}\sqrt{a}\left(a^2-b^2\right)^{1/4}\sqrt{\text{Tan}[e+f x]}+\sqrt{a^2-b^2}\,\text{Tan}[e+f x]\Big]\Bigg)+$$

$$\Bigg(9 a^2 b\,\text{AppellF1}\Big[\frac{5}{4},\frac{1}{2},1,\frac{9}{4},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\Big]\text{Tan}[e+f x]^{5/2}\Bigg)\Bigg/\Bigg(5\sqrt{1+\text{Tan}[e+f x]^2}$$

$$\Bigg(-9 a^2\,\text{AppellF1}\Big[\frac{5}{4},\frac{1}{2},1,\frac{9}{4},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\Big]+2\Bigg(2\left(a^2-b^2\right)\text{AppellF1}\Big[\frac{9}{4},\frac{1}{2},2,\frac{13}{4},-\text{Tan}[e+f x]^2,$$

$$\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\Big]+a^2\,\text{AppellF1}\Big[\frac{9}{4},\frac{3}{2},1,\frac{13}{4},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\Big]\Bigg)\text{Tan}[e+f x]^2\Bigg)$$

$$\left(-b^2\,\text{Tan}[e+f x]^2+a^2\left(1+\text{Tan}[e+f x]^2\right)\right)\Bigg)\Bigg)\Bigg)\Bigg/\left(\text{Cos}[e+f x]^{5/2}\,(a+b\,\text{Sin}[e+f x])\sqrt{\text{Tan}[e+f x]}\left(1+\text{Tan}[e+f x]^2\right)^{3/2}\right)$$

- **Problem 1417: Result unnecessarily involves higher level functions.**

$$\int\frac{(g\,\text{Cos}[e+f x])^{3/2}\sqrt{d\,\text{Sin}[e+f x]}}{a+b\,\text{Sin}[e+f x]}\,dx$$

Optimal (type 4, 611 leaves, 19 steps):

$$-\frac{a\sqrt{d}\,g^{3/2}\,\text{ArcTan}\left[1-\frac{\sqrt{2}\,\sqrt{g}\,\sqrt{d\,\text{Sin}[e+f\,x]}}{\sqrt{d}\,\sqrt{g\,\text{Cos}[e+f\,x]}}\right]}{\sqrt{2}\,b^2\,f}+\frac{a\sqrt{d}\,g^{3/2}\,\text{ArcTan}\left[1+\frac{\sqrt{2}\,\sqrt{g}\,\sqrt{d\,\text{Sin}[e+f\,x]}}{\sqrt{d}\,\sqrt{g\,\text{Cos}[e+f\,x]}}\right]}{\sqrt{2}\,b^2\,f}-$$

$$\frac{2\sqrt{2}\,\sqrt{-a^2+b^2}\,\sqrt{d}\,g^2\,\sqrt{\text{Cos}[e+f\,x]}\,\text{EllipticPi}\left[-\frac{a}{b-\sqrt{-a^2+b^2}},\,\text{ArcSin}\left[\frac{\sqrt{d\,\text{Sin}[e+f\,x]}}{\sqrt{d}\,\sqrt{1+\text{Cos}[e+f\,x]}}\right],\,-1\right]}{b^2\,f\,\sqrt{g\,\text{Cos}[e+f\,x]}}+$$

$$\frac{2\sqrt{2}\,\sqrt{-a^2+b^2}\,\sqrt{d}\,g^2\,\sqrt{\text{Cos}[e+f\,x]}\,\text{EllipticPi}\left[-\frac{a}{b+\sqrt{-a^2+b^2}},\,\text{ArcSin}\left[\frac{\sqrt{d\,\text{Sin}[e+f\,x]}}{\sqrt{d}\,\sqrt{1+\text{Cos}[e+f\,x]}}\right],\,-1\right]}{b^2\,f\,\sqrt{g\,\text{Cos}[e+f\,x]}}+$$

$$\frac{a\sqrt{d}\,g^{3/2}\,\text{Log}\left[\sqrt{d}-\frac{\sqrt{2}\,\sqrt{g}\,\sqrt{d\,\text{Sin}[e+f\,x]}}{\sqrt{g\,\text{Cos}[e+f\,x]}}+\sqrt{d}\,\text{Tan}[e+f\,x]\right]}{2\sqrt{2}\,b^2\,f}-\frac{a\sqrt{d}\,g^{3/2}\,\text{Log}\left[\sqrt{d}+\frac{\sqrt{2}\,\sqrt{g}\,\sqrt{d\,\text{Sin}[e+f\,x]}}{\sqrt{g\,\text{Cos}[e+f\,x]}}+\sqrt{d}\,\text{Tan}[e+f\,x]\right]}{2\sqrt{2}\,b^2\,f}+$$

$$\frac{g\sqrt{g\,\text{Cos}[e+f\,x]}\,\sqrt{d\,\text{Sin}[e+f\,x]}}{b\,f}-\frac{d\,g^2\,\text{EllipticF}\left[e-\frac{\pi}{4}+f\,x,\,2\right]\sqrt{\text{Sin}[2\,e+2\,f\,x]}}{2\,b\,f\,\sqrt{g\,\text{Cos}[e+f\,x]}\,\sqrt{d\,\text{Sin}[e+f\,x]}}$$

Result (type 6, 999 leaves) :

$$-\left(\left((g\,\text{Cos}[e+f x])^{3/2}\left(a+b\sqrt{1-\text{Cos}[e+f x]^2}\right)\left(-\left(25\left(a^2-b^2\right)^2\text{AppellF1}\left[\frac{1}{4},\frac{3}{4},1,\frac{5}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]\right)\right/\right.\right.$$

$$\left(b\left(-5\left(a^2-b^2\right)\text{AppellF1}\left[\frac{1}{4},\frac{3}{4},1,\frac{5}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]+\left(4\,b^2\,\text{AppellF1}\left[\frac{5}{4},\frac{3}{4},2,\frac{9}{4},\text{Cos}[e+f x]^2,\right.\right.\right.\right.$$

$$\left.\left.\left.\left.\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]+3\left(-a^2+b^2\right)\text{AppellF1}\left[\frac{5}{4},\frac{7}{4},1,\frac{9}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]\right)\text{Cos}[e+f x]^2\right)\right)+$$

$$\left(18\,a\left(a^2-b^2\right)\text{AppellF1}\left[\frac{5}{4},\frac{1}{4},1,\frac{9}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]\text{Cos}[e+f x]^2\sqrt{1-\text{Cos}[e+f x]^2}\right)\Big/$$

$$\left(9\left(a^2-b^2\right)\text{AppellF1}\left[\frac{5}{4},\frac{1}{4},1,\frac{9}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]+\right.$$

$$\left(-4\,b^2\,\text{AppellF1}\left[\frac{9}{4},\frac{1}{4},2,\frac{13}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]+\left(a^2-b^2\right)\text{AppellF1}\left[\frac{9}{4},\frac{5}{4},1,\frac{13}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]\right)$$

$$\left.\text{Cos}[e+f x]^2\right)+\left(-5\left(-4\,b^2\,\text{AppellF1}\left[\frac{9}{4},\frac{3}{4},2,\frac{13}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]+\right.\right.$$

$$\left.3\left(a^2-b^2\right)\text{AppellF1}\left[\frac{9}{4},\frac{7}{4},1,\frac{13}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]\right)\text{Cos}[e+f x]^2$$

$$\left(-1+\text{Cos}[e+f x]^2\right)\left(a^2+b^2\left(-1+\text{Cos}[e+f x]^2\right)\right)-9\,\text{AppellF1}\left[\frac{5}{4},\frac{3}{4},1,\frac{9}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]$$

$$\left.\left(a^4\left(-5+3\,\text{Cos}[e+f x]^2\right)+b^4\left(-5+9\,\text{Cos}[e+f x]^2-5\,\text{Cos}[e+f x]^4\right)+a^2\,b^2\left(10-12\,\text{Cos}[e+f x]^2+5\,\text{Cos}[e+f x]^4\right)\right)\right)\Big/$$

$$\left(b\left(-9\left(a^2-b^2\right)\text{AppellF1}\left[\frac{5}{4},\frac{3}{4},1,\frac{9}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]+\left(4\,b^2\,\text{AppellF1}\left[\frac{9}{4},\frac{3}{4},2,\frac{13}{4},\text{Cos}[e+f x]^2,\right.\right.\right.\right.$$

$$\left.\left.\left.\left.\left.\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]+3\left(-a^2+b^2\right)\text{AppellF1}\left[\frac{9}{4},\frac{7}{4},1,\frac{13}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]\right)\text{Cos}[e+f x]^2\right)\right)\right)$$

$$\left.\sqrt{d\,\text{Sin}[e+f x]}\;\text{Tan}[e+f x]\right)\Big/\left(5\,f\left(1-\text{Cos}[e+f x]^2\right)^{3/2}\left(a^2+b^2\left(-1+\text{Cos}[e+f x]^2\right)\right)(a+b\,\text{Sin}[e+f x])\right)$$

- **Problem 1418: Result unnecessarily involves higher level functions.**

$$\int\frac{(g\,\text{Cos}[e+f x])^{3/2}}{\sqrt{d\,\text{Sin}[e+f x]}\;(a+b\,\text{Sin}[e+f x])}\,dx$$

Optimal (type 4, 577 leaves, 18 steps):

$$\frac{g^{3/2}\,\text{ArcTan}\left[1-\frac{\sqrt{2}\,\sqrt{g}\,\sqrt{d\,\text{Sin}[e+f\,x]}}{\sqrt{d}\,\sqrt{g\,\text{Cos}[e+f\,x]}}\right]}{\sqrt{2}\,b\,\sqrt{d}\,f}-\frac{g^{3/2}\,\text{ArcTan}\left[1+\frac{\sqrt{2}\,\sqrt{g}\,\sqrt{d\,\text{Sin}[e+f\,x]}}{\sqrt{d}\,\sqrt{g\,\text{Cos}[e+f\,x]}}\right]}{\sqrt{2}\,b\,\sqrt{d}\,f}+$$

$$\frac{2\sqrt{2}\,\sqrt{-a^2+b^2}\,g^2\,\sqrt{\text{Cos}[e+f\,x]}\,\text{EllipticPi}\left[-\frac{a}{b-\sqrt{-a^2+b^2}},\text{ArcSin}\left[\frac{\sqrt{d\,\text{Sin}[e+f\,x]}}{\sqrt{d}\,\sqrt{1+\text{Cos}[e+f\,x]}}\right],-1\right]}{a\,b\,\sqrt{d}\,f\,\sqrt{g\,\text{Cos}[e+f\,x]}}-$$

$$\frac{2\sqrt{2}\,\sqrt{-a^2+b^2}\,g^2\,\sqrt{\text{Cos}[e+f\,x]}\,\text{EllipticPi}\left[-\frac{a}{b+\sqrt{-a^2+b^2}},\text{ArcSin}\left[\frac{\sqrt{d\,\text{Sin}[e+f\,x]}}{\sqrt{d}\,\sqrt{1+\text{Cos}[e+f\,x]}}\right],-1\right]}{a\,b\,\sqrt{d}\,f\,\sqrt{g\,\text{Cos}[e+f\,x]}}-$$

$$\frac{g^{3/2}\,\text{Log}\left[\sqrt{d}-\frac{\sqrt{2}\,\sqrt{g}\,\sqrt{d\,\text{Sin}[e+f\,x]}}{\sqrt{g\,\text{Cos}[e+f\,x]}}+\sqrt{d}\,\text{Tan}[e+f\,x]\right]}{2\sqrt{2}\,b\,\sqrt{d}\,f}+$$

$$\frac{g^{3/2}\,\text{Log}\left[\sqrt{d}+\frac{\sqrt{2}\,\sqrt{g}\,\sqrt{d\,\text{Sin}[e+f\,x]}}{\sqrt{g\,\text{Cos}[e+f\,x]}}+\sqrt{d}\,\text{Tan}[e+f\,x]\right]}{2\sqrt{2}\,b\,\sqrt{d}\,f}+\frac{g^2\,\text{EllipticF}\left[e-\frac{\pi}{4}+f\,x,2\right]\sqrt{\text{Sin}[2\,e+2\,f\,x]}}{a\,f\,\sqrt{g\,\text{Cos}[e+f\,x]}\,\sqrt{d\,\text{Sin}[e+f\,x]}}$$

Result (type 6, 520 leaves):

$$\frac{1}{5\,f\,\sqrt{d\,\text{Sin}[e+f\,x]}\,(-a+b\,\text{Sin}[e+f\,x])\,(a+b\,\text{Sin}[e+f\,x])^2}\,18\,(a^2-b^2)\,(g\,\text{Cos}[e+f\,x])^{3/2}\,\text{Cot}[e+f\,x]\,\left(a+b\sqrt{\text{Sin}[e+f\,x]^2}\right)$$
$$\left(\left(a\,\text{AppellF1}\left[\frac{5}{4},\frac{3}{4},1,\frac{9}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]\right)\Big/\left(9\,(a^2-b^2)\,\text{AppellF1}\left[\frac{5}{4},\frac{3}{4},1,\frac{9}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]+\right.\right.$$
$$\left(-4\,b^2\,\text{AppellF1}\left[\frac{9}{4},\frac{3}{4},2,\frac{13}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]+3\,(a^2-b^2)\,\text{AppellF1}\left[\frac{9}{4},\frac{7}{4},1,\frac{13}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]\right)$$
$$\left.\text{Cos}[e+f\,x]^2\right)+\left(b\,\text{AppellF1}\left[\frac{5}{4},\frac{1}{4},1,\frac{9}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]\sqrt{\text{Sin}[e+f\,x]^2}\right)\Big/$$
$$\left(-9\,(a^2-b^2)\,\text{AppellF1}\left[\frac{5}{4},\frac{1}{4},1,\frac{9}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]+\left(4\,b^2\,\text{AppellF1}\left[\frac{9}{4},\frac{1}{4},2,\frac{13}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]+\right.\right.$$
$$\left.\left.\left.(-a^2+b^2)\,\text{AppellF1}\left[\frac{9}{4},\frac{5}{4},1,\frac{13}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]\right)\text{Cos}[e+f\,x]^2\right)\right)$$

- **Problem 1419: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int\frac{(g\,\text{Cos}[e+f\,x])^{3/2}}{(d\,\text{Sin}[e+f\,x])^{3/2}\,(a+b\,\text{Sin}[e+f\,x])}\,dx$$

Optimal (type 4, 321 leaves, 8 steps):

$$-\frac{2\sqrt{2}\sqrt{-a^2+b^2}\,g^2\sqrt{\text{Cos}[e+f x]}\,\text{EllipticPi}\left[-\frac{a}{b-\sqrt{-a^2+b^2}},\text{ArcSin}\left[\frac{\sqrt{d\,\text{Sin}[e+f x]}}{\sqrt{d}\,\sqrt{1+\text{Cos}[e+f x]}}\right],-1\right]}{a^2 d^{3/2} f\sqrt{g\,\text{Cos}[e+f x]}}+\frac{2\sqrt{2}\sqrt{-a^2+b^2}\,g^2\sqrt{\text{Cos}[e+f x]}\,\text{EllipticPi}\left[-\frac{a}{b+\sqrt{-a^2+b^2}},\text{ArcSin}\left[\frac{\sqrt{d\,\text{Sin}[e+f x]}}{\sqrt{d}\,\sqrt{1+\text{Cos}[e+f x]}}\right],-1\right]}{a^2 d^{3/2} f\sqrt{g\,\text{Cos}[e+f x]}}-\frac{2 g\sqrt{g\,\text{Cos}[e+f x]}}{a d f\sqrt{d\,\text{Sin}[e+f x]}}-\frac{b g^2\,\text{EllipticF}\left[e-\frac{\pi}{4}+f x,2\right]\sqrt{\text{Sin}[2e+2f x]}}{a^2 d f\sqrt{g\,\text{Cos}[e+f x]}\,\sqrt{d\,\text{Sin}[e+f x]}}$$

Result (type 6, 1287 leaves):

$$-\frac{2\,(g\,\text{Cos}[e+f x])^{3/2}\,\text{Tan}[e+f x]}{a f\,(d\,\text{Sin}[e+f x])^{3/2}}-\frac{1}{a f\,\text{Cos}[e+f x]^{3/2}\,(d\,\text{Sin}[e+f x])^{3/2}}(g\,\text{Cos}[e+f x])^{3/2}\,\text{Sin}[e+f x]^{3/2}\left(-\frac{1}{\left(1-\text{Cos}[e+f x]^2\right)^{1/4}(a+b\,\text{Sin}[e+f x])}2 b\left(a+b\sqrt{1-\text{Cos}[e+f x]^2}\right)\right.$$

$$\left(\left(5 a\left(a^2-b^2\right)\text{AppellF1}\left[\frac{1}{4},\frac{3}{4},1,\frac{5}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]\sqrt{\text{Cos}[e+f x]}\right)\Big/\left(\left(1-\text{Cos}[e+f x]^2\right)^{3/4}\left(5\left(a^2-b^2\right)\right.\right.\right.$$

$$\text{AppellF1}\left[\frac{1}{4},\frac{3}{4},1,\frac{5}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]+\left(-4 b^2\,\text{AppellF1}\left[\frac{5}{4},\frac{3}{4},2,\frac{9}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]+\right.$$

$$\left.\left.\left.3\left(a^2-b^2\right)\text{AppellF1}\left[\frac{5}{4},\frac{7}{4},1,\frac{9}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]\right)\text{Cos}[e+f x]^2\right)\left(a^2+b^2\left(-1+\text{Cos}[e+f x]^2\right)\right)\right)-$$

$$\frac{1}{\sqrt{a}\left(-a^2+b^2\right)^{3/4}}\left(\frac{1}{8}-\frac{i}{8}\right)b\left(2\,\text{ArcTan}\left[1-\frac{(1+i)\sqrt{a}\sqrt{\text{Cos}[e+f x]}}{\left(-a^2+b^2\right)^{1/4}\left(-1+\text{Cos}[e+f x]^2\right)^{1/4}}\right]-2\,\text{ArcTan}\left[1+\frac{(1+i)\sqrt{a}\sqrt{\text{Cos}[e+f x]}}{\left(-a^2+b^2\right)^{1/4}\left(-1+\text{Cos}[e+f x]^2\right)^{1/4}}\right]+\right.$$

$$\text{Log}\left[\sqrt{-a^2+b^2}+\frac{i\,a\,\text{Cos}[e+f x]}{\sqrt{-1+\text{Cos}[e+f x]^2}}-\frac{(1+i)\sqrt{a}\left(-a^2+b^2\right)^{1/4}\sqrt{\text{Cos}[e+f x]}}{\left(-1+\text{Cos}[e+f x]^2\right)^{1/4}}\right]-$$

$$\left.\left.\text{Log}\left[\sqrt{-a^2+b^2}+\frac{i\,a\,\text{Cos}[e+f x]}{\sqrt{-1+\text{Cos}[e+f x]^2}}+\frac{(1+i)\sqrt{a}\left(-a^2+b^2\right)^{1/4}\sqrt{\text{Cos}[e+f x]}}{\left(-1+\text{Cos}[e+f x]^2\right)^{1/4}}\right]\right)\right)\sqrt{\text{Sin}[e+f x]}+$$

$$\left(2 a \sqrt{\text{Sin}[e+f x]} \left(b \text{Tan}[e+f x]+a \sqrt{1+\text{Tan}[e+f x]^2}\right) \left(\frac{1}{4 \sqrt{2} \left(a^2-b^2\right)^{3/4}}\sqrt{a} \left(-2 \text{ArcTan}\left[1-\frac{\sqrt{2} \left(a^2-b^2\right)^{1/4} \sqrt{\text{Tan}[e+f x]}}{\sqrt{a}}\right]+\right.\right.\right.$$

$$2 \text{ArcTan}\left[1+\frac{\sqrt{2} \left(a^2-b^2\right)^{1/4} \sqrt{\text{Tan}[e+f x]}}{\sqrt{a}}\right]+\text{Log}\left[-a+\sqrt{2} \sqrt{a} \left(a^2-b^2\right)^{1/4} \sqrt{\text{Tan}[e+f x]}-\sqrt{a^2-b^2} \text{Tan}[e+f x]\right]-$$

$$\left.\text{Log}\left[a+\sqrt{2} \sqrt{a} \left(a^2-b^2\right)^{1/4} \sqrt{\text{Tan}[e+f x]}+\sqrt{a^2-b^2} \text{Tan}[e+f x]\right]\right)+$$

$$\left(9 a^2 b \text{AppellF1}\left[\frac{5}{4},\frac{1}{2},1,\frac{9}{4},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\right] \text{Tan}[e+f x]^{5/2}\right) \Big/ \left(5 \sqrt{1+\text{Tan}[e+f x]^2}\right.$$

$$\left(-9 a^2 \text{AppellF1}\left[\frac{5}{4},\frac{1}{2},1,\frac{9}{4},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\right]+2 \left(2 \left(a^2-b^2\right) \text{AppellF1}\left[\frac{9}{4},\frac{1}{2},2,\frac{13}{4},-\text{Tan}[e+f x]^2,\right.\right.\right.$$

$$\left.\left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\right]+a^2 \text{AppellF1}\left[\frac{9}{4},\frac{3}{2},1,\frac{13}{4},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\right]\right) \text{Tan}[e+f x]^2\Big)$$

$$\left.\left.\left.\left(-b^2 \text{Tan}[e+f x]^2+a^2 \left(1+\text{Tan}[e+f x]^2\right)\right)\right)\right)\right) \Big/ \left(\text{Cos}[e+f x]^{5/2} (a+b \text{Sin}[e+f x]) \sqrt{\text{Tan}[e+f x]} \left(1+\text{Tan}[e+f x]^2\right)^{3/2}\right)$$

- **Problem 1420: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int \frac{(g \text{Cos}[e+f x])^{3/2}}{(d \text{Sin}[e+f x])^{5/2} (a+b \text{Sin}[e+f x])} \, dx$$

Optimal (type 4, 435 leaves, 12 steps):

$$\frac{2 \sqrt{2} b \sqrt{-a^2+b^2} g^2 \sqrt{\text{Cos}[e+f x]} \text{EllipticPi}\left[-\frac{a}{b-\sqrt{-a^2+b^2}},\text{ArcSin}\left[\frac{\sqrt{d \text{Sin}[e+f x]}}{\sqrt{d} \sqrt{1+\text{Cos}[e+f x]}}\right],-1\right]}{a^3 d^{5/2} f \sqrt{g \text{Cos}[e+f x]}}-$$

$$\frac{2 \sqrt{2} b \sqrt{-a^2+b^2} g^2 \sqrt{\text{Cos}[e+f x]} \text{EllipticPi}\left[-\frac{a}{b+\sqrt{-a^2+b^2}},\text{ArcSin}\left[\frac{\sqrt{d \text{Sin}[e+f x]}}{\sqrt{d} \sqrt{1+\text{Cos}[e+f x]}}\right],-1\right]}{a^3 d^{5/2} f \sqrt{g \text{Cos}[e+f x]}}-\frac{2 g \sqrt{g \text{Cos}[e+f x]}}{3 a d f (d \text{Sin}[e+f x])^{3/2}}+$$

$$\frac{2 b g \sqrt{g \text{Cos}[e+f x]}}{a^2 d^2 f \sqrt{d \text{Sin}[e+f x]}}+\frac{2 g^2 \text{EllipticF}\left[e-\frac{\pi}{4}+f x,2\right] \sqrt{\text{Sin}[2 e+2 f x]}}{3 a d^2 f \sqrt{g \text{Cos}[e+f x]} \sqrt{d \text{Sin}[e+f x]}}-\frac{\left(a^2-b^2\right) g^2 \text{EllipticF}\left[e-\frac{\pi}{4}+f x,2\right] \sqrt{\text{Sin}[2 e+2 f x]}}{a^3 d^2 f \sqrt{g \text{Cos}[e+f x]} \sqrt{d \text{Sin}[e+f x]}}$$

Result (type 6, 1330 leaves):

$$\frac{(g \text{Cos}[e+f x])^{3/2} \left(\frac{2 b \text{Csc}[e+f x]}{a^2}-\frac{2 \text{Csc}[e+f x]^2}{3 a}\right) \text{Sin}[e+f x]^2 \text{Tan}[e+f x]}{f (d \text{Sin}[e+f x])^{5/2}}-$$

$$\frac{1}{3 a^2 f \operatorname{Cos}[e+f x]^{3/2} (d \operatorname{Sin}[e+f x])^{5/2}} (g \operatorname{Cos}[e+f x])^{3/2} \operatorname{Sin}[e+f x]^{5/2} \left(-\frac{1}{\left(1-\operatorname{Cos}[e+f x]^2\right)^{1/4} (a+b \operatorname{Sin}[e+f x])}\right.$$

$$2 \left(a^2-3 b^2\right) \left(a+b \sqrt{1-\operatorname{Cos}[e+f x]^2}\right) \left(\left(5 a \left(a^2-b^2\right) \operatorname{AppellF1}\left[\frac{1}{4}, \frac{3}{4}, 1, \frac{5}{4}, \operatorname{Cos}[e+f x]^2, \frac{b^2 \operatorname{Cos}[e+f x]^2}{-a^2+b^2}\right] \sqrt{\operatorname{Cos}[e+f x]}\right) \Big/ \right.$$

$$\left(\left(1-\operatorname{Cos}[e+f x]^2\right)^{3/4} \left(5 \left(a^2-b^2\right) \operatorname{AppellF1}\left[\frac{1}{4}, \frac{3}{4}, 1, \frac{5}{4}, \operatorname{Cos}[e+f x]^2, \frac{b^2 \operatorname{Cos}[e+f x]^2}{-a^2+b^2}\right] + \left(-4 b^2 \operatorname{AppellF1}\left[\frac{5}{4}, \frac{3}{4}, 2, \frac{9}{4},\right.\right.\right.$$

$$\left.\left.\operatorname{Cos}[e+f x]^2, \frac{b^2 \operatorname{Cos}[e+f x]^2}{-a^2+b^2}\right] + 3 \left(a^2-b^2\right) \operatorname{AppellF1}\left[\frac{5}{4}, \frac{7}{4}, 1, \frac{9}{4}, \operatorname{Cos}[e+f x]^2, \frac{b^2 \operatorname{Cos}[e+f x]^2}{-a^2+b^2}\right]\right) \operatorname{Cos}[e+f x]^2\Big)$$

$$\left.\left(a^2+b^2 \left(-1+\operatorname{Cos}[e+f x]^2\right)\right)\right) - \frac{1}{\sqrt{a} \left(-a^2+b^2\right)^{3/4}} \left(\frac{1}{8}-\frac{i}{8}\right) b \left(2 \operatorname{ArcTan}\left[1-\frac{(1+i) \sqrt{a} \sqrt{\operatorname{Cos}[e+f x]}}{\left(-a^2+b^2\right)^{1/4} \left(-1+\operatorname{Cos}[e+f x]^2\right)^{1/4}}\right] - 2 \operatorname{ArcTan}\left[\right.\right.$$

$$\left. 1+\frac{(1+i) \sqrt{a} \sqrt{\operatorname{Cos}[e+f x]}}{\left(-a^2+b^2\right)^{1/4} \left(-1+\operatorname{Cos}[e+f x]^2\right)^{1/4}}\right] + \operatorname{Log}\left[\sqrt{-a^2+b^2} + \frac{i a \operatorname{Cos}[e+f x]}{\sqrt{-1+\operatorname{Cos}[e+f x]^2}} - \frac{(1+i) \sqrt{a} \left(-a^2+b^2\right)^{1/4} \sqrt{\operatorname{Cos}[e+f x]}}{\left(-1+\operatorname{Cos}[e+f x]^2\right)^{1/4}}\right] -$$

$$\left.\left.\operatorname{Log}\left[\sqrt{-a^2+b^2} + \frac{i a \operatorname{Cos}[e+f x]}{\sqrt{-1+\operatorname{Cos}[e+f x]^2}} + \frac{(1+i) \sqrt{a} \left(-a^2+b^2\right)^{1/4} \sqrt{\operatorname{Cos}[e+f x]}}{\left(-1+\operatorname{Cos}[e+f x]^2\right)^{1/4}}\right]\right)\right) \sqrt{\operatorname{Sin}[e+f x]} -$$

$$\left(4 a b \sqrt{\operatorname{Sin}[e+f x]} \left(b \operatorname{Tan}[e+f x] + a \sqrt{1+\operatorname{Tan}[e+f x]^2}\right) \left(\frac{1}{4 \sqrt{2} \left(a^2-b^2\right)^{3/4}} \sqrt{a} \left(-2 \operatorname{ArcTan}\left[1-\frac{\sqrt{2} \left(a^2-b^2\right)^{1/4} \sqrt{\operatorname{Tan}[e+f x]}}{\sqrt{a}}\right] + \right.\right.\right.$$

$$2 \operatorname{ArcTan}\left[1+\frac{\sqrt{2} \left(a^2-b^2\right)^{1/4} \sqrt{\operatorname{Tan}[e+f x]}}{\sqrt{a}}\right] + \operatorname{Log}\left[-a+\sqrt{2} \sqrt{a} \left(a^2-b^2\right)^{1/4} \sqrt{\operatorname{Tan}[e+f x]} - \sqrt{a^2-b^2} \operatorname{Tan}[e+f x]\right] -$$

$$\left.\operatorname{Log}\left[a+\sqrt{2} \sqrt{a} \left(a^2-b^2\right)^{1/4} \sqrt{\operatorname{Tan}[e+f x]} + \sqrt{a^2-b^2} \operatorname{Tan}[e+f x]\right]\right) +$$

$$\left(9 a^2 b \operatorname{AppellF1}\left[\frac{5}{4}, \frac{1}{2}, 1, \frac{9}{4}, -\operatorname{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \operatorname{Tan}[e+f x]^2\right] \operatorname{Tan}[e+f x]^{5/2}\right) \Big/ \left(5 \sqrt{1+\operatorname{Tan}[e+f x]^2}\right.$$

$$\left(-9 a^2 \operatorname{AppellF1}\left[\frac{5}{4}, \frac{1}{2}, 1, \frac{9}{4}, -\operatorname{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \operatorname{Tan}[e+f x]^2\right] + 2 \left(2 \left(a^2-b^2\right) \operatorname{AppellF1}\left[\frac{9}{4}, \frac{1}{2}, 2, \frac{13}{4}, -\operatorname{Tan}[e+f x]^2,\right.\right.\right.$$

$$\left.\left.\left(-1+\frac{b^2}{a^2}\right) \operatorname{Tan}[e+f x]^2\right] + a^2 \operatorname{AppellF1}\left[\frac{9}{4}, \frac{3}{2}, 1, \frac{13}{4}, -\operatorname{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \operatorname{Tan}[e+f x]^2\right]\right) \operatorname{Tan}[e+f x]^2\Big)$$

$$\left.\left.\left.\left(-b^2 \operatorname{Tan}[e+f x]^2 + a^2 \left(1+\operatorname{Tan}[e+f x]^2\right)\right)\right)\right)\right) \Big/ \left(\operatorname{Cos}[e+f x]^{5/2} (a+b \operatorname{Sin}[e+f x]) \sqrt{\operatorname{Tan}[e+f x]} \left(1+\operatorname{Tan}[e+f x]^2\right)^{3/2}\right)$$

Problem 1421: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{(g \operatorname{Cos}[e+f x])^{3/2}}{(d \operatorname{Sin}[e+f x])^{7/2} (a+b \operatorname{Sin}[e+f x])} \, dx$$

Optimal (type 4, 525 leaves, 15 steps):

$$-\frac{2\sqrt{2}\, b^2 \sqrt{-a^2+b^2}\, g^2 \sqrt{\operatorname{Cos}[e+f x]}\, \operatorname{EllipticPi}\left[-\frac{a}{b-\sqrt{-a^2+b^2}}, \operatorname{ArcSin}\left[\frac{\sqrt{d \operatorname{Sin}[e+f x]}}{\sqrt{d}\, \sqrt{1+\operatorname{Cos}[e+f x]}}\right], -1\right]}{a^4 d^{7/2} f \sqrt{g \operatorname{Cos}[e+f x]}} + \frac{2\sqrt{2}\, b^2 \sqrt{-a^2+b^2}\, g^2 \sqrt{\operatorname{Cos}[e+f x]}\, \operatorname{EllipticPi}\left[-\frac{a}{b+\sqrt{-a^2+b^2}}, \operatorname{ArcSin}\left[\frac{\sqrt{d \operatorname{Sin}[e+f x]}}{\sqrt{d}\, \sqrt{1+\operatorname{Cos}[e+f x]}}\right], -1\right]}{a^4 d^{7/2} f \sqrt{g \operatorname{Cos}[e+f x]}} - \frac{2 g \sqrt{g \operatorname{Cos}[e+f x]}}{5 a d f (d \operatorname{Sin}[e+f x])^{5/2}} + \frac{2 b g \sqrt{g \operatorname{Cos}[e+f x]}}{3 a^2 d^2 f (d \operatorname{Sin}[e+f x])^{3/2}} - \frac{8 g \sqrt{g \operatorname{Cos}[e+f x]}}{5 a d^3 f \sqrt{d \operatorname{Sin}[e+f x]}} + \frac{2 (a^2-b^2) g \sqrt{g \operatorname{Cos}[e+f x]}}{a^3 d^3 f \sqrt{d \operatorname{Sin}[e+f x]}} - \frac{2 b g^2 \operatorname{EllipticF}\left[e-\frac{\pi}{4}+f x, 2\right] \sqrt{\operatorname{Sin}[2 e+2 f x]}}{3 a^2 d^3 f \sqrt{g \operatorname{Cos}[e+f x]}\, \sqrt{d \operatorname{Sin}[e+f x]}} + \frac{b (a^2-b^2) g^2 \operatorname{EllipticF}\left[e-\frac{\pi}{4}+f x, 2\right] \sqrt{\operatorname{Sin}[2 e+2 f x]}}{a^4 d^3 f \sqrt{g \operatorname{Cos}[e+f x]}\, \sqrt{d \operatorname{Sin}[e+f x]}}$$

Result (type 6, 1357 leaves):

$$\frac{(g \operatorname{Cos}[e+f x])^{3/2} \left(\frac{2 (a^2-5 b^2) \operatorname{Csc}[e+f x]}{5 a^3} + \frac{2 b \operatorname{Csc}[e+f x]^2}{3 a^2} - \frac{2 \operatorname{Csc}[e+f x]^3}{5 a}\right) \operatorname{Sin}[e+f x]^3 \operatorname{Tan}[e+f x]}{f (d \operatorname{Sin}[e+f x])^{7/2}} + \frac{1}{3 a^3 f \operatorname{Cos}[e+f x]^{3/2} (d \operatorname{Sin}[e+f x])^{7/2}} b (g \operatorname{Cos}[e+f x])^{3/2} \operatorname{Sin}[e+f x]^{7/2} \left(-\frac{1}{\left(1-\operatorname{Cos}[e+f x]^2\right)^{1/4} (a+b \operatorname{Sin}[e+f x])} 2 (a^2-3 b^2) \left(a+b\sqrt{1-\operatorname{Cos}[e+f x]^2}\right) \left(\left(5 a (a^2-b^2) \operatorname{AppellF1}\left[\frac{1}{4}, \frac{3}{4}, 1, \frac{5}{4}, \operatorname{Cos}[e+f x]^2, \frac{b^2 \operatorname{Cos}[e+f x]^2}{-a^2+b^2}\right] \sqrt{\operatorname{Cos}[e+f x]}\right) \Big/ \left(\left(1-\operatorname{Cos}[e+f x]^2\right)^{3/4} \left(5 (a^2-b^2) \operatorname{AppellF1}\left[\frac{1}{4}, \frac{3}{4}, 1, \frac{5}{4}, \operatorname{Cos}[e+f x]^2, \frac{b^2 \operatorname{Cos}[e+f x]^2}{-a^2+b^2}\right] + \left(-4 b^2 \operatorname{AppellF1}\left[\frac{5}{4}, \frac{3}{4}, 2, \frac{9}{4}, \operatorname{Cos}[e+f x]^2, \frac{b^2 \operatorname{Cos}[e+f x]^2}{-a^2+b^2}\right] + 3 (a^2-b^2) \operatorname{AppellF1}\left[\frac{5}{4}, \frac{7}{4}, 1, \frac{9}{4}, \operatorname{Cos}[e+f x]^2, \frac{b^2 \operatorname{Cos}[e+f x]^2}{-a^2+b^2}\right]\right) \operatorname{Cos}[e+f x]^2\right) \left(a^2+b^2 \left(-1+\operatorname{Cos}[e+f x]^2\right)\right)\right) - \frac{1}{\sqrt{a}\, (-a^2+b^2)^{3/4}}$$

$$\left(\frac{1}{8}-\frac{i}{8}\right) b \left(2\,\text{ArcTan}\left[1-\frac{(1+i)\sqrt{a}\sqrt{\text{Cos}[e+f x]}}{\left(-a^2+b^2\right)^{1/4}\left(-1+\text{Cos}[e+f x]^2\right)^{1/4}}\right]-2\,\text{ArcTan}\left[1+\frac{(1+i)\sqrt{a}\sqrt{\text{Cos}[e+f x]}}{\left(-a^2+b^2\right)^{1/4}\left(-1+\text{Cos}[e+f x]^2\right)^{1/4}}\right]+\right.$$

$$\text{Log}\left[\sqrt{-a^2+b^2}+\frac{i\,a\,\text{Cos}[e+f x]}{\sqrt{-1+\text{Cos}[e+f x]^2}}-\frac{(1+i)\sqrt{a}\left(-a^2+b^2\right)^{1/4}\sqrt{\text{Cos}[e+f x]}}{\left(-1+\text{Cos}[e+f x]^2\right)^{1/4}}\right]-$$

$$\left.\left.\text{Log}\left[\sqrt{-a^2+b^2}+\frac{i\,a\,\text{Cos}[e+f x]}{\sqrt{-1+\text{Cos}[e+f x]^2}}+\frac{(1+i)\sqrt{a}\left(-a^2+b^2\right)^{1/4}\sqrt{\text{Cos}[e+f x]}}{\left(-1+\text{Cos}[e+f x]^2\right)^{1/4}}\right]\right)\right)\sqrt{\text{Sin}[e+f x]}-$$

$$\left(4\,a\,b\sqrt{\text{Sin}[e+f x]}\left(b\,\text{Tan}[e+f x]+a\sqrt{1+\text{Tan}[e+f x]^2}\right)\left(\frac{1}{4\sqrt{2}\left(a^2-b^2\right)^{3/4}}\sqrt{a}\left(-2\,\text{ArcTan}\left[1-\frac{\sqrt{2}\left(a^2-b^2\right)^{1/4}\sqrt{\text{Tan}[e+f x]}}{\sqrt{a}}\right]+\right.\right.\right.$$

$$2\,\text{ArcTan}\left[1+\frac{\sqrt{2}\left(a^2-b^2\right)^{1/4}\sqrt{\text{Tan}[e+f x]}}{\sqrt{a}}\right]+\text{Log}\left[-a+\sqrt{2}\sqrt{a}\left(a^2-b^2\right)^{1/4}\sqrt{\text{Tan}[e+f x]}-\sqrt{a^2-b^2}\,\text{Tan}[e+f x]\right]-$$

$$\left.\text{Log}\left[a+\sqrt{2}\sqrt{a}\left(a^2-b^2\right)^{1/4}\sqrt{\text{Tan}[e+f x]}+\sqrt{a^2-b^2}\,\text{Tan}[e+f x]\right]\right)+$$

$$\left(9\,a^2\,b\,\text{AppellF1}\left[\frac{5}{4},\frac{1}{2},1,\frac{9}{4},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]\text{Tan}[e+f x]^{5/2}\right)\Big/\left(5\sqrt{1+\text{Tan}[e+f x]^2}\right.$$

$$\left(-9\,a^2\,\text{AppellF1}\left[\frac{5}{4},\frac{1}{2},1,\frac{9}{4},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+2\left(2\left(a^2-b^2\right)\text{AppellF1}\left[\frac{9}{4},\frac{1}{2},2,\frac{13}{4},-\text{Tan}[e+f x]^2,\right.\right.\right.$$

$$\left.\left.\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+a^2\,\text{AppellF1}\left[\frac{9}{4},\frac{3}{2},1,\frac{13}{4},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]\right)\text{Tan}[e+f x]^2\Big)$$

$$\left.\left.\left.\left.\left(-b^2\,\text{Tan}[e+f x]^2+a^2\left(1+\text{Tan}[e+f x]^2\right)\right)\right)\right)\right)\Big/\left(\text{Cos}[e+f x]^{5/2}\left(a+b\,\text{Sin}[e+f x]\right)\sqrt{\text{Tan}[e+f x]}\left(1+\text{Tan}[e+f x]^2\right)^{3/2}\right)$$

- **Problem 1422: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int\frac{\left(g\,\text{Cos}[e+f x]\right)^{3/2}}{\left(d\,\text{Sin}[e+f x]\right)^{9/2}\left(a+b\,\text{Sin}[e+f x]\right)}\,dx$$

Optimal (type 4, 688 leaves, 20 steps):

$$\frac{2\sqrt{2}\, b^3 \sqrt{-a^2+b^2}\, g^2 \sqrt{\text{Cos}[e+f x]}\, \text{EllipticPi}\left[-\frac{a}{b-\sqrt{-a^2+b^2}}, \text{ArcSin}\left[\frac{\sqrt{d\,\text{Sin}[e+f x]}}{\sqrt{d}\,\sqrt{1+\text{Cos}[e+f x]}}\right], -1\right]}{a^5 d^{9/2} f \sqrt{g\,\text{Cos}[e+f x]}} -$$

$$\frac{2\sqrt{2}\, b^3 \sqrt{-a^2+b^2}\, g^2 \sqrt{\text{Cos}[e+f x]}\, \text{EllipticPi}\left[-\frac{a}{b+\sqrt{-a^2+b^2}}, \text{ArcSin}\left[\frac{\sqrt{d\,\text{Sin}[e+f x]}}{\sqrt{d}\,\sqrt{1+\text{Cos}[e+f x]}}\right], -1\right]}{a^5 d^{9/2} f \sqrt{g\,\text{Cos}[e+f x]}} -$$

$$\frac{2 g \sqrt{g\,\text{Cos}[e+f x]}}{7 a d f (d\,\text{Sin}[e+f x])^{7/2}} + \frac{2 b g \sqrt{g\,\text{Cos}[e+f x]}}{5 a^2 d^2 f (d\,\text{Sin}[e+f x])^{5/2}} - \frac{4 g \sqrt{g\,\text{Cos}[e+f x]}}{7 a d^3 f (d\,\text{Sin}[e+f x])^{3/2}} + \frac{2 (a^2-b^2) g \sqrt{g\,\text{Cos}[e+f x]}}{3 a^3 d^3 f (d\,\text{Sin}[e+f x])^{3/2}} +$$

$$\frac{8 b g \sqrt{g\,\text{Cos}[e+f x]}}{5 a^2 d^4 f \sqrt{d\,\text{Sin}[e+f x]}} - \frac{2 b (a^2-b^2) g \sqrt{g\,\text{Cos}[e+f x]}}{a^4 d^4 f \sqrt{d\,\text{Sin}[e+f x]}} + \frac{4 g^2\, \text{EllipticF}\left[e-\frac{\pi}{4}+f x, 2\right] \sqrt{\text{Sin}[2 e+2 f x]}}{7 a d^4 f \sqrt{g\,\text{Cos}[e+f x]}\, \sqrt{d\,\text{Sin}[e+f x]}} -$$

$$\frac{2 (a^2-b^2) g^2\, \text{EllipticF}\left[e-\frac{\pi}{4}+f x, 2\right] \sqrt{\text{Sin}[2 e+2 f x]}}{3 a^3 d^4 f \sqrt{g\,\text{Cos}[e+f x]}\, \sqrt{d\,\text{Sin}[e+f x]}} - \frac{b^2 (a^2-b^2) g^2\, \text{EllipticF}\left[e-\frac{\pi}{4}+f x, 2\right] \sqrt{\text{Sin}[2 e+2 f x]}}{a^5 d^4 f \sqrt{g\,\text{Cos}[e+f x]}\, \sqrt{d\,\text{Sin}[e+f x]}}$$

Result (type 6, 1402 leaves) :

$$\frac{1}{f (d\,\text{Sin}[e+f x])^{9/2}}$$

$$(g\,\text{Cos}[e+f x])^{3/2} \left(-\frac{2 b (a^2-5 b^2)\, \text{Csc}[e+f x]}{5 a^4} + \frac{2 (a^2-7 b^2)\, \text{Csc}[e+f x]^2}{21 a^3} + \frac{2 b\, \text{Csc}[e+f x]^3}{5 a^2} - \frac{2\, \text{Csc}[e+f x]^4}{7 a}\right) \text{Sin}[e+f x]^4\, \text{Tan}[e+f x] -$$

$$\frac{1}{21 a^4 f\, \text{Cos}[e+f x]^{3/2} (d\,\text{Sin}[e+f x])^{9/2}}$$

$$(g\,\text{Cos}[e+f x])^{3/2}\, \text{Sin}[e+f x]^{9/2} \left(-\frac{1}{\left(1-\text{Cos}[e+f x]^2\right)^{1/4} (a+b\,\text{Sin}[e+f x])} 2 \left(2 a^4+7 a^2 b^2-21 b^4\right) \left(a+b\sqrt{1-\text{Cos}[e+f x]^2}\right)\right.$$

$$\left(\left(5 a (a^2-b^2)\, \text{AppellF1}\left[\frac{1}{4}, \frac{3}{4}, 1, \frac{5}{4}, \text{Cos}[e+f x]^2, \frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right] \sqrt{\text{Cos}[e+f x]}\right) \Big/ \left(\left(1-\text{Cos}[e+f x]^2\right)^{3/4} \left(5 (a^2-b^2)\right.\right.\right.$$

$$\text{AppellF1}\left[\frac{1}{4}, \frac{3}{4}, 1, \frac{5}{4}, \text{Cos}[e+f x]^2, \frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right] + \left(-4 b^2\, \text{AppellF1}\left[\frac{5}{4}, \frac{3}{4}, 2, \frac{9}{4}, \text{Cos}[e+f x]^2, \frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right] +\right.$$

$$\left.\left.\left. 3 (a^2-b^2)\, \text{AppellF1}\left[\frac{5}{4}, \frac{7}{4}, 1, \frac{9}{4}, \text{Cos}[e+f x]^2, \frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]\right) \text{Cos}[e+f x]^2\right) \left(a^2+b^2 \left(-1+\text{Cos}[e+f x]^2\right)\right)\right) -$$

$$\frac{1}{\sqrt{a}\,\left(-a^2+b^2\right)^{3/4}}\left(\frac{1}{8}-\frac{i}{8}\right) b \left(2\,\text{ArcTan}\left[1-\frac{(1+i)\sqrt{a}\,\sqrt{\text{Cos}[e+f x]}}{\left(-a^2+b^2\right)^{1/4}\left(-1+\text{Cos}[e+f x]^2\right)^{1/4}}\right]-2\,\text{ArcTan}\left[1+\frac{(1+i)\sqrt{a}\,\sqrt{\text{Cos}[e+f x]}}{\left(-a^2+b^2\right)^{1/4}\left(-1+\text{Cos}[e+f x]^2\right)^{1/4}}\right]+\right.$$

$$\text{Log}\left[\sqrt{-a^2+b^2}+\frac{i\,a\,\text{Cos}[e+f x]}{\sqrt{-1+\text{Cos}[e+f x]^2}}-\frac{(1+i)\sqrt{a}\left(-a^2+b^2\right)^{1/4}\sqrt{\text{Cos}[e+f x]}}{\left(-1+\text{Cos}[e+f x]^2\right)^{1/4}}\right]-$$

$$\left.\left.\text{Log}\left[\sqrt{-a^2+b^2}+\frac{i\,a\,\text{Cos}[e+f x]}{\sqrt{-1+\text{Cos}[e+f x]^2}}+\frac{(1+i)\sqrt{a}\left(-a^2+b^2\right)^{1/4}\sqrt{\text{Cos}[e+f x]}}{\left(-1+\text{Cos}[e+f x]^2\right)^{1/4}}\right]\right)\right)\sqrt{\text{Sin}[e+f x]}+$$

$$\left(2\left(2\,a^3 b-14\,a\,b^3\right)\sqrt{\text{Sin}[e+f x]}\left(b\,\text{Tan}[e+f x]+a\sqrt{1+\text{Tan}[e+f x]^2}\right)\left(\frac{1}{4\sqrt{2}\left(a^2-b^2\right)^{3/4}}\right.\right.$$

$$\sqrt{a}\left(-2\,\text{ArcTan}\left[1-\frac{\sqrt{2}\left(a^2-b^2\right)^{1/4}\sqrt{\text{Tan}[e+f x]}}{\sqrt{a}}\right]+2\,\text{ArcTan}\left[1+\frac{\sqrt{2}\left(a^2-b^2\right)^{1/4}\sqrt{\text{Tan}[e+f x]}}{\sqrt{a}}\right]+\text{Log}\left[-a+\sqrt{2}\sqrt{a}\left(a^2-b^2\right)^{1/4}\right.\right.$$

$$\left.\left.\sqrt{\text{Tan}[e+f x]}-\sqrt{a^2-b^2}\,\text{Tan}[e+f x]\right]-\text{Log}\left[a+\sqrt{2}\sqrt{a}\left(a^2-b^2\right)^{1/4}\sqrt{\text{Tan}[e+f x]}+\sqrt{a^2-b^2}\,\text{Tan}[e+f x]\right]\right)+$$

$$\left(9\,a^2 b\,\text{AppellF1}\left[\frac{5}{4},\frac{1}{2},1,\frac{9}{4},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]\text{Tan}[e+f x]^{5/2}\right)\Big/\left(5\sqrt{1+\text{Tan}[e+f x]^2}\right.$$

$$\left(-9\,a^2\,\text{AppellF1}\left[\frac{5}{4},\frac{1}{2},1,\frac{9}{4},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+2\left(2\left(a^2-b^2\right)\text{AppellF1}\left[\frac{9}{4},\frac{1}{2},2,\frac{13}{4},-\text{Tan}[e+f x]^2,\right.\right.\right.$$

$$\left.\left.\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+a^2\,\text{AppellF1}\left[\frac{9}{4},\frac{3}{2},1,\frac{13}{4},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]\right)\text{Tan}[e+f x]^2\Big)$$

$$\left.\left.\left.\left(-b^2\,\text{Tan}[e+f x]^2+a^2\left(1+\text{Tan}[e+f x]^2\right)\right)\right)\right)\right)\Big/\left(\text{Cos}[e+f x]^{5/2}\,(a+b\,\text{Sin}[e+f x])\sqrt{\text{Tan}[e+f x]}\left(1+\text{Tan}[e+f x]^2\right)^{3/2}\right)$$

- **Problem 1423: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int \frac{(g\,\text{Cos}[e+f x])^{5/2}\sqrt{d\,\text{Sin}[e+f x]}}{a+b\,\text{Sin}[e+f x]}\,dx$$

Optimal (type 4, 936 leaves, 31 steps) :

$$-\frac{\sqrt{d}\, g^{5/2} \text{ArcTan}\left[1-\frac{\sqrt{2}\sqrt{d}\sqrt{g \text{Cos}[e+f x]}}{\sqrt{g}\sqrt{d \text{Sin}[e+f x]}}\right]}{4\sqrt{2}\, b f}-\frac{(a^2-b^2)\sqrt{d}\, g^{5/2} \text{ArcTan}\left[1-\frac{\sqrt{2}\sqrt{d}\sqrt{g \text{Cos}[e+f x]}}{\sqrt{g}\sqrt{d \text{Sin}[e+f x]}}\right]}{\sqrt{2}\, b^3 f}+$$

$$\frac{\sqrt{d}\, g^{5/2} \text{ArcTan}\left[1+\frac{\sqrt{2}\sqrt{d}\sqrt{g \text{Cos}[e+f x]}}{\sqrt{g}\sqrt{d \text{Sin}[e+f x]}}\right]}{4\sqrt{2}\, b f}+\frac{(a^2-b^2)\sqrt{d}\, g^{5/2} \text{ArcTan}\left[1+\frac{\sqrt{2}\sqrt{d}\sqrt{g \text{Cos}[e+f x]}}{\sqrt{g}\sqrt{d \text{Sin}[e+f x]}}\right]}{\sqrt{2}\, b^3 f}+$$

$$\frac{\sqrt{d}\, g^{5/2} \text{Log}\left[\sqrt{g}+\sqrt{g}\, \text{Cot}[e+f x]-\frac{\sqrt{2}\sqrt{d}\sqrt{g \text{Cos}[e+f x]}}{\sqrt{d \text{Sin}[e+f x]}}\right]}{8\sqrt{2}\, b f}+\frac{(a^2-b^2)\sqrt{d}\, g^{5/2} \text{Log}\left[\sqrt{g}+\sqrt{g}\, \text{Cot}[e+f x]-\frac{\sqrt{2}\sqrt{d}\sqrt{g \text{Cos}[e+f x]}}{\sqrt{d \text{Sin}[e+f x]}}\right]}{2\sqrt{2}\, b^3 f}-$$

$$\frac{\sqrt{d}\, g^{5/2} \text{Log}\left[\sqrt{g}+\sqrt{g}\, \text{Cot}[e+f x]+\frac{\sqrt{2}\sqrt{d}\sqrt{g \text{Cos}[e+f x]}}{\sqrt{d \text{Sin}[e+f x]}}\right]}{8\sqrt{2}\, b f}-\frac{(a^2-b^2)\sqrt{d}\, g^{5/2} \text{Log}\left[\sqrt{g}+\sqrt{g}\, \text{Cot}[e+f x]+\frac{\sqrt{2}\sqrt{d}\sqrt{g \text{Cos}[e+f x]}}{\sqrt{d \text{Sin}[e+f x]}}\right]}{2\sqrt{2}\, b^3 f}-$$

$$\frac{2\sqrt{2}\, a\sqrt{-a+b}\sqrt{a+b}\, d\, g^{5/2} \text{EllipticPi}\left[-\frac{\sqrt{-a+b}}{\sqrt{a+b}}, \text{ArcSin}\left[\frac{\sqrt{g \text{Cos}[e+f x]}}{\sqrt{g}\sqrt{1+\text{Sin}[e+f x]}}\right], -1\right]\sqrt{\text{Sin}[e+f x]}}{b^3 f\sqrt{d \text{Sin}[e+f x]}}+$$

$$\frac{2\sqrt{2}\, a\sqrt{-a+b}\sqrt{a+b}\, d\, g^{5/2} \text{EllipticPi}\left[\frac{\sqrt{-a+b}}{\sqrt{a+b}}, \text{ArcSin}\left[\frac{\sqrt{g \text{Cos}[e+f x]}}{\sqrt{g}\sqrt{1+\text{Sin}[e+f x]}}\right], -1\right]\sqrt{\text{Sin}[e+f x]}}{b^3 f\sqrt{d \text{Sin}[e+f x]}}+$$

$$\frac{g\,(g \text{Cos}[e+f x])^{3/2}\sqrt{d \text{Sin}[e+f x]}}{2 b f}+\frac{a g^2\sqrt{g \text{Cos}[e+f x]}\, \text{EllipticE}\left[e-\frac{\pi}{4}+f x, 2\right]\sqrt{d \text{Sin}[e+f x]}}{b^2 f\sqrt{\text{Sin}[2 e+2 f x]}}$$

Result (type 6, 2878 leaves) :

$$\frac{(g \text{Cos}[e+f x])^{5/2} \text{Sec}[e+f x]\sqrt{d \text{Sin}[e+f x]}}{2 b f}-$$

$$\frac{1}{4 b f \text{Cos}[e+f x]^{5/2}\sqrt{\text{Sin}[e+f x]}}(g \text{Cos}[e+f x])^{5/2}\sqrt{d \text{Sin}[e+f x]}\left(\frac{1}{(1-\text{Cos}[e+f x]^2)\left(a^2+b^2\left(-1+\text{Cos}[e+f x]^2\right)\right)(a+b \text{Sin}[e+f x])}\right.$$

$$14 b\,(a^2-b^2)\, \text{Cos}[e+f x]^{3/2}\left(a+b\sqrt{1-\text{Cos}[e+f x]^2}\right)\left(\left(b \text{AppellF1}\left[\frac{3}{4}, -\frac{1}{4}, 1, \frac{7}{4}, \text{Cos}[e+f x]^2, \frac{b^2 \text{Cos}[e+f x]^2}{-a^2+b^2}\right]\sqrt{1-\text{Cos}[e+f x]^2}\right)\right/$$

$$\left(-7\,(a^2-b^2)\, \text{AppellF1}\left[\frac{3}{4}, -\frac{1}{4}, 1, \frac{7}{4}, \text{Cos}[e+f x]^2, \frac{b^2 \text{Cos}[e+f x]^2}{-a^2+b^2}\right]+\left(4 b^2 \text{AppellF1}\left[\frac{7}{4}, -\frac{1}{4}, 2, \frac{11}{4}, \text{Cos}[e+f x]^2,\right.\right.\right.$$

$$\frac{b^2 \text{Cos}[e+f x]^2}{-a^2+b^2}\Big] + \left(a^2-b^2\right) \text{AppellF1}\Big[\frac{7}{4}, \frac{3}{4}, 1, \frac{11}{4}, \text{Cos}[e+f x]^2, \frac{b^2 \text{Cos}[e+f x]^2}{-a^2+b^2}\Big]\Big) \text{Cos}[e+f x]^2\Big) +$$

$$\Big(a \text{AppellF1}\Big[\frac{3}{4}, \frac{1}{4}, 1, \frac{7}{4}, \text{Cos}[e+f x]^2, \frac{b^2 \text{Cos}[e+f x]^2}{-a^2+b^2}\Big]\Big) \Big/ \Big(7 \left(a^2-b^2\right) \text{AppellF1}\Big[\frac{3}{4}, \frac{1}{4}, 1, \frac{7}{4}, \text{Cos}[e+f x]^2, \frac{b^2 \text{Cos}[e+f x]^2}{-a^2+b^2}\Big] +$$

$$\Big(-4 b^2 \text{AppellF1}\Big[\frac{7}{4}, \frac{1}{4}, 2, \frac{11}{4}, \text{Cos}[e+f x]^2, \frac{b^2 \text{Cos}[e+f x]^2}{-a^2+b^2}\Big] + \left(a^2-b^2\right)$$

$$\text{AppellF1}\Big[\frac{7}{4}, \frac{5}{4}, 1, \frac{11}{4}, \text{Cos}[e+f x]^2, \frac{b^2 \text{Cos}[e+f x]^2}{-a^2+b^2}\Big]\Big) \text{Cos}[e+f x]^2\Big)\Big) \text{Sin}[e+f x]^{3/2} -$$

$$\Big(2 a \sqrt{\text{Tan}[e+f x]} \left(b \text{Tan}[e+f x] + a \sqrt{1+\text{Tan}[e+f x]^2}\right) \left(\frac{1}{4 \sqrt{2} \sqrt{a} \left(a^2-b^2\right)^{1/4}} \Big(-2 \text{ArcTan}\Big[1 - \frac{\sqrt{2} \left(a^2-b^2\right)^{1/4} \sqrt{\text{Tan}[e+f x]}}{\sqrt{a}}\Big] +\right.$$

$$2 \text{ArcTan}\Big[1 + \frac{\sqrt{2} \left(a^2-b^2\right)^{1/4} \sqrt{\text{Tan}[e+f x]}}{\sqrt{a}}\Big] - \text{Log}\Big[-a + \sqrt{2} \sqrt{a} \left(a^2-b^2\right)^{1/4} \sqrt{\text{Tan}[e+f x]} - \sqrt{a^2-b^2} \text{Tan}[e+f x]\Big] +$$

$$\text{Log}\Big[a + \sqrt{2} \sqrt{a} \left(a^2-b^2\right)^{1/4} \sqrt{\text{Tan}[e+f x]} + \sqrt{a^2-b^2} \text{Tan}[e+f x]\Big]\Big) +$$

$$\Big(7 a^2 b \text{AppellF1}\Big[\frac{3}{4}, \frac{1}{2}, 1, \frac{7}{4}, -\text{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\Big] \text{Tan}[e+f x]^{3/2}\Big) \Big/$$

$$\Big(3 \sqrt{1+\text{Tan}[e+f x]^2} \Big(-7 a^2 \text{AppellF1}\Big[\frac{3}{4}, \frac{1}{2}, 1, \frac{7}{4}, -\text{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\Big] + 2$$

$$\Big(2 \left(a^2-b^2\right) \text{AppellF1}\Big[\frac{7}{4}, \frac{1}{2}, 2, \frac{11}{4}, -\text{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\Big] + a^2 \text{AppellF1}\Big[\frac{7}{4}, \frac{3}{2}, 1, \frac{11}{4},$$

$$-\text{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\Big]\Big) \text{Tan}[e+f x]^2\Big) \left(-b^2 \text{Tan}[e+f x]^2 + a^2 \left(1+\text{Tan}[e+f x]^2\right)\right)\Big)\Big)\Big) \Big/$$

$$\Big(\text{Cos}[e+f x]^{3/2} \sqrt{\text{Sin}[e+f x]} \left(a+b \text{Sin}[e+f x]\right) \left(1+\text{Tan}[e+f x]^2\right)^{3/2}\Big) + \Big(4 a \text{Cos}[2 (e+f x)] \sqrt{\text{Tan}[e+f x]}$$

$$\left(b \text{Tan}[e+f x] + a \sqrt{1+\text{Tan}[e+f x]^2}\right)$$

$$\Bigg(-\frac{a \text{ArcTan}\Big[\frac{-\sqrt{2}+2 \sqrt{\text{Tan}[e+f x]}}{\sqrt{2}}\Big]}{\sqrt{2} b^2} - \frac{a \text{ArcTan}\Big[\frac{\sqrt{2}+2 \sqrt{\text{Tan}[e+f x]}}{\sqrt{2}}\Big]}{\sqrt{2} b^2} + \frac{\left(2 a^2-b^2\right) \text{ArcTan}\Big[\frac{-\sqrt{2} \sqrt{a}+2 \left(a^2-b^2\right)^{1/4} \sqrt{\text{Tan}[e+f x]}}{\sqrt{2} \sqrt{a}}\Big]}{2 \sqrt{2} \sqrt{a} b^2 \left(a^2-b^2\right)^{1/4}} +$$

$$\frac{\left(2 a^2-b^2\right) \text{ArcTan}\left[\frac{\sqrt{2}\ \sqrt{a}+2 \left(a^2-b^2\right)^{1/4} \sqrt{\text{Tan}[e+f x]}}{\sqrt{2}\ \sqrt{a}}\right]}{2 \sqrt{2}\ \sqrt{a}\ b^2 \left(a^2-b^2\right)^{1/4}}+\frac{a \text{Log}\left[1-\sqrt{2}\ \sqrt{\text{Tan}[e+f x]}+\text{Tan}[e+f x]\right]}{2 \sqrt{2}\ b^2}-$$

$$\frac{a \text{Log}\left[1+\sqrt{2}\ \sqrt{\text{Tan}[e+f x]}+\text{Tan}[e+f x]\right]}{2 \sqrt{2}\ b^2}-\frac{\left(2 a^2-b^2\right) \text{Log}\left[-a+\sqrt{2}\ \sqrt{a}\ \left(a^2-b^2\right)^{1/4} \sqrt{\text{Tan}[e+f x]}-\sqrt{a^2-b^2}\ \text{Tan}[e+f x]\right]}{4 \sqrt{2}\ \sqrt{a}\ b^2 \left(a^2-b^2\right)^{1/4}}+$$

$$\frac{\left(2 a^2-b^2\right) \text{Log}\left[a+\sqrt{2}\ \sqrt{a}\ \left(a^2-b^2\right)^{1/4} \sqrt{\text{Tan}[e+f x]}+\sqrt{a^2-b^2}\ \text{Tan}[e+f x]\right]}{4 \sqrt{2}\ \sqrt{a}\ b^2 \left(a^2-b^2\right)^{1/4}}+\frac{\text{Tan}[e+f x]^{3/2}}{b \sqrt{1+\text{Tan}[e+f x]^2}}+$$

$$\left(7 a^4 \text{AppellF1}\left[\frac{3}{4}, \frac{1}{2}, 1, \frac{7}{4}, -\text{Tan}[e+f x]^2, \frac{\left(-a^2+b^2\right) \text{Tan}[e+f x]^2}{a^2}\right] \text{Tan}[e+f x]^{3/2}\right) \Big/$$

$$\left(b \sqrt{1+\text{Tan}[e+f x]^2}\ \left(-7 a^2 \text{AppellF1}\left[\frac{3}{4}, \frac{1}{2}, 1, \frac{7}{4}, -\text{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\right]+2\right.\right.$$

$$\left(2 \left(a^2-b^2\right) \text{AppellF1}\left[\frac{7}{4}, \frac{1}{2}, 2, \frac{11}{4}, -\text{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\right]+a^2 \text{AppellF1}\left[\frac{7}{4}, \frac{3}{2}, 1, \frac{11}{4},\right.\right.$$

$$\left.\left.\left.\left.-\text{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\right]\right) \text{Tan}[e+f x]^2\right) \left(-b^2 \text{Tan}[e+f x]^2+a^2 \left(1+\text{Tan}[e+f x]^2\right)\right)\right)-$$

$$\left(7 a^2 b \text{AppellF1}\left[\frac{3}{4}, \frac{1}{2}, 1, \frac{7}{4}, -\text{Tan}[e+f x]^2, \frac{\left(-a^2+b^2\right) \text{Tan}[e+f x]^2}{a^2}\right] \text{Tan}[e+f x]^{3/2}\right) \Big/ \left(3 \sqrt{1+\text{Tan}[e+f x]^2}\right.$$

$$\left(-7 a^2 \text{AppellF1}\left[\frac{3}{4}, \frac{1}{2}, 1, \frac{7}{4}, -\text{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\right]+2 \left(2 \left(a^2-b^2\right) \text{AppellF1}\left[\frac{7}{4}, \frac{1}{2}, 2, \frac{11}{4}, -\text{Tan}[e+f x]^2,\right.\right.\right.$$

$$\left.\left.\left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\right]+a^2 \text{AppellF1}\left[\frac{7}{4}, \frac{3}{2}, 1, \frac{11}{4}, -\text{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\right]\right) \text{Tan}[e+f x]^2\right)$$

$$\left.\left(-b^2 \text{Tan}[e+f x]^2+a^2 \left(1+\text{Tan}[e+f x]^2\right)\right)\right)+\left(11 a^4 \text{AppellF1}\left[\frac{7}{4}, \frac{1}{2}, 1, \frac{11}{4}, -\text{Tan}[e+f x]^2, \frac{\left(-a^2+b^2\right) \text{Tan}[e+f x]^2}{a^2}\right]\right.$$

$$\left.\text{Tan}[e+f x]^{7/2}\right) \Big/ \left(7 b \sqrt{1+\text{Tan}[e+f x]^2}\ \left(-11 a^2 \text{AppellF1}\left[\frac{7}{4}, \frac{1}{2}, 1, \frac{11}{4}, -\text{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\right]+2\right.\right.$$

$$\left(2 \left(a^2-b^2\right) \text{AppellF1}\left[\frac{11}{4}, \frac{1}{2}, 2, \frac{15}{4}, -\text{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\right]+a^2 \text{AppellF1}\left[\frac{11}{4}, \frac{3}{2}, 1, \frac{15}{4},\right.\right.$$

$$\left.\left.\left.\left.-\text{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\right]\right) \text{Tan}[e+f x]^2\right) \left(-b^2 \text{Tan}[e+f x]^2+a^2 \left(1+\text{Tan}[e+f x]^2\right)\right)\right)-$$

$$\left(11 a^2 b \text{AppellF1}\left[\frac{7}{4}, \frac{1}{2}, 1, \frac{11}{4}, -\text{Tan}[e+f x]^2, \frac{\left(-a^2+b^2\right) \text{Tan}[e+f x]^2}{a^2}\right] \text{Tan}[e+f x]^{7/2}\right) \Big/$$

$$\left(7\sqrt{1+\text{Tan}[e+f x]^2}\left(-11 a^2 \text{AppellF1}\left[\frac{7}{4},\frac{1}{2},1,\frac{11}{4},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+2\left(2\left(a^2-b^2\right)\text{AppellF1}\left[\frac{11}{4},\frac{1}{2},2,\frac{15}{4},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+a^2\text{AppellF1}\left[\frac{11}{4},\frac{3}{2},1,\frac{15}{4},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]\right)\text{Tan}[e+f x]^2\right)\left(-b^2\text{Tan}[e+f x]^2+a^2\left(1+\text{Tan}[e+f x]^2\right)\right)\right)\Big/$$

$$\left(\text{Cos}[e+f x]^{3/2}\sqrt{\text{Sin}[e+f x]}\,(a+b\,\text{Sin}[e+f x])\left(-1+\text{Tan}[e+f x]^2\right)\sqrt{1+\text{Tan}[e+f x]^2}\right)\Bigg)$$

- **Problem 1424: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int\frac{(g\,\text{Cos}[e+f x])^{5/2}}{\sqrt{d\,\text{Sin}[e+f x]}\,(a+b\,\text{Sin}[e+f x])}\,dx$$

Optimal (type 4, 572 leaves, 19 steps):

$$\frac{a g^{5/2}\text{ArcTan}\left[1-\frac{\sqrt{2}\sqrt{d}\sqrt{g\,\text{Cos}[e+f x]}}{\sqrt{g}\sqrt{d\,\text{Sin}[e+f x]}}\right]}{\sqrt{2}\,b^2\sqrt{d}\,f}-\frac{a g^{5/2}\text{ArcTan}\left[1+\frac{\sqrt{2}\sqrt{d}\sqrt{g\,\text{Cos}[e+f x]}}{\sqrt{g}\sqrt{d\,\text{Sin}[e+f x]}}\right]}{\sqrt{2}\,b^2\sqrt{d}\,f}-$$

$$\frac{a g^{5/2}\text{Log}\left[\sqrt{g}+\sqrt{g}\,\text{Cot}[e+f x]-\frac{\sqrt{2}\sqrt{d}\sqrt{g\,\text{Cos}[e+f x]}}{\sqrt{d\,\text{Sin}[e+f x]}}\right]}{2\sqrt{2}\,b^2\sqrt{d}\,f}+\frac{a g^{5/2}\text{Log}\left[\sqrt{g}+\sqrt{g}\,\text{Cot}[e+f x]+\frac{\sqrt{2}\sqrt{d}\sqrt{g\,\text{Cos}[e+f x]}}{\sqrt{d\,\text{Sin}[e+f x]}}\right]}{2\sqrt{2}\,b^2\sqrt{d}\,f}+$$

$$\frac{2\sqrt{2}\sqrt{-a+b}\sqrt{a+b}\,g^{5/2}\text{EllipticPi}\left[-\frac{\sqrt{-a+b}}{\sqrt{a+b}},\text{ArcSin}\left[\frac{\sqrt{g\,\text{Cos}[e+f x]}}{\sqrt{g}\sqrt{1+\text{Sin}[e+f x]}}\right],-1\right]\sqrt{\text{Sin}[e+f x]}}{b^2 f\sqrt{d\,\text{Sin}[e+f x]}}-$$

$$\frac{2\sqrt{2}\sqrt{-a+b}\sqrt{a+b}\,g^{5/2}\text{EllipticPi}\left[\frac{\sqrt{-a+b}}{\sqrt{a+b}},\text{ArcSin}\left[\frac{\sqrt{g\,\text{Cos}[e+f x]}}{\sqrt{g}\sqrt{1+\text{Sin}[e+f x]}}\right],-1\right]\sqrt{\text{Sin}[e+f x]}}{b^2 f\sqrt{d\,\text{Sin}[e+f x]}}-$$

$$\frac{g^2\sqrt{g\,\text{Cos}[e+f x]}\,\text{EllipticE}\left[e-\frac{\pi}{4}+f x,2\right]\sqrt{d\,\text{Sin}[e+f x]}}{b\,d\,f\sqrt{\text{Sin}[2e+2f x]}}$$

Result (type 6, 2299 leaves):

$$\frac{1}{2\,f\,\mathrm{Cos}[e+f\,x]^{5/2}\,\sqrt{d\,\mathrm{Sin}[e+f\,x]}}$$

$$(g\,\mathrm{Cos}[e+f\,x])^{5/2}\,\sqrt{\mathrm{Sin}[e+f\,x]}\,\left(\left(2\,\sqrt{\mathrm{Tan}[e+f\,x]}\,\left(b\,\mathrm{Tan}[e+f\,x]+a\,\sqrt{1+\mathrm{Tan}[e+f\,x]^2}\right)\,\left(\frac{1}{4\,\sqrt{2}\,\sqrt{a}\,\left(a^2-b^2\right)^{1/4}}\right.\right.\right.$$

$$\left(-2\,\mathrm{ArcTan}\left[1-\frac{\sqrt{2}\,\left(a^2-b^2\right)^{1/4}\,\sqrt{\mathrm{Tan}[e+f\,x]}}{\sqrt{a}}\right]+2\,\mathrm{ArcTan}\left[1+\frac{\sqrt{2}\,\left(a^2-b^2\right)^{1/4}\,\sqrt{\mathrm{Tan}[e+f\,x]}}{\sqrt{a}}\right]-\mathrm{Log}\left[-a+\right.\right.$$

$$\left.\left.\sqrt{2}\,\sqrt{a}\,\left(a^2-b^2\right)^{1/4}\,\sqrt{\mathrm{Tan}[e+f\,x]}-\sqrt{a^2-b^2}\,\mathrm{Tan}[e+f\,x]\right]+\mathrm{Log}\left[a+\sqrt{2}\,\sqrt{a}\,\left(a^2-b^2\right)^{1/4}\,\sqrt{\mathrm{Tan}[e+f\,x]}+\sqrt{a^2-b^2}\,\mathrm{Tan}[e+f\,x]\right]\right)+$$

$$\left(7\,a^2\,b\,\mathrm{AppellF1}\left[\frac{3}{4},\,\frac{1}{2},\,1,\,\frac{7}{4},\,-\mathrm{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\,\mathrm{Tan}[e+f\,x]^2\right]\,\mathrm{Tan}[e+f\,x]^{3/2}\right)\Big/$$

$$\left(3\,\sqrt{1+\mathrm{Tan}[e+f\,x]^2}\,\left(-7\,a^2\,\mathrm{AppellF1}\left[\frac{3}{4},\,\frac{1}{2},\,1,\,\frac{7}{4},\,-\mathrm{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\,\mathrm{Tan}[e+f\,x]^2\right]+\right.\right.$$

$$2\,\left(2\,\left(a^2-b^2\right)\,\mathrm{AppellF1}\left[\frac{7}{4},\,\frac{1}{2},\,2,\,\frac{11}{4},\,-\mathrm{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\,\mathrm{Tan}[e+f\,x]^2\right]+a^2\,\mathrm{AppellF1}\left[\frac{7}{4},\,\frac{3}{2},\,1,\,\frac{11}{4},\right.\right.$$

$$\left.\left.\left.\left.\left.\left.-\mathrm{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\,\mathrm{Tan}[e+f\,x]^2\right]\right)\,\mathrm{Tan}[e+f\,x]^2\right)\,\left(-b^2\,\mathrm{Tan}[e+f\,x]^2+a^2\,\left(1+\mathrm{Tan}[e+f\,x]^2\right)\right)\right)\right)\right)\Big/$$

$$\left(\mathrm{Cos}[e+f\,x]^{3/2}\,\sqrt{\mathrm{Sin}[e+f\,x]}\,(a+b\,\mathrm{Sin}[e+f\,x])\,\left(1+\mathrm{Tan}[e+f\,x]^2\right)^{3/2}\right)+\left(2\,\mathrm{Cos}[2\,(e+f\,x)]\,\sqrt{\mathrm{Tan}[e+f\,x]}\right.$$

$$\left(b\,\mathrm{Tan}[e+f\,x]+a\,\sqrt{1+\mathrm{Tan}[e+f\,x]^2}\right)$$

$$\left(-\frac{a\,\mathrm{ArcTan}\left[\frac{-\sqrt{2}+2\,\sqrt{\mathrm{Tan}[e+f\,x]}}{\sqrt{2}}\right]}{\sqrt{2}\,b^2}-\frac{a\,\mathrm{ArcTan}\left[\frac{\sqrt{2}+2\,\sqrt{\mathrm{Tan}[e+f\,x]}}{\sqrt{2}}\right]}{\sqrt{2}\,b^2}+\frac{\left(2\,a^2-b^2\right)\,\mathrm{ArcTan}\left[\frac{-\sqrt{2}\,\sqrt{a}+2\,\left(a^2-b^2\right)^{1/4}\,\sqrt{\mathrm{Tan}[e+f\,x]}}{\sqrt{2}\,\sqrt{a}}\right]}{2\,\sqrt{2}\,\sqrt{a}\,b^2\,\left(a^2-b^2\right)^{1/4}}+\right.$$

$$\frac{\left(2\,a^2-b^2\right)\,\mathrm{ArcTan}\left[\frac{\sqrt{2}\,\sqrt{a}+2\,\left(a^2-b^2\right)^{1/4}\,\sqrt{\mathrm{Tan}[e+f\,x]}}{\sqrt{2}\,\sqrt{a}}\right]}{2\,\sqrt{2}\,\sqrt{a}\,b^2\,\left(a^2-b^2\right)^{1/4}}+\frac{a\,\mathrm{Log}\left[1-\sqrt{2}\,\sqrt{\mathrm{Tan}[e+f\,x]}+\mathrm{Tan}[e+f\,x]\right]}{2\,\sqrt{2}\,b^2}-$$

$$\frac{a\,\mathrm{Log}\left[1+\sqrt{2}\,\sqrt{\mathrm{Tan}[e+f\,x]}+\mathrm{Tan}[e+f\,x]\right]}{2\,\sqrt{2}\,b^2}-\frac{\left(2\,a^2-b^2\right)\,\mathrm{Log}\left[-a+\sqrt{2}\,\sqrt{a}\,\left(a^2-b^2\right)^{1/4}\,\sqrt{\mathrm{Tan}[e+f\,x]}-\sqrt{a^2-b^2}\,\mathrm{Tan}[e+f\,x]\right]}{4\,\sqrt{2}\,\sqrt{a}\,b^2\,\left(a^2-b^2\right)^{1/4}}+$$

$$\frac{\left(2\,a^2-b^2\right)\,\text{Log}\left[a+\sqrt{2}\,\sqrt{a}\,\left(a^2-b^2\right)^{1/4}\,\sqrt{\text{Tan}[e+f\,x]}+\sqrt{a^2-b^2}\,\text{Tan}[e+f\,x]\right]}{4\,\sqrt{2}\,\sqrt{a}\,b^2\,\left(a^2-b^2\right)^{1/4}}+\frac{\text{Tan}[e+f\,x]^{3/2}}{b\,\sqrt{1+\text{Tan}[e+f\,x]^2}}+$$

$$\left(7\,a^4\,\text{AppellF1}\left[\frac{3}{4},\,\frac{1}{2},\,1,\,\frac{7}{4},\,-\text{Tan}[e+f\,x]^2,\,\frac{\left(-a^2+b^2\right)\,\text{Tan}[e+f\,x]^2}{a^2}\right]\,\text{Tan}[e+f\,x]^{3/2}\right)\Big/$$

$$\left(b\,\sqrt{1+\text{Tan}[e+f\,x]^2}\,\left(-7\,a^2\,\text{AppellF1}\left[\frac{3}{4},\,\frac{1}{2},\,1,\,\frac{7}{4},\,-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\,\text{Tan}[e+f\,x]^2\right]+\right.\right.$$

$$2\,\left(2\,\left(a^2-b^2\right)\,\text{AppellF1}\left[\frac{7}{4},\,\frac{1}{2},\,2,\,\frac{11}{4},\,-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\,\text{Tan}[e+f\,x]^2\right]+a^2\,\text{AppellF1}\left[\frac{7}{4},\,\frac{3}{2},\,1,\,\frac{11}{4},\right.\right.$$

$$\left.\left.\left.\left.-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\,\text{Tan}[e+f\,x]^2\right]\right)\,\text{Tan}[e+f\,x]^2\right)\,\left(-b^2\,\text{Tan}[e+f\,x]^2+a^2\,\left(1+\text{Tan}[e+f\,x]^2\right)\right)\right)-$$

$$\left(7\,a^2\,b\,\text{AppellF1}\left[\frac{3}{4},\,\frac{1}{2},\,1,\,\frac{7}{4},\,-\text{Tan}[e+f\,x]^2,\,\frac{\left(-a^2+b^2\right)\,\text{Tan}[e+f\,x]^2}{a^2}\right]\,\text{Tan}[e+f\,x]^{3/2}\right)\Big/\left(3\,\sqrt{1+\text{Tan}[e+f\,x]^2}\right.$$

$$\left(-7\,a^2\,\text{AppellF1}\left[\frac{3}{4},\,\frac{1}{2},\,1,\,\frac{7}{4},\,-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\,\text{Tan}[e+f\,x]^2\right]+2\,\left(2\,\left(a^2-b^2\right)\,\text{AppellF1}\left[\frac{7}{4},\,\frac{1}{2},\,2,\,\frac{11}{4},\,-\text{Tan}[e+f\,x]^2,\right.\right.\right.$$

$$\left.\left.\left(-1+\frac{b^2}{a^2}\right)\,\text{Tan}[e+f\,x]^2\right]+a^2\,\text{AppellF1}\left[\frac{7}{4},\,\frac{3}{2},\,1,\,\frac{11}{4},\,-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\,\text{Tan}[e+f\,x]^2\right]\right)\,\text{Tan}[e+f\,x]^2\right)$$

$$\left.\left(-b^2\,\text{Tan}[e+f\,x]^2+a^2\,\left(1+\text{Tan}[e+f\,x]^2\right)\right)\right)+\left(11\,a^4\,\text{AppellF1}\left[\frac{7}{4},\,\frac{1}{2},\,1,\,\frac{11}{4},\,-\text{Tan}[e+f\,x]^2,\,\frac{\left(-a^2+b^2\right)\,\text{Tan}[e+f\,x]^2}{a^2}\right]\right.$$

$$\left.\text{Tan}[e+f\,x]^{7/2}\right)\Big/\left(7\,b\,\sqrt{1+\text{Tan}[e+f\,x]^2}\,\left(-11\,a^2\,\text{AppellF1}\left[\frac{7}{4},\,\frac{1}{2},\,1,\,\frac{11}{4},\,-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\,\text{Tan}[e+f\,x]^2\right]+\right.\right.$$

$$2\,\left(2\,\left(a^2-b^2\right)\,\text{AppellF1}\left[\frac{11}{4},\,\frac{1}{2},\,2,\,\frac{15}{4},\,-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\,\text{Tan}[e+f\,x]^2\right]+a^2\,\text{AppellF1}\left[\frac{11}{4},\,\frac{3}{2},\,1,\,\frac{15}{4},\right.\right.$$

$$\left.\left.\left.\left.-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\,\text{Tan}[e+f\,x]^2\right]\right)\,\text{Tan}[e+f\,x]^2\right)\,\left(-b^2\,\text{Tan}[e+f\,x]^2+a^2\,\left(1+\text{Tan}[e+f\,x]^2\right)\right)\right)-$$

$$\left(11\,a^2\,b\,\text{AppellF1}\left[\frac{7}{4},\,\frac{1}{2},\,1,\,\frac{11}{4},\,-\text{Tan}[e+f\,x]^2,\,\frac{\left(-a^2+b^2\right)\,\text{Tan}[e+f\,x]^2}{a^2}\right]\,\text{Tan}[e+f\,x]^{7/2}\right)\Big/$$

$$\left(7\,\sqrt{1+\text{Tan}[e+f\,x]^2}\,\left(-11\,a^2\,\text{AppellF1}\left[\frac{7}{4},\,\frac{1}{2},\,1,\,\frac{11}{4},\,-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\,\text{Tan}[e+f\,x]^2\right]+\right.\right.$$

$$2\,\left(2\,\left(a^2-b^2\right)\,\text{AppellF1}\left[\frac{11}{4},\,\frac{1}{2},\,2,\,\frac{15}{4},\,-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\,\text{Tan}[e+f\,x]^2\right]+a^2\,\text{AppellF1}\left[\frac{11}{4},\,\frac{3}{2},\,1,\,\frac{15}{4},\right.\right.$$

$$-\text{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\Big]\Big) \text{Tan}[e+f x]^2\Big) \left(-b^2 \text{Tan}[e+f x]^2+a^2 \left(1+\text{Tan}[e+f x]^2\right)\right)\Bigg)\Bigg)\Bigg) \Big/$$

$$\left(\text{Cos}[e+f x]^{3/2} \sqrt{\text{Sin}[e+f x]} \ (a+b \,\text{Sin}[e+f x]) \left(-1+\text{Tan}[e+f x]^2\right) \sqrt{1+\text{Tan}[e+f x]^2}\right)\Bigg)$$

- **Problem 1425: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int \frac{(g \,\text{Cos}[e+f x])^{5/2}}{(d \,\text{Sin}[e+f x])^{3/2} \ (a+b \,\text{Sin}[e+f x])} \, dx$$

Optimal (type 4, 616 leaves, 20 steps):

$$-\frac{g^{5/2} \,\text{ArcTan}\left[1-\frac{\sqrt{2} \sqrt{d} \sqrt{g \,\text{Cos}[e+f x]}}{\sqrt{g} \sqrt{d \,\text{Sin}[e+f x]}}\right]}{\sqrt{2} \ b \, d^{3/2} f}+\frac{g^{5/2} \,\text{ArcTan}\left[1+\frac{\sqrt{2} \sqrt{d} \sqrt{g \,\text{Cos}[e+f x]}}{\sqrt{g} \sqrt{d \,\text{Sin}[e+f x]}}\right]}{\sqrt{2} \ b \, d^{3/2} f}+$$

$$\frac{g^{5/2} \,\text{Log}\left[\sqrt{g}+\sqrt{g} \,\text{Cot}[e+f x]-\frac{\sqrt{2} \sqrt{d} \sqrt{g \,\text{Cos}[e+f x]}}{\sqrt{d \,\text{Sin}[e+f x]}}\right]}{2 \sqrt{2} \ b \, d^{3/2} f}-\frac{g^{5/2} \,\text{Log}\left[\sqrt{g}+\sqrt{g} \,\text{Cot}[e+f x]+\frac{\sqrt{2} \sqrt{d} \sqrt{g \,\text{Cos}[e+f x]}}{\sqrt{d \,\text{Sin}[e+f x]}}\right]}{2 \sqrt{2} \ b \, d^{3/2} f}-$$

$$\frac{2 g \ (g \,\text{Cos}[e+f x])^{3/2}}{a \, d \, f \sqrt{d \,\text{Sin}[e+f x]}}-\frac{2 \sqrt{2} \sqrt{-a+b} \sqrt{a+b} \ g^{5/2} \,\text{EllipticPi}\left[-\frac{\sqrt{-a+b}}{\sqrt{a+b}}, \text{ArcSin}\left[\frac{\sqrt{g \,\text{Cos}[e+f x]}}{\sqrt{g} \sqrt{1+\text{Sin}[e+f x]}}\right], -1\right] \sqrt{\text{Sin}[e+f x]}}{a \, b \, d \, f \sqrt{d \,\text{Sin}[e+f x]}}+$$

$$\frac{2 \sqrt{2} \sqrt{-a+b} \sqrt{a+b} \ g^{5/2} \,\text{EllipticPi}\left[\frac{\sqrt{-a+b}}{\sqrt{a+b}}, \text{ArcSin}\left[\frac{\sqrt{g \,\text{Cos}[e+f x]}}{\sqrt{g} \sqrt{1+\text{Sin}[e+f x]}}\right], -1\right] \sqrt{\text{Sin}[e+f x]}}{a \, b \, d \, f \sqrt{d \,\text{Sin}[e+f x]}}-$$

$$\frac{2 g^2 \sqrt{g \,\text{Cos}[e+f x]} \ \text{EllipticE}\left[e-\frac{\pi}{4}+f x, 2\right] \sqrt{d \,\text{Sin}[e+f x]}}{a \, d^2 f \sqrt{\text{Sin}[2 e+2 f x]}}$$

Result (type 6, 2873 leaves):

$$-\frac{2 \ (g \,\text{Cos}[e+f x])^{5/2} \,\text{Tan}[e+f x]}{a f \ (d \,\text{Sin}[e+f x])^{3/2}}+$$

$$\frac{1}{a f \,\text{Cos}[e+f x]^{5/2} \ (d \,\text{Sin}[e+f x])^{3/2}} (g \,\text{Cos}[e+f x])^{5/2} \,\text{Sin}[e+f x]^{3/2} \Bigg(\frac{1}{\left(1-\text{Cos}[e+f x]^2\right) \left(a^2+b^2 \left(-1+\text{Cos}[e+f x]^2\right)\right) \ (a+b \,\text{Sin}[e+f x])}$$

$$14\,a\,(a^2-b^2)\,\text{Cos}[e+f\,x]^{3/2}\left(a+b\sqrt{1-\text{Cos}[e+f\,x]^2}\right)\left(\left(b\,\text{AppellF1}\left[\frac{3}{4},-\frac{1}{4},1,\frac{7}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]\sqrt{1-\text{Cos}[e+f\,x]^2}\right)\right/$$
$$\left(-7\,(a^2-b^2)\,\text{AppellF1}\left[\frac{3}{4},-\frac{1}{4},1,\frac{7}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]+\left(4\,b^2\,\text{AppellF1}\left[\frac{7}{4},-\frac{1}{4},2,\frac{11}{4},\text{Cos}[e+f\,x]^2,\right.\right.\right.$$
$$\left.\left.\left.\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]+(a^2-b^2)\,\text{AppellF1}\left[\frac{7}{4},\frac{3}{4},1,\frac{11}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]\right)\text{Cos}[e+f\,x]^2\right)+$$
$$\left(a\,\text{AppellF1}\left[\frac{3}{4},\frac{1}{4},1,\frac{7}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]\right)\Big/\left(7\,(a^2-b^2)\,\text{AppellF1}\left[\frac{3}{4},\frac{1}{4},1,\frac{7}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]+\right.$$
$$\left(-4\,b^2\,\text{AppellF1}\left[\frac{7}{4},\frac{1}{4},2,\frac{11}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]+(a^2-b^2)\right.$$
$$\left.\left.\left.\text{AppellF1}\left[\frac{7}{4},\frac{5}{4},1,\frac{11}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]\right)\text{Cos}[e+f\,x]^2\right)\right)\text{Sin}[e+f\,x]^{3/2}-$$
$$\left(4\,b\sqrt{\text{Tan}[e+f\,x]}\left(b\,\text{Tan}[e+f\,x]+a\sqrt{1+\text{Tan}[e+f\,x]^2}\right)\left(\frac{1}{4\sqrt{2}\sqrt{a}\,(a^2-b^2)^{1/4}}\left(-2\,\text{ArcTan}\left[1-\frac{\sqrt{2}\,(a^2-b^2)^{1/4}\sqrt{\text{Tan}[e+f\,x]}}{\sqrt{a}}\right]+\right.\right.\right.$$
$$2\,\text{ArcTan}\left[1+\frac{\sqrt{2}\,(a^2-b^2)^{1/4}\sqrt{\text{Tan}[e+f\,x]}}{\sqrt{a}}\right]-\text{Log}\left[-a+\sqrt{2}\sqrt{a}\,(a^2-b^2)^{1/4}\sqrt{\text{Tan}[e+f\,x]}-\sqrt{a^2-b^2}\,\text{Tan}[e+f\,x]\right]+$$
$$\left.\text{Log}\left[a+\sqrt{2}\sqrt{a}\,(a^2-b^2)^{1/4}\sqrt{\text{Tan}[e+f\,x]}+\sqrt{a^2-b^2}\,\text{Tan}[e+f\,x]\right]\right)+$$
$$\left(7\,a^2\,b\,\text{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},-\text{Tan}[e+f\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\right]\text{Tan}[e+f\,x]^{3/2}\right)\Big/$$
$$\left(3\sqrt{1+\text{Tan}[e+f\,x]^2}\left(-7\,a^2\,\text{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},-\text{Tan}[e+f\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\right]+2\right.\right.$$
$$\left(2\,(a^2-b^2)\,\text{AppellF1}\left[\frac{7}{4},\frac{1}{2},2,\frac{11}{4},-\text{Tan}[e+f\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\right]+a^2\,\text{AppellF1}\left[\frac{7}{4},\frac{3}{2},1,\frac{11}{4},\right.\right.$$
$$\left.\left.\left.\left.\left.-\text{Tan}[e+f\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\right]\right)\text{Tan}[e+f\,x]^2\right)\left(-b^2\,\text{Tan}[e+f\,x]^2+a^2\,(1+\text{Tan}[e+f\,x]^2)\right)\right)\right)\right)\Big/$$
$$\left(\text{Cos}[e+f\,x]^{3/2}\sqrt{\text{Sin}[e+f\,x]}\,(a+b\,\text{Sin}[e+f\,x])\,(1+\text{Tan}[e+f\,x]^2)^{3/2}\right)+\left(2\,b\,\text{Cos}[2\,(e+f\,x)]\sqrt{\text{Tan}[e+f\,x]}\right.$$
$$\left(b\,\text{Tan}[e+f\,x]+a\sqrt{1+\text{Tan}[e+f\,x]^2}\right)$$

$$\left(-\frac{a\,\text{ArcTan}\left[\frac{-\sqrt{2}+2\sqrt{\text{Tan}[e+f x]}}{\sqrt{2}}\right]}{\sqrt{2}\,b^2}-\frac{a\,\text{ArcTan}\left[\frac{\sqrt{2}+2\sqrt{\text{Tan}[e+f x]}}{\sqrt{2}}\right]}{\sqrt{2}\,b^2}+\frac{\left(2a^2-b^2\right)\text{ArcTan}\left[\frac{-\sqrt{2}\sqrt{a}+2\left(a^2-b^2\right)^{1/4}\sqrt{\text{Tan}[e+f x]}}{\sqrt{2}\sqrt{a}}\right]}{2\sqrt{2}\sqrt{a}\,b^2\left(a^2-b^2\right)^{1/4}}+\right.$$

$$\frac{\left(2a^2-b^2\right)\text{ArcTan}\left[\frac{\sqrt{2}\sqrt{a}+2\left(a^2-b^2\right)^{1/4}\sqrt{\text{Tan}[e+f x]}}{\sqrt{2}\sqrt{a}}\right]}{2\sqrt{2}\sqrt{a}\,b^2\left(a^2-b^2\right)^{1/4}}+\frac{a\,\text{Log}\left[1-\sqrt{2}\sqrt{\text{Tan}[e+f x]}+\text{Tan}[e+f x]\right]}{2\sqrt{2}\,b^2}-$$

$$\frac{a\,\text{Log}\left[1+\sqrt{2}\sqrt{\text{Tan}[e+f x]}+\text{Tan}[e+f x]\right]}{2\sqrt{2}\,b^2}-\frac{\left(2a^2-b^2\right)\text{Log}\left[-a+\sqrt{2}\sqrt{a}\left(a^2-b^2\right)^{1/4}\sqrt{\text{Tan}[e+f x]}-\sqrt{a^2-b^2}\,\text{Tan}[e+f x]\right]}{4\sqrt{2}\sqrt{a}\,b^2\left(a^2-b^2\right)^{1/4}}+$$

$$\frac{\left(2a^2-b^2\right)\text{Log}\left[a+\sqrt{2}\sqrt{a}\left(a^2-b^2\right)^{1/4}\sqrt{\text{Tan}[e+f x]}+\sqrt{a^2-b^2}\,\text{Tan}[e+f x]\right]}{4\sqrt{2}\sqrt{a}\,b^2\left(a^2-b^2\right)^{1/4}}+\frac{\text{Tan}[e+f x]^{3/2}}{b\sqrt{1+\text{Tan}[e+f x]^2}}+$$

$$\left(7a^4\,\text{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},-\text{Tan}[e+f x]^2,\frac{\left(-a^2+b^2\right)\text{Tan}[e+f x]^2}{a^2}\right]\text{Tan}[e+f x]^{3/2}\right)\Big/$$

$$\left(b\sqrt{1+\text{Tan}[e+f x]^2}\left(-7a^2\,\text{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+2\right.\right.$$

$$\left(2\left(a^2-b^2\right)\text{AppellF1}\left[\frac{7}{4},\frac{1}{2},2,\frac{11}{4},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+a^2\,\text{AppellF1}\left[\frac{7}{4},\frac{3}{2},1,\frac{11}{4},\right.\right.$$

$$\left.\left.\left.-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]\right)\text{Tan}[e+f x]^2\right)\left(-b^2\,\text{Tan}[e+f x]^2+a^2\left(1+\text{Tan}[e+f x]^2\right)\right)\Big)-$$

$$\left(7a^2\,b\,\text{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},-\text{Tan}[e+f x]^2,\frac{\left(-a^2+b^2\right)\text{Tan}[e+f x]^2}{a^2}\right]\text{Tan}[e+f x]^{3/2}\right)\Big/\left(3\sqrt{1+\text{Tan}[e+f x]^2}\right.$$

$$\left(-7a^2\,\text{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+2\left(2\left(a^2-b^2\right)\text{AppellF1}\left[\frac{7}{4},\frac{1}{2},2,\frac{11}{4},-\text{Tan}[e+f x]^2,\right.\right.\right.$$

$$\left.\left.\left.\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+a^2\,\text{AppellF1}\left[\frac{7}{4},\frac{3}{2},1,\frac{11}{4},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]\right)\text{Tan}[e+f x]^2\right)$$

$$\left.\left(-b^2\,\text{Tan}[e+f x]^2+a^2\left(1+\text{Tan}[e+f x]^2\right)\right)\right)+\left(11a^4\,\text{AppellF1}\left[\frac{7}{4},\frac{1}{2},1,\frac{11}{4},-\text{Tan}[e+f x]^2,\frac{\left(-a^2+b^2\right)\text{Tan}[e+f x]^2}{a^2}\right]\right.$$

$$\left.\text{Tan}[e+f x]^{7/2}\right)\Big/\left(7b\sqrt{1+\text{Tan}[e+f x]^2}\left(-11a^2\,\text{AppellF1}\left[\frac{7}{4},\frac{1}{2},1,\frac{11}{4},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+2\right.\right.$$

$$\left(2\left(a^2-b^2\right)\text{AppellF1}\left[\frac{11}{4},\frac{1}{2},2,\frac{15}{4},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+a^2\,\text{AppellF1}\left[\frac{11}{4},\frac{3}{2},1,\frac{15}{4},\right.\right.$$

$$-\text{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\Big]\Big) \text{Tan}[e+f x]^2\Big) \left(-b^2 \text{Tan}[e+f x]^2 + a^2 \left(1+\text{Tan}[e+f x]^2\right)\right)\Big) -$$

$$\left(11 a^2 b \,\text{AppellF1}\left[\frac{7}{4}, \frac{1}{2}, 1, \frac{11}{4}, -\text{Tan}[e+f x]^2, \frac{\left(-a^2+b^2\right) \text{Tan}[e+f x]^2}{a^2}\right] \text{Tan}[e+f x]^{7/2}\right) \Big/$$

$$\left(7 \sqrt{1+\text{Tan}[e+f x]^2} \left(-11 a^2 \,\text{AppellF1}\left[\frac{7}{4}, \frac{1}{2}, 1, \frac{11}{4}, -\text{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\right] + 2\right.\right.$$

$$\left(2 \left(a^2-b^2\right) \text{AppellF1}\left[\frac{11}{4}, \frac{1}{2}, 2, \frac{15}{4}, -\text{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\right] + a^2 \,\text{AppellF1}\left[\frac{11}{4}, \frac{3}{2}, 1, \frac{15}{4},\right.\right.$$

$$\left.\left.\left.-\text{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\right]\right) \text{Tan}[e+f x]^2\right) \left(-b^2 \text{Tan}[e+f x]^2 + a^2 \left(1+\text{Tan}[e+f x]^2\right)\right)\Big)\Big)\Big/$$

$$\left(\text{Cos}[e+f x]^{3/2} \sqrt{\text{Sin}[e+f x]} \,(a+b \,\text{Sin}[e+f x]) \left(-1+\text{Tan}[e+f x]^2\right) \sqrt{1+\text{Tan}[e+f x]^2}\right)\Bigg)$$

- **Problem 1426: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int \frac{(g \,\text{Cos}[e+f x])^{5/2}}{(d \,\text{Sin}[e+f x])^{5/2} \,(a+b \,\text{Sin}[e+f x])} \, dx$$

Optimal (type 4, 359 leaves, 10 steps):

$$-\frac{2 g \,(g \,\text{Cos}[e+f x])^{3/2}}{3 a d f \,(d \,\text{Sin}[e+f x])^{3/2}} + \frac{2 b g \,(g \,\text{Cos}[e+f x])^{3/2}}{a^2 d^2 f \sqrt{d \,\text{Sin}[e+f x]}} +$$

$$\frac{2 \sqrt{2} \sqrt{-a+b} \sqrt{a+b} \,g^{5/2} \,\text{EllipticPi}\left[-\frac{\sqrt{-a+b}}{\sqrt{a+b}}, \text{ArcSin}\left[\frac{\sqrt{g \,\text{Cos}[e+f x]}}{\sqrt{g} \sqrt{1+\text{Sin}[e+f x]}}\right], -1\right] \sqrt{\text{Sin}[e+f x]}}{a^2 d^2 f \sqrt{d \,\text{Sin}[e+f x]}} -$$

$$\frac{2 \sqrt{2} \sqrt{-a+b} \sqrt{a+b} \,g^{5/2} \,\text{EllipticPi}\left[\frac{\sqrt{-a+b}}{\sqrt{a+b}}, \text{ArcSin}\left[\frac{\sqrt{g \,\text{Cos}[e+f x]}}{\sqrt{g} \sqrt{1+\text{Sin}[e+f x]}}\right], -1\right] \sqrt{\text{Sin}[e+f x]}}{a^2 d^2 f \sqrt{d \,\text{Sin}[e+f x]}} +$$

$$\frac{2 b g^2 \sqrt{g \,\text{Cos}[e+f x]} \,\text{EllipticE}\left[e-\frac{\pi}{4}+f x, 2\right] \sqrt{d \,\text{Sin}[e+f x]}}{a^2 d^3 f \sqrt{\text{Sin}[2 e+2 f x]}}$$

Result (type 6, 2923 leaves):

$$\frac{(g\,\text{Cos}[e+f\,x])^{5/2}\left(\frac{2\,b\,\text{Cot}[e+f\,x]}{a^2}-\frac{2\,\text{Cot}[e+f\,x]\,\text{Csc}[e+f\,x]}{3\,a}\right)\text{Sin}[e+f\,x]\,\text{Tan}[e+f\,x]^2}{f\,(d\,\text{Sin}[e+f\,x])^{5/2}}-$$

$$\frac{1}{a^2\,f\,\text{Cos}[e+f\,x]^{5/2}\,(d\,\text{Sin}[e+f\,x])^{5/2}}(g\,\text{Cos}[e+f\,x])^{5/2}\,\text{Sin}[e+f\,x]^{5/2}$$

$$\Bigg(\Bigg(28\,a\,b\,(a^2-b^2)\,\text{Cos}[e+f\,x]^{3/2}\left(a+b\sqrt{1-\text{Cos}[e+f\,x]^2}\right)\Bigg(\Bigg(\left(b\,\text{AppellF1}\left[\frac{3}{4},-\frac{1}{4},1,\frac{7}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]\sqrt{1-\text{Cos}[e+f\,x]^2}\right)\Big/$$

$$\left(-7\,(a^2-b^2)\,\text{AppellF1}\left[\frac{3}{4},-\frac{1}{4},1,\frac{7}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]+\left(4\,b^2\,\text{AppellF1}\left[\frac{7}{4},-\frac{1}{4},2,\frac{11}{4},\text{Cos}[e+f\,x]^2,\right.\right.\right.$$

$$\left.\left.\left.\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]+(a^2-b^2)\,\text{AppellF1}\left[\frac{7}{4},\frac{3}{4},1,\frac{11}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]\right)\text{Cos}[e+f\,x]^2\right)+$$

$$\left(a\,\text{AppellF1}\left[\frac{3}{4},\frac{1}{4},1,\frac{7}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]\right)\Big/\left(7\,(a^2-b^2)\,\text{AppellF1}\left[\frac{3}{4},\frac{1}{4},1,\frac{7}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]+\right.$$

$$\left(-4\,b^2\,\text{AppellF1}\left[\frac{7}{4},\frac{1}{4},2,\frac{11}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]+\right.$$

$$\left.\left.\left.(a^2-b^2)\,\text{AppellF1}\left[\frac{7}{4},\frac{5}{4},1,\frac{11}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]\right)\text{Cos}[e+f\,x]^2\right)\right)\text{Sin}[e+f\,x]^{3/2}\Bigg)\Big/$$

$$\left(3\,(1-\text{Cos}[e+f\,x]^2)\,(a^2+b^2\,(-1+\text{Cos}[e+f\,x]^2))\,(a+b\,\text{Sin}[e+f\,x])\right)+\Bigg(2\,(a^2-2\,b^2)\sqrt{\text{Tan}[e+f\,x]}\left(b\,\text{Tan}[e+f\,x]+a\sqrt{1+\text{Tan}[e+f\,x]^2}\right)$$

$$\Bigg(\frac{1}{4\sqrt{2}\sqrt{a}\,(a^2-b^2)^{1/4}}\Bigg(-2\,\text{ArcTan}\left[1-\frac{\sqrt{2}\,(a^2-b^2)^{1/4}\sqrt{\text{Tan}[e+f\,x]}}{\sqrt{a}}\right]+2\,\text{ArcTan}\left[1+\frac{\sqrt{2}\,(a^2-b^2)^{1/4}\sqrt{\text{Tan}[e+f\,x]}}{\sqrt{a}}\right]-$$

$$\text{Log}\left[-a+\sqrt{2}\sqrt{a}\,(a^2-b^2)^{1/4}\sqrt{\text{Tan}[e+f\,x]}-\sqrt{a^2-b^2}\,\text{Tan}[e+f\,x]\right]+\text{Log}\left[a+\sqrt{2}\sqrt{a}\,(a^2-b^2)^{1/4}\sqrt{\text{Tan}[e+f\,x]}+\right.$$

$$\left.\left.\sqrt{a^2-b^2}\,\text{Tan}[e+f\,x]\right]\Bigg)+\left(7\,a^2\,b\,\text{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},-\text{Tan}[e+f\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\right]\text{Tan}[e+f\,x]^{3/2}\right)\Big/$$

$$\left(3\sqrt{1+\text{Tan}[e+f\,x]^2}\left(-7\,a^2\,\text{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},-\text{Tan}[e+f\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\right]+2\right.\right.$$

$$\left(2\,(a^2-b^2)\,\text{AppellF1}\left[\frac{7}{4},\frac{1}{2},2,\frac{11}{4},-\text{Tan}[e+f\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\right]+a^2\,\text{AppellF1}\left[\frac{7}{4},\frac{3}{2},1,\frac{11}{4},\right.\right.$$

$$\left.\left.\left.\left.-\text{Tan}[e+f\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\right]\right)\text{Tan}[e+f\,x]^2\right)\left(-b^2\,\text{Tan}[e+f\,x]^2+a^2\,(1+\text{Tan}[e+f\,x]^2)\right)\right)\Bigg)\Bigg)\Big/$$

$$\left(\text{Cos}[e+f x]^{3/2}\sqrt{\text{Sin}[e+f x]}\;(a+b\,\text{Sin}[e+f x])\left(1+\text{Tan}[e+f x]^2\right)^{3/2}\right)+\Bigg(2\,b^2\,\text{Cos}[2\,(e+f x)]\,\sqrt{\text{Tan}[e+f x]}$$

$$\left(b\,\text{Tan}[e+f x]+a\sqrt{1+\text{Tan}[e+f x]^2}\right)$$

$$\left(-\frac{a\,\text{ArcTan}\left[\frac{-\sqrt{2}+2\sqrt{\text{Tan}[e+f x]}}{\sqrt{2}}\right]}{\sqrt{2}\,b^2}-\frac{a\,\text{ArcTan}\left[\frac{\sqrt{2}+2\sqrt{\text{Tan}[e+f x]}}{\sqrt{2}}\right]}{\sqrt{2}\,b^2}+\frac{\left(2\,a^2-b^2\right)\text{ArcTan}\left[\frac{-\sqrt{2}\,\sqrt{a}+2\left(a^2-b^2\right)^{1/4}\sqrt{\text{Tan}[e+f x]}}{\sqrt{2}\,\sqrt{a}}\right]}{2\sqrt{2}\,\sqrt{a}\,b^2\left(a^2-b^2\right)^{1/4}}+\right.$$

$$\frac{\left(2\,a^2-b^2\right)\text{ArcTan}\left[\frac{\sqrt{2}\,\sqrt{a}+2\left(a^2-b^2\right)^{1/4}\sqrt{\text{Tan}[e+f x]}}{\sqrt{2}\,\sqrt{a}}\right]}{2\sqrt{2}\,\sqrt{a}\,b^2\left(a^2-b^2\right)^{1/4}}+\frac{a\,\text{Log}\left[1-\sqrt{2}\,\sqrt{\text{Tan}[e+f x]}+\text{Tan}[e+f x]\right]}{2\sqrt{2}\,b^2}-$$

$$\frac{a\,\text{Log}\left[1+\sqrt{2}\,\sqrt{\text{Tan}[e+f x]}+\text{Tan}[e+f x]\right]}{2\sqrt{2}\,b^2}-\frac{\left(2\,a^2-b^2\right)\text{Log}\left[-a+\sqrt{2}\,\sqrt{a}\,\left(a^2-b^2\right)^{1/4}\sqrt{\text{Tan}[e+f x]}-\sqrt{a^2-b^2}\,\text{Tan}[e+f x]\right]}{4\sqrt{2}\,\sqrt{a}\,b^2\left(a^2-b^2\right)^{1/4}}+$$

$$\frac{\left(2\,a^2-b^2\right)\text{Log}\left[a+\sqrt{2}\,\sqrt{a}\,\left(a^2-b^2\right)^{1/4}\sqrt{\text{Tan}[e+f x]}+\sqrt{a^2-b^2}\,\text{Tan}[e+f x]\right]}{4\sqrt{2}\,\sqrt{a}\,b^2\left(a^2-b^2\right)^{1/4}}+\frac{\text{Tan}[e+f x]^{3/2}}{b\sqrt{1+\text{Tan}[e+f x]^2}}+$$

$$\left(7\,a^4\,\text{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},-\text{Tan}[e+f x]^2,\frac{\left(-a^2+b^2\right)\text{Tan}[e+f x]^2}{a^2}\right]\text{Tan}[e+f x]^{3/2}\right)\Big/$$

$$\left(b\sqrt{1+\text{Tan}[e+f x]^2}\;\left(-7\,a^2\,\text{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+2\right.\right.$$

$$\left(2\left(a^2-b^2\right)\text{AppellF1}\left[\frac{7}{4},\frac{1}{2},2,\frac{11}{4},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+a^2\,\text{AppellF1}\left[\frac{7}{4},\frac{3}{2},1,\frac{11}{4},\right.\right.$$

$$\left.\left.\left.-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]\right)\text{Tan}[e+f x]^2\right)\left(-b^2\,\text{Tan}[e+f x]^2+a^2\left(1+\text{Tan}[e+f x]^2\right)\right)\Big)-$$

$$\left(7\,a^2\,b\,\text{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},-\text{Tan}[e+f x]^2,\frac{\left(-a^2+b^2\right)\text{Tan}[e+f x]^2}{a^2}\right]\text{Tan}[e+f x]^{3/2}\right)\Big/\left(3\sqrt{1+\text{Tan}[e+f x]^2}\right.$$

$$\left(-7\,a^2\,\text{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+2\left(2\left(a^2-b^2\right)\text{AppellF1}\left[\frac{7}{4},\frac{1}{2},2,\frac{11}{4},-\text{Tan}[e+f x]^2,\right.\right.\right.$$

$$\left.\left.\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+a^2\,\text{AppellF1}\left[\frac{7}{4},\frac{3}{2},1,\frac{11}{4},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]\right)\text{Tan}[e+f x]^2\Big)$$

$$\left(-b^2\,\text{Tan}[e+f\,x]^2+a^2\,\left(1+\text{Tan}[e+f\,x]^2\right)\right)\Big)+\Bigg(11\,a^4\,\text{AppellF1}\Big[\frac{7}{4},\,\frac{1}{2},\,1,\,\frac{11}{4},\,-\text{Tan}[e+f\,x]^2,\,\frac{\left(-a^2+b^2\right)\,\text{Tan}[e+f\,x]^2}{a^2}\Big]$$

$$\text{Tan}[e+f\,x]^{7/2}\Bigg)\Big/\Bigg(7\,b\,\sqrt{1+\text{Tan}[e+f\,x]^2}\,\Bigg(-11\,a^2\,\text{AppellF1}\Big[\frac{7}{4},\,\frac{1}{2},\,1,\,\frac{11}{4},\,-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\,\text{Tan}[e+f\,x]^2\Big]+2$$

$$\Bigg(2\,\left(a^2-b^2\right)\,\text{AppellF1}\Big[\frac{11}{4},\,\frac{1}{2},\,2,\,\frac{15}{4},\,-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\,\text{Tan}[e+f\,x]^2\Big]+a^2\,\text{AppellF1}\Big[\frac{11}{4},\,\frac{3}{2},\,1,\,\frac{15}{4},$$

$$-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\,\text{Tan}[e+f\,x]^2\Big]\Bigg)\,\text{Tan}[e+f\,x]^2\Bigg)\,\left(-b^2\,\text{Tan}[e+f\,x]^2+a^2\,\left(1+\text{Tan}[e+f\,x]^2\right)\right)\Bigg)-$$

$$\Bigg(11\,a^2\,b\,\text{AppellF1}\Big[\frac{7}{4},\,\frac{1}{2},\,1,\,\frac{11}{4},\,-\text{Tan}[e+f\,x]^2,\,\frac{\left(-a^2+b^2\right)\,\text{Tan}[e+f\,x]^2}{a^2}\Big]\,\text{Tan}[e+f\,x]^{7/2}\Bigg)\Big/$$

$$\Bigg(7\,\sqrt{1+\text{Tan}[e+f\,x]^2}\,\Bigg(-11\,a^2\,\text{AppellF1}\Big[\frac{7}{4},\,\frac{1}{2},\,1,\,\frac{11}{4},\,-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\,\text{Tan}[e+f\,x]^2\Big]+2$$

$$\Bigg(2\,\left(a^2-b^2\right)\,\text{AppellF1}\Big[\frac{11}{4},\,\frac{1}{2},\,2,\,\frac{15}{4},\,-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\,\text{Tan}[e+f\,x]^2\Big]+a^2\,\text{AppellF1}\Big[\frac{11}{4},\,\frac{3}{2},\,1,\,\frac{15}{4},$$

$$-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\,\text{Tan}[e+f\,x]^2\Big]\Bigg)\,\text{Tan}[e+f\,x]^2\Bigg)\,\left(-b^2\,\text{Tan}[e+f\,x]^2+a^2\,\left(1+\text{Tan}[e+f\,x]^2\right)\right)\Bigg)\Bigg)\Bigg)\Big/$$

$$\left(\text{Cos}[e+f\,x]^{3/2}\,\sqrt{\text{Sin}[e+f\,x]}\,\left(a+b\,\text{Sin}[e+f\,x]\right)\,\left(-1+\text{Tan}[e+f\,x]^2\right)\,\sqrt{1+\text{Tan}[e+f\,x]^2}\right)\Bigg)$$

- **Problem 1427: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int\frac{\left(g\,\text{Cos}[e+f\,x]\right)^{5/2}}{\left(d\,\text{Sin}[e+f\,x]\right)^{7/2}\,\left(a+b\,\text{Sin}[e+f\,x]\right)}\,dx$$

Optimal (type 4, 519 leaves, 15 steps):

$$-\frac{2 g (g \cos[e+f x])^{3/2}}{5 a d f (d \sin[e+f x])^{5/2}}+\frac{2 b g (g \cos[e+f x])^{3/2}}{3 a^2 d^2 f (d \sin[e+f x])^{3/2}}-\frac{4 g (g \cos[e+f x])^{3/2}}{5 a d^3 f \sqrt{d \sin[e+f x]}}+\frac{2 (a^2-b^2) g (g \cos[e+f x])^{3/2}}{a^3 d^3 f \sqrt{d \sin[e+f x]}}-$$

$$\frac{2 \sqrt{2} b \sqrt{-a+b} \sqrt{a+b} g^{5/2} \text{EllipticPi}\left[-\frac{\sqrt{-a+b}}{\sqrt{a+b}}, \text{ArcSin}\left[\frac{\sqrt{g \cos[e+f x]}}{\sqrt{g} \sqrt{1+\sin[e+f x]}}\right], -1\right] \sqrt{\sin[e+f x]}}{a^3 d^3 f \sqrt{d \sin[e+f x]}}+$$

$$\frac{2 \sqrt{2} b \sqrt{-a+b} \sqrt{a+b} g^{5/2} \text{EllipticPi}\left[\frac{\sqrt{-a+b}}{\sqrt{a+b}}, \text{ArcSin}\left[\frac{\sqrt{g \cos[e+f x]}}{\sqrt{g} \sqrt{1+\sin[e+f x]}}\right], -1\right] \sqrt{\sin[e+f x]}}{a^3 d^3 f \sqrt{d \sin[e+f x]}}-$$

$$\frac{4 g^2 \sqrt{g \cos[e+f x]} \text{EllipticE}\left[e-\frac{\pi}{4}+f x, 2\right] \sqrt{d \sin[e+f x]}}{5 a d^4 f \sqrt{\sin[2 e+2 f x]}}+\frac{2 (a^2-b^2) g^2 \sqrt{g \cos[e+f x]} \text{EllipticE}\left[e-\frac{\pi}{4}+f x, 2\right] \sqrt{d \sin[e+f x]}}{a^3 d^4 f \sqrt{\sin[2 e+2 f x]}}$$

Result (type 6, 2995 leaves) :

$$\frac{1}{f (d \sin[e+f x])^{7/2}}$$

$$(g \cos[e+f x])^{5/2} \left(\frac{2 (3 a^2 \cos[e+f x]-5 b^2 \cos[e+f x]) \csc[e+f x]}{5 a^3}+\frac{2 b \cot[e+f x] \csc[e+f x]}{3 a^2}-\frac{2 \cot[e+f x] \csc[e+f x]^2}{5 a}\right)$$

$$\sin[e+f x]^2 \tan[e+f x]^2+\frac{1}{5 a^3 f \cos[e+f x]^{5/2} (d \sin[e+f x])^{7/2}}$$

$$(g \cos[e+f x])^{5/2} \sin[e+f x]^{7/2} \Bigg(-\Bigg(\Bigg(14 (a^2-b^2) (6 a^3-10 a b^2) \cos[e+f x]^{3/2} \left(a+b \sqrt{1-\cos[e+f x]^2}\right)$$

$$\Bigg(\Bigg(b \text{AppellF1}\left[\frac{3}{4}, -\frac{1}{4}, 1, \frac{7}{4}, \cos[e+f x]^2, \frac{b^2 \cos[e+f x]^2}{-a^2+b^2}\right] \sqrt{1-\cos[e+f x]^2}\Bigg) \Bigg/ \Bigg(-7 (a^2-b^2) \text{AppellF1}\left[\frac{3}{4}, -\frac{1}{4}, 1, \frac{7}{4},\right.$$

$$\left.\cos[e+f x]^2, \frac{b^2 \cos[e+f x]^2}{-a^2+b^2}\right]+\Bigg(4 b^2 \text{AppellF1}\left[\frac{7}{4}, -\frac{1}{4}, 2, \frac{11}{4}, \cos[e+f x]^2, \frac{b^2 \cos[e+f x]^2}{-a^2+b^2}\right]+(a^2-b^2) \text{AppellF1}\left[\frac{7}{4}, \frac{3}{4},\right.$$

$$\left.1, \frac{11}{4}, \cos[e+f x]^2, \frac{b^2 \cos[e+f x]^2}{-a^2+b^2}\right]\Bigg) \cos[e+f x]^2\Bigg)+\Bigg(a \text{AppellF1}\left[\frac{3}{4}, \frac{1}{4}, 1, \frac{7}{4}, \cos[e+f x]^2, \frac{b^2 \cos[e+f x]^2}{-a^2+b^2}\right]\Bigg) \Bigg/$$

$$\Bigg(7 (a^2-b^2) \text{AppellF1}\left[\frac{3}{4}, \frac{1}{4}, 1, \frac{7}{4}, \cos[e+f x]^2, \frac{b^2 \cos[e+f x]^2}{-a^2+b^2}\right]+\Bigg(-4 b^2 \text{AppellF1}\left[\frac{7}{4}, \frac{1}{4}, 2, \frac{11}{4}, \cos[e+f x]^2,\right.$$

$$\left.\frac{b^2 \cos[e+f x]^2}{-a^2+b^2}\right]+(a^2-b^2) \text{AppellF1}\left[\frac{7}{4}, \frac{5}{4}, 1, \frac{11}{4}, \cos[e+f x]^2, \frac{b^2 \cos[e+f x]^2}{-a^2+b^2}\right]\Bigg) \cos[e+f x]^2\Bigg)\Bigg) \sin[e+f x]^{3/2}\Bigg) \Bigg/$$

$$\left(3\left(1-\text{Cos}[e+f x]^2\right)\left(a^2+b^2\left(-1+\text{Cos}[e+f x]^2\right)\right)(a+b\,\text{Sin}[e+f x])\right)\Big)+\Bigg(2\left(8 a^2 b-10 b^3\right)\sqrt{\text{Tan}[e+f x]}$$

$$\left(b\,\text{Tan}[e+f x]+a\sqrt{1+\text{Tan}[e+f x]^2}\right)$$

$$\Bigg(\frac{1}{4\sqrt{2}\sqrt{a}\left(a^2-b^2\right)^{1/4}}\Bigg(-2\,\text{ArcTan}\Big[1-\frac{\sqrt{2}\left(a^2-b^2\right)^{1/4}\sqrt{\text{Tan}[e+f x]}}{\sqrt{a}}\Big]+2\,\text{ArcTan}\Big[1+\frac{\sqrt{2}\left(a^2-b^2\right)^{1/4}\sqrt{\text{Tan}[e+f x]}}{\sqrt{a}}\Big]-$$

$$\text{Log}\Big[-a+\sqrt{2}\sqrt{a}\left(a^2-b^2\right)^{1/4}\sqrt{\text{Tan}[e+f x]}-\sqrt{a^2-b^2}\,\text{Tan}[e+f x]\Big]+\text{Log}\Big[a+\sqrt{2}\sqrt{a}\left(a^2-b^2\right)^{1/4}\sqrt{\text{Tan}[e+f x]}+$$

$$\sqrt{a^2-b^2}\,\text{Tan}[e+f x]\Big]\Bigg)+\Big(7 a^2 b\,\text{AppellF1}\Big[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\Big]\text{Tan}[e+f x]^{3/2}\Big)\Big/$$

$$\Bigg(3\sqrt{1+\text{Tan}[e+f x]^2}\ \Bigg(-7 a^2\,\text{AppellF1}\Big[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\Big]+2$$

$$\Bigg(2\left(a^2-b^2\right)\text{AppellF1}\Big[\frac{7}{4},\frac{1}{2},2,\frac{11}{4},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\Big]+a^2\,\text{AppellF1}\Big[\frac{7}{4},\frac{3}{2},1,\frac{11}{4},$$

$$-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\Big]\Bigg)\text{Tan}[e+f x]^2\Bigg)\left(-b^2\,\text{Tan}[e+f x]^2+a^2\left(1+\text{Tan}[e+f x]^2\right)\right)\Bigg)\Bigg)\Bigg)\Bigg/$$

$$\left(\text{Cos}[e+f x]^{3/2}\sqrt{\text{Sin}[e+f x]}\,(a+b\,\text{Sin}[e+f x])\left(1+\text{Tan}[e+f x]^2\right)^{3/2}\right)+\Bigg(2\left(-3 a^2 b+5 b^3\right)\text{Cos}[2(e+f x)]$$

$$\sqrt{\text{Tan}[e+f x]}\left(b\,\text{Tan}[e+f x]+a\sqrt{1+\text{Tan}[e+f x]^2}\right)$$

$$\Bigg(-\frac{a\,\text{ArcTan}\Big[\frac{-\sqrt{2}+2\sqrt{\text{Tan}[e+f x]}}{\sqrt{2}}\Big]}{\sqrt{2}\,b^2}-\frac{a\,\text{ArcTan}\Big[\frac{\sqrt{2}+2\sqrt{\text{Tan}[e+f x]}}{\sqrt{2}}\Big]}{\sqrt{2}\,b^2}+\frac{\left(2 a^2-b^2\right)\text{ArcTan}\Big[\frac{-\sqrt{2}\sqrt{a}+2\left(a^2-b^2\right)^{1/4}\sqrt{\text{Tan}[e+f x]}}{\sqrt{2}\sqrt{a}}\Big]}{2\sqrt{2}\sqrt{a}\,b^2\left(a^2-b^2\right)^{1/4}}+$$

$$\frac{\left(2 a^2-b^2\right)\text{ArcTan}\Big[\frac{\sqrt{2}\sqrt{a}+2\left(a^2-b^2\right)^{1/4}\sqrt{\text{Tan}[e+f x]}}{\sqrt{2}\sqrt{a}}\Big]}{2\sqrt{2}\sqrt{a}\,b^2\left(a^2-b^2\right)^{1/4}}+\frac{a\,\text{Log}\Big[1-\sqrt{2}\sqrt{\text{Tan}[e+f x]}+\text{Tan}[e+f x]\Big]}{2\sqrt{2}\,b^2}-$$

$$\frac{a\,\text{Log}\Big[1+\sqrt{2}\sqrt{\text{Tan}[e+f x]}+\text{Tan}[e+f x]\Big]}{2\sqrt{2}\,b^2}-\frac{\left(2 a^2-b^2\right)\text{Log}\Big[-a+\sqrt{2}\sqrt{a}\left(a^2-b^2\right)^{1/4}\sqrt{\text{Tan}[e+f x]}-\sqrt{a^2-b^2}\,\text{Tan}[e+f x]\Big]}{4\sqrt{2}\sqrt{a}\,b^2\left(a^2-b^2\right)^{1/4}}+$$

$$\frac{\left(2\,a^2-b^2\right)\,\text{Log}\left[a+\sqrt{2}\,\sqrt{a}\,\left(a^2-b^2\right)^{1/4}\sqrt{\text{Tan}[e+f\,x]}+\sqrt{a^2-b^2}\,\text{Tan}[e+f\,x]\right]}{4\,\sqrt{2}\,\sqrt{a}\,b^2\,\left(a^2-b^2\right)^{1/4}}+\frac{\text{Tan}[e+f\,x]^{3/2}}{b\,\sqrt{1+\text{Tan}[e+f\,x]^2}}+$$

$$\left(7\,a^4\,\text{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},-\text{Tan}[e+f\,x]^2,\frac{\left(-a^2+b^2\right)\,\text{Tan}[e+f\,x]^2}{a^2}\right]\,\text{Tan}[e+f\,x]^{3/2}\right)\Big/$$

$$\left(b\,\sqrt{1+\text{Tan}[e+f\,x]^2}\,\left(-7\,a^2\,\text{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},-\text{Tan}[e+f\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\,\text{Tan}[e+f\,x]^2\right]+2\right.\right.$$

$$\left(2\,\left(a^2-b^2\right)\,\text{AppellF1}\left[\frac{7}{4},\frac{1}{2},2,\frac{11}{4},-\text{Tan}[e+f\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\,\text{Tan}[e+f\,x]^2\right]+a^2\,\text{AppellF1}\left[\frac{7}{4},\frac{3}{2},1,\frac{11}{4},\right.\right.$$

$$\left.\left.\left.-\text{Tan}[e+f\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\,\text{Tan}[e+f\,x]^2\right]\right)\,\text{Tan}[e+f\,x]^2\right)\,\left(-b^2\,\text{Tan}[e+f\,x]^2+a^2\,\left(1+\text{Tan}[e+f\,x]^2\right)\right)\Big)-$$

$$\left(7\,a^2\,b\,\text{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},-\text{Tan}[e+f\,x]^2,\frac{\left(-a^2+b^2\right)\,\text{Tan}[e+f\,x]^2}{a^2}\right]\,\text{Tan}[e+f\,x]^{3/2}\right)\Big/\left(3\,\sqrt{1+\text{Tan}[e+f\,x]^2}\right.$$

$$\left(-7\,a^2\,\text{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},-\text{Tan}[e+f\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\,\text{Tan}[e+f\,x]^2\right]+2\,\left(2\,\left(a^2-b^2\right)\,\text{AppellF1}\left[\frac{7}{4},\frac{1}{2},2,\frac{11}{4},-\text{Tan}[e+f\,x]^2,\right.\right.\right.$$

$$\left.\left.\left.\left(-1+\frac{b^2}{a^2}\right)\,\text{Tan}[e+f\,x]^2\right]+a^2\,\text{AppellF1}\left[\frac{7}{4},\frac{3}{2},1,\frac{11}{4},-\text{Tan}[e+f\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\,\text{Tan}[e+f\,x]^2\right]\right)\,\text{Tan}[e+f\,x]^2\right)$$

$$\left.\left(-b^2\,\text{Tan}[e+f\,x]^2+a^2\,\left(1+\text{Tan}[e+f\,x]^2\right)\right)\right)+\left(11\,a^4\,\text{AppellF1}\left[\frac{7}{4},\frac{1}{2},1,\frac{11}{4},-\text{Tan}[e+f\,x]^2,\frac{\left(-a^2+b^2\right)\,\text{Tan}[e+f\,x]^2}{a^2}\right]\right.$$

$$\left.\text{Tan}[e+f\,x]^{7/2}\right)\Big/\left(7\,b\,\sqrt{1+\text{Tan}[e+f\,x]^2}\,\left(-11\,a^2\,\text{AppellF1}\left[\frac{7}{4},\frac{1}{2},1,\frac{11}{4},-\text{Tan}[e+f\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\,\text{Tan}[e+f\,x]^2\right]+2\right.\right.$$

$$\left(2\,\left(a^2-b^2\right)\,\text{AppellF1}\left[\frac{11}{4},\frac{1}{2},2,\frac{15}{4},-\text{Tan}[e+f\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\,\text{Tan}[e+f\,x]^2\right]+a^2\,\text{AppellF1}\left[\frac{11}{4},\frac{3}{2},1,\frac{15}{4},\right.\right.$$

$$\left.\left.\left.-\text{Tan}[e+f\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\,\text{Tan}[e+f\,x]^2\right]\right)\,\text{Tan}[e+f\,x]^2\right)\,\left(-b^2\,\text{Tan}[e+f\,x]^2+a^2\,\left(1+\text{Tan}[e+f\,x]^2\right)\right)\Big)-$$

$$\left(11\,a^2\,b\,\text{AppellF1}\left[\frac{7}{4},\frac{1}{2},1,\frac{11}{4},-\text{Tan}[e+f\,x]^2,\frac{\left(-a^2+b^2\right)\,\text{Tan}[e+f\,x]^2}{a^2}\right]\,\text{Tan}[e+f\,x]^{7/2}\right)\Big/$$

$$\left(7\,\sqrt{1+\text{Tan}[e+f\,x]^2}\,\left(-11\,a^2\,\text{AppellF1}\left[\frac{7}{4},\frac{1}{2},1,\frac{11}{4},-\text{Tan}[e+f\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\,\text{Tan}[e+f\,x]^2\right]+2\right.\right.$$

$$\left(2\,\left(a^2-b^2\right)\,\text{AppellF1}\left[\frac{11}{4},\frac{1}{2},2,\frac{15}{4},-\text{Tan}[e+f\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\,\text{Tan}[e+f\,x]^2\right]+a^2\,\text{AppellF1}\left[\frac{11}{4},\frac{3}{2},1,\frac{15}{4},\right.\right.$$

$$-\text{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\Big]\Big) \text{Tan}[e+f x]^2\Big) \left(-b^2 \text{Tan}[e+f x]^2+a^2 \left(1+\text{Tan}[e+f x]^2\right)\right)\Big)\Big)\Big) \Big/$$

$$\left(\text{Cos}[e+f x]^{3/2} \sqrt{\text{Sin}[e+f x]} (a+b \text{Sin}[e+f x]) \left(-1+\text{Tan}[e+f x]^2\right) \sqrt{1+\text{Tan}[e+f x]^2}\right)\Big)$$

- **Problem 1428: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int \frac{(g \text{Cos}[e+f x])^{5/2}}{(d \text{Sin}[e+f x])^{9/2} (a+b \text{Sin}[e+f x])} \, dx$$

Optimal (type 4, 612 leaves, 18 steps) :

$$-\frac{2 g (g \text{Cos}[e+f x])^{3/2}}{7 a d f (d \text{Sin}[e+f x])^{7/2}}+\frac{2 b g (g \text{Cos}[e+f x])^{3/2}}{5 a^2 d^2 f (d \text{Sin}[e+f x])^{5/2}}-\frac{8 g (g \text{Cos}[e+f x])^{3/2}}{21 a d^3 f (d \text{Sin}[e+f x])^{3/2}}+$$

$$\frac{2 \left(a^2-b^2\right) g (g \text{Cos}[e+f x])^{3/2}}{3 a^3 d^3 f (d \text{Sin}[e+f x])^{3/2}}+\frac{4 b g (g \text{Cos}[e+f x])^{3/2}}{5 a^2 d^4 f \sqrt{d \text{Sin}[e+f x]}}-\frac{2 b \left(a^2-b^2\right) g (g \text{Cos}[e+f x])^{3/2}}{a^4 d^4 f \sqrt{d \text{Sin}[e+f x]}}+$$

$$\frac{2 \sqrt{2} b^2 \sqrt{-a+b} \sqrt{a+b} g^{5/2} \text{EllipticPi}\left[-\frac{\sqrt{-a+b}}{\sqrt{a+b}}, \text{ArcSin}\left[\frac{\sqrt{g \text{Cos}[e+f x]}}{\sqrt{g} \sqrt{1+\text{Sin}[e+f x]}}\right], -1\right] \sqrt{\text{Sin}[e+f x]}}{a^4 d^4 f \sqrt{d \text{Sin}[e+f x]}}-$$

$$\frac{2 \sqrt{2} b^2 \sqrt{-a+b} \sqrt{a+b} g^{5/2} \text{EllipticPi}\left[\frac{\sqrt{-a+b}}{\sqrt{a+b}}, \text{ArcSin}\left[\frac{\sqrt{g \text{Cos}[e+f x]}}{\sqrt{g} \sqrt{1+\text{Sin}[e+f x]}}\right], -1\right] \sqrt{\text{Sin}[e+f x]}}{a^4 d^4 f \sqrt{d \text{Sin}[e+f x]}}+$$

$$\frac{4 b g^2 \sqrt{g \text{Cos}[e+f x]} \text{EllipticE}\left[e-\frac{\pi}{4}+f x, 2\right] \sqrt{d \text{Sin}[e+f x]}}{5 a^2 d^5 f \sqrt{\text{Sin}[2 e+2 f x]}}-\frac{2 b \left(a^2-b^2\right) g^2 \sqrt{g \text{Cos}[e+f x]} \text{EllipticE}\left[e-\frac{\pi}{4}+f x, 2\right] \sqrt{d \text{Sin}[e+f x]}}{a^4 d^5 f \sqrt{\text{Sin}[2 e+2 f x]}}$$

Result (type 6, 3037 leaves) :

$$\frac{1}{f (d \text{Sin}[e+f x])^{9/2}}$$

$$(g \text{Cos}[e+f x])^{5/2} \left(-\frac{2 \left(3 a^2 b \text{Cos}[e+f x]-5 b^3 \text{Cos}[e+f x]\right) \text{Csc}[e+f x]}{5 a^4}+\frac{2 \left(3 a^2 \text{Cos}[e+f x]-7 b^2 \text{Cos}[e+f x]\right) \text{Csc}[e+f x]^2}{21 a^3}+\right.$$

$$\left.\frac{2 b \text{Cot}[e+f x] \text{Csc}[e+f x]^2}{5 a^2}-\frac{2 \text{Cot}[e+f x] \text{Csc}[e+f x]^3}{7 a}\right) \text{Sin}[e+f x]^3 \text{Tan}[e+f x]^2-$$

$$\frac{1}{5 a^4 f \text{Cos}[e+f x]^{5/2} (d \text{Sin}[e+f x])^{9/2}} b (g \text{Cos}[e+f x])^{5/2} \text{Sin}[e+f x]^{9/2}$$

$$\Bigg(-\Bigg(\Bigg(14 (a^2-b^2) (6 a^3-10 a b^2) \text{Cos}[e+f x]^{3/2} \left(a+b \sqrt{1-\text{Cos}[e+f x]^2}\right) \Bigg(\Bigg(b \text{AppellF1}\left[\frac{3}{4},-\frac{1}{4},1,\frac{7}{4},\text{Cos}[e+f x]^2,\frac{b^2 \text{Cos}[e+f x]^2}{-a^2+b^2}\right]$$

$$\sqrt{1-\text{Cos}[e+f x]^2}\Bigg) \Big/ \Bigg(-7 (a^2-b^2) \text{AppellF1}\left[\frac{3}{4},-\frac{1}{4},1,\frac{7}{4},\text{Cos}[e+f x]^2,\frac{b^2 \text{Cos}[e+f x]^2}{-a^2+b^2}\right]+\Bigg(4 b^2 \text{AppellF1}\left[\frac{7}{4},-\frac{1}{4},2,\frac{11}{4},\right.$$

$$\left.\text{Cos}[e+f x]^2,\frac{b^2 \text{Cos}[e+f x]^2}{-a^2+b^2}\right]+(a^2-b^2) \text{AppellF1}\left[\frac{7}{4},\frac{3}{4},1,\frac{11}{4},\text{Cos}[e+f x]^2,\frac{b^2 \text{Cos}[e+f x]^2}{-a^2+b^2}\right]\Bigg) \text{Cos}[e+f x]^2\Bigg)+$$

$$\Bigg(a \text{AppellF1}\left[\frac{3}{4},\frac{1}{4},1,\frac{7}{4},\text{Cos}[e+f x]^2,\frac{b^2 \text{Cos}[e+f x]^2}{-a^2+b^2}\right]\Bigg) \Big/ \Bigg(7 (a^2-b^2) \text{AppellF1}\left[\frac{3}{4},\frac{1}{4},1,\frac{7}{4},\text{Cos}[e+f x]^2,\right.$$

$$\left.\frac{b^2 \text{Cos}[e+f x]^2}{-a^2+b^2}\right]+\Bigg(-4 b^2 \text{AppellF1}\left[\frac{7}{4},\frac{1}{4},2,\frac{11}{4},\text{Cos}[e+f x]^2,\frac{b^2 \text{Cos}[e+f x]^2}{-a^2+b^2}\right]+$$

$$(a^2-b^2) \text{AppellF1}\left[\frac{7}{4},\frac{5}{4},1,\frac{11}{4},\text{Cos}[e+f x]^2,\frac{b^2 \text{Cos}[e+f x]^2}{-a^2+b^2}\right]\Bigg) \text{Cos}[e+f x]^2\Bigg)\Bigg) \text{Sin}[e+f x]^{3/2}\Bigg) \Big/$$

$$\Big(3 (1-\text{Cos}[e+f x]^2) (a^2+b^2 (-1+\text{Cos}[e+f x]^2)) (a+b \text{Sin}[e+f x])\Big)\Bigg)+\Bigg(2 (8 a^2 b-10 b^3) \sqrt{\text{Tan}[e+f x]}$$

$$\left(b \text{Tan}[e+f x]+a \sqrt{1+\text{Tan}[e+f x]^2}\right)$$

$$\Bigg(\frac{1}{4 \sqrt{2} \sqrt{a} (a^2-b^2)^{1/4}}\Bigg(-2 \text{ArcTan}\left[1-\frac{\sqrt{2} (a^2-b^2)^{1/4} \sqrt{\text{Tan}[e+f x]}}{\sqrt{a}}\right]+2 \text{ArcTan}\left[1+\frac{\sqrt{2} (a^2-b^2)^{1/4} \sqrt{\text{Tan}[e+f x]}}{\sqrt{a}}\right]-$$

$$\text{Log}\left[-a+\sqrt{2} \sqrt{a} (a^2-b^2)^{1/4} \sqrt{\text{Tan}[e+f x]}-\sqrt{a^2-b^2} \text{Tan}[e+f x]\right]+\text{Log}\Big[a+\sqrt{2} \sqrt{a} (a^2-b^2)^{1/4} \sqrt{\text{Tan}[e+f x]}+$$

$$\sqrt{a^2-b^2} \text{Tan}[e+f x]\Big]\Bigg)+\Bigg(7 a^2 b \text{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\right] \text{Tan}[e+f x]^{3/2}\Bigg) \Big/$$

$$\Bigg(3 \sqrt{1+\text{Tan}[e+f x]^2} \Bigg(-7 a^2 \text{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\right]+2$$

$$\Bigg(2 (a^2-b^2) \text{AppellF1}\left[\frac{7}{4},\frac{1}{2},2,\frac{11}{4},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\right]+a^2 \text{AppellF1}\left[\frac{7}{4},\frac{3}{2},1,\frac{11}{4},\right.$$

$$\left.-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\right]\Bigg) \text{Tan}[e+f x]^2\Bigg) \left(-b^2 \text{Tan}[e+f x]^2+a^2 (1+\text{Tan}[e+f x]^2)\right)\Bigg)\Bigg)\Bigg) \Big/$$

$$\left(\text{Cos}[e+f x]^{3/2}\sqrt{\text{Sin}[e+f x]}\,(a+b\,\text{Sin}[e+f x])\,\left(1+\text{Tan}[e+f x]^2\right)^{3/2}\right)+\Bigg(2\left(-3 a^2 b+5 b^3\right)\text{Cos}[2\,(e+f x)]$$

$$\sqrt{\text{Tan}[e+f x]}\,\left(b\,\text{Tan}[e+f x]+a\sqrt{1+\text{Tan}[e+f x]^2}\right)$$

$$\Bigg(-\frac{a\,\text{ArcTan}\left[\frac{-\sqrt{2}+2\sqrt{\text{Tan}[e+f x]}}{\sqrt{2}}\right]}{\sqrt{2}\,b^2}-\frac{a\,\text{ArcTan}\left[\frac{\sqrt{2}+2\sqrt{\text{Tan}[e+f x]}}{\sqrt{2}}\right]}{\sqrt{2}\,b^2}+\frac{\left(2 a^2-b^2\right)\text{ArcTan}\left[\frac{-\sqrt{2}\sqrt{a}+2\left(a^2-b^2\right)^{1/4}\sqrt{\text{Tan}[e+f x]}}{\sqrt{2}\sqrt{a}}\right]}{2\sqrt{2}\sqrt{a}\,b^2\left(a^2-b^2\right)^{1/4}}+$$

$$\frac{\left(2 a^2-b^2\right)\text{ArcTan}\left[\frac{\sqrt{2}\sqrt{a}+2\left(a^2-b^2\right)^{1/4}\sqrt{\text{Tan}[e+f x]}}{\sqrt{2}\sqrt{a}}\right]}{2\sqrt{2}\sqrt{a}\,b^2\left(a^2-b^2\right)^{1/4}}+\frac{a\,\text{Log}\left[1-\sqrt{2}\sqrt{\text{Tan}[e+f x]}+\text{Tan}[e+f x]\right]}{2\sqrt{2}\,b^2}-$$

$$\frac{a\,\text{Log}\left[1+\sqrt{2}\sqrt{\text{Tan}[e+f x]}+\text{Tan}[e+f x]\right]}{2\sqrt{2}\,b^2}-\frac{\left(2 a^2-b^2\right)\text{Log}\left[-a+\sqrt{2}\sqrt{a}\left(a^2-b^2\right)^{1/4}\sqrt{\text{Tan}[e+f x]}-\sqrt{a^2-b^2}\,\text{Tan}[e+f x]\right]}{4\sqrt{2}\sqrt{a}\,b^2\left(a^2-b^2\right)^{1/4}}+$$

$$\frac{\left(2 a^2-b^2\right)\text{Log}\left[a+\sqrt{2}\sqrt{a}\left(a^2-b^2\right)^{1/4}\sqrt{\text{Tan}[e+f x]}+\sqrt{a^2-b^2}\,\text{Tan}[e+f x]\right]}{4\sqrt{2}\sqrt{a}\,b^2\left(a^2-b^2\right)^{1/4}}+\frac{\text{Tan}[e+f x]^{3/2}}{b\sqrt{1+\text{Tan}[e+f x]^2}}+$$

$$\left(7 a^4\,\text{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},-\text{Tan}[e+f x]^2,\frac{\left(-a^2+b^2\right)\text{Tan}[e+f x]^2}{a^2}\right]\text{Tan}[e+f x]^{3/2}\right)\Big/$$

$$\Bigg(b\sqrt{1+\text{Tan}[e+f x]^2}\,\Bigg(-7 a^2\,\text{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+2$$

$$\Bigg(2\left(a^2-b^2\right)\text{AppellF1}\left[\frac{7}{4},\frac{1}{2},2,\frac{11}{4},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+a^2\,\text{AppellF1}\Big[\frac{7}{4},\frac{3}{2},1,\frac{11}{4},$$

$$-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\Big]\Bigg)\text{Tan}[e+f x]^2\Bigg)\left(-b^2\,\text{Tan}[e+f x]^2+a^2\left(1+\text{Tan}[e+f x]^2\right)\right)\Bigg)-$$

$$\left(7 a^2 b\,\text{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},-\text{Tan}[e+f x]^2,\frac{\left(-a^2+b^2\right)\text{Tan}[e+f x]^2}{a^2}\right]\text{Tan}[e+f x]^{3/2}\right)\Big/\Bigg(3\sqrt{1+\text{Tan}[e+f x]^2}$$

$$\Bigg(-7 a^2\,\text{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+2\Bigg(2\left(a^2-b^2\right)\text{AppellF1}\Big[\frac{7}{4},\frac{1}{2},2,\frac{11}{4},-\text{Tan}[e+f x]^2,$$

$$\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\Big]+a^2\,\text{AppellF1}\left[\frac{7}{4},\frac{3}{2},1,\frac{11}{4},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]\Bigg)\text{Tan}[e+f x]^2\Bigg)$$

$$\left(-b^2 \operatorname{Tan}[e+f x]^2+a^2 \left(1+\operatorname{Tan}[e+f x]^2\right)\right)\bigg) + \Bigg(11 a^4 \operatorname{AppellF1}\left[\frac{7}{4}, \frac{1}{2}, 1, \frac{11}{4}, -\operatorname{Tan}[e+f x]^2, \frac{\left(-a^2+b^2\right) \operatorname{Tan}[e+f x]^2}{a^2}\right]$$

$$\operatorname{Tan}[e+f x]^{7/2}\Bigg) \Big/ \Bigg(7 b \sqrt{1+\operatorname{Tan}[e+f x]^2} \left(-11 a^2 \operatorname{AppellF1}\left[\frac{7}{4}, \frac{1}{2}, 1, \frac{11}{4}, -\operatorname{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \operatorname{Tan}[e+f x]^2\right] + 2\right.$$

$$\left(2 \left(a^2-b^2\right) \operatorname{AppellF1}\left[\frac{11}{4}, \frac{1}{2}, 2, \frac{15}{4}, -\operatorname{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \operatorname{Tan}[e+f x]^2\right] + a^2 \operatorname{AppellF1}\left[\frac{11}{4}, \frac{3}{2}, 1, \frac{15}{4},\right.\right.$$

$$\left.\left.\left.-\operatorname{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \operatorname{Tan}[e+f x]^2\right]\right) \operatorname{Tan}[e+f x]^2\right) \left(-b^2 \operatorname{Tan}[e+f x]^2+a^2 \left(1+\operatorname{Tan}[e+f x]^2\right)\right)\Bigg) -$$

$$\left(11 a^2 b \operatorname{AppellF1}\left[\frac{7}{4}, \frac{1}{2}, 1, \frac{11}{4}, -\operatorname{Tan}[e+f x]^2, \frac{\left(-a^2+b^2\right) \operatorname{Tan}[e+f x]^2}{a^2}\right] \operatorname{Tan}[e+f x]^{7/2}\right) \Big/$$

$$\Bigg(7 \sqrt{1+\operatorname{Tan}[e+f x]^2} \left(-11 a^2 \operatorname{AppellF1}\left[\frac{7}{4}, \frac{1}{2}, 1, \frac{11}{4}, -\operatorname{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \operatorname{Tan}[e+f x]^2\right] + 2\right.$$

$$\left(2 \left(a^2-b^2\right) \operatorname{AppellF1}\left[\frac{11}{4}, \frac{1}{2}, 2, \frac{15}{4}, -\operatorname{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \operatorname{Tan}[e+f x]^2\right] + a^2 \operatorname{AppellF1}\left[\frac{11}{4}, \frac{3}{2}, 1, \frac{15}{4},\right.\right.$$

$$\left.\left.\left.-\operatorname{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \operatorname{Tan}[e+f x]^2\right]\right) \operatorname{Tan}[e+f x]^2\right) \left(-b^2 \operatorname{Tan}[e+f x]^2+a^2 \left(1+\operatorname{Tan}[e+f x]^2\right)\right)\Bigg)\Bigg) \Big/$$

$$\left(\operatorname{Cos}[e+f x]^{3/2} \sqrt{\operatorname{Sin}[e+f x]} \left(a+b \operatorname{Sin}[e+f x]\right) \left(-1+\operatorname{Tan}[e+f x]^2\right) \sqrt{1+\operatorname{Tan}[e+f x]^2}\right)\Bigg)$$

- **Problem 1429: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int \frac{\left(g \operatorname{Cos}[e+f x]\right)^{5/2}}{\left(d \operatorname{Sin}[e+f x]\right)^{11/2} \left(a+b \operatorname{Sin}[e+f x]\right)} \, dx$$

Optimal (type 4, 822 leaves, 24 steps) :

$$-\frac{2 g (g \cos[e+f x])^{3/2}}{9 a d f (d \sin[e+f x])^{9/2}}+\frac{2 b g (g \cos[e+f x])^{3/2}}{7 a^2 d^2 f (d \sin[e+f x])^{7/2}}-\frac{4 g (g \cos[e+f x])^{3/2}}{15 a d^3 f (d \sin[e+f x])^{5/2}}+\frac{2 \left(a^2-b^2\right) g (g \cos[e+f x])^{3/2}}{5 a^3 d^3 f (d \sin[e+f x])^{5/2}}+\frac{8 b g (g \cos[e+f x])^{3/2}}{21 a^2 d^4 f (d \sin[e+f x])^{3/2}}-\frac{2 b \left(a^2-b^2\right) g (g \cos[e+f x])^{3/2}}{3 a^4 d^4 f (d \sin[e+f x])^{3/2}}-\frac{8 g (g \cos[e+f x])^{3/2}}{15 a d^5 f \sqrt{d \sin[e+f x]}}+\frac{4 \left(a^2-b^2\right) g (g \cos[e+f x])^{3/2}}{5 a^3 d^5 f \sqrt{d \sin[e+f x]}}+\frac{2 b^2 \left(a^2-b^2\right) g (g \cos[e+f x])^{3/2}}{a^5 d^5 f \sqrt{d \sin[e+f x]}}-\frac{2 \sqrt{2} b^3 \sqrt{-a+b} \sqrt{a+b} g^{5/2} \text{EllipticPi}\left[-\frac{\sqrt{-a+b}}{\sqrt{a+b}}, \text{ArcSin}\left[\frac{\sqrt{g \cos[e+f x]}}{\sqrt{g} \sqrt{1+\sin[e+f x]}}\right], -1\right] \sqrt{\sin[e+f x]}}{a^5 d^5 f \sqrt{d \sin[e+f x]}}+\frac{2 \sqrt{2} b^3 \sqrt{-a+b} \sqrt{a+b} g^{5/2} \text{EllipticPi}\left[\frac{\sqrt{-a+b}}{\sqrt{a+b}}, \text{ArcSin}\left[\frac{\sqrt{g \cos[e+f x]}}{\sqrt{g} \sqrt{1+\sin[e+f x]}}\right], -1\right] \sqrt{\sin[e+f x]}}{a^5 d^5 f \sqrt{d \sin[e+f x]}}-\frac{8 g^2 \sqrt{g \cos[e+f x]} \text{EllipticE}\left[e-\frac{\pi}{4}+f x, 2\right] \sqrt{d \sin[e+f x]}}{15 a d^6 f \sqrt{\sin[2 e+2 f x]}}+\frac{4 \left(a^2-b^2\right) g^2 \sqrt{g \cos[e+f x]} \text{EllipticE}\left[e-\frac{\pi}{4}+f x, 2\right] \sqrt{d \sin[e+f x]}}{5 a^3 d^6 f \sqrt{\sin[2 e+2 f x]}}+\frac{2 b^2 \left(a^2-b^2\right) g^2 \sqrt{g \cos[e+f x]} \text{EllipticE}\left[e-\frac{\pi}{4}+f x, 2\right] \sqrt{d \sin[e+f x]}}{a^5 d^6 f \sqrt{\sin[2 e+2 f x]}}$$

Result (type 6, 3111 leaves) :

$$\frac{1}{f (d \sin[e+f x])^{11/2}} (g \cos[e+f x])^{5/2} \left(\frac{2 \left(2 a^4 \cos[e+f x]+9 a^2 b^2 \cos[e+f x]-15 b^4 \cos[e+f x]\right) \csc[e+f x]}{15 a^5}-\frac{2 \left(3 a^2 b \cos[e+f x]-7 b^3 \cos[e+f x]\right) \csc[e+f x]^2}{21 a^4}+\frac{2 \left(a^2 \cos[e+f x]-3 b^2 \cos[e+f x]\right) \csc[e+f x]^3}{15 a^3}+\frac{2 b \cot[e+f x] \csc[e+f x]^3}{7 a^2}-\frac{2 \cot[e+f x] \csc[e+f x]^4}{9 a}\right) \sin[e+f x]^4 \tan[e+f x]^2+\frac{1}{15 a^5 f \cos[e+f x]^{5/2} (d \sin[e+f x])^{11/2}} (g \cos[e+f x])^{5/2} \sin[e+f x]^{11/2} \left(-\left(\left(14 \left(a^2-b^2\right) \left(4 a^5+18 a^3 b^2-30 a b^4\right) \cos[e+f x]^{3/2} \left(a+b \sqrt{1-\cos[e+f x]^2}\right) \left(\left(b \text{AppellF1}\left[\frac{3}{4}, -\frac{1}{4}, 1, \frac{7}{4}, \cos[e+f x]^2, \frac{b^2 \cos[e+f x]^2}{-a^2+b^2}\right] \sqrt{1-\cos[e+f x]^2}\right) \middle/ \left(-7 \left(a^2-b^2\right) \text{AppellF1}\left[\frac{3}{4}, -\frac{1}{4}, 1, \frac{7}{4}, \cos[e+f x]^2, \frac{b^2 \cos[e+f x]^2}{-a^2+b^2}\right]+\left(4 b^2 \text{AppellF1}\left[\frac{7}{4}, -\frac{1}{4}, 2, \frac{11}{4}, \cos[e+f x]^2, \frac{b^2 \cos[e+f x]^2}{-a^2+b^2}\right]+\left(a^2-b^2\right) \text{AppellF1}\left[\frac{7}{4}, \frac{3}{4},\right.\right.\right.\right.\right.\right.$$

$$1,\ \frac{11}{4},\ \text{Cos}[e+f x]^2,\ \frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\Big]\Big)\ \text{Cos}[e+f x]^2\Big)+\Big(a\,\text{AppellF1}\Big[\frac{3}{4},\ \frac{1}{4},\ 1,\ \frac{7}{4},\ \text{Cos}[e+f x]^2,\ \frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\Big]\Big)\Big/$$

$$\Big(7\,(a^2-b^2)\ \text{AppellF1}\Big[\frac{3}{4},\ \frac{1}{4},\ 1,\ \frac{7}{4},\ \text{Cos}[e+f x]^2,\ \frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\Big]+\Big(-4\,b^2\,\text{AppellF1}\Big[\frac{7}{4},\ \frac{1}{4},\ 2,\ \frac{11}{4},\ \text{Cos}[e+f x]^2,$$

$$\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\Big]+(a^2-b^2)\ \text{AppellF1}\Big[\frac{7}{4},\ \frac{5}{4},\ 1,\ \frac{11}{4},\ \text{Cos}[e+f x]^2,\ \frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\Big]\Big)\ \text{Cos}[e+f x]^2\Big)\Big)\ \text{Sin}[e+f x]^{3/2}\Big)\Big/$$

$$\Big(3\,(1-\text{Cos}[e+f x]^2)\ (a^2+b^2\,(-1+\text{Cos}[e+f x]^2))\ (a+b\,\text{Sin}[e+f x])\Big)\Big)+\Big(2\,(2\,a^4\,b+24\,a^2\,b^3-30\,b^5)\ \sqrt{\text{Tan}[e+f x]}$$

$$\Big(b\,\text{Tan}[e+f x]+a\sqrt{1+\text{Tan}[e+f x]^2}\Big)$$

$$\Big(\frac{1}{4\sqrt{2}\ \sqrt{a}\ (a^2-b^2)^{1/4}}\Big(-2\,\text{ArcTan}\Big[1-\frac{\sqrt{2}\ (a^2-b^2)^{1/4}\sqrt{\text{Tan}[e+f x]}}{\sqrt{a}}\Big]+2\,\text{ArcTan}\Big[1+\frac{\sqrt{2}\ (a^2-b^2)^{1/4}\sqrt{\text{Tan}[e+f x]}}{\sqrt{a}}\Big]-\text{Log}\Big[-a+\sqrt{2}\ \sqrt{a}$$

$$(a^2-b^2)^{1/4}\sqrt{\text{Tan}[e+f x]}-\sqrt{a^2-b^2}\ \text{Tan}[e+f x]\Big]+\text{Log}\Big[a+\sqrt{2}\ \sqrt{a}\ (a^2-b^2)^{1/4}\sqrt{\text{Tan}[e+f x]}+\sqrt{a^2-b^2}\ \text{Tan}[e+f x]\Big]\Big)+$$

$$\Big(7\,a^2\,b\,\text{AppellF1}\Big[\frac{3}{4},\ \frac{1}{2},\ 1,\ \frac{7}{4},\ -\text{Tan}[e+f x]^2,\ \Big(-1+\frac{b^2}{a^2}\Big)\ \text{Tan}[e+f x]^2\Big]\ \text{Tan}[e+f x]^{3/2}\Big)\Big/\Big(3\sqrt{1+\text{Tan}[e+f x]^2}$$

$$\Big(-7\,a^2\,\text{AppellF1}\Big[\frac{3}{4},\ \frac{1}{2},\ 1,\ \frac{7}{4},\ -\text{Tan}[e+f x]^2,\ \Big(-1+\frac{b^2}{a^2}\Big)\ \text{Tan}[e+f x]^2\Big]+2\,\Big(2\,(a^2-b^2)\ \text{AppellF1}\Big[\frac{7}{4},\ \frac{1}{2},\ 2,\ \frac{11}{4},\ -\text{Tan}[e+f x]^2,$$

$$\Big(-1+\frac{b^2}{a^2}\Big)\ \text{Tan}[e+f x]^2\Big]+a^2\,\text{AppellF1}\Big[\frac{7}{4},\ \frac{3}{2},\ 1,\ \frac{11}{4},\ -\text{Tan}[e+f x]^2,\ \Big(-1+\frac{b^2}{a^2}\Big)\ \text{Tan}[e+f x]^2\Big]\Big)\ \text{Tan}[e+f x]^2\Big)$$

$$\Big(-b^2\,\text{Tan}[e+f x]^2+a^2\,(1+\text{Tan}[e+f x]^2)\Big)\Big)\Big)\Big)\Big/\ \Big(\text{Cos}[e+f x]^{3/2}\sqrt{\text{Sin}[e+f x]}\ (a+b\,\text{Sin}[e+f x])\ (1+\text{Tan}[e+f x]^2)^{3/2}\Big)+$$

$$\Big(2\,(-2\,a^4\,b-9\,a^2\,b^3+15\,b^5)\ \text{Cos}[2\,(e+f x)]\ \sqrt{\text{Tan}[e+f x]}\ \Big(b\,\text{Tan}[e+f x]+a\sqrt{1+\text{Tan}[e+f x]^2}\Big)$$

$$\Big(-\frac{a\,\text{ArcTan}\Big[\frac{-\sqrt{2}+2\sqrt{\text{Tan}[e+f x]}}{\sqrt{2}}\Big]}{\sqrt{2}\ b^2}-\frac{a\,\text{ArcTan}\Big[\frac{\sqrt{2}+2\sqrt{\text{Tan}[e+f x]}}{\sqrt{2}}\Big]}{\sqrt{2}\ b^2}+\frac{(2\,a^2-b^2)\ \text{ArcTan}\Big[\frac{-\sqrt{2}\ \sqrt{a}+2\,(a^2-b^2)^{1/4}\sqrt{\text{Tan}[e+f x]}}{\sqrt{2}\ \sqrt{a}}\Big]}{2\sqrt{2}\ \sqrt{a}\ b^2\,(a^2-b^2)^{1/4}}+$$

$$\frac{(2\,a^2-b^2)\ \text{ArcTan}\Big[\frac{\sqrt{2}\ \sqrt{a}+2\,(a^2-b^2)^{1/4}\sqrt{\text{Tan}[e+f x]}}{\sqrt{2}\ \sqrt{a}}\Big]}{2\sqrt{2}\ \sqrt{a}\ b^2\,(a^2-b^2)^{1/4}}+\frac{a\,\text{Log}\Big[1-\sqrt{2}\ \sqrt{\text{Tan}[e+f x]}+\text{Tan}[e+f x]\Big]}{2\sqrt{2}\ b^2}-$$

$$\frac{a\,\text{Log}\left[1+\sqrt{2}\,\sqrt{\text{Tan}[e+f\,x]}+\text{Tan}[e+f\,x]\right]}{2\,\sqrt{2}\,b^2}-\frac{\left(2\,a^2-b^2\right)\,\text{Log}\left[-a+\sqrt{2}\,\sqrt{a}\,\left(a^2-b^2\right)^{1/4}\,\sqrt{\text{Tan}[e+f\,x]}-\sqrt{a^2-b^2}\,\text{Tan}[e+f\,x]\right]}{4\,\sqrt{2}\,\sqrt{a}\,b^2\,\left(a^2-b^2\right)^{1/4}}+$$

$$\frac{\left(2\,a^2-b^2\right)\,\text{Log}\left[a+\sqrt{2}\,\sqrt{a}\,\left(a^2-b^2\right)^{1/4}\,\sqrt{\text{Tan}[e+f\,x]}+\sqrt{a^2-b^2}\,\text{Tan}[e+f\,x]\right]}{4\,\sqrt{2}\,\sqrt{a}\,b^2\,\left(a^2-b^2\right)^{1/4}}+\frac{\text{Tan}[e+f\,x]^{3/2}}{b\,\sqrt{1+\text{Tan}[e+f\,x]^2}}+$$

$$\left(7\,a^4\,\text{AppellF1}\left[\frac{3}{4},\,\frac{1}{2},\,1,\,\frac{7}{4},\,-\text{Tan}[e+f\,x]^2,\,\frac{\left(-a^2+b^2\right)\,\text{Tan}[e+f\,x]^2}{a^2}\right]\,\text{Tan}[e+f\,x]^{3/2}\right)\Big/$$

$$\left(b\,\sqrt{1+\text{Tan}[e+f\,x]^2}\,\left(-7\,a^2\,\text{AppellF1}\left[\frac{3}{4},\,\frac{1}{2},\,1,\,\frac{7}{4},\,-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\,\text{Tan}[e+f\,x]^2\right]+2\right.\right.$$

$$\left(2\,\left(a^2-b^2\right)\,\text{AppellF1}\left[\frac{7}{4},\,\frac{1}{2},\,2,\,\frac{11}{4},\,-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\,\text{Tan}[e+f\,x]^2\right]+a^2\,\text{AppellF1}\left[\frac{7}{4},\,\frac{3}{2},\,1,\,\frac{11}{4},\right.\right.$$

$$\left.\left.\left.\left.-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\,\text{Tan}[e+f\,x]^2\right]\right)\,\text{Tan}[e+f\,x]^2\right)\,\left(-b^2\,\text{Tan}[e+f\,x]^2+a^2\,\left(1+\text{Tan}[e+f\,x]^2\right)\right)\right)-$$

$$\left(7\,a^2\,b\,\text{AppellF1}\left[\frac{3}{4},\,\frac{1}{2},\,1,\,\frac{7}{4},\,-\text{Tan}[e+f\,x]^2,\,\frac{\left(-a^2+b^2\right)\,\text{Tan}[e+f\,x]^2}{a^2}\right]\,\text{Tan}[e+f\,x]^{3/2}\right)\Big/\left(3\,\sqrt{1+\text{Tan}[e+f\,x]^2}\right.$$

$$\left(-7\,a^2\,\text{AppellF1}\left[\frac{3}{4},\,\frac{1}{2},\,1,\,\frac{7}{4},\,-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\,\text{Tan}[e+f\,x]^2\right]+2\,\left(2\,\left(a^2-b^2\right)\,\text{AppellF1}\left[\frac{7}{4},\,\frac{1}{2},\,2,\,\frac{11}{4},\,-\text{Tan}[e+f\,x]^2,\right.\right.\right.$$

$$\left.\left.\left(-1+\frac{b^2}{a^2}\right)\,\text{Tan}[e+f\,x]^2\right]+a^2\,\text{AppellF1}\left[\frac{7}{4},\,\frac{3}{2},\,1,\,\frac{11}{4},\,-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\,\text{Tan}[e+f\,x]^2\right]\right)\,\text{Tan}[e+f\,x]^2\right)$$

$$\left.\left(-b^2\,\text{Tan}[e+f\,x]^2+a^2\,\left(1+\text{Tan}[e+f\,x]^2\right)\right)\right)+\left(11\,a^4\,\text{AppellF1}\left[\frac{7}{4},\,\frac{1}{2},\,1,\,\frac{11}{4},\,-\text{Tan}[e+f\,x]^2,\,\frac{\left(-a^2+b^2\right)\,\text{Tan}[e+f\,x]^2}{a^2}\right]\right.$$

$$\left.\text{Tan}[e+f\,x]^{7/2}\right)\Big/\left(7\,b\,\sqrt{1+\text{Tan}[e+f\,x]^2}\,\left(-11\,a^2\,\text{AppellF1}\left[\frac{7}{4},\,\frac{1}{2},\,1,\,\frac{11}{4},\,-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\,\text{Tan}[e+f\,x]^2\right]+2\right.\right.$$

$$\left(2\,\left(a^2-b^2\right)\,\text{AppellF1}\left[\frac{11}{4},\,\frac{1}{2},\,2,\,\frac{15}{4},\,-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\,\text{Tan}[e+f\,x]^2\right]+a^2\,\text{AppellF1}\left[\frac{11}{4},\,\frac{3}{2},\,1,\,\frac{15}{4},\right.\right.$$

$$\left.\left.\left.\left.-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\,\text{Tan}[e+f\,x]^2\right]\right)\,\text{Tan}[e+f\,x]^2\right)\,\left(-b^2\,\text{Tan}[e+f\,x]^2+a^2\,\left(1+\text{Tan}[e+f\,x]^2\right)\right)\right)-$$

$$\left(11\,a^2\,b\,\text{AppellF1}\left[\frac{7}{4},\,\frac{1}{2},\,1,\,\frac{11}{4},\,-\text{Tan}[e+f\,x]^2,\,\frac{\left(-a^2+b^2\right)\,\text{Tan}[e+f\,x]^2}{a^2}\right]\,\text{Tan}[e+f\,x]^{7/2}\right)\Big/$$

$$\left(7\,\sqrt{1+\text{Tan}[e+f\,x]^2}\,\left(-11\,a^2\,\text{AppellF1}\left[\frac{7}{4},\,\frac{1}{2},\,1,\,\frac{11}{4},\,-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\,\text{Tan}[e+f\,x]^2\right]+2\right.\right.$$

$$\left(2\left(a^2-b^2\right)\text{AppellF1}\left[\frac{11}{4},\frac{1}{2},2,\frac{15}{4},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+a^2\,\text{AppellF1}\left[\frac{11}{4},\frac{3}{2},1,\frac{15}{4},\right.\right.$$

$$\left.\left.-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]\right)\text{Tan}[e+f x]^2\right)\left(-b^2\,\text{Tan}[e+f x]^2+a^2\left(1+\text{Tan}[e+f x]^2\right)\right)\Bigg)\Bigg)\Big/$$

$$\left(\text{Cos}[e+f x]^{3/2}\sqrt{\text{Sin}[e+f x]}\,(a+b\,\text{Sin}[e+f x])\left(-1+\text{Tan}[e+f x]^2\right)\sqrt{1+\text{Tan}[e+f x]^2}\right)\Bigg)$$

- **Problem 1430: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int\frac{(d\,\text{Sin}[e+f x])^{5/2}}{\sqrt{g\,\text{Cos}[e+f x]}\,(a+b\,\text{Sin}[e+f x])}\,dx$$

Optimal (type 4, 616 leaves, 19 steps):

$$\frac{a\,d^{5/2}\,\text{ArcTan}\left[1-\frac{\sqrt{2}\sqrt{g}\sqrt{d\,\text{Sin}[e+f x]}}{\sqrt{d}\sqrt{g\,\text{Cos}[e+f x]}}\right]}{\sqrt{2}\,b^2 f\sqrt{g}}-\frac{a\,d^{5/2}\,\text{ArcTan}\left[1+\frac{\sqrt{2}\sqrt{g}\sqrt{d\,\text{Sin}[e+f x]}}{\sqrt{d}\sqrt{g\,\text{Cos}[e+f x]}}\right]}{\sqrt{2}\,b^2 f\sqrt{g}}-$$

$$\frac{2\sqrt{2}\,a^2 d^{5/2}\sqrt{\text{Cos}[e+f x]}\,\text{EllipticPi}\left[-\frac{a}{b-\sqrt{-a^2+b^2}},\text{ArcSin}\left[\frac{\sqrt{d\,\text{Sin}[e+f x]}}{\sqrt{d}\sqrt{1+\text{Cos}[e+f x]}}\right],-1\right]}{b^2\sqrt{-a^2+b^2}\,f\sqrt{g\,\text{Cos}[e+f x]}}+$$

$$\frac{2\sqrt{2}\,a^2 d^{5/2}\sqrt{\text{Cos}[e+f x]}\,\text{EllipticPi}\left[-\frac{a}{b+\sqrt{-a^2+b^2}},\text{ArcSin}\left[\frac{\sqrt{d\,\text{Sin}[e+f x]}}{\sqrt{d}\sqrt{1+\text{Cos}[e+f x]}}\right],-1\right]}{b^2\sqrt{-a^2+b^2}\,f\sqrt{g\,\text{Cos}[e+f x]}}-\frac{a\,d^{5/2}\,\text{Log}\left[\sqrt{d}-\frac{\sqrt{2}\sqrt{g}\sqrt{d\,\text{Sin}[e+f x]}}{\sqrt{g\,\text{Cos}[e+f x]}}+\sqrt{d}\,\text{Tan}[e+f x]\right]}{2\sqrt{2}\,b^2 f\sqrt{g}}+$$

$$\frac{a\,d^{5/2}\,\text{Log}\left[\sqrt{d}+\frac{\sqrt{2}\sqrt{g}\sqrt{d\,\text{Sin}[e+f x]}}{\sqrt{g\,\text{Cos}[e+f x]}}+\sqrt{d}\,\text{Tan}[e+f x]\right]}{2\sqrt{2}\,b^2 f\sqrt{g}}-\frac{d^2\sqrt{g\,\text{Cos}[e+f x]}\,\sqrt{d\,\text{Sin}[e+f x]}}{b\,f\,g}+\frac{d^3\,\text{EllipticF}\left[e-\frac{\pi}{4}+f x,2\right]\sqrt{\text{Sin}[2e+2f x]}}{2\,b\,f\sqrt{g\,\text{Cos}[e+f x]}\,\sqrt{d\,\text{Sin}[e+f x]}}$$

Result (type 6, 1790 leaves):

$$\frac{1}{2f\sqrt{g\,\text{Cos}[e+f x]}\,\text{Sin}[e+f x]^{5/2}}$$

$$\sqrt{\text{Cos}[e+f x]}\ (d\,\text{Sin}[e+f x])^{5/2}\left(-\left(\left(\left(2\,\text{Cos}[2\,(e+f x)]\,\sqrt{\text{Sin}[e+f x]}\,\left(b\,\text{Tan}[e+f x]+a\sqrt{1+\text{Tan}[e+f x]^2}\right)\left(-\frac{a\,\text{ArcTan}\left[\frac{-\sqrt{2}+2\sqrt{\text{Tan}[e+f x]}}{\sqrt{2}}\right]}{\sqrt{2}\,b^2}-\right.\right.\right.\right.\right.$$

$$\frac{a\,\text{ArcTan}\left[\frac{\sqrt{2}+2\sqrt{\text{Tan}[e+f x]}}{\sqrt{2}}\right]}{\sqrt{2}\,b^2}+\frac{\sqrt{a}\,\left(2\,a^2-b^2\right)\text{ArcTan}\left[\frac{-\sqrt{2}\,\sqrt{a}+2\,\left(a^2-b^2\right)^{1/4}\sqrt{\text{Tan}[e+f x]}}{\sqrt{2}\,\sqrt{a}}\right]}{2\sqrt{2}\,b^2\,\left(a^2-b^2\right)^{3/4}}+$$

$$\frac{\sqrt{a}\,\left(2\,a^2-b^2\right)\text{ArcTan}\left[\frac{\sqrt{2}\,\sqrt{a}+2\,\left(a^2-b^2\right)^{1/4}\sqrt{\text{Tan}[e+f x]}}{\sqrt{2}\,\sqrt{a}}\right]}{2\sqrt{2}\,b^2\,\left(a^2-b^2\right)^{3/4}}-\frac{a\,\text{Log}\left[1-\sqrt{2}\,\sqrt{\text{Tan}[e+f x]}+\text{Tan}[e+f x]\right]}{2\sqrt{2}\,b^2}+$$

$$\frac{a\,\text{Log}\left[1+\sqrt{2}\,\sqrt{\text{Tan}[e+f x]}+\text{Tan}[e+f x]\right]}{2\sqrt{2}\,b^2}+\frac{\sqrt{a}\,\left(2\,a^2-b^2\right)\text{Log}\left[-a+\sqrt{2}\,\sqrt{a}\,\left(a^2-b^2\right)^{1/4}\sqrt{\text{Tan}[e+f x]}-\sqrt{a^2-b^2}\,\text{Tan}[e+f x]\right]}{4\sqrt{2}\,b^2\,\left(a^2-b^2\right)^{3/4}}-$$

$$\frac{\sqrt{a}\,\left(2\,a^2-b^2\right)\text{Log}\left[a+\sqrt{2}\,\sqrt{a}\,\left(a^2-b^2\right)^{1/4}\sqrt{\text{Tan}[e+f x]}+\sqrt{a^2-b^2}\,\text{Tan}[e+f x]\right]}{4\sqrt{2}\,b^2\,\left(a^2-b^2\right)^{3/4}}-\frac{\sqrt{\text{Tan}[e+f x]}}{b\sqrt{1+\text{Tan}[e+f x]^2}}-$$

$$\left(5\,a^4\,\text{AppellF1}\left[\frac{1}{4},\frac{1}{2},1,\frac{5}{4},-\text{Tan}[e+f x]^2,\frac{\left(-a^2+b^2\right)\text{Tan}[e+f x]^2}{a^2}\right]\sqrt{\text{Tan}[e+f x]}\right)\Big/$$

$$\left(b\sqrt{1+\text{Tan}[e+f x]^2}\ \left(-5\,a^2\,\text{AppellF1}\left[\frac{1}{4},\frac{1}{2},1,\frac{5}{4},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+\right.\right.$$

$$2\left(2\,\left(a^2-b^2\right)\text{AppellF1}\left[\frac{5}{4},\frac{1}{2},2,\frac{9}{4},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+a^2\,\text{AppellF1}\left[\frac{5}{4},\frac{3}{2},1,\frac{9}{4},\right.\right.$$

$$\left.\left.\left.-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]\right)\text{Tan}[e+f x]^2\right)\left(-b^2\,\text{Tan}[e+f x]^2+a^2\left(1+\text{Tan}[e+f x]^2\right)\right)\Big)+$$

$$\left(9\,a^4\,\text{AppellF1}\left[\frac{5}{4},\frac{1}{2},1,\frac{9}{4},-\text{Tan}[e+f x]^2,\frac{\left(-a^2+b^2\right)\text{Tan}[e+f x]^2}{a^2}\right]\text{Tan}[e+f x]^{5/2}\right)\Big/$$

$$\left(5\,b\sqrt{1+\text{Tan}[e+f x]^2}\ \left(-9\,a^2\,\text{AppellF1}\left[\frac{5}{4},\frac{1}{2},1,\frac{9}{4},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+\right.\right.$$

$$2\left(2\,\left(a^2-b^2\right)\text{AppellF1}\left[\frac{9}{4},\frac{1}{2},2,\frac{13}{4},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+a^2\,\text{AppellF1}\left[\frac{9}{4},\frac{3}{2},1,\frac{13}{4},\right.\right.$$

$$\left.\left.\left.\left.\left.\left.-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]\right)\text{Tan}[e+f x]^2\right)\left(-b^2\,\text{Tan}[e+f x]^2+a^2\left(1+\text{Tan}[e+f x]^2\right)\right)\right)\right)\right)\Big/$$

$$\left(\text{Cos}[e+f x]^{5/2} (a+b\,\text{Sin}[e+f x]) \sqrt{\text{Tan}[e+f x]} \left(-1+\text{Tan}[e+f x]^2\right) \sqrt{1+\text{Tan}[e+f x]^2}\right) + \left(2 \sqrt{\text{Sin}[e+f x]}\right.$$

$$\left(b\,\text{Tan}[e+f x] + a \sqrt{1+\text{Tan}[e+f x]^2}\right)$$

$$\left(\frac{1}{4 \sqrt{2} \left(a^2-b^2\right)^{3/4}} \sqrt{a} \left(-2\,\text{ArcTan}\left[1-\frac{\sqrt{2} \left(a^2-b^2\right)^{1/4} \sqrt{\text{Tan}[e+f x]}}{\sqrt{a}}\right] + \right.\right.$$

$$2\,\text{ArcTan}\left[1+\frac{\sqrt{2} \left(a^2-b^2\right)^{1/4} \sqrt{\text{Tan}[e+f x]}}{\sqrt{a}}\right] + \text{Log}\left[-a+\sqrt{2} \sqrt{a} \left(a^2-b^2\right)^{1/4} \sqrt{\text{Tan}[e+f x]} - \sqrt{a^2-b^2}\,\text{Tan}[e+f x]\right] -$$

$$\left.\text{Log}\left[a+\sqrt{2} \sqrt{a} \left(a^2-b^2\right)^{1/4} \sqrt{\text{Tan}[e+f x]} + \sqrt{a^2-b^2}\,\text{Tan}[e+f x]\right]\right) +$$

$$\left(9 a^2 b\,\text{AppellF1}\left[\frac{5}{4}, \frac{1}{2}, 1, \frac{9}{4}, -\text{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\right] \text{Tan}[e+f x]^{5/2}\right) \Big/ \left(5 \sqrt{1+\text{Tan}[e+f x]^2}\right.$$

$$\left(-9 a^2\,\text{AppellF1}\left[\frac{5}{4}, \frac{1}{2}, 1, \frac{9}{4}, -\text{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\right] + 2 \left(2 \left(a^2-b^2\right) \text{AppellF1}\left[\frac{9}{4}, \frac{1}{2}, 2, \frac{13}{4}, -\text{Tan}[e+f x]^2,\right.\right.\right.$$

$$\left.\left.\left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\right] + a^2\,\text{AppellF1}\left[\frac{9}{4}, \frac{3}{2}, 1, \frac{13}{4}, -\text{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\right]\right) \text{Tan}[e+f x]^2\Big)$$

$$\left.\left.\left.\left(-b^2\,\text{Tan}[e+f x]^2 + a^2 \left(1+\text{Tan}[e+f x]^2\right)\right)\right)\right)\right) \Big/ \left(\text{Cos}[e+f x]^{5/2} (a+b\,\text{Sin}[e+f x]) \sqrt{\text{Tan}[e+f x]} \left(1+\text{Tan}[e+f x]^2\right)^{3/2}\right)$$

- **Problem 1431: Result unnecessarily involves higher level functions.**

$$\int \frac{(d\,\text{Sin}[e+f x])^{3/2}}{\sqrt{g\,\text{Cos}[e+f x]} (a+b\,\text{Sin}[e+f x])} \, dx$$

Optimal (type 4, 508 leaves, 15 steps) :

$$-\frac{d^{3/2}\,\text{ArcTan}\left[1-\frac{\sqrt{2}\,\sqrt{g}\,\sqrt{d\,\text{Sin}[e+f\,x]}}{\sqrt{d}\,\sqrt{g\,\text{Cos}[e+f\,x]}}\right]}{\sqrt{2}\,b\,f\,\sqrt{g}}+\frac{d^{3/2}\,\text{ArcTan}\left[1+\frac{\sqrt{2}\,\sqrt{g}\,\sqrt{d\,\text{Sin}[e+f\,x]}}{\sqrt{d}\,\sqrt{g\,\text{Cos}[e+f\,x]}}\right]}{\sqrt{2}\,b\,f\,\sqrt{g}}+$$

$$\frac{2\,\sqrt{2}\,a\,d^{3/2}\,\sqrt{\text{Cos}[e+f\,x]}\,\text{EllipticPi}\left[-\frac{a}{b-\sqrt{-a^2+b^2}},\,\text{ArcSin}\left[\frac{\sqrt{d\,\text{Sin}[e+f\,x]}}{\sqrt{d}\,\sqrt{1+\text{Cos}[e+f\,x]}}\right],\,-1\right]}{b\,\sqrt{-a^2+b^2}\,f\,\sqrt{g\,\text{Cos}[e+f\,x]}}-$$

$$\frac{2\,\sqrt{2}\,a\,d^{3/2}\,\sqrt{\text{Cos}[e+f\,x]}\,\text{EllipticPi}\left[-\frac{a}{b+\sqrt{-a^2+b^2}},\,\text{ArcSin}\left[\frac{\sqrt{d\,\text{Sin}[e+f\,x]}}{\sqrt{d}\,\sqrt{1+\text{Cos}[e+f\,x]}}\right],\,-1\right]}{b\,\sqrt{-a^2+b^2}\,f\,\sqrt{g\,\text{Cos}[e+f\,x]}}+$$

$$\frac{d^{3/2}\,\text{Log}\left[\sqrt{d}-\frac{\sqrt{2}\,\sqrt{g}\,\sqrt{d\,\text{Sin}[e+f\,x]}}{\sqrt{g\,\text{Cos}[e+f\,x]}}+\sqrt{d}\,\text{Tan}[e+f\,x]\right]}{2\,\sqrt{2}\,b\,f\,\sqrt{g}}-\frac{d^{3/2}\,\text{Log}\left[\sqrt{d}+\frac{\sqrt{2}\,\sqrt{g}\,\sqrt{d\,\text{Sin}[e+f\,x]}}{\sqrt{g\,\text{Cos}[e+f\,x]}}+\sqrt{d}\,\text{Tan}[e+f\,x]\right]}{2\,\sqrt{2}\,b\,f\,\sqrt{g}}$$

Result (type 6, 518 leaves):

$$\frac{1}{f\,\sqrt{g\,\text{Cos}[e+f\,x]}\,\left(-a+b\,\text{Sin}[e+f\,x]\right)\,\left(a+b\,\text{Sin}[e+f\,x]\right)^2}\,10\,\left(a^2-b^2\right)\,\text{Cot}[e+f\,x]\,\left(d\,\text{Sin}[e+f\,x]\right)^{3/2}\,\left(a+b\,\sqrt{\text{Sin}[e+f\,x]^2}\right)$$

$$\left(\left(\left(a\,\text{AppellF1}\left[\frac{1}{4},\,-\frac{1}{4},\,1,\,\frac{5}{4},\,\text{Cos}[e+f\,x]^2,\,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]\right)\middle/\left(5\,\left(a^2-b^2\right)\,\text{AppellF1}\left[\frac{1}{4},\,-\frac{1}{4},\,1,\,\frac{5}{4},\,\text{Cos}[e+f\,x]^2,\,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]+\right.\right.\right.$$

$$\left(-4\,b^2\,\text{AppellF1}\left[\frac{5}{4},\,-\frac{1}{4},\,2,\,\frac{9}{4},\,\text{Cos}[e+f\,x]^2,\,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]+\left(-a^2+b^2\right)\,\text{AppellF1}\left[\frac{5}{4},\,\frac{3}{4},\,1,\,\frac{9}{4},\,\text{Cos}[e+f\,x]^2,\,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]\right)$$

$$\left.\text{Cos}[e+f\,x]^2\right)+\left(b\,\text{AppellF1}\left[\frac{1}{4},\,-\frac{3}{4},\,1,\,\frac{5}{4},\,\text{Cos}[e+f\,x]^2,\,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]\,\sqrt{\text{Sin}[e+f\,x]^2}\right)\Big/$$

$$\left(-5\,\left(a^2-b^2\right)\,\text{AppellF1}\left[\frac{1}{4},\,-\frac{3}{4},\,1,\,\frac{5}{4},\,\text{Cos}[e+f\,x]^2,\,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]+\left(4\,b^2\,\text{AppellF1}\left[\frac{5}{4},\,-\frac{3}{4},\,2,\,\frac{9}{4},\,\text{Cos}[e+f\,x]^2,\,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]+\right.\right.$$

$$\left.\left.\left.3\,\left(a^2-b^2\right)\,\text{AppellF1}\left[\frac{5}{4},\,\frac{1}{4},\,1,\,\frac{9}{4},\,\text{Cos}[e+f\,x]^2,\,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]\right)\,\text{Cos}[e+f\,x]^2\right)\right)$$

Problem 1433: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{1}{\sqrt{g\,\text{Cos}[e+f\,x]}\,\sqrt{d\,\text{Sin}[e+f\,x]}\,\left(a+b\,\text{Sin}[e+f\,x]\right)}\,dx$$

Optimal (type 4, 273 leaves, 7 steps):

$$\frac{2\sqrt{2}\,b\sqrt{\cos[e+fx]}\,\text{EllipticPi}\left[-\frac{a}{b-\sqrt{-a^2+b^2}},\text{ArcSin}\left[\frac{\sqrt{d\,\sin[e+fx]}}{\sqrt{d}\,\sqrt{1+\cos[e+fx]}}\right],-1\right]}{a\sqrt{-a^2+b^2}\,\sqrt{d}\,f\sqrt{g\cos[e+fx]}}-$$

$$\frac{2\sqrt{2}\,b\sqrt{\cos[e+fx]}\,\text{EllipticPi}\left[-\frac{a}{b+\sqrt{-a^2+b^2}},\text{ArcSin}\left[\frac{\sqrt{d\,\sin[e+fx]}}{\sqrt{d}\,\sqrt{1+\cos[e+fx]}}\right],-1\right]}{a\sqrt{-a^2+b^2}\,\sqrt{d}\,f\sqrt{g\cos[e+fx]}}+\frac{\text{EllipticF}\left[e-\frac{\pi}{4}+fx,2\right]\sqrt{\sin[2e+2fx]}}{af\sqrt{g\cos[e+fx]}\,\sqrt{d\,\sin[e+fx]}}$$

Result (type 6, 664 leaves) :

$$-\Bigg(\Bigg(2\sqrt{\cos[e+fx]}\left(a+b\sqrt{1-\cos[e+fx]^2}\right)$$
$$\Bigg(\left(5a\left(a^2-b^2\right)\text{AppellF1}\left[\frac{1}{4},\frac{3}{4},1,\frac{5}{4},\cos[e+fx]^2,\frac{b^2\cos[e+fx]^2}{-a^2+b^2}\right]\sqrt{\cos[e+fx]}\right)\Big/\left(\left(1-\cos[e+fx]^2\right)^{3/4}\right.$$
$$\left(5\left(a^2-b^2\right)\text{AppellF1}\left[\frac{1}{4},\frac{3}{4},1,\frac{5}{4},\cos[e+fx]^2,\frac{b^2\cos[e+fx]^2}{-a^2+b^2}\right]+\left(-4b^2\,\text{AppellF1}\left[\frac{5}{4},\frac{3}{4},2,\frac{9}{4},\cos[e+fx]^2,\frac{b^2\cos[e+fx]^2}{-a^2+b^2}\right]+\right.\right.$$
$$\left.\left.\left.3\left(a^2-b^2\right)\text{AppellF1}\left[\frac{5}{4},\frac{7}{4},1,\frac{9}{4},\cos[e+fx]^2,\frac{b^2\cos[e+fx]^2}{-a^2+b^2}\right]\right)\cos[e+fx]^2\right)\left(a^2+b^2\left(-1+\cos[e+fx]^2\right)\right)\right)-$$
$$\frac{1}{\sqrt{a}\left(-a^2+b^2\right)^{3/4}}\left(\frac{1}{8}-\frac{i}{8}\right)b\left(2\,\text{ArcTan}\left[1-\frac{(1+i)\sqrt{a}\sqrt{\cos[e+fx]}}{\left(-a^2+b^2\right)^{1/4}\left(-1+\cos[e+fx]^2\right)^{1/4}}\right]-2\,\text{ArcTan}\left[1+\frac{(1+i)\sqrt{a}\sqrt{\cos[e+fx]}}{\left(-a^2+b^2\right)^{1/4}\left(-1+\cos[e+fx]^2\right)^{1/4}}\right]+\right.$$
$$\text{Log}\left[\sqrt{-a^2+b^2}+\frac{i\,a\cos[e+fx]}{\sqrt{-1+\cos[e+fx]^2}}-\frac{(1+i)\sqrt{a}\left(-a^2+b^2\right)^{1/4}\sqrt{\cos[e+fx]}}{\left(-1+\cos[e+fx]^2\right)^{1/4}}\right]-$$
$$\left.\left.\text{Log}\left[\sqrt{-a^2+b^2}+\frac{i\,a\cos[e+fx]}{\sqrt{-1+\cos[e+fx]^2}}+\frac{(1+i)\sqrt{a}\left(-a^2+b^2\right)^{1/4}\sqrt{\cos[e+fx]}}{\left(-1+\cos[e+fx]^2\right)^{1/4}}\right]\right)\Bigg)\sin[e+fx]\Bigg)\Big/$$
$$\left(f\sqrt{g\cos[e+fx]}\left(1-\cos[e+fx]^2\right)^{1/4}\sqrt{d\,\sin[e+fx]}\,\left(a+b\,\sin[e+fx]\right)\right)\Bigg)$$

- **Problem 1434: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int\frac{1}{\sqrt{g\cos[e+fx]}\,\left(d\,\sin[e+fx]\right)^{3/2}\left(a+b\,\sin[e+fx]\right)}\,dx$$

Optimal (type 4, 320 leaves, 9 steps) :

$$-\frac{2\sqrt{2}\,b^2\sqrt{\text{Cos}[e+f x]}\,\text{EllipticPi}\left[-\frac{a}{b-\sqrt{-a^2+b^2}},\text{ArcSin}\left[\frac{\sqrt{d\,\text{Sin}[e+f x]}}{\sqrt{d}\,\sqrt{1+\text{Cos}[e+f x]}}\right],-1\right]}{a^2\sqrt{-a^2+b^2}\,d^{3/2}\,f\,\sqrt{g\,\text{Cos}[e+f x]}}+\frac{2\sqrt{2}\,b^2\sqrt{\text{Cos}[e+f x]}\,\text{EllipticPi}\left[-\frac{a}{b+\sqrt{-a^2+b^2}},\text{ArcSin}\left[\frac{\sqrt{d\,\text{Sin}[e+f x]}}{\sqrt{d}\,\sqrt{1+\text{Cos}[e+f x]}}\right],-1\right]}{a^2\sqrt{-a^2+b^2}\,d^{3/2}\,f\,\sqrt{g\,\text{Cos}[e+f x]}}-\frac{2\sqrt{g\,\text{Cos}[e+f x]}}{a\,d\,f\,g\,\sqrt{d\,\text{Sin}[e+f x]}}-\frac{b\,\text{EllipticF}\left[e-\frac{\pi}{4}+f x,2\right]\sqrt{\text{Sin}[2e+2f x]}}{a^2\,d\,f\,\sqrt{g\,\text{Cos}[e+f x]}\,\sqrt{d\,\text{Sin}[e+f x]}}$$

Result (type 6, 715 leaves) :

$$-\frac{2\,\text{Cos}[e+f x]\,\text{Sin}[e+f x]}{a\,f\,\sqrt{g\,\text{Cos}[e+f x]}\,(d\,\text{Sin}[e+f x])^{3/2}}+\left(2\,b\sqrt{\text{Cos}[e+f x]}\left(a+b\sqrt{1-\text{Cos}[e+f x]^2}\right)\left(\left(5\,a\left(a^2-b^2\right)\text{AppellF1}\left[\frac{1}{4},\frac{3}{4},1,\frac{5}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]\sqrt{\text{Cos}[e+f x]}\right)\Big/\left(\left(1-\text{Cos}[e+f x]^2\right)^{3/4}\left(5\left(a^2-b^2\right)\text{AppellF1}\left[\frac{1}{4},\frac{3}{4},1,\frac{5}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]+\left(-4\,b^2\,\text{AppellF1}\left[\frac{5}{4},\frac{3}{4},2,\frac{9}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]+3\left(a^2-b^2\right)\text{AppellF1}\left[\frac{5}{4},\frac{7}{4},1,\frac{9}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]\right)\text{Cos}[e+f x]^2\right)\left(a^2+b^2\left(-1+\text{Cos}[e+f x]^2\right)\right)\right)-\frac{1}{\sqrt{a}\left(-a^2+b^2\right)^{3/4}}\left(\frac{1}{8}-\frac{i}{8}\right)b\left(2\,\text{ArcTan}\left[1-\frac{(1+i)\sqrt{a}\,\sqrt{\text{Cos}[e+f x]}}{\left(-a^2+b^2\right)^{1/4}\left(-1+\text{Cos}[e+f x]^2\right)^{1/4}}\right]-2\,\text{ArcTan}\left[1+\frac{(1+i)\sqrt{a}\,\sqrt{\text{Cos}[e+f x]}}{\left(-a^2+b^2\right)^{1/4}\left(-1+\text{Cos}[e+f x]^2\right)^{1/4}}\right]+\text{Log}\left[\sqrt{-a^2+b^2}+\frac{i\,a\,\text{Cos}[e+f x]}{\sqrt{-1+\text{Cos}[e+f x]^2}}-\frac{(1+i)\sqrt{a}\left(-a^2+b^2\right)^{1/4}\sqrt{\text{Cos}[e+f x]}}{\left(-1+\text{Cos}[e+f x]^2\right)^{1/4}}\right]-\text{Log}\left[\sqrt{-a^2+b^2}+\frac{i\,a\,\text{Cos}[e+f x]}{\sqrt{-1+\text{Cos}[e+f x]^2}}+\frac{(1+i)\sqrt{a}\left(-a^2+b^2\right)^{1/4}\sqrt{\text{Cos}[e+f x]}}{\left(-1+\text{Cos}[e+f x]^2\right)^{1/4}}\right]\right)\right)\text{Sin}[e+f x]^2\right)\Big/\left(a\,f\,\sqrt{g\,\text{Cos}[e+f x]}\left(1-\text{Cos}[e+f x]^2\right)^{1/4}(d\,\text{Sin}[e+f x])^{3/2}\,(a+b\,\text{Sin}[e+f x])\right)$$

- **Problem 1435: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int \frac{1}{\sqrt{g \operatorname{Cos}[e+f x]}\,(d \operatorname{Sin}[e+f x])^{5/2}\,(a+b \operatorname{Sin}[e+f x])}\,dx$$

Optimal (type 4, 424 leaves, 13 steps):

$$\frac{2\sqrt{2}\,b^3\sqrt{\operatorname{Cos}[e+f x]}\,\operatorname{EllipticPi}\left[-\frac{a}{b-\sqrt{-a^2+b^2}},\operatorname{ArcSin}\left[\frac{\sqrt{d \operatorname{Sin}[e+f x]}}{\sqrt{d}\,\sqrt{1+\operatorname{Cos}[e+f x]}}\right],-1\right]}{a^3\sqrt{-a^2+b^2}\,d^{5/2}\,f\sqrt{g \operatorname{Cos}[e+f x]}}-$$

$$\frac{2\sqrt{2}\,b^3\sqrt{\operatorname{Cos}[e+f x]}\,\operatorname{EllipticPi}\left[-\frac{a}{b+\sqrt{-a^2+b^2}},\operatorname{ArcSin}\left[\frac{\sqrt{d \operatorname{Sin}[e+f x]}}{\sqrt{d}\,\sqrt{1+\operatorname{Cos}[e+f x]}}\right],-1\right]}{a^3\sqrt{-a^2+b^2}\,d^{5/2}\,f\sqrt{g \operatorname{Cos}[e+f x]}}-\frac{2\sqrt{g \operatorname{Cos}[e+f x]}}{3\,a\,d\,f\,g\,(d \operatorname{Sin}[e+f x])^{3/2}}+$$

$$\frac{2\,b\sqrt{g \operatorname{Cos}[e+f x]}}{a^2\,d^2\,f\,g\sqrt{d \operatorname{Sin}[e+f x]}}+\frac{2\,\operatorname{EllipticF}\left[e-\frac{\pi}{4}+f x,2\right]\sqrt{\operatorname{Sin}[2 e+2 f x]}}{3\,a\,d^2\,f\sqrt{g \operatorname{Cos}[e+f x]}\,\sqrt{d \operatorname{Sin}[e+f x]}}+\frac{b^2\,\operatorname{EllipticF}\left[e-\frac{\pi}{4}+f x,2\right]\sqrt{\operatorname{Sin}[2 e+2 f x]}}{a^3\,d^2\,f\sqrt{g \operatorname{Cos}[e+f x]}\,\sqrt{d \operatorname{Sin}[e+f x]}}$$

Result (type 6, 1332 leaves):

$$\frac{\operatorname{Cos}[e+f x]\left(\frac{2\,b \operatorname{Csc}[e+f x]}{a^2}-\frac{2 \operatorname{Csc}[e+f x]^2}{3\,a}\right)\operatorname{Sin}[e+f x]^3}{f\sqrt{g \operatorname{Cos}[e+f x]}\,(d \operatorname{Sin}[e+f x])^{5/2}}+$$

$$\frac{1}{3\,a^2\,f\sqrt{g \operatorname{Cos}[e+f x]}\,(d \operatorname{Sin}[e+f x])^{5/2}}\sqrt{\operatorname{Cos}[e+f x]}\,\operatorname{Sin}[e+f x]^{5/2}\left(-\frac{1}{\left(1-\operatorname{Cos}[e+f x]^2\right)^{1/4}(a+b \operatorname{Sin}[e+f x])}\right.$$

$$2\left(2\,a^2+3\,b^2\right)\left(a+b\sqrt{1-\operatorname{Cos}[e+f x]^2}\right)\left(\left(5\,a\left(a^2-b^2\right)\operatorname{AppellF1}\left[\frac{1}{4},\frac{3}{4},1,\frac{5}{4},\operatorname{Cos}[e+f x]^2,\frac{b^2 \operatorname{Cos}[e+f x]^2}{-a^2+b^2}\right]\sqrt{\operatorname{Cos}[e+f x]}\right)\right/$$

$$\left(\left(1-\operatorname{Cos}[e+f x]^2\right)^{3/4}\left(5\left(a^2-b^2\right)\operatorname{AppellF1}\left[\frac{1}{4},\frac{3}{4},1,\frac{5}{4},\operatorname{Cos}[e+f x]^2,\frac{b^2 \operatorname{Cos}[e+f x]^2}{-a^2+b^2}\right]+\left(-4\,b^2\,\operatorname{AppellF1}\left[\frac{5}{4},\frac{3}{4},2,\frac{9}{4},\right.\right.\right.\right.$$

$$\left.\left.\operatorname{Cos}[e+f x]^2,\frac{b^2 \operatorname{Cos}[e+f x]^2}{-a^2+b^2}\right]+3\left(a^2-b^2\right)\operatorname{AppellF1}\left[\frac{5}{4},\frac{7}{4},1,\frac{9}{4},\operatorname{Cos}[e+f x]^2,\frac{b^2 \operatorname{Cos}[e+f x]^2}{-a^2+b^2}\right]\right)\operatorname{Cos}[e+f x]^2\right)$$

$$\left.\left.\left(a^2+b^2\left(-1+\operatorname{Cos}[e+f x]^2\right)\right)\right)-\frac{1}{\sqrt{a}\left(-a^2+b^2\right)^{3/4}}\left(\frac{1}{8}-\frac{i}{8}\right)b\left(2\operatorname{ArcTan}\left[1-\frac{(1+i)\sqrt{a}\,\sqrt{\operatorname{Cos}[e+f x]}}{\left(-a^2+b^2\right)^{1/4}\left(-1+\operatorname{Cos}[e+f x]^2\right)^{1/4}}\right]-2\operatorname{ArcTan}\left[\right.\right.$$

$$\left.1+\frac{(1+i)\sqrt{a}\,\sqrt{\operatorname{Cos}[e+f x]}}{\left(-a^2+b^2\right)^{1/4}\left(-1+\operatorname{Cos}[e+f x]^2\right)^{1/4}}\right]+\operatorname{Log}\left[\sqrt{-a^2+b^2}+\frac{i\,a \operatorname{Cos}[e+f x]}{\sqrt{-1+\operatorname{Cos}[e+f x]^2}}-\frac{(1+i)\sqrt{a}\left(-a^2+b^2\right)^{1/4}\sqrt{\operatorname{Cos}[e+f x]}}{\left(-1+\operatorname{Cos}[e+f x]^2\right)^{1/4}}\right]-$$

$$\mathrm{Log}\left[\sqrt{-a^2+b^2}+\frac{i\,a\,\mathrm{Cos}[e+f\,x]}{\sqrt{-1+\mathrm{Cos}[e+f\,x]^2}}+\frac{(1+i)\,\sqrt{a}\,\left(-a^2+b^2\right)^{1/4}\sqrt{\mathrm{Cos}[e+f\,x]}}{\left(-1+\mathrm{Cos}[e+f\,x]^2\right)^{1/4}}\right]\Bigg)\Bigg)\sqrt{\mathrm{Sin}[e+f\,x]}+$$

$$\Bigg(4\,a\,b\,\sqrt{\mathrm{Sin}[e+f\,x]}\,\left(b\,\mathrm{Tan}[e+f\,x]+a\,\sqrt{1+\mathrm{Tan}[e+f\,x]^2}\right)\Bigg(\frac{1}{4\,\sqrt{2}\,\left(a^2-b^2\right)^{3/4}}\sqrt{a}\,\Bigg(-2\,\mathrm{ArcTan}\left[1-\frac{\sqrt{2}\,\left(a^2-b^2\right)^{1/4}\sqrt{\mathrm{Tan}[e+f\,x]}}{\sqrt{a}}\right]+$$

$$2\,\mathrm{ArcTan}\left[1+\frac{\sqrt{2}\,\left(a^2-b^2\right)^{1/4}\sqrt{\mathrm{Tan}[e+f\,x]}}{\sqrt{a}}\right]+\mathrm{Log}\left[-a+\sqrt{2}\,\sqrt{a}\,\left(a^2-b^2\right)^{1/4}\sqrt{\mathrm{Tan}[e+f\,x]}-\sqrt{a^2-b^2}\,\mathrm{Tan}[e+f\,x]\right]-$$

$$\mathrm{Log}\left[a+\sqrt{2}\,\sqrt{a}\,\left(a^2-b^2\right)^{1/4}\sqrt{\mathrm{Tan}[e+f\,x]}+\sqrt{a^2-b^2}\,\mathrm{Tan}[e+f\,x]\right]\Bigg)+$$

$$\left(9\,a^2\,b\,\mathrm{AppellF1}\left[\frac{5}{4},\frac{1}{2},1,\frac{9}{4},-\mathrm{Tan}[e+f\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\mathrm{Tan}[e+f\,x]^2\right]\mathrm{Tan}[e+f\,x]^{5/2}\right)\Big/\Bigg(5\,\sqrt{1+\mathrm{Tan}[e+f\,x]^2}$$

$$\Bigg(-9\,a^2\,\mathrm{AppellF1}\left[\frac{5}{4},\frac{1}{2},1,\frac{9}{4},-\mathrm{Tan}[e+f\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\mathrm{Tan}[e+f\,x]^2\right]+2\,\Bigg(2\,\left(a^2-b^2\right)\mathrm{AppellF1}\left[\frac{9}{4},\frac{1}{2},2,\frac{13}{4},-\mathrm{Tan}[e+f\,x]^2,\right.$$

$$\left.\left(-1+\frac{b^2}{a^2}\right)\mathrm{Tan}[e+f\,x]^2\right]+a^2\,\mathrm{AppellF1}\left[\frac{9}{4},\frac{3}{2},1,\frac{13}{4},-\mathrm{Tan}[e+f\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\mathrm{Tan}[e+f\,x]^2\right]\Bigg)\mathrm{Tan}[e+f\,x]^2\Bigg)$$

$$\left(-b^2\,\mathrm{Tan}[e+f\,x]^2+a^2\,\left(1+\mathrm{Tan}[e+f\,x]^2\right)\right)\Bigg)\Bigg)\Bigg)\Big/\left(\mathrm{Cos}[e+f\,x]^{5/2}\,(a+b\,\mathrm{Sin}[e+f\,x])\,\sqrt{\mathrm{Tan}[e+f\,x]}\,\left(1+\mathrm{Tan}[e+f\,x]^2\right)^{3/2}\right)$$

- **Problem 1436: Attempted integration timed out after 120 seconds.**

$$\int\frac{(d\,\mathrm{Sin}[e+f\,x])^{5/2}}{(g\,\mathrm{Cos}[e+f\,x])^{3/2}\,(a+b\,\mathrm{Sin}[e+f\,x])}\,dx$$

Optimal (type 4, 1064 leaves, 31 steps):

$$-\frac{a^2 d^{5/2} \text{ArcTan}\left[1-\frac{\sqrt{2}\sqrt{d}\sqrt{g \text{Cos}[e+f x]}}{\sqrt{g}\sqrt{d \text{Sin}[e+f x]}}\right]}{\sqrt{2} b (a^2-b^2) f g^{3/2}}+\frac{b d^{5/2} \text{ArcTan}\left[1-\frac{\sqrt{2}\sqrt{d}\sqrt{g \text{Cos}[e+f x]}}{\sqrt{g}\sqrt{d \text{Sin}[e+f x]}}\right]}{\sqrt{2} (a^2-b^2) f g^{3/2}}+\frac{a^2 d^{5/2} \text{ArcTan}\left[1+\frac{\sqrt{2}\sqrt{d}\sqrt{g \text{Cos}[e+f x]}}{\sqrt{g}\sqrt{d \text{Sin}[e+f x]}}\right]}{\sqrt{2} b (a^2-b^2) f g^{3/2}}-$$

$$\frac{b d^{5/2} \text{ArcTan}\left[1+\frac{\sqrt{2}\sqrt{d}\sqrt{g \text{Cos}[e+f x]}}{\sqrt{g}\sqrt{d \text{Sin}[e+f x]}}\right]}{\sqrt{2} (a^2-b^2) f g^{3/2}}+\frac{a^2 d^{5/2} \text{Log}\left[\sqrt{g}+\sqrt{g} \text{Cot}[e+f x]-\frac{\sqrt{2}\sqrt{d}\sqrt{g \text{Cos}[e+f x]}}{\sqrt{d \text{Sin}[e+f x]}}\right]}{2\sqrt{2} b (a^2-b^2) f g^{3/2}}-$$

$$\frac{b d^{5/2} \text{Log}\left[\sqrt{g}+\sqrt{g} \text{Cot}[e+f x]-\frac{\sqrt{2}\sqrt{d}\sqrt{g \text{Cos}[e+f x]}}{\sqrt{d \text{Sin}[e+f x]}}\right]}{2\sqrt{2} (a^2-b^2) f g^{3/2}}-\frac{a^2 d^{5/2} \text{Log}\left[\sqrt{g}+\sqrt{g} \text{Cot}[e+f x]+\frac{\sqrt{2}\sqrt{d}\sqrt{g \text{Cos}[e+f x]}}{\sqrt{d \text{Sin}[e+f x]}}\right]}{2\sqrt{2} b (a^2-b^2) f g^{3/2}}+$$

$$\frac{b d^{5/2} \text{Log}\left[\sqrt{g}+\sqrt{g} \text{Cot}[e+f x]+\frac{\sqrt{2}\sqrt{d}\sqrt{g \text{Cos}[e+f x]}}{\sqrt{d \text{Sin}[e+f x]}}\right]}{2\sqrt{2} (a^2-b^2) f g^{3/2}}-\frac{2\sqrt{2} a^3 d^3 \text{EllipticPi}\left[-\frac{\sqrt{-a+b}}{\sqrt{a+b}}, \text{ArcSin}\left[\frac{\sqrt{g \text{Cos}[e+f x]}}{\sqrt{g}\sqrt{1+\text{Sin}[e+f x]}}\right], -1\right]\sqrt{\text{Sin}[e+f x]}}{b (-a+b)^{3/2} (a+b)^{3/2} f g^{3/2}\sqrt{d \text{Sin}[e+f x]}}+$$

$$\frac{2\sqrt{2} a^3 d^3 \text{EllipticPi}\left[\frac{\sqrt{-a+b}}{\sqrt{a+b}}, \text{ArcSin}\left[\frac{\sqrt{g \text{Cos}[e+f x]}}{\sqrt{g}\sqrt{1+\text{Sin}[e+f x]}}\right], -1\right]\sqrt{\text{Sin}[e+f x]}}{b (-a+b)^{3/2} (a+b)^{3/2} f g^{3/2}\sqrt{d \text{Sin}[e+f x]}}-\frac{2 b d^2\sqrt{d \text{Sin}[e+f x]}}{(a^2-b^2) f g\sqrt{g \text{Cos}[e+f x]}}+$$

$$\frac{2 a d (d \text{Sin}[e+f x])^{3/2}}{(a^2-b^2) f g\sqrt{g \text{Cos}[e+f x]}}-\frac{2 a d^2\sqrt{g \text{Cos}[e+f x]} \text{EllipticE}\left[e-\frac{\pi}{4}+f x, 2\right]\sqrt{d \text{Sin}[e+f x]}}{(a^2-b^2) f g^2\sqrt{\text{Sin}[2 e+2 f x]}}$$

Result (type 1, 1 leaves) :

???

- **Problem 1437: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int \frac{(d \text{Sin}[e+f x])^{3/2}}{(g \text{Cos}[e+f x])^{3/2} (a+b \text{Sin}[e+f x])} \, dx$$

Optimal (type 4, 379 leaves, 10 steps) :

$$\frac{2\sqrt{2}\,a^2 d^2\,\text{EllipticPi}\left[-\frac{\sqrt{-a+b}}{\sqrt{a+b}},\,\text{ArcSin}\left[\frac{\sqrt{g\,\text{Cos}[e+f\,x]}}{\sqrt{g}\,\sqrt{1+\text{Sin}[e+f\,x]}}\right],\,-1\right]\sqrt{\text{Sin}[e+f\,x]}}{(-a+b)^{3/2}\,(a+b)^{3/2}\,f\,g^{3/2}\,\sqrt{d\,\text{Sin}[e+f\,x]}}-$$

$$\frac{2\sqrt{2}\,a^2 d^2\,\text{EllipticPi}\left[\frac{\sqrt{-a+b}}{\sqrt{a+b}},\,\text{ArcSin}\left[\frac{\sqrt{g\,\text{Cos}[e+f\,x]}}{\sqrt{g}\,\sqrt{1+\text{Sin}[e+f\,x]}}\right],\,-1\right]\sqrt{\text{Sin}[e+f\,x]}}{(-a+b)^{3/2}\,(a+b)^{3/2}\,f\,g^{3/2}\,\sqrt{d\,\text{Sin}[e+f\,x]}}+\frac{2\,a\,d\,\sqrt{d\,\text{Sin}[e+f\,x]}}{\left(a^2-b^2\right)f\,g\,\sqrt{g\,\text{Cos}[e+f\,x]}}-$$

$$\frac{2\,b\,(d\,\text{Sin}[e+f\,x])^{3/2}}{\left(a^2-b^2\right)f\,g\,\sqrt{g\,\text{Cos}[e+f\,x]}}+\frac{2\,b\,d\,\sqrt{g\,\text{Cos}[e+f\,x]}\,\text{EllipticE}\left[e-\frac{\pi}{4}+f\,x,\,2\right]\sqrt{d\,\text{Sin}[e+f\,x]}}{\left(a^2-b^2\right)f\,g^2\,\sqrt{\text{Sin}[2\,e+2\,f\,x]}}$$

Result (type 6, 2915 leaves):

$$\frac{2\,\text{Cot}[e+f\,x]\,(d\,\text{Sin}[e+f\,x])^{3/2}\,(a-b\,\text{Sin}[e+f\,x])}{\left(a^2-b^2\right)f\,(g\,\text{Cos}[e+f\,x])^{3/2}}-$$

$$\frac{1}{(a-b)\,(a+b)\,f\,(g\,\text{Cos}[e+f\,x])^{3/2}\,\text{Sin}[e+f\,x]^{3/2}}\text{Cos}[e+f\,x]^{3/2}\,(d\,\text{Sin}[e+f\,x])^{3/2}\left(\left(28\,a\,b\,\left(a^2-b^2\right)\text{Cos}[e+f\,x]^{3/2}\left(a+b\sqrt{1-\text{Cos}[e+f\,x]^2}\right)\right.\right.$$

$$\left(\left(b\,\text{AppellF1}\left[\frac{3}{4},-\frac{1}{4},1,\frac{7}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]\sqrt{1-\text{Cos}[e+f\,x]^2}\right)\Big/\left(-7\left(a^2-b^2\right)\text{AppellF1}\left[\frac{3}{4},-\frac{1}{4},1,\frac{7}{4},\text{Cos}[e+f\,x]^2,\right.\right.\right.$$

$$\left.\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]+\left(4\,b^2\,\text{AppellF1}\left[\frac{7}{4},-\frac{1}{4},2,\frac{11}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]+\left(a^2-b^2\right)\text{AppellF1}\left[\frac{7}{4},\frac{3}{4},1,\frac{11}{4},\right.\right.$$

$$\left.\left.\left.\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]\right)\text{Cos}[e+f\,x]^2\right)+\left(a\,\text{AppellF1}\left[\frac{3}{4},\frac{1}{4},1,\frac{7}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]\right)\Big/$$

$$\left(7\left(a^2-b^2\right)\text{AppellF1}\left[\frac{3}{4},\frac{1}{4},1,\frac{7}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]+\left(-4\,b^2\,\text{AppellF1}\left[\frac{7}{4},\frac{1}{4},2,\frac{11}{4},\text{Cos}[e+f\,x]^2,\right.\right.\right.$$

$$\left.\left.\left.\left.\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]+\left(a^2-b^2\right)\text{AppellF1}\left[\frac{7}{4},\frac{5}{4},1,\frac{11}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]\right)\text{Cos}[e+f\,x]^2\right)\right)\text{Sin}[e+f\,x]^{3/2}\right)\Big/$$

$$\left.\left(3\left(1-\text{Cos}[e+f\,x]^2\right)\left(a^2+b^2\left(-1+\text{Cos}[e+f\,x]^2\right)\right)(a+b\,\text{Sin}[e+f\,x])\right)+\left(2\left(a^2-b^2\right)\sqrt{\text{Tan}[e+f\,x]}\left(b\,\text{Tan}[e+f\,x]+a\sqrt{1+\text{Tan}[e+f\,x]^2}\right)\right.$$

$$\left(\frac{1}{4\sqrt{2}\,\sqrt{a}\left(a^2-b^2\right)^{1/4}}\left(-2\,\text{ArcTan}\left[1-\frac{\sqrt{2}\left(a^2-b^2\right)^{1/4}\sqrt{\text{Tan}[e+f\,x]}}{\sqrt{a}}\right]+2\,\text{ArcTan}\left[1+\frac{\sqrt{2}\left(a^2-b^2\right)^{1/4}\sqrt{\text{Tan}[e+f\,x]}}{\sqrt{a}}\right]-\right.\right.$$

$$\text{Log}\left[-a+\sqrt{2}\,\sqrt{a}\left(a^2-b^2\right)^{1/4}\sqrt{\text{Tan}[e+f\,x]}-\sqrt{a^2-b^2}\,\text{Tan}[e+f\,x]\right]+\text{Log}\left[a+\sqrt{2}\,\sqrt{a}\left(a^2-b^2\right)^{1/4}\sqrt{\text{Tan}[e+f\,x]}+\right.$$

$$\sqrt{a^2-b^2}\ \text{Tan}[e+f x]\Big]\Bigg)+\left(7 a^2 b\,\text{AppellF1}\Big[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\Big]\,\text{Tan}[e+f x]^{3/2}\right)\Big/$$

$$\Bigg(3\sqrt{1+\text{Tan}[e+f x]^2}\ \Bigg(-7 a^2\,\text{AppellF1}\Big[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\Big]+2$$

$$\Bigg(2\left(a^2-b^2\right)\text{AppellF1}\Big[\frac{7}{4},\frac{1}{2},2,\frac{11}{4},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\Big]+a^2\,\text{AppellF1}\Big[\frac{7}{4},\frac{3}{2},1,\frac{11}{4},$$

$$-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\Big]\Bigg)\text{Tan}[e+f x]^2\Bigg)\left(-b^2\,\text{Tan}[e+f x]^2+a^2\left(1+\text{Tan}[e+f x]^2\right)\right)\Bigg)\Bigg)\Bigg/$$

$$\left(\text{Cos}[e+f x]^{3/2}\sqrt{\text{Sin}[e+f x]}\ (a+b\,\text{Sin}[e+f x])\left(1+\text{Tan}[e+f x]^2\right)^{3/2}\right)+\Bigg(2 b^2\,\text{Cos}[2(e+f x)]\sqrt{\text{Tan}[e+f x]}$$

$$\left(b\,\text{Tan}[e+f x]+a\sqrt{1+\text{Tan}[e+f x]^2}\right)$$

$$\Bigg(-\frac{a\,\text{ArcTan}\Big[\frac{-\sqrt{2}+2\sqrt{\text{Tan}[e+f x]}}{\sqrt{2}}\Big]}{\sqrt{2}\ b^2}-\frac{a\,\text{ArcTan}\Big[\frac{\sqrt{2}+2\sqrt{\text{Tan}[e+f x]}}{\sqrt{2}}\Big]}{\sqrt{2}\ b^2}+\frac{\left(2 a^2-b^2\right)\text{ArcTan}\Big[\frac{-\sqrt{2}\sqrt{a}+2\left(a^2-b^2\right)^{1/4}\sqrt{\text{Tan}[e+f x]}}{\sqrt{2}\sqrt{a}}\Big]}{2\sqrt{2}\sqrt{a}\ b^2\left(a^2-b^2\right)^{1/4}}+$$

$$\frac{\left(2 a^2-b^2\right)\text{ArcTan}\Big[\frac{\sqrt{2}\sqrt{a}+2\left(a^2-b^2\right)^{1/4}\sqrt{\text{Tan}[e+f x]}}{\sqrt{2}\sqrt{a}}\Big]}{2\sqrt{2}\sqrt{a}\ b^2\left(a^2-b^2\right)^{1/4}}+\frac{a\,\text{Log}\Big[1-\sqrt{2}\sqrt{\text{Tan}[e+f x]}+\text{Tan}[e+f x]\Big]}{2\sqrt{2}\ b^2}-$$

$$\frac{a\,\text{Log}\Big[1+\sqrt{2}\sqrt{\text{Tan}[e+f x]}+\text{Tan}[e+f x]\Big]}{2\sqrt{2}\ b^2}-\frac{\left(2 a^2-b^2\right)\text{Log}\Big[-a+\sqrt{2}\sqrt{a}\left(a^2-b^2\right)^{1/4}\sqrt{\text{Tan}[e+f x]}-\sqrt{a^2-b^2}\ \text{Tan}[e+f x]\Big]}{4\sqrt{2}\sqrt{a}\ b^2\left(a^2-b^2\right)^{1/4}}+$$

$$\frac{\left(2 a^2-b^2\right)\text{Log}\Big[a+\sqrt{2}\sqrt{a}\left(a^2-b^2\right)^{1/4}\sqrt{\text{Tan}[e+f x]}+\sqrt{a^2-b^2}\ \text{Tan}[e+f x]\Big]}{4\sqrt{2}\sqrt{a}\ b^2\left(a^2-b^2\right)^{1/4}}+\frac{\text{Tan}[e+f x]^{3/2}}{b\sqrt{1+\text{Tan}[e+f x]^2}}+$$

$$\left(7 a^4\,\text{AppellF1}\Big[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},-\text{Tan}[e+f x]^2,\frac{\left(-a^2+b^2\right)\text{Tan}[e+f x]^2}{a^2}\Big]\,\text{Tan}[e+f x]^{3/2}\right)\Big/$$

$$\Bigg(b\sqrt{1+\text{Tan}[e+f x]^2}\ \Bigg(-7 a^2\,\text{AppellF1}\Big[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\Big]+2$$

$$\Bigg(2\left(a^2-b^2\right)\text{AppellF1}\Big[\frac{7}{4},\frac{1}{2},2,\frac{11}{4},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\Big]+a^2\,\text{AppellF1}\Big[\frac{7}{4},\frac{3}{2},1,\frac{11}{4},$$

$$-\text{Tan}[e+f x]^2,\ \left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\Big]\Big)\ \text{Tan}[e+f x]^2\Big)\ \left(-b^2\,\text{Tan}[e+f x]^2+a^2\left(1+\text{Tan}[e+f x]^2\right)\right)\Big)-$$

$$\left(7\,a^2\,b\,\text{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},-\text{Tan}[e+f x]^2,\frac{\left(-a^2+b^2\right)\text{Tan}[e+f x]^2}{a^2}\right]\text{Tan}[e+f x]^{3/2}\right)\Big/\ \Big(3\sqrt{1+\text{Tan}[e+f x]^2}$$

$$\Big(-7\,a^2\,\text{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+2\Big(2\left(a^2-b^2\right)\text{AppellF1}\Big[\frac{7}{4},\frac{1}{2},2,\frac{11}{4},-\text{Tan}[e+f x]^2,$$

$$\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\Big]+a^2\,\text{AppellF1}\left[\frac{7}{4},\frac{3}{2},1,\frac{11}{4},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]\Big)\ \text{Tan}[e+f x]^2\Big)$$

$$\left(-b^2\,\text{Tan}[e+f x]^2+a^2\left(1+\text{Tan}[e+f x]^2\right)\right)\Big)+\Big(11\,a^4\,\text{AppellF1}\left[\frac{7}{4},\frac{1}{2},1,\frac{11}{4},-\text{Tan}[e+f x]^2,\frac{\left(-a^2+b^2\right)\text{Tan}[e+f x]^2}{a^2}\right]$$

$$\text{Tan}[e+f x]^{7/2}\Big)\Big/\ \Big(7\,b\sqrt{1+\text{Tan}[e+f x]^2}\ \Big(-11\,a^2\,\text{AppellF1}\left[\frac{7}{4},\frac{1}{2},1,\frac{11}{4},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+2$$

$$\Big(2\left(a^2-b^2\right)\text{AppellF1}\left[\frac{11}{4},\frac{1}{2},2,\frac{15}{4},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+a^2\,\text{AppellF1}\Big[\frac{11}{4},\frac{3}{2},1,\frac{15}{4},$$

$$-\text{Tan}[e+f x]^2,\ \left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\Big]\Big)\ \text{Tan}[e+f x]^2\Big)\ \left(-b^2\,\text{Tan}[e+f x]^2+a^2\left(1+\text{Tan}[e+f x]^2\right)\right)\Big)-$$

$$\left(11\,a^2\,b\,\text{AppellF1}\left[\frac{7}{4},\frac{1}{2},1,\frac{11}{4},-\text{Tan}[e+f x]^2,\frac{\left(-a^2+b^2\right)\text{Tan}[e+f x]^2}{a^2}\right]\text{Tan}[e+f x]^{7/2}\right)\Big/$$

$$\Big(7\sqrt{1+\text{Tan}[e+f x]^2}\ \Big(-11\,a^2\,\text{AppellF1}\left[\frac{7}{4},\frac{1}{2},1,\frac{11}{4},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+2$$

$$\Big(2\left(a^2-b^2\right)\text{AppellF1}\left[\frac{11}{4},\frac{1}{2},2,\frac{15}{4},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+a^2\,\text{AppellF1}\Big[\frac{11}{4},\frac{3}{2},1,\frac{15}{4},$$

$$-\text{Tan}[e+f x]^2,\ \left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\Big]\Big)\ \text{Tan}[e+f x]^2\Big)\ \left(-b^2\,\text{Tan}[e+f x]^2+a^2\left(1+\text{Tan}[e+f x]^2\right)\right)\Big)\Big)\Big)\Big/$$

$$\left(\text{Cos}[e+f x]^{3/2}\sqrt{\text{Sin}[e+f x]}\ \left(a+b\,\text{Sin}[e+f x]\right)\left(-1+\text{Tan}[e+f x]^2\right)\sqrt{1+\text{Tan}[e+f x]^2}\right)\Bigg)$$

- **Problem 1438: Attempted integration timed out after 120 seconds.**

$$\int\frac{\sqrt{d\,\text{Sin}[e+f x]}}{\left(g\,\text{Cos}[e+f x]\right)^{3/2}\left(a+b\,\text{Sin}[e+f x]\right)}\,dx$$

Optimal (type 4, 374 leaves, 11 steps):

$$-\frac{2\sqrt{2}\,a\,b\,d\,\text{EllipticPi}\left[-\frac{\sqrt{-a+b}}{\sqrt{a+b}},\,\text{ArcSin}\left[\frac{\sqrt{g\,\text{Cos}[e+f\,x]}}{\sqrt{g}\,\sqrt{1+\text{Sin}[e+f\,x]}}\right],\,-1\right]\sqrt{\text{Sin}[e+f\,x]}}{(-a+b)^{3/2}\,(a+b)^{3/2}\,f\,g^{3/2}\,\sqrt{d\,\text{Sin}[e+f\,x]}}+\frac{2\sqrt{2}\,a\,b\,d\,\text{EllipticPi}\left[\frac{\sqrt{-a+b}}{\sqrt{a+b}},\,\text{ArcSin}\left[\frac{\sqrt{g\,\text{Cos}[e+f\,x]}}{\sqrt{g}\,\sqrt{1+\text{Sin}[e+f\,x]}}\right],\,-1\right]\sqrt{\text{Sin}[e+f\,x]}}{(-a+b)^{3/2}\,(a+b)^{3/2}\,f\,g^{3/2}\,\sqrt{d\,\text{Sin}[e+f\,x]}}-\frac{2\,b\,\sqrt{d\,\text{Sin}[e+f\,x]}}{\left(a^2-b^2\right)\,f\,g\,\sqrt{g\,\text{Cos}[e+f\,x]}}+\frac{2\,a\,(d\,\text{Sin}[e+f\,x])^{3/2}}{\left(a^2-b^2\right)\,d\,f\,g\,\sqrt{g\,\text{Cos}[e+f\,x]}}-\frac{2\,a\,\sqrt{g\,\text{Cos}[e+f\,x]}\,\text{EllipticE}\left[e-\frac{\pi}{4}+f\,x,\,2\right]\sqrt{d\,\text{Sin}[e+f\,x]}}{\left(a^2-b^2\right)\,f\,g^2\,\sqrt{\text{Sin}[2\,e+2\,f\,x]}}$$

Result (type 1, 1 leaves):

???

Problem 1439: Attempted integration timed out after 120 seconds.

$$\int\frac{1}{(g\,\text{Cos}[e+f\,x])^{3/2}\,\sqrt{d\,\text{Sin}[e+f\,x]}\,(a+b\,\text{Sin}[e+f\,x])}\,dx$$

Optimal (type 4, 380 leaves, 11 steps):

$$\frac{2\sqrt{2}\,b^2\,\text{EllipticPi}\left[-\frac{\sqrt{-a+b}}{\sqrt{a+b}},\,\text{ArcSin}\left[\frac{\sqrt{g\,\text{Cos}[e+f\,x]}}{\sqrt{g}\,\sqrt{1+\text{Sin}[e+f\,x]}}\right],\,-1\right]\sqrt{\text{Sin}[e+f\,x]}}{(-a+b)^{3/2}\,(a+b)^{3/2}\,f\,g^{3/2}\,\sqrt{d\,\text{Sin}[e+f\,x]}}-\frac{2\sqrt{2}\,b^2\,\text{EllipticPi}\left[\frac{\sqrt{-a+b}}{\sqrt{a+b}},\,\text{ArcSin}\left[\frac{\sqrt{g\,\text{Cos}[e+f\,x]}}{\sqrt{g}\,\sqrt{1+\text{Sin}[e+f\,x]}}\right],\,-1\right]\sqrt{\text{Sin}[e+f\,x]}}{(-a+b)^{3/2}\,(a+b)^{3/2}\,f\,g^{3/2}\,\sqrt{d\,\text{Sin}[e+f\,x]}}+\frac{2\,a\,\sqrt{d\,\text{Sin}[e+f\,x]}}{\left(a^2-b^2\right)\,d\,f\,g\,\sqrt{g\,\text{Cos}[e+f\,x]}}-\frac{2\,b\,(d\,\text{Sin}[e+f\,x])^{3/2}}{\left(a^2-b^2\right)\,d^2\,f\,g\,\sqrt{g\,\text{Cos}[e+f\,x]}}+\frac{2\,b\,\sqrt{g\,\text{Cos}[e+f\,x]}\,\text{EllipticE}\left[e-\frac{\pi}{4}+f\,x,\,2\right]\sqrt{d\,\text{Sin}[e+f\,x]}}{\left(a^2-b^2\right)\,d\,f\,g^2\,\sqrt{\text{Sin}[2\,e+2\,f\,x]}}$$

Result (type 1, 1 leaves):

???

Problem 1440: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{1}{(g\,\text{Cos}[e+f\,x])^{3/2}\,(d\,\text{Sin}[e+f\,x])^{3/2}\,(a+b\,\text{Sin}[e+f\,x])}\,dx$$

Optimal (type 4, 568 leaves, 16 steps):

$$-\frac{2a}{(a^2-b^2)\, d f g \sqrt{g\,\text{Cos}[e+f x]}\,\sqrt{d\,\text{Sin}[e+f x]}}+\frac{2 b^2 (g\,\text{Cos}[e+f x])^{3/2}}{a (a^2-b^2)\, d f g^3 \sqrt{d\,\text{Sin}[e+f x]}}-$$

$$\frac{2\sqrt{2}\, b^3\,\text{EllipticPi}\left[-\frac{\sqrt{-a+b}}{\sqrt{a+b}},\,\text{ArcSin}\left[\frac{\sqrt{g\,\text{Cos}[e+f x]}}{\sqrt{g}\,\sqrt{1+\text{Sin}[e+f x]}}\right],\,-1\right]\sqrt{\text{Sin}[e+f x]}}{a (-a+b)^{3/2} (a+b)^{3/2} d f g^{3/2}\sqrt{d\,\text{Sin}[e+f x]}}+$$

$$\frac{2\sqrt{2}\, b^3\,\text{EllipticPi}\left[\frac{\sqrt{-a+b}}{\sqrt{a+b}},\,\text{ArcSin}\left[\frac{\sqrt{g\,\text{Cos}[e+f x]}}{\sqrt{g}\,\sqrt{1+\text{Sin}[e+f x]}}\right],\,-1\right]\sqrt{\text{Sin}[e+f x]}}{a (-a+b)^{3/2} (a+b)^{3/2} d f g^{3/2}\sqrt{d\,\text{Sin}[e+f x]}}-\frac{2 b\sqrt{d\,\text{Sin}[e+f x]}}{(a^2-b^2)\, d^2 f g\sqrt{g\,\text{Cos}[e+f x]}}+\frac{4 a (d\,\text{Sin}[e+f x])^{3/2}}{(a^2-b^2)\, d^3 f g\sqrt{g\,\text{Cos}[e+f x]}}-$$

$$\frac{4 a\sqrt{g\,\text{Cos}[e+f x]}\,\text{EllipticE}\left[e-\frac{\pi}{4}+f x,\,2\right]\sqrt{d\,\text{Sin}[e+f x]}}{(a^2-b^2)\, d^2 f g^2\sqrt{\text{Sin}[2 e+2 f x]}}+\frac{2 b^2\sqrt{g\,\text{Cos}[e+f x]}\,\text{EllipticE}\left[e-\frac{\pi}{4}+f x,\,2\right]\sqrt{d\,\text{Sin}[e+f x]}}{a (a^2-b^2)\, d^2 f g^2\sqrt{\text{Sin}[2 e+2 f x]}}$$

Result (type 6, 2968 leaves):

$$\frac{\text{Cos}[e+f x]^2\,\text{Sin}[e+f x]^2\left(-\frac{2\,\text{Cot}[e+f x]}{a}+\frac{2\,\text{Sec}[e+f x]\,(-b+a\,\text{Sin}[e+f x])}{a^2-b^2}\right)}{f\,(g\,\text{Cos}[e+f x])^{3/2}\,(d\,\text{Sin}[e+f x])^{3/2}}-$$

$$\frac{1}{a (a-b) (a+b) f (g\,\text{Cos}[e+f x])^{3/2} (d\,\text{Sin}[e+f x])^{3/2}}\,\text{Cos}[e+f x]^{3/2}\,\text{Sin}[e+f x]^{3/2}$$

$$\Bigg(-\Bigg(\Bigg(14 (a^2-b^2)(4 a^3-2 a b^2)\,\text{Cos}[e+f x]^{3/2}\left(a+b\sqrt{1-\text{Cos}[e+f x]^2}\right)\Bigg(\Bigg(b\,\text{AppellF1}\left[\frac{3}{4},-\frac{1}{4},1,\frac{7}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]$$

$$\sqrt{1-\text{Cos}[e+f x]^2}\Bigg)\Bigg/\Bigg(-7 (a^2-b^2)\,\text{AppellF1}\left[\frac{3}{4},-\frac{1}{4},1,\frac{7}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]+\Bigg(4 b^2\,\text{AppellF1}\left[\frac{7}{4},-\frac{1}{4},2,\frac{11}{4},\right.$$

$$\left.\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]+(a^2-b^2)\,\text{AppellF1}\left[\frac{7}{4},\frac{3}{4},1,\frac{11}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]\Bigg)\text{Cos}[e+f x]^2\Bigg)+$$

$$\Bigg(a\,\text{AppellF1}\left[\frac{3}{4},\frac{1}{4},1,\frac{7}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]\Bigg)\Bigg/\Bigg(7 (a^2-b^2)\,\text{AppellF1}\left[\frac{3}{4},\frac{1}{4},1,\frac{7}{4},\text{Cos}[e+f x]^2,\right.$$

$$\left.\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]+\Bigg(-4 b^2\,\text{AppellF1}\left[\frac{7}{4},\frac{1}{4},2,\frac{11}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]+$$

$$(a^2-b^2)\,\text{AppellF1}\left[\frac{7}{4},\frac{5}{4},1,\frac{11}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\right]\Bigg)\text{Cos}[e+f x]^2\Bigg)\Bigg)\,\text{Sin}[e+f x]^{3/2}\Bigg)\Bigg/$$

$$\left(3\left(1-\mathrm{Cos}[e+f x]^2\right)\left(a^2+b^2\left(-1+\mathrm{Cos}[e+f x]^2\right)\right)\left(a+b\,\mathrm{Sin}[e+f x]\right)\right)\right)+\left(2\left(2 a^2 b-2 b^3\right)\sqrt{\mathrm{Tan}[e+f x]}\right.$$

$$\left(b\,\mathrm{Tan}[e+f x]+a\sqrt{1+\mathrm{Tan}[e+f x]^2}\right)$$

$$\left(\frac{1}{4\sqrt{2}\sqrt{a}\left(a^2-b^2\right)^{1/4}}\left(-2\,\mathrm{ArcTan}\left[1-\frac{\sqrt{2}\left(a^2-b^2\right)^{1/4}\sqrt{\mathrm{Tan}[e+f x]}}{\sqrt{a}}\right]+2\,\mathrm{ArcTan}\left[1+\frac{\sqrt{2}\left(a^2-b^2\right)^{1/4}\sqrt{\mathrm{Tan}[e+f x]}}{\sqrt{a}}\right]-\right.\right.$$

$$\mathrm{Log}\left[-a+\sqrt{2}\sqrt{a}\left(a^2-b^2\right)^{1/4}\sqrt{\mathrm{Tan}[e+f x]}-\sqrt{a^2-b^2}\,\mathrm{Tan}[e+f x]\right]+\mathrm{Log}\left[a+\sqrt{2}\sqrt{a}\left(a^2-b^2\right)^{1/4}\sqrt{\mathrm{Tan}[e+f x]}+\right.$$

$$\left.\left.\sqrt{a^2-b^2}\,\mathrm{Tan}[e+f x]\right]\right)+\left(7 a^2 b\,\mathrm{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},-\mathrm{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\mathrm{Tan}[e+f x]^2\right]\mathrm{Tan}[e+f x]^{3/2}\right)\Big/$$

$$\left(3\sqrt{1+\mathrm{Tan}[e+f x]^2}\left(-7 a^2\,\mathrm{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},-\mathrm{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\mathrm{Tan}[e+f x]^2\right]+2\right.\right.$$

$$\left(2\left(a^2-b^2\right)\mathrm{AppellF1}\left[\frac{7}{4},\frac{1}{2},2,\frac{11}{4},-\mathrm{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\mathrm{Tan}[e+f x]^2\right]+a^2\,\mathrm{AppellF1}\left[\frac{7}{4},\frac{3}{2},1,\frac{11}{4},\right.\right.$$

$$\left.\left.\left.\left.\left.-\mathrm{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\mathrm{Tan}[e+f x]^2\right]\right)\mathrm{Tan}[e+f x]^2\right)\left(-b^2\,\mathrm{Tan}[e+f x]^2+a^2\left(1+\mathrm{Tan}[e+f x]^2\right)\right)\right)\right)\right)\Big/$$

$$\left(\mathrm{Cos}[e+f x]^{3/2}\sqrt{\mathrm{Sin}[e+f x]}\left(a+b\,\mathrm{Sin}[e+f x]\right)\left(1+\mathrm{Tan}[e+f x]^2\right)^{3/2}\right)+\left(2\left(-2 a^2 b+b^3\right)\mathrm{Cos}[2(e+f x)]\right.$$

$$\sqrt{\mathrm{Tan}[e+f x]}\left(b\,\mathrm{Tan}[e+f x]+a\sqrt{1+\mathrm{Tan}[e+f x]^2}\right)$$

$$\left(-\frac{a\,\mathrm{ArcTan}\left[\frac{-\sqrt{2}+2\sqrt{\mathrm{Tan}[e+f x]}}{\sqrt{2}}\right]}{\sqrt{2}\,b^2}-\frac{a\,\mathrm{ArcTan}\left[\frac{\sqrt{2}+2\sqrt{\mathrm{Tan}[e+f x]}}{\sqrt{2}}\right]}{\sqrt{2}\,b^2}+\frac{\left(2 a^2-b^2\right)\mathrm{ArcTan}\left[\frac{-\sqrt{2}\sqrt{a}+2\left(a^2-b^2\right)^{1/4}\sqrt{\mathrm{Tan}[e+f x]}}{\sqrt{2}\sqrt{a}}\right]}{2\sqrt{2}\sqrt{a}\,b^2\left(a^2-b^2\right)^{1/4}}+\right.$$

$$\frac{\left(2 a^2-b^2\right)\mathrm{ArcTan}\left[\frac{\sqrt{2}\sqrt{a}+2\left(a^2-b^2\right)^{1/4}\sqrt{\mathrm{Tan}[e+f x]}}{\sqrt{2}\sqrt{a}}\right]}{2\sqrt{2}\sqrt{a}\,b^2\left(a^2-b^2\right)^{1/4}}+\frac{a\,\mathrm{Log}\left[1-\sqrt{2}\sqrt{\mathrm{Tan}[e+f x]}+\mathrm{Tan}[e+f x]\right]}{2\sqrt{2}\,b^2}-$$

$$\frac{a\,\mathrm{Log}\left[1+\sqrt{2}\sqrt{\mathrm{Tan}[e+f x]}+\mathrm{Tan}[e+f x]\right]}{2\sqrt{2}\,b^2}-\frac{\left(2 a^2-b^2\right)\mathrm{Log}\left[-a+\sqrt{2}\sqrt{a}\left(a^2-b^2\right)^{1/4}\sqrt{\mathrm{Tan}[e+f x]}-\sqrt{a^2-b^2}\,\mathrm{Tan}[e+f x]\right]}{4\sqrt{2}\sqrt{a}\,b^2\left(a^2-b^2\right)^{1/4}}+$$

$$\frac{\left(2 a^2-b^2\right) \text{Log}\left[a+\sqrt{2} \sqrt{a} \left(a^2-b^2\right)^{1/4} \sqrt{\text{Tan}[e+f x]}+\sqrt{a^2-b^2} \text{Tan}[e+f x]\right]}{4 \sqrt{2} \sqrt{a} b^2 \left(a^2-b^2\right)^{1/4}}+\frac{\text{Tan}[e+f x]^{3/2}}{b \sqrt{1+\text{Tan}[e+f x]^2}}+$$

$$\left(7 a^4 \text{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},-\text{Tan}[e+f x]^2,\frac{\left(-a^2+b^2\right) \text{Tan}[e+f x]^2}{a^2}\right] \text{Tan}[e+f x]^{3/2}\right)\Big/$$

$$\left(b \sqrt{1+\text{Tan}[e+f x]^2} \left(-7 a^2 \text{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\right]+2\right.\right.$$

$$\left(2 \left(a^2-b^2\right) \text{AppellF1}\left[\frac{7}{4},\frac{1}{2},2,\frac{11}{4},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\right]+a^2 \text{AppellF1}\left[\frac{7}{4},\frac{3}{2},1,\frac{11}{4},\right.\right.$$

$$\left.\left.\left.-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\right]\right) \text{Tan}[e+f x]^2\right) \left(-b^2 \text{Tan}[e+f x]^2+a^2 \left(1+\text{Tan}[e+f x]^2\right)\right)\Big)-$$

$$\left(7 a^2 b \text{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},-\text{Tan}[e+f x]^2,\frac{\left(-a^2+b^2\right) \text{Tan}[e+f x]^2}{a^2}\right] \text{Tan}[e+f x]^{3/2}\right)\Big/\left(3 \sqrt{1+\text{Tan}[e+f x]^2}\right.$$

$$\left(-7 a^2 \text{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\right]+2 \left(2 \left(a^2-b^2\right) \text{AppellF1}\left[\frac{7}{4},\frac{1}{2},2,\frac{11}{4},-\text{Tan}[e+f x]^2,\right.\right.\right.$$

$$\left.\left.\left.\left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\right]+a^2 \text{AppellF1}\left[\frac{7}{4},\frac{3}{2},1,\frac{11}{4},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\right]\right) \text{Tan}[e+f x]^2\right)$$

$$\left.\left(-b^2 \text{Tan}[e+f x]^2+a^2 \left(1+\text{Tan}[e+f x]^2\right)\right)\right)+\left(11 a^4 \text{AppellF1}\left[\frac{7}{4},\frac{1}{2},1,\frac{11}{4},-\text{Tan}[e+f x]^2,\frac{\left(-a^2+b^2\right) \text{Tan}[e+f x]^2}{a^2}\right]\right.$$

$$\left.\text{Tan}[e+f x]^{7/2}\right)\Big/\left(7 b \sqrt{1+\text{Tan}[e+f x]^2} \left(-11 a^2 \text{AppellF1}\left[\frac{7}{4},\frac{1}{2},1,\frac{11}{4},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\right]+2\right.\right.$$

$$\left(2 \left(a^2-b^2\right) \text{AppellF1}\left[\frac{11}{4},\frac{1}{2},2,\frac{15}{4},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\right]+a^2 \text{AppellF1}\left[\frac{11}{4},\frac{3}{2},1,\frac{15}{4},\right.\right.$$

$$\left.\left.\left.-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\right]\right) \text{Tan}[e+f x]^2\right) \left(-b^2 \text{Tan}[e+f x]^2+a^2 \left(1+\text{Tan}[e+f x]^2\right)\right)\Big)-$$

$$\left(11 a^2 b \text{AppellF1}\left[\frac{7}{4},\frac{1}{2},1,\frac{11}{4},-\text{Tan}[e+f x]^2,\frac{\left(-a^2+b^2\right) \text{Tan}[e+f x]^2}{a^2}\right] \text{Tan}[e+f x]^{7/2}\right)\Big/$$

$$\left(7 \sqrt{1+\text{Tan}[e+f x]^2} \left(-11 a^2 \text{AppellF1}\left[\frac{7}{4},\frac{1}{2},1,\frac{11}{4},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\right]+2\right.\right.$$

$$\left(2 \left(a^2-b^2\right) \text{AppellF1}\left[\frac{11}{4},\frac{1}{2},2,\frac{15}{4},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\right]+a^2 \text{AppellF1}\left[\frac{11}{4},\frac{3}{2},1,\frac{15}{4},\right.\right.$$

$$-\mathrm{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right)\mathrm{Tan}[e+f x]^2\Big]\Big)\,\mathrm{Tan}[e+f x]^2\Big)\left(-b^2\,\mathrm{Tan}[e+f x]^2+a^2\left(1+\mathrm{Tan}[e+f x]^2\right)\right)\Bigg)\Bigg)\Bigg/$$

$$\left(\mathrm{Cos}[e+f x]^{3/2}\sqrt{\mathrm{Sin}[e+f x]}\,(a+b\,\mathrm{Sin}[e+f x])\left(-1+\mathrm{Tan}[e+f x]^2\right)\sqrt{1+\mathrm{Tan}[e+f x]^2}\right)\Bigg)$$

- **Problem 1441: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int\frac{1}{(g\,\mathrm{Cos}[e+f x])^{3/2}\,(d\,\mathrm{Sin}[e+f x])^{5/2}\,(a+b\,\mathrm{Sin}[e+f x])}\,dx$$

Optimal (type 4, 673 leaves, 19 steps):

$$-\frac{2a}{3\left(a^2-b^2\right)d f g\sqrt{g\,\mathrm{Cos}[e+f x]}\,(d\,\mathrm{Sin}[e+f x])^{3/2}}+\frac{2b^2\,(g\,\mathrm{Cos}[e+f x])^{3/2}}{3a\left(a^2-b^2\right)d f g^3\,(d\,\mathrm{Sin}[e+f x])^{3/2}}+\frac{2b}{\left(a^2-b^2\right)d^2 f g\sqrt{g\,\mathrm{Cos}[e+f x]}\,\sqrt{d\,\mathrm{Sin}[e+f x]}}-$$

$$\frac{2b^3\,(g\,\mathrm{Cos}[e+f x])^{3/2}}{a^2\left(a^2-b^2\right)d^2 f g^3\sqrt{d\,\mathrm{Sin}[e+f x]}}+\frac{2\sqrt{2}\,b^4\,\mathrm{EllipticPi}\left[-\frac{\sqrt{-a+b}}{\sqrt{a+b}},\mathrm{ArcSin}\left[\frac{\sqrt{g\,\mathrm{Cos}[e+f x]}}{\sqrt{g}\,\sqrt{1+\mathrm{Sin}[e+f x]}}\right],-1\right]\sqrt{\mathrm{Sin}[e+f x]}}{a^2\,(-a+b)^{3/2}\,(a+b)^{3/2}\,d^2 f g^{3/2}\sqrt{d\,\mathrm{Sin}[e+f x]}}-$$

$$\frac{2\sqrt{2}\,b^4\,\mathrm{EllipticPi}\left[\frac{\sqrt{-a+b}}{\sqrt{a+b}},\mathrm{ArcSin}\left[\frac{\sqrt{g\,\mathrm{Cos}[e+f x]}}{\sqrt{g}\,\sqrt{1+\mathrm{Sin}[e+f x]}}\right],-1\right]\sqrt{\mathrm{Sin}[e+f x]}}{a^2\,(-a+b)^{3/2}\,(a+b)^{3/2}\,d^2 f g^{3/2}\sqrt{d\,\mathrm{Sin}[e+f x]}}+\frac{8a\sqrt{d\,\mathrm{Sin}[e+f x]}}{3\left(a^2-b^2\right)d^3 f g\sqrt{g\,\mathrm{Cos}[e+f x]}}-\frac{4b\,(d\,\mathrm{Sin}[e+f x])^{3/2}}{\left(a^2-b^2\right)d^4 f g\sqrt{g\,\mathrm{Cos}[e+f x]}}+$$

$$\frac{4b\sqrt{g\,\mathrm{Cos}[e+f x]}\,\mathrm{EllipticE}\left[e-\frac{\pi}{4}+f x,2\right]\sqrt{d\,\mathrm{Sin}[e+f x]}}{\left(a^2-b^2\right)d^3 f g^2\sqrt{\mathrm{Sin}[2e+2f x]}}-\frac{2b^3\sqrt{g\,\mathrm{Cos}[e+f x]}\,\mathrm{EllipticE}\left[e-\frac{\pi}{4}+f x,2\right]\sqrt{d\,\mathrm{Sin}[e+f x]}}{a^2\left(a^2-b^2\right)d^3 f g^2\sqrt{\mathrm{Sin}[2e+2f x]}}$$

Result (type 6, 2988 leaves):

$$\frac{\mathrm{Cos}[e+f x]^2\,\mathrm{Sin}[e+f x]^3\left(\frac{2b\,\mathrm{Cot}[e+f x]}{a^2}-\frac{2\,\mathrm{Cot}[e+f x]\,\mathrm{Csc}[e+f x]}{3a}+\frac{2\,\mathrm{Sec}[e+f x]\,(a-b\,\mathrm{Sin}[e+f x])}{a^2-b^2}\right)}{f\,(g\,\mathrm{Cos}[e+f x])^{3/2}\,(d\,\mathrm{Sin}[e+f x])^{5/2}}-$$

$$\frac{1}{a^2\,(-a+b)\,(a+b)\,f\,(g\,\mathrm{Cos}[e+f x])^{3/2}\,(d\,\mathrm{Sin}[e+f x])^{5/2}}\,b\,\mathrm{Cos}[e+f x]^{3/2}\,\mathrm{Sin}[e+f x]^{5/2}$$

$$\Bigg(-\Bigg(\Bigg(14\left(a^2-b^2\right)\left(4a^3-2a b^2\right)\mathrm{Cos}[e+f x]^{3/2}\left(a+b\sqrt{1-\mathrm{Cos}[e+f x]^2}\right)\Bigg(\Bigg(b\,\mathrm{AppellF1}\left[\frac{3}{4},-\frac{1}{4},1,\frac{7}{4},\mathrm{Cos}[e+f x]^2,\frac{b^2\,\mathrm{Cos}[e+f x]^2}{-a^2+b^2}\right]$$

$$\sqrt{1-\text{Cos}[e+f x]^2}\Bigg) \Big/ \Bigg(\Bigg(-7\left(a^2-b^2\right)\text{AppellF1}\Big[\frac{3}{4},-\frac{1}{4},1,\frac{7}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\Big]+\Bigg(4\,b^2\,\text{AppellF1}\Big[\frac{7}{4},-\frac{1}{4},2,\frac{11}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\Big]+\left(a^2-b^2\right)\text{AppellF1}\Big[\frac{7}{4},\frac{3}{4},1,\frac{11}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\Big]\Bigg)\text{Cos}[e+f x]^2\Bigg)+$$

$$\Bigg(a\,\text{AppellF1}\Big[\frac{3}{4},\frac{1}{4},1,\frac{7}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\Big]\Bigg) \Big/ \Bigg(7\left(a^2-b^2\right)\text{AppellF1}\Big[\frac{3}{4},\frac{1}{4},1,\frac{7}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\Big]+\Bigg(-4\,b^2\,\text{AppellF1}\Big[\frac{7}{4},\frac{1}{4},2,\frac{11}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\Big]+\left(a^2-b^2\right)\text{AppellF1}\Big[\frac{7}{4},\frac{5}{4},1,\frac{11}{4},\text{Cos}[e+f x]^2,\frac{b^2\,\text{Cos}[e+f x]^2}{-a^2+b^2}\Big]\Bigg)\text{Cos}[e+f x]^2\Bigg)\Bigg)\text{Sin}[e+f x]^{3/2}\Bigg) \Big/$$

$$\left(3\left(1-\text{Cos}[e+f x]^2\right)\left(a^2+b^2\left(-1+\text{Cos}[e+f x]^2\right)\right)(a+b\,\text{Sin}[e+f x])\right)\Bigg)+\Bigg(2\left(2\,a^2\,b-2\,b^3\right)\sqrt{\text{Tan}[e+f x]}$$

$$\left(b\,\text{Tan}[e+f x]+a\sqrt{1+\text{Tan}[e+f x]^2}\right)$$

$$\Bigg(\frac{1}{4\sqrt{2}\sqrt{a}\left(a^2-b^2\right)^{1/4}}\Bigg(-2\,\text{ArcTan}\Big[1-\frac{\sqrt{2}\left(a^2-b^2\right)^{1/4}\sqrt{\text{Tan}[e+f x]}}{\sqrt{a}}\Big]+2\,\text{ArcTan}\Big[1+\frac{\sqrt{2}\left(a^2-b^2\right)^{1/4}\sqrt{\text{Tan}[e+f x]}}{\sqrt{a}}\Big]-$$

$$\text{Log}\Big[-a+\sqrt{2}\sqrt{a}\left(a^2-b^2\right)^{1/4}\sqrt{\text{Tan}[e+f x]}-\sqrt{a^2-b^2}\,\text{Tan}[e+f x]\Big]+\text{Log}\Big[a+\sqrt{2}\sqrt{a}\left(a^2-b^2\right)^{1/4}\sqrt{\text{Tan}[e+f x]}+$$

$$\sqrt{a^2-b^2}\,\text{Tan}[e+f x]\Big]\Bigg)+\Bigg(7\,a^2\,b\,\text{AppellF1}\Big[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\Big]\,\text{Tan}[e+f x]^{3/2}\Bigg) \Big/$$

$$\Bigg(3\sqrt{1+\text{Tan}[e+f x]^2}\,\Bigg(-7\,a^2\,\text{AppellF1}\Big[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\Big]+2$$

$$\Bigg(2\left(a^2-b^2\right)\text{AppellF1}\Big[\frac{7}{4},\frac{1}{2},2,\frac{11}{4},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\Big]+a^2\,\text{AppellF1}\Big[\frac{7}{4},\frac{3}{2},1,\frac{11}{4},$$

$$-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\Big]\Bigg)\text{Tan}[e+f x]^2\Bigg)\left(-b^2\,\text{Tan}[e+f x]^2+a^2\left(1+\text{Tan}[e+f x]^2\right)\right)\Bigg)\Bigg)\Bigg) \Big/$$

$$\left(\text{Cos}[e+f x]^{3/2}\sqrt{\text{Sin}[e+f x]}\,(a+b\,\text{Sin}[e+f x])\left(1+\text{Tan}[e+f x]^2\right)^{3/2}\right)+\Bigg(2\left(-2\,a^2\,b+b^3\right)\text{Cos}[2\,(e+f x)]$$

$$\sqrt{\text{Tan}[e+f x]}\,\left(b\,\text{Tan}[e+f x]+a\sqrt{1+\text{Tan}[e+f x]^2}\right)$$

$$\left(-\frac{a\,\text{ArcTan}\left[\frac{-\sqrt{2}+2\sqrt{\text{Tan}[e+f x]}}{\sqrt{2}}\right]}{\sqrt{2}\,b^2}-\frac{a\,\text{ArcTan}\left[\frac{\sqrt{2}+2\sqrt{\text{Tan}[e+f x]}}{\sqrt{2}}\right]}{\sqrt{2}\,b^2}+\frac{\left(2a^2-b^2\right)\text{ArcTan}\left[\frac{-\sqrt{2}\sqrt{a}+2\left(a^2-b^2\right)^{1/4}\sqrt{\text{Tan}[e+f x]}}{\sqrt{2}\sqrt{a}}\right]}{2\sqrt{2}\sqrt{a}\,b^2\left(a^2-b^2\right)^{1/4}}+\right.$$

$$\frac{\left(2a^2-b^2\right)\text{ArcTan}\left[\frac{\sqrt{2}\sqrt{a}+2\left(a^2-b^2\right)^{1/4}\sqrt{\text{Tan}[e+f x]}}{\sqrt{2}\sqrt{a}}\right]}{2\sqrt{2}\sqrt{a}\,b^2\left(a^2-b^2\right)^{1/4}}+\frac{a\,\text{Log}\left[1-\sqrt{2}\sqrt{\text{Tan}[e+f x]}+\text{Tan}[e+f x]\right]}{2\sqrt{2}\,b^2}-$$

$$\frac{a\,\text{Log}\left[1+\sqrt{2}\sqrt{\text{Tan}[e+f x]}+\text{Tan}[e+f x]\right]}{2\sqrt{2}\,b^2}-\frac{\left(2a^2-b^2\right)\text{Log}\left[-a+\sqrt{2}\sqrt{a}\left(a^2-b^2\right)^{1/4}\sqrt{\text{Tan}[e+f x]}-\sqrt{a^2-b^2}\,\text{Tan}[e+f x]\right]}{4\sqrt{2}\sqrt{a}\,b^2\left(a^2-b^2\right)^{1/4}}+$$

$$\frac{\left(2a^2-b^2\right)\text{Log}\left[a+\sqrt{2}\sqrt{a}\left(a^2-b^2\right)^{1/4}\sqrt{\text{Tan}[e+f x]}+\sqrt{a^2-b^2}\,\text{Tan}[e+f x]\right]}{4\sqrt{2}\sqrt{a}\,b^2\left(a^2-b^2\right)^{1/4}}+\frac{\text{Tan}[e+f x]^{3/2}}{b\sqrt{1+\text{Tan}[e+f x]^2}}+$$

$$\left(7a^4\,\text{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},-\text{Tan}[e+f x]^2,\frac{\left(-a^2+b^2\right)\text{Tan}[e+f x]^2}{a^2}\right]\text{Tan}[e+f x]^{3/2}\right)\Big/$$

$$\left(b\sqrt{1+\text{Tan}[e+f x]^2}\left(-7a^2\,\text{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+2\right.\right.$$

$$\left(2\left(a^2-b^2\right)\text{AppellF1}\left[\frac{7}{4},\frac{1}{2},2,\frac{11}{4},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+a^2\,\text{AppellF1}\left[\frac{7}{4},\frac{3}{2},1,\frac{11}{4},\right.\right.$$

$$\left.\left.\left.-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]\right)\text{Tan}[e+f x]^2\right)\left(-b^2\,\text{Tan}[e+f x]^2+a^2\left(1+\text{Tan}[e+f x]^2\right)\right)\Big)-$$

$$\left(7a^2\,b\,\text{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},-\text{Tan}[e+f x]^2,\frac{\left(-a^2+b^2\right)\text{Tan}[e+f x]^2}{a^2}\right]\text{Tan}[e+f x]^{3/2}\right)\Big/\left(3\sqrt{1+\text{Tan}[e+f x]^2}\right.$$

$$\left(-7a^2\,\text{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+2\left(2\left(a^2-b^2\right)\text{AppellF1}\left[\frac{7}{4},\frac{1}{2},2,\frac{11}{4},-\text{Tan}[e+f x]^2,\right.\right.\right.$$

$$\left.\left.\left.\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+a^2\,\text{AppellF1}\left[\frac{7}{4},\frac{3}{2},1,\frac{11}{4},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]\right)\text{Tan}[e+f x]^2\right)$$

$$\left.\left(-b^2\,\text{Tan}[e+f x]^2+a^2\left(1+\text{Tan}[e+f x]^2\right)\right)\right)+\left(11a^4\,\text{AppellF1}\left[\frac{7}{4},\frac{1}{2},1,\frac{11}{4},-\text{Tan}[e+f x]^2,\frac{\left(-a^2+b^2\right)\text{Tan}[e+f x]^2}{a^2}\right]\right.$$

$$\left.\text{Tan}[e+f x]^{7/2}\right)\Big/\left(7b\sqrt{1+\text{Tan}[e+f x]^2}\left(-11a^2\,\text{AppellF1}\left[\frac{7}{4},\frac{1}{2},1,\frac{11}{4},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+2\right.\right.$$

$$\left(2\left(a^2-b^2\right)\text{AppellF1}\left[\frac{11}{4},\frac{1}{2},2,\frac{15}{4},-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+a^2\,\text{AppellF1}\left[\frac{11}{4},\frac{3}{2},1,\frac{15}{4},\right.\right.$$

$$-\mathrm{Tan}[e+f\,x]^2,\ \left(-1+\frac{b^2}{a^2}\right)\mathrm{Tan}[e+f\,x]^2\Big]\Big)\ \mathrm{Tan}[e+f\,x]^2\Big)\ \left(-b^2\,\mathrm{Tan}[e+f\,x]^2+a^2\,\left(1+\mathrm{Tan}[e+f\,x]^2\right)\right)\Big)-$$

$$\left(11\,a^2\,b\,\mathrm{AppellF1}\left[\frac{7}{4},\ \frac{1}{2},\ 1,\ \frac{11}{4},\ -\mathrm{Tan}[e+f\,x]^2,\ \frac{\left(-a^2+b^2\right)\mathrm{Tan}[e+f\,x]^2}{a^2}\right]\mathrm{Tan}[e+f\,x]^{7/2}\right)\Big/$$

$$\Big(7\,\sqrt{1+\mathrm{Tan}[e+f\,x]^2}\ \Big(-11\,a^2\,\mathrm{AppellF1}\left[\frac{7}{4},\ \frac{1}{2},\ 1,\ \frac{11}{4},\ -\mathrm{Tan}[e+f\,x]^2,\ \left(-1+\frac{b^2}{a^2}\right)\mathrm{Tan}[e+f\,x]^2\right]+2$$

$$\Big(2\,\left(a^2-b^2\right)\mathrm{AppellF1}\left[\frac{11}{4},\ \frac{1}{2},\ 2,\ \frac{15}{4},\ -\mathrm{Tan}[e+f\,x]^2,\ \left(-1+\frac{b^2}{a^2}\right)\mathrm{Tan}[e+f\,x]^2\right]+a^2\,\mathrm{AppellF1}\Big[\frac{11}{4},\ \frac{3}{2},\ 1,\ \frac{15}{4},$$

$$-\mathrm{Tan}[e+f\,x]^2,\ \left(-1+\frac{b^2}{a^2}\right)\mathrm{Tan}[e+f\,x]^2\Big]\Big)\ \mathrm{Tan}[e+f\,x]^2\Big)\ \left(-b^2\,\mathrm{Tan}[e+f\,x]^2+a^2\,\left(1+\mathrm{Tan}[e+f\,x]^2\right)\right)\Big)\Big)\Big/$$

$$\left(\mathrm{Cos}[e+f\,x]^{3/2}\,\sqrt{\mathrm{Sin}[e+f\,x]}\ \left(a+b\,\mathrm{Sin}[e+f\,x]\right)\ \left(-1+\mathrm{Tan}[e+f\,x]^2\right)\sqrt{1+\mathrm{Tan}[e+f\,x]^2}\right)\Bigg)$$

- **Problem 1442: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int\frac{\left(g\,\mathrm{Cos}[e+f\,x]\right)^{3/2}}{\sqrt{d\,\mathrm{Sin}[e+f\,x]}\ \left(a+b\,\mathrm{Sin}[e+f\,x]\right)^2}\,dx$$

Optimal (type 4, 331 leaves, 8 steps):

$$\frac{\sqrt{2}\ b\,g^2\,\sqrt{\mathrm{Cos}[e+f\,x]}\ \mathrm{EllipticPi}\left[-\frac{a}{b-\sqrt{-a^2+b^2}},\ \mathrm{ArcSin}\left[\frac{\sqrt{d\,\mathrm{Sin}[e+f\,x]}}{\sqrt{d}\ \sqrt{1+\mathrm{Cos}[e+f\,x]}}\right],\ -1\right]}{a^2\,\sqrt{-a^2+b^2}\ \sqrt{d}\ f\,\sqrt{g\,\mathrm{Cos}[e+f\,x]}}-$$

$$\frac{\sqrt{2}\ b\,g^2\,\sqrt{\mathrm{Cos}[e+f\,x]}\ \mathrm{EllipticPi}\left[-\frac{a}{b+\sqrt{-a^2+b^2}},\ \mathrm{ArcSin}\left[\frac{\sqrt{d\,\mathrm{Sin}[e+f\,x]}}{\sqrt{d}\ \sqrt{1+\mathrm{Cos}[e+f\,x]}}\right],\ -1\right]}{a^2\,\sqrt{-a^2+b^2}\ \sqrt{d}\ f\,\sqrt{g\,\mathrm{Cos}[e+f\,x]}}+$$

$$\frac{g\,\sqrt{g\,\mathrm{Cos}[e+f\,x]}\ \sqrt{d\,\mathrm{Sin}[e+f\,x]}}{a\,d\,f\,\left(a+b\,\mathrm{Sin}[e+f\,x]\right)}+\frac{g^2\,\mathrm{EllipticF}\left[e-\frac{\pi}{4}+f\,x,\ 2\right]\sqrt{\mathrm{Sin}[2\,e+2\,f\,x]}}{2\,a^2\,f\,\sqrt{g\,\mathrm{Cos}[e+f\,x]}\ \sqrt{d\,\mathrm{Sin}[e+f\,x]}}$$

Result (type 6, 717 leaves):

$$-\Bigg(\Bigg((g\,\text{Cos}[e+f\,x])^{3/2}\left(a+b\sqrt{1-\text{Cos}[e+f\,x]^2}\right)$$

$$\Bigg(\Bigg(5\,a\left(a^2-b^2\right)\text{AppellF1}\left[\frac{1}{4},\frac{3}{4},1,\frac{5}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]\sqrt{\text{Cos}[e+f\,x]}\Bigg)\Bigg/\Bigg(\left(1-\text{Cos}[e+f\,x]^2\right)^{3/4}\Bigg(5\left(a^2-b^2\right)$$

$$\text{AppellF1}\left[\frac{1}{4},\frac{3}{4},1,\frac{5}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]+\Bigg(-4\,b^2\,\text{AppellF1}\left[\frac{5}{4},\frac{3}{4},2,\frac{9}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]+$$

$$3\left(a^2-b^2\right)\text{AppellF1}\left[\frac{5}{4},\frac{7}{4},1,\frac{9}{4},\text{Cos}[e+f\,x]^2,\frac{b^2\,\text{Cos}[e+f\,x]^2}{-a^2+b^2}\right]\Bigg)\text{Cos}[e+f\,x]^2\Bigg)\left(a^2+b^2\left(-1+\text{Cos}[e+f\,x]^2\right)\right)\Bigg)-$$

$$\frac{1}{\sqrt{a}\left(-a^2+b^2\right)^{3/4}}\left(\frac{1}{8}-\frac{i}{8}\right)b\Bigg(2\,\text{ArcTan}\left[1-\frac{(1+i)\sqrt{a}\sqrt{\text{Cos}[e+f\,x]}}{\left(-a^2+b^2\right)^{1/4}\left(-1+\text{Cos}[e+f\,x]^2\right)^{1/4}}\right]-2\,\text{ArcTan}\left[1+\frac{(1+i)\sqrt{a}\sqrt{\text{Cos}[e+f\,x]}}{\left(-a^2+b^2\right)^{1/4}\left(-1+\text{Cos}[e+f\,x]^2\right)^{1/4}}\right]+$$

$$\text{Log}\left[\sqrt{-a^2+b^2}+\frac{i\,a\,\text{Cos}[e+f\,x]}{\sqrt{-1+\text{Cos}[e+f\,x]^2}}-\frac{(1+i)\sqrt{a}\left(-a^2+b^2\right)^{1/4}\sqrt{\text{Cos}[e+f\,x]}}{\left(-1+\text{Cos}[e+f\,x]^2\right)^{1/4}}\right]-$$

$$\text{Log}\left[\sqrt{-a^2+b^2}+\frac{i\,a\,\text{Cos}[e+f\,x]}{\sqrt{-1+\text{Cos}[e+f\,x]^2}}+\frac{(1+i)\sqrt{a}\left(-a^2+b^2\right)^{1/4}\sqrt{\text{Cos}[e+f\,x]}}{\left(-1+\text{Cos}[e+f\,x]^2\right)^{1/4}}\right]\Bigg)\Bigg)\text{Sin}[e+f\,x]\Bigg)\Bigg/$$

$$\left(a\,f\,\text{Cos}[e+f\,x]^{3/2}\left(1-\text{Cos}[e+f\,x]^2\right)^{1/4}\sqrt{d\,\text{Sin}[e+f\,x]}\,(a+b\,\text{Sin}[e+f\,x])\right)\Bigg)+$$

$$\frac{(g\,\text{Cos}[e+f\,x])^{3/2}\,\text{Tan}[e+f\,x]}{a\,f\sqrt{d\,\text{Sin}[e+f\,x]}\,(a+b\,\text{Sin}[e+f\,x])}$$

- **Problem 1449: Result more than twice size of optimal antiderivative.**

$$\int \text{Csc}[c+d\,x]^3\,\text{Sec}[c+d\,x]^2\,(a+b\,\text{Sin}[c+d\,x])\,dx$$

Optimal (type 3, 75 leaves, 8 steps):

$$-\frac{3\,a\,\text{ArcTanh}[\text{Cos}[c+d\,x]]}{2\,d}-\frac{b\,\text{Cot}[c+d\,x]}{d}+\frac{3\,a\,\text{Sec}[c+d\,x]}{2\,d}-\frac{a\,\text{Csc}[c+d\,x]^2\,\text{Sec}[c+d\,x]}{2\,d}+\frac{b\,\text{Tan}[c+d\,x]}{d}$$

Result (type 3, 172 leaves):

$$-\frac{2\,b\,\text{Cot}[2\,(c+d\,x)]}{d}-\frac{a\,\text{Csc}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{8\,d}-\frac{3\,a\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]\right]}{2\,d}+\frac{3\,a\,\text{Log}\left[\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]}{2\,d}+$$
$$\frac{a\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{8\,d}+\frac{a\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]}{d\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)}-\frac{a\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]}{d\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)}$$

Problem 1455: Result more than twice size of optimal antiderivative.

$$\int \text{Csc}[c+d\,x]^3\,\text{Sec}[c+d\,x]^2\,(a+b\,\text{Sin}[c+d\,x])^2\,dx$$

Optimal (type 3, 100 leaves, 10 steps):

$$-\frac{\left(3\,a^2+2\,b^2\right)\,\text{ArcTanh}[\text{Cos}[c+d\,x]]}{2\,d}-\frac{2\,a\,b\,\text{Cot}[c+d\,x]}{d}+\frac{\left(3\,a^2+2\,b^2\right)\,\text{Sec}[c+d\,x]}{2\,d}-\frac{a^2\,\text{Csc}[c+d\,x]^2\,\text{Sec}[c+d\,x]}{2\,d}+\frac{2\,a\,b\,\text{Tan}[c+d\,x]}{d}$$

Result (type 3, 238 leaves):

$$\frac{1}{2\,d\,\left(\text{Csc}\left[\frac{1}{2}\,(c+d\,x)\right]^2-\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)}\,\text{Csc}[c+d\,x]^4$$
$$\left(2\,a^2+4\,b^2-2\,\left(3\,a^2+2\,b^2\right)\,\text{Cos}[2\,(c+d\,x)]+3\,a^2\,\text{Cos}[3\,(c+d\,x)]\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]\right]+2\,b^2\,\text{Cos}[3\,(c+d\,x)]\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]\right]-\right.$$
$$\left(3\,a^2+2\,b^2\right)\,\text{Cos}[c+d\,x]\,\left(\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]\right]-\text{Log}\left[\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\right)-3\,a^2\,\text{Cos}[3\,(c+d\,x)]\,\text{Log}\left[\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]-$$
$$\left.2\,b^2\,\text{Cos}[3\,(c+d\,x)]\,\text{Log}\left[\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]+8\,a\,b\,\text{Sin}[c+d\,x]-8\,a\,b\,\text{Sin}[3\,(c+d\,x)]\right)$$

Problem 1462: Result more than twice size of optimal antiderivative.

$$\int \text{Csc}[c+d\,x]^3\,\text{Sec}[c+d\,x]^2\,(a+b\,\text{Sin}[c+d\,x])^3\,dx$$

Optimal (type 3, 132 leaves, 14 steps):

$$-\frac{3\,a^3\,\text{ArcTanh}[\text{Cos}[c+d\,x]]}{2\,d}-\frac{3\,a\,b^2\,\text{ArcTanh}[\text{Cos}[c+d\,x]]}{d}-\frac{3\,a^2\,b\,\text{Cot}[c+d\,x]}{d}+$$
$$\frac{3\,a^3\,\text{Sec}[c+d\,x]}{2\,d}+\frac{3\,a\,b^2\,\text{Sec}[c+d\,x]}{d}-\frac{a^3\,\text{Csc}[c+d\,x]^2\,\text{Sec}[c+d\,x]}{2\,d}+\frac{3\,a^2\,b\,\text{Tan}[c+d\,x]}{d}+\frac{b^3\,\text{Tan}[c+d\,x]}{d}$$

Result (type 3, 267 leaves):

$$\frac{1}{2\, d \left(\text{Csc}\left[\frac{1}{2}(c+d\,x)\right]^2-\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\right)}\text{Csc}[c+d\,x]^4$$

$$\Big(2\,a^3+12\,a\,b^2-6\left(a^3+2\,a\,b^2\right)\text{Cos}[2\,(c+d\,x)]+3\,a^3\,\text{Cos}[3\,(c+d\,x)]\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]\right]+6\,a\,b^2\,\text{Cos}[3\,(c+d\,x)]\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]\right]-$$

$$3\,a\left(a^2+2\,b^2\right)\text{Cos}[c+d\,x]\left(\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]\right]-\text{Log}\left[\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]\right)-3\,a^3\,\text{Cos}[3\,(c+d\,x)]\,\text{Log}\left[\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]-$$

$$6\,a\,b^2\,\text{Cos}[3\,(c+d\,x)]\,\text{Log}\left[\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]+12\,a^2\,b\,\text{Sin}[c+d\,x]+6\,b^3\,\text{Sin}[c+d\,x]-12\,a^2\,b\,\text{Sin}[3\,(c+d\,x)]-2\,b^3\,\text{Sin}[3\,(c+d\,x)]\Big)$$

- **Problem 1479: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int\frac{\text{Sec}[e+f\,x]^2\,(a+b\,\text{Sin}[e+f\,x])^{3/2}}{\sqrt{d\,\text{Sin}[e+f\,x]}}\,dx$$

Optimal (type 4, 312 leaves, ? steps):

$$\frac{\text{Sec}[e+f\,x]\,(b+a\,\text{Sin}[e+f\,x])\,\sqrt{a+b\,\text{Sin}[e+f\,x]}}{f\,\sqrt{d\,\text{Sin}[e+f\,x]}}-$$

$$\frac{(a+b)^{3/2}\sqrt{-\frac{a\,(-1+\text{Csc}[e+f\,x])}{a+b}}\sqrt{\frac{a\,(1+\text{Csc}[e+f\,x])}{a-b}}\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{d}\,\sqrt{a+b\,\text{Sin}[e+f\,x]}}{\sqrt{a+b}\,\sqrt{d\,\text{Sin}[e+f\,x]}}\right],-\frac{a+b}{a-b}\right]\text{Tan}[e+f\,x]}{\sqrt{d}\,f}-$$

$$\left(b\,(a+b)\sqrt{-\frac{a\,(-1+\text{Csc}[e+f\,x])}{a+b}}\sqrt{\frac{b+a\,\text{Csc}[e+f\,x]}{-a+b}}\,\text{EllipticE}\left[\text{ArcSin}\left[\sqrt{-\frac{b+a\,\text{Csc}[e+f\,x]}{a-b}}\right],\frac{-a+b}{a+b}\right](1+\text{Sin}[e+f\,x])\,\text{Tan}[e+f\,x]\right)\Big/$$

$$\left(f\sqrt{\frac{a\,(1+\text{Csc}[e+f\,x])}{a-b}}\,\sqrt{d\,\text{Sin}[e+f\,x]}\,\sqrt{a+b\,\text{Sin}[e+f\,x]}\right)$$

Result (type 4, 9055 leaves):

$$-\frac{1}{f\,\sqrt{d\,\text{Sin}[e+f\,x]}}\,2\,a^2\,\sqrt{\text{Sin}[e+f\,x]}$$

$$\Bigg(\Bigg(\sqrt{\text{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Sin}[e+f\,x]}{a}}}{\sqrt{2}}\right],\frac{2\,a}{a+b}\right]\text{Sec}[e+f\,x]\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4$$

$$\left.\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,\text{Sin}[e+f\,x]}{a}}\;\sqrt{\frac{\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(a+b\,\text{Sin}[e+f\,x])}{a}}\right)\Big/\left(\sqrt{\text{Sin}[e+f\,x]}\;\sqrt{a+b\,\text{Sin}[e+f\,x]}\right)-$$

$$\left(b\,\sqrt{\text{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}\;\text{EllipticPi}\left[\frac{a}{a+b},\,\text{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,\text{Sin}[e+f\,x]}{a}}}{\sqrt{2}}\right],\,\frac{2\,a}{a+b}\right]\,\text{Sec}[e+f\,x]\right.$$

$$\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\,\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,\text{Sin}[e+f\,x]}{a}}$$

$$\left.\sqrt{\frac{\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(a+b\,\text{Sin}[e+f\,x])}{a}}\right)\Big/\left((a+b)\,\sqrt{\text{Sin}[e+f\,x]}\;\sqrt{a+b\,\text{Sin}[e+f\,x]}\right)\right)-$$

$$\left(b\,\text{Sin}[e+f\,x]\,\sqrt{a+b\,\text{Sin}[e+f\,x]}\;\left(\sqrt{2}\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]\,\sqrt{\frac{\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]}{1+\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]^2}}\;\sqrt{\frac{a+2\,b\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]+a\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]^2}{1+\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]^2}}\;-\right.\right.$$

$$\frac{1}{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}\;\left(a+2\,b\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]+a\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]^2\right)}\,\sqrt{2}\,\left(\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}\;\left(a+2\,b\,\text{Cot}\left[\frac{1}{2}(e+f\,x)\right]+a\,\text{Cot}\left[\frac{1}{2}(e+f\,x)\right]^2\right)+\right.$$

$$\frac{1}{\sqrt{\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]}}\,\mathbb{i}\,\left(b-\sqrt{-a^2+b^2}\right)\,\sqrt{\frac{b+\sqrt{-a^2+b^2}+a\,\text{Cot}\left[\frac{1}{2}(e+f\,x)\right]}{b+\sqrt{-a^2+b^2}}}\;\sqrt{1+\frac{a\,\text{Cot}\left[\frac{1}{2}(e+f\,x)\right]}{b-\sqrt{-a^2+b^2}}}$$

$$\left(\text{EllipticE}\left[\mathbb{i}\,\text{ArcSinh}\left[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]}}\right],\ \frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\right]-\text{EllipticF}\left[\mathbb{i}\,\text{ArcSinh}\left[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]}}\right],\ \frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\right]\right)-$$

$$\frac{1}{\sqrt{\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]}}\,a\,\sqrt{\frac{b+\sqrt{-a^2+b^2}\,+a\,\text{Cot}\left[\frac{1}{2}\,(e+f\,x)\right]}{b+\sqrt{-a^2+b^2}}}\,\sqrt{1+\frac{a\,\text{Cot}\left[\frac{1}{2}\,(e+f\,x)\right]}{b-\sqrt{-a^2+b^2}}}\ \text{EllipticPi}\left[-\frac{\mathbb{i}\,\left(b+\sqrt{-a^2+b^2}\right)}{a},\right.$$

$$\left.\mathbb{i}\,\text{ArcSinh}\left[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]}}\right],\ \frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\right]+\frac{1}{\sqrt{\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]}}\,a\,\sqrt{\frac{b+\sqrt{-a^2+b^2}\,+a\,\text{Cot}\left[\frac{1}{2}\,(e+f\,x)\right]}{b+\sqrt{-a^2+b^2}}}$$

$$\left.\sqrt{1+\frac{a\,\text{Cot}\left[\frac{1}{2}\,(e+f\,x)\right]}{b-\sqrt{-a^2+b^2}}}\ \text{EllipticPi}\left[\frac{\mathbb{i}\,\left(b+\sqrt{-a^2+b^2}\right)}{a},\ \mathbb{i}\,\text{ArcSinh}\left[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]}}\right],\ \frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\right]\right)$$

$$\left.\left.\left(\frac{\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]}{1+\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2}\right)^{3/2}\left(1+\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right)^2\sqrt{\frac{a+2\,b\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]+a\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2}{1+\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2}}\right)\right)\Big/$$

$$\left(f\,\sqrt{d\,\text{Sin}[e+f\,x]}\,\left(\frac{\text{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]^2\sqrt{\frac{\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]}{1+\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2}}\,\sqrt{\frac{a+2\,b\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]+a\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2}{1+\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2}}}{\sqrt{2}}+\right.\right.$$

$$\frac{1}{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}\,\left(a+2\,b\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]+a\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right)^2}\,\sqrt{2}\,\left(\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}\,\left(a+2\,b\,\text{Cot}\left[\frac{1}{2}\,(e+f\,x)\right]+a\,\text{Cot}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right)+\right.$$

$$\frac{1}{\sqrt{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}}\, \mathbb{i}\left(b-\sqrt{-a^2+b^2}\right)\sqrt{\frac{b+\sqrt{-a^2+b^2}+a\,\text{Cot}\left[\frac{1}{2}(e+f x)\right]}{b+\sqrt{-a^2+b^2}}}\ \sqrt{1+\frac{a\,\text{Cot}\left[\frac{1}{2}(e+f x)\right]}{b-\sqrt{-a^2+b^2}}}$$

$$\left(\text{EllipticE}\left[\mathbb{i}\,\text{ArcSinh}\left[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}}\right],\frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\right]-\text{EllipticF}\left[\mathbb{i}\,\text{ArcSinh}\left[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}}\right],\frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\right]\right)-$$

$$\frac{1}{\sqrt{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}}\, a\sqrt{\frac{b+\sqrt{-a^2+b^2}+a\,\text{Cot}\left[\frac{1}{2}(e+f x)\right]}{b+\sqrt{-a^2+b^2}}}\ \sqrt{1+\frac{a\,\text{Cot}\left[\frac{1}{2}(e+f x)\right]}{b-\sqrt{-a^2+b^2}}}\ \text{EllipticPi}\left[-\frac{\mathbb{i}\left(b+\sqrt{-a^2+b^2}\right)}{a},\right.$$

$$\left.\mathbb{i}\,\text{ArcSinh}\left[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}}\right],\frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\right]+\frac{1}{\sqrt{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}}\, a\sqrt{\frac{b+\sqrt{-a^2+b^2}+a\,\text{Cot}\left[\frac{1}{2}(e+f x)\right]}{b+\sqrt{-a^2+b^2}}}$$

$$\sqrt{1+\frac{a\,\text{Cot}\left[\frac{1}{2}(e+f x)\right]}{b-\sqrt{-a^2+b^2}}}\ \text{EllipticPi}\left[\frac{\mathbb{i}\left(b+\sqrt{-a^2+b^2}\right)}{a},\mathbb{i}\,\text{ArcSinh}\left[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}}\right],\frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\right]\Bigg)$$

$$\left(b\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2+a\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\left(\frac{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}\right)^{3/2}\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)^2$$

$$\sqrt{\frac{a+2\,b\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]+a\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}{1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}}-\frac{1}{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}\left(a+2\,b\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]+a\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)}$$

$$2\sqrt{2}\,\mathrm{Sec}\left[\frac{1}{2}(e+f x)\right]^2\left(\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}\left(a+2 b\,\mathrm{Cot}\left[\frac{1}{2}(e+f x)\right]+a\,\mathrm{Cot}\left[\frac{1}{2}(e+f x)\right]^2\right)+\frac{1}{\sqrt{\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]}}\right.$$

$$i\left(b-\sqrt{-a^2+b^2}\right)\sqrt{\frac{b+\sqrt{-a^2+b^2}+a\,\mathrm{Cot}\left[\frac{1}{2}(e+f x)\right]}{b+\sqrt{-a^2+b^2}}}\sqrt{1+\frac{a\,\mathrm{Cot}\left[\frac{1}{2}(e+f x)\right]}{b-\sqrt{-a^2+b^2}}}$$

$$\left(\mathrm{EllipticE}\left[i\,\mathrm{ArcSinh}\left[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]}}\right],\frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\right]-\mathrm{EllipticF}\left[i\,\mathrm{ArcSinh}\left[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]}}\right],\frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\right]\right)-$$

$$\frac{1}{\sqrt{\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]}}a\sqrt{\frac{b+\sqrt{-a^2+b^2}+a\,\mathrm{Cot}\left[\frac{1}{2}(e+f x)\right]}{b+\sqrt{-a^2+b^2}}}\sqrt{1+\frac{a\,\mathrm{Cot}\left[\frac{1}{2}(e+f x)\right]}{b-\sqrt{-a^2+b^2}}}\;\mathrm{EllipticPi}\left[-\frac{i\left(b+\sqrt{-a^2+b^2}\right)}{a},\right.$$

$$\left.i\,\mathrm{ArcSinh}\left[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]}}\right],\frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\right]+\frac{1}{\sqrt{\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]}}a\sqrt{\frac{b+\sqrt{-a^2+b^2}+a\,\mathrm{Cot}\left[\frac{1}{2}(e+f x)\right]}{b+\sqrt{-a^2+b^2}}}$$

$$\left.\sqrt{1+\frac{a\,\mathrm{Cot}\left[\frac{1}{2}(e+f x)\right]}{b-\sqrt{-a^2+b^2}}}\;\mathrm{EllipticPi}\left[\frac{i\left(b+\sqrt{-a^2+b^2}\right)}{a},i\,\mathrm{ArcSinh}\left[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]}}\right],\frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\right]\right)$$

$$\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]\left(\frac{\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]}{1+\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2}\right)^{3/2}\left(1+\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)\sqrt{\frac{a+2 b\,\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]+a\,\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2}{1+\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2}}-$$

$$\frac{1}{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}\left(a+2 b\,\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]+a\,\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)}$$

$$\sqrt{2}\left(\frac{i\,a\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}\sqrt{\frac{b+\sqrt{-a^2+b^2}+a\,Cot\left[\frac{1}{2}(e+f\,x)\right]}{b+\sqrt{-a^2+b^2}}}\,Csc\left[\frac{1}{2}(e+f\,x)\right]^2}{4\left(1-i\,Cot\left[\frac{1}{2}(e+f\,x)\right]\right)\sqrt{1+\frac{a\,Cot\left[\frac{1}{2}(e+f\,x)\right]}{b+\sqrt{-a^2+b^2}}}}-\frac{i\,a\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}\sqrt{\frac{b+\sqrt{-a^2+b^2}+a\,Cot\left[\frac{1}{2}(e+f\,x)\right]}{b+\sqrt{-a^2+b^2}}}\,Csc\left[\frac{1}{2}(e+f\,x)\right]^2}{4\left(1+i\,Cot\left[\frac{1}{2}(e+f\,x)\right]\right)\sqrt{1+\frac{a\,Cot\left[\frac{1}{2}(e+f\,x)\right]}{b+\sqrt{-a^2+b^2}}}}+\right.$$

$$\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}\left(-b\,Csc\left[\frac{1}{2}(e+f\,x)\right]^2-a\,Cot\left[\frac{1}{2}(e+f\,x)\right]Csc\left[\frac{1}{2}(e+f\,x)\right]^2\right)-\frac{1}{4\,Tan\left[\frac{1}{2}(e+f\,x)\right]^{3/2}}$$

$$i\left(b-\sqrt{-a^2+b^2}\right)\sqrt{\frac{b+\sqrt{-a^2+b^2}+a\,Cot\left[\frac{1}{2}(e+f\,x)\right]}{b+\sqrt{-a^2+b^2}}}\sqrt{1+\frac{a\,Cot\left[\frac{1}{2}(e+f\,x)\right]}{b-\sqrt{-a^2+b^2}}}$$

$$\left(EllipticE\left[i\,ArcSinh\left[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{Tan\left[\frac{1}{2}(e+f\,x)\right]}}\right],\frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\right]-EllipticF\left[i\,ArcSinh\left[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{Tan\left[\frac{1}{2}(e+f\,x)\right]}}\right],\frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\right]\right)$$

$$Sec\left[\frac{1}{2}(e+f\,x)\right]^2+\frac{1}{4\,Tan\left[\frac{1}{2}(e+f\,x)\right]^{3/2}}a\sqrt{\frac{b+\sqrt{-a^2+b^2}+a\,Cot\left[\frac{1}{2}(e+f\,x)\right]}{b+\sqrt{-a^2+b^2}}}\sqrt{1+\frac{a\,Cot\left[\frac{1}{2}(e+f\,x)\right]}{b-\sqrt{-a^2+b^2}}}$$

$$EllipticPi\left[-\frac{i\left(b+\sqrt{-a^2+b^2}\right)}{a},i\,ArcSinh\left[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{Tan\left[\frac{1}{2}(e+f\,x)\right]}}\right],\frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\right]Sec\left[\frac{1}{2}(e+f\,x)\right]^2-$$

$$\frac{1}{4\,Tan\left[\frac{1}{2}(e+f\,x)\right]^{3/2}}a\sqrt{\frac{b+\sqrt{-a^2+b^2}+a\,Cot\left[\frac{1}{2}(e+f\,x)\right]}{b+\sqrt{-a^2+b^2}}}\sqrt{1+\frac{a\,Cot\left[\frac{1}{2}(e+f\,x)\right]}{b-\sqrt{-a^2+b^2}}}\;EllipticPi\left[\frac{i\left(b+\sqrt{-a^2+b^2}\right)}{a},\right.$$

$$\left.i\,ArcSinh\left[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{Tan\left[\frac{1}{2}(e+f\,x)\right]}}\right],\frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\right]Sec\left[\frac{1}{2}(e+f\,x)\right]^2-\left(i\,a\sqrt{\frac{b+\sqrt{-a^2+b^2}+a\,Cot\left[\frac{1}{2}(e+f\,x)\right]}{b+\sqrt{-a^2+b^2}}}\,Csc\left[\frac{1}{2}(e+f\,x)\right]^2\right.$$

$$\left(\text{EllipticE}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}}\right],\frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\right]-\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}}\right],\frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\right]\right)\right)\Big/$$

$$\left(4\sqrt{1+\frac{a\,\text{Cot}\left[\frac{1}{2}(e+f x)\right]}{b-\sqrt{-a^2+b^2}}}\sqrt{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}\right)-\left(i\,a\left(b-\sqrt{-a^2+b^2}\right)\sqrt{1+\frac{a\,\text{Cot}\left[\frac{1}{2}(e+f x)\right]}{b-\sqrt{-a^2+b^2}}}\,\text{Csc}\left[\frac{1}{2}(e+f x)\right]^2\right.$$

$$\left(\text{EllipticE}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}}\right],\frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\right]-\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}}\right],\frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\right]\right)\right)\Big/$$

$$\left(4\left(b+\sqrt{-a^2+b^2}\right)\sqrt{\frac{b+\sqrt{-a^2+b^2}+a\,\text{Cot}\left[\frac{1}{2}(e+f x)\right]}{b+\sqrt{-a^2+b^2}}}\sqrt{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}\right)+$$

$$\left(a^2\sqrt{\frac{b+\sqrt{-a^2+b^2}+a\,\text{Cot}\left[\frac{1}{2}(e+f x)\right]}{b+\sqrt{-a^2+b^2}}}\,\text{Csc}\left[\frac{1}{2}(e+f x)\right]^2\text{EllipticPi}\left[-\frac{i\left(b+\sqrt{-a^2+b^2}\right)}{a},i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}}\right],\right.\right.$$

$$\left.\left.\frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\right]\right)\Big/\left(4\left(b-\sqrt{-a^2+b^2}\right)\sqrt{1+\frac{a\,\text{Cot}\left[\frac{1}{2}(e+f x)\right]}{b-\sqrt{-a^2+b^2}}}\sqrt{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}\right)+$$

$$\left(a^2\sqrt{1+\frac{a\,\text{Cot}\left[\frac{1}{2}(e+f x)\right]}{b-\sqrt{-a^2+b^2}}}\,\text{Csc}\left[\frac{1}{2}(e+f x)\right]^2\text{EllipticPi}\left[-\frac{i\left(b+\sqrt{-a^2+b^2}\right)}{a},i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}}\right],\frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\right]\right)\Big/$$

$$\left(4\left(b+\sqrt{-a^2+b^2}\right)\sqrt{\frac{b+\sqrt{-a^2+b^2}+a\,\mathrm{Cot}\left[\frac{1}{2}(e+f\,x)\right]}{b+\sqrt{-a^2+b^2}}}\sqrt{\mathrm{Tan}\left[\frac{1}{2}(e+f\,x)\right]}\right)-$$

$$\left(a^2\sqrt{\frac{b+\sqrt{-a^2+b^2}+a\,\mathrm{Cot}\left[\frac{1}{2}(e+f\,x)\right]}{b+\sqrt{-a^2+b^2}}}\,\mathrm{Csc}\left[\frac{1}{2}(e+f\,x)\right]^2\mathrm{EllipticPi}\left[\frac{i\left(b+\sqrt{-a^2+b^2}\right)}{a},\,i\,\mathrm{ArcSinh}\left[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\mathrm{Tan}\left[\frac{1}{2}(e+f\,x)\right]}}\right],\right.\right.$$

$$\left.\left.\frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\right]\right)\Big/\left(4\left(b-\sqrt{-a^2+b^2}\right)\sqrt{1+\frac{a\,\mathrm{Cot}\left[\frac{1}{2}(e+f\,x)\right]}{b-\sqrt{-a^2+b^2}}}\sqrt{\mathrm{Tan}\left[\frac{1}{2}(e+f\,x)\right]}\right)-$$

$$\left(a^2\sqrt{1+\frac{a\,\mathrm{Cot}\left[\frac{1}{2}(e+f\,x)\right]}{b-\sqrt{-a^2+b^2}}}\,\mathrm{Csc}\left[\frac{1}{2}(e+f\,x)\right]^2\mathrm{EllipticPi}\left[\frac{i\left(b+\sqrt{-a^2+b^2}\right)}{a},\,i\,\mathrm{ArcSinh}\left[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\mathrm{Tan}\left[\frac{1}{2}(e+f\,x)\right]}}\right],\,\frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\right]\right)\Big/$$

$$\left(4\left(b+\sqrt{-a^2+b^2}\right)\sqrt{\frac{b+\sqrt{-a^2+b^2}+a\,\mathrm{Cot}\left[\frac{1}{2}(e+f\,x)\right]}{b+\sqrt{-a^2+b^2}}}\sqrt{\mathrm{Tan}\left[\frac{1}{2}(e+f\,x)\right]}\right)+$$

$$\frac{1}{\sqrt{\mathrm{Tan}\left[\frac{1}{2}(e+f\,x)\right]}}\,i\left(b-\sqrt{-a^2+b^2}\right)\sqrt{\frac{b+\sqrt{-a^2+b^2}+a\,\mathrm{Cot}\left[\frac{1}{2}(e+f\,x)\right]}{b+\sqrt{-a^2+b^2}}}\sqrt{1+\frac{a\,\mathrm{Cot}\left[\frac{1}{2}(e+f\,x)\right]}{b-\sqrt{-a^2+b^2}}}$$

$$\left(\frac{i\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}\,\mathrm{Sec}\left[\frac{1}{2}(e+f\,x)\right]^2}{4\sqrt{1+\frac{a\,\mathrm{Cot}\left[\frac{1}{2}(e+f\,x)\right]}{b-\sqrt{-a^2+b^2}}}\sqrt{1+\frac{a\,\mathrm{Cot}\left[\frac{1}{2}(e+f\,x)\right]}{b+\sqrt{-a^2+b^2}}}\,\mathrm{Tan}\left[\frac{1}{2}(e+f\,x)\right]^{3/2}}-\frac{i\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}\sqrt{1+\frac{a\,\mathrm{Cot}\left[\frac{1}{2}(e+f\,x)\right]}{b-\sqrt{-a^2+b^2}}}\,\mathrm{Sec}\left[\frac{1}{2}(e+f\,x)\right]^2}{4\sqrt{1+\frac{a\,\mathrm{Cot}\left[\frac{1}{2}(e+f\,x)\right]}{b+\sqrt{-a^2+b^2}}}\,\mathrm{Tan}\left[\frac{1}{2}(e+f\,x)\right]^{3/2}}\right)\Bigg)$$

$$\left(\frac{\operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]}{1+\operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]^2}\right)^{3/2}\left(1+\operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)^2\sqrt{\frac{a+2 b \operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]+a \operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]^2}{1+\operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]^2}}+$$

$$\frac{\operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]\sqrt{\frac{a+2 b \operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]+a \operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]^2}{1+\operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]^2}}\left(-\frac{\operatorname{Sec}\left[\frac{1}{2}(e+f x)\right]^2 \operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]^2}{\left(1+\operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)^2}+\frac{\operatorname{Sec}\left[\frac{1}{2}(e+f x)\right]^2}{2\left(1+\operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)}\right)}{\sqrt{2}\sqrt{\frac{\operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]}{1+\operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]^2}}}-$$

$$\frac{1}{\sqrt{2}\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}\left(a+2 b \operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]+a \operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)}$$

$$3\left(\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}\left(a+2 b \operatorname{Cot}\left[\frac{1}{2}(e+f x)\right]+a \operatorname{Cot}\left[\frac{1}{2}(e+f x)\right]^2\right)+\frac{1}{\sqrt{\operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]}}\right.$$

$$i\left(b-\sqrt{-a^2+b^2}\right)\sqrt{\frac{b+\sqrt{-a^2+b^2}+a \operatorname{Cot}\left[\frac{1}{2}(e+f x)\right]}{b+\sqrt{-a^2+b^2}}}\sqrt{1+\frac{a \operatorname{Cot}\left[\frac{1}{2}(e+f x)\right]}{b-\sqrt{-a^2+b^2}}}$$

$$\left(\operatorname{EllipticE}\left[i \operatorname{ArcSinh}\left[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]}}\right], \frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\right]-\operatorname{EllipticF}\left[i \operatorname{ArcSinh}\left[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]}}\right], \frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\right]\right)-$$

$$\frac{1}{\sqrt{\operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]}} a \sqrt{\frac{b+\sqrt{-a^2+b^2}+a \operatorname{Cot}\left[\frac{1}{2}(e+f x)\right]}{b+\sqrt{-a^2+b^2}}}\sqrt{1+\frac{a \operatorname{Cot}\left[\frac{1}{2}(e+f x)\right]}{b-\sqrt{-a^2+b^2}}} \operatorname{EllipticPi}\left[-\frac{i\left(b+\sqrt{-a^2+b^2}\right)}{a},\right.$$

$$\dot{\imath}\,\text{ArcSinh}\Big[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}}\Big],\ \frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\Big]+\frac{1}{\sqrt{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}}a\sqrt{\frac{b+\sqrt{-a^2+b^2}+a\,\text{Cot}\left[\frac{1}{2}(e+f x)\right]}{b+\sqrt{-a^2+b^2}}}$$

$$\sqrt{1+\frac{a\,\text{Cot}\left[\frac{1}{2}(e+f x)\right]}{b-\sqrt{-a^2+b^2}}}\ \text{EllipticPi}\Big[\frac{\dot{\imath}\left(b+\sqrt{-a^2+b^2}\right)}{a},\ \dot{\imath}\,\text{ArcSinh}\Big[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}}\Big],\ \frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\Big]\Bigg)$$

$$\sqrt{\frac{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}}\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)^2\sqrt{\frac{a+2 b\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]+a\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}{1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}}$$

$$\left(-\frac{\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}{\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)^2}+\frac{\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2}{2\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)}\right)+$$

$$\Bigg(\text{Tan}\left[\frac{1}{2}(e+f x)\right]\sqrt{\frac{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}}\Bigg(\frac{b\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2+a\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}-$$

$$\frac{\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]\left(a+2 b\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]+a\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)}{\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)^2}\Bigg)\Bigg)\Bigg/$$

$$\left(\sqrt{2}\sqrt{\frac{a+2 b\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]+a\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}{1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}}\right)-\Bigg(\Bigg(\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}\left(a+2 b\,\text{Cot}\left[\frac{1}{2}(e+f x)\right]+a\,\text{Cot}\left[\frac{1}{2}(e+f x)\right]^2\right)+$$

$$\frac{1}{\sqrt{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}}\dot{\imath}\left(b-\sqrt{-a^2+b^2}\right)\sqrt{\frac{b+\sqrt{-a^2+b^2}+a\,\text{Cot}\left[\frac{1}{2}(e+f x)\right]}{b+\sqrt{-a^2+b^2}}}\sqrt{1+\frac{a\,\text{Cot}\left[\frac{1}{2}(e+f x)\right]}{b-\sqrt{-a^2+b^2}}}$$

$$\left(\text{EllipticE}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}}\right],\frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\right]-\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}}\right],\frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\right]\right)-$$

$$\frac{1}{\sqrt{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}}\,a\,\sqrt{\frac{b+\sqrt{-a^2+b^2}+a\,\text{Cot}\left[\frac{1}{2}(e+f x)\right]}{b+\sqrt{-a^2+b^2}}}\,\sqrt{1+\frac{a\,\text{Cot}\left[\frac{1}{2}(e+f x)\right]}{b-\sqrt{-a^2+b^2}}}\ \text{EllipticPi}\left[-\frac{i\left(b+\sqrt{-a^2+b^2}\right)}{a},\right.$$

$$\left.i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}}\right],\frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\right]+\frac{1}{\sqrt{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}}\,a\,\sqrt{\frac{b+\sqrt{-a^2+b^2}+a\,\text{Cot}\left[\frac{1}{2}(e+f x)\right]}{b+\sqrt{-a^2+b^2}}}$$

$$\left.\sqrt{1+\frac{a\,\text{Cot}\left[\frac{1}{2}(e+f x)\right]}{b-\sqrt{-a^2+b^2}}}\ \text{EllipticPi}\left[\frac{i\left(b+\sqrt{-a^2+b^2}\right)}{a},i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}}\right],\frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\right]\right)$$

$$\left(\frac{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}\right)^{3/2}\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)^2\left(\frac{b\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2+a\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}-\right.$$

$$\left.\left.\frac{\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]\left(a+2\,b\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]+a\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)}{\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)^2}\right)\right)\Big/\left(\sqrt{2}\,\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}\right.$$

$$\left.\left.\left(a+2\,b\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]+a\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)\sqrt{\frac{a+2\,b\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]+a\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}{1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}}\right)\right)+\frac{(a+b\,\text{Sin}[e+f x])^{3/2}\,\text{Tan}[e+f x]}{f\,\sqrt{d\,\text{Sin}[e+f x]}}$$

- **Problem 1480: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int \frac{\operatorname{Sec}[e+f x]^4 (a+b \operatorname{Sin}[e+f x])^{5/2}}{\sqrt{d \operatorname{Sin}[e+f x]}} \, dx$$

Optimal (type 4, 366 leaves, ? steps):

$$\frac{5 a \operatorname{Sec}[e+f x] (b+a \operatorname{Sin}[e+f x]) \sqrt{a+b \operatorname{Sin}[e+f x]}}{6 f \sqrt{d \operatorname{Sin}[e+f x]}}+\frac{\operatorname{Sec}[e+f x]^3 \sqrt{d \operatorname{Sin}[e+f x]} (a+b \operatorname{Sin}[e+f x])^{5/2}}{3 d f}-\frac{1}{6 \sqrt{d} f}$$

$$5 a (a+b)^{3/2} \sqrt{-\frac{a (-1+\operatorname{Csc}[e+f x])}{a+b}} \sqrt{\frac{a (1+\operatorname{Csc}[e+f x])}{a-b}} \operatorname{EllipticF}\left[\operatorname{ArcSin}\left[\frac{\sqrt{d} \sqrt{a+b \operatorname{Sin}[e+f x]}}{\sqrt{a+b} \sqrt{d \operatorname{Sin}[e+f x]}}\right],-\frac{a+b}{a-b}\right] \operatorname{Tan}[e+f x]-$$

$$\left(5 a b (a+b) \sqrt{-\frac{a (-1+\operatorname{Csc}[e+f x])}{a+b}} \sqrt{\frac{b+a \operatorname{Csc}[e+f x]}{-a+b}} \operatorname{EllipticE}\left[\operatorname{ArcSin}\left[\sqrt{-\frac{b+a \operatorname{Csc}[e+f x]}{a-b}}\right],\frac{-a+b}{a+b}\right] (1+\operatorname{Sin}[e+f x]) \operatorname{Tan}[e+f x]\right) \Big/$$

$$\left(6 f \sqrt{\frac{a (1+\operatorname{Csc}[e+f x])}{a-b}} \sqrt{d \operatorname{Sin}[e+f x]} \sqrt{a+b \operatorname{Sin}[e+f x]}\right)$$

Result (type 4, 9121 leaves) :

$$-\frac{1}{3 f \sqrt{d \operatorname{Sin}[e+f x]}} 5 a^3 \sqrt{\operatorname{Sin}[e+f x]}$$

$$\left(\left(\sqrt{\operatorname{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2} \operatorname{EllipticF}\left[\operatorname{ArcSin}\left[\frac{\sqrt{-\frac{(a+b) \operatorname{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \operatorname{Sin}[e+f x]}{a}}}{\sqrt{2}}\right],\frac{2 a}{a+b}\right] \operatorname{Sec}[e+f x] \operatorname{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^4\right.\right.$$

$$\left.\sqrt{-\frac{(a+b) \operatorname{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \operatorname{Sin}[e+f x]}{a}} \sqrt{\frac{\operatorname{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 (a+b \operatorname{Sin}[e+f x])}{a}}\right) \Big/ \left(\sqrt{\operatorname{Sin}[e+f x]} \sqrt{a+b \operatorname{Sin}[e+f x]}\right)-$$

$$\left(b \sqrt{\operatorname{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2} \operatorname{EllipticPi}\left[\frac{a}{a+b},\operatorname{ArcSin}\left[\frac{\sqrt{-\frac{(a+b) \operatorname{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \operatorname{Sin}[e+f x]}{a}}}{\sqrt{2}}\right],\frac{2 a}{a+b}\right] \operatorname{Sec}[e+f x]\right.$$

$$\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^4 \sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Sin}[e+f x]}{a}} \sqrt{\frac{\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 (a+b\,\text{Sin}[e+f x])}{a}}\Bigg)\Big/$$

$$\left((a+b)\sqrt{\text{Sin}[e+f x]}\,\sqrt{a+b\,\text{Sin}[e+f x]}\right)\Bigg) + \frac{1}{f\sqrt{d\,\text{Sin}[e+f x]}}\text{Sin}[e+f x]\,\sqrt{a+b\,\text{Sin}[e+f x]}$$

$$\left(\frac{1}{3}\text{Sec}[e+f x]^3\left(a^2+b^2+2\,a\,b\,\text{Sin}[e+f x]\right)+\frac{1}{6}\text{Sec}[e+f x]\left(5\,a^2-2\,b^2+5\,a\,b\,\text{Sin}[e+f x]\right)\right)-$$

$$\Bigg(5\,a\,b\,\text{Sin}[e+f x]\,\sqrt{a+b\,\text{Sin}[e+f x]}\,\Bigg(\sqrt{2}\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]\sqrt{\frac{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}}\sqrt{\frac{a+2\,b\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]+a\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}{1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}}-$$

$$\frac{1}{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}\left(a+2\,b\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]+a\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)}\sqrt{2}\left(\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}\left(a+2\,b\,\text{Cot}\left[\frac{1}{2}(e+f x)\right]+a\,\text{Cot}\left[\frac{1}{2}(e+f x)\right]^2\right)+\right.$$

$$\frac{1}{\sqrt{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}}\,\mathbb{i}\left(b-\sqrt{-a^2+b^2}\right)\sqrt{\frac{b+\sqrt{-a^2+b^2}+a\,\text{Cot}\left[\frac{1}{2}(e+f x)\right]}{b+\sqrt{-a^2+b^2}}}\sqrt{1+\frac{a\,\text{Cot}\left[\frac{1}{2}(e+f x)\right]}{b-\sqrt{-a^2+b^2}}}$$

$$\left(\text{EllipticE}\left[\mathbb{i}\,\text{ArcSinh}\left[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}}\right],\frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\right]-\text{EllipticF}\left[\mathbb{i}\,\text{ArcSinh}\left[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}}\right],\frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\right]\right)-$$

$$\frac{1}{\sqrt{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}}a\sqrt{\frac{b+\sqrt{-a^2+b^2}+a\,\text{Cot}\left[\frac{1}{2}(e+f x)\right]}{b+\sqrt{-a^2+b^2}}}\sqrt{1+\frac{a\,\text{Cot}\left[\frac{1}{2}(e+f x)\right]}{b-\sqrt{-a^2+b^2}}}\;\text{EllipticPi}\left[-\frac{\mathbb{i}\left(b+\sqrt{-a^2+b^2}\right)}{a},\right.$$

$$\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}}\right], \frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\right] + \frac{1}{\sqrt{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}} a \sqrt{\frac{b+\sqrt{-a^2+b^2}+a\,\text{Cot}\left[\frac{1}{2}(e+f x)\right]}{b+\sqrt{-a^2+b^2}}}$$

$$\sqrt{1+\frac{a\,\text{Cot}\left[\frac{1}{2}(e+f x)\right]}{b-\sqrt{-a^2+b^2}}}\ \text{EllipticPi}\left[\frac{\mathrm{i}\left(b+\sqrt{-a^2+b^2}\right)}{a}, \mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}}\right], \frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\right]\Bigg)$$

$$\left(\frac{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}\right)^{3/2}\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)^2\sqrt{\frac{a+2\,b\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]+a\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}{1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}}\Bigg)\Bigg)\Bigg/$$

$$\left(6\,f\,\sqrt{d\,\text{Sin}[e+f x]}\left(\frac{\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\sqrt{\frac{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}}\sqrt{\frac{a+2\,b\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]+a\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}{1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}}}{\sqrt{2}}+\right.\right.$$

$$\frac{1}{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}\left(a+2\,b\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]+a\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)^2}\sqrt{2}\left(\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}\left(a+2\,b\,\text{Cot}\left[\frac{1}{2}(e+f x)\right]+a\,\text{Cot}\left[\frac{1}{2}(e+f x)\right]^2\right)+\right.$$

$$\frac{1}{\sqrt{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}}\mathrm{i}\left(b-\sqrt{-a^2+b^2}\right)\sqrt{\frac{b+\sqrt{-a^2+b^2}+a\,\text{Cot}\left[\frac{1}{2}(e+f x)\right]}{b+\sqrt{-a^2+b^2}}}\sqrt{1+\frac{a\,\text{Cot}\left[\frac{1}{2}(e+f x)\right]}{b-\sqrt{-a^2+b^2}}}$$

$$\left(\text{EllipticE}\left[\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}}\right], \frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\right]-\text{EllipticF}\left[\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}}\right], \frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\right]\right)-$$

$$\frac{1}{\sqrt{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}} a \sqrt{\frac{b+\sqrt{-a^2+b^2}+a \text{Cot}\left[\frac{1}{2}(e+f x)\right]}{b+\sqrt{-a^2+b^2}}} \sqrt{1+\frac{a \text{Cot}\left[\frac{1}{2}(e+f x)\right]}{b-\sqrt{-a^2+b^2}}} \text{EllipticPi}\left[-\frac{i\left(b+\sqrt{-a^2+b^2}\right)}{a},\right.$$

$$\left. i \text{ArcSinh}\left[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}}\right], \frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\right]+\frac{1}{\sqrt{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}} a \sqrt{\frac{b+\sqrt{-a^2+b^2}+a \text{Cot}\left[\frac{1}{2}(e+f x)\right]}{b+\sqrt{-a^2+b^2}}}$$

$$\left.\sqrt{1+\frac{a \text{Cot}\left[\frac{1}{2}(e+f x)\right]}{b-\sqrt{-a^2+b^2}}} \text{EllipticPi}\left[\frac{i\left(b+\sqrt{-a^2+b^2}\right)}{a}, i \text{ArcSinh}\left[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}}\right], \frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\right]\right)$$

$$\left(b \text{Sec}\left[\frac{1}{2}(e+f x)\right]^2+a \text{Sec}\left[\frac{1}{2}(e+f x)\right]^2 \text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\left(\frac{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}\right)^{3/2}\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)^2$$

$$\sqrt{\frac{a+2 b \text{Tan}\left[\frac{1}{2}(e+f x)\right]+a \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}{1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}}-\frac{1}{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}\left(a+2 b \text{Tan}\left[\frac{1}{2}(e+f x)\right]+a \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)}$$

$$2 \sqrt{2} \text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\left(\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}\left(a+2 b \text{Cot}\left[\frac{1}{2}(e+f x)\right]+a \text{Cot}\left[\frac{1}{2}(e+f x)\right]^2\right)+\frac{1}{\sqrt{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}}\right.$$

$$i\left(b-\sqrt{-a^2+b^2}\right) \sqrt{\frac{b+\sqrt{-a^2+b^2}+a \text{Cot}\left[\frac{1}{2}(e+f x)\right]}{b+\sqrt{-a^2+b^2}}} \sqrt{1+\frac{a \text{Cot}\left[\frac{1}{2}(e+f x)\right]}{b-\sqrt{-a^2+b^2}}}$$

$$\left(\text{EllipticE}\left[i \text{ArcSinh}\left[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}}\right], \frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\right]-\text{EllipticF}\left[i \text{ArcSinh}\left[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}}\right], \frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\right]\right)-$$

$$\frac{1}{\sqrt{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}} a \sqrt{\frac{b+\sqrt{-a^2+b^2}+a \text{Cot}\left[\frac{1}{2}(e+f x)\right]}{b+\sqrt{-a^2+b^2}}} \sqrt{1+\frac{a \text{Cot}\left[\frac{1}{2}(e+f x)\right]}{b-\sqrt{-a^2+b^2}}} \text{EllipticPi}\left[-\frac{i\left(b+\sqrt{-a^2+b^2}\right)}{a},\right.$$

$$\left.i \text{ArcSinh}\left[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}}\right], \frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\right]+\frac{1}{\sqrt{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}} a \sqrt{\frac{b+\sqrt{-a^2+b^2}+a \text{Cot}\left[\frac{1}{2}(e+f x)\right]}{b+\sqrt{-a^2+b^2}}}$$

$$\left.\sqrt{1+\frac{a \text{Cot}\left[\frac{1}{2}(e+f x)\right]}{b-\sqrt{-a^2+b^2}}} \text{EllipticPi}\left[\frac{i\left(b+\sqrt{-a^2+b^2}\right)}{a}, i \text{ArcSinh}\left[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}}\right], \frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\right]\right)$$

$$\text{Tan}\left[\frac{1}{2}(e+f x)\right]\left(\frac{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}\right)^{3/2}\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right) \sqrt{\frac{a+2 b \text{Tan}\left[\frac{1}{2}(e+f x)\right]+a \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}{1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}}-$$

$$\frac{1}{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}\left(a+2 b \text{Tan}\left[\frac{1}{2}(e+f x)\right]+a \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)}$$

$$\sqrt{2}\left(\frac{i a \sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}} \sqrt{\frac{b+\sqrt{-a^2+b^2}+a \text{Cot}\left[\frac{1}{2}(e+f x)\right]}{b+\sqrt{-a^2+b^2}}} \text{Csc}\left[\frac{1}{2}(e+f x)\right]^2}{4\left(1-i \text{Cot}\left[\frac{1}{2}(e+f x)\right]\right) \sqrt{1+\frac{a \text{Cot}\left[\frac{1}{2}(e+f x)\right]}{b+\sqrt{-a^2+b^2}}}}-\frac{i a \sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}} \sqrt{\frac{b+\sqrt{-a^2+b^2}+a \text{Cot}\left[\frac{1}{2}(e+f x)\right]}{b+\sqrt{-a^2+b^2}}} \text{Csc}\left[\frac{1}{2}(e+f x)\right]^2}{4\left(1+i \text{Cot}\left[\frac{1}{2}(e+f x)\right]\right) \sqrt{1+\frac{a \text{Cot}\left[\frac{1}{2}(e+f x)\right]}{b+\sqrt{-a^2+b^2}}}}+\right.$$

$$\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}\left(-b \text{Csc}\left[\frac{1}{2}(e+f x)\right]^2-a \text{Cot}\left[\frac{1}{2}(e+f x)\right] \text{Csc}\left[\frac{1}{2}(e+f x)\right]^2\right)-\frac{1}{4 \text{Tan}\left[\frac{1}{2}(e+f x)\right]^{3/2}}$$

$$i\left(b-\sqrt{-a^2+b^2}\right) \sqrt{\frac{b+\sqrt{-a^2+b^2}+a \text{Cot}\left[\frac{1}{2}(e+f x)\right]}{b+\sqrt{-a^2+b^2}}} \sqrt{1+\frac{a \text{Cot}\left[\frac{1}{2}(e+f x)\right]}{b-\sqrt{-a^2+b^2}}}$$

$$\left(\text{EllipticE}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}}\right],\frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\right]-\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}}\right],\frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\right]\right)$$

$$\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2+\frac{1}{4\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^{3/2}}a\sqrt{\frac{b+\sqrt{-a^2+b^2}+a\,\text{Cot}\left[\frac{1}{2}(e+f x)\right]}{b+\sqrt{-a^2+b^2}}}\sqrt{1+\frac{a\,\text{Cot}\left[\frac{1}{2}(e+f x)\right]}{b-\sqrt{-a^2+b^2}}}$$

$$\text{EllipticPi}\left[-\frac{i\left(b+\sqrt{-a^2+b^2}\right)}{a},\,i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}}\right],\frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2-$$

$$\frac{1}{4\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^{3/2}}a\sqrt{\frac{b+\sqrt{-a^2+b^2}+a\,\text{Cot}\left[\frac{1}{2}(e+f x)\right]}{b+\sqrt{-a^2+b^2}}}\sqrt{1+\frac{a\,\text{Cot}\left[\frac{1}{2}(e+f x)\right]}{b-\sqrt{-a^2+b^2}}}\;\text{EllipticPi}\left[\frac{i\left(b+\sqrt{-a^2+b^2}\right)}{a},\right.$$

$$\left.i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}}\right],\frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2-\left(i\,a\sqrt{\frac{b+\sqrt{-a^2+b^2}+a\,\text{Cot}\left[\frac{1}{2}(e+f x)\right]}{b+\sqrt{-a^2+b^2}}}\;\text{Csc}\left[\frac{1}{2}(e+f x)\right]^2\right.$$

$$\left.\left(\text{EllipticE}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}}\right],\frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\right]-\text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}}\right],\frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\right]\right)\right)\Big/$$

$$\left(4\sqrt{1+\frac{a\,\text{Cot}\left[\frac{1}{2}(e+f x)\right]}{b-\sqrt{-a^2+b^2}}}\sqrt{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}\right)-\left(i\,a\left(b-\sqrt{-a^2+b^2}\right)\sqrt{1+\frac{a\,\text{Cot}\left[\frac{1}{2}(e+f x)\right]}{b-\sqrt{-a^2+b^2}}}\;\text{Csc}\left[\frac{1}{2}(e+f x)\right]^2\right.$$

$$\left(\text{EllipticE}\left[\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}}\right],\frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\right]-\text{EllipticF}\left[\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}}\right],\frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\right]\right)\right)\Big/$$

$$\left(4\left(b+\sqrt{-a^2+b^2}\right)\sqrt{\frac{b+\sqrt{-a^2+b^2}+a\,\text{Cot}\left[\frac{1}{2}(e+f x)\right]}{b+\sqrt{-a^2+b^2}}}\sqrt{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}\right)+$$

$$\left(a^2\sqrt{\frac{b+\sqrt{-a^2+b^2}+a\,\text{Cot}\left[\frac{1}{2}(e+f x)\right]}{b+\sqrt{-a^2+b^2}}}\,\text{Csc}\left[\frac{1}{2}(e+f x)\right]^2\text{EllipticPi}\left[-\frac{\mathrm{i}\left(b+\sqrt{-a^2+b^2}\right)}{a},\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}}\right],\right.\right.$$

$$\left.\left.\frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\right]\right)\Big/\left(4\left(b-\sqrt{-a^2+b^2}\right)\sqrt{1+\frac{a\,\text{Cot}\left[\frac{1}{2}(e+f x)\right]}{b-\sqrt{-a^2+b^2}}}\sqrt{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}\right)+$$

$$\left(a^2\sqrt{1+\frac{a\,\text{Cot}\left[\frac{1}{2}(e+f x)\right]}{b-\sqrt{-a^2+b^2}}}\,\text{Csc}\left[\frac{1}{2}(e+f x)\right]^2\text{EllipticPi}\left[-\frac{\mathrm{i}\left(b+\sqrt{-a^2+b^2}\right)}{a},\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}}\right],\frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\right]\right)\Big/$$

$$\left(4\left(b+\sqrt{-a^2+b^2}\right)\sqrt{\frac{b+\sqrt{-a^2+b^2}+a\,\text{Cot}\left[\frac{1}{2}(e+f x)\right]}{b+\sqrt{-a^2+b^2}}}\sqrt{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}\right)-$$

$$\left(a^2\sqrt{\frac{b+\sqrt{-a^2+b^2}+a\,\text{Cot}\left[\frac{1}{2}(e+f x)\right]}{b+\sqrt{-a^2+b^2}}}\,\text{Csc}\left[\frac{1}{2}(e+f x)\right]^2\text{EllipticPi}\left[\frac{\mathrm{i}\left(b+\sqrt{-a^2+b^2}\right)}{a},\mathrm{i}\,\text{ArcSinh}\left[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}}\right],\right.\right.$$

$$\left.\left.\frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\right]\right) \Bigg/ \left(4\left(b-\sqrt{-a^2+b^2}\right)\sqrt{1+\frac{a\,\text{Cot}\left[\frac{1}{2}(e+f x)\right]}{b-\sqrt{-a^2+b^2}}}\sqrt{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}\right)-$$

$$\left(a^2\sqrt{1+\frac{a\,\text{Cot}\left[\frac{1}{2}(e+f x)\right]}{b-\sqrt{-a^2+b^2}}}\,\text{Csc}\left[\frac{1}{2}(e+f x)\right]^2\,\text{EllipticPi}\left[\frac{i\left(b+\sqrt{-a^2+b^2}\right)}{a},\,i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}}\right],\,\frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\right]\right)\Bigg/$$

$$\left(4\left(b+\sqrt{-a^2+b^2}\right)\sqrt{\frac{b+\sqrt{-a^2+b^2}+a\,\text{Cot}\left[\frac{1}{2}(e+f x)\right]}{b+\sqrt{-a^2+b^2}}}\sqrt{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}\right)+$$

$$\frac{1}{\sqrt{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}}\,i\left(b-\sqrt{-a^2+b^2}\right)\sqrt{\frac{b+\sqrt{-a^2+b^2}+a\,\text{Cot}\left[\frac{1}{2}(e+f x)\right]}{b+\sqrt{-a^2+b^2}}}\sqrt{1+\frac{a\,\text{Cot}\left[\frac{1}{2}(e+f x)\right]}{b-\sqrt{-a^2+b^2}}}$$

$$\left.\left(\frac{i\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2}{4\sqrt{1+\frac{a\,\text{Cot}\left[\frac{1}{2}(e+f x)\right]}{b-\sqrt{-a^2+b^2}}}\sqrt{1+\frac{a\,\text{Cot}\left[\frac{1}{2}(e+f x)\right]}{b+\sqrt{-a^2+b^2}}}\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^{3/2}}-\frac{i\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}\sqrt{1+\frac{a\,\text{Cot}\left[\frac{1}{2}(e+f x)\right]}{b-\sqrt{-a^2+b^2}}}\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2}{4\sqrt{1+\frac{a\,\text{Cot}\left[\frac{1}{2}(e+f x)\right]}{b+\sqrt{-a^2+b^2}}}\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^{3/2}}\right)\right)$$

$$\left(\frac{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}\right)^{3/2}\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)^2\sqrt{\frac{a+2\,b\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]+a\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}{1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}}+$$

$$\frac{\text{Tan}\left[\frac{1}{2}(e+f x)\right]\sqrt{\frac{a+2\,b\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]+a\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}{1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}}\left(-\frac{\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}{\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)^2}+\frac{\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2}{2\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)}\right)}{\sqrt{2}\sqrt{\frac{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}}}-$$

$$\frac{1}{\sqrt{2}\,\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}\,\left(a+2\,b\,\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]+a\,\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right)}$$

$$3\left(\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}\,\left(a+2\,b\,\mathrm{Cot}\left[\frac{1}{2}\,(e+f\,x)\right]+a\,\mathrm{Cot}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right)+\frac{1}{\sqrt{\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]}}\right.$$

$$\mathbb{i}\,\left(b-\sqrt{-a^2+b^2}\right)\,\sqrt{\frac{b+\sqrt{-a^2+b^2}+a\,\mathrm{Cot}\left[\frac{1}{2}\,(e+f\,x)\right]}{b+\sqrt{-a^2+b^2}}}\,\sqrt{1+\frac{a\,\mathrm{Cot}\left[\frac{1}{2}\,(e+f\,x)\right]}{b-\sqrt{-a^2+b^2}}}$$

$$\left(\mathrm{EllipticE}\left[\mathbb{i}\,\mathrm{ArcSinh}\left[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]}}\right],\,\frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\right]-\mathrm{EllipticF}\left[\mathbb{i}\,\mathrm{ArcSinh}\left[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]}}\right],\,\frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\right]\right)-$$

$$\frac{1}{\sqrt{\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]}}a\,\sqrt{\frac{b+\sqrt{-a^2+b^2}+a\,\mathrm{Cot}\left[\frac{1}{2}\,(e+f\,x)\right]}{b+\sqrt{-a^2+b^2}}}\,\sqrt{1+\frac{a\,\mathrm{Cot}\left[\frac{1}{2}\,(e+f\,x)\right]}{b-\sqrt{-a^2+b^2}}}\,\mathrm{EllipticPi}\left[-\frac{\mathbb{i}\,\left(b+\sqrt{-a^2+b^2}\right)}{a},\right.$$

$$\left.\mathbb{i}\,\mathrm{ArcSinh}\left[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]}}\right],\,\frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\right]+\frac{1}{\sqrt{\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]}}a\,\sqrt{\frac{b+\sqrt{-a^2+b^2}+a\,\mathrm{Cot}\left[\frac{1}{2}\,(e+f\,x)\right]}{b+\sqrt{-a^2+b^2}}}$$

$$\left.\sqrt{1+\frac{a\,\mathrm{Cot}\left[\frac{1}{2}\,(e+f\,x)\right]}{b-\sqrt{-a^2+b^2}}}\,\mathrm{EllipticPi}\left[\frac{\mathbb{i}\,\left(b+\sqrt{-a^2+b^2}\right)}{a},\,\mathbb{i}\,\mathrm{ArcSinh}\left[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]}}\right],\,\frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\right]\right)$$

$$\sqrt{\frac{\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]}{1+\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2}}\,\left(1+\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right)^2\,\sqrt{\frac{a+2\,b\,\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]+a\,\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2}{1+\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2}}$$

$$\left(-\frac{\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}{\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)^2}+\frac{\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2}{2\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)}\right)+$$

$$\left(\text{Tan}\left[\frac{1}{2}(e+f x)\right]\sqrt{\frac{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}}\left(\frac{b\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2+a\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}-\right.\right.$$

$$\left.\left.\frac{\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]\left(a+2 b\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]+a\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)}{\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)^2}\right)\right)\Big/$$

$$\left(\sqrt{2}\sqrt{\frac{a+2 b\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]+a\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}{1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}}\right)-\left(\left(\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}\left(a+2 b\,\text{Cot}\left[\frac{1}{2}(e+f x)\right]+a\,\text{Cot}\left[\frac{1}{2}(e+f x)\right]^2\right)+\right.\right.$$

$$\frac{1}{\sqrt{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}}\,\mathbb{i}\left(b-\sqrt{-a^2+b^2}\right)\sqrt{\frac{b+\sqrt{-a^2+b^2}+a\,\text{Cot}\left[\frac{1}{2}(e+f x)\right]}{b+\sqrt{-a^2+b^2}}}\sqrt{1+\frac{a\,\text{Cot}\left[\frac{1}{2}(e+f x)\right]}{b-\sqrt{-a^2+b^2}}}$$

$$\left(\text{EllipticE}\left[\mathbb{i}\,\text{ArcSinh}\left[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}}\right],\frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\right]-\text{EllipticF}\left[\mathbb{i}\,\text{ArcSinh}\left[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}}\right],\frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\right]\right)-$$

$$\frac{1}{\sqrt{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}}\,a\sqrt{\frac{b+\sqrt{-a^2+b^2}+a\,\text{Cot}\left[\frac{1}{2}(e+f x)\right]}{b+\sqrt{-a^2+b^2}}}\sqrt{1+\frac{a\,\text{Cot}\left[\frac{1}{2}(e+f x)\right]}{b-\sqrt{-a^2+b^2}}}\;\text{EllipticPi}\left[-\frac{\mathbb{i}\left(b+\sqrt{-a^2+b^2}\right)}{a},\right.$$

$$\left.\mathbb{i}\,\text{ArcSinh}\left[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}}\right],\frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\right]+\frac{1}{\sqrt{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}}\,a\sqrt{\frac{b+\sqrt{-a^2+b^2}+a\,\text{Cot}\left[\frac{1}{2}(e+f x)\right]}{b+\sqrt{-a^2+b^2}}}$$

$$\sqrt{1+\frac{a\,\text{Cot}\left[\frac{1}{2}\,(e+f\,x)\right]}{b-\sqrt{-a^2+b^2}}}\;\text{EllipticPi}\left[\frac{i\,\left(b+\sqrt{-a^2+b^2}\right)}{a},\;i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]}}\right],\;\frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\right]\Bigg)$$

$$\left(\frac{\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]}{1+\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2}\right)^{3/2}\left(1+\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right)^2\Bigg(\frac{b\,\text{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]^2+a\,\text{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]^2\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]}{1+\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2}-$$

$$\frac{\text{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]^2\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\left(a+2\,b\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]+a\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right)}{\left(1+\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right)^2}\Bigg)\Bigg)\Bigg/$$

$$\left(\sqrt{2}\,\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}\left(a+2\,b\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]+a\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right)\sqrt{\frac{a+2\,b\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]+a\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2}{1+\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2}}\right)\Bigg)\Bigg)$$

- **Problem 1483: Result more than twice size of optimal antiderivative.**

$$\int (a+b\,\text{Sin}[c+d\,x])\,\text{Tan}[c+d\,x]^5\,dx$$

Optimal (type 3, 116 leaves, 7 steps):

$$-\frac{(8\,a+15\,b)\,\text{Log}[1-\text{Sin}[c+d\,x]]}{16\,d}-\frac{(8\,a-15\,b)\,\text{Log}[1+\text{Sin}[c+d\,x]]}{16\,d}-\frac{15\,b\,\text{Sin}[c+d\,x]}{8\,d}-\frac{(4\,a+5\,b\,\text{Sin}[c+d\,x])\,\text{Tan}[c+d\,x]^2}{8\,d}+\frac{(a+b\,\text{Sin}[c+d\,x])\,\text{Tan}[c+d\,x]^4}{4\,d}$$

Result (type 3, 246 leaves):

$$-\frac{a\,\text{Log}[\text{Cos}[c+d\,x]]}{d}-\frac{15\,b\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]}{8\,d}+\frac{15\,b\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]}{8\,d}-$$

$$\frac{a\,\text{Sec}[c+d\,x]^2}{d}+\frac{a\,\text{Sec}[c+d\,x]^4}{4\,d}+\frac{b}{16\,d\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^4}-\frac{9\,b}{16\,d\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}-$$

$$\frac{b}{16\,d\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^4}+\frac{9\,b}{16\,d\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}-\frac{b\,\text{Sin}[c+d\,x]}{d}$$

Problem 1484: Result more than twice size of optimal antiderivative.

$$\int \operatorname{Sec}[c+d x]\,(a+b \operatorname{Sin}[c+d x])\operatorname{Tan}[c+d x]^4\,dx$$

Optimal (type 3, 103 leaves, 7 steps):

$$\frac{3 a \operatorname{ArcTanh}[\operatorname{Sin}[c+d x]]}{8 d}-\frac{b \operatorname{Log}[\operatorname{Cos}[c+d x]]}{d}-\frac{3 a \operatorname{Sec}[c+d x] \operatorname{Tan}[c+d x]}{8 d}-\frac{b \operatorname{Tan}[c+d x]^2}{2 d}+\frac{a \operatorname{Sec}[c+d x] \operatorname{Tan}[c+d x]^3}{4 d}+\frac{b \operatorname{Tan}[c+d x]^4}{4 d}$$

Result (type 3, 234 leaves):

$$-\frac{b \operatorname{Log}[\operatorname{Cos}[c+d x]]}{d}-\frac{3 a \operatorname{Log}\left[\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]-\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right]}{8 d}+\frac{3 a \operatorname{Log}\left[\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right]}{8 d}-\frac{b \operatorname{Sec}[c+d x]^2}{d}+\frac{b \operatorname{Sec}[c+d x]^4}{4 d}+\frac{a}{16 d\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]-\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^4}-\frac{5 a}{16 d\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]-\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2}-\frac{a}{16 d\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^4}+\frac{5 a}{16 d\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2}$$

Problem 1486: Result more than twice size of optimal antiderivative.

$$\int \operatorname{Sec}[c+d x]^3\,(a+b \operatorname{Sin}[c+d x])\operatorname{Tan}[c+d x]^2\,dx$$

Optimal (type 3, 74 leaves, 6 steps):

$$-\frac{a \operatorname{ArcTanh}[\operatorname{Sin}[c+d x]]}{8 d}-\frac{a \operatorname{Sec}[c+d x] \operatorname{Tan}[c+d x]}{8 d}+\frac{a \operatorname{Sec}[c+d x]^3 \operatorname{Tan}[c+d x]}{4 d}+\frac{b \operatorname{Tan}[c+d x]^4}{4 d}$$

Result (type 3, 207 leaves):

$$\frac{a \operatorname{Log}\left[\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]-\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right]}{8 d}-\frac{a \operatorname{Log}\left[\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right]}{8 d}+\frac{a}{16 d\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]-\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^4}-\frac{a}{16 d\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]-\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2}-\frac{a}{16 d\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^4}+\frac{a}{16 d\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2}+\frac{b \operatorname{Tan}[c+d x]^4}{4 d}$$

Problem 1487: Result more than twice size of optimal antiderivative.

$$\int \operatorname{Sec}[c+d x]^4\,(a+b \operatorname{Sin}[c+d x])\operatorname{Tan}[c+d x]\,dx$$

Optimal (type 3, 74 leaves, 6 steps):

$$-\frac{b \operatorname{ArcTanh}[\operatorname{Sin}[c+d x]]}{8 d}+\frac{a \operatorname{Sec}[c+d x]^4}{4 d}-\frac{b \operatorname{Sec}[c+d x] \operatorname{Tan}[c+d x]}{8 d}+\frac{b \operatorname{Sec}[c+d x]^3 \operatorname{Tan}[c+d x]}{4 d}$$

Result (type 3, 207 leaves):

$$\frac{b \,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]}{8 d}-\frac{b \,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]}{8 d}+\frac{a \,\text{Sec}[c+d x]^4}{4 d}+\frac{b}{16 d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^4}-\frac{b}{16 d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2}-\frac{b}{16 d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^4}+\frac{b}{16 d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2}$$

- **Problem 1488: Result more than twice size of optimal antiderivative.**

$$\int \text{Csc}[c+d x]\, \text{Sec}[c+d x]^5\, (a+b \,\text{Sin}[c+d x])\, dx$$

Optimal (type 3, 99 leaves, 8 steps):

$$\frac{3 b \,\text{ArcTanh}[\text{Sin}[c+d x]]}{8 d}+\frac{a \,\text{Log}[\text{Tan}[c+d x]]}{d}+\frac{3 b \,\text{Sec}[c+d x]\, \text{Tan}[c+d x]}{8 d}+\frac{b \,\text{Sec}[c+d x]^3 \,\text{Tan}[c+d x]}{4 d}+\frac{a \,\text{Tan}[c+d x]^2}{d}+\frac{a \,\text{Tan}[c+d x]^4}{4 d}$$

Result (type 3, 248 leaves):

$$-\frac{a \,\text{Log}[\text{Cos}[c+d x]]}{d}-\frac{3 b \,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]}{8 d}+\frac{3 b \,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]}{8 d}+\frac{a \,\text{Log}[\text{Sin}[c+d x]]}{d}+\frac{a \,\text{Sec}[c+d x]^2}{2 d}+\frac{a \,\text{Sec}[c+d x]^4}{4 d}+\frac{b}{16 d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^4}+\frac{3 b}{16 d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2}-\frac{b}{16 d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^4}-\frac{3 b}{16 d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2}$$

- **Problem 1489: Result more than twice size of optimal antiderivative.**

$$\int \text{Csc}[c+d x]^2\, \text{Sec}[c+d x]^5\, (a+b \,\text{Sin}[c+d x])\, dx$$

Optimal (type 3, 115 leaves, 10 steps):

$$\frac{15 a \,\text{ArcTanh}[\text{Sin}[c+d x]]}{8 d}-\frac{15 a \,\text{Csc}[c+d x]}{8 d}+\frac{b \,\text{Log}[\text{Tan}[c+d x]]}{d}+\frac{5 a \,\text{Csc}[c+d x]\, \text{Sec}[c+d x]^2}{8 d}+\frac{a \,\text{Csc}[c+d x]\, \text{Sec}[c+d x]^4}{4 d}+\frac{b \,\text{Tan}[c+d x]^2}{d}+\frac{b \,\text{Tan}[c+d x]^4}{4 d}$$

Result (type 3, 284 leaves):

$$-\frac{a\,\mathrm{Cot}\left[\frac{1}{2}(c+d\,x)\right]}{2\,d}-\frac{b\,\mathrm{Log}[\mathrm{Cos}[c+d\,x]]}{d}-\frac{15\,a\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]}{8\,d}+\frac{15\,a\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]}{8\,d}+\frac{b\,\mathrm{Log}[\mathrm{Sin}[c+d\,x]]}{d}+\frac{b\,\mathrm{Sec}[c+d\,x]^2}{2\,d}+\frac{b\,\mathrm{Sec}[c+d\,x]^4}{4\,d}+\frac{a}{16\,d\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4}+\frac{7\,a}{16\,d\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2}-\frac{a}{16\,d\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4}-\frac{7\,a}{16\,d\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2}-\frac{a\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{2\,d}$$

- **Problem 1490: Result more than twice size of optimal antiderivative.**

$$\int \mathrm{Csc}[c+d\,x]^3\,\mathrm{Sec}[c+d\,x]^5\,(a+b\,\mathrm{Sin}[c+d\,x])\,dx$$

Optimal (type 3, 135 leaves, 10 steps):

$$\frac{15\,b\,\mathrm{ArcTanh}[\mathrm{Sin}[c+d\,x]]}{8\,d}-\frac{a\,\mathrm{Cot}[c+d\,x]^2}{2\,d}-\frac{15\,b\,\mathrm{Csc}[c+d\,x]}{8\,d}+\frac{3\,a\,\mathrm{Log}[\mathrm{Tan}[c+d\,x]]}{d}+\frac{5\,b\,\mathrm{Csc}[c+d\,x]\,\mathrm{Sec}[c+d\,x]^2}{8\,d}+\frac{b\,\mathrm{Csc}[c+d\,x]\,\mathrm{Sec}[c+d\,x]^4}{4\,d}+\frac{3\,a\,\mathrm{Tan}[c+d\,x]^2}{2\,d}+\frac{a\,\mathrm{Tan}[c+d\,x]^4}{4\,d}$$

Result (type 3, 298 leaves):

$$-\frac{b\,\mathrm{Cot}\left[\frac{1}{2}(c+d\,x)\right]}{2\,d}-\frac{a\,\mathrm{Csc}[c+d\,x]^2}{2\,d}-\frac{3\,a\,\mathrm{Log}[\mathrm{Cos}[c+d\,x]]}{d}-\frac{15\,b\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]}{8\,d}+\frac{15\,b\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]}{8\,d}+\frac{3\,a\,\mathrm{Log}[\mathrm{Sin}[c+d\,x]]}{d}+\frac{a\,\mathrm{Sec}[c+d\,x]^2}{d}+\frac{a\,\mathrm{Sec}[c+d\,x]^4}{4\,d}+\frac{b}{16\,d\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4}+\frac{7\,b}{16\,d\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2}-\frac{b}{16\,d\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4}-\frac{7\,b}{16\,d\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2}-\frac{b\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{2\,d}$$

- **Problem 1491: Result more than twice size of optimal antiderivative.**

$$\int \mathrm{Csc}[c+d\,x]^4\,\mathrm{Sec}[c+d\,x]^5\,(a+b\,\mathrm{Sin}[c+d\,x])\,dx$$

Optimal (type 3, 155 leaves, 11 steps):

$$\frac{35\,a\,\mathrm{ArcTanh}[\mathrm{Sin}[c+d\,x]]}{8\,d}-\frac{b\,\mathrm{Cot}[c+d\,x]^2}{2\,d}-\frac{35\,a\,\mathrm{Csc}[c+d\,x]}{8\,d}-\frac{35\,a\,\mathrm{Csc}[c+d\,x]^3}{24\,d}+\frac{3\,b\,\mathrm{Log}[\mathrm{Tan}[c+d\,x]]}{d}+\frac{7\,a\,\mathrm{Csc}[c+d\,x]^3\,\mathrm{Sec}[c+d\,x]^2}{8\,d}+\frac{a\,\mathrm{Csc}[c+d\,x]^3\,\mathrm{Sec}[c+d\,x]^4}{4\,d}+\frac{3\,b\,\mathrm{Tan}[c+d\,x]^2}{2\,d}+\frac{b\,\mathrm{Tan}[c+d\,x]^4}{4\,d}$$

Result (type 3, 358 leaves):

$$-\frac{19 a \operatorname{Cot}\left[\frac{1}{2}(c+d x)\right]}{12 d}-\frac{a \operatorname{Cot}\left[\frac{1}{2}(c+d x)\right] \operatorname{Csc}\left[\frac{1}{2}(c+d x)\right]^2}{24 d}-\frac{b \operatorname{Csc}[c+d x]^2}{2 d}-\frac{3 b \operatorname{Log}[\operatorname{Cos}[c+d x]]}{d}-\frac{35 a \operatorname{Log}\left[\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]-\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right]}{8 d}+\frac{35 a \operatorname{Log}\left[\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right]}{8 d}+\frac{3 b \operatorname{Log}[\operatorname{Sin}[c+d x]]}{d}+\frac{b \operatorname{Sec}[c+d x]^2}{d}+\frac{b \operatorname{Sec}[c+d x]^4}{4 d}+\frac{a}{16 d\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]-\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^4}+\frac{11 a}{16 d\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]-\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2}-\frac{a}{16 d\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^4}-\frac{11 a}{16 d\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2}-\frac{19 a \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]}{12 d}-\frac{a \operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]}{24 d}$$

- **Problem 1495: Result more than twice size of optimal antiderivative.**

$$\int \operatorname{Sec}[c+d x]^2 (a+b \operatorname{Sin}[c+d x])^2 \operatorname{Tan}[c+d x]^3 \, dx$$

Optimal (type 3, 116 leaves, 7 steps):

$$-\frac{b (3 a+4 b) \operatorname{Log}[1-\operatorname{Sin}[c+d x]]}{8 d}+\frac{(3 a-4 b) b \operatorname{Log}[1+\operatorname{Sin}[c+d x]]}{8 d}+\frac{\operatorname{Sec}[c+d x]^4 (a+b \operatorname{Sin}[c+d x])^2}{4 d}-\frac{\operatorname{Sec}[c+d x]^2 (a+b \operatorname{Sin}[c+d x]) (2 a+3 b \operatorname{Sin}[c+d x])}{4 d}$$

Result (type 3, 264 leaves):

$$-\frac{b^2 \operatorname{Log}[\operatorname{Cos}[c+d x]]}{d}-\frac{3 a b \operatorname{Log}\left[\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]-\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right]}{4 d}+\frac{3 a b \operatorname{Log}\left[\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right]}{4 d}-\frac{b^2 \operatorname{Sec}[c+d x]^2}{d}+\frac{b^2 \operatorname{Sec}[c+d x]^4}{4 d}+\frac{a b}{8 d\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]-\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^4}-\frac{5 a b}{8 d\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]-\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2}-\frac{a b}{8 d\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^4}+\frac{5 a b}{8 d\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2}+\frac{a^2 \operatorname{Tan}[c+d x]^4}{4 d}$$

- **Problem 1496: Result more than twice size of optimal antiderivative.**

$$\int \operatorname{Sec}[c+d x]^3 (a+b \operatorname{Sin}[c+d x])^2 \operatorname{Tan}[c+d x]^2 \, dx$$

Optimal (type 3, 93 leaves, 5 steps):

$$-\frac{\left(a^2-3 b^2\right) \text{ArcTanh}[\text{Sin}[c+d x]]}{8 d}-\frac{\text{Sec}[c+d x]^2 \left(4 a b+\left(a^2+3 b^2\right) \text{Sin}[c+d x]\right)}{8 d}+\frac{\text{Sec}[c+d x]^3 (a+b \text{Sin}[c+d x])^2 \text{Tan}[c+d x]}{4 d}$$

Result (type 3, 216 leaves):

$$\frac{1}{16 d}\left(2 \left(a^2-3 b^2\right) \text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]-\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right]-2 \left(a^2-3 b^2\right) \text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right]+\frac{(a+b)^2}{\left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]-\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^4}-\frac{a^2+6 a b+5 b^2}{\left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]-\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^2}-\frac{(a-b)^2}{\left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^4}+\frac{a^2-6 a b+5 b^2}{\left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^2}\right)$$

- **Problem 1497: Result more than twice size of optimal antiderivative.**

$$\int \text{Sec}[c+d x]^4 (a+b \text{Sin}[c+d x])^2 \text{Tan}[c+d x] \, dx$$

Optimal (type 3, 72 leaves, 6 steps):

$$-\frac{a b \text{ArcTanh}[\text{Sin}[c+d x]]}{4 d}+\frac{\text{Sec}[c+d x]^4 (a+b \text{Sin}[c+d x])^2}{4 d}-\frac{\text{Sec}[c+d x]^2 \left(b^2+a b \text{Sin}[c+d x]\right)}{4 d}$$

Result (type 3, 200 leaves):

$$\frac{1}{16 d}\left(4 a b \text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]-\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right]-4 a b \text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right]+\frac{(a+b)^2}{\left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]-\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^4}+\frac{a^2-2 a b-3 b^2}{\left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]-\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^2}+\frac{(a-b)^2}{\left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^4}+\frac{a^2+2 a b-3 b^2}{\left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^2}\right)$$

- **Problem 1500: Result more than twice size of optimal antiderivative.**

$$\int \text{Csc}[c+d x]^3 \text{Sec}[c+d x]^5 (a+b \text{Sin}[c+d x])^2 \, dx$$

Optimal (type 3, 185 leaves, 6 steps):

$$-\frac{2 a b \text{Csc}[c+d x]}{d}-\frac{a^2 \text{Csc}[c+d x]^2}{2 d}-\frac{\left(12 a^2+15 a b+4 b^2\right) \text{Log}[1-\text{Sin}[c+d x]]}{8 d}+\frac{\left(3 a^2+b^2\right) \text{Log}[\text{Sin}[c+d x]]}{d}-\frac{\left(12 a^2-15 a b+4 b^2\right) \text{Log}[1+\text{Sin}[c+d x]]}{8 d}+\frac{\text{Sec}[c+d x]^4 \left(a^2+b^2+2 a b \text{Sin}[c+d x]\right)}{4 d}+\frac{\text{Sec}[c+d x]^2 \left(2 \left(2 a^2+b^2\right)+7 a b \text{Sin}[c+d x]\right)}{4 d}$$

Result (type 3, 717 leaves):

$$-\frac{a\,b\,\text{Cot}\left[\frac{1}{2}\,(c+d\,x)\right]\,(b+a\,\text{Csc}[c+d\,x])^2\,\text{Sin}[c+d\,x]^2}{d\,(a+b\,\text{Sin}[c+d\,x])^2}-\frac{a^2\,\text{Csc}\left[\frac{1}{2}\,(c+d\,x)\right]^2\,(b+a\,\text{Csc}[c+d\,x])^2\,\text{Sin}[c+d\,x]^2}{8\,d\,(a+b\,\text{Sin}[c+d\,x])^2}+$$
$$\frac{\left(-12\,a^2-15\,a\,b-4\,b^2\right)\,(b+a\,\text{Csc}[c+d\,x])^2\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\,\text{Sin}[c+d\,x]^2}{4\,d\,(a+b\,\text{Sin}[c+d\,x])^2}+$$
$$\frac{\left(-12\,a^2+15\,a\,b-4\,b^2\right)\,(b+a\,\text{Csc}[c+d\,x])^2\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\,\text{Sin}[c+d\,x]^2}{4\,d\,(a+b\,\text{Sin}[c+d\,x])^2}+$$
$$\frac{\left(3\,a^2+b^2\right)\,(b+a\,\text{Csc}[c+d\,x])^2\,\text{Log}[\text{Sin}[c+d\,x]]\,\text{Sin}[c+d\,x]^2}{d\,(a+b\,\text{Sin}[c+d\,x])^2}-\frac{a^2\,(b+a\,\text{Csc}[c+d\,x])^2\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\,\text{Sin}[c+d\,x]^2}{8\,d\,(a+b\,\text{Sin}[c+d\,x])^2}+$$
$$\frac{\left(a^2+2\,a\,b+b^2\right)\,(b+a\,\text{Csc}[c+d\,x])^2\,\text{Sin}[c+d\,x]^2}{16\,d\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^4\,(a+b\,\text{Sin}[c+d\,x])^2}+$$
$$\frac{\left(9\,a^2+14\,a\,b+5\,b^2\right)\,(b+a\,\text{Csc}[c+d\,x])^2\,\text{Sin}[c+d\,x]^2}{16\,d\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2\,(a+b\,\text{Sin}[c+d\,x])^2}+\frac{\left(a^2-2\,a\,b+b^2\right)\,(b+a\,\text{Csc}[c+d\,x])^2\,\text{Sin}[c+d\,x]^2}{16\,d\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^4\,(a+b\,\text{Sin}[c+d\,x])^2}+$$
$$\frac{\left(9\,a^2-14\,a\,b+5\,b^2\right)\,(b+a\,\text{Csc}[c+d\,x])^2\,\text{Sin}[c+d\,x]^2}{16\,d\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2\,(a+b\,\text{Sin}[c+d\,x])^2}-\frac{a\,b\,(b+a\,\text{Csc}[c+d\,x])^2\,\text{Sin}[c+d\,x]^2\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]}{d\,(a+b\,\text{Sin}[c+d\,x])^2}$$

- **Problem 1505: Result more than twice size of optimal antiderivative.**

$$\int \text{Sec}[c+d\,x]^4\,(a+b\,\text{Sin}[c+d\,x])^3\,\text{Tan}[c+d\,x]\,dx$$

Optimal (type 3, 90 leaves, 5 steps):

$$-\frac{3\,b\,\left(a^2-b^2\right)\,\text{ArcTanh}[\text{Sin}[c+d\,x]]}{8\,d}+\frac{\text{Sec}[c+d\,x]^4\,(a+b\,\text{Sin}[c+d\,x])^3}{4\,d}-\frac{3\,\text{Sec}[c+d\,x]^2\,(a+b\,\text{Sin}[c+d\,x])\,\left(b^2+a\,b\,\text{Sin}[c+d\,x]\right)}{8\,d}$$

Result (type 3, 212 leaves):

$$\frac{1}{16\,d}\left(6\,b\,\left(a^2-b^2\right)\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]+\right.$$
$$6\,b\,\left(-a^2+b^2\right)\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]+\frac{(a+b)^3}{\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^4}+$$
$$\left.\frac{(a-5\,b)\,(a+b)^2}{\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}+\frac{(a-b)^3}{\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^4}+\frac{(a-b)^2\,(a+5\,b)}{\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}\right)$$

Problem 1508: Result more than twice size of optimal antiderivative.

$$\int \mathrm{Csc}[c+d\,x]^3\,\mathrm{Sec}[c+d\,x]^5\,(a+b\,\mathrm{Sin}[c+d\,x])^3\,dx$$

Optimal (type 3, 221 leaves, 6 steps):

$$-\frac{3\,a^2\,b\,\mathrm{Csc}[c+d\,x]}{d}-\frac{a^3\,\mathrm{Csc}[c+d\,x]^2}{2\,d}-\frac{3\,(a+b)\,\left(8\,a^2+7\,a\,b+b^2\right)\,\mathrm{Log}[1-\mathrm{Sin}[c+d\,x]]}{16\,d}+$$
$$\frac{3\,a\,\left(a^2+b^2\right)\,\mathrm{Log}[\mathrm{Sin}[c+d\,x]]}{d}-\frac{3\,(a-b)\,\left(8\,a^2-7\,a\,b+b^2\right)\,\mathrm{Log}[1+\mathrm{Sin}[c+d\,x]]}{16\,d}+$$
$$\frac{b^2\,\mathrm{Sec}[c+d\,x]^4\,\left(a\,\left(3+\frac{a^2}{b^2}\right)+\left(1+\frac{3\,a^2}{b^2}\right)\,b\,\mathrm{Sin}[c+d\,x]\right)}{4\,d}+\frac{b^2\,\mathrm{Sec}[c+d\,x]^2\,\left(4\,a\,\left(3+\frac{2\,a^2}{b^2}\right)+3\,\left(1+\frac{7\,a^2}{b^2}\right)\,b\,\mathrm{Sin}[c+d\,x]\right)}{8\,d}$$

Result (type 3, 772 leaves):

$$-\frac{3\,a^2\,b\,\mathrm{Cot}\left[\frac{1}{2}\,(c+d\,x)\right]\,(b+a\,\mathrm{Csc}[c+d\,x])^3\,\mathrm{Sin}[c+d\,x]^3}{2\,d\,(a+b\,\mathrm{Sin}[c+d\,x])^3}-\frac{a^3\,\mathrm{Csc}\left[\frac{1}{2}\,(c+d\,x)\right]^2\,(b+a\,\mathrm{Csc}[c+d\,x])^3\,\mathrm{Sin}[c+d\,x]^3}{8\,d\,(a+b\,\mathrm{Sin}[c+d\,x])^3}-$$
$$\frac{3\,\left(8\,a^3+15\,a^2\,b+8\,a\,b^2+b^3\right)\,(b+a\,\mathrm{Csc}[c+d\,x])^3\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\,\mathrm{Sin}[c+d\,x]^3}{8\,d\,(a+b\,\mathrm{Sin}[c+d\,x])^3}-$$
$$\frac{3\,\left(8\,a^3-15\,a^2\,b+8\,a\,b^2-b^3\right)\,(b+a\,\mathrm{Csc}[c+d\,x])^3\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\,\mathrm{Sin}[c+d\,x]^3}{8\,d\,(a+b\,\mathrm{Sin}[c+d\,x])^3}+$$
$$\frac{3\,\left(a^3+a\,b^2\right)\,(b+a\,\mathrm{Csc}[c+d\,x])^3\,\mathrm{Log}[\mathrm{Sin}[c+d\,x]]\,\mathrm{Sin}[c+d\,x]^3}{d\,(a+b\,\mathrm{Sin}[c+d\,x])^3}-$$
$$\frac{a^3\,(b+a\,\mathrm{Csc}[c+d\,x])^3\,\mathrm{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\,\mathrm{Sin}[c+d\,x]^3}{8\,d\,(a+b\,\mathrm{Sin}[c+d\,x])^3}+\frac{\left(a^3+3\,a^2\,b+3\,a\,b^2+b^3\right)\,(b+a\,\mathrm{Csc}[c+d\,x])^3\,\mathrm{Sin}[c+d\,x]^3}{16\,d\,\left(\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^4\,(a+b\,\mathrm{Sin}[c+d\,x])^3}+$$
$$\frac{3\,\left(3\,a^3+7\,a^2\,b+5\,a\,b^2+b^3\right)\,(b+a\,\mathrm{Csc}[c+d\,x])^3\,\mathrm{Sin}[c+d\,x]^3}{16\,d\,\left(\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2\,(a+b\,\mathrm{Sin}[c+d\,x])^3}+\frac{\left(a^3-3\,a^2\,b+3\,a\,b^2-b^3\right)\,(b+a\,\mathrm{Csc}[c+d\,x])^3\,\mathrm{Sin}[c+d\,x]^3}{16\,d\,\left(\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^4\,(a+b\,\mathrm{Sin}[c+d\,x])^3}+$$
$$\frac{3\,\left(3\,a^3-7\,a^2\,b+5\,a\,b^2-b^3\right)\,(b+a\,\mathrm{Csc}[c+d\,x])^3\,\mathrm{Sin}[c+d\,x]^3}{16\,d\,\left(\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2\,(a+b\,\mathrm{Sin}[c+d\,x])^3}-\frac{3\,a^2\,b\,(b+a\,\mathrm{Csc}[c+d\,x])^3\,\mathrm{Sin}[c+d\,x]^3\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]}{2\,d\,(a+b\,\mathrm{Sin}[c+d\,x])^3}$$

Problem 1509: Unable to integrate problem.

$$\int \mathrm{Sec}[c+d\,x]^5\,\mathrm{Sin}[c+d\,x]^n\,(a+b\,\mathrm{Sin}[c+d\,x])^4\,dx$$

Optimal (type 5, 295 leaves, 6 steps):

$$-\frac{1}{8 d (1+n)}\left(6 a^2 b^2 \left(1-n^2\right)-a^4 \left(3-4 n+n^2\right)-b^4 \left(3+4 n+n^2\right)\right) \text{Hypergeometric2F1}\left[1,\frac{1+n}{2},\frac{3+n}{2},\text{Sin}[c+d x]^2\right] \text{Sin}[c+d x]^{1+n}-\frac{a b n \left(a^2 (2-n)-b^2 (2+n)\right) \text{Hypergeometric2F1}\left[1,\frac{2+n}{2},\frac{4+n}{2},\text{Sin}[c+d x]^2\right] \text{Sin}[c+d x]^{2+n}}{2 d (2+n)}+\frac{\text{Sec}[c+d x]^4 \text{Sin}[c+d x]^{1+n} \left(a^4+6 a^2 b^2+b^4+4 a b \left(a^2+b^2\right) \text{Sin}[c+d x]\right)}{4 d}+\frac{1}{8 d} \text{Sec}[c+d x]^2 \text{Sin}[c+d x]^{1+n} \left(a^4 (3-n)-6 a^2 b^2 (1+n)-b^4 (5+n)+4 a b \left(a^2 (2-n)-b^2 (2+n)\right) \text{Sin}[c+d x]\right)$$

Result (type 8, 31 leaves):

$$\int \text{Sec}[c+d x]^5 \text{Sin}[c+d x]^n (a+b \text{Sin}[c+d x])^4 \, dx$$

Problem 1513: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{\text{Sec}[c+d x]^5 \text{Sin}[c+d x]^n}{a+b \text{Sin}[c+d x]} \, dx$$

Optimal (type 5, 360 leaves, 10 steps):

$$\frac{\left(3 a^2-9 a b+8 b^2\right) \text{Hypergeometric2F1}[1,1+n,2+n,-\text{Sin}[c+d x]] \text{Sin}[c+d x]^{1+n}}{16 (a-b)^3 d (1+n)}+\frac{\left(3 a^2+9 a b+8 b^2\right) \text{Hypergeometric2F1}[1,1+n,2+n,\text{Sin}[c+d x]] \text{Sin}[c+d x]^{1+n}}{16 (a+b)^3 d (1+n)}-\frac{b^6 \text{Hypergeometric2F1}\left[1,1+n,2+n,-\frac{b \text{Sin}[c+d x]}{a}\right] \text{Sin}[c+d x]^{1+n}}{a \left(a^2-b^2\right)^3 d (1+n)}+\frac{(3 a-5 b) \text{Hypergeometric2F1}[2,1+n,2+n,-\text{Sin}[c+d x]] \text{Sin}[c+d x]^{1+n}}{16 (a-b)^2 d (1+n)}+\frac{(3 a+5 b) \text{Hypergeometric2F1}[2,1+n,2+n,\text{Sin}[c+d x]] \text{Sin}[c+d x]^{1+n}}{16 (a+b)^2 d (1+n)}+\frac{\text{Hypergeometric2F1}[3,1+n,2+n,-\text{Sin}[c+d x]] \text{Sin}[c+d x]^{1+n}}{8 (a-b) d (1+n)}+\frac{\text{Hypergeometric2F1}[3,1+n,2+n,\text{Sin}[c+d x]] \text{Sin}[c+d x]^{1+n}}{8 (a+b) d (1+n)}$$

Result (type 6, 16 959 leaves):

$$\Bigg(\text{Sec}[c+d x]^5 \text{Sin}[c+d x]^n$$

$$\Bigg(-\Bigg(\Bigg(\Bigg(a^3 (3+n) \text{AppellF1}\left[\frac{1+n}{2},\frac{1}{2} (-1+n),1,\frac{3+n}{2},-\text{Tan}[c+d x]^2,\frac{\left(-a^2+b^2\right) \text{Tan}[c+d x]^2}{a^2}\right] \text{Tan}[c+d x]^2 \left(\frac{\text{Tan}[c+d x]}{\sqrt{1+\text{Tan}[c+d x]^2}}\right)^{-1+n}\Bigg) \Bigg/$$

$$\left((1+n) \left(-a^2 (3+n) \text{AppellF1}\left[\frac{1+n}{2},\frac{1}{2} (-1+n),1,\frac{3+n}{2},-\text{Tan}[c+d x]^2,\left(-1+\frac{b^2}{a^2}\right) \text{Tan}[c+d x]^2\right]+\right.\right.$$

$$\left(2\left(a^2-b^2\right)\text{AppellF1}\left[\frac{3+n}{2},\frac{1}{2}(-1+n),2,\frac{5+n}{2},-\text{Tan}[c+d x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d x]^2\right]+a^2(-1+n)\text{AppellF1}\left[\frac{3+n}{2},\right.\right.$$

$$\left.\left.\frac{1+n}{2},1,\frac{5+n}{2},-\text{Tan}[c+d x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d x]^2\right]\right)\text{Tan}[c+d x]^2\Big)\left(-b^2\text{Tan}[c+d x]^2+a^2\left(1+\text{Tan}[c+d x]^2\right)\right)\Big)+$$

$$\left(a^2 b(4+n)\text{AppellF1}\left[\frac{2+n}{2},\frac{n}{2},1,\frac{4+n}{2},-\text{Tan}[c+d x]^2,\frac{\left(-a^2+b^2\right)\text{Tan}[c+d x]^2}{a^2}\right]\text{Tan}[c+d x]^2\left(\frac{\text{Tan}[c+d x]}{\sqrt{1+\text{Tan}[c+d x]^2}}\right)^n\right)\Big/$$

$$\left((2+n)\left(-a^2(4+n)\text{AppellF1}\left[\frac{2+n}{2},\frac{n}{2},1,\frac{4+n}{2},-\text{Tan}[c+d x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d x]^2\right]+\right.\right.$$

$$\left(2\left(a^2-b^2\right)\text{AppellF1}\left[\frac{4+n}{2},\frac{n}{2},2,\frac{6+n}{2},-\text{Tan}[c+d x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d x]^2\right]+a^2 n\,\text{AppellF1}\left[\frac{4+n}{2},\frac{2+n}{2},1,\right.\right.$$

$$\left.\left.\left.\frac{6+n}{2},-\text{Tan}[c+d x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d x]^2\right]\right)\text{Tan}[c+d x]^2\right)\left(-b^2\text{Tan}[c+d x]^2+a^2\left(1+\text{Tan}[c+d x]^2\right)\right)\Big)-$$

$$\left(2a^3(5+n)\text{AppellF1}\left[\frac{3+n}{2},\frac{1}{2}(-1+n),1,\frac{5+n}{2},-\text{Tan}[c+d x]^2,\frac{\left(-a^2+b^2\right)\text{Tan}[c+d x]^2}{a^2}\right]\text{Tan}[c+d x]^4\left(\frac{\text{Tan}[c+d x]}{\sqrt{1+\text{Tan}[c+d x]^2}}\right)^{-1+n}\right)\Big/$$

$$\left((3+n)\left(-a^2(5+n)\text{AppellF1}\left[\frac{3+n}{2},\frac{1}{2}(-1+n),1,\frac{5+n}{2},-\text{Tan}[c+d x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d x]^2\right]+\right.\right.$$

$$\left(2\left(a^2-b^2\right)\text{AppellF1}\left[\frac{5+n}{2},\frac{1}{2}(-1+n),2,\frac{7+n}{2},-\text{Tan}[c+d x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d x]^2\right]+a^2(-1+n)\text{AppellF1}\left[\frac{5+n}{2},\right.\right.$$

$$\left.\left.\left.\frac{1+n}{2},1,\frac{7+n}{2},-\text{Tan}[c+d x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d x]^2\right]\right)\text{Tan}[c+d x]^2\right)\left(-b^2\text{Tan}[c+d x]^2+a^2\left(1+\text{Tan}[c+d x]^2\right)\right)\Big)+$$

$$\left(2a^2 b(6+n)\text{AppellF1}\left[\frac{4+n}{2},\frac{n}{2},1,\frac{6+n}{2},-\text{Tan}[c+d x]^2,\frac{\left(-a^2+b^2\right)\text{Tan}[c+d x]^2}{a^2}\right]\text{Tan}[c+d x]^4\left(\frac{\text{Tan}[c+d x]}{\sqrt{1+\text{Tan}[c+d x]^2}}\right)^n\right)\Big/$$

$$\left((4+n)\left(-a^2(6+n)\text{AppellF1}\left[\frac{4+n}{2},\frac{n}{2},1,\frac{6+n}{2},-\text{Tan}[c+d x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d x]^2\right]+\right.\right.$$

$$\left(2\left(a^2-b^2\right)\text{AppellF1}\left[\frac{6+n}{2},\frac{n}{2},2,\frac{8+n}{2},-\text{Tan}[c+d x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d x]^2\right]+a^2 n\,\text{AppellF1}\left[\frac{6+n}{2},\frac{2+n}{2},1,\right.\right.$$

$$\left.\left.\left.\frac{8+n}{2},-\text{Tan}[c+d x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d x]^2\right]\right)\text{Tan}[c+d x]^2\right)\left(-b^2\text{Tan}[c+d x]^2+a^2\left(1+\text{Tan}[c+d x]^2\right)\right)\Big)-$$

$$\left(a^3 (7+n) \text{AppellF1}\left[\frac{5+n}{2}, \frac{1}{2}(-1+n), 1, \frac{7+n}{2}, -\text{Tan}[c+d x]^2, \frac{(-a^2+b^2) \text{Tan}[c+d x]^2}{a^2}\right] \text{Tan}[c+d x]^6 \left(\frac{\text{Tan}[c+d x]}{\sqrt{1+\text{Tan}[c+d x]^2}}\right)^{-1+n}\right) \Big/$$

$$\left((5+n) \left(-a^2 (7+n) \text{AppellF1}\left[\frac{5+n}{2}, \frac{1}{2}(-1+n), 1, \frac{7+n}{2}, -\text{Tan}[c+d x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[c+d x]^2\right] + \right.\right.$$

$$\left(2 (a^2-b^2) \text{AppellF1}\left[\frac{7+n}{2}, \frac{1}{2}(-1+n), 2, \frac{9+n}{2}, -\text{Tan}[c+d x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[c+d x]^2\right] + a^2 (-1+n) \text{AppellF1}\left[\frac{7+n}{2},\right.\right.$$

$$\left.\left.\left.\frac{1+n}{2}, 1, \frac{9+n}{2}, -\text{Tan}[c+d x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[c+d x]^2\right]\right) \text{Tan}[c+d x]^2\right) \left(-b^2 \text{Tan}[c+d x]^2 + a^2 \left(1+\text{Tan}[c+d x]^2\right)\right)\right) +$$

$$\left(a^2 b (8+n) \text{AppellF1}\left[\frac{6+n}{2}, \frac{n}{2}, 1, \frac{8+n}{2}, -\text{Tan}[c+d x]^2, \frac{(-a^2+b^2) \text{Tan}[c+d x]^2}{a^2}\right] \text{Tan}[c+d x]^6 \left(\frac{\text{Tan}[c+d x]}{\sqrt{1+\text{Tan}[c+d x]^2}}\right)^{n}\right) \Big/$$

$$\left((6+n) \left(-a^2 (8+n) \text{AppellF1}\left[\frac{6+n}{2}, \frac{n}{2}, 1, \frac{8+n}{2}, -\text{Tan}[c+d x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[c+d x]^2\right] + \right.\right.$$

$$\left(2 (a^2-b^2) \text{AppellF1}\left[\frac{8+n}{2}, \frac{n}{2}, 2, 5+\frac{n}{2}, -\text{Tan}[c+d x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[c+d x]^2\right] + a^2 n \text{AppellF1}\left[\frac{8+n}{2}, \frac{2+n}{2}, 1, 5+\right.\right.$$

$$\left.\left.\left.\left.\frac{n}{2}, -\text{Tan}[c+d x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[c+d x]^2\right]\right) \text{Tan}[c+d x]^2\right) \left(-b^2 \text{Tan}[c+d x]^2 + a^2 \left(1+\text{Tan}[c+d x]^2\right)\right)\right)\right) \Big/$$

$$\left(d (a+b \text{Sin}[c+d x]) \left(\left(a^3 (3+n) \text{AppellF1}\left[\frac{1+n}{2}, \frac{1}{2}(-1+n), 1, \frac{3+n}{2}, -\text{Tan}[c+d x]^2, \frac{(-a^2+b^2) \text{Tan}[c+d x]^2}{a^2}\right]\right.\right.\right.$$

$$\text{Tan}[c+d x]^2 \left(2 a^2 \text{Sec}[c+d x]^2 \text{Tan}[c+d x] - 2 b^2 \text{Sec}[c+d x]^2 \text{Tan}[c+d x]\right) \left(\frac{\text{Tan}[c+d x]}{\sqrt{1+\text{Tan}[c+d x]^2}}\right)^{-1+n}\right) \Big/$$

$$\left((1+n) \left(-a^2 (3+n) \text{AppellF1}\left[\frac{1+n}{2}, \frac{1}{2}(-1+n), 1, \frac{3+n}{2}, -\text{Tan}[c+d x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[c+d x]^2\right] + \right.\right.$$

$$\left(2 (a^2-b^2) \text{AppellF1}\left[\frac{3+n}{2}, \frac{1}{2}(-1+n), 2, \frac{5+n}{2}, -\text{Tan}[c+d x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[c+d x]^2\right] + a^2 (-1+n) \text{AppellF1}\left[\frac{3+n}{2},\right.\right.$$

$$\left.\left.\left.\frac{1+n}{2}, 1, \frac{5+n}{2}, -\text{Tan}[c+d x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[c+d x]^2\right]\right) \text{Tan}[c+d x]^2\right) \left(-b^2 \text{Tan}[c+d x]^2 + a^2 \left(1+\text{Tan}[c+d x]^2\right)\right)^2\right) -$$

$$\left(a^2 b (4+n) \text{AppellF1}\left[\frac{2+n}{2}, \frac{n}{2}, 1, \frac{4+n}{2}, -\text{Tan}[c+d x]^2, \frac{(-a^2+b^2) \text{Tan}[c+d x]^2}{a^2}\right] \text{Tan}[c+d x]^2\right.$$

$$\left(2 a^2 \operatorname{Sec}[c+d x]^2 \operatorname{Tan}[c+d x]-2 b^2 \operatorname{Sec}[c+d x]^2 \operatorname{Tan}[c+d x]\right)\left(\frac{\operatorname{Tan}[c+d x]}{\sqrt{1+\operatorname{Tan}[c+d x]^2}}\right)^n\Bigg) \Bigg/$$

$$\Bigg((2+n)\left(-a^2 (4+n) \operatorname{AppellF1}\left[\frac{2+n}{2}, \frac{n}{2}, 1, \frac{4+n}{2}, -\operatorname{Tan}[c+d x]^2, \left(-1+\frac{b^2}{a^2}\right) \operatorname{Tan}[c+d x]^2\right]+\right.$$

$$\left(2\left(a^2-b^2\right) \operatorname{AppellF1}\left[\frac{4+n}{2}, \frac{n}{2}, 2, \frac{6+n}{2}, -\operatorname{Tan}[c+d x]^2, \left(-1+\frac{b^2}{a^2}\right) \operatorname{Tan}[c+d x]^2\right]+a^2 n \operatorname{AppellF1}\left[\frac{4+n}{2}, \frac{2+n}{2}, 1,\right.\right.$$

$$\left.\left.\left.\frac{6+n}{2}, -\operatorname{Tan}[c+d x]^2, \left(-1+\frac{b^2}{a^2}\right) \operatorname{Tan}[c+d x]^2\right]\right) \operatorname{Tan}[c+d x]^2\right)\left(-b^2 \operatorname{Tan}[c+d x]^2+a^2\left(1+\operatorname{Tan}[c+d x]^2\right)\right)^2\Bigg)+$$

$$\Bigg(2 a^3 (5+n) \operatorname{AppellF1}\left[\frac{3+n}{2}, \frac{1}{2}(-1+n), 1, \frac{5+n}{2}, -\operatorname{Tan}[c+d x]^2, \frac{\left(-a^2+b^2\right) \operatorname{Tan}[c+d x]^2}{a^2}\right] \operatorname{Tan}[c+d x]^4$$

$$\left(2 a^2 \operatorname{Sec}[c+d x]^2 \operatorname{Tan}[c+d x]-2 b^2 \operatorname{Sec}[c+d x]^2 \operatorname{Tan}[c+d x]\right)\left(\frac{\operatorname{Tan}[c+d x]}{\sqrt{1+\operatorname{Tan}[c+d x]^2}}\right)^{-1+n}\Bigg) \Bigg/$$

$$\Bigg((3+n)\left(-a^2 (5+n) \operatorname{AppellF1}\left[\frac{3+n}{2}, \frac{1}{2}(-1+n), 1, \frac{5+n}{2}, -\operatorname{Tan}[c+d x]^2, \left(-1+\frac{b^2}{a^2}\right) \operatorname{Tan}[c+d x]^2\right]+\right.$$

$$\left(2\left(a^2-b^2\right) \operatorname{AppellF1}\left[\frac{5+n}{2}, \frac{1}{2}(-1+n), 2, \frac{7+n}{2}, -\operatorname{Tan}[c+d x]^2, \left(-1+\frac{b^2}{a^2}\right) \operatorname{Tan}[c+d x]^2\right]+a^2 (-1+n) \operatorname{AppellF1}\left[\frac{5+n}{2},\right.\right.$$

$$\left.\left.\left.\frac{1+n}{2}, 1, \frac{7+n}{2}, -\operatorname{Tan}[c+d x]^2, \left(-1+\frac{b^2}{a^2}\right) \operatorname{Tan}[c+d x]^2\right]\right) \operatorname{Tan}[c+d x]^2\right)\left(-b^2 \operatorname{Tan}[c+d x]^2+a^2\left(1+\operatorname{Tan}[c+d x]^2\right)\right)^2\Bigg)-$$

$$\Bigg(2 a^2 b (6+n) \operatorname{AppellF1}\left[\frac{4+n}{2}, \frac{n}{2}, 1, \frac{6+n}{2}, -\operatorname{Tan}[c+d x]^2, \frac{\left(-a^2+b^2\right) \operatorname{Tan}[c+d x]^2}{a^2}\right] \operatorname{Tan}[c+d x]^4$$

$$\left(2 a^2 \operatorname{Sec}[c+d x]^2 \operatorname{Tan}[c+d x]-2 b^2 \operatorname{Sec}[c+d x]^2 \operatorname{Tan}[c+d x]\right)\left(\frac{\operatorname{Tan}[c+d x]}{\sqrt{1+\operatorname{Tan}[c+d x]^2}}\right)^n\Bigg) \Bigg/$$

$$\Bigg((4+n)\left(-a^2 (6+n) \operatorname{AppellF1}\left[\frac{4+n}{2}, \frac{n}{2}, 1, \frac{6+n}{2}, -\operatorname{Tan}[c+d x]^2, \left(-1+\frac{b^2}{a^2}\right) \operatorname{Tan}[c+d x]^2\right]+\right.$$

$$\left(2\left(a^2-b^2\right) \operatorname{AppellF1}\left[\frac{6+n}{2}, \frac{n}{2}, 2, \frac{8+n}{2}, -\operatorname{Tan}[c+d x]^2, \left(-1+\frac{b^2}{a^2}\right) \operatorname{Tan}[c+d x]^2\right]+a^2 n \operatorname{AppellF1}\left[\frac{6+n}{2}, \frac{2+n}{2}, 1,\right.\right.$$

$$\left.\left.\left.\frac{8+n}{2}, -\operatorname{Tan}[c+d x]^2, \left(-1+\frac{b^2}{a^2}\right) \operatorname{Tan}[c+d x]^2\right]\right) \operatorname{Tan}[c+d x]^2\right)\left(-b^2 \operatorname{Tan}[c+d x]^2+a^2\left(1+\operatorname{Tan}[c+d x]^2\right)\right)^2\Bigg)+$$

$$\Bigg(a^3\,(7+n)\,\text{AppellF1}\Big[\frac{5+n}{2},\ \frac{1}{2}\,(-1+n),\ 1,\ \frac{7+n}{2},\ -\text{Tan}[c+d\,x]^2,\ \frac{\left(-a^2+b^2\right)\text{Tan}[c+d\,x]^2}{a^2}\Big]\,\text{Tan}[c+d\,x]^6$$

$$\left(2\,a^2\,\text{Sec}[c+d\,x]^2\,\text{Tan}[c+d\,x]-2\,b^2\,\text{Sec}[c+d\,x]^2\,\text{Tan}[c+d\,x]\right)\left(\frac{\text{Tan}[c+d\,x]}{\sqrt{1+\text{Tan}[c+d\,x]^2}}\right)^{-1+n}\Bigg)\Bigg/$$

$$\Bigg((5+n)\,\Big(-a^2\,(7+n)\,\text{AppellF1}\Big[\frac{5+n}{2},\ \frac{1}{2}\,(-1+n),\ 1,\ \frac{7+n}{2},\ -\text{Tan}[c+d\,x]^2,\ \left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\Big]+$$

$$\Big(2\,\left(a^2-b^2\right)\text{AppellF1}\Big[\frac{7+n}{2},\ \frac{1}{2}\,(-1+n),\ 2,\ \frac{9+n}{2},\ -\text{Tan}[c+d\,x]^2,\ \left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\Big]+a^2\,(-1+n)\,\text{AppellF1}\Big[\frac{7+n}{2},$$

$$\frac{1+n}{2},\ 1,\ \frac{9+n}{2},\ -\text{Tan}[c+d\,x]^2,\ \left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\Big]\Big)\,\text{Tan}[c+d\,x]^2\Big)\,\left(-b^2\,\text{Tan}[c+d\,x]^2+a^2\,\left(1+\text{Tan}[c+d\,x]^2\right)\right)^2\Bigg)-$$

$$\Bigg(a^2\,b\,(8+n)\,\text{AppellF1}\Big[\frac{6+n}{2},\ \frac{n}{2},\ 1,\ \frac{8+n}{2},\ -\text{Tan}[c+d\,x]^2,\ \frac{\left(-a^2+b^2\right)\text{Tan}[c+d\,x]^2}{a^2}\Big]\,\text{Tan}[c+d\,x]^6$$

$$\left(2\,a^2\,\text{Sec}[c+d\,x]^2\,\text{Tan}[c+d\,x]-2\,b^2\,\text{Sec}[c+d\,x]^2\,\text{Tan}[c+d\,x]\right)\left(\frac{\text{Tan}[c+d\,x]}{\sqrt{1+\text{Tan}[c+d\,x]^2}}\right)^{n}\Bigg)\Bigg/$$

$$\Bigg((6+n)\,\Big(-a^2\,(8+n)\,\text{AppellF1}\Big[\frac{6+n}{2},\ \frac{n}{2},\ 1,\ \frac{8+n}{2},\ -\text{Tan}[c+d\,x]^2,\ \left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\Big]+$$

$$\Big(2\,\left(a^2-b^2\right)\text{AppellF1}\Big[\frac{8+n}{2},\ \frac{n}{2},\ 2,\ 5+\frac{n}{2},\ -\text{Tan}[c+d\,x]^2,\ \left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\Big]+a^2\,n\,\text{AppellF1}\Big[\frac{8+n}{2},\ \frac{2+n}{2},\ 1,\ 5+$$

$$\frac{n}{2},\ -\text{Tan}[c+d\,x]^2,\ \left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\Big]\Big)\,\text{Tan}[c+d\,x]^2\Big)\,\left(-b^2\,\text{Tan}[c+d\,x]^2+a^2\,\left(1+\text{Tan}[c+d\,x]^2\right)\right)^2\Bigg)-$$

$$\Bigg(2\,a^3\,(3+n)\,\text{AppellF1}\Big[\frac{1+n}{2},\ \frac{1}{2}\,(-1+n),\ 1,\ \frac{3+n}{2},\ -\text{Tan}[c+d\,x]^2,\ \frac{\left(-a^2+b^2\right)\text{Tan}[c+d\,x]^2}{a^2}\Big]\,\text{Sec}[c+d\,x]^2$$

$$\text{Tan}[c+d\,x]\left(\frac{\text{Tan}[c+d\,x]}{\sqrt{1+\text{Tan}[c+d\,x]^2}}\right)^{-1+n}\Bigg)\Bigg/$$

$$\Bigg((1+n)\,\Big(-a^2\,(3+n)\,\text{AppellF1}\Big[\frac{1+n}{2},\ \frac{1}{2}\,(-1+n),\ 1,\ \frac{3+n}{2},\ -\text{Tan}[c+d\,x]^2,\ \left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\Big]+$$

$$\Big(2\,\left(a^2-b^2\right)\text{AppellF1}\Big[\frac{3+n}{2},\ \frac{1}{2}\,(-1+n),\ 2,\ \frac{5+n}{2},\ -\text{Tan}[c+d\,x]^2,\ \left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\Big]+a^2\,(-1+n)\,\text{AppellF1}\Big[\frac{3+n}{2},$$

$$\frac{1+n}{2},\,1,\,\frac{5+n}{2},\,-\text{Tan}[c+d\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\Big]\Big)\,\text{Tan}[c+d\,x]^2\Big)\,\left(-b^2\,\text{Tan}[c+d\,x]^2+a^2\,\left(1+\text{Tan}[c+d\,x]^2\right)\right)\Big)-$$

$$\Bigg(a^3\,(3+n)\,\text{Tan}[c+d\,x]^2\,\Bigg(-\frac{1}{3+n}(-1+n)\,(1+n)\,\text{AppellF1}\Big[1+\frac{1+n}{2},\,1+\frac{1}{2}\,(-1+n),\,1,\,1+\frac{3+n}{2},\,-\text{Tan}[c+d\,x]^2,\,\frac{\left(-a^2+b^2\right)\text{Tan}[c+d\,x]^2}{a^2}\Big]$$

$$\text{Sec}[c+d\,x]^2\,\text{Tan}[c+d\,x]+\frac{1}{a^2\,(3+n)}2\,\left(-a^2+b^2\right)\,(1+n)\,\text{AppellF1}\Big[1+\frac{1+n}{2},\,\frac{1}{2}\,(-1+n),\,2,\,1+\frac{3+n}{2},$$

$$-\text{Tan}[c+d\,x]^2,\,\frac{\left(-a^2+b^2\right)\text{Tan}[c+d\,x]^2}{a^2}\Big]\,\text{Sec}[c+d\,x]^2\,\text{Tan}[c+d\,x]\Bigg)\,\left(\frac{\text{Tan}[c+d\,x]}{\sqrt{1+\text{Tan}[c+d\,x]^2}}\right)^{-1+n}\Bigg)\Big/$$

$$\Bigg((1+n)\,\Bigg(-a^2\,(3+n)\,\text{AppellF1}\Big[\frac{1+n}{2},\,\frac{1}{2}\,(-1+n),\,1,\,\frac{3+n}{2},\,-\text{Tan}[c+d\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\Big]+$$

$$\Big(2\,\left(a^2-b^2\right)\text{AppellF1}\Big[\frac{3+n}{2},\,\frac{1}{2}\,(-1+n),\,2,\,\frac{5+n}{2},\,-\text{Tan}[c+d\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\Big]+a^2\,(-1+n)\,\text{AppellF1}\Big[\frac{3+n}{2},$$

$$\frac{1+n}{2},\,1,\,\frac{5+n}{2},\,-\text{Tan}[c+d\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\Big]\Big)\,\text{Tan}[c+d\,x]^2\Big)\,\left(-b^2\,\text{Tan}[c+d\,x]^2+a^2\,\left(1+\text{Tan}[c+d\,x]^2\right)\right)\Bigg)+$$

$$\Bigg(2\,a^2\,b\,(4+n)\,\text{AppellF1}\Big[\frac{2+n}{2},\,\frac{n}{2},\,1,\,\frac{4+n}{2},\,-\text{Tan}[c+d\,x]^2,\,\frac{\left(-a^2+b^2\right)\text{Tan}[c+d\,x]^2}{a^2}\Big]\,\text{Sec}[c+d\,x]^2\,\text{Tan}[c+d\,x]\,\left(\frac{\text{Tan}[c+d\,x]}{\sqrt{1+\text{Tan}[c+d\,x]^2}}\right)^n\Bigg)\Big/$$

$$\Bigg((2+n)\,\Bigg(-a^2\,(4+n)\,\text{AppellF1}\Big[\frac{2+n}{2},\,\frac{n}{2},\,1,\,\frac{4+n}{2},\,-\text{Tan}[c+d\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\Big]+$$

$$\Big(2\,\left(a^2-b^2\right)\text{AppellF1}\Big[\frac{4+n}{2},\,\frac{n}{2},\,2,\,\frac{6+n}{2},\,-\text{Tan}[c+d\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\Big]+a^2\,n\,\text{AppellF1}\Big[\frac{4+n}{2},\,\frac{2+n}{2},\,1,\,\frac{6+n}{2},$$

$$-\text{Tan}[c+d\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\Big]\Big)\,\text{Tan}[c+d\,x]^2\Big)\,\left(-b^2\,\text{Tan}[c+d\,x]^2+a^2\,\left(1+\text{Tan}[c+d\,x]^2\right)\right)\Bigg)+\Bigg(a^2\,b\,(4+n)\,\text{Tan}[c+d\,x]^2$$

$$\Bigg(-\frac{1}{4+n}n\,(2+n)\,\text{AppellF1}\Big[1+\frac{2+n}{2},\,1+\frac{n}{2},\,1,\,1+\frac{4+n}{2},\,-\text{Tan}[c+d\,x]^2,\,\frac{\left(-a^2+b^2\right)\text{Tan}[c+d\,x]^2}{a^2}\Big]\,\text{Sec}[c+d\,x]^2\,\text{Tan}[c+d\,x]+$$

$$\frac{1}{a^2\,(4+n)}2\,\left(-a^2+b^2\right)\,(2+n)\,\text{AppellF1}\Big[1+\frac{2+n}{2},\,\frac{n}{2},\,2,\,1+\frac{4+n}{2},\,-\text{Tan}[c+d\,x]^2,\,\frac{\left(-a^2+b^2\right)\text{Tan}[c+d\,x]^2}{a^2}\Big]\,\text{Sec}[c+d\,x]^2\,\text{Tan}[c+d\,x]\Bigg)$$

$$\left(\frac{\text{Tan}[c+d\,x]}{\sqrt{1+\text{Tan}[c+d\,x]^2}}\right)^n\Bigg)\Big/\,\Bigg((2+n)\,\Bigg(-a^2\,(4+n)\,\text{AppellF1}\Big[\frac{2+n}{2},\,\frac{n}{2},\,1,\,\frac{4+n}{2},\,-\text{Tan}[c+d\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\Big]+$$

$$\Big(2\,(a^2-b^2)\,\text{AppellF1}\Big[\frac{4+n}{2},\,\frac{n}{2},\,2,\,\frac{6+n}{2},\,-\text{Tan}[c+d\,x]^2,\,\Big(-1+\frac{b^2}{a^2}\Big)\,\text{Tan}[c+d\,x]^2\Big]+a^2\,n\,\text{AppellF1}\Big[\frac{4+n}{2},\,\frac{2+n}{2},\,1,$$

$$\frac{6+n}{2},\,-\text{Tan}[c+d\,x]^2,\,\Big(-1+\frac{b^2}{a^2}\Big)\,\text{Tan}[c+d\,x]^2\Big]\Big)\,\text{Tan}[c+d\,x]^2\Big)\,\big(-b^2\,\text{Tan}[c+d\,x]^2+a^2\,\big(1+\text{Tan}[c+d\,x]^2\big)\big)\Big)-$$

$$\Big(8\,a^3\,(5+n)\,\text{AppellF1}\Big[\frac{3+n}{2},\,\frac{1}{2}\,(-1+n),\,1,\,\frac{5+n}{2},\,-\text{Tan}[c+d\,x]^2,\,\frac{(-a^2+b^2)\,\text{Tan}[c+d\,x]^2}{a^2}\Big]\,\text{Sec}[c+d\,x]^2$$

$$\text{Tan}[c+d\,x]^3\,\left(\frac{\text{Tan}[c+d\,x]}{\sqrt{1+\text{Tan}[c+d\,x]^2}}\right)^{-1+n}\Big)\Big/$$

$$\Big((3+n)\,\Big(-a^2\,(5+n)\,\text{AppellF1}\Big[\frac{3+n}{2},\,\frac{1}{2}\,(-1+n),\,1,\,\frac{5+n}{2},\,-\text{Tan}[c+d\,x]^2,\,\Big(-1+\frac{b^2}{a^2}\Big)\,\text{Tan}[c+d\,x]^2\Big]+$$

$$\Big(2\,(a^2-b^2)\,\text{AppellF1}\Big[\frac{5+n}{2},\,\frac{1}{2}\,(-1+n),\,2,\,\frac{7+n}{2},\,-\text{Tan}[c+d\,x]^2,\,\Big(-1+\frac{b^2}{a^2}\Big)\,\text{Tan}[c+d\,x]^2\Big]+a^2\,(-1+n)\,\text{AppellF1}\Big[\frac{5+n}{2},$$

$$\frac{1+n}{2},\,1,\,\frac{7+n}{2},\,-\text{Tan}[c+d\,x]^2,\,\Big(-1+\frac{b^2}{a^2}\Big)\,\text{Tan}[c+d\,x]^2\Big]\Big)\,\text{Tan}[c+d\,x]^2\Big)\,\big(-b^2\,\text{Tan}[c+d\,x]^2+a^2\,\big(1+\text{Tan}[c+d\,x]^2\big)\big)\Big)-$$

$$\Big(2\,a^3\,(5+n)\,\text{Tan}[c+d\,x]^4\,\Big(-\frac{1}{5+n}\,(-1+n)\,(3+n)\,\text{AppellF1}\Big[1+\frac{3+n}{2},\,1+\frac{1}{2}\,(-1+n),\,1,\,1+\frac{5+n}{2},\,-\text{Tan}[c+d\,x]^2,$$

$$\frac{(-a^2+b^2)\,\text{Tan}[c+d\,x]^2}{a^2}\Big]\,\text{Sec}[c+d\,x]^2\,\text{Tan}[c+d\,x]+\frac{1}{a^2\,(5+n)}2\,(-a^2+b^2)\,(3+n)\,\text{AppellF1}\Big[1+\frac{3+n}{2},\,\frac{1}{2}\,(-1+n),$$

$$2,\,1+\frac{5+n}{2},\,-\text{Tan}[c+d\,x]^2,\,\frac{(-a^2+b^2)\,\text{Tan}[c+d\,x]^2}{a^2}\Big]\,\text{Sec}[c+d\,x]^2\,\text{Tan}[c+d\,x]\Big)\,\left(\frac{\text{Tan}[c+d\,x]}{\sqrt{1+\text{Tan}[c+d\,x]^2}}\right)^{-1+n}\Big)\Big/$$

$$\Big((3+n)\,\Big(-a^2\,(5+n)\,\text{AppellF1}\Big[\frac{3+n}{2},\,\frac{1}{2}\,(-1+n),\,1,\,\frac{5+n}{2},\,-\text{Tan}[c+d\,x]^2,\,\Big(-1+\frac{b^2}{a^2}\Big)\,\text{Tan}[c+d\,x]^2\Big]+$$

$$\Big(2\,(a^2-b^2)\,\text{AppellF1}\Big[\frac{5+n}{2},\,\frac{1}{2}\,(-1+n),\,2,\,\frac{7+n}{2},\,-\text{Tan}[c+d\,x]^2,\,\Big(-1+\frac{b^2}{a^2}\Big)\,\text{Tan}[c+d\,x]^2\Big]+a^2\,(-1+n)\,\text{AppellF1}\Big[\frac{5+n}{2},$$

$$\frac{1+n}{2},\,1,\,\frac{7+n}{2},\,-\text{Tan}[c+d\,x]^2,\,\Big(-1+\frac{b^2}{a^2}\Big)\,\text{Tan}[c+d\,x]^2\Big]\Big)\,\text{Tan}[c+d\,x]^2\Big)\,\big(-b^2\,\text{Tan}[c+d\,x]^2+a^2\,\big(1+\text{Tan}[c+d\,x]^2\big)\big)\Big)+$$

$$\Big(8\,a^2\,b\,(6+n)\,\text{AppellF1}\Big[\frac{4+n}{2},\,\frac{n}{2},\,1,\,\frac{6+n}{2},\,-\text{Tan}[c+d\,x]^2,\,\frac{(-a^2+b^2)\,\text{Tan}[c+d\,x]^2}{a^2}\Big]\,\text{Sec}[c+d\,x]^2\,\text{Tan}[c+d\,x]^3\,\left(\frac{\text{Tan}[c+d\,x]}{\sqrt{1+\text{Tan}[c+d\,x]^2}}\right)^{n}\Big)\Big/$$

$$\left((4+n)\left(-a^2(6+n)\,\text{AppellF1}\left[\frac{4+n}{2},\frac{n}{2},1,\frac{6+n}{2},-\text{Tan}[c+d\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\right]+\right.\right.$$

$$\left(2\left(a^2-b^2\right)\text{AppellF1}\left[\frac{6+n}{2},\frac{n}{2},2,\frac{8+n}{2},-\text{Tan}[c+d\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\right]+a^2\,n\,\text{AppellF1}\left[\frac{6+n}{2},\frac{2+n}{2},1,\frac{8+n}{2},\right.\right.$$

$$\left.\left.\left.-\text{Tan}[c+d\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\right]\right)\text{Tan}[c+d\,x]^2\right)\left(-b^2\,\text{Tan}[c+d\,x]^2+a^2\left(1+\text{Tan}[c+d\,x]^2\right)\right)\Big)+\Big(2\,a^2\,b\,(6+n)\,\text{Tan}[c+d\,x]^4$$

$$\left(-\frac{1}{6+n}n\,(4+n)\,\text{AppellF1}\left[1+\frac{4+n}{2},1+\frac{n}{2},1,1+\frac{6+n}{2},-\text{Tan}[c+d\,x]^2,\frac{\left(-a^2+b^2\right)\text{Tan}[c+d\,x]^2}{a^2}\right]\text{Sec}[c+d\,x]^2\,\text{Tan}[c+d\,x]+\right.$$

$$\left.\frac{1}{a^2\,(6+n)}2\left(-a^2+b^2\right)(4+n)\,\text{AppellF1}\left[1+\frac{4+n}{2},\frac{n}{2},2,1+\frac{6+n}{2},-\text{Tan}[c+d\,x]^2,\frac{\left(-a^2+b^2\right)\text{Tan}[c+d\,x]^2}{a^2}\right]\text{Sec}[c+d\,x]^2\,\text{Tan}[c+d\,x]\right)$$

$$\left.\left(\frac{\text{Tan}[c+d\,x]}{\sqrt{1+\text{Tan}[c+d\,x]^2}}\right)^n\right)\Big/\left((4+n)\left(-a^2(6+n)\,\text{AppellF1}\left[\frac{4+n}{2},\frac{n}{2},1,\frac{6+n}{2},-\text{Tan}[c+d\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\right]+\right.\right.$$

$$\left(2\left(a^2-b^2\right)\text{AppellF1}\left[\frac{6+n}{2},\frac{n}{2},2,\frac{8+n}{2},-\text{Tan}[c+d\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\right]+a^2\,n\,\text{AppellF1}\left[\frac{6+n}{2},\frac{2+n}{2},1,\right.\right.$$

$$\left.\left.\left.\left.\frac{8+n}{2},-\text{Tan}[c+d\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\right]\right)\text{Tan}[c+d\,x]^2\right)\left(-b^2\,\text{Tan}[c+d\,x]^2+a^2\left(1+\text{Tan}[c+d\,x]^2\right)\right)\right)-$$

$$\left(6\,a^3\,(7+n)\,\text{AppellF1}\left[\frac{5+n}{2},\frac{1}{2}(-1+n),1,\frac{7+n}{2},-\text{Tan}[c+d\,x]^2,\frac{\left(-a^2+b^2\right)\text{Tan}[c+d\,x]^2}{a^2}\right]\text{Sec}[c+d\,x]^2\right.$$

$$\left.\text{Tan}[c+d\,x]^5\left(\frac{\text{Tan}[c+d\,x]}{\sqrt{1+\text{Tan}[c+d\,x]^2}}\right)^{-1+n}\right)\Big/$$

$$\left((5+n)\left(-a^2(7+n)\,\text{AppellF1}\left[\frac{5+n}{2},\frac{1}{2}(-1+n),1,\frac{7+n}{2},-\text{Tan}[c+d\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\right]+\right.\right.$$

$$\left(2\left(a^2-b^2\right)\text{AppellF1}\left[\frac{7+n}{2},\frac{1}{2}(-1+n),2,\frac{9+n}{2},-\text{Tan}[c+d\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\right]+a^2(-1+n)\,\text{AppellF1}\left[\frac{7+n}{2},\right.\right.$$

$$\left.\left.\left.\left.\frac{1+n}{2},1,\frac{9+n}{2},-\text{Tan}[c+d\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\right]\right)\text{Tan}[c+d\,x]^2\right)\left(-b^2\,\text{Tan}[c+d\,x]^2+a^2\left(1+\text{Tan}[c+d\,x]^2\right)\right)\right)-$$

$$\left(a^3\,(7+n)\,\text{Tan}[c+d\,x]^6\left(-\frac{1}{7+n}(-1+n)\,(5+n)\,\text{AppellF1}\left[1+\frac{5+n}{2},1+\frac{1}{2}(-1+n),1,1+\frac{7+n}{2},-\text{Tan}[c+d\,x]^2,\frac{\left(-a^2+b^2\right)\text{Tan}[c+d\,x]^2}{a^2}\right]\right.\right.$$

$$\mathrm{Sec}[c+d\,x]^2\,\mathrm{Tan}[c+d\,x]+\frac{1}{a^2\,(7+n)}2\,\left(-a^2+b^2\right)\,(5+n)\,\mathrm{AppellF1}\Big[1+\frac{5+n}{2},\,\frac{1}{2}\,(-1+n),\,2,\,1+\frac{7+n}{2},$$

$$-\mathrm{Tan}[c+d\,x]^2,\,\frac{\left(-a^2+b^2\right)\,\mathrm{Tan}[c+d\,x]^2}{a^2}\Big]\,\mathrm{Sec}[c+d\,x]^2\,\mathrm{Tan}[c+d\,x]\Big)\,\left(\frac{\mathrm{Tan}[c+d\,x]}{\sqrt{1+\mathrm{Tan}[c+d\,x]^2}}\right)^{-1+n}\Bigg)\Bigg/$$

$$\Bigg((5+n)\,\Big(-a^2\,(7+n)\,\mathrm{AppellF1}\Big[\frac{5+n}{2},\,\frac{1}{2}\,(-1+n),\,1,\,\frac{7+n}{2},\,-\mathrm{Tan}[c+d\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\,\mathrm{Tan}[c+d\,x]^2\Big]+$$

$$\Big(2\,\left(a^2-b^2\right)\,\mathrm{AppellF1}\Big[\frac{7+n}{2},\,\frac{1}{2}\,(-1+n),\,2,\,\frac{9+n}{2},\,-\mathrm{Tan}[c+d\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\,\mathrm{Tan}[c+d\,x]^2\Big]+a^2\,(-1+n)\,\mathrm{AppellF1}\Big[\frac{7+n}{2},$$

$$\frac{1+n}{2},\,1,\,\frac{9+n}{2},\,-\mathrm{Tan}[c+d\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\,\mathrm{Tan}[c+d\,x]^2\Big]\Big)\,\mathrm{Tan}[c+d\,x]^2\Big)\,\left(-b^2\,\mathrm{Tan}[c+d\,x]^2+a^2\,\left(1+\mathrm{Tan}[c+d\,x]^2\right)\right)\Bigg)+$$

$$\left(6\,a^2\,b\,(8+n)\,\mathrm{AppellF1}\Big[\frac{6+n}{2},\,\frac{n}{2},\,1,\,\frac{8+n}{2},\,-\mathrm{Tan}[c+d\,x]^2,\,\frac{\left(-a^2+b^2\right)\,\mathrm{Tan}[c+d\,x]^2}{a^2}\Big]\,\mathrm{Sec}[c+d\,x]^2\,\mathrm{Tan}[c+d\,x]^5\,\left(\frac{\mathrm{Tan}[c+d\,x]}{\sqrt{1+\mathrm{Tan}[c+d\,x]^2}}\right)^n\right)\Bigg/$$

$$\Bigg((6+n)\,\Big(-a^2\,(8+n)\,\mathrm{AppellF1}\Big[\frac{6+n}{2},\,\frac{n}{2},\,1,\,\frac{8+n}{2},\,-\mathrm{Tan}[c+d\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\,\mathrm{Tan}[c+d\,x]^2\Big]+$$

$$\Big(2\,\left(a^2-b^2\right)\,\mathrm{AppellF1}\Big[\frac{8+n}{2},\,\frac{n}{2},\,2,\,5+\frac{n}{2},\,-\mathrm{Tan}[c+d\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\,\mathrm{Tan}[c+d\,x]^2\Big]+a^2\,n\,\mathrm{AppellF1}\Big[\frac{8+n}{2},\,\frac{2+n}{2},\,1,\,5+\frac{n}{2},$$

$$-\mathrm{Tan}[c+d\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\,\mathrm{Tan}[c+d\,x]^2\Big]\Big)\,\mathrm{Tan}[c+d\,x]^2\Big)\,\left(-b^2\,\mathrm{Tan}[c+d\,x]^2+a^2\,\left(1+\mathrm{Tan}[c+d\,x]^2\right)\right)\Bigg)+\Bigg(a^2\,b\,(8+n)\,\mathrm{Tan}[c+d\,x]^6$$

$$\Big(-\frac{1}{8+n}n\,(6+n)\,\mathrm{AppellF1}\Big[1+\frac{6+n}{2},\,1+\frac{n}{2},\,1,\,1+\frac{8+n}{2},\,-\mathrm{Tan}[c+d\,x]^2,\,\frac{\left(-a^2+b^2\right)\,\mathrm{Tan}[c+d\,x]^2}{a^2}\Big]\,\mathrm{Sec}[c+d\,x]^2\,\mathrm{Tan}[c+d\,x]+$$

$$\frac{1}{a^2\,(8+n)}2\,\left(-a^2+b^2\right)\,(6+n)\,\mathrm{AppellF1}\Big[1+\frac{6+n}{2},\,\frac{n}{2},\,2,\,1+\frac{8+n}{2},\,-\mathrm{Tan}[c+d\,x]^2,\,\frac{\left(-a^2+b^2\right)\,\mathrm{Tan}[c+d\,x]^2}{a^2}\Big]\,\mathrm{Sec}[c+d\,x]^2\,\mathrm{Tan}[c+d\,x]\Big)$$

$$\left(\frac{\mathrm{Tan}[c+d\,x]}{\sqrt{1+\mathrm{Tan}[c+d\,x]^2}}\right)^n\Bigg)\Bigg/\Bigg((6+n)\,\Big(-a^2\,(8+n)\,\mathrm{AppellF1}\Big[\frac{6+n}{2},\,\frac{n}{2},\,1,\,\frac{8+n}{2},\,-\mathrm{Tan}[c+d\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\,\mathrm{Tan}[c+d\,x]^2\Big]+$$

$$\Big(2\,\left(a^2-b^2\right)\,\mathrm{AppellF1}\Big[\frac{8+n}{2},\,\frac{n}{2},\,2,\,5+\frac{n}{2},\,-\mathrm{Tan}[c+d\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\,\mathrm{Tan}[c+d\,x]^2\Big]+a^2\,n\,\mathrm{AppellF1}\Big[\frac{8+n}{2},\,\frac{2+n}{2},\,1,\,5+$$

$$\frac{n}{2},\,-\mathrm{Tan}[c+d\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\,\mathrm{Tan}[c+d\,x]^2\Big]\Big)\,\mathrm{Tan}[c+d\,x]^2\Big)\,\left(-b^2\,\mathrm{Tan}[c+d\,x]^2+a^2\,\left(1+\mathrm{Tan}[c+d\,x]^2\right)\right)\Bigg)-$$

$$\left(a^3 (-1+n) (3+n) \text{AppellF1}\left[\frac{1+n}{2}, \frac{1}{2}(-1+n), 1, \frac{3+n}{2}, -\text{Tan}[c+d x]^2, \frac{(-a^2+b^2) \text{Tan}[c+d x]^2}{a^2}\right] \text{Tan}[c+d x]^2 \left(\frac{\text{Tan}[c+d x]}{\sqrt{1+\text{Tan}[c+d x]^2}}\right)^{-2+n} \left(-\frac{\text{Sec}[c+d x]^2 \text{Tan}[c+d x]^2}{(1+\text{Tan}[c+d x]^2)^{3/2}} + \frac{\text{Sec}[c+d x]^2}{\sqrt{1+\text{Tan}[c+d x]^2}}\right)\right) \Big/$$

$$\left((1+n) \left(-a^2 (3+n) \text{AppellF1}\left[\frac{1+n}{2}, \frac{1}{2}(-1+n), 1, \frac{3+n}{2}, -\text{Tan}[c+d x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[c+d x]^2\right] + \left(2 (a^2-b^2) \text{AppellF1}\left[\frac{3+n}{2}, \frac{1}{2}(-1+n), 2, \frac{5+n}{2}, -\text{Tan}[c+d x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[c+d x]^2\right] + a^2 (-1+n) \text{AppellF1}\left[\frac{3+n}{2}, \frac{1+n}{2}, 1, \frac{5+n}{2}, -\text{Tan}[c+d x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[c+d x]^2\right]\right) \text{Tan}[c+d x]^2\right) \left(-b^2 \text{Tan}[c+d x]^2 + a^2 (1+\text{Tan}[c+d x]^2)\right)\right) +$$

$$\left(a^2 b\, n (4+n) \text{AppellF1}\left[\frac{2+n}{2}, \frac{n}{2}, 1, \frac{4+n}{2}, -\text{Tan}[c+d x]^2, \frac{(-a^2+b^2) \text{Tan}[c+d x]^2}{a^2}\right] \text{Tan}[c+d x]^2 \left(\frac{\text{Tan}[c+d x]}{\sqrt{1+\text{Tan}[c+d x]^2}}\right)^{-1+n} \left(-\frac{\text{Sec}[c+d x]^2 \text{Tan}[c+d x]^2}{(1+\text{Tan}[c+d x]^2)^{3/2}} + \frac{\text{Sec}[c+d x]^2}{\sqrt{1+\text{Tan}[c+d x]^2}}\right)\right) \Big/$$

$$\left((2+n) \left(-a^2 (4+n) \text{AppellF1}\left[\frac{2+n}{2}, \frac{n}{2}, 1, \frac{4+n}{2}, -\text{Tan}[c+d x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[c+d x]^2\right] + \left(2 (a^2-b^2) \text{AppellF1}\left[\frac{4+n}{2}, \frac{n}{2}, 2, \frac{6+n}{2}, -\text{Tan}[c+d x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[c+d x]^2\right] + a^2 n \text{AppellF1}\left[\frac{4+n}{2}, \frac{2+n}{2}, 1, \frac{6+n}{2}, -\text{Tan}[c+d x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[c+d x]^2\right]\right) \text{Tan}[c+d x]^2\right) \left(-b^2 \text{Tan}[c+d x]^2 + a^2 (1+\text{Tan}[c+d x]^2)\right)\right) -$$

$$\left(2 a^3 (-1+n) (5+n) \text{AppellF1}\left[\frac{3+n}{2}, \frac{1}{2}(-1+n), 1, \frac{5+n}{2}, -\text{Tan}[c+d x]^2, \frac{(-a^2+b^2) \text{Tan}[c+d x]^2}{a^2}\right] \text{Tan}[c+d x]^4 \left(\frac{\text{Tan}[c+d x]}{\sqrt{1+\text{Tan}[c+d x]^2}}\right)^{-2+n} \left(-\frac{\text{Sec}[c+d x]^2 \text{Tan}[c+d x]^2}{(1+\text{Tan}[c+d x]^2)^{3/2}} + \frac{\text{Sec}[c+d x]^2}{\sqrt{1+\text{Tan}[c+d x]^2}}\right)\right) \Big/$$

$$\left((3+n) \left(-a^2 (5+n) \text{AppellF1}\left[\frac{3+n}{2}, \frac{1}{2}(-1+n), 1, \frac{5+n}{2}, -\text{Tan}[c+d x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[c+d x]^2\right] + \left(2 (a^2-b^2) \text{AppellF1}\left[\frac{5+n}{2}, \frac{1}{2}(-1+n), 2, \frac{7+n}{2}, -\text{Tan}[c+d x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[c+d x]^2\right] + a^2 (-1+n) \text{AppellF1}\left[\frac{5+n}{2},\right.\right.\right.$$

$$\frac{1+n}{2},1,\frac{7+n}{2},-\text{Tan}[c+d x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d x]^2\Big]\Big)\text{Tan}[c+d x]^2\Big)\left(-b^2\text{Tan}[c+d x]^2+a^2\left(1+\text{Tan}[c+d x]^2\right)\right)\Big)+$$

$$\Big(2 a^2 b n (6+n)\text{AppellF1}\Big[\frac{4+n}{2},\frac{n}{2},1,\frac{6+n}{2},-\text{Tan}[c+d x]^2,\frac{\left(-a^2+b^2\right)\text{Tan}[c+d x]^2}{a^2}\Big]\text{Tan}[c+d x]^4$$

$$\left(\frac{\text{Tan}[c+d x]}{\sqrt{1+\text{Tan}[c+d x]^2}}\right)^{-1+n}\left(-\frac{\text{Sec}[c+d x]^2\text{Tan}[c+d x]^2}{\left(1+\text{Tan}[c+d x]^2\right)^{3/2}}+\frac{\text{Sec}[c+d x]^2}{\sqrt{1+\text{Tan}[c+d x]^2}}\right)\Big)\Big/$$

$$\Big((4+n)\Big(-a^2(6+n)\text{AppellF1}\Big[\frac{4+n}{2},\frac{n}{2},1,\frac{6+n}{2},-\text{Tan}[c+d x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d x]^2\Big]+$$

$$\Big(2\left(a^2-b^2\right)\text{AppellF1}\Big[\frac{6+n}{2},\frac{n}{2},2,\frac{8+n}{2},-\text{Tan}[c+d x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d x]^2\Big]+a^2 n\,\text{AppellF1}\Big[\frac{6+n}{2},\frac{2+n}{2},1,$$

$$\frac{8+n}{2},-\text{Tan}[c+d x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d x]^2\Big]\Big)\text{Tan}[c+d x]^2\Big)\left(-b^2\text{Tan}[c+d x]^2+a^2\left(1+\text{Tan}[c+d x]^2\right)\right)\Big)-$$

$$\Big(a^3(-1+n)(7+n)\text{AppellF1}\Big[\frac{5+n}{2},\frac{1}{2}(-1+n),1,\frac{7+n}{2},-\text{Tan}[c+d x]^2,\frac{\left(-a^2+b^2\right)\text{Tan}[c+d x]^2}{a^2}\Big]\text{Tan}[c+d x]^6$$

$$\left(\frac{\text{Tan}[c+d x]}{\sqrt{1+\text{Tan}[c+d x]^2}}\right)^{-2+n}\left(-\frac{\text{Sec}[c+d x]^2\text{Tan}[c+d x]^2}{\left(1+\text{Tan}[c+d x]^2\right)^{3/2}}+\frac{\text{Sec}[c+d x]^2}{\sqrt{1+\text{Tan}[c+d x]^2}}\right)\Big)\Big/$$

$$\Big((5+n)\Big(-a^2(7+n)\text{AppellF1}\Big[\frac{5+n}{2},\frac{1}{2}(-1+n),1,\frac{7+n}{2},-\text{Tan}[c+d x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d x]^2\Big]+$$

$$\Big(2\left(a^2-b^2\right)\text{AppellF1}\Big[\frac{7+n}{2},\frac{1}{2}(-1+n),2,\frac{9+n}{2},-\text{Tan}[c+d x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d x]^2\Big]+a^2(-1+n)\text{AppellF1}\Big[\frac{7+n}{2},$$

$$\frac{1+n}{2},1,\frac{9+n}{2},-\text{Tan}[c+d x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d x]^2\Big]\Big)\text{Tan}[c+d x]^2\Big)\left(-b^2\text{Tan}[c+d x]^2+a^2\left(1+\text{Tan}[c+d x]^2\right)\right)\Big)+$$

$$\Big(a^2 b n (8+n)\text{AppellF1}\Big[\frac{6+n}{2},\frac{n}{2},1,\frac{8+n}{2},-\text{Tan}[c+d x]^2,\frac{\left(-a^2+b^2\right)\text{Tan}[c+d x]^2}{a^2}\Big]\text{Tan}[c+d x]^6\left(\frac{\text{Tan}[c+d x]}{\sqrt{1+\text{Tan}[c+d x]^2}}\right)^{-1+n}$$

$$\left(-\frac{\text{Sec}[c+d x]^2\text{Tan}[c+d x]^2}{\left(1+\text{Tan}[c+d x]^2\right)^{3/2}}+\frac{\text{Sec}[c+d x]^2}{\sqrt{1+\text{Tan}[c+d x]^2}}\right)\Big)\Big/$$

$$\Big((6+n)\Big(-a^2(8+n)\text{AppellF1}\Big[\frac{6+n}{2},\frac{n}{2},1,\frac{8+n}{2},-\text{Tan}[c+d x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d x]^2\Big]+$$

$$\left(2\left(a^2-b^2\right)\text{AppellF1}\left[\frac{8+n}{2},\frac{n}{2},2,5+\frac{n}{2},-\text{Tan}[c+d x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d x]^2\right]+a^2 n\,\text{AppellF1}\left[\frac{8+n}{2},\frac{2+n}{2},1,5+\frac{n}{2},-\text{Tan}[c+d x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d x]^2\right]\right)\text{Tan}[c+d x]^2\right)\left(-b^2\,\text{Tan}[c+d x]^2+a^2\left(1+\text{Tan}[c+d x]^2\right)\right)\Big)+$$

$$\left(a^3(3+n)\,\text{AppellF1}\left[\frac{1+n}{2},\frac{1}{2}(-1+n),1,\frac{3+n}{2},-\text{Tan}[c+d x]^2,\frac{\left(-a^2+b^2\right)\text{Tan}[c+d x]^2}{a^2}\right]\text{Tan}[c+d x]^2\left(\frac{\text{Tan}[c+d x]}{\sqrt{1+\text{Tan}[c+d x]^2}}\right)^{-1+n}\right.$$

$$\left(2\left(2\left(a^2-b^2\right)\text{AppellF1}\left[\frac{3+n}{2},\frac{1}{2}(-1+n),2,\frac{5+n}{2},-\text{Tan}[c+d x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d x]^2\right]+\right.\right.$$

$$a^2(-1+n)\,\text{AppellF1}\left[\frac{3+n}{2},\frac{1+n}{2},1,\frac{5+n}{2},-\text{Tan}[c+d x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d x]^2\right]\Big)\,\text{Sec}[c+d x]^2\,\text{Tan}[c+d x]-a^2(3+n)$$

$$\left(-\frac{1}{3+n}(-1+n)(1+n)\,\text{AppellF1}\left[1+\frac{1+n}{2},1+\frac{1}{2}(-1+n),1,1+\frac{3+n}{2},-\text{Tan}[c+d x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d x]^2\right]\text{Sec}[c+d x]^2\right.$$

$$\text{Tan}[c+d x]+\frac{1}{3+n}2\left(-1+\frac{b^2}{a^2}\right)(1+n)\,\text{AppellF1}\left[1+\frac{1+n}{2},\frac{1}{2}(-1+n),2,1+\frac{3+n}{2},-\text{Tan}[c+d x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d x]^2\right]$$

$$\text{Sec}[c+d x]^2\,\text{Tan}[c+d x]\Big)+\text{Tan}[c+d x]^2\left(2\left(a^2-b^2\right)\left(-\frac{1}{5+n}(-1+n)(3+n)\,\text{AppellF1}\left[1+\frac{3+n}{2},1+\frac{1}{2}(-1+n),2,1+\frac{5+n}{2},\right.\right.\right.$$

$$-\text{Tan}[c+d x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d x]^2\Big]\,\text{Sec}[c+d x]^2\,\text{Tan}[c+d x]+\frac{1}{5+n}4\left(-1+\frac{b^2}{a^2}\right)(3+n)\,\text{AppellF1}\left[1+\frac{3+n}{2},\frac{1}{2}(-1+n),\right.$$

$$3,1+\frac{5+n}{2},-\text{Tan}[c+d x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d x]^2\Big]\,\text{Sec}[c+d x]^2\,\text{Tan}[c+d x]\Big)+a^2(-1+n)\left(\frac{1}{5+n}2\left(-1+\frac{b^2}{a^2}\right)(3+n)\right.$$

$$\text{AppellF1}\left[1+\frac{3+n}{2},\frac{1+n}{2},2,1+\frac{5+n}{2},-\text{Tan}[c+d x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d x]^2\right]\text{Sec}[c+d x]^2\,\text{Tan}[c+d x]-\frac{1}{5+n}(1+n)$$

$$(3+n)\,\text{AppellF1}\left[1+\frac{3+n}{2},1+\frac{1+n}{2},1,1+\frac{5+n}{2},-\text{Tan}[c+d x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d x]^2\right]\text{Sec}[c+d x]^2\,\text{Tan}[c+d x]\Big)\Big)\Big)\Big)\Big/$$

$$\left((1+n)\left(-a^2(3+n)\,\text{AppellF1}\left[\frac{1+n}{2},\frac{1}{2}(-1+n),1,\frac{3+n}{2},-\text{Tan}[c+d x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d x]^2\right]+\right.\right.$$

$$\left(2\left(a^2-b^2\right)\text{AppellF1}\left[\frac{3+n}{2},\frac{1}{2}(-1+n),2,\frac{5+n}{2},-\text{Tan}[c+d x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d x]^2\right]+a^2(-1+n)\,\text{AppellF1}\left[\frac{3+n}{2},\right.\right.$$

$$\frac{1+n}{2},1,\frac{5+n}{2},-\text{Tan}[c+d x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d x]^2\Big]\Big)\,\text{Tan}[c+d x]^2\Big)^2\left(-b^2\,\text{Tan}[c+d x]^2+a^2\left(1+\text{Tan}[c+d x]^2\right)\right)\Big)-$$

$$\left(a^2\,b\,(4+n)\,\text{AppellF1}\left[\frac{2+n}{2},\,\frac{n}{2},\,1,\,\frac{4+n}{2},\,-\text{Tan}[c+d\,x]^2,\,\frac{\left(-a^2+b^2\right)\text{Tan}[c+d\,x]^2}{a^2}\right]\text{Tan}[c+d\,x]^2\left(\frac{\text{Tan}[c+d\,x]}{\sqrt{1+\text{Tan}[c+d\,x]^2}}\right)^n\right.$$

$$\left(2\left(2\left(a^2-b^2\right)\text{AppellF1}\left[\frac{4+n}{2},\,\frac{n}{2},\,2,\,\frac{6+n}{2},\,-\text{Tan}[c+d\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\right]+\right.\right.$$

$$\left.a^2\,n\,\text{AppellF1}\left[\frac{4+n}{2},\,\frac{2+n}{2},\,1,\,\frac{6+n}{2},\,-\text{Tan}[c+d\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\right]\right)\text{Sec}[c+d\,x]^2\,\text{Tan}[c+d\,x]-$$

$$a^2\,(4+n)\left(-\frac{1}{4+n}n\,(2+n)\,\text{AppellF1}\left[1+\frac{2+n}{2},\,1+\frac{n}{2},\,1,\,1+\frac{4+n}{2},\,-\text{Tan}[c+d\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\right]\text{Sec}[c+d\,x]^2\,\text{Tan}[c+d\,x]+\right.$$

$$\left.\frac{1}{4+n}2\left(-1+\frac{b^2}{a^2}\right)(2+n)\,\text{AppellF1}\left[1+\frac{2+n}{2},\,\frac{n}{2},\,2,\,1+\frac{4+n}{2},\,-\text{Tan}[c+d\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\right]\text{Sec}[c+d\,x]^2\,\text{Tan}[c+d\,x]\right)+$$

$$\text{Tan}[c+d\,x]^2\left(2\left(a^2-b^2\right)\left(-\frac{1}{6+n}n\,(4+n)\,\text{AppellF1}\left[1+\frac{4+n}{2},\,1+\frac{n}{2},\,2,\,1+\frac{6+n}{2},\,-\text{Tan}[c+d\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\right]\right.\right.$$

$$\text{Sec}[c+d\,x]^2\,\text{Tan}[c+d\,x]+\frac{1}{6+n}4\left(-1+\frac{b^2}{a^2}\right)(4+n)\,\text{AppellF1}\left[1+\frac{4+n}{2},\,\frac{n}{2},\,3,\,1+\frac{6+n}{2},\right.$$

$$\left.\left.-\text{Tan}[c+d\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\right]\text{Sec}[c+d\,x]^2\,\text{Tan}[c+d\,x]\right)+a^2\,n\left(\frac{1}{6+n}2\left(-1+\frac{b^2}{a^2}\right)(4+n)\right.$$

$$\text{AppellF1}\left[1+\frac{4+n}{2},\,\frac{2+n}{2},\,2,\,1+\frac{6+n}{2},\,-\text{Tan}[c+d\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\right]\text{Sec}[c+d\,x]^2\,\text{Tan}[c+d\,x]-\frac{1}{6+n}(2+n)$$

$$\left.\left.\left.\left.(4+n)\,\text{AppellF1}\left[1+\frac{4+n}{2},\,1+\frac{2+n}{2},\,1,\,1+\frac{6+n}{2},\,-\text{Tan}[c+d\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\right]\text{Sec}[c+d\,x]^2\,\text{Tan}[c+d\,x]\right)\right)\right)\right)\Big/$$

$$\left((2+n)\left(-a^2\,(4+n)\,\text{AppellF1}\left[\frac{2+n}{2},\,\frac{n}{2},\,1,\,\frac{4+n}{2},\,-\text{Tan}[c+d\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\right]+\right.\right.$$

$$\left(2\left(a^2-b^2\right)\text{AppellF1}\left[\frac{4+n}{2},\,\frac{n}{2},\,2,\,\frac{6+n}{2},\,-\text{Tan}[c+d\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\right]+a^2\,n\,\text{AppellF1}\left[\frac{4+n}{2},\,\frac{2+n}{2},\,1,\right.\right.$$

$$\left.\left.\left.\frac{6+n}{2},\,-\text{Tan}[c+d\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\right]\right)\text{Tan}[c+d\,x]^2\right)^2\left(-b^2\,\text{Tan}[c+d\,x]^2+a^2\left(1+\text{Tan}[c+d\,x]^2\right)\right)\right)+$$

$$\left(2\,a^3\,(5+n)\,\text{AppellF1}\left[\frac{3+n}{2},\,\frac{1}{2}(-1+n),\,1,\,\frac{5+n}{2},\,-\text{Tan}[c+d\,x]^2,\,\frac{\left(-a^2+b^2\right)\text{Tan}[c+d\,x]^2}{a^2}\right]\text{Tan}[c+d\,x]^4\right.$$

$$\left(\frac{\text{Tan}[c+d\,x]}{\sqrt{1+\text{Tan}[c+d\,x]^2}}\right)^{-1+n}\left(2\left(2\left(a^2-b^2\right)\text{AppellF1}\left[\frac{5+n}{2},\,\frac{1}{2}(-1+n),\,2,\,\frac{7+n}{2},\,-\text{Tan}[c+d\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\right]+\right.\right.$$

$$a^2\,(-1+n)\,\text{AppellF1}\Big[\frac{5+n}{2},\,\frac{1+n}{2},\,1,\,\frac{7+n}{2},\,-\text{Tan}[c+d\,x]^2,\,\Big(-1+\frac{b^2}{a^2}\Big)\,\text{Tan}[c+d\,x]^2\Big]\Big)\,\text{Sec}[c+d\,x]^2\,\text{Tan}[c+d\,x]\;-$$

$$a^2\,(5+n)\,\Big(-\frac{1}{5+n}(-1+n)\,(3+n)\,\text{AppellF1}\Big[1+\frac{3+n}{2},\,1+\frac{1}{2}\,(-1+n),\,1,\,1+\frac{5+n}{2},\,-\text{Tan}[c+d\,x]^2,$$

$$\Big(-1+\frac{b^2}{a^2}\Big)\,\text{Tan}[c+d\,x]^2\Big]\,\text{Sec}[c+d\,x]^2\,\text{Tan}[c+d\,x]\;+\;\frac{1}{5+n}2\,\Big(-1+\frac{b^2}{a^2}\Big)\,(3+n)$$

$$\text{AppellF1}\Big[1+\frac{3+n}{2},\,\frac{1}{2}\,(-1+n),\,2,\,1+\frac{5+n}{2},\,-\text{Tan}[c+d\,x]^2,\,\Big(-1+\frac{b^2}{a^2}\Big)\,\text{Tan}[c+d\,x]^2\Big]\,\text{Sec}[c+d\,x]^2\,\text{Tan}[c+d\,x]\Big)\;+$$

$$\text{Tan}[c+d\,x]^2\,\Big(2\,(a^2-b^2)\,\Big(-\frac{1}{7+n}(-1+n)\,(5+n)\,\text{AppellF1}\Big[1+\frac{5+n}{2},\,1+\frac{1}{2}\,(-1+n),\,2,\,1+\frac{7+n}{2},\,-\text{Tan}[c+d\,x]^2,$$

$$\Big(-1+\frac{b^2}{a^2}\Big)\,\text{Tan}[c+d\,x]^2\Big]\,\text{Sec}[c+d\,x]^2\,\text{Tan}[c+d\,x]\;+\;\frac{1}{7+n}4\,\Big(-1+\frac{b^2}{a^2}\Big)\,(5+n)\,\text{AppellF1}\Big[1+\frac{5+n}{2},\,\frac{1}{2}\,(-1+n),\,3,$$

$$1+\frac{7+n}{2},\,-\text{Tan}[c+d\,x]^2,\,\Big(-1+\frac{b^2}{a^2}\Big)\,\text{Tan}[c+d\,x]^2\Big]\,\text{Sec}[c+d\,x]^2\,\text{Tan}[c+d\,x]\Big)\;+\;a^2\,(-1+n)\,\Big(\frac{1}{7+n}2\,\Big(-1+\frac{b^2}{a^2}\Big)\,(5+n)$$

$$\text{AppellF1}\Big[1+\frac{5+n}{2},\,\frac{1+n}{2},\,2,\,1+\frac{7+n}{2},\,-\text{Tan}[c+d\,x]^2,\,\Big(-1+\frac{b^2}{a^2}\Big)\,\text{Tan}[c+d\,x]^2\Big]\,\text{Sec}[c+d\,x]^2\,\text{Tan}[c+d\,x]\;-\;\frac{1}{7+n}(1+n)$$

$$(5+n)\,\text{AppellF1}\Big[1+\frac{5+n}{2},\,1+\frac{1+n}{2},\,1,\,1+\frac{7+n}{2},\,-\text{Tan}[c+d\,x]^2,\,\Big(-1+\frac{b^2}{a^2}\Big)\,\text{Tan}[c+d\,x]^2\Big]\,\text{Sec}[c+d\,x]^2\,\text{Tan}[c+d\,x]\Big)\Big)\Big)\Big)\Big/$$

$$\Big((3+n)\,\Big(-a^2\,(5+n)\,\text{AppellF1}\Big[\frac{3+n}{2},\,\frac{1}{2}\,(-1+n),\,1,\,\frac{5+n}{2},\,-\text{Tan}[c+d\,x]^2,\,\Big(-1+\frac{b^2}{a^2}\Big)\,\text{Tan}[c+d\,x]^2\Big]\;+$$

$$\Big(2\,(a^2-b^2)\,\text{AppellF1}\Big[\frac{5+n}{2},\,\frac{1}{2}\,(-1+n),\,2,\,\frac{7+n}{2},\,-\text{Tan}[c+d\,x]^2,\,\Big(-1+\frac{b^2}{a^2}\Big)\,\text{Tan}[c+d\,x]^2\Big]\;+\;a^2\,(-1+n)\,\text{AppellF1}\Big[\frac{5+n}{2},$$

$$\frac{1+n}{2},\,1,\,\frac{7+n}{2},\,-\text{Tan}[c+d\,x]^2,\,\Big(-1+\frac{b^2}{a^2}\Big)\,\text{Tan}[c+d\,x]^2\Big]\Big)\,\text{Tan}[c+d\,x]^2\Big)^2\,\Big(-b^2\,\text{Tan}[c+d\,x]^2+a^2\,\big(1+\text{Tan}[c+d\,x]^2\big)\Big)\Big)\;-$$

$$\Big(2\,a^2\,b\,(6+n)\,\text{AppellF1}\Big[\frac{4+n}{2},\,\frac{n}{2},\,1,\,\frac{6+n}{2},\,-\text{Tan}[c+d\,x]^2,\,\frac{(-a^2+b^2)\,\text{Tan}[c+d\,x]^2}{a^2}\Big]\,\text{Tan}[c+d\,x]^4\,\Bigg(\frac{\text{Tan}[c+d\,x]}{\sqrt{1+\text{Tan}[c+d\,x]^2}}\Bigg)^n$$

$$\Big(2\,\Big(2\,(a^2-b^2)\,\text{AppellF1}\Big[\frac{6+n}{2},\,\frac{n}{2},\,2,\,\frac{8+n}{2},\,-\text{Tan}[c+d\,x]^2,\,\Big(-1+\frac{b^2}{a^2}\Big)\,\text{Tan}[c+d\,x]^2\Big]\;+$$

$$a^2\,n\,\text{AppellF1}\Big[\frac{6+n}{2},\,\frac{2+n}{2},\,1,\,\frac{8+n}{2},\,-\text{Tan}[c+d\,x]^2,\,\Big(-1+\frac{b^2}{a^2}\Big)\,\text{Tan}[c+d\,x]^2\Big]\Big)\,\text{Sec}[c+d\,x]^2\,\text{Tan}[c+d\,x]\;-$$

$$a^2\,(6+n)\,\Big(-\frac{1}{6+n}n\,(4+n)\,\text{AppellF1}\Big[1+\frac{4+n}{2},\,1+\frac{n}{2},\,1,\,1+\frac{6+n}{2},\,-\text{Tan}[c+d\,x]^2,\,\Big(-1+\frac{b^2}{a^2}\Big)\,\text{Tan}[c+d\,x]^2\Big]\,\text{Sec}[c+d\,x]^2\,\text{Tan}[c+d\,x]\;+$$

$$\frac{1}{6+n}2\left(-1+\frac{b^2}{a^2}\right)(4+n)\,\text{AppellF1}\left[1+\frac{4+n}{2},\frac{n}{2},2,1+\frac{6+n}{2},-\text{Tan}[c+d x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d x]^2\right]\text{Sec}[c+d x]^2\,\text{Tan}[c+d x]\Bigg)+$$

$$\text{Tan}[c+d x]^2\left(2\left(a^2-b^2\right)\left(-\frac{1}{8+n}n(6+n)\,\text{AppellF1}\left[1+\frac{6+n}{2},1+\frac{n}{2},2,1+\frac{8+n}{2},-\text{Tan}[c+d x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d x]^2\right]\right.\right.$$

$$\text{Sec}[c+d x]^2\,\text{Tan}[c+d x]+\frac{1}{8+n}4\left(-1+\frac{b^2}{a^2}\right)(6+n)\,\text{AppellF1}\left[1+\frac{6+n}{2},\frac{n}{2},3,1+\frac{8+n}{2},\right.$$

$$\left.\left.-\text{Tan}[c+d x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d x]^2\right]\text{Sec}[c+d x]^2\,\text{Tan}[c+d x]\right)+a^2 n\left(\frac{1}{8+n}2\left(-1+\frac{b^2}{a^2}\right)(6+n)\right.$$

$$\text{AppellF1}\left[1+\frac{6+n}{2},\frac{2+n}{2},2,1+\frac{8+n}{2},-\text{Tan}[c+d x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d x]^2\right]\text{Sec}[c+d x]^2\,\text{Tan}[c+d x]-\frac{1}{8+n}(2+n)$$

$$\left.\left.\left.(6+n)\,\text{AppellF1}\left[1+\frac{6+n}{2},1+\frac{2+n}{2},1,1+\frac{8+n}{2},-\text{Tan}[c+d x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d x]^2\right]\text{Sec}[c+d x]^2\,\text{Tan}[c+d x]\right)\right)\right)\Bigg)\Bigg/$$

$$\left((4+n)\left(-a^2(6+n)\,\text{AppellF1}\left[\frac{4+n}{2},\frac{n}{2},1,\frac{6+n}{2},-\text{Tan}[c+d x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d x]^2\right]+\right.\right.$$

$$\left(2\left(a^2-b^2\right)\text{AppellF1}\left[\frac{6+n}{2},\frac{n}{2},2,\frac{8+n}{2},-\text{Tan}[c+d x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d x]^2\right]+a^2 n\,\text{AppellF1}\left[\frac{6+n}{2},\frac{2+n}{2},1,\right.\right.$$

$$\left.\left.\left.\left.\frac{8+n}{2},-\text{Tan}[c+d x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d x]^2\right]\right)\text{Tan}[c+d x]^2\right)^2\left(-b^2\,\text{Tan}[c+d x]^2+a^2\left(1+\text{Tan}[c+d x]^2\right)\right)\right)+$$

$$\left(a^3(7+n)\,\text{AppellF1}\left[\frac{5+n}{2},\frac{1}{2}(-1+n),1,\frac{7+n}{2},-\text{Tan}[c+d x]^2,\frac{\left(-a^2+b^2\right)\text{Tan}[c+d x]^2}{a^2}\right]\text{Tan}[c+d x]^6\left(\frac{\text{Tan}[c+d x]}{\sqrt{1+\text{Tan}[c+d x]^2}}\right)^{-1+n}\right.$$

$$\left(2\left(2\left(a^2-b^2\right)\text{AppellF1}\left[\frac{7+n}{2},\frac{1}{2}(-1+n),2,\frac{9+n}{2},-\text{Tan}[c+d x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d x]^2\right]+\right.\right.$$

$$\left.a^2(-1+n)\,\text{AppellF1}\left[\frac{7+n}{2},\frac{1+n}{2},1,\frac{9+n}{2},-\text{Tan}[c+d x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d x]^2\right]\right)\text{Sec}[c+d x]^2\,\text{Tan}[c+d x]-$$

$$a^2(7+n)\left(-\frac{1}{7+n}(-1+n)(5+n)\,\text{AppellF1}\left[1+\frac{5+n}{2},1+\frac{1}{2}(-1+n),1,1+\frac{7+n}{2},-\text{Tan}[c+d x]^2,\right.\right.$$

$$\left.\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d x]^2\right]\text{Sec}[c+d x]^2\,\text{Tan}[c+d x]+\frac{1}{7+n}2\left(-1+\frac{b^2}{a^2}\right)(5+n)$$

$$\left.\text{AppellF1}\left[1+\frac{5+n}{2},\frac{1}{2}(-1+n),2,1+\frac{7+n}{2},-\text{Tan}[c+d x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d x]^2\right]\text{Sec}[c+d x]^2\,\text{Tan}[c+d x]\right)+$$

$$\text{Tan}[c+d x]^2\left(2\left(a^2-b^2\right)\left(-\frac{1}{9+n}(-1+n)(7+n)\,\text{AppellF1}\left[1+\frac{7+n}{2},1+\frac{1}{2}(-1+n),2,1+\frac{9+n}{2},-\text{Tan}[c+d x]^2,\right.\right.\right.$$

$$\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d x]^2\Big]\,\text{Sec}[c+d x]^2\,\text{Tan}[c+d x]+\frac{1}{9+n}4\left(-1+\frac{b^2}{a^2}\right)(7+n)\,\text{AppellF1}\Big[1+\frac{7+n}{2},\frac{1}{2}(-1+n),3,$$

$$1+\frac{9+n}{2},-\text{Tan}[c+d x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d x]^2\Big]\,\text{Sec}[c+d x]^2\,\text{Tan}[c+d x]\Bigg)+a^2(-1+n)\left(\frac{1}{9+n}2\left(-1+\frac{b^2}{a^2}\right)(7+n)\right.$$

$$\text{AppellF1}\Big[1+\frac{7+n}{2},\frac{1+n}{2},2,1+\frac{9+n}{2},-\text{Tan}[c+d x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d x]^2\Big]\,\text{Sec}[c+d x]^2\,\text{Tan}[c+d x]-\frac{1}{9+n}(1+n)$$

$$(7+n)\,\text{AppellF1}\Big[1+\frac{7+n}{2},1+\frac{1+n}{2},1,1+\frac{9+n}{2},-\text{Tan}[c+d x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d x]^2\Big]\,\text{Sec}[c+d x]^2\,\text{Tan}[c+d x]\Bigg)\Bigg)\Bigg)\Bigg)\Bigg/$$

$$\Bigg((5+n)\Bigg(-a^2(7+n)\,\text{AppellF1}\Big[\frac{5+n}{2},\frac{1}{2}(-1+n),1,\frac{7+n}{2},-\text{Tan}[c+d x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d x]^2\Big]+$$

$$\Bigg(2\left(a^2-b^2\right)\text{AppellF1}\Big[\frac{7+n}{2},\frac{1}{2}(-1+n),2,\frac{9+n}{2},-\text{Tan}[c+d x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d x]^2\Big]+a^2(-1+n)\,\text{AppellF1}\Big[\frac{7+n}{2},$$

$$\frac{1+n}{2},1,\frac{9+n}{2},-\text{Tan}[c+d x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d x]^2\Big]\Bigg)\,\text{Tan}[c+d x]^2\Bigg)^2\left(-b^2\,\text{Tan}[c+d x]^2+a^2\left(1+\text{Tan}[c+d x]^2\right)\right)\Bigg)-$$

$$\Bigg(a^2 b(8+n)\,\text{AppellF1}\Big[\frac{6+n}{2},\frac{n}{2},1,\frac{8+n}{2},-\text{Tan}[c+d x]^2,\frac{\left(-a^2+b^2\right)\text{Tan}[c+d x]^2}{a^2}\Big]\,\text{Tan}[c+d x]^6\left(\frac{\text{Tan}[c+d x]}{\sqrt{1+\text{Tan}[c+d x]^2}}\right)^n$$

$$\Bigg(2\Bigg(2\left(a^2-b^2\right)\text{AppellF1}\Big[\frac{8+n}{2},\frac{n}{2},2,5+\frac{n}{2},-\text{Tan}[c+d x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d x]^2\Big]+$$

$$a^2 n\,\text{AppellF1}\Big[\frac{8+n}{2},\frac{2+n}{2},1,5+\frac{n}{2},-\text{Tan}[c+d x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d x]^2\Big]\Bigg)\,\text{Sec}[c+d x]^2\,\text{Tan}[c+d x]-$$

$$a^2(8+n)\Bigg(-\frac{1}{8+n}n(6+n)\,\text{AppellF1}\Big[1+\frac{6+n}{2},1+\frac{n}{2},1,1+\frac{8+n}{2},-\text{Tan}[c+d x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d x]^2\Big]\,\text{Sec}[c+d x]^2\,\text{Tan}[c+d x]+$$

$$\frac{1}{8+n}2\left(-1+\frac{b^2}{a^2}\right)(6+n)\,\text{AppellF1}\Big[1+\frac{6+n}{2},\frac{n}{2},2,1+\frac{8+n}{2},-\text{Tan}[c+d x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d x]^2\Big]\,\text{Sec}[c+d x]^2\,\text{Tan}[c+d x]\Bigg)+$$

$$\text{Tan}[c+d x]^2\Bigg(2\left(a^2-b^2\right)\Bigg(-\frac{1}{2\left(5+\frac{n}{2}\right)}n(8+n)\,\text{AppellF1}\Big[1+\frac{8+n}{2},1+\frac{n}{2},2,6+\frac{n}{2},-\text{Tan}[c+d x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d x]^2\Big]$$

$$\text{Sec}[c+d x]^2\,\text{Tan}[c+d x]+\frac{1}{5+\frac{n}{2}}2\left(-1+\frac{b^2}{a^2}\right)(8+n)\,\text{AppellF1}\Big[1+\frac{8+n}{2},\frac{n}{2},3,6+\frac{n}{2},$$

$$-\text{Tan}[c+d x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d x]^2\Big]\,\text{Sec}[c+d x]^2\,\text{Tan}[c+d x]\Bigg)+a^2 n\left(\frac{1}{5+\frac{n}{2}}\left(-1+\frac{b^2}{a^2}\right)(8+n)\right.$$

$$\text{AppellF1}\left[1+\frac{8+n}{2},\ \frac{2+n}{2},\ 2,\ 6+\frac{n}{2},\ -\text{Tan}[c+d\,x]^2,\ \left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\right]\text{Sec}[c+d\,x]^2\,\text{Tan}[c+d\,x]-\frac{1}{2\left(5+\frac{n}{2}\right)}$$

$$(2+n)\ (8+n)\ \text{AppellF1}\left[1+\frac{8+n}{2},\ 1+\frac{2+n}{2},\ 1,\ 6+\frac{n}{2},\ -\text{Tan}[c+d\,x]^2,\ \left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\right]\text{Sec}[c+d\,x]^2\,\text{Tan}[c+d\,x]\Bigg)\Bigg)\Bigg)\Bigg)\Bigg)\Bigg/$$

$$\Bigg((6+n)\ \Bigg(-a^2\ (8+n)\ \text{AppellF1}\left[\frac{6+n}{2},\ \frac{n}{2},\ 1,\ \frac{8+n}{2},\ -\text{Tan}[c+d\,x]^2,\ \left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\right]+$$

$$\Bigg(2\ \left(a^2-b^2\right)\ \text{AppellF1}\left[\frac{8+n}{2},\ \frac{n}{2},\ 2,\ 5+\frac{n}{2},\ -\text{Tan}[c+d\,x]^2,\ \left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\right]+a^2\,n\,\text{AppellF1}\left[\frac{8+n}{2},\ \frac{2+n}{2},\ 1,\right.$$

$$\left.5+\frac{n}{2},\ -\text{Tan}[c+d\,x]^2,\ \left(-1+\frac{b^2}{a^2}\right)\text{Tan}[c+d\,x]^2\right]\Bigg)\ \text{Tan}[c+d\,x]^2\Bigg)^2\ \left(-b^2\,\text{Tan}[c+d\,x]^2+a^2\ \left(1+\text{Tan}[c+d\,x]^2\right)\right)\Bigg)\Bigg)$$

- **Problem 1514: Unable to integrate problem.**

$$\int \text{Sec}[c+d\,x]^5\ \text{Sin}[c+d\,x]^n\ (a+b\,\text{Sin}[c+d\,x])^p\,dx$$

Optimal (type 6, 487 leaves, 17 steps) :

$$\frac{1}{16\,d\ (1+n)}3\,\text{AppellF1}\left[1+n,\ -p,\ 1,\ 2+n,\ -\frac{b\,\text{Sin}[c+d\,x]}{a},\ -\text{Sin}[c+d\,x]\right]\text{Sin}[c+d\,x]^{1+n}\ (a+b\,\text{Sin}[c+d\,x])^p\ \left(1+\frac{b\,\text{Sin}[c+d\,x]}{a}\right)^{-p}+$$
$$\frac{1}{16\,d\ (1+n)}3\,\text{AppellF1}\left[1+n,\ -p,\ 1,\ 2+n,\ -\frac{b\,\text{Sin}[c+d\,x]}{a},\ \text{Sin}[c+d\,x]\right]\text{Sin}[c+d\,x]^{1+n}\ (a+b\,\text{Sin}[c+d\,x])^p\ \left(1+\frac{b\,\text{Sin}[c+d\,x]}{a}\right)^{-p}+$$
$$\frac{1}{16\,d\ (1+n)}3\,\text{AppellF1}\left[1+n,\ -p,\ 2,\ 2+n,\ -\frac{b\,\text{Sin}[c+d\,x]}{a},\ -\text{Sin}[c+d\,x]\right]\text{Sin}[c+d\,x]^{1+n}\ (a+b\,\text{Sin}[c+d\,x])^p\ \left(1+\frac{b\,\text{Sin}[c+d\,x]}{a}\right)^{-p}+$$
$$\frac{1}{16\,d\ (1+n)}3\,\text{AppellF1}\left[1+n,\ -p,\ 2,\ 2+n,\ -\frac{b\,\text{Sin}[c+d\,x]}{a},\ \text{Sin}[c+d\,x]\right]\text{Sin}[c+d\,x]^{1+n}\ (a+b\,\text{Sin}[c+d\,x])^p\ \left(1+\frac{b\,\text{Sin}[c+d\,x]}{a}\right)^{-p}+$$
$$\frac{1}{8\,d\ (1+n)}\text{AppellF1}\left[1+n,\ -p,\ 3,\ 2+n,\ -\frac{b\,\text{Sin}[c+d\,x]}{a},\ -\text{Sin}[c+d\,x]\right]\text{Sin}[c+d\,x]^{1+n}\ (a+b\,\text{Sin}[c+d\,x])^p\ \left(1+\frac{b\,\text{Sin}[c+d\,x]}{a}\right)^{-p}+$$
$$\frac{1}{8\,d\ (1+n)}\text{AppellF1}\left[1+n,\ -p,\ 3,\ 2+n,\ -\frac{b\,\text{Sin}[c+d\,x]}{a},\ \text{Sin}[c+d\,x]\right]\text{Sin}[c+d\,x]^{1+n}\ (a+b\,\text{Sin}[c+d\,x])^p\ \left(1+\frac{b\,\text{Sin}[c+d\,x]}{a}\right)^{-p}$$

Result (type 8, 31 leaves) :

$$\int \text{Sec}[c+d\,x]^5\ \text{Sin}[c+d\,x]^n\ (a+b\,\text{Sin}[c+d\,x])^p\,dx$$

- **Problem 1515: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int \frac{\text{Sec}[e+f\,x]^6\ (a+b\,\text{Sin}[e+f\,x])^{9/2}}{\sqrt{d\,\text{Sin}[e+f\,x]}}\,dx$$

Optimal (type 4, 502 leaves, ? steps):

$$-\frac{3\,a\,b\,\left(-2\,a^2+b^2\right)\,\text{Cos}[e+f\,x]\,\sqrt{a+b\,\text{Sin}[e+f\,x]}}{5\,f\,\sqrt{d\,\text{Sin}[e+f\,x]}}+\frac{\text{Sec}[e+f\,x]^5\,\sqrt{d\,\text{Sin}[e+f\,x]}\,\left(a+b\,\text{Sin}[e+f\,x]\right)^{9/2}}{5\,d\,f}-\frac{1}{20\,d\,f}3\,a\,\text{Sec}[e+f\,x]^3\,\sqrt{d\,\text{Sin}[e+f\,x]}\,\sqrt{a+b\,\text{Sin}[e+f\,x]}$$

$$\left(-a\,\left(7\,a^2+b^2\right)+2\,b\,\left(-7\,a^2+b^2\right)\,\text{Sin}[e+f\,x]+5\,a\,\left(a^2-b^2\right)\,\text{Sin}[e+f\,x]^2+\left(8\,a^2\,b-4\,b^3\right)\,\text{Sin}[e+f\,x]^3\right)-\frac{1}{20\,\sqrt{d}\,f}3\,a\,(a+b)^{3/2}\,\left(5\,a^2+3\,a\,b-4\,b^2\right)$$

$$\sqrt{-\frac{a\,(-1+\text{Csc}[e+f\,x])}{a+b}}\,\sqrt{\frac{a\,(1+\text{Csc}[e+f\,x])}{a-b}}\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{d}\,\sqrt{a+b\,\text{Sin}[e+f\,x]}}{\sqrt{a+b}\,\sqrt{d\,\text{Sin}[e+f\,x]}}\right],-\frac{a+b}{a-b}\right]\,\text{Tan}[e+f\,x]-$$

$$\frac{1}{5\,d\,f\,\sqrt{a+b\,\text{Sin}[e+f\,x]}}3\,b\,\left(2\,a^4-3\,a^2\,b^2+b^4\right)\,\sqrt{-\frac{a\,(-1+\text{Csc}[e+f\,x])}{a+b}}\,\text{EllipticE}\left[\text{ArcSin}\left[\sqrt{-\frac{b+a\,\text{Csc}[e+f\,x]}{a-b}}\right],1-\frac{2\,a}{a+b}\right]$$

$$\sqrt{d\,\text{Sin}[e+f\,x]}\,\sqrt{-\frac{a\,\text{Csc}[e+f\,x]^2\,(1+\text{Sin}[e+f\,x])\,(a+b\,\text{Sin}[e+f\,x])}{(a-b)^2}}\,\text{Tan}[e+f\,x]$$

Result (type 4, 1600 leaves) :

$$\frac{1}{f\,\sqrt{d\,\text{Sin}[e+f\,x]}}$$

$$\text{Sin}[e+f\,x]\,\sqrt{a+b\,\text{Sin}[e+f\,x]}\,\left(\frac{1}{20}\,\text{Sec}[e+f\,x]\,\left(15\,a^4-15\,a^2\,b^2+4\,b^4+24\,a^3\,b\,\text{Sin}[e+f\,x]-12\,a\,b^3\,\text{Sin}[e+f\,x]\right)+\frac{1}{10}\,\text{Sec}[e+f\,x]^3\right.$$

$$\left.\left(3\,a^4-3\,a^2\,b^2-4\,b^4+9\,a^3\,b\,\text{Sin}[e+f\,x]-5\,a\,b^3\,\text{Sin}[e+f\,x]\right)+\frac{1}{5}\,\text{Sec}[e+f\,x]^5\,\left(a^4+6\,a^2\,b^2+b^4+4\,a^3\,b\,\text{Sin}[e+f\,x]+4\,a\,b^3\,\text{Sin}[e+f\,x]\right)\right)+$$

$$\frac{1}{40\,f\,\sqrt{d\,\text{Sin}[e+f\,x]}}3\,a\,\sqrt{\text{Sin}[e+f\,x]}\,\left(\left(4\,a\,\left(5\,a^4-9\,a^2\,b^2+4\,b^4\right)\,\sqrt{\frac{(a+b)\,\text{Cot}\left[\frac{1}{2}\,\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{-a+b}}\,\text{EllipticF}\left[\right.\right.\right.$$

$$\left.\text{ArcSin}\left[\frac{\sqrt{\frac{\text{Csc}\left[\frac{1}{2}\,\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(a+b\,\text{Sin}[e+f\,x])}{a}}}{\sqrt{2}}\right],-\frac{2\,a}{-a+b}\right]\,\text{Sec}[e+f\,x]\,\text{Sin}\left[\frac{1}{2}\,\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\,\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\,\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,\text{Sin}[e+f\,x]}{a}}$$

$$\sqrt{\frac{\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 (a+b\,\text{Sin}[e+f x])}{a}}\Bigg) \Big/ \left((a+b)\sqrt{\text{Sin}[e+f x]}\sqrt{a+b\,\text{Sin}[e+f x]}\right)+4 a\left(-8 a^3 b+4 a b^3\right)$$

$$\Bigg(\Bigg(\sqrt{\frac{(a+b)\,\text{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{-a+b}}\ \text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{\frac{\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 (a+b\,\text{Sin}[e+f x])}{a}}}{\sqrt{2}}\right],-\frac{2 a}{-a+b}\right]\text{Sec}[e+f x]\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^4$$

$$\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Sin}[e+f x]}{a}}\sqrt{\frac{\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 (a+b\,\text{Sin}[e+f x])}{a}}\Bigg) \Big/ \Big((a+b)\sqrt{\text{Sin}[e+f x]}$$

$$\sqrt{a+b\,\text{Sin}[e+f x]}\Big)-\Bigg(\sqrt{\frac{(a+b)\,\text{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{-a+b}}\ \text{EllipticPi}\left[-\frac{a}{b},\text{ArcSin}\left[\frac{\sqrt{\frac{\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 (a+b\,\text{Sin}[e+f x])}{a}}}{\sqrt{2}}\right],-\frac{2 a}{-a+b}\right]$$

$$\text{Sec}[e+f x]\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^4\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Sin}[e+f x]}{a}}\sqrt{\frac{\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 (a+b\,\text{Sin}[e+f x])}{a}}\Bigg) \Big/$$

$$\left(b\sqrt{\text{Sin}[e+f x]}\sqrt{a+b\,\text{Sin}[e+f x]}\right)\Bigg)+2\left(8 a^2 b^2-4 b^4\right)\Bigg(\frac{\text{Cos}[e+f x]\sqrt{a+b\,\text{Sin}[e+f x]}}{b\sqrt{\text{Sin}[e+f x]}}+$$

$$\left(i\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\text{Csc}[e+f x]\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[\frac{\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}{\sqrt{\text{Sin}[e+f x]}}\right],-\frac{2 a}{-a-b}\right]\sqrt{a+b\,\text{Sin}[e+f x]}\right) \Big/$$

$$\left(b\sqrt{\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Csc}[e+f x]}\sqrt{\frac{\text{Csc}[e+f x]\,(a+b\,\text{Sin}[e+f x])}{a+b}}\right)+$$

$$\frac{1}{b} 2 a \left(\left(a \sqrt{\frac{(a+b) \operatorname{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{-a+b}} \operatorname{EllipticF}\left[\operatorname{ArcSin}\left[\frac{\sqrt{\frac{\operatorname{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 (a+b \operatorname{Sin}[e+f x])}{a}}}{\sqrt{2}}\right], -\frac{2 a}{-a+b}\right] \operatorname{Sec}[e+f x] \operatorname{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^4 \sqrt{-\frac{(a+b) \operatorname{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \operatorname{Sin}[e+f x]}{a}} \sqrt{\frac{\operatorname{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 (a+b \operatorname{Sin}[e+f x])}{a}}\right) \Big/ \left((a+b) \sqrt{\operatorname{Sin}[e+f x]} \sqrt{a+b \operatorname{Sin}[e+f x]}\right) - \left(a \sqrt{\frac{(a+b) \operatorname{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{-a+b}} \operatorname{EllipticPi}\left[-\frac{a}{b}, \operatorname{ArcSin}\left[\frac{\sqrt{\frac{\operatorname{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 (a+b \operatorname{Sin}[e+f x])}{a}}}{\sqrt{2}}\right], -\frac{2 a}{-a+b}\right] \operatorname{Sec}[e+f x] \operatorname{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^4 \sqrt{-\frac{(a+b) \operatorname{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \operatorname{Sin}[e+f x]}{a}} \sqrt{\frac{\operatorname{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 (a+b \operatorname{Sin}[e+f x])}{a}}\right) \Big/ \left(b \sqrt{\operatorname{Sin}[e+f x]} \sqrt{a+b \operatorname{Sin}[e+f x]}\right)\right)$$

- **Problem 1516: Result more than twice size of optimal antiderivative.**

$$\int \operatorname{Cos}[e+f x]^2 (a+b \operatorname{Sin}[e+f x])^2 (c+d \operatorname{Sin}[e+f x])^{4/3} \, dx$$

Optimal (type 6, 458 leaves, 11 steps):

$$-\frac{9\left(64\,a\,b\,c\,d-26\,a^2\,d^2-b^2\left(18\,c^2-13\,d^2\right)\right)\mathrm{Cos}[e+f\,x]\,(c+d\,\mathrm{Sin}[e+f\,x])^{7/3}}{2080\,d^3\,f}-\frac{9\,b\,(3\,b\,c-2\,a\,d)\,\mathrm{Cos}[e+f\,x]\,\mathrm{Sin}[e+f\,x]\,(c+d\,\mathrm{Sin}[e+f\,x])^{7/3}}{208\,d^2\,f}+\frac{3\,\mathrm{Cos}[e+f\,x]\,(a+b\,\mathrm{Sin}[e+f\,x])^2\,(c+d\,\mathrm{Sin}[e+f\,x])^{7/3}}{16\,d\,f}-$$

$$\left(3\,(c+d)^2\left(208\,a^2\,c\,d^2-64\,a\,b\,d\left(3\,c^2-5\,d^2\right)+b^2\,c\left(54\,c^2+d^2\right)\right)\mathrm{AppellF1}\left[\frac{1}{2},\frac{1}{2},-\frac{7}{3},\frac{3}{2},\frac{1}{2}(1-\mathrm{Sin}[e+f\,x]),\frac{d\,(1-\mathrm{Sin}[e+f\,x])}{c+d}\right]\mathrm{Cos}[e+f\,x]\,(c+d\,\mathrm{Sin}[e+f\,x])^{1/3}\right)\Big/\left(1040\,\sqrt{2}\,d^4\,f\,\sqrt{1+\mathrm{Sin}[e+f\,x]}\left(\frac{c+d\,\mathrm{Sin}[e+f\,x]}{c+d}\right)^{1/3}\right)-$$

$$\left(3\,(c-d)\,(c+d)^2\left(192\,a\,b\,c\,d-208\,a^2\,d^2-b^2\left(54\,c^2+91\,d^2\right)\right)\mathrm{AppellF1}\left[\frac{1}{2},\frac{1}{2},-\frac{4}{3},\frac{3}{2},\frac{1}{2}(1-\mathrm{Sin}[e+f\,x]),\frac{d\,(1-\mathrm{Sin}[e+f\,x])}{c+d}\right]\mathrm{Cos}[e+f\,x]\,(c+d\,\mathrm{Sin}[e+f\,x])^{1/3}\right)\Big/\left(1040\,\sqrt{2}\,d^4\,f\,\sqrt{1+\mathrm{Sin}[e+f\,x]}\left(\frac{c+d\,\mathrm{Sin}[e+f\,x]}{c+d}\right)^{1/3}\right)$$

Result (type 6, 3522 leaves):

$$\frac{1}{455\,f}513\,a\,b\,c\,\mathrm{AppellF1}\left[\frac{1}{3},\frac{1}{2},\frac{1}{2},\frac{4}{3},-\frac{c+d\,\mathrm{Sin}[e+f\,x]}{\left(1-\frac{c}{d}\right)d},-\frac{c+d\,\mathrm{Sin}[e+f\,x]}{\left(-1-\frac{c}{d}\right)d}\right]\mathrm{Sec}[e+f\,x]\sqrt{\frac{-d-d\,\mathrm{Sin}[e+f\,x]}{c-d}}\sqrt{\frac{d-d\,\mathrm{Sin}[e+f\,x]}{c+d}}\,(c+d\,\mathrm{Sin}[e+f\,x])^{1/3}+\frac{1}{7280\,d^3\,f}$$

$$81\,b^2\,c^4\,\mathrm{AppellF1}\left[\frac{1}{3},\frac{1}{2},\frac{1}{2},\frac{4}{3},-\frac{c+d\,\mathrm{Sin}[e+f\,x]}{\left(1-\frac{c}{d}\right)d},-\frac{c+d\,\mathrm{Sin}[e+f\,x]}{\left(-1-\frac{c}{d}\right)d}\right]\mathrm{Sec}[e+f\,x]\sqrt{\frac{-d-d\,\mathrm{Sin}[e+f\,x]}{c-d}}\sqrt{\frac{d-d\,\mathrm{Sin}[e+f\,x]}{c+d}}$$

$$(c+d\,\mathrm{Sin}[e+f\,x])^{1/3}-\frac{1}{455\,d^2\,f}18\,a\,b\,c^3\,\mathrm{AppellF1}\left[\frac{1}{3},\frac{1}{2},\frac{1}{2},\frac{4}{3},-\frac{c+d\,\mathrm{Sin}[e+f\,x]}{\left(1-\frac{c}{d}\right)d},-\frac{c+d\,\mathrm{Sin}[e+f\,x]}{\left(-1-\frac{c}{d}\right)d}\right]$$

$$\mathrm{Sec}[e+f\,x]\sqrt{\frac{-d-d\,\mathrm{Sin}[e+f\,x]}{c-d}}\sqrt{\frac{d-d\,\mathrm{Sin}[e+f\,x]}{c+d}}\,(c+d\,\mathrm{Sin}[e+f\,x])^{1/3}+\frac{1}{35\,d\,f}$$

$$54\,a^2\,c^2\,\mathrm{AppellF1}\left[\frac{1}{3},\frac{1}{2},\frac{1}{2},\frac{4}{3},-\frac{c+d\,\mathrm{Sin}[e+f\,x]}{\left(1-\frac{c}{d}\right)d},-\frac{c+d\,\mathrm{Sin}[e+f\,x]}{\left(-1-\frac{c}{d}\right)d}\right]\mathrm{Sec}[e+f\,x]\sqrt{\frac{-d-d\,\mathrm{Sin}[e+f\,x]}{c-d}}\sqrt{\frac{d-d\,\mathrm{Sin}[e+f\,x]}{c+d}}$$

$$(c+d\,\mathrm{Sin}[e+f\,x])^{1/3}+\frac{1}{14\,560\,d\,f}5211\,b^2\,c^2\,\mathrm{AppellF1}\left[\frac{1}{3},\frac{1}{2},\frac{1}{2},\frac{4}{3},-\frac{c+d\,\mathrm{Sin}[e+f\,x]}{\left(1-\frac{c}{d}\right)d},-\frac{c+d\,\mathrm{Sin}[e+f\,x]}{\left(-1-\frac{c}{d}\right)d}\right]$$

$$\mathrm{Sec}[e+f\,x]\sqrt{\frac{-d-d\,\mathrm{Sin}[e+f\,x]}{c-d}}\sqrt{\frac{d-d\,\mathrm{Sin}[e+f\,x]}{c+d}}\,(c+d\,\mathrm{Sin}[e+f\,x])^{1/3}+\frac{1}{40\,f}$$

$$9 a^2 d \,\text{AppellF1}\left[\frac{1}{3}, \frac{1}{2}, \frac{1}{2}, \frac{4}{3}, -\frac{c + d \,\text{Sin}[e + f x]}{\left(1 - \frac{c}{d}\right) d}, -\frac{c + d \,\text{Sin}[e + f x]}{\left(-1 - \frac{c}{d}\right) d}\right] \text{Sec}[e + f x] \sqrt{\frac{-d - d \,\text{Sin}[e + f x]}{c - d}} \sqrt{\frac{d - d \,\text{Sin}[e + f x]}{c + d}}$$

$$(c + d \,\text{Sin}[e + f x])^{1/3} + \frac{1}{640 f} 63 b^2 d \,\text{AppellF1}\left[\frac{1}{3}, \frac{1}{2}, \frac{1}{2}, \frac{4}{3}, -\frac{c + d \,\text{Sin}[e + f x]}{\left(1 - \frac{c}{d}\right) d}, -\frac{c + d \,\text{Sin}[e + f x]}{\left(-1 - \frac{c}{d}\right) d}\right]$$

$$\text{Sec}[e + f x] \sqrt{\frac{-d - d \,\text{Sin}[e + f x]}{c - d}} \sqrt{\frac{d - d \,\text{Sin}[e + f x]}{c + d}} (c + d \,\text{Sin}[e + f x])^{1/3} + \frac{1}{65 f}$$

$$9 a b c^2 \left(-1 / d^2 3 c \,\text{AppellF1}\left[\frac{1}{3}, \frac{1}{2}, \frac{1}{2}, \frac{4}{3}, -\frac{c + d \,\text{Sin}[e + f x]}{\left(1 - \frac{c}{d}\right) d}, -\frac{c + d \,\text{Sin}[e + f x]}{\left(-1 - \frac{c}{d}\right) d}\right] \text{Sec}[e + f x] \sqrt{\frac{-d - d \,\text{Sin}[e + f x]}{c - d}}\right.$$

$$\sqrt{\frac{d - d \,\text{Sin}[e + f x]}{c + d}} (c + d \,\text{Sin}[e + f x])^{1/3} + 1 / \left(4 d^2\right) 3 \,\text{AppellF1}\left[\frac{4}{3}, \frac{1}{2}, \frac{1}{2}, \frac{7}{3}, -\frac{c + d \,\text{Sin}[e + f x]}{\left(1 - \frac{c}{d}\right) d}, -\frac{c + d \,\text{Sin}[e + f x]}{\left(-1 - \frac{c}{d}\right) d}\right]$$

$$\left.\text{Sec}[e + f x] \sqrt{\frac{-d - d \,\text{Sin}[e + f x]}{c - d}} \sqrt{\frac{d - d \,\text{Sin}[e + f x]}{c + d}} (c + d \,\text{Sin}[e + f x])^{4/3}\right) + \frac{1}{7280 d^3 f}$$

$$81 b^2 c^5 \left(-1 / d^2 3 c \,\text{AppellF1}\left[\frac{1}{3}, \frac{1}{2}, \frac{1}{2}, \frac{4}{3}, -\frac{c + d \,\text{Sin}[e + f x]}{\left(1 - \frac{c}{d}\right) d}, -\frac{c + d \,\text{Sin}[e + f x]}{\left(-1 - \frac{c}{d}\right) d}\right] \text{Sec}[e + f x] \sqrt{\frac{-d - d \,\text{Sin}[e + f x]}{c - d}}\right.$$

$$\sqrt{\frac{d - d \,\text{Sin}[e + f x]}{c + d}} (c + d \,\text{Sin}[e + f x])^{1/3} + 1 / \left(4 d^2\right) 3 \,\text{AppellF1}\left[\frac{4}{3}, \frac{1}{2}, \frac{1}{2}, \frac{7}{3}, -\frac{c + d \,\text{Sin}[e + f x]}{\left(1 - \frac{c}{d}\right) d}, -\frac{c + d \,\text{Sin}[e + f x]}{\left(-1 - \frac{c}{d}\right) d}\right]$$

$$\left.\text{Sec}[e + f x] \sqrt{\frac{-d - d \,\text{Sin}[e + f x]}{c - d}} \sqrt{\frac{d - d \,\text{Sin}[e + f x]}{c + d}} (c + d \,\text{Sin}[e + f x])^{4/3}\right) - \frac{1}{455 d^2 f}$$

$$18 a b c^4 \left(-1 / d^2 3 c \,\text{AppellF1}\left[\frac{1}{3}, \frac{1}{2}, \frac{1}{2}, \frac{4}{3}, -\frac{c + d \,\text{Sin}[e + f x]}{\left(1 - \frac{c}{d}\right) d}, -\frac{c + d \,\text{Sin}[e + f x]}{\left(-1 - \frac{c}{d}\right) d}\right] \text{Sec}[e + f x] \sqrt{\frac{-d - d \,\text{Sin}[e + f x]}{c - d}}\right.$$

$$\sqrt{\frac{d - d \,\text{Sin}[e + f x]}{c + d}} (c + d \,\text{Sin}[e + f x])^{1/3} + 1 / \left(4 d^2\right) 3 \,\text{AppellF1}\left[\frac{4}{3}, \frac{1}{2}, \frac{1}{2}, \frac{7}{3}, -\frac{c + d \,\text{Sin}[e + f x]}{\left(1 - \frac{c}{d}\right) d}, -\frac{c + d \,\text{Sin}[e + f x]}{\left(-1 - \frac{c}{d}\right) d}\right]$$

$$\text{Sec}[e+f x]\sqrt{\frac{-d-d\,\text{Sin}[e+f x]}{c-d}}\sqrt{\frac{d-d\,\text{Sin}[e+f x]}{c+d}}\,(c+d\,\text{Sin}[e+f x])^{4/3}\Bigg)+\frac{1}{70\,d\,f}$$

$$3\,a^2\,c^3\left(-1\big/d^2 3\,c\,\text{AppellF1}\left[\frac{1}{3},\frac{1}{2},\frac{1}{2},\frac{4}{3},-\frac{c+d\,\text{Sin}[e+f x]}{\left(1-\frac{c}{d}\right)d},-\frac{c+d\,\text{Sin}[e+f x]}{\left(-1-\frac{c}{d}\right)d}\right]\text{Sec}[e+f x]\sqrt{\frac{-d-d\,\text{Sin}[e+f x]}{c-d}}\right.$$

$$\sqrt{\frac{d-d\,\text{Sin}[e+f x]}{c+d}}\,(c+d\,\text{Sin}[e+f x])^{1/3}+1\big/\left(4\,d^2\right)3\,\text{AppellF1}\left[\frac{4}{3},\frac{1}{2},\frac{1}{2},\frac{7}{3},-\frac{c+d\,\text{Sin}[e+f x]}{\left(1-\frac{c}{d}\right)d},-\frac{c+d\,\text{Sin}[e+f x]}{\left(-1-\frac{c}{d}\right)d}\right]$$

$$\left.\text{Sec}[e+f x]\sqrt{\frac{-d-d\,\text{Sin}[e+f x]}{c-d}}\sqrt{\frac{d-d\,\text{Sin}[e+f x]}{c+d}}\,(c+d\,\text{Sin}[e+f x])^{4/3}\right)-\frac{1}{1040\,d\,f}$$

$$21\,b^2\,c^3\left(-1\big/d^2 3\,c\,\text{AppellF1}\left[\frac{1}{3},\frac{1}{2},\frac{1}{2},\frac{4}{3},-\frac{c+d\,\text{Sin}[e+f x]}{\left(1-\frac{c}{d}\right)d},-\frac{c+d\,\text{Sin}[e+f x]}{\left(-1-\frac{c}{d}\right)d}\right]\text{Sec}[e+f x]\sqrt{\frac{-d-d\,\text{Sin}[e+f x]}{c-d}}\right.$$

$$\sqrt{\frac{d-d\,\text{Sin}[e+f x]}{c+d}}\,(c+d\,\text{Sin}[e+f x])^{1/3}+1\big/\left(4\,d^2\right)3\,\text{AppellF1}\left[\frac{4}{3},\frac{1}{2},\frac{1}{2},\frac{7}{3},-\frac{c+d\,\text{Sin}[e+f x]}{\left(1-\frac{c}{d}\right)d},-\frac{c+d\,\text{Sin}[e+f x]}{\left(-1-\frac{c}{d}\right)d}\right]$$

$$\left.\text{Sec}[e+f x]\sqrt{\frac{-d-d\,\text{Sin}[e+f x]}{c-d}}\sqrt{\frac{d-d\,\text{Sin}[e+f x]}{c+d}}\,(c+d\,\text{Sin}[e+f x])^{4/3}\right)+\frac{1}{280\,f}$$

$$153\,a^2\,c\,d\left(-1\big/d^2 3\,c\,\text{AppellF1}\left[\frac{1}{3},\frac{1}{2},\frac{1}{2},\frac{4}{3},-\frac{c+d\,\text{Sin}[e+f x]}{\left(1-\frac{c}{d}\right)d},-\frac{c+d\,\text{Sin}[e+f x]}{\left(-1-\frac{c}{d}\right)d}\right]\text{Sec}[e+f x]\sqrt{\frac{-d-d\,\text{Sin}[e+f x]}{c-d}}\right.$$

$$\sqrt{\frac{d-d\,\text{Sin}[e+f x]}{c+d}}\,(c+d\,\text{Sin}[e+f x])^{1/3}+1\big/\left(4\,d^2\right)3\,\text{AppellF1}\left[\frac{4}{3},\frac{1}{2},\frac{1}{2},\frac{7}{3},-\frac{c+d\,\text{Sin}[e+f x]}{\left(1-\frac{c}{d}\right)d},-\frac{c+d\,\text{Sin}[e+f x]}{\left(-1-\frac{c}{d}\right)d}\right]$$

$$\left.\text{Sec}[e+f x]\sqrt{\frac{-d-d\,\text{Sin}[e+f x]}{c-d}}\sqrt{\frac{d-d\,\text{Sin}[e+f x]}{c+d}}\,(c+d\,\text{Sin}[e+f x])^{4/3}\right)+\frac{1}{58\,240\,f}$$

$$9603\,b^2\,c\,d\left(-1\big/d^2 3\,c\,\text{AppellF1}\left[\frac{1}{3},\frac{1}{2},\frac{1}{2},\frac{4}{3},-\frac{c+d\,\text{Sin}[e+f x]}{\left(1-\frac{c}{d}\right)d},-\frac{c+d\,\text{Sin}[e+f x]}{\left(-1-\frac{c}{d}\right)d}\right]\text{Sec}[e+f x]\sqrt{\frac{-d-d\,\text{Sin}[e+f x]}{c-d}}\right.$$

$$\sqrt{\frac{d-d\,\text{Sin}[e+f\,x]}{c+d}}\;(c+d\,\text{Sin}[e+f\,x])^{1/3}+1\Big/\left(4\,d^2\right)3\,\text{AppellF1}\left[\frac{4}{3},\frac{1}{2},\frac{1}{2},\frac{7}{3},-\frac{c+d\,\text{Sin}[e+f\,x]}{\left(1-\frac{c}{d}\right)d},-\frac{c+d\,\text{Sin}[e+f\,x]}{\left(-1-\frac{c}{d}\right)d}\right]$$

$$\left.\text{Sec}[e+f\,x]\sqrt{\frac{-d-d\,\text{Sin}[e+f\,x]}{c-d}}\sqrt{\frac{d-d\,\text{Sin}[e+f\,x]}{c+d}}\;(c+d\,\text{Sin}[e+f\,x])^{4/3}\right)+\frac{1}{91\,f}$$

$$24\,a\,b\,d^2\left(-1\Big/d^2 3\,c\,\text{AppellF1}\left[\frac{1}{3},\frac{1}{2},\frac{1}{2},\frac{4}{3},-\frac{c+d\,\text{Sin}[e+f\,x]}{\left(1-\frac{c}{d}\right)d},-\frac{c+d\,\text{Sin}[e+f\,x]}{\left(-1-\frac{c}{d}\right)d}\right]\text{Sec}[e+f\,x]\sqrt{\frac{-d-d\,\text{Sin}[e+f\,x]}{c-d}}\right.$$

$$\sqrt{\frac{d-d\,\text{Sin}[e+f\,x]}{c+d}}\;(c+d\,\text{Sin}[e+f\,x])^{1/3}+1\Big/\left(4\,d^2\right)3\,\text{AppellF1}\left[\frac{4}{3},\frac{1}{2},\frac{1}{2},\frac{7}{3},-\frac{c+d\,\text{Sin}[e+f\,x]}{\left(1-\frac{c}{d}\right)d},-\frac{c+d\,\text{Sin}[e+f\,x]}{\left(-1-\frac{c}{d}\right)d}\right]$$

$$\left.\text{Sec}[e+f\,x]\sqrt{\frac{-d-d\,\text{Sin}[e+f\,x]}{c-d}}\sqrt{\frac{d-d\,\text{Sin}[e+f\,x]}{c+d}}\;(c+d\,\text{Sin}[e+f\,x])^{4/3}\right)+\frac{1}{f}$$

$$(c+d\,\text{Sin}[e+f\,x])^{1/3}\left(-1\Big/\left(58\,240\,d^3\right)3\left(-216\,b^2\,c^4+768\,a\,b\,c^3\,d-832\,a^2\,c^2\,d^2+332\,b^2\,c^2\,d^2+7232\,a\,b\,c\,d^3+2912\,a^2\,d^4+1729\,b^2\,d^4\right)\text{Cos}[e+f\,x]-\right.$$

$$\frac{3\left(8\,b^2\,c^2+896\,a\,b\,c\,d+416\,a^2\,d^2+117\,b^2\,d^2\right)\text{Cos}[3\,(e+f\,x)]}{16\,640\,d}+\frac{3}{256}\,b^2\,d\,\text{Cos}[5\,(e+f\,x)]+$$

$$\left.\frac{3\left(-18\,b^2\,c^3+64\,a\,b\,c^2\,d+1144\,a^2\,c\,d^2+23\,b^2\,c\,d^2+80\,a\,b\,d^3\right)\text{Sin}[2\,(e+f\,x)]}{14\,560\,d^2}-\frac{3\,b\,(17\,b\,c+32\,a\,d)\,\text{Sin}[4\,(e+f\,x)]}{1664}\right)$$

- **Problem 1517: Result more than twice size of optimal antiderivative.**

$$\int \text{Cos}[e+f\,x]^2\,(a+b\,\text{Sin}[e+f\,x])\,(c+d\,\text{Sin}[e+f\,x])^{4/3}\,dx$$

Optimal (type 6, 341 leaves, 10 steps):

$$-\frac{3\,(6\,b\,c-13\,a\,d)\,\text{Cos}[e+f\,x]\,(c+d\,\text{Sin}[e+f\,x])^{7/3}}{130\,d^2\,f}+\frac{3\,b\,\text{Cos}[e+f\,x]\,\text{Sin}[e+f\,x]\,(c+d\,\text{Sin}[e+f\,x])^{7/3}}{13\,d\,f}+$$
$$\left(3\,(c+d)^2\,\left(6\,b\,c^2-13\,a\,c\,d-10\,b\,d^2\right)\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2},-\frac{7}{3},\frac{3}{2},\frac{1}{2}\,(1-\text{Sin}[e+f\,x]),\frac{d\,(1-\text{Sin}[e+f\,x])}{c+d}\right]\,\text{Cos}[e+f\,x]\,(c+d\,\text{Sin}[e+f\,x])^{1/3}\right)\Big/$$
$$\left(65\,\sqrt{2}\,d^3\,f\,\sqrt{1+\text{Sin}[e+f\,x]}\,\left(\frac{c+d\,\text{Sin}[e+f\,x]}{c+d}\right)^{1/3}\right)-$$
$$\left(3\,(c-d)\,(c+d)^2\,(6\,b\,c-13\,a\,d)\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2},-\frac{4}{3},\frac{3}{2},\frac{1}{2}\,(1-\text{Sin}[e+f\,x]),\frac{d\,(1-\text{Sin}[e+f\,x])}{c+d}\right]\,\text{Cos}[e+f\,x]\,(c+d\,\text{Sin}[e+f\,x])^{1/3}\right)\Big/$$
$$\left(65\,\sqrt{2}\,d^3\,f\,\sqrt{1+\text{Sin}[e+f\,x]}\,\left(\frac{c+d\,\text{Sin}[e+f\,x]}{c+d}\right)^{1/3}\right)$$

Result (type 6, 2110 leaves) :

$$\frac{1}{910\,f}513\,b\,c\,\text{AppellF1}\left[\frac{1}{3},\frac{1}{2},\frac{1}{2},\frac{4}{3},-\frac{c+d\,\text{Sin}[e+f\,x]}{\left(1-\frac{c}{d}\right)d},-\frac{c+d\,\text{Sin}[e+f\,x]}{\left(-1-\frac{c}{d}\right)d}\right]\,\text{Sec}[e+f\,x]\,\sqrt{\frac{-d-d\,\text{Sin}[e+f\,x]}{c-d}}$$
$$\sqrt{\frac{d-d\,\text{Sin}[e+f\,x]}{c+d}}\,(c+d\,\text{Sin}[e+f\,x])^{1/3}-\frac{1}{455\,d^2\,f}9\,b\,c^3\,\text{AppellF1}\left[\frac{1}{3},\frac{1}{2},\frac{1}{2},\frac{4}{3},-\frac{c+d\,\text{Sin}[e+f\,x]}{\left(1-\frac{c}{d}\right)d},-\frac{c+d\,\text{Sin}[e+f\,x]}{\left(-1-\frac{c}{d}\right)d}\right]$$
$$\text{Sec}[e+f\,x]\,\sqrt{\frac{-d-d\,\text{Sin}[e+f\,x]}{c-d}}\,\sqrt{\frac{d-d\,\text{Sin}[e+f\,x]}{c+d}}\,(c+d\,\text{Sin}[e+f\,x])^{1/3}+\frac{1}{35\,d\,f}$$
$$54\,a\,c^2\,\text{AppellF1}\left[\frac{1}{3},\frac{1}{2},\frac{1}{2},\frac{4}{3},-\frac{c+d\,\text{Sin}[e+f\,x]}{\left(1-\frac{c}{d}\right)d},-\frac{c+d\,\text{Sin}[e+f\,x]}{\left(-1-\frac{c}{d}\right)d}\right]\,\text{Sec}[e+f\,x]\,\sqrt{\frac{-d-d\,\text{Sin}[e+f\,x]}{c-d}}$$
$$\sqrt{\frac{d-d\,\text{Sin}[e+f\,x]}{c+d}}\,(c+d\,\text{Sin}[e+f\,x])^{1/3}+\frac{1}{40\,f}9\,a\,d\,\text{AppellF1}\left[\frac{1}{3},\frac{1}{2},\frac{1}{2},\frac{4}{3},-\frac{c+d\,\text{Sin}[e+f\,x]}{\left(1-\frac{c}{d}\right)d},-\frac{c+d\,\text{Sin}[e+f\,x]}{\left(-1-\frac{c}{d}\right)d}\right]$$
$$\text{Sec}[e+f\,x]\,\sqrt{\frac{-d-d\,\text{Sin}[e+f\,x]}{c-d}}\,\sqrt{\frac{d-d\,\text{Sin}[e+f\,x]}{c+d}}\,(c+d\,\text{Sin}[e+f\,x])^{1/3}+\frac{1}{130\,f}$$
$$9\,b\,c^2\,\left(-1\Big/d^2 3\,c\,\text{AppellF1}\left[\frac{1}{3},\frac{1}{2},\frac{1}{2},\frac{4}{3},-\frac{c+d\,\text{Sin}[e+f\,x]}{\left(1-\frac{c}{d}\right)d},-\frac{c+d\,\text{Sin}[e+f\,x]}{\left(-1-\frac{c}{d}\right)d}\right]\,\text{Sec}[e+f\,x]\,\sqrt{\frac{-d-d\,\text{Sin}[e+f\,x]}{c-d}}\right.$$
$$\sqrt{\frac{d-d\,\text{Sin}[e+f\,x]}{c+d}}\,(c+d\,\text{Sin}[e+f\,x])^{1/3}+1\Big/\left(4\,d^2\right)3\,\text{AppellF1}\left[\frac{4}{3},\frac{1}{2},\frac{1}{2},\frac{7}{3},-\frac{c+d\,\text{Sin}[e+f\,x]}{\left(1-\frac{c}{d}\right)d},-\frac{c+d\,\text{Sin}[e+f\,x]}{\left(-1-\frac{c}{d}\right)d}\right]$$

$$\text{Sec}[e+f x]\sqrt{\frac{-d-d\,\text{Sin}[e+f x]}{c-d}}\sqrt{\frac{d-d\,\text{Sin}[e+f x]}{c+d}}\,(c+d\,\text{Sin}[e+f x])^{4/3}\Bigg)-\frac{1}{455\,d^2 f}$$

$$9\,b\,c^4\Bigg(-1/d^2 3\,c\,\text{AppellF1}\Big[\frac{1}{3},\frac{1}{2},\frac{1}{2},\frac{4}{3},-\frac{c+d\,\text{Sin}[e+f x]}{\left(1-\frac{c}{d}\right)d},-\frac{c+d\,\text{Sin}[e+f x]}{\left(-1-\frac{c}{d}\right)d}\Big]\,\text{Sec}[e+f x]\sqrt{\frac{-d-d\,\text{Sin}[e+f x]}{c-d}}$$

$$\sqrt{\frac{d-d\,\text{Sin}[e+f x]}{c+d}}\,(c+d\,\text{Sin}[e+f x])^{1/3}+1/\left(4\,d^2\right)3\,\text{AppellF1}\Big[\frac{4}{3},\frac{1}{2},\frac{1}{2},\frac{7}{3},-\frac{c+d\,\text{Sin}[e+f x]}{\left(1-\frac{c}{d}\right)d},-\frac{c+d\,\text{Sin}[e+f x]}{\left(-1-\frac{c}{d}\right)d}\Big]$$

$$\text{Sec}[e+f x]\sqrt{\frac{-d-d\,\text{Sin}[e+f x]}{c-d}}\sqrt{\frac{d-d\,\text{Sin}[e+f x]}{c+d}}\,(c+d\,\text{Sin}[e+f x])^{4/3}\Bigg)+\frac{1}{70\,d\,f}$$

$$3\,a\,c^3\Bigg(-1/d^2 3\,c\,\text{AppellF1}\Big[\frac{1}{3},\frac{1}{2},\frac{1}{2},\frac{4}{3},-\frac{c+d\,\text{Sin}[e+f x]}{\left(1-\frac{c}{d}\right)d},-\frac{c+d\,\text{Sin}[e+f x]}{\left(-1-\frac{c}{d}\right)d}\Big]\,\text{Sec}[e+f x]\sqrt{\frac{-d-d\,\text{Sin}[e+f x]}{c-d}}$$

$$\sqrt{\frac{d-d\,\text{Sin}[e+f x]}{c+d}}\,(c+d\,\text{Sin}[e+f x])^{1/3}+1/\left(4\,d^2\right)3\,\text{AppellF1}\Big[\frac{4}{3},\frac{1}{2},\frac{1}{2},\frac{7}{3},-\frac{c+d\,\text{Sin}[e+f x]}{\left(1-\frac{c}{d}\right)d},-\frac{c+d\,\text{Sin}[e+f x]}{\left(-1-\frac{c}{d}\right)d}\Big]$$

$$\text{Sec}[e+f x]\sqrt{\frac{-d-d\,\text{Sin}[e+f x]}{c-d}}\sqrt{\frac{d-d\,\text{Sin}[e+f x]}{c+d}}\,(c+d\,\text{Sin}[e+f x])^{4/3}\Bigg)+\frac{1}{280\,f}$$

$$153\,a\,c\,d\Bigg(-1/d^2 3\,c\,\text{AppellF1}\Big[\frac{1}{3},\frac{1}{2},\frac{1}{2},\frac{4}{3},-\frac{c+d\,\text{Sin}[e+f x]}{\left(1-\frac{c}{d}\right)d},-\frac{c+d\,\text{Sin}[e+f x]}{\left(-1-\frac{c}{d}\right)d}\Big]\,\text{Sec}[e+f x]\sqrt{\frac{-d-d\,\text{Sin}[e+f x]}{c-d}}$$

$$\sqrt{\frac{d-d\,\text{Sin}[e+f x]}{c+d}}\,(c+d\,\text{Sin}[e+f x])^{1/3}+1/\left(4\,d^2\right)3\,\text{AppellF1}\Big[\frac{4}{3},\frac{1}{2},\frac{1}{2},\frac{7}{3},-\frac{c+d\,\text{Sin}[e+f x]}{\left(1-\frac{c}{d}\right)d},-\frac{c+d\,\text{Sin}[e+f x]}{\left(-1-\frac{c}{d}\right)d}\Big]$$

$$\text{Sec}[e+f x]\sqrt{\frac{-d-d\,\text{Sin}[e+f x]}{c-d}}\sqrt{\frac{d-d\,\text{Sin}[e+f x]}{c+d}}\,(c+d\,\text{Sin}[e+f x])^{4/3}\Bigg)+\frac{1}{91\,f}$$

$$12\,b\,d^2\Bigg(-1/d^2 3\,c\,\text{AppellF1}\Big[\frac{1}{3},\frac{1}{2},\frac{1}{2},\frac{4}{3},-\frac{c+d\,\text{Sin}[e+f x]}{\left(1-\frac{c}{d}\right)d},-\frac{c+d\,\text{Sin}[e+f x]}{\left(-1-\frac{c}{d}\right)d}\Big]\,\text{Sec}[e+f x]\sqrt{\frac{-d-d\,\text{Sin}[e+f x]}{c-d}}$$

$$\sqrt{\frac{d-d\,\text{Sin}[e+f\,x]}{c+d}}\,(c+d\,\text{Sin}[e+f\,x])^{1/3}+1\Big/\left(4\,d^2\right)3\,\text{AppellF1}\left[\frac{4}{3},\frac{1}{2},\frac{1}{2},\frac{7}{3},-\frac{c+d\,\text{Sin}[e+f\,x]}{\left(1-\frac{c}{d}\right)d},-\frac{c+d\,\text{Sin}[e+f\,x]}{\left(-1-\frac{c}{d}\right)d}\right]$$

$$\left.\text{Sec}[e+f\,x]\sqrt{\frac{-d-d\,\text{Sin}[e+f\,x]}{c-d}}\sqrt{\frac{d-d\,\text{Sin}[e+f\,x]}{c+d}}\,(c+d\,\text{Sin}[e+f\,x])^{4/3}\right)+\frac{1}{f}$$

$$(c+d\,\text{Sin}[e+f\,x])^{1/3}\left(-\frac{3\left(12\,b\,c^3-26\,a\,c^2\,d+113\,b\,c\,d^2+91\,a\,d^3\right)\text{Cos}[e+f\,x]}{1820\,d^2}-\frac{3}{520}(14\,b\,c+13\,a\,d)\,\text{Cos}[3\,(e+f\,x)]+\right.$$

$$\left.\frac{3\left(4\,b\,c^2+143\,a\,c\,d+5\,b\,d^2\right)\text{Sin}[2\,(e+f\,x)]}{1820\,d}-\frac{3}{104}\,b\,d\,\text{Sin}[4\,(e+f\,x)]\right)$$

- **Problem 1518: Result more than twice size of optimal antiderivative.**

$$\int \text{Cos}[e+f\,x]^2\,(c+d\,\text{Sin}[e+f\,x])^{4/3}\,dx$$

Optimal (type 6, 125 leaves, 2 steps):

$$\frac{3\,\text{AppellF1}\left[\frac{7}{3},-\frac{1}{2},-\frac{1}{2},\frac{10}{3},\frac{c+d\,\text{Sin}[e+f\,x]}{c-d},\frac{c+d\,\text{Sin}[e+f\,x]}{c+d}\right]\text{Cos}[e+f\,x]\,(c+d\,\text{Sin}[e+f\,x])^{7/3}}{7\,d\,f\sqrt{1-\frac{c+d\,\text{Sin}[e+f\,x]}{c-d}}\sqrt{1-\frac{c+d\,\text{Sin}[e+f\,x]}{c+d}}}$$

Result (type 6, 301 leaves):

$$-\frac{1}{1120\,d^3\,f}3\,\text{Sec}[e+f\,x]\,(c+d\,\text{Sin}[e+f\,x])^{1/3}$$

$$\left(12\left(4\,c^4+3\,c^2\,d^2-7\,d^4\right)\text{AppellF1}\left[\frac{1}{3},\frac{1}{2},\frac{1}{2},\frac{4}{3},\frac{c+d\,\text{Sin}[e+f\,x]}{c-d},\frac{c+d\,\text{Sin}[e+f\,x]}{c+d}\right]\sqrt{-\frac{d\,(-1+\text{Sin}[e+f\,x])}{c+d}}\sqrt{-\frac{d\,(1+\text{Sin}[e+f\,x])}{c-d}}-\right.$$

$$3\,c\left(4\,c^2+51\,d^2\right)\text{AppellF1}\left[\frac{4}{3},\frac{1}{2},\frac{1}{2},\frac{7}{3},\frac{c+d\,\text{Sin}[e+f\,x]}{c-d},\frac{c+d\,\text{Sin}[e+f\,x]}{c+d}\right]\sqrt{-\frac{d\,(-1+\text{Sin}[e+f\,x])}{c+d}}$$

$$\left.\sqrt{-\frac{d\,(1+\text{Sin}[e+f\,x])}{c-d}}\,(c+d\,\text{Sin}[e+f\,x])+4\,d^2\,\text{Cos}[e+f\,x]^2\left(-4\,c^2+7\,d^2+14\,d^2\,\text{Cos}[2\,(e+f\,x)]-44\,c\,d\,\text{Sin}[e+f\,x]\right)\right)$$

- **Problem 1523: Unable to integrate problem.**

$$\int \text{Cos}[e+f\,x]^2\,(a+b\,\text{Sin}[e+f\,x])^2\,(c+d\,\text{Sin}[e+f\,x])^n\,dx$$

Optimal (type 6, 552 leaves, 11 steps):

$$\frac{\left(2 a^2 d^2 (3+n)-4 a b c d (4+n)+b^2 \left(6 c^2-d^2 (3+n)\right)\right) \text{Cos}[e+f x] (c+d \text{Sin}[e+f x])^{1+n}}{d^3 f (2+n) (3+n) (4+n)}-$$
$$\frac{b (3 b c-2 a d) \text{Cos}[e+f x] \text{Sin}[e+f x] (c+d \text{Sin}[e+f x])^{1+n}}{d^2 f (3+n) (4+n)}+\frac{\text{Cos}[e+f x] (a+b \text{Sin}[e+f x])^2 (c+d \text{Sin}[e+f x])^{1+n}}{d f (4+n)}-$$
$$\left(\sqrt{2} (c+d) \left(a^2 c d^2 \left(12+7 n+n^2\right)-2 a b d (4+n) \left(2 c^2-d^2 (2+n)\right)+b^2 c \left(6 c^2-d^2 \left(3-n-n^2\right)\right)\right) \text{AppellF1}\left[\frac{1}{2},\frac{1}{2},-1-n,\frac{3}{2},\frac{1}{2} (1-\text{Sin}[e+f x]),\frac{d (1-\text{Sin}[e+f x])}{c+d}\right] \text{Cos}[e+f x] (c+d \text{Sin}[e+f x])^n \left(\frac{c+d \text{Sin}[e+f x]}{c+d}\right)^{-n}\right)\Big/\left(d^4 f (2+n) (3+n) (4+n) \sqrt{1+\text{Sin}[e+f x]}\right)-$$
$$\left(\sqrt{2} \left(c^2-d^2\right) \left(4 a b c d (4+n)-a^2 d^2 \left(12+7 n+n^2\right)-b^2 \left(6 c^2+d^2 \left(3+4 n+n^2\right)\right)\right) \text{AppellF1}\left[\frac{1}{2},\frac{1}{2},-n,\frac{3}{2},\frac{1}{2} (1-\text{Sin}[e+f x]),\frac{d (1-\text{Sin}[e+f x])}{c+d}\right] \text{Cos}[e+f x] (c+d \text{Sin}[e+f x])^n \left(\frac{c+d \text{Sin}[e+f x]}{c+d}\right)^{-n}\right)\Big/\left(d^4 f (2+n) (3+n) (4+n) \sqrt{1+\text{Sin}[e+f x]}\right)$$

Result (type 8, 35 leaves) :

$$\int \text{Cos}[e+f x]^2 (a+b \text{Sin}[e+f x])^2 (c+d \text{Sin}[e+f x])^n \, dx$$

Problem 1524: Unable to integrate problem.

$$\int \text{Cos}[e+f x]^2 (a+b \text{Sin}[e+f x]) (c+d \text{Sin}[e+f x])^n \, dx$$

Optimal (type 6, 375 leaves, 10 steps) :

$$-\frac{(2 b c-a d (3+n)) \text{Cos}[e+f x] (c+d \text{Sin}[e+f x])^{1+n}}{d^2 f (2+n) (3+n)}+\frac{b \text{Cos}[e+f x] \text{Sin}[e+f x] (c+d \text{Sin}[e+f x])^{1+n}}{d f (3+n)}-$$
$$\left(\sqrt{2} (c+d) \left(a c d (3+n)-b \left(2 c^2-d^2 (2+n)\right)\right) \text{AppellF1}\left[\frac{1}{2},\frac{1}{2},-1-n,\frac{3}{2},\frac{1}{2} (1-\text{Sin}[e+f x]),\frac{d (1-\text{Sin}[e+f x])}{c+d}\right] \text{Cos}[e+f x] (c+d \text{Sin}[e+f x])^n \left(\frac{c+d \text{Sin}[e+f x]}{c+d}\right)^{-n}\right)\Big/\left(d^3 f (2+n) (3+n) \sqrt{1+\text{Sin}[e+f x]}\right)-$$
$$\left(\sqrt{2} \left(c^2-d^2\right) (2 b c-a d (3+n)) \text{AppellF1}\left[\frac{1}{2},\frac{1}{2},-n,\frac{3}{2},\frac{1}{2} (1-\text{Sin}[e+f x]),\frac{d (1-\text{Sin}[e+f x])}{c+d}\right] \text{Cos}[e+f x] (c+d \text{Sin}[e+f x])^n \left(\frac{c+d \text{Sin}[e+f x]}{c+d}\right)^{-n}\right)\Big/\left(d^3 f (2+n) (3+n) \sqrt{1+\text{Sin}[e+f x]}\right)$$

Result (type 8, 33 leaves) :

$$\int \text{Cos}[e+f x]^2 (a+b \text{Sin}[e+f x]) (c+d \text{Sin}[e+f x])^n \, dx$$

Problem 1525: Unable to integrate problem.

$$\int \text{Cos}[e+f x]^2 (c+d \text{Sin}[e+f x])^n \, dx$$

Optimal (type 6, 127 leaves, 2 steps):

$$\frac{\text{AppellF1}\left[1+n,-\frac{1}{2},-\frac{1}{2},2+n,\frac{c+d\,\text{Sin}[e+f\,x]}{c-d},\frac{c+d\,\text{Sin}[e+f\,x]}{c+d}\right]\text{Cos}[e+f\,x]\,(c+d\,\text{Sin}[e+f\,x])^{1+n}}{d\,f\,(1+n)\sqrt{1-\frac{c+d\,\text{Sin}[e+f\,x]}{c-d}}\sqrt{1-\frac{c+d\,\text{Sin}[e+f\,x]}{c+d}}}$$

Result (type 8, 23 leaves):

$$\int \text{Cos}[e+f\,x]^2\,(c+d\,\text{Sin}[e+f\,x])^n\,dx$$

Problem 1532: Result more than twice size of optimal antiderivative.

$$\int \text{Sec}[c+d\,x]\,(a+b\,\text{Sin}[c+d\,x])\,(A+B\,\text{Sin}[c+d\,x])\,dx$$

Optimal (type 3, 64 leaves, 5 steps):

$$-\frac{(a+b)\,(A+B)\,\text{Log}[1-\text{Sin}[c+d\,x]]}{2\,d}+\frac{(a-b)\,(A-B)\,\text{Log}[1+\text{Sin}[c+d\,x]]}{2\,d}-\frac{b\,B\,\text{Sin}[c+d\,x]}{d}$$

Result (type 3, 172 leaves):

$$-\frac{A\,b\,\text{Log}[\text{Cos}[c+d\,x]]}{d}-\frac{a\,B\,\text{Log}[\text{Cos}[c+d\,x]]}{d}-\frac{a\,A\,\text{Log}\left[\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]-\text{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right]}{d}+\frac{a\,A\,\text{Log}\left[\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right]}{d}-$$
$$\frac{b\,B\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]}{d}+\frac{b\,B\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]}{d}-\frac{b\,B\,\text{Sin}[c+d\,x]}{d}$$

Problem 1533: Result more than twice size of optimal antiderivative.

$$\int \text{Sec}[c+d\,x]^3\,(a+b\,\text{Sin}[c+d\,x])\,(A+B\,\text{Sin}[c+d\,x])\,dx$$

Optimal (type 3, 59 leaves, 3 steps):

$$\frac{(a\,A-b\,B)\,\text{ArcTanh}[\text{Sin}[c+d\,x]]}{2\,d}+\frac{\text{Sec}[c+d\,x]^2\,(A\,b+a\,B+(a\,A+b\,B)\,\text{Sin}[c+d\,x])}{2\,d}$$

Result (type 3, 141 leaves):

$$\frac{1}{4\,d}\left(2\,(-a\,A+b\,B)\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]+\right.$$
$$\left.2\,(a\,A-b\,B)\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]+\frac{(a+b)\,(A+B)}{\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}-\frac{(a-b)\,(A-B)}{\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}\right)$$

Problem 1534: Result more than twice size of optimal antiderivative.

$$\int \text{Sec}[c+d\,x]^5\,(a+b\,\text{Sin}[c+d\,x])\,(A+B\,\text{Sin}[c+d\,x])\,dx$$

Optimal (type 3, 88 leaves, 4 steps):

$$\frac{(3 a A-b B) \operatorname{ArcTanh}[\operatorname{Sin}[c+d x]]}{8 d}+\frac{\operatorname{Sec}[c+d x]^4 (A b+a B+(a A+b B) \operatorname{Sin}[c+d x])}{4 d}+\frac{(3 a A-b B) \operatorname{Sec}[c+d x] \operatorname{Tan}[c+d x]}{8 d}$$

Result (type 3, 220 leaves):

$$\frac{1}{16 d}\left(2 (-3 a A+b B) \operatorname{Log}\left[\operatorname{Cos}\left[\frac{1}{2} (c+d x)\right]-\operatorname{Sin}\left[\frac{1}{2} (c+d x)\right]\right]+\right.$$
$$2 (3 a A-b B) \operatorname{Log}\left[\operatorname{Cos}\left[\frac{1}{2} (c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2} (c+d x)\right]\right]+\frac{(a+b) (A+B)}{\left(\operatorname{Cos}\left[\frac{1}{2} (c+d x)\right]-\operatorname{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^4}+$$
$$\left.\frac{b (A-B)+a (3 A+B)}{\left(\operatorname{Cos}\left[\frac{1}{2} (c+d x)\right]-\operatorname{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^2}-\frac{(a-b) (A-B)}{\left(\operatorname{Cos}\left[\frac{1}{2} (c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^4}+\frac{a (-3 A+B)+b (A+B)}{\left(\operatorname{Cos}\left[\frac{1}{2} (c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^2}\right)$$

- **Problem 1535: Result more than twice size of optimal antiderivative.**

$$\int \operatorname{Sec}[c+d x]^7 (a+b \operatorname{Sin}[c+d x]) (A+B \operatorname{Sin}[c+d x]) \, dx$$

Optimal (type 3, 118 leaves, 5 steps):

$$\frac{(5 a A-b B) \operatorname{ArcTanh}[\operatorname{Sin}[c+d x]]}{16 d}+\frac{\operatorname{Sec}[c+d x]^6 (A b+a B+(a A+b B) \operatorname{Sin}[c+d x])}{6 d}+$$
$$\frac{(5 a A-b B) \operatorname{Sec}[c+d x] \operatorname{Tan}[c+d x]}{16 d}+\frac{(5 a A-b B) \operatorname{Sec}[c+d x]^3 \operatorname{Tan}[c+d x]}{24 d}$$

Result (type 3, 297 leaves):

$$\frac{1}{96 d}\left(6 (-5 a A+b B) \operatorname{Log}\left[\operatorname{Cos}\left[\frac{1}{2} (c+d x)\right]-\operatorname{Sin}\left[\frac{1}{2} (c+d x)\right]\right]+6 (5 a A-b B) \operatorname{Log}\left[\operatorname{Cos}\left[\frac{1}{2} (c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2} (c+d x)\right]\right]+\right.$$
$$\frac{2 (a+b) (A+B)}{\left(\operatorname{Cos}\left[\frac{1}{2} (c+d x)\right]-\operatorname{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^6}+\frac{3 (A b+a (2 A+B))}{\left(\operatorname{Cos}\left[\frac{1}{2} (c+d x)\right]-\operatorname{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^4}+\frac{3 (b (A-B)+a (5 A+B))}{\left(\operatorname{Cos}\left[\frac{1}{2} (c+d x)\right]-\operatorname{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^2}-$$
$$\left.\frac{2 (a-b) (A-B)}{\left(\operatorname{Cos}\left[\frac{1}{2} (c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^6}+\frac{3 (A b+a (-2 A+B))}{\left(\operatorname{Cos}\left[\frac{1}{2} (c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^4}+\frac{3 (a (-5 A+B)+b (A+B))}{\left(\operatorname{Cos}\left[\frac{1}{2} (c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^2}\right)$$

- **Problem 1542: Result more than twice size of optimal antiderivative.**

$$\int \operatorname{Sec}[c+d x]^5 (a+b \operatorname{Sin}[c+d x])^2 (A+B \operatorname{Sin}[c+d x]) \, dx$$

Optimal (type 3, 122 leaves, 4 steps):

$$\frac{\left(3 a^2 A-A b^2-2 a b B\right) \operatorname{ArcTanh}[\operatorname{Sin}[c+d x]]}{8 d}+\frac{\operatorname{Sec}[c+d x]^4 (B+A \operatorname{Sin}[c+d x]) (a+b \operatorname{Sin}[c+d x])^2}{4 d}+\frac{\operatorname{Sec}[c+d x]^2 \left(2 b (2 a A-b B)+\left(3 a^2 A+A b^2-2 a b B\right) \operatorname{Sin}[c+d x]\right)}{8 d}$$

Result (type 3, 255 leaves) :

$$\frac{1}{16 d}\left(2\left(-3 a^2 A+A b^2+2 a b B\right) \operatorname{Log}\left[\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]-\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right]+2\left(3 a^2 A-A b^2-2 a b B\right) \operatorname{Log}\left[\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right]+\frac{(a+b)^2 (A+B)}{\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]-\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^4}+\frac{(a+b)(a(3 A+B)-b(A+3 B))}{\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]-\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2}-\frac{(a-b)^2 (A-B)}{\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^4}-\frac{(a-b)(3 a A+A b-a B-3 b B)}{\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2}\right)$$

- **Problem 1543: Result more than twice size of optimal antiderivative.**

$$\int \operatorname{Sec}[c+d x]^7 (a+b \operatorname{Sin}[c+d x])^2 (A+B \operatorname{Sin}[c+d x]) \, dx$$

Optimal (type 3, 160 leaves, 5 steps) :

$$\frac{\left(5 a^2 A-A b^2-2 a b B\right) \operatorname{ArcTanh}[\operatorname{Sin}[c+d x]]}{16 d}+\frac{\operatorname{Sec}[c+d x]^6 (B+A \operatorname{Sin}[c+d x]) (a+b \operatorname{Sin}[c+d x])^2}{6 d}+\frac{\operatorname{Sec}[c+d x]^4 \left(2 b (4 a A-b B)+\left(5 a^2 A+3 A b^2-2 a b B\right) \operatorname{Sin}[c+d x]\right)}{24 d}+\frac{\left(5 a^2 A-A b^2-2 a b B\right) \operatorname{Sec}[c+d x] \operatorname{Tan}[c+d x]}{16 d}$$

Result (type 3, 459 leaves) :

$$\frac{\left(-5 a^2 A+A b^2+2 a b B\right) \operatorname{Log}\left[\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]-\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right]}{16 d}+\frac{\left(5 a^2 A-A b^2-2 a b B\right) \operatorname{Log}\left[\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right]}{16 d}+\frac{a^2 A+2 a A b+A b^2+a^2 B+2 a b B+b^2 B}{48 d\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]-\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^6}+\frac{2 a^2 A+2 a A b+a^2 B-b^2 B}{32 d\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]-\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^4}+\frac{5 a^2 A+2 a A b-A b^2+a^2 B-2 a b B-b^2 B}{32 d\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]-\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2}+\frac{-a^2 A+2 a A b-A b^2+a^2 B-2 a b B+b^2 B}{48 d\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^6}+\frac{-2 a^2 A+2 a A b+a^2 B-b^2 B}{32 d\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^4}+\frac{-5 a^2 A+2 a A b+A b^2+a^2 B+2 a b B-b^2 B}{32 d\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2}$$

- **Problem 1557: Result unnecessarily involves imaginary or complex numbers.**

$$\int \frac{\operatorname{Sec}[c+d x]^3 (A+B \operatorname{Sin}[c+d x])}{(a+b \operatorname{Sin}[c+d x])^2} \, dx$$

Optimal (type 3, 228 leaves, 4 steps) :

$$-\frac{(a A+3 A b+2 b B) \operatorname{Log}[1-\operatorname{Sin}[c+d x]]}{4 (a+b)^3 d}+\frac{(a A-3 A b+2 b B) \operatorname{Log}[1+\operatorname{Sin}[c+d x]]}{4 (a-b)^3 d}+\frac{b^2 \left(4 a A b-3 a^2 B-b^2 B\right) \operatorname{Log}[a+b \operatorname{Sin}[c+d x]]}{\left(a^2-b^2\right)^3 d}-\frac{b \left(a^2 A+3 A b^2-4 a b B\right)}{2 \left(a^2-b^2\right)^2 d (a+b \operatorname{Sin}[c+d x])}-\frac{\operatorname{Sec}[c+d x]^2 (A b-a B-(a A-b B) \operatorname{Sin}[c+d x])}{2 \left(a^2-b^2\right) d (a+b \operatorname{Sin}[c+d x])}$$

Result (type 3, 347 leaves):

$$\frac{1}{4 d}\left(\frac{8 i b^2 \left(-4 a A b+3 a^2 B+b^2 B\right) (c+d x)}{(a-b)^3 (a+b)^3}+\frac{2 i (a A-3 A b+2 b B) \operatorname{ArcTan}[\operatorname{Cot}[c+d x]]}{(a-b)^3}-\frac{2 i (a A+3 A b+2 b B) \operatorname{ArcTan}[\operatorname{Cot}[c+d x]]}{(a+b)^3}-\frac{(a A+3 A b+2 b B) \operatorname{Log}\left[\left(\operatorname{Cos}\left[\frac{1}{2} (c+d x)\right]-\operatorname{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^2\right]}{(a+b)^3}+\frac{(a A-3 A b+2 b B) \operatorname{Log}\left[\left(\operatorname{Cos}\left[\frac{1}{2} (c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^2\right]}{(a-b)^3}+\frac{4 b^2 \left(-4 a A b+3 a^2 B+b^2 B\right) \operatorname{Log}[a+b \operatorname{Sin}[c+d x]]}{\left(-a^2+b^2\right)^3}+\frac{A+B}{(a+b)^2 \left(\operatorname{Cos}\left[\frac{1}{2} (c+d x)\right]-\operatorname{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^2}+\frac{-A+B}{(a-b)^2 \left(\operatorname{Cos}\left[\frac{1}{2} (c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^2}+\frac{4 b^2 (-A b+a B)}{(a-b)^2 (a+b)^2 (a+b \operatorname{Sin}[c+d x])}\right)$$

- **Problem 1558: Result unnecessarily involves imaginary or complex numbers.**

$$\int \frac{\operatorname{Sec}[c+d x]^5 (A+B \operatorname{Sin}[c+d x])}{(a+b \operatorname{Sin}[c+d x])^2} \, dx$$

Optimal (type 3, 372 leaves, 5 steps):

$$-\frac{\left(3 a^2 A+2 a b (6 A+B)+b^2 (15 A+8 B)\right) \operatorname{Log}[1-\operatorname{Sin}[c+d x]]}{16 (a+b)^4 d}+\frac{\left(3 a^2 A+b^2 (15 A-8 B)-2 a b (6 A-B)\right) \operatorname{Log}[1+\operatorname{Sin}[c+d x]]}{16 (a-b)^4 d}-\frac{b^4 \left(6 a A b-5 a^2 B-b^2 B\right) \operatorname{Log}[a+b \operatorname{Sin}[c+d x]]}{\left(a^2-b^2\right)^4 d}-\frac{b \left(3 a^4 A-12 a^2 A b^2-15 A b^4+2 a^3 b B+22 a b^3 B\right)}{8 \left(a^2-b^2\right)^3 d (a+b \operatorname{Sin}[c+d x])}-\frac{\operatorname{Sec}[c+d x]^4 (A b-a B-(a A-b B) \operatorname{Sin}[c+d x])}{4 \left(a^2-b^2\right) d (a+b \operatorname{Sin}[c+d x])}+\frac{\operatorname{Sec}[c+d x]^2 \left(b \left(a^2 A+5 A b^2-6 a b B\right)+\left(3 a^3 A-9 a A b^2+2 a^2 b B+4 b^3 B\right) \operatorname{Sin}[c+d x]\right)}{8 \left(a^2-b^2\right)^2 d (a+b \operatorname{Sin}[c+d x])}$$

Result (type 3, 642 leaves):

$$\frac{1}{64\,d}\left(-\frac{128\,i\,b^4\left(-6\,a\,A\,b+5\,a^2\,B+b^2\,B\right)(c+d\,x)}{(a-b)^4\,(a+b)^4}+\right.$$
$$\frac{8\,i\left(3\,a^2\,A+b^2\,(15\,A-8\,B)+2\,a\,b\,(-6\,A+B)\right)\text{ArcTan}[\text{Cot}[c+d\,x]]}{(a-b)^4}-\frac{8\,i\left(3\,a^2\,A+2\,a\,b\,(6\,A+B)+b^2\,(15\,A+8\,B)\right)\text{ArcTan}[\text{Cot}[c+d\,x]]}{(a+b)^4}-$$
$$\frac{4\left(3\,a^2\,A+2\,a\,b\,(6\,A+B)+b^2\,(15\,A+8\,B)\right)\text{Log}\left[\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2\right]}{(a+b)^4}+$$
$$\frac{4\left(3\,a^2\,A+b^2\,(15\,A-8\,B)+2\,a\,b\,(-6\,A+B)\right)\text{Log}\left[\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2\right]}{(a-b)^4}+$$
$$\frac{64\,b^4\left(-6\,a\,A\,b+5\,a^2\,B+b^2\,B\right)\text{Log}[a+b\,\text{Sin}[c+d\,x]]}{\left(a^2-b^2\right)^4}+\frac{1}{\left(a^2-b^2\right)^3\,(a+b\,\text{Sin}[c+d\,x])}$$
$$\text{Sec}[c+d\,x]^4\left(-21\,a^4\,A\,b+84\,a^2\,A\,b^3+9\,A\,b^5+16\,a^5\,B-62\,a^3\,b^2\,B-26\,a\,b^4\,B-8\,b\left(a^4\,A-8\,a^2\,A\,b^2-5\,A\,b^4+4\,a^3\,b\,B+8\,a\,b^3\,B\right)\text{Cos}[2\,(c+d\,x)]+\right.$$
$$b\left(-3\,a^4\,A+12\,a^2\,A\,b^2+15\,A\,b^4-2\,a^3\,b\,B-22\,a\,b^3\,B\right)\text{Cos}[4\,(c+d\,x)]+22\,a^5\,A\,\text{Sin}[c+d\,x]-56\,a^3\,A\,b^2\,\text{Sin}[c+d\,x]+$$
$$34\,a\,A\,b^4\,\text{Sin}[c+d\,x]-12\,a^4\,b\,B\,\text{Sin}[c+d\,x]+36\,a^2\,b^3\,B\,\text{Sin}[c+d\,x]-24\,b^5\,B\,\text{Sin}[c+d\,x]+6\,a^5\,A\,\text{Sin}[3\,(c+d\,x)]-$$
$$\left.\left.24\,a^3\,A\,b^2\,\text{Sin}[3\,(c+d\,x)]+18\,a\,A\,b^4\,\text{Sin}[3\,(c+d\,x)]+4\,a^4\,b\,B\,\text{Sin}[3\,(c+d\,x)]+4\,a^2\,b^3\,B\,\text{Sin}[3\,(c+d\,x)]-8\,b^5\,B\,\text{Sin}[3\,(c+d\,x)]\right)\right)$$

- **Problem 1559: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int\frac{\text{Sec}[c+d\,x]^7\,(A+B\,\text{Sin}[c+d\,x])}{(a+b\,\text{Sin}[c+d\,x])^2}\,dx$$

Optimal (type 3, 550 leaves, 6 steps) :

$$-\frac{\left(5\,a^3\,A+a^2\,b\,(25\,A+2\,B)+a\,b^2\,(47\,A+10\,B)+b^3\,(35\,A+16\,B)\right)\text{Log}[1-\text{Sin}[c+d\,x]]}{32\,(a+b)^5\,d}+$$
$$\frac{\left(5\,a^3\,A-b^3\,(35\,A-16\,B)+a\,b^2\,(47\,A-10\,B)-a^2\,(25\,A\,b-2\,b\,B)\right)\text{Log}[1+\text{Sin}[c+d\,x]]}{32\,(a-b)^5\,d}+\frac{b^6\left(8\,a\,A\,b-7\,a^2\,B-b^2\,B\right)\text{Log}[a+b\,\text{Sin}[c+d\,x]]}{\left(a^2-b^2\right)^5\,d}-$$
$$\frac{b\left(5\,a^6\,A-23\,a^4\,A\,b^2+47\,a^2\,A\,b^4+35\,A\,b^6+2\,a^5\,b\,B-12\,a^3\,b^3\,B-54\,a\,b^5\,B\right)}{16\left(a^2-b^2\right)^4 d\,(a+b\,\text{Sin}[c+d\,x])}-\frac{\text{Sec}[c+d\,x]^6\,(A\,b-a\,B-(a\,A-b\,B)\,\text{Sin}[c+d\,x])}{6\left(a^2-b^2\right)d\,(a+b\,\text{Sin}[c+d\,x])}+$$
$$\frac{\text{Sec}[c+d\,x]^4\left(b\left(a^2\,A+7\,A\,b^2-8\,a\,b\,B\right)+\left(5\,a^3\,A-13\,a\,A\,b^2+2\,a^2\,b\,B+6\,b^3\,B\right)\text{Sin}[c+d\,x]\right)}{24\left(a^2-b^2\right)^2 d\,(a+b\,\text{Sin}[c+d\,x])}+$$
$$\left(\text{Sec}[c+d\,x]^2\left(b\left(5\,a^4\,A-18\,a^2\,A\,b^2-35\,A\,b^4+2\,a^3\,b\,B+46\,a\,b^3\,B\right)+3\left(5\,a^5\,A-18\,a^3\,A\,b^2+29\,a\,A\,b^4+2\,a^4\,b\,B-10\,a^2\,b^3\,B-8\,b^5\,B\right)\text{Sin}[c+d\,x]\right)\right)\Big/$$
$$\left(48\left(a^2-b^2\right)^3 d\,(a+b\,\text{Sin}[c+d\,x])\right)$$

Result (type 3, 1293 leaves) :

$$\frac{2\, i \left(-8\, a\, A\, b^7+7\, a^2\, b^6\, B+b^8\, B\right) (c+d\, x)}{(a-b)^5 (a+b)^5 d}+\frac{1}{16 (a+b)^5 d} i \left(-5\, a^3\, A-25\, a^2\, A\, b-47\, a\, A\, b^2-35\, A\, b^3-2\, a^2\, b\, B-10\, a\, b^2\, B-16\, b^3\, B\right)$$
$$\text{ArcTan}\left[\text{Csc}[c+d\, x] \left(\text{Cos}\left[\frac{1}{2} (c+d\, x)\right]-\text{Sin}\left[\frac{1}{2} (c+d\, x)\right]\right) \left(\text{Cos}\left[\frac{1}{2} (c+d\, x)\right]+\text{Sin}\left[\frac{1}{2} (c+d\, x)\right]\right)\right]+$$
$$\frac{1}{16 (a-b)^5 d} i \left(5\, a^3\, A-25\, a^2\, A\, b+47\, a\, A\, b^2-35\, A\, b^3+2\, a^2\, b\, B-10\, a\, b^2\, B+16\, b^3\, B\right)$$
$$\text{ArcTan}\left[\text{Csc}[c+d\, x] \left(\text{Cos}\left[\frac{1}{2} (c+d\, x)\right]-\text{Sin}\left[\frac{1}{2} (c+d\, x)\right]\right) \left(\text{Cos}\left[\frac{1}{2} (c+d\, x)\right]+\text{Sin}\left[\frac{1}{2} (c+d\, x)\right]\right)\right]+\frac{1}{32 (a+b)^5 d}$$
$$\left(-5\, a^3\, A-25\, a^2\, A\, b-47\, a\, A\, b^2-35\, A\, b^3-2\, a^2\, b\, B-10\, a\, b^2\, B-16\, b^3\, B\right) \text{Log}\left[\left(\text{Cos}\left[\frac{1}{2} (c+d\, x)\right]-\text{Sin}\left[\frac{1}{2} (c+d\, x)\right]\right)^2\right]+\frac{1}{32 (a-b)^5 d}$$
$$\left(5\, a^3\, A-25\, a^2\, A\, b+47\, a\, A\, b^2-35\, A\, b^3+2\, a^2\, b\, B-10\, a\, b^2\, B+16\, b^3\, B\right) \text{Log}\left[\left(\text{Cos}\left[\frac{1}{2} (c+d\, x)\right]+\text{Sin}\left[\frac{1}{2} (c+d\, x)\right]\right)^2\right]+$$
$$\frac{\left(8\, a\, A\, b^7-7\, a^2\, b^6\, B-b^8\, B\right) \text{Log}[a+b\, \text{Sin}[c+d\, x]]}{\left(a^2-b^2\right)^5 d}+\frac{1}{1536 \left(a^2-b^2\right)^4 d\, (a+b\, \text{Sin}[c+d\, x])}$$
$$\text{Sec}[c+d\, x]^6 \left(-314\, a^6\, A\, b+1342\, a^4\, A\, b^3-2798\, a^2\, A\, b^5-150\, A\, b^7+256\, a^7\, B-1060\, a^5\, b^2\, B+2168\, a^3\, b^4\, B+556\, a\, b^6\, B-113\, a^6\, A\, b\, \text{Cos}[2 (c+d\, x)]+\right.$$
$$827\, a^4\, A\, b^3\, \text{Cos}[2 (c+d\, x)]-2803\, a^2\, A\, b^5\, \text{Cos}[2 (c+d\, x)]-791\, A\, b^7\, \text{Cos}[2 (c+d\, x)]-314\, a^5\, b^2\, B\, \text{Cos}[2 (c+d\, x)]+1756\, a^3\, b^4\, B$$
$$\text{Cos}[2 (c+d\, x)]+1438\, a\, b^6\, B\, \text{Cos}[2 (c+d\, x)]-70\, a^6\, A\, b\, \text{Cos}[4 (c+d\, x)]+322\, a^4\, A\, b^3\, \text{Cos}[4 (c+d\, x)]-914\, a^2\, A\, b^5\, \text{Cos}[4 (c+d\, x)]-$$
$$490\, A\, b^7\, \text{Cos}[4 (c+d\, x)]-28\, a^5\, b^2\, B\, \text{Cos}[4 (c+d\, x)]+392\, a^3\, b^4\, B\, \text{Cos}[4 (c+d\, x)]+788\, a\, b^6\, B\, \text{Cos}[4 (c+d\, x)]-15\, a^6\, A\, b\, \text{Cos}[6 (c+d\, x)]+$$
$$69\, a^4\, A\, b^3\, \text{Cos}[6 (c+d\, x)]-141\, a^2\, A\, b^5\, \text{Cos}[6 (c+d\, x)]-105\, A\, b^7\, \text{Cos}[6 (c+d\, x)]-6\, a^5\, b^2\, B\, \text{Cos}[6 (c+d\, x)]+36\, a^3\, b^4\, B\, \text{Cos}[6 (c+d\, x)]+$$
$$162\, a\, b^6\, B\, \text{Cos}[6 (c+d\, x)]+396\, a^7\, A\, \text{Sin}[c+d\, x]-1412\, a^5\, A\, b^2\, \text{Sin}[c+d\, x]+1828\, a^3\, A\, b^4\, \text{Sin}[c+d\, x]-812\, a\, A\, b^6\, \text{Sin}[c+d\, x]-$$
$$200\, a^6\, b\, B\, \text{Sin}[c+d\, x]+656\, a^4\, b^3\, B\, \text{Sin}[c+d\, x]-904\, a^2\, b^5\, B\, \text{Sin}[c+d\, x]+448\, b^7\, B\, \text{Sin}[c+d\, x]+170\, a^7\, A\, \text{Sin}[3 (c+d\, x)]-$$
$$782\, a^5\, A\, b^2\, \text{Sin}[3 (c+d\, x)]+1342\, a^3\, A\, b^4\, \text{Sin}[3 (c+d\, x)]-730\, a\, A\, b^6\, \text{Sin}[3 (c+d\, x)]+68\, a^6\, b\, B\, \text{Sin}[3 (c+d\, x)]-184\, a^4\, b^3\, B\, \text{Sin}[3 (c+d\, x)]-$$
$$124\, a^2\, b^5\, B\, \text{Sin}[3 (c+d\, x)]+240\, b^7\, B\, \text{Sin}[3 (c+d\, x)]+30\, a^7\, A\, \text{Sin}[5 (c+d\, x)]-138\, a^5\, A\, b^2\, \text{Sin}[5 (c+d\, x)]+282\, a^3\, A\, b^4\, \text{Sin}[5 (c+d\, x)]-$$
$$\left.174\, a\, A\, b^6\, \text{Sin}[5 (c+d\, x)]+12\, a^6\, b\, B\, \text{Sin}[5 (c+d\, x)]-72\, a^4\, b^3\, B\, \text{Sin}[5 (c+d\, x)]+12\, a^2\, b^5\, B\, \text{Sin}[5 (c+d\, x)]+48\, b^7\, B\, \text{Sin}[5 (c+d\, x)]\right)$$

- **Problem 1561: Result more than twice size of optimal antiderivative.**

$$\int \frac{(g\, \text{Cos}[e+f\, x])^p}{(a+b\, \text{Sin}[e+f\, x]) (c+d\, \text{Sin}[e+f\, x])} \, dx$$

Optimal (type 6, 330 leaves, 4 steps):

$$-\frac{1}{(b\, c-a\, d) f (1-p)} g\, \text{AppellF1}\left[1-p, \frac{1-p}{2}, \frac{1-p}{2}, 2-p, \frac{a+b}{a+b\, \text{Sin}[e+f\, x]}, \frac{a-b}{a+b\, \text{Sin}[e+f\, x]}\right]$$
$$(g\, \text{Cos}[e+f\, x])^{-1+p} \left(-\frac{b (1-\text{Sin}[e+f\, x])}{a+b\, \text{Sin}[e+f\, x]}\right)^{\frac{1-p}{2}} \left(\frac{b (1+\text{Sin}[e+f\, x])}{a+b\, \text{Sin}[e+f\, x]}\right)^{\frac{1-p}{2}}+\frac{1}{(b\, c-a\, d) f (1-p)}$$
$$g\, \text{AppellF1}\left[1-p, \frac{1-p}{2}, \frac{1-p}{2}, 2-p, \frac{c+d}{c+d\, \text{Sin}[e+f\, x]}, \frac{c-d}{c+d\, \text{Sin}[e+f\, x]}\right] (g\, \text{Cos}[e+f\, x])^{-1+p} \left(-\frac{d (1-\text{Sin}[e+f\, x])}{c+d\, \text{Sin}[e+f\, x]}\right)^{\frac{1-p}{2}} \left(\frac{d (1+\text{Sin}[e+f\, x])}{c+d\, \text{Sin}[e+f\, x]}\right)^{\frac{1-p}{2}}$$

Result (type 6, 9347 leaves):

$$-\Bigg(\Bigg(a^2\,b^2\,(g\,\text{Cos}[e+f\,x])^p\,\text{Tan}[e+f\,x]\,\left(1+\text{Tan}[e+f\,x]^2\right)^{-p/2}\Bigg(-\Bigg(3\,a\,\text{AppellF1}\Big[\frac{1}{2},\,\frac{p}{2},\,1,\,\frac{3}{2},\,-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\Big]\Bigg)\Big/$$

$$\Bigg(-3\,a^2\,\text{AppellF1}\Big[\frac{1}{2},\,\frac{p}{2},\,1,\,\frac{3}{2},\,-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\Big]+\Bigg(2\,\left(a^2-b^2\right)\text{AppellF1}\Big[\frac{3}{2},\,\frac{p}{2},\,2,\,\frac{5}{2},\,-\text{Tan}[e+f\,x]^2,$$

$$\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\Big]+a^2\,p\,\text{AppellF1}\Big[\frac{3}{2},\,\frac{2+p}{2},\,1,\,\frac{5}{2},\,-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\Big]\Bigg)\text{Tan}[e+f\,x]^2\Bigg)+$$

$$\Bigg(2\,b\,\text{AppellF1}\Big[1,\,\frac{1+p}{2},\,1,\,2,\,-\text{Tan}[e+f\,x]^2,\,\frac{\left(-a^2+b^2\right)\text{Tan}[e+f\,x]^2}{a^2}\Big]\,\text{Tan}[e+f\,x]\Bigg)\Big/\Bigg(\sqrt{1+\text{Tan}[e+f\,x]^2}$$

$$\Bigg(-4\,a^2\,\text{AppellF1}\Big[1,\,\frac{1+p}{2},\,1,\,2,\,-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\Big]+\Bigg(2\,\left(a^2-b^2\right)\text{AppellF1}\Big[2,\,\frac{1+p}{2},\,2,\,3,\,-\text{Tan}[e+f\,x]^2,$$

$$\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\Big]+a^2\,(1+p)\,\text{AppellF1}\Big[2,\,\frac{3+p}{2},\,1,\,3,\,-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\Big]\Bigg)\text{Tan}[e+f\,x]^2\Bigg)\Bigg)\Bigg)\Bigg)\Bigg)\Big/$$

$$\Bigg((b\,c-a\,d)\,(-b\,c+a\,d)\,f\,(a+b\,\text{Sin}[e+f\,x])\,\left(-b^2\,\text{Tan}[e+f\,x]^2+a^2\,\left(1+\text{Tan}[e+f\,x]^2\right)\right)$$

$$\Bigg(-\frac{1}{(b\,c-a\,d)\,\left(-b^2\,\text{Tan}[e+f\,x]^2+a^2\,\left(1+\text{Tan}[e+f\,x]^2\right)\right)^2}\,a^2\,b\,\text{Tan}[e+f\,x]\,\left(2\,a^2\,\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]-2\,b^2\,\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]\right)$$

$$\left(1+\text{Tan}[e+f\,x]^2\right)^{-p/2}\Bigg(-\Bigg(3\,a\,\text{AppellF1}\Big[\frac{1}{2},\,\frac{p}{2},\,1,\,\frac{3}{2},\,-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\Big]\Bigg)\Big/$$

$$\Bigg(-3\,a^2\,\text{AppellF1}\Big[\frac{1}{2},\,\frac{p}{2},\,1,\,\frac{3}{2},\,-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\Big]+\Bigg(2\,\left(a^2-b^2\right)\text{AppellF1}\Big[\frac{3}{2},\,\frac{p}{2},\,2,\,\frac{5}{2},\,-\text{Tan}[e+f\,x]^2,$$

$$\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\Big]+a^2\,p\,\text{AppellF1}\Big[\frac{3}{2},\,\frac{2+p}{2},\,1,\,\frac{5}{2},\,-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\Big]\Bigg)\text{Tan}[e+f\,x]^2\Bigg)+$$

$$\Bigg(2\,b\,\text{AppellF1}\Big[1,\,\frac{1+p}{2},\,1,\,2,\,-\text{Tan}[e+f\,x]^2,\,\frac{\left(-a^2+b^2\right)\text{Tan}[e+f\,x]^2}{a^2}\Big]\,\text{Tan}[e+f\,x]\Bigg)\Big/\Bigg(\sqrt{1+\text{Tan}[e+f\,x]^2}\,\Bigg(-4\,a^2\,\text{AppellF1}\Big[$$

$$1,\,\frac{1+p}{2},\,1,\,2,\,-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\Big]+\Bigg(2\,\left(a^2-b^2\right)\text{AppellF1}\Big[2,\,\frac{1+p}{2},\,2,\,3,\,-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)$$

$$\text{Tan}[e+f\,x]^2\Big]+a^2\,(1+p)\,\text{AppellF1}\Big[2,\,\frac{3+p}{2},\,1,\,3,\,-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\Big]\Bigg)\text{Tan}[e+f\,x]^2\Bigg)\Bigg)\Bigg)-$$

$$\frac{1}{(b\,c-a\,d)\,\left(-b^2\,\text{Tan}[e+f\,x]^2+a^2\,\left(1+\text{Tan}[e+f\,x]^2\right)\right)}\,a^2\,b\,p\,\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]^2\,\left(1+\text{Tan}[e+f\,x]^2\right)^{-1-\frac{p}{2}}$$

$$\Bigg(-\Bigg(3\,a\,\text{AppellF1}\Big[\frac{1}{2},\,\frac{p}{2},\,1,\,\frac{3}{2},\,-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\Big]\Bigg)\Big/$$

$$\left(-3\,a^2\,\text{AppellF1}\left[\frac{1}{2},\ \frac{p}{2},\ 1,\ \frac{3}{2},\ -\text{Tan}[e+f\,x]^2,\ \left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\right]+\left(2\left(a^2-b^2\right)\text{AppellF1}\left[\frac{3}{2},\ \frac{p}{2},\ 2,\ \frac{5}{2},\ -\text{Tan}[e+f\,x]^2,\right.\right.\right.$$

$$\left.\left.\left.\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\right]+a^2\,p\,\text{AppellF1}\left[\frac{3}{2},\ \frac{2+p}{2},\ 1,\ \frac{5}{2},\ -\text{Tan}[e+f\,x]^2,\ \left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\right]\right)\text{Tan}[e+f\,x]^2\right)+$$

$$\left(2\,b\,\text{AppellF1}\left[1,\ \frac{1+p}{2},\ 1,\ 2,\ -\text{Tan}[e+f\,x]^2,\ \frac{\left(-a^2+b^2\right)\text{Tan}[e+f\,x]^2}{a^2}\right]\text{Tan}[e+f\,x]\right)\Big/\left(\sqrt{1+\text{Tan}[e+f\,x]^2}\ \left(-4\,a^2\,\text{AppellF1}\left[\right.\right.\right.$$

$$1,\ \frac{1+p}{2},\ 1,\ 2,\ -\text{Tan}[e+f\,x]^2,\ \left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\Big]+\left(2\left(a^2-b^2\right)\text{AppellF1}\left[2,\ \frac{1+p}{2},\ 2,\ 3,\ -\text{Tan}[e+f\,x]^2,\ \left(-1+\frac{b^2}{a^2}\right)\right.\right.$$

$$\left.\left.\left.\left.\text{Tan}[e+f\,x]^2\right]+a^2\,(1+p)\,\text{AppellF1}\left[2,\ \frac{3+p}{2},\ 1,\ 3,\ -\text{Tan}[e+f\,x]^2,\ \left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\right]\right)\text{Tan}[e+f\,x]^2\right)\right)+$$

$$\frac{1}{(b\,c-a\,d)\left(-b^2\,\text{Tan}[e+f\,x]^2+a^2\left(1+\text{Tan}[e+f\,x]^2\right)\right)}\,a^2\,b\,\text{Sec}[e+f\,x]^2\left(1+\text{Tan}[e+f\,x]^2\right)^{-p/2}$$

$$\left(-\left(3\,a\,\text{AppellF1}\left[\frac{1}{2},\ \frac{p}{2},\ 1,\ \frac{3}{2},\ -\text{Tan}[e+f\,x]^2,\ \left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\right]\right)\Big/\right.$$

$$\left(-3\,a^2\,\text{AppellF1}\left[\frac{1}{2},\ \frac{p}{2},\ 1,\ \frac{3}{2},\ -\text{Tan}[e+f\,x]^2,\ \left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\right]+\left(2\left(a^2-b^2\right)\text{AppellF1}\left[\frac{3}{2},\ \frac{p}{2},\ 2,\ \frac{5}{2},\ -\text{Tan}[e+f\,x]^2,\right.\right.\right.$$

$$\left.\left.\left.\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\right]+a^2\,p\,\text{AppellF1}\left[\frac{3}{2},\ \frac{2+p}{2},\ 1,\ \frac{5}{2},\ -\text{Tan}[e+f\,x]^2,\ \left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\right]\right)\text{Tan}[e+f\,x]^2\right)+$$

$$\left(2\,b\,\text{AppellF1}\left[1,\ \frac{1+p}{2},\ 1,\ 2,\ -\text{Tan}[e+f\,x]^2,\ \frac{\left(-a^2+b^2\right)\text{Tan}[e+f\,x]^2}{a^2}\right]\text{Tan}[e+f\,x]\right)\Big/\left(\sqrt{1+\text{Tan}[e+f\,x]^2}\ \left(-4\,a^2\,\text{AppellF1}\left[\right.\right.\right.$$

$$1,\ \frac{1+p}{2},\ 1,\ 2,\ -\text{Tan}[e+f\,x]^2,\ \left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\Big]+\left(2\left(a^2-b^2\right)\text{AppellF1}\left[2,\ \frac{1+p}{2},\ 2,\ 3,\ -\text{Tan}[e+f\,x]^2,\ \left(-1+\frac{b^2}{a^2}\right)\right.\right.$$

$$\left.\left.\left.\left.\text{Tan}[e+f\,x]^2\right]+a^2\,(1+p)\,\text{AppellF1}\left[2,\ \frac{3+p}{2},\ 1,\ 3,\ -\text{Tan}[e+f\,x]^2,\ \left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\right]\right)\text{Tan}[e+f\,x]^2\right)\right)+$$

$$\frac{1}{(b\,c-a\,d)\left(-b^2\,\text{Tan}[e+f\,x]^2+a^2\left(1+\text{Tan}[e+f\,x]^2\right)\right)}\,a^2\,b\,\text{Tan}[e+f\,x]\left(1+\text{Tan}[e+f\,x]^2\right)^{-p/2}$$

$$\left(-\left(3\,a\left(-\frac{1}{3}\,p\,\text{AppellF1}\left[\frac{3}{2},\ 1+\frac{p}{2},\ 1,\ \frac{5}{2},\ -\text{Tan}[e+f\,x]^2,\ \left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\right]\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]+\right.\right.\right.$$

$$\left.\left.\frac{2}{3}\left(-1+\frac{b^2}{a^2}\right)\text{AppellF1}\left[\frac{3}{2},\ \frac{p}{2},\ 2,\ \frac{5}{2},\ -\text{Tan}[e+f\,x]^2,\ \left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\right]\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]\right)\right)\Big/$$

$$\left(-3\,a^2\,\text{AppellF1}\left[\frac{1}{2},\ \frac{p}{2},\ 1,\ \frac{3}{2},\ -\text{Tan}[e+f\,x]^2,\ \left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\right]+\left(2\left(a^2-b^2\right)\text{AppellF1}\left[\frac{3}{2},\ \frac{p}{2},\ 2,\ \frac{5}{2},\ -\text{Tan}[e+f\,x]^2,\right.\right.\right.$$

$$\left(-1+\frac{b^2}{a^2}\right)\mathrm{Tan}[e+f\,x]^2\Big]+a^2\,p\,\mathrm{AppellF1}\Big[\frac{3}{2},\frac{2+p}{2},1,\frac{5}{2},-\mathrm{Tan}[e+f\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\mathrm{Tan}[e+f\,x]^2\Big]\Big)\mathrm{Tan}[e+f\,x]^2\Big)-$$

$$\left(2\,b\,\mathrm{AppellF1}\Big[1,\frac{1+p}{2},1,2,-\mathrm{Tan}[e+f\,x]^2,\frac{\left(-a^2+b^2\right)\mathrm{Tan}[e+f\,x]^2}{a^2}\Big]\mathrm{Sec}[e+f\,x]^2\,\mathrm{Tan}[e+f\,x]^2\right)\Big/$$

$$\Big(\left(1+\mathrm{Tan}[e+f\,x]^2\right)^{3/2}\Big(-4\,a^2\,\mathrm{AppellF1}\Big[1,\frac{1+p}{2},1,2,-\mathrm{Tan}[e+f\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\mathrm{Tan}[e+f\,x]^2\Big]+$$

$$\Big(2\left(a^2-b^2\right)\mathrm{AppellF1}\Big[2,\frac{1+p}{2},2,3,-\mathrm{Tan}[e+f\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\mathrm{Tan}[e+f\,x]^2\Big]+$$

$$a^2\,(1+p)\,\mathrm{AppellF1}\Big[2,\frac{3+p}{2},1,3,-\mathrm{Tan}[e+f\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\mathrm{Tan}[e+f\,x]^2\Big]\Big)\mathrm{Tan}[e+f\,x]^2\Big)\Big)+$$

$$\left(2\,b\,\mathrm{AppellF1}\Big[1,\frac{1+p}{2},1,2,-\mathrm{Tan}[e+f\,x]^2,\frac{\left(-a^2+b^2\right)\mathrm{Tan}[e+f\,x]^2}{a^2}\Big]\mathrm{Sec}[e+f\,x]^2\right)\Big/$$

$$\Big(\sqrt{1+\mathrm{Tan}[e+f\,x]^2}\,\Big(-4\,a^2\,\mathrm{AppellF1}\Big[1,\frac{1+p}{2},1,2,-\mathrm{Tan}[e+f\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\mathrm{Tan}[e+f\,x]^2\Big]+$$

$$\Big(2\left(a^2-b^2\right)\mathrm{AppellF1}\Big[2,\frac{1+p}{2},2,3,-\mathrm{Tan}[e+f\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\mathrm{Tan}[e+f\,x]^2\Big]+$$

$$a^2\,(1+p)\,\mathrm{AppellF1}\Big[2,\frac{3+p}{2},1,3,-\mathrm{Tan}[e+f\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\mathrm{Tan}[e+f\,x]^2\Big]\Big)\mathrm{Tan}[e+f\,x]^2\Big)\Big)+$$

$$\Big(2\,b\,\mathrm{Tan}[e+f\,x]\,\Big(1\big/a^2\left(-a^2+b^2\right)\mathrm{AppellF1}\Big[2,\frac{1+p}{2},2,3,-\mathrm{Tan}[e+f\,x]^2,\frac{\left(-a^2+b^2\right)\mathrm{Tan}[e+f\,x]^2}{a^2}\Big]\mathrm{Sec}[e+f\,x]^2$$

$$\mathrm{Tan}[e+f\,x]-\frac{1}{2}\,(1+p)\,\mathrm{AppellF1}\Big[2,1+\frac{1+p}{2},1,3,-\mathrm{Tan}[e+f\,x]^2,\frac{\left(-a^2+b^2\right)\mathrm{Tan}[e+f\,x]^2}{a^2}\Big]\mathrm{Sec}[e+f\,x]^2\,\mathrm{Tan}[e+f\,x]\Big)\Big)\Big/$$

$$\Big(\sqrt{1+\mathrm{Tan}[e+f\,x]^2}\,\Big(-4\,a^2\,\mathrm{AppellF1}\Big[1,\frac{1+p}{2},1,2,-\mathrm{Tan}[e+f\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\mathrm{Tan}[e+f\,x]^2\Big]+$$

$$\Big(2\left(a^2-b^2\right)\mathrm{AppellF1}\Big[2,\frac{1+p}{2},2,3,-\mathrm{Tan}[e+f\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\mathrm{Tan}[e+f\,x]^2\Big]+$$

$$a^2\,(1+p)\,\mathrm{AppellF1}\Big[2,\frac{3+p}{2},1,3,-\mathrm{Tan}[e+f\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\mathrm{Tan}[e+f\,x]^2\Big]\Big)\mathrm{Tan}[e+f\,x]^2\Big)\Big)+$$

$$\Big(3\,a\,\mathrm{AppellF1}\Big[\frac{1}{2},\frac{p}{2},1,\frac{3}{2},-\mathrm{Tan}[e+f\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\mathrm{Tan}[e+f\,x]^2\Big]\Big(2\Big(2\left(a^2-b^2\right)\mathrm{AppellF1}\Big[\frac{3}{2},\frac{p}{2},2,\frac{5}{2},-\mathrm{Tan}[e+f\,x]^2,$$

$$\left(-1+\frac{b^2}{a^2}\right)\mathrm{Tan}[e+f\,x]^2\Big]+a^2\,p\,\mathrm{AppellF1}\Big[\frac{3}{2},\frac{2+p}{2},1,\frac{5}{2},-\mathrm{Tan}[e+f\,x]^2,\left(-1+\frac{b^2}{a^2}\right)\mathrm{Tan}[e+f\,x]^2\Big]\Big)\mathrm{Sec}[e+f\,x]^2$$

$$\text{Tan}[e+f x]-3 a^2 \left(-\frac{1}{3} p \,\text{AppellF1}\left[\frac{3}{2}, 1+\frac{p}{2}, 1, \frac{5}{2}, -\text{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\right] \text{Sec}[e+f x]^2 \text{Tan}[e+f x]+\right.$$

$$\left.\frac{2}{3} \left(-1+\frac{b^2}{a^2}\right) \text{AppellF1}\left[\frac{3}{2}, \frac{p}{2}, 2, \frac{5}{2}, -\text{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\right] \text{Sec}[e+f x]^2 \text{Tan}[e+f x]\right)+\text{Tan}[e+f x]^2$$

$$\left(2 \left(a^2-b^2\right) \left(-\frac{3}{5} p \,\text{AppellF1}\left[\frac{5}{2}, 1+\frac{p}{2}, 2, \frac{7}{2}, -\text{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\right] \text{Sec}[e+f x]^2 \text{Tan}[e+f x]+\right.\right.$$

$$\left.\frac{12}{5} \left(-1+\frac{b^2}{a^2}\right) \text{AppellF1}\left[\frac{5}{2}, \frac{p}{2}, 3, \frac{7}{2}, -\text{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\right] \text{Sec}[e+f x]^2 \text{Tan}[e+f x]\right)+$$

$$a^2 p \left(\frac{6}{5} \left(-1+\frac{b^2}{a^2}\right) \text{AppellF1}\left[\frac{5}{2}, \frac{2+p}{2}, 2, \frac{7}{2}, -\text{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\right] \text{Sec}[e+f x]^2 \text{Tan}[e+f x]-\right.$$

$$\left.\left.\left.\left.\frac{3}{5} (2+p) \,\text{AppellF1}\left[\frac{5}{2}, 1+\frac{2+p}{2}, 1, \frac{7}{2}, -\text{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\right] \text{Sec}[e+f x]^2 \text{Tan}[e+f x]\right)\right)\right)\right) \Big/$$

$$\left(-3 a^2 \,\text{AppellF1}\left[\frac{1}{2}, \frac{p}{2}, 1, \frac{3}{2}, -\text{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\right]+\left(2 \left(a^2-b^2\right) \text{AppellF1}\left[\frac{3}{2}, \frac{p}{2}, 2, \frac{5}{2}, -\text{Tan}[e+f x]^2,\right.\right.\right.$$

$$\left.\left.\left.\left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\right]+a^2 p \,\text{AppellF1}\left[\frac{3}{2}, \frac{2+p}{2}, 1, \frac{5}{2}, -\text{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\right]\right) \text{Tan}[e+f x]^2\right)^2-$$

$$\left(2 b \,\text{AppellF1}\left[1, \frac{1+p}{2}, 1, 2, -\text{Tan}[e+f x]^2, \frac{\left(-a^2+b^2\right) \text{Tan}[e+f x]^2}{a^2}\right] \text{Tan}[e+f x] \left(2 \left(2 \left(a^2-b^2\right) \text{AppellF1}\left[2, \frac{1+p}{2}, 2, 3,\right.\right.\right.\right.$$

$$\left.\left.-\text{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\right]+a^2 (1+p) \,\text{AppellF1}\left[2, \frac{3+p}{2}, 1, 3, -\text{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\right]\right)$$

$$\text{Sec}[e+f x]^2 \text{Tan}[e+f x]-4 a^2 \left(\left(\left(-1+\frac{b^2}{a^2}\right) \text{AppellF1}\left[2, \frac{1+p}{2}, 2, 3, -\text{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\right] \text{Sec}[e+f x]^2\right.\right.$$

$$\left.\text{Tan}[e+f x]-\frac{1}{2} (1+p) \,\text{AppellF1}\left[2, 1+\frac{1+p}{2}, 1, 3, -\text{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\right] \text{Sec}[e+f x]^2 \text{Tan}[e+f x]\right)+$$

$$\text{Tan}[e+f x]^2 \left(2 \left(a^2-b^2\right) \left(\frac{8}{3} \left(-1+\frac{b^2}{a^2}\right) \text{AppellF1}\left[3, \frac{1+p}{2}, 3, 4, -\text{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\right] \text{Sec}[e+f x]^2 \text{Tan}[\right.\right.$$

$$\left.e+f x]-\frac{2}{3} (1+p) \,\text{AppellF1}\left[3, 1+\frac{1+p}{2}, 2, 4, -\text{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\right] \text{Sec}[e+f x]^2 \text{Tan}[e+f x]\right)+$$

$$a^2 (1+p) \left(\frac{4}{3} \left(-1+\frac{b^2}{a^2}\right) \text{AppellF1}\left[3, \frac{3+p}{2}, 2, 4, -\text{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\right] \text{Sec}[e+f x]^2 \text{Tan}[e+f x]-\right.$$

$$\left.\left.\left.\left.\left.\frac{2}{3} (3+p) \,\text{AppellF1}\left[3, 1+\frac{3+p}{2}, 1, 4, -\text{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\right] \text{Sec}[e+f x]^2 \text{Tan}[e+f x]\right)\right)\right)\right)\right) \Big/$$

$$\left(\sqrt{1+\text{Tan}[e+f x]^2} \left(-4 a^2 \,\text{AppellF1}\left[1, \frac{1+p}{2}, 1, 2, -\text{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \text{Tan}[e+f x]^2\right]+\right.\right.$$

$$\left(2\left(a^2-b^2\right)\text{AppellF1}\left[2,\frac{1+p}{2},2,3,-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+\right.$$

$$\left.\left.\left.\left.\left.\left.a^2(1+p)\,\text{AppellF1}\left[2,\frac{3+p}{2},1,3,-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]\right)\text{Tan}[e+f x]^2\right)^2\right)\right)\right)\right)\right)-$$

$$\left(c^2 d^2 (g\,\text{Cos}[e+f x])^p\,\text{Tan}[e+f x]\left(1+\text{Tan}[e+f x]^2\right)^{-p/2}\left(-\left(3 c\,\text{AppellF1}\left[\frac{1}{2},\frac{p}{2},1,\frac{3}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{d^2}{c^2}\right)\text{Tan}[e+f x]^2\right]\right)\right/\right.$$

$$\left(-3 c^2\,\text{AppellF1}\left[\frac{1}{2},\frac{p}{2},1,\frac{3}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{d^2}{c^2}\right)\text{Tan}[e+f x]^2\right]+\right.$$

$$\left(2\left(c^2-d^2\right)\text{AppellF1}\left[\frac{3}{2},\frac{p}{2},2,\frac{5}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{d^2}{c^2}\right)\text{Tan}[e+f x]^2\right]+\right.$$

$$\left.\left.c^2 p\,\text{AppellF1}\left[\frac{3}{2},\frac{2+p}{2},1,\frac{5}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{d^2}{c^2}\right)\text{Tan}[e+f x]^2\right]\right)\text{Tan}[e+f x]^2\right)+$$

$$\left(2 d\,\text{AppellF1}\left[1,\frac{1+p}{2},1,2,-\text{Tan}[e+f x]^2,\frac{\left(-c^2+d^2\right)\text{Tan}[e+f x]^2}{c^2}\right]\text{Tan}[e+f x]\right)\Big/$$

$$\left(\sqrt{1+\text{Tan}[e+f x]^2}\right.$$

$$\left(-4 c^2\,\text{AppellF1}\left[1,\frac{1+p}{2},1,2,-\text{Tan}[e+f x]^2,\left(-1+\frac{d^2}{c^2}\right)\text{Tan}[e+f x]^2\right]+\right.$$

$$\left(2\left(c^2-d^2\right)\text{AppellF1}\left[2,\frac{1+p}{2},2,3,-\text{Tan}[e+f x]^2,\left(-1+\frac{d^2}{c^2}\right)\text{Tan}[e+f x]^2\right]+\right.$$

$$\left.\left.\left.\left.\left.c^2(1+p)\,\text{AppellF1}\left[2,\frac{3+p}{2},1,3,-\text{Tan}[e+f x]^2,\left(-1+\frac{d^2}{c^2}\right)\text{Tan}[e+f x]^2\right]\right)\text{Tan}[e+f x]^2\right)\right)\right)\right)\Big/$$

$$\left((b c-a d)(-b c+a d) f (c+d\,\text{Sin}[e+f x])\left(-d^2\,\text{Tan}[e+f x]^2+c^2\left(1+\text{Tan}[e+f x]^2\right)\right)\right.$$

$$\left(-\frac{1}{(-b c+a d)\left(-d^2\,\text{Tan}[e+f x]^2+c^2\left(1+\text{Tan}[e+f x]^2\right)\right)^2}\right.$$

$$c^2 d\,\text{Tan}[e+f x]$$

$$\left(2 c^2\,\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]-2 d^2\,\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]\right)$$

$$\left(1+\text{Tan}[e+f x]^2\right)^{-p/2}$$

$$\left(-\left(3 c\,\text{AppellF1}\left[\frac{1}{2},\frac{p}{2},1,\frac{3}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{d^2}{c^2}\right)\text{Tan}[e+f x]^2\right]\right)\right/$$

$$\left(-3 c^2\,\text{AppellF1}\left[\frac{1}{2},\frac{p}{2},1,\frac{3}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{d^2}{c^2}\right)\text{Tan}[e+f x]^2\right]+\left(2\left(c^2-d^2\right)\text{AppellF1}\left[\frac{3}{2},\frac{p}{2},2,\frac{5}{2},-\text{Tan}[e+f x]^2,\right.\right.\right.$$

$$\left(-1+\frac{d^2}{c^2}\right)\text{Tan}[e+f x]^2\Big]+c^2\,p\,\text{AppellF1}\Big[\frac{3}{2},\frac{2+p}{2},1,\frac{5}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{d^2}{c^2}\right)\text{Tan}[e+f x]^2\Big]\Big)\text{Tan}[e+f x]^2\Big)+$$

$$\left(2\,d\,\text{AppellF1}\Big[1,\frac{1+p}{2},1,2,-\text{Tan}[e+f x]^2,\frac{\left(-c^2+d^2\right)\text{Tan}[e+f x]^2}{c^2}\Big]\text{Tan}[e+f x]\right)\Big/\left(\sqrt{1+\text{Tan}[e+f x]^2}\right.$$

$$\left(-4\,c^2\,\text{AppellF1}\Big[1,\frac{1+p}{2},1,2,-\text{Tan}[e+f x]^2,\left(-1+\frac{d^2}{c^2}\right)\text{Tan}[e+f x]^2\Big]+\left(2\left(c^2-d^2\right)\text{AppellF1}\Big[2,\frac{1+p}{2},2,3,-\text{Tan}[e+f x]^2,\right.\right.$$

$$\left(-1+\frac{d^2}{c^2}\right)\text{Tan}[e+f x]^2\Big]+c^2\,(1+p)\,\text{AppellF1}\Big[2,\frac{3+p}{2},1,3,-\text{Tan}[e+f x]^2,\left(-1+\frac{d^2}{c^2}\right)\text{Tan}[e+f x]^2\Big]\Big)\text{Tan}[e+f x]^2\Big)\Big)\Big)-$$

$$\frac{1}{(-b\,c+a\,d)\left(-d^2\,\text{Tan}[e+f x]^2+c^2\left(1+\text{Tan}[e+f x]^2\right)\right)}c^2\,d\,p\,\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]^2\left(1+\text{Tan}[e+f x]^2\right)^{-1-\frac{p}{2}}$$

$$\left(-\left(3\,c\,\text{AppellF1}\Big[\frac{1}{2},\frac{p}{2},1,\frac{3}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{d^2}{c^2}\right)\text{Tan}[e+f x]^2\Big]\right)\Big/\right.$$

$$\left(-3\,c^2\,\text{AppellF1}\Big[\frac{1}{2},\frac{p}{2},1,\frac{3}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{d^2}{c^2}\right)\text{Tan}[e+f x]^2\Big]+\left(2\left(c^2-d^2\right)\text{AppellF1}\Big[\frac{3}{2},\frac{p}{2},2,\frac{5}{2},-\text{Tan}[e+f x]^2,\right.\right.$$

$$\left(-1+\frac{d^2}{c^2}\right)\text{Tan}[e+f x]^2\Big]+c^2\,p\,\text{AppellF1}\Big[\frac{3}{2},\frac{2+p}{2},1,\frac{5}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{d^2}{c^2}\right)\text{Tan}[e+f x]^2\Big]\Big)\text{Tan}[e+f x]^2\Big)+$$

$$\left(2\,d\,\text{AppellF1}\Big[1,\frac{1+p}{2},1,2,-\text{Tan}[e+f x]^2,\frac{\left(-c^2+d^2\right)\text{Tan}[e+f x]^2}{c^2}\Big]\text{Tan}[e+f x]\right)\Big/\left(\sqrt{1+\text{Tan}[e+f x]^2}\right.$$

$$\left(-4\,c^2\,\text{AppellF1}\Big[1,\frac{1+p}{2},1,2,-\text{Tan}[e+f x]^2,\left(-1+\frac{d^2}{c^2}\right)\text{Tan}[e+f x]^2\Big]+\left(2\left(c^2-d^2\right)\text{AppellF1}\Big[2,\frac{1+p}{2},2,3,-\text{Tan}[e+f x]^2,\right.\right.$$

$$\left(-1+\frac{d^2}{c^2}\right)\text{Tan}[e+f x]^2\Big]+c^2\,(1+p)\,\text{AppellF1}\Big[2,\frac{3+p}{2},1,3,-\text{Tan}[e+f x]^2,\left(-1+\frac{d^2}{c^2}\right)\text{Tan}[e+f x]^2\Big]\Big)\text{Tan}[e+f x]^2\Big)\Big)\Big)+$$

$$\frac{1}{(-b\,c+a\,d)\left(-d^2\,\text{Tan}[e+f x]^2+c^2\left(1+\text{Tan}[e+f x]^2\right)\right)}c^2\,d\,\text{Sec}[e+f x]^2\left(1+\text{Tan}[e+f x]^2\right)^{-p/2}$$

$$\left(-\left(3\,c\,\text{AppellF1}\Big[\frac{1}{2},\frac{p}{2},1,\frac{3}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{d^2}{c^2}\right)\text{Tan}[e+f x]^2\Big]\right)\Big/\right.$$

$$\left(-3\,c^2\,\text{AppellF1}\Big[\frac{1}{2},\frac{p}{2},1,\frac{3}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{d^2}{c^2}\right)\text{Tan}[e+f x]^2\Big]+\left(2\left(c^2-d^2\right)\text{AppellF1}\Big[\frac{3}{2},\frac{p}{2},2,\frac{5}{2},-\text{Tan}[e+f x]^2,\right.\right.$$

$$\left(-1+\frac{d^2}{c^2}\right)\text{Tan}[e+f x]^2\Big]+c^2\,p\,\text{AppellF1}\Big[\frac{3}{2},\frac{2+p}{2},1,\frac{5}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{d^2}{c^2}\right)\text{Tan}[e+f x]^2\Big]\Big)\text{Tan}[e+f x]^2\Big)+$$

$$\left(2\,d\,\text{AppellF1}\Big[1,\frac{1+p}{2},1,2,-\text{Tan}[e+f x]^2,\frac{\left(-c^2+d^2\right)\text{Tan}[e+f x]^2}{c^2}\Big]\text{Tan}[e+f x]\right)\Big/\left(\sqrt{1+\text{Tan}[e+f x]^2}\right.$$

$$\Bigg(-4\,c^2\,\text{AppellF1}\Big[1,\ \frac{1+p}{2},\ 1,\ 2,\ -\text{Tan}[e+f\,x]^2,\ \Big(-1+\frac{d^2}{c^2}\Big)\,\text{Tan}[e+f\,x]^2\Big]+\Big(2\,\big(c^2-d^2\big)\,\text{AppellF1}\Big[2,\ \frac{1+p}{2},\ 2,\ 3,\ -\text{Tan}[e+f\,x]^2,$$

$$\Big(-1+\frac{d^2}{c^2}\Big)\,\text{Tan}[e+f\,x]^2\Big]+c^2\,(1+p)\,\text{AppellF1}\Big[2,\ \frac{3+p}{2},\ 1,\ 3,\ -\text{Tan}[e+f\,x]^2,\ \Big(-1+\frac{d^2}{c^2}\Big)\,\text{Tan}[e+f\,x]^2\Big]\Big)\,\text{Tan}[e+f\,x]^2\Bigg)\Bigg)\Bigg)+$$

$$\frac{1}{(-b\,c+a\,d)\,\big(-d^2\,\text{Tan}[e+f\,x]^2+c^2\,\big(1+\text{Tan}[e+f\,x]^2\big)\big)}\,c^2\,d\,\text{Tan}[e+f\,x]\,\big(1+\text{Tan}[e+f\,x]^2\big)^{-p/2}$$

$$\Bigg(-\Bigg(3\,c\,\Bigg(-\frac{1}{3}\,p\,\text{AppellF1}\Big[\frac{3}{2},\ 1+\frac{p}{2},\ 1,\ \frac{5}{2},\ -\text{Tan}[e+f\,x]^2,\ \Big(-1+\frac{d^2}{c^2}\Big)\,\text{Tan}[e+f\,x]^2\Big]\,\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]+$$

$$\frac{2}{3}\,\Big(-1+\frac{d^2}{c^2}\Big)\,\text{AppellF1}\Big[\frac{3}{2},\ \frac{p}{2},\ 2,\ \frac{5}{2},\ -\text{Tan}[e+f\,x]^2,\ \Big(-1+\frac{d^2}{c^2}\Big)\,\text{Tan}[e+f\,x]^2\Big]\,\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]\Bigg)\Bigg)\Bigg/$$

$$\Bigg(-3\,c^2\,\text{AppellF1}\Big[\frac{1}{2},\ \frac{p}{2},\ 1,\ \frac{3}{2},\ -\text{Tan}[e+f\,x]^2,\ \Big(-1+\frac{d^2}{c^2}\Big)\,\text{Tan}[e+f\,x]^2\Big]+\Big(2\,\big(c^2-d^2\big)\,\text{AppellF1}\Big[\frac{3}{2},\ \frac{p}{2},\ 2,\ \frac{5}{2},\ -\text{Tan}[e+f\,x]^2,$$

$$\Big(-1+\frac{d^2}{c^2}\Big)\,\text{Tan}[e+f\,x]^2\Big]+c^2\,p\,\text{AppellF1}\Big[\frac{3}{2},\ \frac{2+p}{2},\ 1,\ \frac{5}{2},\ -\text{Tan}[e+f\,x]^2,\ \Big(-1+\frac{d^2}{c^2}\Big)\,\text{Tan}[e+f\,x]^2\Big]\Big)\,\text{Tan}[e+f\,x]^2\Bigg)-$$

$$\Bigg(2\,d\,\text{AppellF1}\Big[1,\ \frac{1+p}{2},\ 1,\ 2,\ -\text{Tan}[e+f\,x]^2,\ \frac{\big(-c^2+d^2\big)\,\text{Tan}[e+f\,x]^2}{c^2}\Big]\,\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]^2\Bigg)\Bigg/$$

$$\Bigg(\big(1+\text{Tan}[e+f\,x]^2\big)^{3/2}\,\Bigg(-4\,c^2\,\text{AppellF1}\Big[1,\ \frac{1+p}{2},\ 1,\ 2,\ -\text{Tan}[e+f\,x]^2,\ \Big(-1+\frac{d^2}{c^2}\Big)\,\text{Tan}[e+f\,x]^2\Big]+$$

$$\Big(2\,\big(c^2-d^2\big)\,\text{AppellF1}\Big[2,\ \frac{1+p}{2},\ 2,\ 3,\ -\text{Tan}[e+f\,x]^2,\ \Big(-1+\frac{d^2}{c^2}\Big)\,\text{Tan}[e+f\,x]^2\Big]+$$

$$c^2\,(1+p)\,\text{AppellF1}\Big[2,\ \frac{3+p}{2},\ 1,\ 3,\ -\text{Tan}[e+f\,x]^2,\ \Big(-1+\frac{d^2}{c^2}\Big)\,\text{Tan}[e+f\,x]^2\Big]\Big)\,\text{Tan}[e+f\,x]^2\Bigg)\Bigg)+$$

$$\Bigg(2\,d\,\text{AppellF1}\Big[1,\ \frac{1+p}{2},\ 1,\ 2,\ -\text{Tan}[e+f\,x]^2,\ \frac{\big(-c^2+d^2\big)\,\text{Tan}[e+f\,x]^2}{c^2}\Big]\,\text{Sec}[e+f\,x]^2\Bigg)\Bigg/\Bigg(\sqrt{1+\text{Tan}[e+f\,x]^2}$$

$$\Bigg(-4\,c^2\,\text{AppellF1}\Big[1,\ \frac{1+p}{2},\ 1,\ 2,\ -\text{Tan}[e+f\,x]^2,\ \Big(-1+\frac{d^2}{c^2}\Big)\,\text{Tan}[e+f\,x]^2\Big]+\Big(2\,\big(c^2-d^2\big)\,\text{AppellF1}\Big[2,\ \frac{1+p}{2},\ 2,\ 3,\ -\text{Tan}[e+f\,x]^2,$$

$$\Big(-1+\frac{d^2}{c^2}\Big)\,\text{Tan}[e+f\,x]^2\Big]+c^2\,(1+p)\,\text{AppellF1}\Big[2,\ \frac{3+p}{2},\ 1,\ 3,\ -\text{Tan}[e+f\,x]^2,\ \Big(-1+\frac{d^2}{c^2}\Big)\,\text{Tan}[e+f\,x]^2\Big]\Big)\,\text{Tan}[e+f\,x]^2\Bigg)\Bigg)+$$

$$\Bigg(2\,d\,\text{Tan}[e+f\,x]\,\Bigg(1/c^2\,\big(-c^2+d^2\big)\,\text{AppellF1}\Big[2,\ \frac{1+p}{2},\ 2,\ 3,\ -\text{Tan}[e+f\,x]^2,\ \frac{\big(-c^2+d^2\big)\,\text{Tan}[e+f\,x]^2}{c^2}\Big]\,\text{Sec}[e+f\,x]^2$$

$$\text{Tan}[e+f\,x]-\frac{1}{2}\,(1+p)\,\text{AppellF1}\Big[2,\ 1+\frac{1+p}{2},\ 1,\ 3,\ -\text{Tan}[e+f\,x]^2,\ \frac{\big(-c^2+d^2\big)\,\text{Tan}[e+f\,x]^2}{c^2}\Big]\,\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]\Bigg)\Bigg)\Bigg/$$

$$\left(\sqrt{1+\text{Tan}[e+f x]^2}\ \left(-4 c^2 \text{AppellF1}\left[1,\frac{1+p}{2},1,2,-\text{Tan}[e+f x]^2,\left(-1+\frac{d^2}{c^2}\right)\text{Tan}[e+f x]^2\right]+\right.\right.$$

$$\left(2\left(c^2-d^2\right)\text{AppellF1}\left[2,\frac{1+p}{2},2,3,-\text{Tan}[e+f x]^2,\left(-1+\frac{d^2}{c^2}\right)\text{Tan}[e+f x]^2\right]+\right.$$

$$\left.\left.c^2(1+p)\text{AppellF1}\left[2,\frac{3+p}{2},1,3,-\text{Tan}[e+f x]^2,\left(-1+\frac{d^2}{c^2}\right)\text{Tan}[e+f x]^2\right]\right)\text{Tan}[e+f x]^2\right)\right)+$$

$$\left(3 c\,\text{AppellF1}\left[\frac{1}{2},\frac{p}{2},1,\frac{3}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{d^2}{c^2}\right)\text{Tan}[e+f x]^2\right]\left(2\left(2\left(c^2-d^2\right)\text{AppellF1}\left[\frac{3}{2},\frac{p}{2},2,\frac{5}{2},-\text{Tan}[e+f x]^2,\right.\right.\right.\right.$$

$$\left.\left.\left(-1+\frac{d^2}{c^2}\right)\text{Tan}[e+f x]^2\right]+c^2 p\,\text{AppellF1}\left[\frac{3}{2},\frac{2+p}{2},1,\frac{5}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{d^2}{c^2}\right)\text{Tan}[e+f x]^2\right]\right)\text{Sec}[e+f x]^2$$

$$\text{Tan}[e+f x]-3 c^2\left(-\frac{1}{3}p\,\text{AppellF1}\left[\frac{3}{2},1+\frac{p}{2},1,\frac{5}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{d^2}{c^2}\right)\text{Tan}[e+f x]^2\right]\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]+\right.$$

$$\left.\frac{2}{3}\left(-1+\frac{d^2}{c^2}\right)\text{AppellF1}\left[\frac{3}{2},\frac{p}{2},2,\frac{5}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{d^2}{c^2}\right)\text{Tan}[e+f x]^2\right]\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]\right)+\text{Tan}[e+f x]^2$$

$$\left(2\left(c^2-d^2\right)\left(-\frac{3}{5}p\,\text{AppellF1}\left[\frac{5}{2},1+\frac{p}{2},2,\frac{7}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{d^2}{c^2}\right)\text{Tan}[e+f x]^2\right]\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]+\right.\right.$$

$$\left.\frac{12}{5}\left(-1+\frac{d^2}{c^2}\right)\text{AppellF1}\left[\frac{5}{2},\frac{p}{2},3,\frac{7}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{d^2}{c^2}\right)\text{Tan}[e+f x]^2\right]\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]\right)+$$

$$c^2 p\left(\frac{6}{5}\left(-1+\frac{d^2}{c^2}\right)\text{AppellF1}\left[\frac{5}{2},\frac{2+p}{2},2,\frac{7}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{d^2}{c^2}\right)\text{Tan}[e+f x]^2\right]\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]-\right.$$

$$\left.\left.\left.\left.\frac{3}{5}(2+p)\text{AppellF1}\left[\frac{5}{2},1+\frac{2+p}{2},1,\frac{7}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{d^2}{c^2}\right)\text{Tan}[e+f x]^2\right]\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]\right)\right)\right)\right)\Big/$$

$$\left(-3 c^2\text{AppellF1}\left[\frac{1}{2},\frac{p}{2},1,\frac{3}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{d^2}{c^2}\right)\text{Tan}[e+f x]^2\right]+\left(2\left(c^2-d^2\right)\text{AppellF1}\left[\frac{3}{2},\frac{p}{2},2,\frac{5}{2},-\text{Tan}[e+f x]^2,\right.\right.\right.$$

$$\left.\left.\left.\left(-1+\frac{d^2}{c^2}\right)\text{Tan}[e+f x]^2\right]+c^2 p\,\text{AppellF1}\left[\frac{3}{2},\frac{2+p}{2},1,\frac{5}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{d^2}{c^2}\right)\text{Tan}[e+f x]^2\right]\right)\text{Tan}[e+f x]^2\right)^2-$$

$$\left(2 d\,\text{AppellF1}\left[1,\frac{1+p}{2},1,2,-\text{Tan}[e+f x]^2,\frac{\left(-c^2+d^2\right)\text{Tan}[e+f x]^2}{c^2}\right]\text{Tan}[e+f x]\left(2\left(2\left(c^2-d^2\right)\text{AppellF1}\left[2,\frac{1+p}{2},2,\right.\right.\right.\right.$$

$$\left.\left.3,-\text{Tan}[e+f x]^2,\left(-1+\frac{d^2}{c^2}\right)\text{Tan}[e+f x]^2\right]+c^2(1+p)\text{AppellF1}\left[2,\frac{3+p}{2},1,3,-\text{Tan}[e+f x]^2,\left(-1+\frac{d^2}{c^2}\right)\text{Tan}[e+f x]^2\right]\right)$$

$$\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]-4 c^2\left(\left(\left(-1+\frac{d^2}{c^2}\right)\text{AppellF1}\left[2,\frac{1+p}{2},2,3,-\text{Tan}[e+f x]^2,\left(-1+\frac{d^2}{c^2}\right)\text{Tan}[e+f x]^2\right]\text{Sec}[e+f x]^2\right.\right.$$

$$\left.\text{Tan}[e+f x]-\frac{1}{2}(1+p)\text{AppellF1}\left[2,1+\frac{1+p}{2},1,3,-\text{Tan}[e+f x]^2,\left(-1+\frac{d^2}{c^2}\right)\text{Tan}[e+f x]^2\right]\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]\right)+$$

$$\text{Tan}[e+f x]^2 \left(2 \left(c^2-d^2\right) \left(\frac{8}{3} \left(-1+\frac{d^2}{c^2}\right) \text{AppellF1}\left[3, \frac{1+p}{2}, 3, 4, -\text{Tan}[e+f x]^2, \left(-1+\frac{d^2}{c^2}\right) \text{Tan}[e+f x]^2\right] \text{Sec}[e+f x]^2 \text{Tan}[\right.\right.$$

$$\left.e+f x]-\frac{2}{3} (1+p) \text{AppellF1}\left[3, 1+\frac{1+p}{2}, 2, 4, -\text{Tan}[e+f x]^2, \left(-1+\frac{d^2}{c^2}\right) \text{Tan}[e+f x]^2\right] \text{Sec}[e+f x]^2 \text{Tan}[e+f x]\right)+$$

$$c^2 (1+p) \left(\frac{4}{3} \left(-1+\frac{d^2}{c^2}\right) \text{AppellF1}\left[3, \frac{3+p}{2}, 2, 4, -\text{Tan}[e+f x]^2, \left(-1+\frac{d^2}{c^2}\right) \text{Tan}[e+f x]^2\right] \text{Sec}[e+f x]^2 \text{Tan}[e+f x]-\right.$$

$$\left.\left.\left.\left.\frac{2}{3} (3+p) \text{AppellF1}\left[3, 1+\frac{3+p}{2}, 1, 4, -\text{Tan}[e+f x]^2, \left(-1+\frac{d^2}{c^2}\right) \text{Tan}[e+f x]^2\right] \text{Sec}[e+f x]^2 \text{Tan}[e+f x]\right)\right)\right)\right) \Big/$$

$$\left(\sqrt{1+\text{Tan}[e+f x]^2} \left(-4 c^2 \text{AppellF1}\left[1, \frac{1+p}{2}, 1, 2, -\text{Tan}[e+f x]^2, \left(-1+\frac{d^2}{c^2}\right) \text{Tan}[e+f x]^2\right]+\right.\right.$$

$$\left(2 \left(c^2-d^2\right) \text{AppellF1}\left[2, \frac{1+p}{2}, 2, 3, -\text{Tan}[e+f x]^2, \left(-1+\frac{d^2}{c^2}\right) \text{Tan}[e+f x]^2\right]+\right.$$

$$\left.\left.\left.\left.\left.c^2 (1+p) \text{AppellF1}\left[2, \frac{3+p}{2}, 1, 3, -\text{Tan}[e+f x]^2, \left(-1+\frac{d^2}{c^2}\right) \text{Tan}[e+f x]^2\right]\right) \text{Tan}[e+f x]^2\right)^2\right)\right)\right)\right)$$

- **Problem 1562: Result more than twice size of optimal antiderivative.**

$$\int \frac{(g \text{Cos}[e+f x])^p}{(a+b \text{Sin}[e+f x]) (c+d \text{Sin}[e+f x])^2} \, dx$$

Optimal (type 6, 508 leaves, 5 steps) :

$$-\frac{1}{(b c-a d)^2 f (1-p)} b g \text{AppellF1}\left[1-p, \frac{1-p}{2}, \frac{1-p}{2}, 2-p, \frac{a+b}{a+b \text{Sin}[e+f x]}, \frac{a-b}{a+b \text{Sin}[e+f x]}\right]$$

$$(g \text{Cos}[e+f x])^{-1+p} \left(-\frac{b (1-\text{Sin}[e+f x])}{a+b \text{Sin}[e+f x]}\right)^{\frac{1-p}{2}} \left(\frac{b (1+\text{Sin}[e+f x])}{a+b \text{Sin}[e+f x]}\right)^{\frac{1-p}{2}}+\frac{1}{(b c-a d)^2 f (1-p)}$$

$$b g \text{AppellF1}\left[1-p, \frac{1-p}{2}, \frac{1-p}{2}, 2-p, \frac{c+d}{c+d \text{Sin}[e+f x]}, \frac{c-d}{c+d \text{Sin}[e+f x]}\right] (g \text{Cos}[e+f x])^{-1+p} \left(-\frac{d (1-\text{Sin}[e+f x])}{c+d \text{Sin}[e+f x]}\right)^{\frac{1-p}{2}}$$

$$\left(\frac{d (1+\text{Sin}[e+f x])}{c+d \text{Sin}[e+f x]}\right)^{\frac{1-p}{2}}+\left(g \text{AppellF1}\left[2-p, \frac{1-p}{2}, \frac{1-p}{2}, 3-p, \frac{c+d}{c+d \text{Sin}[e+f x]}, \frac{c-d}{c+d \text{Sin}[e+f x]}\right]\right.$$

$$\left.(g \text{Cos}[e+f x])^{-1+p} \left(-\frac{d (1-\text{Sin}[e+f x])}{c+d \text{Sin}[e+f x]}\right)^{\frac{1-p}{2}} \left(\frac{d (1+\text{Sin}[e+f x])}{c+d \text{Sin}[e+f x]}\right)^{\frac{1-p}{2}}\right) \Big/ ((b c-a d) f (2-p) (c+d \text{Sin}[e+f x]))$$

Result (type 6, 23 548 leaves) : Display of huge result suppressed !

Problem 1563: Result more than twice size of optimal antiderivative.

$$\int \frac{(g \operatorname{Sec}[e+f x])^p}{(a+b \operatorname{Sin}[e+f x]) (c+d \operatorname{Sin}[e+f x])} \, dx$$

Optimal (type 6, 308 leaves, 5 steps):

$$-\frac{1}{(b c-a d) f (1+p)} \operatorname{AppellF1}\left[1+p, \frac{1+p}{2}, \frac{1+p}{2}, 2+p, \frac{a+b}{a+b \operatorname{Sin}[e+f x]}, \frac{a-b}{a+b \operatorname{Sin}[e+f x]}\right] \operatorname{Sec}[e+f x] (g \operatorname{Sec}[e+f x])^p \left(-\frac{b (1-\operatorname{Sin}[e+f x])}{a+b \operatorname{Sin}[e+f x]}\right)^{\frac{1+p}{2}} \left(\frac{b (1+\operatorname{Sin}[e+f x])}{a+b \operatorname{Sin}[e+f x]}\right)^{\frac{1+p}{2}} + \frac{1}{(b c-a d) f (1+p)} \operatorname{AppellF1}\left[1+p, \frac{1+p}{2}, \frac{1+p}{2}, 2+p, \frac{c+d}{c+d \operatorname{Sin}[e+f x]}, \frac{c-d}{c+d \operatorname{Sin}[e+f x]}\right] \operatorname{Sec}[e+f x] (g \operatorname{Sec}[e+f x])^p \left(-\frac{d (1-\operatorname{Sin}[e+f x])}{c+d \operatorname{Sin}[e+f x]}\right)^{\frac{1+p}{2}} \left(\frac{d (1+\operatorname{Sin}[e+f x])}{c+d \operatorname{Sin}[e+f x]}\right)^{\frac{1+p}{2}}$$

Result (type 6, 9549 leaves):

$$-\left(\left(a^2 b^2 (g \operatorname{Sec}[e+f x])^p \operatorname{Tan}[e+f x] \left(1+\operatorname{Tan}[e+f x]^2\right)^{p/2} \left(\left(3 a \operatorname{AppellF1}\left[\frac{1}{2}, -\frac{p}{2}, 1, \frac{3}{2}, -\operatorname{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \operatorname{Tan}[e+f x]^2\right]\right) \Big/ \left(3 a^2 \operatorname{AppellF1}\left[\frac{1}{2}, -\frac{p}{2}, 1, \frac{3}{2}, -\operatorname{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \operatorname{Tan}[e+f x]^2\right] + \left(a^2 p \operatorname{AppellF1}\left[\frac{3}{2}, 1-\frac{p}{2}, 1, \frac{5}{2}, -\operatorname{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \operatorname{Tan}[e+f x]^2\right] + 2 \left(-a^2+b^2\right) \operatorname{AppellF1}\left[\frac{3}{2}, -\frac{p}{2}, 2, \frac{5}{2}, -\operatorname{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \operatorname{Tan}[e+f x]^2\right]\right) \operatorname{Tan}[e+f x]^2\right) + \left(2 b \operatorname{AppellF1}\left[1, \frac{1-p}{2}, 1, 2, -\operatorname{Tan}[e+f x]^2, \frac{\left(-a^2+b^2\right) \operatorname{Tan}[e+f x]^2}{a^2}\right] \operatorname{Tan}[e+f x]\right) \Big/ \left(\sqrt{1+\operatorname{Tan}[e+f x]^2} \left(-4 a^2 \operatorname{AppellF1}\left[1, \frac{1-p}{2}, 1, 2, -\operatorname{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \operatorname{Tan}[e+f x]^2\right] + \left(2 \left(a^2-b^2\right) \operatorname{AppellF1}\left[2, \frac{1-p}{2}, 2, 3, -\operatorname{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \operatorname{Tan}[e+f x]^2\right] - a^2 (-1+p) \operatorname{AppellF1}\left[2, \frac{3-p}{2}, 1, 3, -\operatorname{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \operatorname{Tan}[e+f x]^2\right]\right) \operatorname{Tan}[e+f x]^2\right)\right)\right)\right) \Big/ \left((b c-a d) (-b c+a d) f (a+b \operatorname{Sin}[e+f x]) \left(-b^2 \operatorname{Tan}[e+f x]^2+a^2 \left(1+\operatorname{Tan}[e+f x]^2\right)\right) \left(-\frac{1}{(b c-a d) \left(-b^2 \operatorname{Tan}[e+f x]^2+a^2 \left(1+\operatorname{Tan}[e+f x]^2\right)\right)^2} a^2 b \operatorname{Tan}[e+f x] \left(2 a^2 \operatorname{Sec}[e+f x]^2 \operatorname{Tan}[e+f x] - 2 b^2 \operatorname{Sec}[e+f x]^2 \operatorname{Tan}[e+f x]\right) \left(1+\operatorname{Tan}[e+f x]^2\right)^{p/2} \left(\left(3 a \operatorname{AppellF1}\left[\frac{1}{2}, -\frac{p}{2}, 1, \frac{3}{2}, -\operatorname{Tan}[e+f x]^2, \left(-1+\frac{b^2}{a^2}\right) \operatorname{Tan}[e+f x]^2\right]\right) \Big/\right.\right.\right.$$

$$\left(3\,a^2\,\text{AppellF1}\left[\frac{1}{2},\,-\frac{p}{2},\,1,\,\frac{3}{2},\,-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\right]+\left(a^2\,p\,\text{AppellF1}\left[\frac{3}{2},\,1-\frac{p}{2},\,1,\,\frac{5}{2},\,-\text{Tan}[e+f\,x]^2,\right.\right.\right.$$

$$\left.\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\right]+2\,(-a^2+b^2)\,\text{AppellF1}\left[\frac{3}{2},\,-\frac{p}{2},\,2,\,\frac{5}{2},\,-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\right]\Big)\,\text{Tan}[e+f\,x]^2\Big)+$$

$$\left(2\,b\,\text{AppellF1}\left[1,\,\frac{1-p}{2},\,1,\,2,\,-\text{Tan}[e+f\,x]^2,\,\frac{(-a^2+b^2)\,\text{Tan}[e+f\,x]^2}{a^2}\right]\text{Tan}[e+f\,x]\right)\Big/\left(\sqrt{1+\text{Tan}[e+f\,x]^2}\,\left(-4\,a^2\,\text{AppellF1}\left[\right.\right.\right.$$

$$1,\,\frac{1-p}{2},\,1,\,2,\,-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\Big]+\Big(2\,(a^2-b^2)\,\text{AppellF1}\left[2,\,\frac{1-p}{2},\,2,\,3,\,-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\right.$$

$$\left.\text{Tan}[e+f\,x]^2\right]-a^2\,(-1+p)\,\text{AppellF1}\left[2,\,\frac{3-p}{2},\,1,\,3,\,-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\right]\Big)\,\text{Tan}[e+f\,x]^2\Big)\Big)\Big)+$$

$$\frac{1}{(b\,c-a\,d)\,\left(-b^2\,\text{Tan}[e+f\,x]^2+a^2\,(1+\text{Tan}[e+f\,x]^2)\right)}\,a^2\,b\,p\,\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]^2\,(1+\text{Tan}[e+f\,x]^2)^{-1+\frac{p}{2}}$$

$$\left(\left(3\,a\,\text{AppellF1}\left[\frac{1}{2},\,-\frac{p}{2},\,1,\,\frac{3}{2},\,-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\right]\right)\Big/\right.$$

$$\left(3\,a^2\,\text{AppellF1}\left[\frac{1}{2},\,-\frac{p}{2},\,1,\,\frac{3}{2},\,-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\right]+\left(a^2\,p\,\text{AppellF1}\left[\frac{3}{2},\,1-\frac{p}{2},\,1,\,\frac{5}{2},\,-\text{Tan}[e+f\,x]^2,\right.\right.\right.$$

$$\left.\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\right]+2\,(-a^2+b^2)\,\text{AppellF1}\left[\frac{3}{2},\,-\frac{p}{2},\,2,\,\frac{5}{2},\,-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\right]\Big)\,\text{Tan}[e+f\,x]^2\Big)+$$

$$\left(2\,b\,\text{AppellF1}\left[1,\,\frac{1-p}{2},\,1,\,2,\,-\text{Tan}[e+f\,x]^2,\,\frac{(-a^2+b^2)\,\text{Tan}[e+f\,x]^2}{a^2}\right]\text{Tan}[e+f\,x]\right)\Big/\left(\sqrt{1+\text{Tan}[e+f\,x]^2}\,\left(-4\,a^2\,\text{AppellF1}\left[\right.\right.\right.$$

$$1,\,\frac{1-p}{2},\,1,\,2,\,-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\Big]+\Big(2\,(a^2-b^2)\,\text{AppellF1}\left[2,\,\frac{1-p}{2},\,2,\,3,\,-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\right.$$

$$\left.\text{Tan}[e+f\,x]^2\right]-a^2\,(-1+p)\,\text{AppellF1}\left[2,\,\frac{3-p}{2},\,1,\,3,\,-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\right]\Big)\,\text{Tan}[e+f\,x]^2\Big)\Big)\Big)+$$

$$\frac{1}{(b\,c-a\,d)\,\left(-b^2\,\text{Tan}[e+f\,x]^2+a^2\,(1+\text{Tan}[e+f\,x]^2)\right)}\,a^2\,b\,\text{Sec}[e+f\,x]^2\,(1+\text{Tan}[e+f\,x]^2)^{p/2}$$

$$\left(\left(3\,a\,\text{AppellF1}\left[\frac{1}{2},\,-\frac{p}{2},\,1,\,\frac{3}{2},\,-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\right]\right)\Big/\right.$$

$$\left(3\,a^2\,\text{AppellF1}\left[\frac{1}{2},\,-\frac{p}{2},\,1,\,\frac{3}{2},\,-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\right]+\left(a^2\,p\,\text{AppellF1}\left[\frac{3}{2},\,1-\frac{p}{2},\,1,\,\frac{5}{2},\,-\text{Tan}[e+f\,x]^2,\right.\right.\right.$$

$$\left.\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\right]+2\,(-a^2+b^2)\,\text{AppellF1}\left[\frac{3}{2},\,-\frac{p}{2},\,2,\,\frac{5}{2},\,-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\right]\Big)\,\text{Tan}[e+f\,x]^2\Big)+$$

$$\left(2\,b\,\text{AppellF1}\left[1,\,\frac{1-p}{2},\,1,\,2,\,-\text{Tan}[e+f\,x]^2,\,\frac{\left(-a^2+b^2\right)\,\text{Tan}[e+f\,x]^2}{a^2}\right]\,\text{Tan}[e+f\,x]\right)\Big/\left(\sqrt{1+\text{Tan}[e+f\,x]^2}\,\left(-4\,a^2\,\text{AppellF1}\left[\right.\right.\right.$$

$$1,\,\frac{1-p}{2},\,1,\,2,\,-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\,\text{Tan}[e+f\,x]^2\Big]+\left(2\,\left(a^2-b^2\right)\,\text{AppellF1}\left[2,\,\frac{1-p}{2},\,2,\,3,\,-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\right.\right.$$

$$\left.\left.\left.\text{Tan}[e+f\,x]^2\right]-a^2\,(-1+p)\,\text{AppellF1}\left[2,\,\frac{3-p}{2},\,1,\,3,\,-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\,\text{Tan}[e+f\,x]^2\right]\right)\,\text{Tan}[e+f\,x]^2\right)\Big)+$$

$$\frac{1}{(b\,c-a\,d)\,\left(-b^2\,\text{Tan}[e+f\,x]^2+a^2\,\left(1+\text{Tan}[e+f\,x]^2\right)\right)}\,a^2\,b\,\text{Tan}[e+f\,x]\,\left(1+\text{Tan}[e+f\,x]^2\right)^{p/2}$$

$$\left(\left(\left(3\,a\,\left(\frac{1}{3}\,p\,\text{AppellF1}\left[\frac{3}{2},\,1-\frac{p}{2},\,1,\,\frac{5}{2},\,-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\,\text{Tan}[e+f\,x]^2\right]\,\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]+\right.\right.\right.\right.$$

$$\left.\left.\frac{2}{3}\,\left(-1+\frac{b^2}{a^2}\right)\,\text{AppellF1}\left[\frac{3}{2},\,-\frac{p}{2},\,2,\,\frac{5}{2},\,-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\,\text{Tan}[e+f\,x]^2\right]\,\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]\right)\right)\Big/$$

$$\left(3\,a^2\,\text{AppellF1}\left[\frac{1}{2},\,-\frac{p}{2},\,1,\,\frac{3}{2},\,-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\,\text{Tan}[e+f\,x]^2\right]+\left(a^2\,p\,\text{AppellF1}\left[\frac{3}{2},\,1-\frac{p}{2},\,1,\,\frac{5}{2},\,-\text{Tan}[e+f\,x]^2,\right.\right.\right.$$

$$\left.\left.\left.\left(-1+\frac{b^2}{a^2}\right)\,\text{Tan}[e+f\,x]^2\right]+2\,\left(-a^2+b^2\right)\,\text{AppellF1}\left[\frac{3}{2},\,-\frac{p}{2},\,2,\,\frac{5}{2},\,-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\,\text{Tan}[e+f\,x]^2\right]\right)\,\text{Tan}[e+f\,x]^2\right)-$$

$$\left(2\,b\,\text{AppellF1}\left[1,\,\frac{1-p}{2},\,1,\,2,\,-\text{Tan}[e+f\,x]^2,\,\frac{\left(-a^2+b^2\right)\,\text{Tan}[e+f\,x]^2}{a^2}\right]\,\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]^2\right)\Big/$$

$$\left(\left(1+\text{Tan}[e+f\,x]^2\right)^{3/2}\,\left(-4\,a^2\,\text{AppellF1}\left[1,\,\frac{1-p}{2},\,1,\,2,\,-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\,\text{Tan}[e+f\,x]^2\right]+\right.\right.$$

$$\left(2\,\left(a^2-b^2\right)\,\text{AppellF1}\left[2,\,\frac{1-p}{2},\,2,\,3,\,-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\,\text{Tan}[e+f\,x]^2\right]-\right.$$

$$\left.\left.\left.a^2\,(-1+p)\,\text{AppellF1}\left[2,\,\frac{3-p}{2},\,1,\,3,\,-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\,\text{Tan}[e+f\,x]^2\right]\right)\,\text{Tan}[e+f\,x]^2\right)\right)+$$

$$\left(2\,b\,\text{AppellF1}\left[1,\,\frac{1-p}{2},\,1,\,2,\,-\text{Tan}[e+f\,x]^2,\,\frac{\left(-a^2+b^2\right)\,\text{Tan}[e+f\,x]^2}{a^2}\right]\,\text{Sec}[e+f\,x]^2\right)\Big/$$

$$\left(\sqrt{1+\text{Tan}[e+f\,x]^2}\,\left(-4\,a^2\,\text{AppellF1}\left[1,\,\frac{1-p}{2},\,1,\,2,\,-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\,\text{Tan}[e+f\,x]^2\right]+\right.\right.$$

$$\left(2\,\left(a^2-b^2\right)\,\text{AppellF1}\left[2,\,\frac{1-p}{2},\,2,\,3,\,-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\,\text{Tan}[e+f\,x]^2\right]-\right.$$

$$\left.\left.\left.a^2\,(-1+p)\,\text{AppellF1}\left[2,\,\frac{3-p}{2},\,1,\,3,\,-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\,\text{Tan}[e+f\,x]^2\right]\right)\,\text{Tan}[e+f\,x]^2\right)\right)+$$

$$\left(2\,b\,\text{Tan}[e+f\,x]\left(-\frac{1}{2}\,(1-p)\,\text{AppellF1}\left[2,\,1+\frac{1-p}{2},\,1,\,3,\,-\text{Tan}[e+f\,x]^2,\,\frac{\left(-a^2+b^2\right)\text{Tan}[e+f\,x]^2}{a^2}\right]\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]\,+\right.\right.$$

$$\left.\left.1\big/a^2\left(-a^2+b^2\right)\text{AppellF1}\left[2,\,\frac{1-p}{2},\,2,\,3,\,-\text{Tan}[e+f\,x]^2,\,\frac{\left(-a^2+b^2\right)\text{Tan}[e+f\,x]^2}{a^2}\right]\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]\right)\right)\Big/$$

$$\left(\sqrt{1+\text{Tan}[e+f\,x]^2}\left(-4\,a^2\,\text{AppellF1}\left[1,\,\frac{1-p}{2},\,1,\,2,\,-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\right]+\right.\right.$$

$$\left(2\left(a^2-b^2\right)\text{AppellF1}\left[2,\,\frac{1-p}{2},\,2,\,3,\,-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\right]-\right.$$

$$\left.\left.\left.a^2\,(-1+p)\,\text{AppellF1}\left[2,\,\frac{3-p}{2},\,1,\,3,\,-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\right]\right)\text{Tan}[e+f\,x]^2\right)\right)-$$

$$\left(3\,a\,\text{AppellF1}\left[\frac{1}{2},\,-\frac{p}{2},\,1,\,\frac{3}{2},\,-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\right]\left(2\left(a^2\,p\,\text{AppellF1}\left[\frac{3}{2},\,1-\frac{p}{2},\,1,\,\frac{5}{2},\,-\text{Tan}[e+f\,x]^2,\right.\right.\right.\right.$$

$$\left.\left.\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\right]+2\left(-a^2+b^2\right)\text{AppellF1}\left[\frac{3}{2},\,-\frac{p}{2},\,2,\,\frac{5}{2},\,-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\right]\right)\text{Sec}[e+f\,x]^2$$

$$\text{Tan}[e+f\,x]+3\,a^2\left(\frac{1}{3}\,p\,\text{AppellF1}\left[\frac{3}{2},\,1-\frac{p}{2},\,1,\,\frac{5}{2},\,-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\right]\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]\,+\right.$$

$$\left.\frac{2}{3}\left(-1+\frac{b^2}{a^2}\right)\text{AppellF1}\left[\frac{3}{2},\,-\frac{p}{2},\,2,\,\frac{5}{2},\,-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\right]\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]\right)+\text{Tan}[e+f\,x]^2$$

$$\left(a^2\,p\left(\frac{6}{5}\left(-1+\frac{b^2}{a^2}\right)\text{AppellF1}\left[\frac{5}{2},\,1-\frac{p}{2},\,2,\,\frac{7}{2},\,-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\right]\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]\,-\right.\right.$$

$$\left.\frac{6}{5}\left(1-\frac{p}{2}\right)\text{AppellF1}\left[\frac{5}{2},\,2-\frac{p}{2},\,1,\,\frac{7}{2},\,-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\right]\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]\right)+$$

$$2\left(-a^2+b^2\right)\left(\frac{3}{5}\,p\,\text{AppellF1}\left[\frac{5}{2},\,1-\frac{p}{2},\,2,\,\frac{7}{2},\,-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\right]\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]\,+\right.$$

$$\left.\left.\left.\left.\frac{12}{5}\left(-1+\frac{b^2}{a^2}\right)\text{AppellF1}\left[\frac{5}{2},\,-\frac{p}{2},\,3,\,\frac{7}{2},\,-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\right]\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]\right)\right)\right)\right)\Big/$$

$$\left(3\,a^2\,\text{AppellF1}\left[\frac{1}{2},\,-\frac{p}{2},\,1,\,\frac{3}{2},\,-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\right]+\left(a^2\,p\,\text{AppellF1}\left[\frac{3}{2},\,1-\frac{p}{2},\,1,\,\frac{5}{2},\,-\text{Tan}[e+f\,x]^2,\right.\right.\right.$$

$$\left.\left.\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\right]+2\left(-a^2+b^2\right)\text{AppellF1}\left[\frac{3}{2},\,-\frac{p}{2},\,2,\,\frac{5}{2},\,-\text{Tan}[e+f\,x]^2,\,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f\,x]^2\right]\right)$$

$$\left.\text{Tan}[e+f\,x]^2\right)^2-\left(2\,b\,\text{AppellF1}\left[1,\,\frac{1-p}{2},\,1,\,2,\,-\text{Tan}[e+f\,x]^2,\,\frac{\left(-a^2+b^2\right)\text{Tan}[e+f\,x]^2}{a^2}\right]\text{Tan}[\right.$$

$$e+f x]\left(2\left(2\left(a^2-b^2\right)\text{AppellF1}\left[2,\frac{1-p}{2},2,3,-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]-\right.\right.$$

$$a^2(-1+p)\text{AppellF1}\left[2,\frac{3-p}{2},1,3,-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]\Big)\text{Sec}[e+f x]^2\text{Tan}[e+f x]-$$

$$4a^2\left(-\frac{1}{2}(1-p)\text{AppellF1}\left[2,1+\frac{1-p}{2},1,3,-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]\text{Sec}[e+f x]^2\text{Tan}[e+f x]+\right.$$

$$\left.\left(-1+\frac{b^2}{a^2}\right)\text{AppellF1}\left[2,\frac{1-p}{2},2,3,-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]\text{Sec}[e+f x]^2\text{Tan}[e+f x]\right)+\text{Tan}[e+f x]^2$$

$$\left(2\left(a^2-b^2\right)\left(-\frac{2}{3}(1-p)\text{AppellF1}\left[3,1+\frac{1-p}{2},2,4,-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]\text{Sec}[e+f x]^2\text{Tan}[e+f x]+\right.\right.$$

$$\left.\frac{8}{3}\left(-1+\frac{b^2}{a^2}\right)\text{AppellF1}\left[3,\frac{1-p}{2},3,4,-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]\text{Sec}[e+f x]^2\text{Tan}[e+f x]\right)-$$

$$a^2(-1+p)\left(-\frac{2}{3}(3-p)\text{AppellF1}\left[3,1+\frac{3-p}{2},1,4,-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]\text{Sec}[e+f x]^2\text{Tan}[e+f x]+\right.$$

$$\left.\left.\left.\left.\frac{4}{3}\left(-1+\frac{b^2}{a^2}\right)\text{AppellF1}\left[3,\frac{3-p}{2},2,4,-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]\text{Sec}[e+f x]^2\text{Tan}[e+f x]\right)\right)\right)\right)\Big/$$

$$\left(\sqrt{1+\text{Tan}[e+f x]^2}\left(-4a^2\text{AppellF1}\left[1,\frac{1-p}{2},1,2,-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]+\right.\right.$$

$$\left(2\left(a^2-b^2\right)\text{AppellF1}\left[2,\frac{1-p}{2},2,3,-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]-\right.$$

$$\left.\left.\left.\left.\left.\left.a^2(-1+p)\text{AppellF1}\left[2,\frac{3-p}{2},1,3,-\text{Tan}[e+f x]^2,\left(-1+\frac{b^2}{a^2}\right)\text{Tan}[e+f x]^2\right]\right)\text{Tan}[e+f x]^2\right)^2\right)\right)\right)\right)\right)-$$

$$\left(c^2d^2(g\,\text{Sec}[e+f x])^p\,\text{Tan}[e+f x]\left(1+\text{Tan}[e+f x]^2\right)^{p/2}\left(\left(3c\,\text{AppellF1}\left[\frac{1}{2},-\frac{p}{2},1,\frac{3}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{d^2}{c^2}\right)\text{Tan}[e+f x]^2\right]\right)\Big/\right.\right.$$

$$\left(3c^2\text{AppellF1}\left[\frac{1}{2},-\frac{p}{2},1,\frac{3}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{d^2}{c^2}\right)\text{Tan}[e+f x]^2\right]+\right.$$

$$\left(c^2p\,\text{AppellF1}\left[\frac{3}{2},1-\frac{p}{2},1,\frac{5}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{d^2}{c^2}\right)\text{Tan}[e+f x]^2\right]+\right.$$

$$\left.\left.2\left(-c^2+d^2\right)\text{AppellF1}\left[\frac{3}{2},-\frac{p}{2},2,\frac{5}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{d^2}{c^2}\right)\text{Tan}[e+f x]^2\right]\right)\text{Tan}[e+f x]^2\right)+$$

$$\left(2d\,\text{AppellF1}\left[1,\frac{1-p}{2},1,2,-\text{Tan}[e+f x]^2,\frac{\left(-c^2+d^2\right)\text{Tan}[e+f x]^2}{c^2}\right]\text{Tan}[e+f x]\right)\Big/$$

$$\left(\sqrt{1+\text{Tan}[e+f x]^2}\right.$$

$$\left(-4 c^2 \text{AppellF1}\left[1, \frac{1-p}{2}, 1, 2, -\text{Tan}[e+f x]^2, \left(-1+\frac{d^2}{c^2}\right) \text{Tan}[e+f x]^2\right] + \right.$$

$$\left(2 \left(c^2-d^2\right) \text{AppellF1}\left[2, \frac{1-p}{2}, 2, 3, -\text{Tan}[e+f x]^2, \left(-1+\frac{d^2}{c^2}\right) \text{Tan}[e+f x]^2\right] - \right.$$

$$\left.\left.\left.\left. c^2 (-1+p) \text{AppellF1}\left[2, \frac{3-p}{2}, 1, 3, -\text{Tan}[e+f x]^2, \left(-1+\frac{d^2}{c^2}\right) \text{Tan}[e+f x]^2\right]\right) \text{Tan}[e+f x]^2\right)\right)\right)\right) \Big/$$

$$\left((b c-a d) (-b c+a d) f (c+d \text{Sin}[e+f x]) \left(-d^2 \text{Tan}[e+f x]^2+c^2 \left(1+\text{Tan}[e+f x]^2\right)\right)\right.$$

$$\left(-\frac{1}{(-b c+a d) \left(-d^2 \text{Tan}[e+f x]^2+c^2 \left(1+\text{Tan}[e+f x]^2\right)\right)^2}\right.$$

$$c^2 d \text{Tan}[e+f x]$$

$$\left(2 c^2 \text{Sec}[e+f x]^2 \text{Tan}[e+f x] - 2 d^2 \text{Sec}[e+f x]^2 \text{Tan}[e+f x]\right)$$

$$\left(1+\text{Tan}[e+f x]^2\right)^{p/2}$$

$$\left(\left(3 c \text{AppellF1}\left[\frac{1}{2}, -\frac{p}{2}, 1, \frac{3}{2}, -\text{Tan}[e+f x]^2, \left(-1+\frac{d^2}{c^2}\right) \text{Tan}[e+f x]^2\right]\right) \Big/\right.$$

$$\left(3 c^2 \text{AppellF1}\left[\frac{1}{2}, -\frac{p}{2}, 1, \frac{3}{2}, -\text{Tan}[e+f x]^2, \left(-1+\frac{d^2}{c^2}\right) \text{Tan}[e+f x]^2\right] + \left(c^2 p \text{AppellF1}\left[\frac{3}{2}, 1-\frac{p}{2}, 1, \frac{5}{2}, -\text{Tan}[e+f x]^2,\right.\right.\right.$$

$$\left.\left.\left.\left(-1+\frac{d^2}{c^2}\right) \text{Tan}[e+f x]^2\right] + 2 \left(-c^2+d^2\right) \text{AppellF1}\left[\frac{3}{2}, -\frac{p}{2}, 2, \frac{5}{2}, -\text{Tan}[e+f x]^2, \left(-1+\frac{d^2}{c^2}\right) \text{Tan}[e+f x]^2\right]\right) \text{Tan}[e+f x]^2\right) +$$

$$\left(2 d \text{AppellF1}\left[1, \frac{1-p}{2}, 1, 2, -\text{Tan}[e+f x]^2, \frac{\left(-c^2+d^2\right) \text{Tan}[e+f x]^2}{c^2}\right] \text{Tan}[e+f x]\right) \Big/$$

$$\left(\sqrt{1+\text{Tan}[e+f x]^2} \left(-4 c^2 \text{AppellF1}\left[1, \frac{1-p}{2}, 1, 2, -\text{Tan}[e+f x]^2, \left(-1+\frac{d^2}{c^2}\right) \text{Tan}[e+f x]^2\right] + \right.\right.$$

$$\left(2 \left(c^2-d^2\right) \text{AppellF1}\left[2, \frac{1-p}{2}, 2, 3, -\text{Tan}[e+f x]^2, \left(-1+\frac{d^2}{c^2}\right) \text{Tan}[e+f x]^2\right] - \right.$$

$$\left.\left.\left.\left. c^2 (-1+p) \text{AppellF1}\left[2, \frac{3-p}{2}, 1, 3, -\text{Tan}[e+f x]^2, \left(-1+\frac{d^2}{c^2}\right) \text{Tan}[e+f x]^2\right]\right) \text{Tan}[e+f x]^2\right)\right)\right) +$$

$$\frac{1}{(-b c+a d) \left(-d^2 \text{Tan}[e+f x]^2+c^2 \left(1+\text{Tan}[e+f x]^2\right)\right)} c^2 d p \text{Sec}[e+f x]^2 \text{Tan}[e+f x]^2 \left(1+\text{Tan}[e+f x]^2\right)^{-1+\frac{p}{2}}$$

$$\left(\left(3 c \text{AppellF1}\left[\frac{1}{2}, -\frac{p}{2}, 1, \frac{3}{2}, -\text{Tan}[e+f x]^2, \left(-1+\frac{d^2}{c^2}\right) \text{Tan}[e+f x]^2\right]\right) \Big/\right.$$

$$\left(3 c^2 \text{AppellF1}\left[\frac{1}{2}, -\frac{p}{2}, 1, \frac{3}{2}, -\text{Tan}[e+f x]^2, \left(-1+\frac{d^2}{c^2}\right) \text{Tan}[e+f x]^2\right] + \left(c^2 p \text{AppellF1}\left[\frac{3}{2}, 1-\frac{p}{2}, 1, \frac{5}{2}, -\text{Tan}[e+f x]^2, \left(-1+\frac{d^2}{c^2}\right) \text{Tan}[e+f x]^2\right] + 2 \left(-c^2+d^2\right) \text{AppellF1}\left[\frac{3}{2}, -\frac{p}{2}, 2, \frac{5}{2}, -\text{Tan}[e+f x]^2, \left(-1+\frac{d^2}{c^2}\right) \text{Tan}[e+f x]^2\right]\right) \text{Tan}[e+f x]^2\right) +$$

$$\left(2 d \text{AppellF1}\left[1, \frac{1-p}{2}, 1, 2, -\text{Tan}[e+f x]^2, \frac{\left(-c^2+d^2\right) \text{Tan}[e+f x]^2}{c^2}\right] \text{Tan}[e+f x]\right) \Big/$$

$$\left(\sqrt{1+\text{Tan}[e+f x]^2} \left(-4 c^2 \text{AppellF1}\left[1, \frac{1-p}{2}, 1, 2, -\text{Tan}[e+f x]^2, \left(-1+\frac{d^2}{c^2}\right) \text{Tan}[e+f x]^2\right] + \left(2 \left(c^2-d^2\right) \text{AppellF1}\left[2, \frac{1-p}{2}, 2, 3, -\text{Tan}[e+f x]^2, \left(-1+\frac{d^2}{c^2}\right) \text{Tan}[e+f x]^2\right] - c^2 (-1+p) \text{AppellF1}\left[2, \frac{3-p}{2}, 1, 3, -\text{Tan}[e+f x]^2, \left(-1+\frac{d^2}{c^2}\right) \text{Tan}[e+f x]^2\right]\right) \text{Tan}[e+f x]^2\right)\right)\Bigg) +$$

$$\frac{1}{(-b c+a d) \left(-d^2 \text{Tan}[e+f x]^2+c^2 \left(1+\text{Tan}[e+f x]^2\right)\right)} c^2 d \text{Sec}[e+f x]^2 \left(1+\text{Tan}[e+f x]^2\right)^{p/2}$$

$$\left(\left(3 c \text{AppellF1}\left[\frac{1}{2}, -\frac{p}{2}, 1, \frac{3}{2}, -\text{Tan}[e+f x]^2, \left(-1+\frac{d^2}{c^2}\right) \text{Tan}[e+f x]^2\right]\right) \Big/\right.$$

$$\left(3 c^2 \text{AppellF1}\left[\frac{1}{2}, -\frac{p}{2}, 1, \frac{3}{2}, -\text{Tan}[e+f x]^2, \left(-1+\frac{d^2}{c^2}\right) \text{Tan}[e+f x]^2\right] + \left(c^2 p \text{AppellF1}\left[\frac{3}{2}, 1-\frac{p}{2}, 1, \frac{5}{2}, -\text{Tan}[e+f x]^2, \left(-1+\frac{d^2}{c^2}\right) \text{Tan}[e+f x]^2\right] + 2 \left(-c^2+d^2\right) \text{AppellF1}\left[\frac{3}{2}, -\frac{p}{2}, 2, \frac{5}{2}, -\text{Tan}[e+f x]^2, \left(-1+\frac{d^2}{c^2}\right) \text{Tan}[e+f x]^2\right]\right) \text{Tan}[e+f x]^2\right) +$$

$$\left(2 d \text{AppellF1}\left[1, \frac{1-p}{2}, 1, 2, -\text{Tan}[e+f x]^2, \frac{\left(-c^2+d^2\right) \text{Tan}[e+f x]^2}{c^2}\right] \text{Tan}[e+f x]\right) \Big/$$

$$\left(\sqrt{1+\text{Tan}[e+f x]^2} \left(-4 c^2 \text{AppellF1}\left[1, \frac{1-p}{2}, 1, 2, -\text{Tan}[e+f x]^2, \left(-1+\frac{d^2}{c^2}\right) \text{Tan}[e+f x]^2\right] + \left(2 \left(c^2-d^2\right) \text{AppellF1}\left[2, \frac{1-p}{2}, 2, 3, -\text{Tan}[e+f x]^2, \left(-1+\frac{d^2}{c^2}\right) \text{Tan}[e+f x]^2\right] - c^2 (-1+p) \text{AppellF1}\left[2, \frac{3-p}{2}, 1, 3, -\text{Tan}[e+f x]^2, \left(-1+\frac{d^2}{c^2}\right) \text{Tan}[e+f x]^2\right]\right) \text{Tan}[e+f x]^2\right)\right)\Bigg) +$$

$$\frac{1}{(-b c+a d) \left(-d^2 \text{Tan}[e+f x]^2+c^2 \left(1+\text{Tan}[e+f x]^2\right)\right)} c^2 d \text{Tan}[e+f x] \left(1+\text{Tan}[e+f x]^2\right)^{p/2}$$

$$\left(\left(3 c \left(\frac{1}{3} p \text{AppellF1}\left[\frac{3}{2}, 1-\frac{p}{2}, 1, \frac{5}{2}, -\text{Tan}[e+f x]^2, \left(-1+\frac{d^2}{c^2}\right) \text{Tan}[e+f x]^2\right] \text{Sec}[e+f x]^2 \text{Tan}[e+f x] + \frac{2}{3}\right.\right.\right.$$

$$\left(-1+\frac{d^2}{c^2}\right) \text{AppellF1}\left[\frac{3}{2}, -\frac{p}{2}, 2, \frac{5}{2}, -\text{Tan}[e+f x]^2, \left(-1+\frac{d^2}{c^2}\right) \text{Tan}[e+f x]^2\right] \text{Sec}[e+f x]^2 \text{Tan}[e+f x]\Bigg)\Bigg) \Big/$$

$$\Bigg(3 c^2 \text{AppellF1}\left[\frac{1}{2}, -\frac{p}{2}, 1, \frac{3}{2}, -\text{Tan}[e+f x]^2, \left(-1+\frac{d^2}{c^2}\right) \text{Tan}[e+f x]^2\right] + \Bigg(c^2 p \text{AppellF1}\left[\frac{3}{2}, 1-\frac{p}{2}, 1, \frac{5}{2}, -\text{Tan}[e+f x]^2,\right.$$

$$\left.\left(-1+\frac{d^2}{c^2}\right) \text{Tan}[e+f x]^2\right] + 2\left(-c^2+d^2\right) \text{AppellF1}\left[\frac{3}{2}, -\frac{p}{2}, 2, \frac{5}{2}, -\text{Tan}[e+f x]^2, \left(-1+\frac{d^2}{c^2}\right) \text{Tan}[e+f x]^2\right]\Bigg) \text{Tan}[e+f x]^2\Bigg) -$$

$$\left(2 d \text{AppellF1}\left[1, \frac{1-p}{2}, 1, 2, -\text{Tan}[e+f x]^2, \frac{\left(-c^2+d^2\right) \text{Tan}[e+f x]^2}{c^2}\right] \text{Sec}[e+f x]^2 \text{Tan}[e+f x]^2\right) \Big/$$

$$\Bigg(\left(1+\text{Tan}[e+f x]^2\right)^{3/2} \Bigg(-4 c^2 \text{AppellF1}\left[1, \frac{1-p}{2}, 1, 2, -\text{Tan}[e+f x]^2, \left(-1+\frac{d^2}{c^2}\right) \text{Tan}[e+f x]^2\right] +$$

$$\Bigg(2\left(c^2-d^2\right) \text{AppellF1}\left[2, \frac{1-p}{2}, 2, 3, -\text{Tan}[e+f x]^2, \left(-1+\frac{d^2}{c^2}\right) \text{Tan}[e+f x]^2\right] -$$

$$c^2 (-1+p) \text{AppellF1}\left[2, \frac{3-p}{2}, 1, 3, -\text{Tan}[e+f x]^2, \left(-1+\frac{d^2}{c^2}\right) \text{Tan}[e+f x]^2\right]\Bigg) \text{Tan}[e+f x]^2\Bigg)\Bigg) +$$

$$\left(2 d \text{AppellF1}\left[1, \frac{1-p}{2}, 1, 2, -\text{Tan}[e+f x]^2, \frac{\left(-c^2+d^2\right) \text{Tan}[e+f x]^2}{c^2}\right] \text{Sec}[e+f x]^2\right) \Big/ \Bigg(\sqrt{1+\text{Tan}[e+f x]^2}$$

$$\Bigg(-4 c^2 \text{AppellF1}\left[1, \frac{1-p}{2}, 1, 2, -\text{Tan}[e+f x]^2, \left(-1+\frac{d^2}{c^2}\right) \text{Tan}[e+f x]^2\right] + \Bigg(2\left(c^2-d^2\right) \text{AppellF1}\left[2, \frac{1-p}{2}, 2, 3, -\text{Tan}[e+f x]^2,\right.$$

$$\left.\left(-1+\frac{d^2}{c^2}\right) \text{Tan}[e+f x]^2\right] - c^2 (-1+p) \text{AppellF1}\left[2, \frac{3-p}{2}, 1, 3, -\text{Tan}[e+f x]^2, \left(-1+\frac{d^2}{c^2}\right) \text{Tan}[e+f x]^2\right]\Bigg) \text{Tan}[e+f x]^2\Bigg)\Bigg) +$$

$$\Bigg(2 d \text{Tan}[e+f x] \Bigg(-\frac{1}{2} (1-p) \text{AppellF1}\left[2, 1+\frac{1-p}{2}, 1, 3, -\text{Tan}[e+f x]^2, \frac{\left(-c^2+d^2\right) \text{Tan}[e+f x]^2}{c^2}\right] \text{Sec}[e+f x]^2$$

$$\text{Tan}[e+f x] + 1/c^2\left(-c^2+d^2\right) \text{AppellF1}\left[2, \frac{1-p}{2}, 2, 3, -\text{Tan}[e+f x]^2, \frac{\left(-c^2+d^2\right) \text{Tan}[e+f x]^2}{c^2}\right] \text{Sec}[e+f x]^2 \text{Tan}[e+f x]\Bigg)\Bigg) \Big/$$

$$\Bigg(\sqrt{1+\text{Tan}[e+f x]^2} \Bigg(-4 c^2 \text{AppellF1}\left[1, \frac{1-p}{2}, 1, 2, -\text{Tan}[e+f x]^2, \left(-1+\frac{d^2}{c^2}\right) \text{Tan}[e+f x]^2\right] +$$

$$\Bigg(2\left(c^2-d^2\right) \text{AppellF1}\left[2, \frac{1-p}{2}, 2, 3, -\text{Tan}[e+f x]^2, \left(-1+\frac{d^2}{c^2}\right) \text{Tan}[e+f x]^2\right] -$$

$$c^2 (-1+p) \text{AppellF1}\left[2, \frac{3-p}{2}, 1, 3, -\text{Tan}[e+f x]^2, \left(-1+\frac{d^2}{c^2}\right) \text{Tan}[e+f x]^2\right]\Bigg) \text{Tan}[e+f x]^2\Bigg)\Bigg) -$$

$$\Bigg(3 c \text{AppellF1}\left[\frac{1}{2}, -\frac{p}{2}, 1, \frac{3}{2}, -\text{Tan}[e+f x]^2, \left(-1+\frac{d^2}{c^2}\right) \text{Tan}[e+f x]^2\right] \Bigg(2 \Bigg(c^2 p \text{AppellF1}\left[\frac{3}{2}, 1-\frac{p}{2}, 1, \frac{5}{2}, -\text{Tan}[e+f x]^2,\right.$$

$$\left(-1+\frac{d^2}{c^2}\right)\text{Tan}[e+f x]^2\Big]+2\left(-c^2+d^2\right)\text{AppellF1}\Big[\frac{3}{2},-\frac{p}{2},2,\frac{5}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{d^2}{c^2}\right)\text{Tan}[e+f x]^2\Big]\Big)\,\text{Sec}[e+f x]^2$$

$$\text{Tan}[e+f x]+3c^2\Big(\frac{1}{3}p\,\text{AppellF1}\Big[\frac{3}{2},1-\frac{p}{2},1,\frac{5}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{d^2}{c^2}\right)\text{Tan}[e+f x]^2\Big]\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]+$$

$$\frac{2}{3}\left(-1+\frac{d^2}{c^2}\right)\text{AppellF1}\Big[\frac{3}{2},-\frac{p}{2},2,\frac{5}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{d^2}{c^2}\right)\text{Tan}[e+f x]^2\Big]\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]\Big)+\text{Tan}[e+f x]^2$$

$$\Big(c^2p\Big(\frac{6}{5}\left(-1+\frac{d^2}{c^2}\right)\text{AppellF1}\Big[\frac{5}{2},1-\frac{p}{2},2,\frac{7}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{d^2}{c^2}\right)\text{Tan}[e+f x]^2\Big]\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]-$$

$$\frac{6}{5}\left(1-\frac{p}{2}\right)\text{AppellF1}\Big[\frac{5}{2},2-\frac{p}{2},1,\frac{7}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{d^2}{c^2}\right)\text{Tan}[e+f x]^2\Big]\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]\Big)+$$

$$2\left(-c^2+d^2\right)\Big(\frac{3}{5}p\,\text{AppellF1}\Big[\frac{5}{2},1-\frac{p}{2},2,\frac{7}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{d^2}{c^2}\right)\text{Tan}[e+f x]^2\Big]\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]+$$

$$\frac{12}{5}\left(-1+\frac{d^2}{c^2}\right)\text{AppellF1}\Big[\frac{5}{2},-\frac{p}{2},3,\frac{7}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{d^2}{c^2}\right)\text{Tan}[e+f x]^2\Big]\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]\Big)\Big)\Big)\Big)\Big)\Big/$$

$$\Big(3c^2\,\text{AppellF1}\Big[\frac{1}{2},-\frac{p}{2},1,\frac{3}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{d^2}{c^2}\right)\text{Tan}[e+f x]^2\Big]+\Big(c^2p\,\text{AppellF1}\Big[\frac{3}{2},1-\frac{p}{2},1,\frac{5}{2},-\text{Tan}[e+f x]^2,$$

$$\left(-1+\frac{d^2}{c^2}\right)\text{Tan}[e+f x]^2\Big]+2\left(-c^2+d^2\right)\text{AppellF1}\Big[\frac{3}{2},-\frac{p}{2},2,\frac{5}{2},-\text{Tan}[e+f x]^2,\left(-1+\frac{d^2}{c^2}\right)\text{Tan}[e+f x]^2\Big]\Big)\text{Tan}[e+f x]^2\Big)^2-$$

$$\Big(2d\,\text{AppellF1}\Big[1,\frac{1-p}{2},1,2,-\text{Tan}[e+f x]^2,\frac{\left(-c^2+d^2\right)\text{Tan}[e+f x]^2}{c^2}\Big]\text{Tan}[e+f x]$$

$$\Big(2\Big(2\left(c^2-d^2\right)\text{AppellF1}\Big[2,\frac{1-p}{2},2,3,-\text{Tan}[e+f x]^2,\left(-1+\frac{d^2}{c^2}\right)\text{Tan}[e+f x]^2\Big]-$$

$$c^2(-1+p)\,\text{AppellF1}\Big[2,\frac{3-p}{2},1,3,-\text{Tan}[e+f x]^2,\left(-1+\frac{d^2}{c^2}\right)\text{Tan}[e+f x]^2\Big]\Big)\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]-4c^2$$

$$\Big(-\frac{1}{2}(1-p)\,\text{AppellF1}\Big[2,1+\frac{1-p}{2},1,3,-\text{Tan}[e+f x]^2,\left(-1+\frac{d^2}{c^2}\right)\text{Tan}[e+f x]^2\Big]\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]+$$

$$\left(-1+\frac{d^2}{c^2}\right)\text{AppellF1}\Big[2,\frac{1-p}{2},2,3,-\text{Tan}[e+f x]^2,\left(-1+\frac{d^2}{c^2}\right)\text{Tan}[e+f x]^2\Big]\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]\Big)+\text{Tan}[e+f x]^2$$

$$\Big(2\left(c^2-d^2\right)\Big(-\frac{2}{3}(1-p)\,\text{AppellF1}\Big[3,1+\frac{1-p}{2},2,4,-\text{Tan}[e+f x]^2,\left(-1+\frac{d^2}{c^2}\right)\text{Tan}[e+f x]^2\Big]\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]+$$

$$\frac{8}{3}\left(-1+\frac{d^2}{c^2}\right)\text{AppellF1}\Big[3,\frac{1-p}{2},3,4,-\text{Tan}[e+f x]^2,\left(-1+\frac{d^2}{c^2}\right)\text{Tan}[e+f x]^2\Big]\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]\Big)-$$

$$c^2(-1+p)\Big(-\frac{2}{3}(3-p)\,\text{AppellF1}\Big[3,1+\frac{3-p}{2},1,4,-\text{Tan}[e+f x]^2,\left(-1+\frac{d^2}{c^2}\right)\text{Tan}[e+f x]^2\Big]\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]+$$

$$\frac{4}{3}\left(-1+\frac{d^2}{c^2}\right)\text{AppellF1}\left[3,\frac{3-p}{2},2,4,-\text{Tan}[e+f x]^2,\left(-1+\frac{d^2}{c^2}\right)\text{Tan}[e+f x]^2\right]\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]\Bigg)\Bigg)\Bigg)\Bigg)\Bigg/$$

$$\Bigg(\sqrt{1+\text{Tan}[e+f x]^2}\,\Bigg(-4\,c^2\,\text{AppellF1}\left[1,\frac{1-p}{2},1,2,-\text{Tan}[e+f x]^2,\left(-1+\frac{d^2}{c^2}\right)\text{Tan}[e+f x]^2\right]+$$

$$\Bigg(2\left(c^2-d^2\right)\text{AppellF1}\left[2,\frac{1-p}{2},2,3,-\text{Tan}[e+f x]^2,\left(-1+\frac{d^2}{c^2}\right)\text{Tan}[e+f x]^2\right]-$$

$$c^2\,(-1+p)\,\text{AppellF1}\left[2,\frac{3-p}{2},1,3,-\text{Tan}[e+f x]^2,\left(-1+\frac{d^2}{c^2}\right)\text{Tan}[e+f x]^2\right]\Bigg)\,\text{Tan}[e+f x]^2\Bigg)^2\Bigg)\Bigg)\Bigg)\Bigg)$$

Test results for the 51 problems in "4.1.2.3 (g sin)^p (a+b sin)^m (c+d sin)^n.m"

- **Problem 8: Result more than twice size of optimal antiderivative.**

$$\int \text{Csc}[e+f x]^4\,(a+a\,\text{Sin}[e+f x])^2\,(c-c\,\text{Sin}[e+f x])\,dx$$

Optimal (type 3, 61 leaves, 6 steps):

$$\frac{a^2\,c\,\text{ArcTanh}[\text{Cos}[e+f x]]}{2 f}-\frac{a^2\,c\,\text{Cot}[e+f x]^3}{3 f}-\frac{a^2\,c\,\text{Cot}[e+f x]\,\text{Csc}[e+f x]}{2 f}$$

Result (type 3, 172 leaves):

$$a^2\,c\,\Bigg(\frac{\text{Cot}\left[\frac{1}{2}(e+f x)\right]}{6 f}-\frac{\text{Csc}\left[\frac{1}{2}(e+f x)\right]^2}{8 f}-\frac{\text{Cot}\left[\frac{1}{2}(e+f x)\right]\text{Csc}\left[\frac{1}{2}(e+f x)\right]^2}{24 f}+$$

$$\frac{\text{Log}\left[\text{Cos}\left[\frac{1}{2}(e+f x)\right]\right]}{2 f}-\frac{\text{Log}\left[\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right]}{2 f}+\frac{\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2}{8 f}-\frac{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{6 f}+\frac{\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{24 f}\Bigg)$$

- **Problem 9: Result more than twice size of optimal antiderivative.**

$$\int \text{Csc}[e+f x]^5\,(a+a\,\text{Sin}[e+f x])^2\,(c-c\,\text{Sin}[e+f x])\,dx$$

Optimal (type 3, 86 leaves, 11 steps):

$$\frac{a^2\,c\,\text{ArcTanh}[\text{Cos}[e+f x]]}{8 f}-\frac{a^2\,c\,\text{Cot}[e+f x]^3}{3 f}+\frac{a^2\,c\,\text{Cot}[e+f x]\,\text{Csc}[e+f x]}{8 f}-\frac{a^2\,c\,\text{Cot}[e+f x]\,\text{Csc}[e+f x]^3}{4 f}$$

Result (type 3, 179 leaves):

$$\frac{a^2 c \operatorname{Cot}[e+f x]}{3 f}+\frac{a^2 c \operatorname{Csc}\left[\frac{1}{2}(e+f x)\right]^2}{32 f}-\frac{a^2 c \operatorname{Csc}\left[\frac{1}{2}(e+f x)\right]^4}{64 f}-\frac{a^2 c \operatorname{Cot}[e+f x] \operatorname{Csc}[e+f x]^2}{3 f}+$$
$$\frac{a^2 c \operatorname{Log}\left[\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]\right]}{8 f}-\frac{a^2 c \operatorname{Log}\left[\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right]}{8 f}-\frac{a^2 c \operatorname{Sec}\left[\frac{1}{2}(e+f x)\right]^2}{32 f}+\frac{a^2 c \operatorname{Sec}\left[\frac{1}{2}(e+f x)\right]^4}{64 f}$$

- **Problem 13: Result more than twice size of optimal antiderivative.**

$$\int \frac{\operatorname{Csc}[e+f x] \sqrt{a+a \operatorname{Sin}[e+f x]}}{c-c \operatorname{Sin}[e+f x]} \, dx$$

Optimal (type 3, 69 leaves, 5 steps):

$$-\frac{2 \sqrt{a} \operatorname{ArcTanh}\left[\frac{\sqrt{a} \operatorname{Cos}[e+f x]}{\sqrt{a+a \operatorname{Sin}[e+f x]}}\right]}{c f}+\frac{2 \operatorname{Sec}[e+f x] \sqrt{a+a \operatorname{Sin}[e+f x]}}{c f}$$

Result (type 3, 157 leaves):

$$\frac{1}{c f}\operatorname{Sec}[e+f x]\left(2+\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]\left(-\operatorname{Log}\left[1+\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]-\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right]+\operatorname{Log}\left[1-\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]+\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right]\right)+\right.$$
$$\left.\left(\operatorname{Log}\left[1+\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]-\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right]-\operatorname{Log}\left[1-\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]+\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right]\right) \operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right) \sqrt{a(1+\operatorname{Sin}[e+f x])}$$

- **Problem 14: Result unnecessarily involves imaginary or complex numbers.**

$$\int \frac{\operatorname{Csc}[e+f x]}{\sqrt{a+a \operatorname{Sin}[e+f x]}\,(c-c \operatorname{Sin}[e+f x])} \, dx$$

Optimal (type 3, 120 leaves, 8 steps):

$$-\frac{2 \operatorname{ArcTanh}\left[\frac{\sqrt{a} \operatorname{Cos}[e+f x]}{\sqrt{a+a \operatorname{Sin}[e+f x]}}\right]}{\sqrt{a}\, c f}+\frac{\operatorname{ArcTanh}\left[\frac{\sqrt{a} \operatorname{Cos}[e+f x]}{\sqrt{2} \sqrt{a+a \operatorname{Sin}[e+f x]}}\right]}{\sqrt{2} \sqrt{a}\, c f}+\frac{\operatorname{Sec}[e+f x] \sqrt{a+a \operatorname{Sin}[e+f x]}}{a c f}$$

Result (type 3, 234 leaves):

$$\frac{1}{c f(-1+\operatorname{Sin}[e+f x]) \sqrt{a(1+\operatorname{Sin}[e+f x])}}$$
$$\left(\operatorname{Cos}[e+f x]\left(-1+\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]\left(\operatorname{Log}\left[1+\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]-\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right]-\operatorname{Log}\left[1-\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]+\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right]\right)\right)+\right.$$
$$(1+i)(-1)^{3/4} \operatorname{ArcTanh}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{3/4}\left(-1+\operatorname{Tan}\left[\frac{1}{4}(e+f x)\right]\right)\right]\left(\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]-\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right)-$$
$$\left.\operatorname{Log}\left[1+\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]-\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right] \operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]+\operatorname{Log}\left[1-\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]+\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right] \operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right)$$

Problem 15: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{\sqrt{g \operatorname{Sin}[e+f x]} \sqrt{a+a \operatorname{Sin}[e+f x]}}{c-c \operatorname{Sin}[e+f x]} \, dx$$

Optimal (type 3, 103 leaves, 6 steps):

$$\frac{2 \sqrt{a} \sqrt{g} \operatorname{ArcTan}\left[\frac{\sqrt{a} \sqrt{g} \operatorname{Cos}[e+f x]}{\sqrt{g \operatorname{Sin}[e+f x]} \sqrt{a+a \operatorname{Sin}[e+f x]}}\right]}{c f}+\frac{2 \operatorname{Sec}[e+f x] \sqrt{g \operatorname{Sin}[e+f x]} \sqrt{a+a \operatorname{Sin}[e+f x]}}{c f}$$

Result (type 3, 180 leaves):

$$\left(2 e^{i (e+f x)} \left(2 \sqrt{-1+e^{2 i (e+f x)}}+\left(1+i e^{i (e+f x)}\right) \operatorname{ArcTan}\left[\frac{1}{\sqrt{-1+e^{2 i (e+f x)}}}\right]-\left(-i+e^{i (e+f x)}\right) \operatorname{Log}\left[e^{i (e+f x)}+\sqrt{-1+e^{2 i (e+f x)}}\right]\right) \sqrt{g \operatorname{Sin}[e+f x]} \sqrt{a (1+\operatorname{Sin}[e+f x])}\right) \Big/ \left(c \sqrt{-1+e^{2 i (e+f x)}} \left(1+e^{2 i (e+f x)}\right) f\right)$$

Problem 17: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{\sqrt{g \operatorname{Sin}[e+f x]}}{\sqrt{a+a \operatorname{Sin}[e+f x]} \, (c-c \operatorname{Sin}[e+f x])} \, dx$$

Optimal (type 3, 114 leaves, 6 steps):

$$\frac{\sqrt{g} \operatorname{ArcTan}\left[\frac{\sqrt{a} \sqrt{g} \operatorname{Cos}[e+f x]}{\sqrt{2} \sqrt{g \operatorname{Sin}[e+f x]} \sqrt{a+a \operatorname{Sin}[e+f x]}}\right]}{\sqrt{2} \sqrt{a} c f}+\frac{\operatorname{Sec}[e+f x] \sqrt{g \operatorname{Sin}[e+f x]} \sqrt{a+a \operatorname{Sin}[e+f x]}}{a c f}$$

Result (type 4, 232 leaves):

$$\left(\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)\sqrt{g\,\text{Sin}[e+f x]}\right.$$

$$\left(1-\left(\left(\text{EllipticF}\left[\text{ArcSin}\left[\frac{1}{\sqrt{\text{Tan}\left[\frac{1}{4}(e+f x)\right]}}\right],-1\right]+\text{EllipticPi}\left[1-\sqrt{2},-\text{ArcSin}\left[\frac{1}{\sqrt{\text{Tan}\left[\frac{1}{4}(e+f x)\right]}}\right],-1\right]+\right.\right.\right.$$

$$\left.\text{EllipticPi}\left[1+\sqrt{2},-\text{ArcSin}\left[\frac{1}{\sqrt{\text{Tan}\left[\frac{1}{4}(e+f x)\right]}}\right],-1\right]\right)\text{Sec}\left[\frac{1}{4}(e+f x)\right]^2\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)\Bigg)\Bigg/$$

$$\left.\left.\left(\sqrt{1-\text{Cot}\left[\frac{1}{4}(e+f x)\right]^2}\ \text{Tan}\left[\frac{1}{4}(e+f x)\right]^{3/2}\right)\right)\right)\Bigg/\left(f\sqrt{a\,(1+\text{Sin}[e+f x])}\ (c-c\,\text{Sin}[e+f x])\right)$$

- **Problem 18: Result unnecessarily involves higher level functions.**

$$\int\frac{1}{\sqrt{g\,\text{Sin}[e+f x]}\ \sqrt{a+a\,\text{Sin}[e+f x]}\ (c-c\,\text{Sin}[e+f x])}\,dx$$

Optimal (type 3, 118 leaves, 6 steps):

$$-\frac{\text{ArcTan}\left[\frac{\sqrt{a}\ \sqrt{g}\ \text{Cos}[e+f x]}{\sqrt{2}\ \sqrt{g\,\text{Sin}[e+f x]}\ \sqrt{a+a\,\text{Sin}[e+f x]}}\right]}{\sqrt{2}\ \sqrt{a}\ c\,f\sqrt{g}}+\frac{\text{Sec}[e+f x]\ \sqrt{g\,\text{Sin}[e+f x]}\ \sqrt{a+a\,\text{Sin}[e+f x]}}{a\,c\,f\,g}$$

Result (type 4, 234 leaves):

$$\left(\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)\sqrt{g\,\text{Sin}[e+f x]}\right.$$

$$\left(1+\left(\left(\text{EllipticF}\left[\text{ArcSin}\left[\frac{1}{\sqrt{\text{Tan}\left[\frac{1}{4}(e+f x)\right]}}\right],-1\right]+\text{EllipticPi}\left[1-\sqrt{2},-\text{ArcSin}\left[\frac{1}{\sqrt{\text{Tan}\left[\frac{1}{4}(e+f x)\right]}}\right],-1\right]+\right.\right.\right.$$

$$\left.\text{EllipticPi}\left[1+\sqrt{2},-\text{ArcSin}\left[\frac{1}{\sqrt{\text{Tan}\left[\frac{1}{4}(e+f x)\right]}}\right],-1\right]\right)\text{Sec}\left[\frac{1}{4}(e+f x)\right]^2\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)\Bigg)\Bigg/$$

$$\left.\left.\left.\left(\sqrt{1-\text{Cot}\left[\frac{1}{4}(e+f x)\right]^2}\;\text{Tan}\left[\frac{1}{4}(e+f x)\right]^{3/2}\right)\right)\right)\right)\Bigg/\left(f\,g\sqrt{a\,(1+\text{Sin}[e+f x])}\;(c-c\,\text{Sin}[e+f x])\right)$$

■ **Problem 20: Result unnecessarily involves imaginary or complex numbers.**

$$\int\frac{\text{Csc}[e+f x]\sqrt{a+a\,\text{Sin}[e+f x]}}{\sqrt{c-c\,\text{Sin}[e+f x]}}\,dx$$

Optimal (type 3, 102 leaves, 6 steps):

$$-\frac{a\,\text{Cos}[e+f x]\,\text{Log}[1-\text{Sin}[e+f x]]}{f\sqrt{a+a\,\text{Sin}[e+f x]}\;\sqrt{c-c\,\text{Sin}[e+f x]}}+\frac{\text{Log}[\text{Sin}[e+f x]]\,\text{Sec}[e+f x]\sqrt{a+a\,\text{Sin}[e+f x]}\;\sqrt{c-c\,\text{Sin}[e+f x]}}{c\,f}$$

Result (type 3, 144 leaves):

$$\left(\sqrt{2}\left(-i+e^{i(e+f x)}\right)\left(2\,\text{ArcTan}\left[e^{i(e+f x)}\right]+i\left(\text{Log}\left[1-e^{2i(e+f x)}\right]-\text{Log}\left[1+e^{2i(e+f x)}\right]\right)\right)\sqrt{a\,(1+\text{Sin}[e+f x])}\right)\Bigg/$$

$$\left(\sqrt{i\,c\,e^{-i(e+f x)}\left(-i+e^{i(e+f x)}\right)^2}\left(i+e^{i(e+f x)}\right)f\right)$$

■ **Problem 21: Result unnecessarily involves imaginary or complex numbers.**

$$\int\frac{\text{Csc}[e+f x]\sqrt{c-c\,\text{Sin}[e+f x]}}{\sqrt{a+a\,\text{Sin}[e+f x]}}\,dx$$

Optimal (type 3, 100 leaves, 6 steps):

$$-\frac{c\,\mathrm{Cos}[e+f\,x]\,\mathrm{Log}[1+\mathrm{Sin}[e+f\,x]]}{f\sqrt{a+a\,\mathrm{Sin}[e+f\,x]}\,\sqrt{c-c\,\mathrm{Sin}[e+f\,x]}}+\frac{\mathrm{Log}[\mathrm{Sin}[e+f\,x]]\,\mathrm{Sec}[e+f\,x]\,\sqrt{a+a\,\mathrm{Sin}[e+f\,x]}\,\sqrt{c-c\,\mathrm{Sin}[e+f\,x]}}{a\,f}$$

Result (type 3, 145 leaves):

$$\frac{\sqrt{2}\left(i+e^{i(e+f\,x)}\right)\left(2\,\mathrm{ArcTan}\left[e^{i(e+f\,x)}\right]-i\left(\mathrm{Log}\left[1-e^{2\,i(e+f\,x)}\right]-\mathrm{Log}\left[1+e^{2\,i(e+f\,x)}\right]\right)\right)\sqrt{c-c\,\mathrm{Sin}[e+f\,x]}}{\left(-i+e^{i(e+f\,x)}\right)\sqrt{-i\,a\,e^{-i(e+f\,x)}\left(i+e^{i(e+f\,x)}\right)^2}\,f}$$

Problem 22: Result more than twice size of optimal antiderivative.

$$\int\frac{\mathrm{Csc}[e+f\,x]}{\sqrt{a+a\,\mathrm{Sin}[e+f\,x]}\,\sqrt{c-c\,\mathrm{Sin}[e+f\,x]}}\,dx$$

Optimal (type 3, 46 leaves, 3 steps):

$$\frac{\mathrm{Cos}[e+f\,x]\,\mathrm{Log}[\mathrm{Tan}[e+f\,x]]}{f\sqrt{a+a\,\mathrm{Sin}[e+f\,x]}\,\sqrt{c-c\,\mathrm{Sin}[e+f\,x]}}$$

Result (type 3, 96 leaves):

$$-\left(\mathrm{Cos}[e+f\,x]\left(\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}(e+f\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right]+\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}(e+f\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right]-\mathrm{Log}[\mathrm{Sin}[e+f\,x]]\right)\right)\Big/\left(f\sqrt{a\,(1+\mathrm{Sin}[e+f\,x])}\,\sqrt{c-c\,\mathrm{Sin}[e+f\,x]}\right)$$

Problem 23: Result is not expressed in closed-form.

$$\int\frac{\mathrm{Csc}[e+f\,x]\,\sqrt{a+a\,\mathrm{Sin}[e+f\,x]}}{c+d\,\mathrm{Sin}[e+f\,x]}\,dx$$

Optimal (type 3, 105 leaves, 5 steps):

$$-\frac{2\sqrt{a}\,\mathrm{ArcTanh}\left[\frac{\sqrt{a}\,\mathrm{Cos}[e+f\,x]}{\sqrt{a+a\,\mathrm{Sin}[e+f\,x]}}\right]}{c\,f}+\frac{2\sqrt{a}\,\sqrt{d}\,\mathrm{ArcTanh}\left[\frac{\sqrt{a}\,\sqrt{d}\,\mathrm{Cos}[e+f\,x]}{\sqrt{c+d}\,\sqrt{a+a\,\mathrm{Sin}[e+f\,x]}}\right]}{c\sqrt{c+d}\,f}$$

Result (type 7, 746 leaves):

$$-\frac{1}{c\sqrt{c+d}\,f\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)}$$

$$\left(\frac{1}{8}-\frac{i}{8}\right)\left((4+4 i)\sqrt{c+d}\left(\text{Log}\left[1+\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right]-\text{Log}\left[1-\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right]\right)+\right.$$

$$\sqrt{d}\,\text{RootSum}\left[-d+2 i c e^{i e}\#1^2+d e^{2 i e}\#1^4\&,\frac{1}{-i d-c e^{i e}\#1^2}\right.$$

$$\left((1+i) d\sqrt{e^{-i e}}\,f x-(2-2 i) d\sqrt{e^{-i e}}\,\text{Log}\left[e^{\frac{i f x}{2}}-\#1\right]-i\sqrt{d}\sqrt{c+d}\,f x\#1+2\sqrt{d}\sqrt{c+d}\,\text{Log}\left[e^{\frac{i f x}{2}}-\#1\right]\#1+\frac{(1-i) c f x\#1^2}{\sqrt{e^{-i e}}}+\right.$$

$$\left.\left.\frac{(2+2 i) c\,\text{Log}\left[e^{\frac{i f x}{2}}-\#1\right]\#1^2}{\sqrt{e^{-i e}}}-\sqrt{d}\sqrt{c+d}\,e^{i e} f x\#1^3-2 i\sqrt{d}\sqrt{c+d}\,e^{i e}\,\text{Log}\left[e^{\frac{i f x}{2}}-\#1\right]\#1^3\right)\&\right]\left(\text{Cos}\left[\frac{e}{2}\right]+i\,\text{Sin}\left[\frac{e}{2}\right]\right)+$$

$$\sqrt{d}\,\text{RootSum}\left[-d+2 i c e^{i e}\#1^2+d e^{2 i e}\#1^4\&,\frac{1}{d-i c e^{i e}\#1^2}\left((1-i) d\sqrt{e^{-i e}}\,f x+(2+2 i) d\sqrt{e^{-i e}}\,\text{Log}\left[e^{\frac{i f x}{2}}-\#1\right]+\right.\right.$$

$$\sqrt{d}\sqrt{c+d}\,f x\#1+2 i\sqrt{d}\sqrt{c+d}\,\text{Log}\left[e^{\frac{i f x}{2}}-\#1\right]\#1-\frac{(1+i) c f x\#1^2}{\sqrt{e^{-i e}}}+\frac{(2-2 i) c\,\text{Log}\left[e^{\frac{i f x}{2}}-\#1\right]\#1^2}{\sqrt{e^{-i e}}}-$$

$$\left.\left.\left.i\sqrt{d}\sqrt{c+d}\,e^{i e} f x\#1^3+2\sqrt{d}\sqrt{c+d}\,e^{i e}\,\text{Log}\left[e^{\frac{i f x}{2}}-\#1\right]\#1^3\right)\&\right]\left(\text{Cos}\left[\frac{e}{2}\right]+i\,\text{Sin}\left[\frac{e}{2}\right]\right)\right)\sqrt{a\,(1+\text{Sin}[e+f x])}$$

- **Problem 24: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int\frac{\text{Csc}[e+f x]}{\sqrt{a+a\,\text{Sin}[e+f x]}\,(c+d\,\text{Sin}[e+f x])}\,dx$$

Optimal (type 3, 165 leaves, 8 steps):

$$-\frac{2\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\text{Cos}[e+f x]}{\sqrt{a+a\,\text{Sin}[e+f x]}}\right]}{\sqrt{a}\,c f}+\frac{\sqrt{2}\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\text{Cos}[e+f x]}{\sqrt{2}\sqrt{a+a\,\text{Sin}[e+f x]}}\right]}{\sqrt{a}\,(c-d) f}-\frac{2 d^{3/2}\,\text{ArcTanh}\left[\frac{\sqrt{a}\sqrt{d}\,\text{Cos}[e+f x]}{\sqrt{c+d}\sqrt{a+a\,\text{Sin}[e+f x]}}\right]}{\sqrt{a}\,c\,(c-d)\sqrt{c+d}\,f}$$

Result (type 3, 331 leaves):

$$-\frac{1}{c\,(c-d)\,\sqrt{c+d}\,f\,\sqrt{a\,(1+\text{Sin}[e+f\,x])}}$$
$$\left((2+2\,i)\,(-1)^{3/4}\,c\,\sqrt{c+d}\,\text{ArcTanh}\left[\left(\frac{1}{2}+\frac{i}{2}\right)\,(-1)^{3/4}\left(-1+\text{Tan}\left[\frac{1}{4}\,(e+f\,x)\right]\right)\right]+(c-d)\,\sqrt{c+d}\,\text{Log}\left[1+\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right]-\right.$$
$$c\,\sqrt{c+d}\,\text{Log}\left[1-\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right]+d\,\sqrt{c+d}\,\text{Log}\left[1-\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right]+$$
$$d^{3/2}\,\text{Log}\left[\text{Sec}\left[\frac{1}{4}\,(e+f\,x)\right]^2\left(\sqrt{c+d}+\sqrt{d}\,\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]-\sqrt{d}\,\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)\right]-$$
$$\left.d^{3/2}\,\text{Log}\left[\text{Sec}\left[\frac{1}{4}\,(e+f\,x)\right]^2\left(\sqrt{c+d}-\sqrt{d}\,\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\sqrt{d}\,\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)\right]\right)\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)$$

- **Problem 25: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int\frac{\sqrt{g\,\text{Sin}[e+f\,x]}\,\sqrt{a+a\,\text{Sin}[e+f\,x]}}{c+d\,\text{Sin}[e+f\,x]}\,dx$$

Optimal (type 3, 149 leaves, 5 steps):

$$-\frac{2\,\sqrt{a}\,\sqrt{g}\,\text{ArcTan}\left[\frac{\sqrt{a}\,\sqrt{g}\,\text{Cos}[e+f\,x]}{\sqrt{g\,\text{Sin}[e+f\,x]}\,\sqrt{a+a\,\text{Sin}[e+f\,x]}}\right]}{d\,f}+\frac{2\,\sqrt{a}\,\sqrt{c}\,\sqrt{g}\,\text{ArcTan}\left[\frac{\sqrt{a}\,\sqrt{c}\,\sqrt{g}\,\text{Cos}[e+f\,x]}{\sqrt{c+d}\,\sqrt{g\,\text{Sin}[e+f\,x]}\,\sqrt{a+a\,\text{Sin}[e+f\,x]}}\right]}{d\,\sqrt{c+d}\,f}$$

Result (type 3, 908 leaves):

$$\left(\left(\frac{1}{2}+\frac{i}{2}\right)\left(-2\,\sqrt{c^2-d^2}\,\sqrt{-c+\sqrt{c^2-d^2}}\,\sqrt{c+\sqrt{c^2-d^2}}\,\text{ArcTan}\left[\frac{1}{\sqrt{-1+\text{Cos}[2\,(e+f\,x)]+i\,\text{Sin}[2\,(e+f\,x)]}}\right]+\right.\right.$$
$$\sqrt{2}\,\sqrt{c}\left(\sqrt{c+\sqrt{c^2-d^2}}\,\left(-c+d+\sqrt{c^2-d^2}\right)\right.$$
$$\text{Log}\left[\left(d^2\,\sqrt{c^2-d^2}\,e^{-i\,e}\left(i\,\sqrt{2}\,d-\sqrt{2}\,c\,e^{i\,(e+f\,x)}+\sqrt{2}\,\sqrt{c^2-d^2}\,e^{i\,(e+f\,x)}-2\,i\,\sqrt{c}\,\sqrt{-c+\sqrt{c^2-d^2}}\,\sqrt{-1+e^{2\,i\,(e+f\,x)}}\right)f\right)\Big/\right.$$
$$\left.\left(2\,c^{3/2}\,\sqrt{-c+\sqrt{c^2-d^2}}\,\left(-c+d+\sqrt{c^2-d^2}\right)\left(-c+\sqrt{c^2-d^2}+i\,d\,e^{i\,(e+f\,x)}\right)\right)\right]+i\,\sqrt{-c+\sqrt{c^2-d^2}}\,\left(c-d+\sqrt{c^2-d^2}\right)$$
$$\text{Log}\left[\left(i\,d^2\,e^{-i\,e}\left(-i\,\sqrt{2}\,d\,\sqrt{c^2-d^2}+\sqrt{2}\,c^2\,e^{i\,(e+f\,x)}-\sqrt{2}\,d^2\,e^{i\,(e+f\,x)}+\sqrt{2}\,c\,\sqrt{c^2-d^2}\,e^{i\,(e+f\,x)}+2\,\sqrt{c}\,\sqrt{c^2-d^2}\right.\right.\right.$$

$$\sqrt{c+\sqrt{c^2-d^2}}\ \sqrt{-1+e^{2\,i\,(e+f\,x)}}\Bigg)\ f\Bigg)\Bigg/\left(2\,c^{3/2}\,\sqrt{c+\sqrt{c^2-d^2}}\ \left(c-d+\sqrt{c^2-d^2}\right)\ \left(c+\sqrt{c^2-d^2}-i\,d\,e^{i\,(e+f\,x)}\right)\right)\Bigg]\Bigg)-$$

$$2\,i\,\sqrt{c^2-d^2}\ \sqrt{-c+\sqrt{c^2-d^2}}\ \sqrt{c+\sqrt{c^2-d^2}}\ \text{Log}\left[\text{Cos}[e+f\,x]+i\,\text{Sin}[e+f\,x]+\sqrt{-1+\text{Cos}[2\,(e+f\,x)]+i\,\text{Sin}[2\,(e+f\,x)]}\right]\Bigg)$$

$$\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+i\,\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)$$

$$\sqrt{g\,\text{Sin}[e+f\,x]}$$

$$\sqrt{a\,(1+\text{Sin}[e+f\,x])}\Bigg)\Bigg/\Bigg(d$$

$$\sqrt{c^2-d^2}$$

$$\sqrt{-c+\sqrt{c^2-d^2}}$$

$$\sqrt{c+\sqrt{c^2-d^2}}$$

$$f$$

$$\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)$$

$$\sqrt{-1+\text{Cos}[2\,(e+f\,x)]+i\,\text{Sin}[2\,(e+f\,x)]}\Bigg)$$

- **Problem 26: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int \frac{\sqrt{a+a\,\text{Sin}[e+f\,x]}}{\sqrt{g\,\text{Sin}[e+f\,x]}\ (c+d\,\text{Sin}[e+f\,x])}\,dx$$

Optimal (type 3, 83 leaves, 2 steps) :

$$-\frac{2\,\sqrt{a}\ \text{ArcTan}\left[\frac{\sqrt{a}\ \sqrt{c}\ \sqrt{g}\ \text{Cos}[e+f\,x]}{\sqrt{c+d}\ \sqrt{g\,\text{Sin}[e+f\,x]}\ \sqrt{a+a\,\text{Sin}[e+f\,x]}}\right]}{\sqrt{c}\ \sqrt{c+d}\ f\,\sqrt{g}}$$

Result (type 3, 748 leaves) :

$$\left(\left(\frac{1}{2}+\frac{i}{2}\right)\left(i\sqrt{c+\sqrt{c^2-d^2}}\left(-c+d+\sqrt{c^2-d^2}\right)\text{Log}\left[\left(d\,e^{-i e}\left(\sqrt{2}\,d\sqrt{c^2-d^2}-i\sqrt{2}\,c^2 e^{i(e+f x)}+i\sqrt{2}\,d^2 e^{i(e+f x)}+i\sqrt{2}\,c\sqrt{c^2-d^2}\,e^{i(e+f x)}-2\sqrt{c}\sqrt{c^2-d^2}\sqrt{-c+\sqrt{c^2-d^2}}\sqrt{-1+e^{2 i(e+f x)}}\right)f\right)\Big/\left(\sqrt{c}\sqrt{-c+\sqrt{c^2-d^2}}\left(-c+d+\sqrt{c^2-d^2}\right)\left(-c+\sqrt{c^2-d^2}+i\,d\,e^{i(e+f x)}\right)\right)\right]-\sqrt{-c+\sqrt{c^2-d^2}}\left(c-d+\sqrt{c^2-d^2}\right)\text{Log}\left[\left(d\,e^{-i e}\left(-i\sqrt{2}\,d\sqrt{c^2-d^2}+\sqrt{2}\,c^2 e^{i(e+f x)}-\sqrt{2}\,d^2 e^{i(e+f x)}+\sqrt{2}\,c\sqrt{c^2-d^2}\,e^{i(e+f x)}+2\sqrt{c}\sqrt{c^2-d^2}\sqrt{c+\sqrt{c^2-d^2}}\sqrt{-1+e^{2 i(e+f x)}}\right)f\right)\Big/\left(\sqrt{c}\sqrt{c+\sqrt{c^2-d^2}}\left(c-d+\sqrt{c^2-d^2}\right)\left(c+\sqrt{c^2-d^2}-i\,d\,e^{i(e+f x)}\right)\right)\right]\right)$$

$$\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-i\,\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)\sqrt{a(1+\text{Sin}[e+f x])}\sqrt{-1+\text{Cos}[2(e+f x)]+i\,\text{Sin}[2(e+f x)]}\right)\Big/\left(\sqrt{2}\sqrt{c}\sqrt{c^2-d^2}\sqrt{-c+\sqrt{c^2-d^2}}\sqrt{c+\sqrt{c^2-d^2}}\,f\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)\sqrt{g\,\text{Sin}[e+f x]}\right)$$

- **Problem 27: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int\frac{\sqrt{g\,\text{Sin}[e+f x]}}{\sqrt{a+a\,\text{Sin}[e+f x]}\,(c+d\,\text{Sin}[e+f x])}\,dx$$

Optimal (type 3, 166 leaves, 5 steps):

$$\frac{\sqrt{2}\sqrt{g}\,\text{ArcTan}\left[\frac{\sqrt{a}\sqrt{g}\,\text{Cos}[e+f x]}{\sqrt{2}\sqrt{g\,\text{Sin}[e+f x]}\sqrt{a+a\,\text{Sin}[e+f x]}}\right]}{\sqrt{a}\,(c-d)\,f}-\frac{2\sqrt{c}\sqrt{g}\,\text{ArcTan}\left[\frac{\sqrt{a}\sqrt{c}\sqrt{g}\,\text{Cos}[e+f x]}{\sqrt{c+d}\sqrt{g\,\text{Sin}[e+f x]}\sqrt{a+a\,\text{Sin}[e+f x]}}\right]}{\sqrt{a}\,(c-d)\sqrt{c+d}\,f}$$

Result (type 4, 61 316 leaves): Display of huge result suppressed!

- **Problem 28: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int \frac{1}{\sqrt{g \operatorname{Sin}[e+f x]} \sqrt{a+a \operatorname{Sin}[e+f x]} (c+d \operatorname{Sin}[e+f x])} \, dx$$

Optimal (type 3, 168 leaves, 5 steps):

$$-\frac{\sqrt{2} \operatorname{ArcTan}\left[\frac{\sqrt{a} \sqrt{g} \operatorname{Cos}[e+f x]}{\sqrt{2} \sqrt{g \operatorname{Sin}[e+f x]} \sqrt{a+a \operatorname{Sin}[e+f x]}}\right]}{\sqrt{a} (c-d) f \sqrt{g}}+\frac{2 d \operatorname{ArcTan}\left[\frac{\sqrt{a} \sqrt{c} \sqrt{g} \operatorname{Cos}[e+f x]}{\sqrt{c+d} \sqrt{g \operatorname{Sin}[e+f x]} \sqrt{a+a \operatorname{Sin}[e+f x]}}\right]}{\sqrt{a} \sqrt{c} (c-d) \sqrt{c+d} f \sqrt{g}}$$

Result (type 4, 99 997 leaves): Display of huge result suppressed!

- **Problem 29: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int \frac{\operatorname{Csc}[e+f x] \sqrt{a+b \operatorname{Sin}[e+f x]}}{c+c \operatorname{Sin}[e+f x]} \, dx$$

Optimal (type 4, 238 leaves, 9 steps):

$$\frac{\operatorname{EllipticE}\left[\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right), \frac{2 b}{a+b}\right] \sqrt{a+b \operatorname{Sin}[e+f x]}}{c f \sqrt{\frac{a+b \operatorname{Sin}[e+f x]}{a+b}}}-\frac{(a-b) \operatorname{EllipticF}\left[\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right), \frac{2 b}{a+b}\right] \sqrt{\frac{a+b \operatorname{Sin}[e+f x]}{a+b}}}{c f \sqrt{a+b \operatorname{Sin}[e+f x]}}+$$

$$\frac{2 a \operatorname{EllipticPi}\left[2, \frac{1}{2}\left(e-\frac{\pi}{2}+f x\right), \frac{2 b}{a+b}\right] \sqrt{\frac{a+b \operatorname{Sin}[e+f x]}{a+b}}}{c f \sqrt{a+b \operatorname{Sin}[e+f x]}}+\frac{\operatorname{Cos}[e+f x] \sqrt{a+b \operatorname{Sin}[e+f x]}}{f (c+c \operatorname{Sin}[e+f x])}$$

Result (type 4, 611 leaves):

$$-\frac{2\,\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\,\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)\,\sqrt{a+b\,\text{Sin}[e+f\,x]}}{f\,(c+c\,\text{Sin}[e+f\,x])}+$$

$$\frac{1}{4\,f\,(c+c\,\text{Sin}[e+f\,x])}\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^2\left(-\frac{4\,b\,\text{EllipticF}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right),\,\frac{2\,b}{a+b}\right]\sqrt{\frac{a+b\,\text{Sin}[e+f\,x]}{a+b}}}{\sqrt{a+b\,\text{Sin}[e+f\,x]}}+\right.$$

$$\frac{2\,(-4\,a-b)\,\text{EllipticPi}\left[2,\,\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right),\,\frac{2\,b}{a+b}\right]\sqrt{\frac{a+b\,\text{Sin}[e+f\,x]}{a+b}}}{\sqrt{a+b\,\text{Sin}[e+f\,x]}}+\Bigg(2\,i\,b\,\text{Cos}[e+f\,x]\,\text{Cos}[2\,(e+f\,x)]$$

$$\left(2\,a\,(a-b)\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[\sqrt{-\frac{1}{a+b}}\,\sqrt{a+b\,\text{Sin}[e+f\,x]}\right],\,\frac{a+b}{a-b}\right]+b\left(2\,a\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[\sqrt{-\frac{1}{a+b}}\,\sqrt{a+b\,\text{Sin}[e+f\,x]}\right],\right.\right.\right.$$

$$\left.\left.\left.\frac{a+b}{a-b}\right]-b\,\text{EllipticPi}\left[\frac{a+b}{a},\,i\,\text{ArcSinh}\left[\sqrt{-\frac{1}{a+b}}\,\sqrt{a+b\,\text{Sin}[e+f\,x]}\right],\,\frac{a+b}{a-b}\right]\right)\right)\sqrt{\frac{b-b\,\text{Sin}[e+f\,x]}{a+b}}\,\sqrt{-\frac{b+b\,\text{Sin}[e+f\,x]}{a-b}}\Bigg)\Bigg/$$

$$\left(a\,\sqrt{-\frac{1}{a+b}}\,\sqrt{1-\text{Sin}[e+f\,x]^2}\,\left(-2\,a^2+b^2+4\,a\,(a+b\,\text{Sin}[e+f\,x])-2\,(a+b\,\text{Sin}[e+f\,x])^2\right)\right.$$

$$\left.\left.\sqrt{-\frac{a^2-b^2-2\,a\,(a+b\,\text{Sin}[e+f\,x])+(a+b\,\text{Sin}[e+f\,x])^2}{b^2}}\right)+\frac{2\,\text{Cot}[e+f\,x]\,\sqrt{a+b\,\text{Sin}[e+f\,x]}\,\text{Sin}[2\,(e+f\,x)]}{1-\text{Sin}[e+f\,x]^2}\right)$$

- **Problem 30: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int\frac{\text{Csc}[e+f\,x]}{\sqrt{a+b\,\text{Sin}[e+f\,x]}\,(c+c\,\text{Sin}[e+f\,x])}\,dx$$

Optimal (type 4, 246 leaves, 9 steps):

$$\frac{\text{EllipticE}\left[\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right),\frac{2 b}{a+b}\right]\sqrt{a+b\,\text{Sin}[e+f x]}}{(a-b)\,c\,f\,\sqrt{\frac{a+b\,\text{Sin}[e+f x]}{a+b}}}-\frac{\text{EllipticF}\left[\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right),\frac{2 b}{a+b}\right]\sqrt{\frac{a+b\,\text{Sin}[e+f x]}{a+b}}}{c\,f\,\sqrt{a+b\,\text{Sin}[e+f x]}}+$$

$$\frac{2\,\text{EllipticPi}\left[2,\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right),\frac{2 b}{a+b}\right]\sqrt{\frac{a+b\,\text{Sin}[e+f x]}{a+b}}}{c\,f\,\sqrt{a+b\,\text{Sin}[e+f x]}}+\frac{\text{Cos}[e+f x]\sqrt{a+b\,\text{Sin}[e+f x]}}{(a-b)\,f\,(c+c\,\text{Sin}[e+f x])}$$

Result (type 4, 625 leaves) :

$$-\frac{2\,\text{Sin}\left[\frac{1}{2}(e+f x)\right]\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)\sqrt{a+b\,\text{Sin}[e+f x]}}{(a-b)\,f\,(c+c\,\text{Sin}[e+f x])}-$$

$$\frac{1}{4\,(a-b)\,f\,(c+c\,\text{Sin}[e+f x])}\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^2$$

$$\left(\frac{4\,b\,\text{EllipticF}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right),\frac{2b}{a+b}\right]\sqrt{\frac{a+b\,\text{Sin}[e+f x]}{a+b}}}{\sqrt{a+b\,\text{Sin}[e+f x]}}-\frac{2\,(-4a+3b)\,\text{EllipticPi}\left[2,\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right),\frac{2b}{a+b}\right]\sqrt{\frac{a+b\,\text{Sin}[e+f x]}{a+b}}}{\sqrt{a+b\,\text{Sin}[e+f x]}}-\right.$$

$$\left(2\,i\,b\,\text{Cos}[e+f x]\,\text{Cos}[2(e+f x)]\left(2\,a\,(a-b)\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[\sqrt{-\frac{1}{a+b}}\sqrt{a+b\,\text{Sin}[e+f x]}\right],\frac{a+b}{a-b}\right]+\right.\right.$$

$$b\left(2\,a\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[\sqrt{-\frac{1}{a+b}}\sqrt{a+b\,\text{Sin}[e+f x]}\right],\frac{a+b}{a-b}\right]-\right.$$

$$\left.\left.\left.b\,\text{EllipticPi}\left[\frac{a+b}{a},i\,\text{ArcSinh}\left[\sqrt{-\frac{1}{a+b}}\sqrt{a+b\,\text{Sin}[e+f x]}\right],\frac{a+b}{a-b}\right]\right)\right)\sqrt{\frac{b-b\,\text{Sin}[e+f x]}{a+b}}\sqrt{-\frac{b+b\,\text{Sin}[e+f x]}{a-b}}\right)\Big/$$

$$\left(a\sqrt{-\frac{1}{a+b}}\sqrt{1-\text{Sin}[e+f x]^2}\left(-2a^2+b^2+4a\,(a+b\,\text{Sin}[e+f x])-2\,(a+b\,\text{Sin}[e+f x])^2\right)\right.$$

$$\left.\left.\sqrt{-\frac{a^2-b^2-2a\,(a+b\,\text{Sin}[e+f x])+(a+b\,\text{Sin}[e+f x])^2}{b^2}}\right)-\frac{2\,\text{Cot}[e+f x]\sqrt{a+b\,\text{Sin}[e+f x]}\,\text{Sin}[2(e+f x)]}{1-\text{Sin}[e+f x]^2}\right)$$

- **Problem 31: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int\frac{\sqrt{g\,\text{Sin}[e+f x]}\sqrt{a+b\,\text{Sin}[e+f x]}}{c+c\,\text{Sin}[e+f x]}\,dx$$

Optimal (type 4, 267 leaves, 3 steps):

$$\frac{1}{\sqrt{a+b}\,c\,f}2\sqrt{g}\,\text{EllipticPi}\left[\frac{b}{a+b},\,\text{ArcSin}\left[\frac{\sqrt{a+b}\,\sqrt{g\,\text{Sin}[e+f\,x]}}{\sqrt{g}\,\sqrt{a+b\,\text{Sin}[e+f\,x]}}\right],\,-\frac{a-b}{a+b}\right]\text{Sec}[e+f\,x]\sqrt{\frac{a\,(1-\text{Sin}[e+f\,x])}{a+b\,\text{Sin}[e+f\,x]}}$$

$$\sqrt{\frac{a\,(1+\text{Sin}[e+f\,x])}{a+b\,\text{Sin}[e+f\,x]}}\,(a+b\,\text{Sin}[e+f\,x])+\frac{g\,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\text{Cos}[e+f\,x]}{1+\text{Sin}[e+f\,x]}\right],\,-\frac{a-b}{a+b}\right]\sqrt{\frac{\text{Sin}[e+f\,x]}{1+\text{Sin}[e+f\,x]}}\,\sqrt{a+b\,\text{Sin}[e+f\,x]}}{c\,f\,\sqrt{g\,\text{Sin}[e+f\,x]}\,\sqrt{\frac{a+b\,\text{Sin}[e+f\,x]}{(a+b)\,(1+\text{Sin}[e+f\,x])}}}$$

Result (type 4, 10 621 leaves) :

$$\frac{2\,\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)\sqrt{g\,\text{Sin}[e+f\,x]}\,\sqrt{a+b\,\text{Sin}[e+f\,x]}}{f\,(c+c\,\text{Sin}[e+f\,x])}+$$

$$\left(\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^2\sqrt{g\,\text{Sin}[e+f\,x]}\right.$$

$$\left(-\frac{a\sqrt{\text{Sin}[e+f\,x]}}{2\sqrt{a+b\,\text{Sin}[e+f\,x]}}+\frac{b\sqrt{\text{Sin}[e+f\,x]}}{2\sqrt{a+b\,\text{Sin}[e+f\,x]}}-\frac{b\,\text{Cos}\left[\frac{3}{2}\,(e+f\,x)\right]\text{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]\sqrt{\text{Sin}[e+f\,x]}}{2\sqrt{a+b\,\text{Sin}[e+f\,x]}}-\right.$$

$$\left.\frac{b\,\text{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]\sqrt{\text{Sin}[e+f\,x]}\,\text{Sin}\left[\frac{3}{2}\,(e+f\,x)\right]}{2\sqrt{a+b\,\text{Sin}[e+f\,x]}}+\frac{a\sqrt{\text{Sin}[e+f\,x]}\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]}{2\sqrt{a+b\,\text{Sin}[e+f\,x]}}-\frac{b\sqrt{\text{Sin}[e+f\,x]}\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]}{2\sqrt{a+b\,\text{Sin}[e+f\,x]}}\right)$$

$$\left(-\sqrt{2}\left(1+\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right)\sqrt{\frac{\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]}{1+\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2}}\,\sqrt{\frac{a+2\,b\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]+a\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2}{1+\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2}}+\right.$$

$$\frac{1}{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}\,\sqrt{\frac{a+2\,b\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]+a\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2}{1+\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2}}}\sqrt{2}\,\text{Cot}\left[\frac{1}{2}\,(e+f\,x)\right]\sqrt{\frac{\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]}{1+\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2}}$$

$$\left(a \sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}+2 b \sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}} \operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]+a \sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}} \operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]^2-\right.$$

$$i \left(-b+\sqrt{-a^2+b^2}\right) \sqrt{1+\frac{a \operatorname{Cot}\left[\frac{1}{2}(e+f x)\right]}{b+\sqrt{-a^2+b^2}}} \operatorname{EllipticE}\left[i \operatorname{ArcSinh}\left[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]}}\right], \frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\right] \operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]^{3/2}$$

$$\sqrt{\frac{a+b \operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]-\sqrt{-a^2+b^2} \operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]}{b \operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]-\sqrt{-a^2+b^2} \operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]}}+i \left(a-b+\sqrt{-a^2+b^2}\right) \sqrt{1+\frac{a \operatorname{Cot}\left[\frac{1}{2}(e+f x)\right]}{b+\sqrt{-a^2+b^2}}} \operatorname{EllipticF}\Big[$$

$$i \operatorname{ArcSinh}\left[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]}}\right], \frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\Big] \operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]^{3/2} \sqrt{\frac{a+b \operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]-\sqrt{-a^2+b^2} \operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]}{b \operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]-\sqrt{-a^2+b^2} \operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]}}+$$

$$2 b \sqrt{1+\frac{a \operatorname{Cot}\left[\frac{1}{2}(e+f x)\right]}{b+\sqrt{-a^2+b^2}}} \operatorname{EllipticPi}\left[-\frac{i \left(b+\sqrt{-a^2+b^2}\right)}{a}, i \operatorname{ArcSinh}\left[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]}}\right], \frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\right] \operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]^{3/2}$$

$$\sqrt{\frac{a+b \operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]-\sqrt{-a^2+b^2} \operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]}{b \operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]-\sqrt{-a^2+b^2} \operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]}}-2 b \sqrt{1+\frac{a \operatorname{Cot}\left[\frac{1}{2}(e+f x)\right]}{b+\sqrt{-a^2+b^2}}} \operatorname{EllipticPi}\Big[\frac{i \left(b+\sqrt{-a^2+b^2}\right)}{a},$$

$$\left.\left.\left. i \operatorname{ArcSinh}\left[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]}}\right], \frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\Big] \operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]^{3/2} \sqrt{\frac{a+b \operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]-\sqrt{-a^2+b^2} \operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]}{b \operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]-\sqrt{-a^2+b^2} \operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]}}\right)\right)\right) \Big/$$

$$\left(f\sqrt{\text{Sin}[e+f x]}\,(c+c\,\text{Sin}[e+f x])\right)\left(-\frac{\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\sqrt{\frac{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}}\sqrt{\frac{a+2 b\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]+a\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}{1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}}}{\sqrt{2}}-\right.$$

$$\frac{1}{\sqrt{2}\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}\sqrt{\frac{a+2 b\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]+a\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}{1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}}}\text{Csc}\left[\frac{1}{2}(e+f x)\right]^2\sqrt{\frac{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}}$$

$$\left(a\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}+2 b\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]+a\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2-\right.$$

$$i\left(-b+\sqrt{-a^2+b^2}\right)\sqrt{1+\frac{a\,\text{Cot}\left[\frac{1}{2}(e+f x)\right]}{b+\sqrt{-a^2+b^2}}}\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}}\right],\frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\right]\text{Tan}\left[\frac{1}{2}(e+f x)\right]^{3/2}$$

$$\sqrt{\frac{a+b\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]-\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{b\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]-\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]}}+i\left(a-b+\sqrt{-a^2+b^2}\right)\sqrt{1+\frac{a\,\text{Cot}\left[\frac{1}{2}(e+f x)\right]}{b+\sqrt{-a^2+b^2}}}\,\text{EllipticF}\Big[$$

$$i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}}\right],\frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\Big]\text{Tan}\left[\frac{1}{2}(e+f x)\right]^{3/2}\sqrt{\frac{a+b\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]-\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{b\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]-\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]}}+$$

$$2 b\sqrt{1+\frac{a\,\text{Cot}\left[\frac{1}{2}(e+f x)\right]}{b+\sqrt{-a^2+b^2}}}\,\text{EllipticPi}\left[-\frac{i\left(b+\sqrt{-a^2+b^2}\right)}{a},i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}}\right],\frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\right]\text{Tan}\left[\frac{1}{2}(e+f x)\right]^{3/2}$$

$$\sqrt{\frac{a+b\,\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]-\sqrt{-a^2+b^2}\,\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]}{b\,\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]-\sqrt{-a^2+b^2}\,\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]}}-2 b\sqrt{1+\frac{a\,\mathrm{Cot}\left[\frac{1}{2}(e+f x)\right]}{b+\sqrt{-a^2+b^2}}}\;\mathrm{EllipticPi}\Big[\frac{i\left(b+\sqrt{-a^2+b^2}\right)}{a},$$

$$i\,\mathrm{ArcSinh}\Big[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]}}\Big],\frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\Big]\,\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^{3/2}\sqrt{\frac{a+b\,\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]-\sqrt{-a^2+b^2}\,\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]}{b\,\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]-\sqrt{-a^2+b^2}\,\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]}}\Bigg)-$$

$$\frac{1}{\sqrt{2}\sqrt{\frac{\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]}{1+\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2}}}\left(1+\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\sqrt{\frac{a+2 b\,\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]+a\,\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2}{1+\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2}}$$

$$\left(-\frac{\mathrm{Sec}\left[\frac{1}{2}(e+f x)\right]^2\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2}{\left(1+\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)^2}+\frac{\mathrm{Sec}\left[\frac{1}{2}(e+f x)\right]^2}{2\left(1+\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)}\right)+$$

$$\frac{1}{\sqrt{2}\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}\sqrt{\frac{\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]}{1+\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2}}\sqrt{\frac{a+2 b\,\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]+a\,\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2}{1+\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2}}}$$

$$\mathrm{Cot}\left[\frac{1}{2}(e+f x)\right]\Bigg(a\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}+2 b\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}\,\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]+a\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}\,\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2-$$

$$i\left(-b+\sqrt{-a^2+b^2}\right)\sqrt{1+\frac{a\,\mathrm{Cot}\left[\frac{1}{2}(e+f x)\right]}{b+\sqrt{-a^2+b^2}}}\;\mathrm{EllipticE}\Big[i\,\mathrm{ArcSinh}\Big[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]}}\Big],\frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\Big]\,\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^{3/2}$$

$$\sqrt{\frac{a+b\,\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]-\sqrt{-a^2+b^2}\,\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]}{b\,\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]-\sqrt{-a^2+b^2}\,\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]}}+i\left(a-b+\sqrt{-a^2+b^2}\right)\sqrt{1+\frac{a\,\mathrm{Cot}\left[\frac{1}{2}(e+f x)\right]}{b+\sqrt{-a^2+b^2}}}\;\mathrm{EllipticF}\Big[$$

$$i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]}}\right],\ \frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\right]\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^{3/2}\sqrt{\frac{a+b\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]-\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]}{b\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]-\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]}}\ +$$

$$2\,b\,\sqrt{1+\frac{a\,\text{Cot}\left[\frac{1}{2}\,(e+f\,x)\right]}{b+\sqrt{-a^2+b^2}}}\ \text{EllipticPi}\left[-\frac{i\left(b+\sqrt{-a^2+b^2}\right)}{a},\ i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]}}\right],\ \frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\right]$$

$$\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^{3/2}\sqrt{\frac{a+b\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]-\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]}{b\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]-\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]}}\ -$$

$$2\,b\,\sqrt{1+\frac{a\,\text{Cot}\left[\frac{1}{2}\,(e+f\,x)\right]}{b+\sqrt{-a^2+b^2}}}\ \text{EllipticPi}\left[\frac{i\left(b+\sqrt{-a^2+b^2}\right)}{a},\ i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]}}\right],\ \frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\right]\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^{3/2}$$

$$\left.\sqrt{\frac{a+b\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]-\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]}{b\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]-\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]}}\right)\left(-\frac{\text{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]^2\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2}{\left(1+\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right)^2}+\frac{\text{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]^2}{2\left(1+\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right)}\right)\ -$$

$$\left(\left(1+\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right)\sqrt{\frac{\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]}{1+\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2}}\ \left(\frac{b\,\text{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]^2+a\,\text{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]^2\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]}{1+\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2}\ -\right.\right.$$

$$\left.\left.\frac{\text{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]^2\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\left(a+2\,b\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]+a\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right)}{\left(1+\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right)^2}\right)\right)\Bigg/$$

$$\left(\sqrt{2}\,\sqrt{\frac{a+2\,b\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]+a\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2}{1+\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2}}\right)-\frac{1}{\sqrt{2}\,\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}\,\left(\frac{a+2\,b\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]+a\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2}{1+\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2}\right)^{3/2}}$$

$$\text{Cot}\left[\frac{1}{2}(e+f x)\right]\sqrt{\frac{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}}\left(a\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}+2 b\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]+\right.$$

$$a\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2-i\left(-b+\sqrt{-a^2+b^2}\right)\sqrt{1+\frac{a\,\text{Cot}\left[\frac{1}{2}(e+f x)\right]}{b+\sqrt{-a^2+b^2}}}\,\text{EllipticE}\Big[$$

$$i\,\text{ArcSinh}\Big[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}}\Big],\frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\Big]\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^{3/2}\sqrt{\frac{a+b\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]-\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{b\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]-\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]}}+$$

$$i\left(a-b+\sqrt{-a^2+b^2}\right)\sqrt{1+\frac{a\,\text{Cot}\left[\frac{1}{2}(e+f x)\right]}{b+\sqrt{-a^2+b^2}}}\,\text{EllipticF}\Big[i\,\text{ArcSinh}\Big[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}}\Big],\frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\Big]\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^{3/2}$$

$$\sqrt{\frac{a+b\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]-\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{b\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]-\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]}}+2 b\sqrt{1+\frac{a\,\text{Cot}\left[\frac{1}{2}(e+f x)\right]}{b+\sqrt{-a^2+b^2}}}\,\text{EllipticPi}\Big[-\frac{i\left(b+\sqrt{-a^2+b^2}\right)}{a},$$

$$i\,\text{ArcSinh}\Big[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}}\Big],\frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\Big]\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^{3/2}\sqrt{\frac{a+b\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]-\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{b\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]-\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]}}-$$

$$2 b\sqrt{1+\frac{a\,\text{Cot}\left[\frac{1}{2}(e+f x)\right]}{b+\sqrt{-a^2+b^2}}}\,\text{EllipticPi}\Big[\frac{i\left(b+\sqrt{-a^2+b^2}\right)}{a},i\,\text{ArcSinh}\Big[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}}\Big],\frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\Big]\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^{3/2}$$

$$\sqrt{\frac{a+b\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]-\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{b\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]-\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]}}\Bigg)\left(\frac{b\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2+a\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}-\right.$$

$$\left.\frac{\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]\left(a+2\,b\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]+a\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)}{\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)^2}\right)+$$

$$\frac{1}{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}\sqrt{\frac{a+2\,b\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]+a\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}{1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}}}\sqrt{2}\,\text{Cot}\left[\frac{1}{2}(e+f x)\right]\sqrt{\frac{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}}$$

$$\left(b\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2+a\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]+\right.$$

$$\frac{\left(a-b+\sqrt{-a^2+b^2}\right)\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\sqrt{\frac{a+b\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]-\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{b\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]-\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]}}}{4\sqrt{1+\frac{a\,\text{Cot}\left[\frac{1}{2}(e+f x)\right]}{b-\sqrt{-a^2+b^2}}}}-$$

$$\frac{i\,b\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\sqrt{\frac{a+b\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]-\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{b\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]-\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]}}}{2\left(1-i\,\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right)\sqrt{1+\frac{a\,\text{Cot}\left[\frac{1}{2}(e+f x)\right]}{b-\sqrt{-a^2+b^2}}}}+$$

$$\frac{i\, b \sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}\, \text{Sec}\left[\frac{1}{2}(e+f x)\right]^2 \sqrt{\frac{a+b\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]-\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{b\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]-\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]}}}{2\left(1+i\,\text{Cot}\left[\frac{1}{2}(e+f x)\right]\right)\sqrt{1+\frac{a\,\text{Cot}\left[\frac{1}{2}(e+f x)\right]}{b-\sqrt{-a^2+b^2}}}} - \frac{1}{4}\left(-b+\sqrt{-a^2+b^2}\right)\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}$$

$$\sqrt{1+\frac{a\,\text{Cot}\left[\frac{1}{2}(e+f x)\right]}{b-\sqrt{-a^2+b^2}}}\ \text{Sec}\left[\frac{1}{2}(e+f x)\right]^2 \sqrt{\frac{a+b\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]-\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{b\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]-\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]}} -$$

$$\frac{3}{4}\, i \left(-b+\sqrt{-a^2+b^2}\right)\sqrt{1+\frac{a\,\text{Cot}\left[\frac{1}{2}(e+f x)\right]}{b+\sqrt{-a^2+b^2}}}\ \text{EllipticE}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}}\right], \frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\right]$$

$$\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2 \sqrt{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}\ \sqrt{\frac{a+b\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]-\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{b\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]-\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]}} +$$

$$\frac{3}{4}\, i \left(a-b+\sqrt{-a^2+b^2}\right)\sqrt{1+\frac{a\,\text{Cot}\left[\frac{1}{2}(e+f x)\right]}{b+\sqrt{-a^2+b^2}}}\ \text{EllipticF}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}}\right], \frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\right]$$

$$\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2 \sqrt{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}\ \sqrt{\frac{a+b\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]-\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{b\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]-\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]}} +$$

$$\frac{3}{2}\, b \sqrt{1+\frac{a\,\text{Cot}\left[\frac{1}{2}(e+f x)\right]}{b+\sqrt{-a^2+b^2}}}\ \text{EllipticPi}\left[-\frac{i\left(b+\sqrt{-a^2+b^2}\right)}{a}, i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}}\right], \frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\right]$$

$$\mathrm{Sec}\left[\frac{1}{2}(e+f x)\right]^2 \sqrt{\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]} \sqrt{\frac{a+b\,\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]-\sqrt{-a^2+b^2}\,\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]}{b\,\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]-\sqrt{-a^2+b^2}\,\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]}} -$$

$$\frac{3}{2} b \sqrt{1+\frac{a\,\mathrm{Cot}\left[\frac{1}{2}(e+f x)\right]}{b+\sqrt{-a^2+b^2}}}\ \mathrm{EllipticPi}\left[\frac{i\left(b+\sqrt{-a^2+b^2}\right)}{a}, i\,\mathrm{ArcSinh}\left[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]}}\right], \frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\right]$$

$$\mathrm{Sec}\left[\frac{1}{2}(e+f x)\right]^2 \sqrt{\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]} \sqrt{\frac{a+b\,\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]-\sqrt{-a^2+b^2}\,\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]}{b\,\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]-\sqrt{-a^2+b^2}\,\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]}} +$$

$$\left(i\,a\left(-b+\sqrt{-a^2+b^2}\right)\mathrm{Csc}\left[\frac{1}{2}(e+f x)\right]^2 \mathrm{EllipticE}\left[i\,\mathrm{ArcSinh}\left[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]}}\right], \frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\right] \mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^{3/2}\right.$$

$$\left.\sqrt{\frac{a+b\,\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]-\sqrt{-a^2+b^2}\,\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]}{b\,\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]-\sqrt{-a^2+b^2}\,\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]}}\right) \Bigg/ \left(4\left(b+\sqrt{-a^2+b^2}\right)\sqrt{1+\frac{a\,\mathrm{Cot}\left[\frac{1}{2}(e+f x)\right]}{b+\sqrt{-a^2+b^2}}}\right) -$$

$$\left(i\,a\left(a-b+\sqrt{-a^2+b^2}\right)\mathrm{Csc}\left[\frac{1}{2}(e+f x)\right]^2 \mathrm{EllipticF}\left[i\,\mathrm{ArcSinh}\left[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]}}\right], \frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\right] \mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^{3/2}\right.$$

$$\left.\sqrt{\frac{a+b\,\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]-\sqrt{-a^2+b^2}\,\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]}{b\,\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]-\sqrt{-a^2+b^2}\,\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]}}\right) \Bigg/ \left(4\left(b+\sqrt{-a^2+b^2}\right)\sqrt{1+\frac{a\,\mathrm{Cot}\left[\frac{1}{2}(e+f x)\right]}{b+\sqrt{-a^2+b^2}}}\right) -$$

$$\left(a\,b\,\text{Csc}\left[\frac{1}{2}(e+f\,x)\right]^2\,\text{EllipticPi}\left[-\frac{i\left(b+\sqrt{-a^2+b^2}\right)}{a},\,i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]}}\right],\,\frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\right]\right.$$

$$\left.\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]^{3/2}\sqrt{\frac{a+b\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]-\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]}{b\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]-\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]}}\right)\Big/\left(2\left(b+\sqrt{-a^2+b^2}\right)\sqrt{1+\frac{a\,\text{Cot}\left[\frac{1}{2}(e+f\,x)\right]}{b+\sqrt{-a^2+b^2}}}\right)+$$

$$\left(a\,b\,\text{Csc}\left[\frac{1}{2}(e+f\,x)\right]^2\,\text{EllipticPi}\left[\frac{i\left(b+\sqrt{-a^2+b^2}\right)}{a},\,i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]}}\right],\,\frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\right]\right.$$

$$\left.\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]^{3/2}\sqrt{\frac{a+b\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]-\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]}{b\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]-\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]}}\right)\Big/\left(2\left(b+\sqrt{-a^2+b^2}\right)\sqrt{1+\frac{a\,\text{Cot}\left[\frac{1}{2}(e+f\,x)\right]}{b+\sqrt{-a^2+b^2}}}\right)-$$

$$\left(i\left(-b+\sqrt{-a^2+b^2}\right)\sqrt{1+\frac{a\,\text{Cot}\left[\frac{1}{2}(e+f\,x)\right]}{b+\sqrt{-a^2+b^2}}}\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]}}\right],\,\frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\right]\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]^{3/2}\right.$$

$$\left(\frac{\frac{1}{2}b\,\text{Sec}\left[\frac{1}{2}(e+f\,x)\right]^2-\frac{1}{2}\sqrt{-a^2+b^2}\,\text{Sec}\left[\frac{1}{2}(e+f\,x)\right]^2}{b\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]-\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]}-\left(\left(\frac{1}{2}b\,\text{Sec}\left[\frac{1}{2}(e+f\,x)\right]^2-\frac{1}{2}\sqrt{-a^2+b^2}\,\text{Sec}\left[\frac{1}{2}(e+f\,x)\right]^2\right)\right.\right.$$

$$\left.\left.\left.\left(a+b\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]-\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]\right)\right)\Big/\left(b\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]-\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]\right)^2\right)\right)\Big/$$

$$\left(2\sqrt{\frac{a+b\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]-\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]}{b\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]-\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]}}\right)+\Bigg(i\left(a-b+\sqrt{-a^2+b^2}\right)\sqrt{1+\frac{a\,\text{Cot}\left[\frac{1}{2}(e+f\,x)\right]}{b+\sqrt{-a^2+b^2}}}\;\text{EllipticF}\Bigg[$$

$$i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]}}\right],\frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\Bigg]\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]^{3/2}\left(\frac{\frac{1}{2}b\,\text{Sec}\left[\frac{1}{2}(e+f\,x)\right]^2-\frac{1}{2}\sqrt{-a^2+b^2}\,\text{Sec}\left[\frac{1}{2}(e+f\,x)\right]^2}{b\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]-\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]}-\right.$$

$$\left(\left(\frac{1}{2}b\,\text{Sec}\left[\frac{1}{2}(e+f\,x)\right]^2-\frac{1}{2}\sqrt{-a^2+b^2}\,\text{Sec}\left[\frac{1}{2}(e+f\,x)\right]^2\right)\left(a+b\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]-\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]\right)\right)\Big/$$

$$\left.\left(b\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]-\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]\right)^2\right)\Bigg)\Bigg/\left(2\sqrt{\frac{a+b\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]-\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]}{b\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]-\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]}}\right)+$$

$$\Bigg(b\sqrt{1+\frac{a\,\text{Cot}\left[\frac{1}{2}(e+f\,x)\right]}{b+\sqrt{-a^2+b^2}}}\;\text{EllipticPi}\left[-\frac{i\left(b+\sqrt{-a^2+b^2}\right)}{a},i\,\text{ArcSinh}\left[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]}}\right],\frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\right]\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]^{3/2}$$

$$\left(\frac{\frac{1}{2}b\,\text{Sec}\left[\frac{1}{2}(e+f\,x)\right]^2-\frac{1}{2}\sqrt{-a^2+b^2}\,\text{Sec}\left[\frac{1}{2}(e+f\,x)\right]^2}{b\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]-\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]}-\left(\left(\frac{1}{2}b\,\text{Sec}\left[\frac{1}{2}(e+f\,x)\right]^2-\frac{1}{2}\sqrt{-a^2+b^2}\,\text{Sec}\left[\frac{1}{2}(e+f\,x)\right]^2\right)\right.\right.$$

$$\left.\left.\left(a+b\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]-\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]\right)\right)\Big/\left(b\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]-\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]\right)^2\right)\Bigg)\Bigg/$$

$$\left(\sqrt{\frac{a+b\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]-\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]}{b\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]-\sqrt{-a^2+b^2}\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]}}\right)-\Bigg(b\sqrt{1+\frac{a\,\text{Cot}\left[\frac{1}{2}(e+f\,x)\right]}{b+\sqrt{-a^2+b^2}}}\;\text{EllipticPi}\left[\frac{i\left(b+\sqrt{-a^2+b^2}\right)}{a},\right.$$

$$i\,\text{ArcSinh}\Big[\frac{\sqrt{\frac{a}{b+\sqrt{-a^2+b^2}}}}{\sqrt{\text{Tan}[\frac{1}{2}(e+f x)]}}\Big],\ \frac{b+\sqrt{-a^2+b^2}}{b-\sqrt{-a^2+b^2}}\Big]\ \text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^{3/2}\ \Bigg(\frac{\frac{1}{2} b\,\text{Sec}[\frac{1}{2}(e+f x)]^2-\frac{1}{2}\sqrt{-a^2+b^2}\ \text{Sec}[\frac{1}{2}(e+f x)]^2}{b\,\text{Tan}[\frac{1}{2}(e+f x)]-\sqrt{-a^2+b^2}\ \text{Tan}[\frac{1}{2}(e+f x)]}-$$

$$\Bigg(\Big(\frac{1}{2} b\,\text{Sec}\Big[\frac{1}{2}(e+f x)\Big]^2-\frac{1}{2}\sqrt{-a^2+b^2}\ \text{Sec}\Big[\frac{1}{2}(e+f x)\Big]^2\Big)\ \Big(a+b\,\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]-\sqrt{-a^2+b^2}\ \text{Tan}\Big[\frac{1}{2}(e+f x)\Big]\Big)\Bigg)\Big/$$

$$\Big(b\,\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]-\sqrt{-a^2+b^2}\ \text{Tan}\Big[\frac{1}{2}(e+f x)\Big]\Big)^2\Bigg)\Bigg)\Bigg/\ \Bigg(\sqrt{\frac{a+b\,\text{Tan}[\frac{1}{2}(e+f x)]-\sqrt{-a^2+b^2}\ \text{Tan}[\frac{1}{2}(e+f x)]}{b\,\text{Tan}[\frac{1}{2}(e+f x)]-\sqrt{-a^2+b^2}\ \text{Tan}[\frac{1}{2}(e+f x)]}}\Bigg)\Bigg)\Bigg)\Bigg)$$

- **Problem 32: Attempted integration timed out after 120 seconds.**

$$\int \frac{\sqrt{a+b\,\text{Sin}[e+f x]}}{\sqrt{g\,\text{Sin}[e+f x]}\ (c+c\,\text{Sin}[e+f x])}\,dx$$

Optimal (type 4, 116 leaves, 1 step):

$$-\frac{\text{EllipticE}\Big[\text{ArcSin}\Big[\frac{\text{Cos}[e+f x]}{1+\text{Sin}[e+f x]}\Big],-\frac{a-b}{a+b}\Big]\sqrt{\frac{\text{Sin}[e+f x]}{1+\text{Sin}[e+f x]}}\ \sqrt{a+b\,\text{Sin}[e+f x]}}{c\,f\,\sqrt{g\,\text{Sin}[e+f x]}\ \sqrt{\frac{a+b\,\text{Sin}[e+f x]}{(a+b)\,(1+\text{Sin}[e+f x])}}}$$

Result (type 1, 1 leaves):

???

- **Problem 33: Attempted integration timed out after 120 seconds.**

$$\int \frac{\sqrt{g\,\text{Sin}[e+f x]}}{\sqrt{a+b\,\text{Sin}[e+f x]}\ (c+c\,\text{Sin}[e+f x])}\,dx$$

Optimal (type 4, 252 leaves, 3 steps):

$$\frac{g\,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\text{Cos}[e+f x]}{1+\text{Sin}[e+f x]}\right],-\frac{a-b}{a+b}\right]\sqrt{\frac{\text{Sin}[e+f x]}{1+\text{Sin}[e+f x]}}\sqrt{a+b\,\text{Sin}[e+f x]}}{(a-b)\,c\,f\sqrt{g\,\text{Sin}[e+f x]}\sqrt{\frac{a+b\,\text{Sin}[e+f x]}{(a+b)\,(1+\text{Sin}[e+f x])}}}-$$

$$\frac{2\sqrt{a+b}\sqrt{g}\sqrt{\frac{a\,(1-\text{Csc}[e+f x])}{a+b}}\sqrt{\frac{a\,(1+\text{Csc}[e+f x])}{a-b}}\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{g}\sqrt{a+b\,\text{Sin}[e+f x]}}{\sqrt{a+b}\sqrt{g\,\text{Sin}[e+f x]}}\right],-\frac{a+b}{a-b}\right]\text{Tan}[e+f x]}{(a-b)\,c\,f}$$

Result (type 1, 1 leaves):

???

Problem 34: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int\frac{1}{\sqrt{g\,\text{Sin}[e+f x]}\sqrt{a+b\,\text{Sin}[e+f x]}\,(c+c\,\text{Sin}[e+f x])}\,dx$$

Optimal (type 4, 256 leaves, 3 steps):

$$-\frac{\text{EllipticE}\left[\text{ArcSin}\left[\frac{\text{Cos}[e+f x]}{1+\text{Sin}[e+f x]}\right],-\frac{a-b}{a+b}\right]\sqrt{\frac{\text{Sin}[e+f x]}{1+\text{Sin}[e+f x]}}\sqrt{a+b\,\text{Sin}[e+f x]}}{(a-b)\,c\,f\sqrt{g\,\text{Sin}[e+f x]}\sqrt{\frac{a+b\,\text{Sin}[e+f x]}{(a+b)\,(1+\text{Sin}[e+f x])}}}+$$

$$\frac{2\,b\sqrt{a+b}\sqrt{\frac{a\,(1-\text{Csc}[e+f x])}{a+b}}\sqrt{\frac{a\,(1+\text{Csc}[e+f x])}{a-b}}\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{g}\sqrt{a+b\,\text{Sin}[e+f x]}}{\sqrt{a+b}\sqrt{g\,\text{Sin}[e+f x]}}\right],-\frac{a+b}{a-b}\right]\text{Tan}[e+f x]}{a\,(a-b)\,c\,f\sqrt{g}}$$

Result (type 4, 1662 leaves):

$$-\frac{2\,\text{Sin}\left[\frac{1}{2}(e+f x)\right]\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)\text{Sin}[e+f x]\sqrt{a+b\,\text{Sin}[e+f x]}}{(a-b)\,f\sqrt{g\,\text{Sin}[e+f x]}\,(c+c\,\text{Sin}[e+f x])}+$$

$$\frac{1}{2\,(a-b)\,f\sqrt{g\,\text{Sin}[e+f x]}\,(c+c\,\text{Sin}[e+f x])}\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^2\sqrt{\text{Sin}[e+f x]}$$

$$\left(\left(4\,a\,(a-b)\sqrt{\frac{(a+b)\,\text{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{-a+b}}\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{\frac{\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2(a+b\,\text{Sin}[e+f x])}{a}}}{\sqrt{2}}\right],-\frac{2\,a}{-a+b}\right]\text{Sec}[e+f x]\right.\right.$$

$$\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^4 \sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Sin}[e+f x]}{a}} \sqrt{\frac{\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 (a+b\,\text{Sin}[e+f x])}{a}}\Bigg) \Big/$$

$$\left((a+b)\sqrt{\text{Sin}[e+f x]}\sqrt{a+b\,\text{Sin}[e+f x]}\right)+\frac{2\,a\,\text{ArcTanh}\left[\frac{\sqrt{b}\sqrt{\text{Sin}[e+f x]}}{\sqrt{a+b\,\text{Sin}[e+f x]}}\right]\text{Cos}[e+f x]^2}{\sqrt{b}\left(1-\text{Sin}[e+f x]^2\right)}+$$

$$4\,a^2\Bigg(\Bigg(\sqrt{\frac{(a+b)\,\text{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{-a+b}}\ \text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{\frac{\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 (a+b\,\text{Sin}[e+f x])}{a}}}{\sqrt{2}}\right],-\frac{2\,a}{-a+b}\right]\text{Sec}[e+f x]$$

$$\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^4 \sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Sin}[e+f x]}{a}} \sqrt{\frac{\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 (a+b\,\text{Sin}[e+f x])}{a}}\Bigg) \Big/$$

$$\left((a+b)\sqrt{\text{Sin}[e+f x]}\sqrt{a+b\,\text{Sin}[e+f x]}\right)-\Bigg(\sqrt{\frac{(a+b)\,\text{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{-a+b}}\ \text{EllipticPi}\left[-\frac{a}{b},\text{ArcSin}\right[$$

$$\left.\frac{\sqrt{\frac{\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 (a+b\,\text{Sin}[e+f x])}{a}}}{\sqrt{2}}\right],-\frac{2\,a}{-a+b}\Big]\,\text{Sec}[e+f x]\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^4 \sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Sin}[e+f x]}{a}}$$

$$\sqrt{\frac{\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 (a+b\,\text{Sin}[e+f x])}{a}}\Bigg) \Big/ \left(b\sqrt{\text{Sin}[e+f x]}\sqrt{a+b\,\text{Sin}[e+f x]}\right)\Bigg)-$$

$$2\,b\Bigg(\frac{\text{Cos}[e+f x]\sqrt{a+b\,\text{Sin}[e+f x]}}{b\sqrt{\text{Sin}[e+f x]}}+\Bigg(i\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\text{Csc}[e+f x]\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[\frac{\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}{\sqrt{\text{Sin}[e+f x]}}\right],-\frac{2\,a}{-a-b}\right]$$

$$\sqrt{a+b\,\mathrm{Sin}[e+f\,x]}\Bigg)\Bigg/\left(b\sqrt{\mathrm{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\mathrm{Csc}[e+f\,x]}\ \sqrt{\frac{\mathrm{Csc}[e+f\,x]\,(a+b\,\mathrm{Sin}[e+f\,x])}{a+b}}\right)+$$

$$\frac{1}{b}2\,a\left(\left(a\sqrt{\frac{(a+b)\,\mathrm{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{-a+b}}\ \mathrm{EllipticF}\left[\mathrm{ArcSin}\left[\frac{\sqrt{\frac{\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2(a+b\,\mathrm{Sin}[e+f\,x])}{a}}}{\sqrt{2}}\right],-\frac{2\,a}{-a+b}\right]\mathrm{Sec}\left[\right.\right.\right.$$

$$\left.e+f\,x\right]\mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\sqrt{-\frac{(a+b)\,\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\mathrm{Sin}[e+f\,x]}{a}}$$

$$\left.\sqrt{\frac{\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2(a+b\,\mathrm{Sin}[e+f\,x])}{a}}\right)\Bigg/\left((a+b)\sqrt{\mathrm{Sin}[e+f\,x]}\ \sqrt{a+b\,\mathrm{Sin}[e+f\,x]}\right)-$$

$$\left(a\sqrt{\frac{(a+b)\,\mathrm{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{-a+b}}\ \mathrm{EllipticPi}\left[-\frac{a}{b},\mathrm{ArcSin}\left[\frac{\sqrt{\frac{\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2(a+b\,\mathrm{Sin}[e+f\,x])}{a}}}{\sqrt{2}}\right],-\frac{2\,a}{-a+b}\right]\mathrm{Sec}\left[\right.\right.$$

$$\left.e+f\,x\right]\mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\sqrt{-\frac{(a+b)\,\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\mathrm{Sin}[e+f\,x]}{a}}$$

$$\left.\left.\sqrt{\frac{\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2(a+b\,\mathrm{Sin}[e+f\,x])}{a}}\right)\Bigg/\left(b\sqrt{\mathrm{Sin}[e+f\,x]}\ \sqrt{a+b\,\mathrm{Sin}[e+f\,x]}\right)\right)+$$

$$\left.\frac{2\,b\,\mathrm{Cot}[e+f\,x]\left(-\frac{a\,\mathrm{Log}\left[b\sqrt{\mathrm{Sin}[e+f\,x]}+\sqrt{b}\ \sqrt{a+b\,\mathrm{Sin}[e+f\,x]}\right]}{2\,b^{3/2}}+\frac{\sqrt{\mathrm{Sin}[e+f\,x]}\ \sqrt{a+b\,\mathrm{Sin}[e+f\,x]}}{2\,b}\right)\mathrm{Sin}[2\,(e+f\,x)]}{1-\mathrm{Sin}[e+f\,x]^2}\right)$$

Problem 35: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \mathrm{Csc}[e+f\,x]\,\sqrt{a+a\,\mathrm{Sin}[e+f\,x]}\ \sqrt{c+d\,\mathrm{Sin}[e+f\,x]}\,dx$$

Optimal (type 3, 123 leaves, 5 steps):

$$-\frac{2\sqrt{a}\,\sqrt{d}\,\text{ArcTan}\left[\frac{\sqrt{a}\,\sqrt{d}\,\text{Cos}[e+f x]}{\sqrt{a+a\,\text{Sin}[e+f x]}\,\sqrt{c+d\,\text{Sin}[e+f x]}}\right]}{f}-\frac{2\sqrt{a}\,\sqrt{c}\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\sqrt{c}\,\text{Cos}[e+f x]}{\sqrt{a+a\,\text{Sin}[e+f x]}\,\sqrt{c+d\,\text{Sin}[e+f x]}}\right]}{f}$$

Result (type 3, 567 leaves):

$$-\Bigg(\Bigg(\Bigg(\sqrt{c}\,\text{Log}\Big[\frac{1}{c^{3/2}\left(1+e^{i(e+f x)}\right)}\left(\frac{1}{2}+\frac{i}{2}\right)e^{-\frac{i e}{2}}\Big(-\sqrt{2}\,c\left(-1+e^{i(e+f x)}\right)-i\sqrt{2}\,d\left(1+e^{i(e+f x)}\right)+2 i\sqrt{c}\,\sqrt{2 c\,e^{i(e+f x)}-i d\left(-1+e^{2 i(e+f x)}\right)}\Big)f\Big]+$$

$$\sqrt{c}\,\text{Log}\Big[\frac{1}{c^{3/2}\left(-1+e^{i(e+f x)}\right)}\left(\frac{1}{2}+\frac{i}{2}\right)e^{-\frac{i e}{2}}\Big(-i\sqrt{2}\,d\left(-1+e^{i(e+f x)}\right)+\sqrt{2}\,c\left(1+e^{i(e+f x)}\right)+2\sqrt{c}\,\sqrt{2 c\,e^{i(e+f x)}-i d\left(-1+e^{2 i(e+f x)}\right)}\Big)f\Big]-$$

$$i\sqrt{d}\,\Bigg(\text{Log}\Big[\frac{2 e^{-\frac{1}{2} i(e+2 f x)}\Big((-1)^{3/4} d+(-1)^{1/4} c\,e^{i(e+f x)}+i\sqrt{d}\,\sqrt{2 c\,e^{i(e+f x)}-i d\left(-1+e^{2 i(e+f x)}\right)}\Big)f}{d^{3/2}}\Big]-$$

$$\text{Log}\Big[\frac{1}{\sqrt{d}}(1+i)\sqrt{2}\,\Big(c-i d\,\text{Cos}[e+f x]+d\,\text{Sin}[e+f x]+(1-i)\sqrt{d}\,\sqrt{(\text{Cos}[e+f x]+i\,\text{Sin}[e+f x])\,(c+d\,\text{Sin}[e+f x])}\Big)\Big]\Bigg)\Bigg)$$

$$\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+i\,\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)\sqrt{a\,(1+\text{Sin}[e+f x])}\,\sqrt{c+d\,\text{Sin}[e+f x]}\Bigg)\Bigg/$$

$$\left(f\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)\sqrt{(\text{Cos}[e+f x]+i\,\text{Sin}[e+f x])\,(c+d\,\text{Sin}[e+f x])}\right)$$

- **Problem 36: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int\frac{\text{Csc}[e+f x]\,\sqrt{a+a\,\text{Sin}[e+f x]}}{\sqrt{c+d\,\text{Sin}[e+f x]}}\,dx$$

Optimal (type 3, 61 leaves, 2 steps):

$$-\frac{2\sqrt{a}\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\sqrt{c}\,\text{Cos}[e+f x]}{\sqrt{a+a\,\text{Sin}[e+f x]}\,\sqrt{c+d\,\text{Sin}[e+f x]}}\right]}{\sqrt{c}\,f}$$

Result (type 3, 367 leaves):

$$-\frac{1}{\sqrt{c}\, f\left(\cos\left[\frac{1}{2}(e+f x)\right]+\sin\left[\frac{1}{2}(e+f x)\right]\right)\sqrt{c+d \sin[e+f x]}}$$

$$\left(\text{Log}\left[-\frac{1}{\sqrt{c}\left(1+e^{i(e+f x)}\right)}(1+i)\, e^{\frac{i e}{2}}\left(\sqrt{2}\, c\left(-1+e^{i(e+f x)}\right)+i\sqrt{2}\, d\left(1+e^{i(e+f x)}\right)-2 i\sqrt{c}\sqrt{2 c\, e^{i(e+f x)}-i d\left(-1+e^{2 i(e+f x)}\right)}\right) f\right]+\right.$$

$$\left.\text{Log}\left[\frac{1}{\sqrt{c}\left(-1+e^{i(e+f x)}\right)}(1+i)\, e^{\frac{i e}{2}}\left(-i\sqrt{2}\, d\left(-1+e^{i(e+f x)}\right)+\sqrt{2}\, c\left(1+e^{i(e+f x)}\right)+2\sqrt{c}\sqrt{2 c\, e^{i(e+f x)}-i d\left(-1+e^{2 i(e+f x)}\right)}\right) f\right]\right)$$

$$\left(\cos\left[\frac{1}{2}(e+f x)\right]-i \sin\left[\frac{1}{2}(e+f x)\right]\right)\sqrt{a(1+\sin[e+f x])}\sqrt{(\cos[e+f x]+i \sin[e+f x])(c+d \sin[e+f x])}$$

- **Problem 37: Humongous result has more than 200000 leaves.**

$$\int \frac{\csc[e+f x]\sqrt{c+d \sin[e+f x]}}{\sqrt{a+a \sin[e+f x]}}\, dx$$

Optimal (type 3, 140 leaves, 5 steps):

$$-\frac{2\sqrt{c}\,\text{ArcTanh}\left[\frac{\sqrt{a}\sqrt{c}\cos[e+f x]}{\sqrt{a+a \sin[e+f x]}\sqrt{c+d \sin[e+f x]}}\right]}{\sqrt{a}\, f}+\frac{\sqrt{2}\sqrt{c-d}\,\text{ArcTanh}\left[\frac{\sqrt{a}\sqrt{c-d}\cos[e+f x]}{\sqrt{2}\sqrt{a+a \sin[e+f x]}\sqrt{c+d \sin[e+f x]}}\right]}{\sqrt{a}\, f}$$

Result (type ?, 472502 leaves): Display of huge result suppressed!

- **Problem 38: Humongous result has more than 200000 leaves.**

$$\int \frac{\csc[e+f x]}{\sqrt{a+a \sin[e+f x]}\sqrt{c+d \sin[e+f x]}}\, dx$$

Optimal (type 3, 140 leaves, 5 steps):

$$-\frac{2\,\text{ArcTanh}\left[\frac{\sqrt{a}\sqrt{c}\cos[e+f x]}{\sqrt{a+a \sin[e+f x]}\sqrt{c+d \sin[e+f x]}}\right]}{\sqrt{a}\sqrt{c}\, f}+\frac{\sqrt{2}\,\text{ArcTanh}\left[\frac{\sqrt{a}\sqrt{c-d}\cos[e+f x]}{\sqrt{2}\sqrt{a+a \sin[e+f x]}\sqrt{c+d \sin[e+f x]}}\right]}{\sqrt{a}\sqrt{c-d}\, f}$$

Result (type ?, 309693 leaves): Display of huge result suppressed!

- **Problem 40: Result unnecessarily involves imaginary or complex numbers.**

$$\int \frac{\csc[e+f x]\sqrt{c+d \sin[e+f x]}}{a+b \sin[e+f x]}\, dx$$

Optimal (type 4, 154 leaves, 5 steps):

$$\frac{2 c\,\text{EllipticPi}\left[2, \frac{1}{2}\left(e-\frac{\pi}{2}+f x\right), \frac{2 d}{c+d}\right]\sqrt{\frac{c+d \sin[e+f x]}{c+d}}}{a f\sqrt{c+d \sin[e+f x]}}-\frac{2(b c-a d)\,\text{EllipticPi}\left[\frac{2 b}{a+b}, \frac{1}{2}\left(e-\frac{\pi}{2}+f x\right), \frac{2 d}{c+d}\right]\sqrt{\frac{c+d \sin[e+f x]}{c+d}}}{a(a+b) f\sqrt{c+d \sin[e+f x]}}$$

Result (type 4, 179 leaves) :

$$\frac{1}{a\sqrt{-\frac{1}{c+d}}\ f}2\,i\left(\text{EllipticPi}\left[\frac{c+d}{c},\ i\,\text{ArcSinh}\left[\sqrt{-\frac{1}{c+d}}\ \sqrt{c+d\,\text{Sin}[e+f\,x]}\right],\ \frac{c+d}{c-d}\right]-\text{EllipticPi}\left[\frac{b\,(c+d)}{b\,c-a\,d},\ i\,\text{ArcSinh}\left[\sqrt{-\frac{1}{c+d}}\ \sqrt{c+d\,\text{Sin}[e+f\,x]}\right],\ \frac{c+d}{c-d}\right]\right)$$
$$\text{Sec}[e+f\,x]\sqrt{-\frac{d\,(-1+\text{Sin}[e+f\,x])}{c+d}}\ \sqrt{\frac{d\,(1+\text{Sin}[e+f\,x])}{-c+d}}$$

Problem 41: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{\text{Csc}[e+f\,x]}{(a+b\,\text{Sin}[e+f\,x])\ \sqrt{c+d\,\text{Sin}[e+f\,x]}}\,dx$$

Optimal (type 4, 146 leaves, 5 steps) :

$$\frac{2\,\text{EllipticPi}\left[2,\ \frac{1}{2}\left(e-\frac{\pi}{2}+f\,x\right),\ \frac{2\,d}{c+d}\right]\sqrt{\frac{c+d\,\text{Sin}[e+f\,x]}{c+d}}}{a\,f\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}-\frac{2\,b\,\text{EllipticPi}\left[\frac{2\,b}{a+b},\ \frac{1}{2}\left(e-\frac{\pi}{2}+f\,x\right),\ \frac{2\,d}{c+d}\right]\sqrt{\frac{c+d\,\text{Sin}[e+f\,x]}{c+d}}}{a\,(a+b)\,f\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}$$

Result (type 4, 203 leaves) :

$$-\frac{1}{a\,c\,\sqrt{-\frac{1}{c+d}}\ (b\,c-a\,d)\,f}2\,i\left((-b\,c+a\,d)\,\text{EllipticPi}\left[\frac{c+d}{c},\ i\,\text{ArcSinh}\left[\sqrt{-\frac{1}{c+d}}\ \sqrt{c+d\,\text{Sin}[e+f\,x]}\right],\ \frac{c+d}{c-d}\right]+\right.$$
$$\left.b\,c\,\text{EllipticPi}\left[\frac{b\,(c+d)}{b\,c-a\,d},\ i\,\text{ArcSinh}\left[\sqrt{-\frac{1}{c+d}}\ \sqrt{c+d\,\text{Sin}[e+f\,x]}\right],\ \frac{c+d}{c-d}\right]\right)\text{Sec}[e+f\,x]\sqrt{-\frac{d\,(-1+\text{Sin}[e+f\,x])}{c+d}}\ \sqrt{-\frac{d\,(1+\text{Sin}[e+f\,x])}{c-d}}$$

Problem 42: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int\frac{\sqrt{g\,\text{Sin}[e+f\,x]}\ \sqrt{a+b\,\text{Sin}[e+f\,x]}}{c+d\,\text{Sin}[e+f\,x]}\,dx$$

Optimal (type 4, 254 leaves, 3 steps) :

$$\frac{1}{d\,f}2\sqrt{a+b}\,\sqrt{g}\,\sqrt{\frac{a\,(1-\text{Csc}[e+f\,x])}{a+b}}\,\sqrt{\frac{a\,(1+\text{Csc}[e+f\,x])}{a-b}}\,\text{EllipticPi}\left[\frac{a+b}{b},\text{ArcSin}\left[\frac{\sqrt{g}\,\sqrt{a+b\,\text{Sin}[e+f\,x]}}{\sqrt{a+b}\,\sqrt{g\,\text{Sin}[e+f\,x]}}\right],-\frac{a+b}{a-b}\right]\text{Tan}[e+f\,x]-$$

$$\left(2\,(b\,c-a\,d)\,\sqrt{-\text{Cot}[e+f\,x]^2}\,\sqrt{\frac{b+a\,\text{Csc}[e+f\,x]}{a+b}}\,\text{EllipticPi}\left[\frac{2\,c}{c+d},\text{ArcSin}\left[\frac{\sqrt{1-\text{Csc}[e+f\,x]}}{\sqrt{2}}\right],\frac{2\,a}{a+b}\right]\sqrt{g\,\text{Sin}[e+f\,x]}\,\text{Tan}[e+f\,x]\right)\Big/$$

$$\left(d\,(c+d)\,f\,\sqrt{a+b\,\text{Sin}[e+f\,x]}\right)$$

Result (type 4, 75 407 leaves): Display of huge result suppressed!

Problem 43: Result more than twice size of optimal antiderivative.

$$\int\frac{\sqrt{a+b\,\text{Sin}[e+f\,x]}}{\sqrt{g\,\text{Sin}[e+f\,x]}\,(c+d\,\text{Sin}[e+f\,x])}\,dx$$

Optimal (type 4, 250 leaves, 3 steps):

$$-\frac{2\sqrt{a+b}\,\sqrt{\frac{a\,(1-\text{Csc}[e+f\,x])}{a+b}}\,\sqrt{\frac{a\,(1+\text{Csc}[e+f\,x])}{a-b}}\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{g}\,\sqrt{a+b\,\text{Sin}[e+f\,x]}}{\sqrt{a+b}\,\sqrt{g\,\text{Sin}[e+f\,x]}}\right],-\frac{a+b}{a-b}\right]\text{Tan}[e+f\,x]}{c\,f\,\sqrt{g}}+$$

$$\left(2\,(b\,c-a\,d)\,\sqrt{-\text{Cot}[e+f\,x]^2}\,\sqrt{\frac{b+a\,\text{Csc}[e+f\,x]}{a+b}}\,\text{EllipticPi}\left[\frac{2\,c}{c+d},\text{ArcSin}\left[\frac{\sqrt{1-\text{Csc}[e+f\,x]}}{\sqrt{2}}\right],\frac{2\,a}{a+b}\right]\sqrt{g\,\text{Sin}[e+f\,x]}\,\text{Tan}[e+f\,x]\right)\Big/$$

$$\left(c\,(c+d)\,f\,g\,\sqrt{a+b\,\text{Sin}[e+f\,x]}\right)$$

Result (type 4, 45 019 leaves): Display of huge result suppressed!

Problem 44: Result more than twice size of optimal antiderivative.

$$\int\frac{\sqrt{g\,\text{Sin}[e+f\,x]}}{\sqrt{a+b\,\text{Sin}[e+f\,x]}\,(c+d\,\text{Sin}[e+f\,x])}\,dx$$

Optimal (type 4, 114 leaves, 1 step):

$$\left(2\,\sqrt{-\text{Cot}[e+f\,x]^2}\,\sqrt{\frac{b+a\,\text{Csc}[e+f\,x]}{a+b}}\,\text{EllipticPi}\left[\frac{2\,c}{c+d},\text{ArcSin}\left[\frac{\sqrt{1-\text{Csc}[e+f\,x]}}{\sqrt{2}}\right],\frac{2\,a}{a+b}\right]\sqrt{g\,\text{Sin}[e+f\,x]}\,\text{Tan}[e+f\,x]\right)\Big/$$

$$\left((c+d)\,f\,\sqrt{a+b\,\text{Sin}[e+f\,x]}\right)$$

Result (type 4, 3427 leaves):

$$\left(a\sqrt{-a^2+b^2}\left(\left(a\,c+\left(b+\sqrt{-a^2+b^2}\right)\left(-d+\sqrt{-c^2+d^2}\right)\right)\text{EllipticPi}\left[\frac{2\sqrt{-a^2+b^2}\;c}{b\,c+\sqrt{-a^2+b^2}\;c-a\,d+a\sqrt{-c^2+d^2}},\right.\right.\right.$$

$$\left.\text{ArcSin}\left[\frac{\sqrt{\frac{b+\sqrt{-a^2+b^2}+a\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]}{\sqrt{-a^2+b^2}}}}{\sqrt{2}}\right],\frac{2\sqrt{-a^2+b^2}}{b+\sqrt{-a^2+b^2}}\right]+\left(-a\,c+\left(b+\sqrt{-a^2+b^2}\right)\left(d+\sqrt{-c^2+d^2}\right)\right)$$

$$\left.\left.\text{EllipticPi}\left[\frac{2\sqrt{-a^2+b^2}\;c}{b\,c+\sqrt{-a^2+b^2}\;c-a\left(d+\sqrt{-c^2+d^2}\right)},\text{ArcSin}\left[\frac{\sqrt{\frac{b+\sqrt{-a^2+b^2}+a\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]}{\sqrt{-a^2+b^2}}}}{\sqrt{2}}\right],\frac{2\sqrt{-a^2+b^2}}{b+\sqrt{-a^2+b^2}}\right]\right)\right.$$

$$\left.\sqrt{\text{Sin}[e+f\,x]}\sqrt{g\,\text{Sin}[e+f\,x]}\sqrt{\frac{a\,\text{Sec}\left[\frac{1}{2}(e+f\,x)\right]^2(a+b\,\text{Sin}[e+f\,x])}{a^2-b^2}}\right)\Big/$$

$$\left(\left(b+\sqrt{-a^2+b^2}\right)^2(b\,c-a\,d)\sqrt{-c^2+d^2}\;f\,(a+b\,\text{Sin}[e+f\,x])\,(c+d\,\text{Sin}[e+f\,x])\sqrt{-\frac{a\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]}{b+\sqrt{-a^2+b^2}}}\right.$$

$$\left(\left(a^2\sqrt{-a^2+b^2}\left(\left(a\,c+\left(b+\sqrt{-a^2+b^2}\right)\left(-d+\sqrt{-c^2+d^2}\right)\right)\text{EllipticPi}\left[\frac{2\sqrt{-a^2+b^2}\;c}{b\,c+\sqrt{-a^2+b^2}\;c-a\,d+a\sqrt{-c^2+d^2}},\right.\right.\right.\right.$$

$$\text{ArcSin}\left[\frac{\sqrt{\frac{b+\sqrt{-a^2+b^2}+a\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]}{\sqrt{-a^2+b^2}}}}{\sqrt{2}}\right],\ \frac{2\,\sqrt{-a^2+b^2}}{b+\sqrt{-a^2+b^2}}\right]+\left(-a\,c+\left(b+\sqrt{-a^2+b^2}\right)\,\left(d+\sqrt{-c^2+d^2}\right)\right)\,\text{EllipticPi}\left[\right.$$

$$\left.\frac{2\,\sqrt{-a^2+b^2}\,\,c}{b\,c+\sqrt{-a^2+b^2}\,\,c-a\,\left(d+\sqrt{-c^2+d^2}\right)},\ \text{ArcSin}\left[\frac{\sqrt{\frac{b+\sqrt{-a^2+b^2}+a\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]}{\sqrt{-a^2+b^2}}}}{\sqrt{2}}\right],\ \frac{2\,\sqrt{-a^2+b^2}}{b+\sqrt{-a^2+b^2}}\right]\right)\,\text{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]^2\,\sqrt{\text{Sin}[e+f\,x]}$$

$$\left.\sqrt{\frac{a\,\text{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]^2\,(a+b\,\text{Sin}[e+f\,x])}{a^2-b^2}}\right)\Bigg/\left(4\,\left(b+\sqrt{-a^2+b^2}\right)^3\,(b\,c-a\,d)\,\sqrt{-c^2+d^2}\,\,\sqrt{a+b\,\text{Sin}[e+f\,x]}\,\left(-\frac{a\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]}{b+\sqrt{-a^2+b^2}}\right)^{3/2}\right)-$$

$$\left(a\,b\,\sqrt{-a^2+b^2}\,\,\text{Cos}[e+f\,x]\,\left(\left(a\,c+\left(b+\sqrt{-a^2+b^2}\right)\,\left(-d+\sqrt{-c^2+d^2}\right)\right)\,\text{EllipticPi}\left[\frac{2\,\sqrt{-a^2+b^2}\,\,c}{b\,c+\sqrt{-a^2+b^2}\,\,c-a\,d+a\,\sqrt{-c^2+d^2}},\right.\right.\right.$$

$$\text{ArcSin}\left[\frac{\sqrt{\frac{b+\sqrt{-a^2+b^2}+a\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]}{\sqrt{-a^2+b^2}}}}{\sqrt{2}}\right],\ \frac{2\,\sqrt{-a^2+b^2}}{b+\sqrt{-a^2+b^2}}\right]+\left(-a\,c+\left(b+\sqrt{-a^2+b^2}\right)\,\left(d+\sqrt{-c^2+d^2}\right)\right)$$

$$\left.\text{EllipticPi}\left[\frac{2\,\sqrt{-a^2+b^2}\,\,c}{b\,c+\sqrt{-a^2+b^2}\,\,c-a\,\left(d+\sqrt{-c^2+d^2}\right)},\ \text{ArcSin}\left[\frac{\sqrt{\frac{b+\sqrt{-a^2+b^2}+a\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]}{\sqrt{-a^2+b^2}}}}{\sqrt{2}}\right],\ \frac{2\,\sqrt{-a^2+b^2}}{b+\sqrt{-a^2+b^2}}\right]\right)\,\sqrt{\text{Sin}[e+f\,x]}$$

$$\sqrt{\frac{a\,\mathrm{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]^2\,(a+b\,\mathrm{Sin}[e+f\,x])}{a^2-b^2}}\Bigg)\Bigg/\left(2\,\left(b+\sqrt{-a^2+b^2}\right)^2\,(b\,c-a\,d)\,\sqrt{-c^2+d^2}\,\,(a+b\,\mathrm{Sin}[e+f\,x])^{3/2}\,\sqrt{-\frac{a\,\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]}{b+\sqrt{-a^2+b^2}}}\right)+$$

$$\Bigg(a\,\sqrt{-a^2+b^2}\,\,\mathrm{Cos}[e+f\,x]\,\Bigg(\left(a\,c+\left(b+\sqrt{-a^2+b^2}\right)\,\left(-d+\sqrt{-c^2+d^2}\right)\right)\,\mathrm{EllipticPi}\Big[\frac{2\,\sqrt{-a^2+b^2}\,\,c}{b\,c+\sqrt{-a^2+b^2}\,\,c-a\,d+a\,\sqrt{-c^2+d^2}},$$

$$\mathrm{ArcSin}\Big[\frac{\sqrt{\frac{b+\sqrt{-a^2+b^2}\,+a\,\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]}{\sqrt{-a^2+b^2}}}}{\sqrt{2}}\Big],\,\frac{2\,\sqrt{-a^2+b^2}}{b+\sqrt{-a^2+b^2}}\Big]+\left(-a\,c+\left(b+\sqrt{-a^2+b^2}\right)\,\left(d+\sqrt{-c^2+d^2}\right)\right)$$

$$\mathrm{EllipticPi}\Big[\frac{2\,\sqrt{-a^2+b^2}\,\,c}{b\,c+\sqrt{-a^2+b^2}\,\,c-a\,\left(d+\sqrt{-c^2+d^2}\right)},\,\mathrm{ArcSin}\Big[\frac{\sqrt{\frac{b+\sqrt{-a^2+b^2}\,+a\,\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]}{\sqrt{-a^2+b^2}}}}{\sqrt{2}}\Big],\,\frac{2\,\sqrt{-a^2+b^2}}{b+\sqrt{-a^2+b^2}}\Big]\Bigg)$$

$$\sqrt{\frac{a\,\mathrm{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]^2\,(a+b\,\mathrm{Sin}[e+f\,x])}{a^2-b^2}}\Bigg)\Bigg/\Bigg(2\,\left(b+\sqrt{-a^2+b^2}\right)^2\,(b\,c-a\,d)\,\sqrt{-c^2+d^2}\,\,\sqrt{\mathrm{Sin}[e+f\,x]}$$

$$\sqrt{a+b\,\mathrm{Sin}[e+f\,x]}\,\,\sqrt{-\frac{a\,\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]}{b+\sqrt{-a^2+b^2}}}\Bigg)+$$

$$\left(a\sqrt{-a^2+b^2}\left(\left(a\,c+\left(b+\sqrt{-a^2+b^2}\right)\left(-d+\sqrt{-c^2+d^2}\right)\right)\text{EllipticPi}\left[\frac{2\sqrt{-a^2+b^2}\;c}{b\,c+\sqrt{-a^2+b^2}\;c-a\,d+a\sqrt{-c^2+d^2}},\right.\right.\right.$$

$$\left.\text{ArcSin}\left[\frac{\sqrt{\frac{b+\sqrt{-a^2+b^2}+a\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]}{\sqrt{-a^2+b^2}}}}{\sqrt{2}}\right],\ \frac{2\sqrt{-a^2+b^2}}{b+\sqrt{-a^2+b^2}}\right]+\left(-a\,c+\left(b+\sqrt{-a^2+b^2}\right)\left(d+\sqrt{-c^2+d^2}\right)\right)$$

$$\left.\text{EllipticPi}\left[\frac{2\sqrt{-a^2+b^2}\;c}{b\,c+\sqrt{-a^2+b^2}\;c-a\left(d+\sqrt{-c^2+d^2}\right)},\ \text{ArcSin}\left[\frac{\sqrt{\frac{b+\sqrt{-a^2+b^2}+a\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]}{\sqrt{-a^2+b^2}}}}{\sqrt{2}}\right],\ \frac{2\sqrt{-a^2+b^2}}{b+\sqrt{-a^2+b^2}}\right]\right)$$

$$\left.\sqrt{\text{Sin}[e+f\,x]}\left(\frac{a\,b\,\text{Cos}[e+f\,x]\,\text{Sec}\left[\frac{1}{2}(e+f\,x)\right]^2}{a^2-b^2}+\frac{a\,\text{Sec}\left[\frac{1}{2}(e+f\,x)\right]^2(a+b\,\text{Sin}[e+f\,x])\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]}{a^2-b^2}\right)\right)\Big/$$

$$\left(2\left(b+\sqrt{-a^2+b^2}\right)^2(b\,c-a\,d)\sqrt{-c^2+d^2}\sqrt{a+b\,\text{Sin}[e+f\,x]}\sqrt{\frac{a\,\text{Sec}\left[\frac{1}{2}(e+f\,x)\right]^2(a+b\,\text{Sin}[e+f\,x])}{a^2-b^2}}\sqrt{-\frac{a\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]}{b+\sqrt{-a^2+b^2}}}\right)+$$

$$\left(a\sqrt{-a^2+b^2}\sqrt{\text{Sin}[e+f\,x]}\sqrt{\frac{a\,\text{Sec}\left[\frac{1}{2}(e+f\,x)\right]^2(a+b\,\text{Sin}[e+f\,x])}{a^2-b^2}}\right.$$

$$\left(\left(a\left(a\,c+\left(b+\sqrt{-a^2+b^2}\right)\left(-d+\sqrt{-c^2+d^2}\right)\right)\text{Sec}\left[\frac{1}{2}(e+f\,x)\right]^2\right)\Big/\left(4\sqrt{2}\sqrt{-a^2+b^2}\sqrt{\frac{b+\sqrt{-a^2+b^2}+a\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]}{\sqrt{-a^2+b^2}}}\right.\right.$$

$$\sqrt{1-\frac{b+\sqrt{-a^2+b^2}+a\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{2\sqrt{-a^2+b^2}}}\,\sqrt{1-\frac{b+\sqrt{-a^2+b^2}+a\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{b+\sqrt{-a^2+b^2}}}\left(1-\frac{c\left(b+\sqrt{-a^2+b^2}+a\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)}{b\,c+\sqrt{-a^2+b^2}\,c-a\,d+a\sqrt{-c^2+d^2}}\right)\Bigg)\Bigg)+$$

$$\left(a\left(-a\,c+\left(b+\sqrt{-a^2+b^2}\right)\left(d+\sqrt{-c^2+d^2}\right)\right)\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\right)\Big/\left(4\sqrt{2}\sqrt{-a^2+b^2}\sqrt{\frac{b+\sqrt{-a^2+b^2}+a\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{\sqrt{-a^2+b^2}}}\right.$$

$$\sqrt{1-\frac{b+\sqrt{-a^2+b^2}+a\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{2\sqrt{-a^2+b^2}}}\,\sqrt{1-\frac{b+\sqrt{-a^2+b^2}+a\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{b+\sqrt{-a^2+b^2}}}\left(1-\frac{c\left(b+\sqrt{-a^2+b^2}+a\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)}{b\,c+\sqrt{-a^2+b^2}\,c-a\left(d+\sqrt{-c^2+d^2}\right)}\right)\Bigg)\Bigg)\Bigg)\Big/$$

$$\left(\left(b+\sqrt{-a^2+b^2}\right)^2(b\,c-a\,d)\sqrt{-c^2+d^2}\,\sqrt{a+b\,\text{Sin}[e+f x]}\,\sqrt{-\frac{a\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{b+\sqrt{-a^2+b^2}}}\right)\Bigg)\Bigg)$$

Problem 45: Result more than twice size of optimal antiderivative.

$$\int\frac{1}{\sqrt{g\,\text{Sin}[e+f x]}\,\sqrt{a+b\,\text{Sin}[e+f x]}\,(c+d\,\text{Sin}[e+f x])}\,dx$$

Optimal (type 4, 246 leaves, 3 steps):

$$-\frac{2\sqrt{a+b}\sqrt{\frac{a(1-\text{Csc}[e+f x])}{a+b}}\sqrt{\frac{a(1+\text{Csc}[e+f x])}{a-b}}\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{g}\sqrt{a+b\,\text{Sin}[e+f x]}}{\sqrt{a+b}\sqrt{g\,\text{Sin}[e+f x]}}\right],-\frac{a+b}{a-b}\right]\text{Tan}[e+f x]}{a\,c\,f\sqrt{g}}-$$

$$\left(2\,d\sqrt{-\text{Cot}[e+f x]^2}\sqrt{\frac{b+a\,\text{Csc}[e+f x]}{a+b}}\,\text{EllipticPi}\left[\frac{2c}{c+d},\text{ArcSin}\left[\frac{\sqrt{1-\text{Csc}[e+f x]}}{\sqrt{2}}\right],\frac{2a}{a+b}\right]\sqrt{g\,\text{Sin}[e+f x]}\,\text{Tan}[e+f x]\right)\Big/$$

$$\left(c\,(c+d)\,f\,g\sqrt{a+b\,\text{Sin}[e+f x]}\right)$$

Result (type 4, 4935 leaves):

$$-\left(\left(4\sqrt{-a^2+b^2}\,\text{Cos}\left[\frac{1}{2}(e+f x)\right]^4\left(-2\left(b+\sqrt{-a^2+b^2}\right)(b c-a d)\sqrt{-c^2+d^2}\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{\frac{b+\sqrt{-a^2+b^2}+a\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{\sqrt{-a^2+b^2}}}}{\sqrt{2}}\right],\frac{2\sqrt{-a^2+b^2}}{b+\sqrt{-a^2+b^2}}\right]-\right.\right.\right.$$

$$a d\left(a c+\left(b+\sqrt{-a^2+b^2}\right)\left(-d+\sqrt{-c^2+d^2}\right)\right)\text{EllipticPi}\left[\frac{2\sqrt{-a^2+b^2}\,c}{b c+\sqrt{-a^2+b^2}\,c-a d+a\sqrt{-c^2+d^2}},\right.$$

$$\left.\text{ArcSin}\left[\frac{\sqrt{\frac{b+\sqrt{-a^2+b^2}+a\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{\sqrt{-a^2+b^2}}}}{\sqrt{2}}\right],\frac{2\sqrt{-a^2+b^2}}{b+\sqrt{-a^2+b^2}}\right]+\left(-a c+\left(b+\sqrt{-a^2+b^2}\right)\left(d+\sqrt{-c^2+d^2}\right)\right)$$

$$\left.\left.\text{EllipticPi}\left[\frac{2\sqrt{-a^2+b^2}\,c}{b c+\sqrt{-a^2+b^2}\,c-a\left(d+\sqrt{-c^2+d^2}\right)},\text{ArcSin}\left[\frac{\sqrt{\frac{b+\sqrt{-a^2+b^2}+a\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{\sqrt{-a^2+b^2}}}}{\sqrt{2}}\right],\frac{2\sqrt{-a^2+b^2}}{b+\sqrt{-a^2+b^2}}\right]\right)\right)$$

$$\left.\sqrt{\frac{a\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2(a+b\,\text{Sin}[e+f x])}{a^2-b^2}}\left(-\frac{a\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{b+\sqrt{-a^2+b^2}}\right)^{3/2}\right)\Big/\left(a^2 c(-b c+a d)\sqrt{-c^2+d^2}\,f\,\text{Sin}[e+f x]^{3/2}\right.$$

$$\left.\sqrt{g\,\text{Sin}[e+f x]}\,(a+b\,\text{Sin}[e+f x])(c+d\,\text{Sin}[e+f x])\right)$$

$$\left(\left(3\sqrt{-a^2+b^2}\,\text{Cos}\left[\frac{1}{2}(e+f x)\right]^2\left(-2\left(b+\sqrt{-a^2+b^2}\right)(b c-a d)\sqrt{-c^2+d^2}\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{\frac{b+\sqrt{-a^2+b^2}+a\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{\sqrt{-a^2+b^2}}}}{\sqrt{2}}\right],\frac{2\sqrt{-a^2+b^2}}{b+\sqrt{-a^2+b^2}}\right]-\right.\right.\right.$$

$$a d\left(\left(a c+\left(b+\sqrt{-a^2+b^2}\right)\left(-d+\sqrt{-c^2+d^2}\right)\right)\text{EllipticPi}\left[\frac{2\sqrt{-a^2+b^2}\,c}{b c+\sqrt{-a^2+b^2}\,c-a d+a\sqrt{-c^2+d^2}},\right.\right.$$

$$\left.\text{ArcSin}\left[\frac{\sqrt{\frac{b+\sqrt{-a^2+b^2}+a\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{\sqrt{-a^2+b^2}}}}{\sqrt{2}}\right],\frac{2\sqrt{-a^2+b^2}}{b+\sqrt{-a^2+b^2}}\right]+\left(-a c+\left(b+\sqrt{-a^2+b^2}\right)\left(d+\sqrt{-c^2+d^2}\right)\right)$$

$$\left.\left.\text{EllipticPi}\left[\frac{2\sqrt{-a^2+b^2}\,c}{b c+\sqrt{-a^2+b^2}\,c-a\left(d+\sqrt{-c^2+d^2}\right)},\text{ArcSin}\left[\frac{\sqrt{\frac{b+\sqrt{-a^2+b^2}+a\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{\sqrt{-a^2+b^2}}}}{\sqrt{2}}\right],\frac{2\sqrt{-a^2+b^2}}{b+\sqrt{-a^2+b^2}}\right]\right)\right)$$

$$\left.\sqrt{\frac{a\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2(a+b\,\text{Sin}[e+f x])}{a^2-b^2}}\sqrt{-\frac{a\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{b+\sqrt{-a^2+b^2}}}\right)\Big/\left(a\left(b+\sqrt{-a^2+b^2}\right)c\,(-b c+a d)\right.$$

$$\left.\sqrt{-c^2+d^2}\,\text{Sin}[e+f x]^{3/2}\sqrt{a+b\,\text{Sin}[e+f x]}\right)+$$

$$\frac{1}{a^2 c\,(-b c+a d)\sqrt{-c^2+d^2}\,\text{Sin}[e+f x]^{3/2}(a+b\,\text{Sin}[e+f x])^{3/2}}\,2 b\sqrt{-a^2+b^2}\,\text{Cos}\left[\frac{1}{2}(e+f x)\right]^4\text{Cos}[e+f x]$$

$$\left(-2\left(b+\sqrt{-a^2+b^2}\right)(b\,c-a\,d)\sqrt{-c^2+d^2}\;\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{\frac{b+\sqrt{-a^2+b^2}+a\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]}{\sqrt{-a^2+b^2}}}}{\sqrt{2}}\right],\frac{2\sqrt{-a^2+b^2}}{b+\sqrt{-a^2+b^2}}\right]-\right.$$

$$a\,d\left(\left(a\,c+\left(b+\sqrt{-a^2+b^2}\right)\left(-d+\sqrt{-c^2+d^2}\right)\right)\text{EllipticPi}\left[\frac{2\sqrt{-a^2+b^2}\;c}{b\,c+\sqrt{-a^2+b^2}\;c-a\,d+a\sqrt{-c^2+d^2}},\text{ArcSin}\left[\frac{\sqrt{\frac{b+\sqrt{-a^2+b^2}+a\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]}{\sqrt{-a^2+b^2}}}}{\sqrt{2}}\right],\right.\right.$$

$$\left.\frac{2\sqrt{-a^2+b^2}}{b+\sqrt{-a^2+b^2}}\right]+\left(-a\,c+\left(b+\sqrt{-a^2+b^2}\right)\left(d+\sqrt{-c^2+d^2}\right)\right)\text{EllipticPi}\left[\frac{2\sqrt{-a^2+b^2}\;c}{b\,c+\sqrt{-a^2+b^2}\;c-a\left(d+\sqrt{-c^2+d^2}\right)},\right.$$

$$\left.\left.\left.\text{ArcSin}\left[\frac{\sqrt{\frac{b+\sqrt{-a^2+b^2}+a\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]}{\sqrt{-a^2+b^2}}}}{\sqrt{2}}\right],\frac{2\sqrt{-a^2+b^2}}{b+\sqrt{-a^2+b^2}}\right]\right)\right)\sqrt{\frac{a\,\text{Sec}\left[\frac{1}{2}(e+f\,x)\right]^2(a+b\,\text{Sin}[e+f\,x])}{a^2-b^2}}\left(-\frac{a\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]}{b+\sqrt{-a^2+b^2}}\right)^{3/2}+$$

$$\frac{1}{a^2\,c\,(-b\,c+a\,d)\sqrt{-c^2+d^2}\;\text{Sin}[e+f\,x]^{5/2}\sqrt{a+b\,\text{Sin}[e+f\,x]}}\,6\sqrt{-a^2+b^2}\;\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]^4\text{Cos}[e+f\,x]$$

$$\left(-2\left(b+\sqrt{-a^2+b^2}\right)(b\,c-a\,d)\sqrt{-c^2+d^2}\;\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{\frac{b+\sqrt{-a^2+b^2}+a\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]}{\sqrt{-a^2+b^2}}}}{\sqrt{2}}\right],\frac{2\sqrt{-a^2+b^2}}{b+\sqrt{-a^2+b^2}}\right]-\right.$$

$$a\,d\left(\left(a\,c+\left(b+\sqrt{-a^2+b^2}\right)\left(-d+\sqrt{-c^2+d^2}\right)\right)\text{EllipticPi}\left[\frac{2\sqrt{-a^2+b^2}\;c}{b\,c+\sqrt{-a^2+b^2}\;c-a\,d+a\sqrt{-c^2+d^2}},\,\text{ArcSin}\left[\frac{\sqrt{\frac{b+\sqrt{-a^2+b^2}+a\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]}{\sqrt{-a^2+b^2}}}}{\sqrt{2}}\right],\right.\right.$$

$$\left.\frac{2\sqrt{-a^2+b^2}}{b+\sqrt{-a^2+b^2}}\right]+\left(-a\,c+\left(b+\sqrt{-a^2+b^2}\right)\left(d+\sqrt{-c^2+d^2}\right)\right)\text{EllipticPi}\left[\frac{2\sqrt{-a^2+b^2}\;c}{b\,c+\sqrt{-a^2+b^2}\;c-a\left(d+\sqrt{-c^2+d^2}\right)},\right.$$

$$\left.\left.\left.\text{ArcSin}\left[\frac{\sqrt{\frac{b+\sqrt{-a^2+b^2}+a\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]}{\sqrt{-a^2+b^2}}}}{\sqrt{2}}\right],\,\frac{2\sqrt{-a^2+b^2}}{b+\sqrt{-a^2+b^2}}\right]\right)\right)\sqrt{\frac{a\,\text{Sec}\left[\frac{1}{2}(e+f\,x)\right]^2(a+b\,\text{Sin}[e+f\,x])}{a^2-b^2}}\left(-\frac{a\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]}{b+\sqrt{-a^2+b^2}}\right)^{3/2}+$$

$$\frac{1}{a^2\,c\,(-b\,c+a\,d)\sqrt{-c^2+d^2}\;\text{Sin}[e+f\,x]^{3/2}\sqrt{a+b\,\text{Sin}[e+f\,x]}}\,8\sqrt{-a^2+b^2}\;\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]^3$$

$$\left(-2\left(b+\sqrt{-a^2+b^2}\right)(b\,c-a\,d)\sqrt{-c^2+d^2}\;\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{\frac{b+\sqrt{-a^2+b^2}+a\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]}{\sqrt{-a^2+b^2}}}}{\sqrt{2}}\right],\,\frac{2\sqrt{-a^2+b^2}}{b+\sqrt{-a^2+b^2}}\right]-\right.$$

$$a\,d\left(\left(a\,c+\left(b+\sqrt{-a^2+b^2}\right)\left(-d+\sqrt{-c^2+d^2}\right)\right)\text{EllipticPi}\left[\frac{2\sqrt{-a^2+b^2}\;c}{b\,c+\sqrt{-a^2+b^2}\;c-a\,d+a\sqrt{-c^2+d^2}},\right.\right.$$

$$\text{ArcSin}\left[\frac{\sqrt{\frac{b+\sqrt{-a^2+b^2}+a\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]}{\sqrt{-a^2+b^2}}}}{\sqrt{2}}\right],\,\left.\frac{2\sqrt{-a^2+b^2}}{b+\sqrt{-a^2+b^2}}\right]+\left(-a\,c+\left(b+\sqrt{-a^2+b^2}\right)\left(d+\sqrt{-c^2+d^2}\right)\right)\text{EllipticPi}\Big[$$

$$\frac{2\sqrt{-a^2+b^2}\,c}{b\,c+\sqrt{-a^2+b^2}\,c-a\left(d+\sqrt{-c^2+d^2}\right)},\ \text{ArcSin}\left[\frac{\sqrt{\frac{b+\sqrt{-a^2+b^2}+a\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]}{\sqrt{-a^2+b^2}}}}{\sqrt{2}}\right],\ \frac{2\sqrt{-a^2+b^2}}{b+\sqrt{-a^2+b^2}}\right]\Bigg)\Bigg)$$

$$\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]\sqrt{\frac{a\,\text{Sec}\left[\frac{1}{2}(e+f\,x)\right]^2(a+b\,\text{Sin}[e+f\,x])}{a^2-b^2}}\left(-\frac{a\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]}{b+\sqrt{-a^2+b^2}}\right)^{3/2}-$$

$$\Bigg(2\sqrt{-a^2+b^2}\,\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]^4\Bigg(-2\left(b+\sqrt{-a^2+b^2}\right)(b\,c-a\,d)\sqrt{-c^2+d^2}\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{\frac{b+\sqrt{-a^2+b^2}+a\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]}{\sqrt{-a^2+b^2}}}}{\sqrt{2}}\right],\ \frac{2\sqrt{-a^2+b^2}}{b+\sqrt{-a^2+b^2}}\right]-$$

$$a\,d\Bigg(\left(a\,c+\left(b+\sqrt{-a^2+b^2}\right)\left(-d+\sqrt{-c^2+d^2}\right)\right)\text{EllipticPi}\left[\frac{2\sqrt{-a^2+b^2}\,c}{b\,c+\sqrt{-a^2+b^2}\,c-a\,d+a\sqrt{-c^2+d^2}},\right.$$

$$\left.\text{ArcSin}\left[\frac{\sqrt{\frac{b+\sqrt{-a^2+b^2}+a\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]}{\sqrt{-a^2+b^2}}}}{\sqrt{2}}\right],\ \frac{2\sqrt{-a^2+b^2}}{b+\sqrt{-a^2+b^2}}\right]+\left(-a\,c+\left(b+\sqrt{-a^2+b^2}\right)\left(d+\sqrt{-c^2+d^2}\right)\right)$$

$$\text{EllipticPi}\left[\frac{2\sqrt{-a^2+b^2}\,c}{b\,c+\sqrt{-a^2+b^2}\,c-a\left(d+\sqrt{-c^2+d^2}\right)},\ \text{ArcSin}\left[\frac{\sqrt{\frac{b+\sqrt{-a^2+b^2}+a\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]}{\sqrt{-a^2+b^2}}}}{\sqrt{2}}\right],\ \frac{2\sqrt{-a^2+b^2}}{b+\sqrt{-a^2+b^2}}\right]\Bigg)\Bigg)$$

$$\left(-\frac{a\,\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]}{b+\sqrt{-a^2+b^2}}\right)^{3/2}\left(\frac{a\,b\,\mathrm{Cos}[e+f x]\,\mathrm{Sec}\left[\frac{1}{2}(e+f x)\right]^2}{a^2-b^2}+\frac{a\,\mathrm{Sec}\left[\frac{1}{2}(e+f x)\right]^2(a+b\,\mathrm{Sin}[e+f x])\,\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]}{a^2-b^2}\right)\Bigg/$$

$$\left(a^2 c\,(-b c+a d)\sqrt{-c^2+d^2}\,\mathrm{Sin}[e+f x]^{3/2}\sqrt{a+b\,\mathrm{Sin}[e+f x]}\sqrt{\frac{a\,\mathrm{Sec}\left[\frac{1}{2}(e+f x)\right]^2(a+b\,\mathrm{Sin}[e+f x])}{a^2-b^2}}\right)-$$

$$\frac{1}{a^2 c\,(-b c+a d)\sqrt{-c^2+d^2}\,\mathrm{Sin}[e+f x]^{3/2}\sqrt{a+b\,\mathrm{Sin}[e+f x]}}$$

$$4\sqrt{-a^2+b^2}\,\mathrm{Cos}\left[\frac{1}{2}(e+f x)\right]^4\sqrt{\frac{a\,\mathrm{Sec}\left[\frac{1}{2}(e+f x)\right]^2(a+b\,\mathrm{Sin}[e+f x])}{a^2-b^2}}\left(-\frac{a\,\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]}{b+\sqrt{-a^2+b^2}}\right)^{3/2}$$

$$\left(-\left(a\left(b+\sqrt{-a^2+b^2}\right)(b c-a d)\sqrt{-c^2+d^2}\,\mathrm{Sec}\left[\frac{1}{2}(e+f x)\right]^2\right)\Bigg/\left(2\sqrt{2}\sqrt{-a^2+b^2}\sqrt{\frac{b+\sqrt{-a^2+b^2}+a\,\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]}{\sqrt{-a^2+b^2}}}\right.\right.$$

$$\left.\sqrt{1-\frac{b+\sqrt{-a^2+b^2}+a\,\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]}{2\sqrt{-a^2+b^2}}}\sqrt{1-\frac{b+\sqrt{-a^2+b^2}+a\,\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]}{b+\sqrt{-a^2+b^2}}}\right)-$$

$$a\,d\left(\left(a\left(a c+\left(b+\sqrt{-a^2+b^2}\right)\left(-d+\sqrt{-c^2+d^2}\right)\right)\mathrm{Sec}\left[\frac{1}{2}(e+f x)\right]^2\right)\Bigg/\left(4\sqrt{2}\sqrt{-a^2+b^2}\sqrt{\frac{b+\sqrt{-a^2+b^2}+a\,\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]}{\sqrt{-a^2+b^2}}}\right.\right.$$

$$\sqrt{1-\frac{b+\sqrt{-a^2+b^2}+a\,\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]}{2\sqrt{-a^2+b^2}}}\sqrt{1-\frac{b+\sqrt{-a^2+b^2}+a\,\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]}{b+\sqrt{-a^2+b^2}}}$$

$$\left(1-\frac{c\left(b+\sqrt{-a^2+b^2}+a\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]\right)}{b\,c+\sqrt{-a^2+b^2}\,c-a\,d+a\sqrt{-c^2+d^2}}\right)\right)+\left(a\left(-a\,c+\left(b+\sqrt{-a^2+b^2}\right)\left(d+\sqrt{-c^2+d^2}\right)\right)\text{Sec}\left[\frac{1}{2}(e+f\,x)\right]^2\right)\Big/$$

$$\left(4\sqrt{2}\sqrt{-a^2+b^2}\sqrt{\frac{b+\sqrt{-a^2+b^2}+a\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]}{\sqrt{-a^2+b^2}}}\sqrt{1-\frac{b+\sqrt{-a^2+b^2}+a\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]}{2\sqrt{-a^2+b^2}}}\right.$$

$$\left.\sqrt{1-\frac{b+\sqrt{-a^2+b^2}+a\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]}{b+\sqrt{-a^2+b^2}}}\left(1-\frac{c\left(b+\sqrt{-a^2+b^2}+a\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]\right)}{b\,c+\sqrt{-a^2+b^2}\,c-a\left(d+\sqrt{-c^2+d^2}\right)}\right)\right)\right)\right)\right)\right)$$

- **Problem 46: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int\frac{\sqrt{g\,\text{Sin}[e+f\,x]}\sqrt{c+d\,\text{Sin}[e+f\,x]}}{a+b\,\text{Sin}[e+f\,x]}\,dx$$

Optimal (type 4, 254 leaves, 3 steps):

$$\frac{1}{b\,f}2\sqrt{c+d}\sqrt{g}\sqrt{\frac{c\,(1-\text{Csc}[e+f\,x])}{c+d}}\sqrt{\frac{c\,(1+\text{Csc}[e+f\,x])}{c-d}}\,\text{EllipticPi}\left[\frac{c+d}{d},\text{ArcSin}\left[\frac{\sqrt{g}\sqrt{c+d\,\text{Sin}[e+f\,x]}}{\sqrt{c+d}\sqrt{g\,\text{Sin}[e+f\,x]}}\right],-\frac{c+d}{c-d}\right]\text{Tan}[e+f\,x]+$$

$$\left(2\,(b\,c-a\,d)\sqrt{-\text{Cot}[e+f\,x]^2}\sqrt{\frac{d+c\,\text{Csc}[e+f\,x]}{c+d}}\,\text{EllipticPi}\left[\frac{2\,a}{a+b},\text{ArcSin}\left[\frac{\sqrt{1-\text{Csc}[e+f\,x]}}{\sqrt{2}}\right],\frac{2\,c}{c+d}\right]\sqrt{g\,\text{Sin}[e+f\,x]}\,\text{Tan}[e+f\,x]\right)\Big/$$

$$\left(b\,(a+b)\,f\sqrt{c+d\,\text{Sin}[e+f\,x]}\right)$$

Result (type 4, 75 413 leaves): Display of huge result suppressed!

- **Problem 47: Result more than twice size of optimal antiderivative.**

$$\int\frac{\sqrt{g\,\text{Sin}[e+f\,x]}}{(a+b\,\text{Sin}[e+f\,x])\sqrt{c+d\,\text{Sin}[e+f\,x]}}\,dx$$

Optimal (type 4, 114 leaves, 1 step):

$$\left(2\sqrt{-\text{Cot}[e+f\,x]^2}\sqrt{\frac{d+c\,\text{Csc}[e+f\,x]}{c+d}}\ \text{EllipticPi}\left[\frac{2\,a}{a+b},\ \text{ArcSin}\left[\frac{\sqrt{1-\text{Csc}[e+f\,x]}}{\sqrt{2}}\right],\ \frac{2\,c}{c+d}\right]\sqrt{g\,\text{Sin}[e+f\,x]}\ \text{Tan}[e+f\,x]\right)\Big/$$
$$\left((a+b)\,f\,\sqrt{c+d\,\text{Sin}[e+f\,x]}\right)$$

Result (type 4, 3429 leaves):

$$-\left(\left(c\sqrt{-c^2+d^2}\left(\left(-a\,c+\left(b+\sqrt{-a^2+b^2}\right)\left(d+\sqrt{-c^2+d^2}\right)\right)\text{EllipticPi}\left[\frac{2\,a\sqrt{-c^2+d^2}}{-b\,c-\sqrt{-a^2+b^2}\ c+a\left(d+\sqrt{-c^2+d^2}\right)},\right.\right.\right.\right.$$
$$\left.\text{ArcSin}\left[\frac{\sqrt{\frac{d+\sqrt{-c^2+d^2}+c\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]}{\sqrt{-c^2+d^2}}}}{\sqrt{2}}\right],\ \frac{2\sqrt{-c^2+d^2}}{d+\sqrt{-c^2+d^2}}\right]+\left(a\,c+\left(-b+\sqrt{-a^2+b^2}\right)\left(d+\sqrt{-c^2+d^2}\right)\right)$$
$$\left.\text{EllipticPi}\left[\frac{2\,a\sqrt{-c^2+d^2}}{-b\,c+\sqrt{-a^2+b^2}\ c+a\left(d+\sqrt{-c^2+d^2}\right)},\ \text{ArcSin}\left[\frac{\sqrt{\frac{d+\sqrt{-c^2+d^2}+c\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]}{\sqrt{-c^2+d^2}}}}{\sqrt{2}}\right],\ \frac{2\sqrt{-c^2+d^2}}{d+\sqrt{-c^2+d^2}}\right]\right)$$
$$\left.\sqrt{\text{Sin}[e+f\,x]}\ \sqrt{g\,\text{Sin}[e+f\,x]}\ \sqrt{\frac{c\,\text{Sec}\left[\frac{1}{2}(e+f\,x)\right]^2(c+d\,\text{Sin}[e+f\,x])}{c^2-d^2}}\right)\Big/$$
$$\left(\sqrt{-a^2+b^2}\ (b\,c-a\,d)\left(d+\sqrt{-c^2+d^2}\right)^2 f\,(a+b\,\text{Sin}[e+f\,x])\,(c+d\,\text{Sin}[e+f\,x])\sqrt{-\frac{c\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]}{d+\sqrt{-c^2+d^2}}}\right.$$

$$\left(-\left(\left(c^2 \sqrt{-c^2+d^2} \left(\left(-a c+\left(b+\sqrt{-a^2+b^2}\right) \left(d+\sqrt{-c^2+d^2}\right)\right) \text{EllipticPi}\left[\frac{2 a \sqrt{-c^2+d^2}}{-b c-\sqrt{-a^2+b^2}\, c+a \left(d+\sqrt{-c^2+d^2}\right)},\right.\right.\right.\right.\right.$$

$$\left.\text{ArcSin}\left[\frac{\sqrt{\frac{d+\sqrt{-c^2+d^2}+c \text{Tan}\left[\frac{1}{2} (e+f x)\right]}{\sqrt{-c^2+d^2}}}}{\sqrt{2}}\right], \frac{2 \sqrt{-c^2+d^2}}{d+\sqrt{-c^2+d^2}}\right]+\left(a c+\left(-b+\sqrt{-a^2+b^2}\right) \left(d+\sqrt{-c^2+d^2}\right)\right) \text{EllipticPi}\left[\right.$$

$$\left.\left.\frac{2 a \sqrt{-c^2+d^2}}{-b c+\sqrt{-a^2+b^2}\, c+a \left(d+\sqrt{-c^2+d^2}\right)}, \text{ArcSin}\left[\frac{\sqrt{\frac{d+\sqrt{-c^2+d^2}+c \text{Tan}\left[\frac{1}{2} (e+f x)\right]}{\sqrt{-c^2+d^2}}}}{\sqrt{2}}\right], \frac{2 \sqrt{-c^2+d^2}}{d+\sqrt{-c^2+d^2}}\right]\right)$$

$$\left.\text{Sec}\left[\frac{1}{2} (e+f x)\right]^2 \sqrt{\text{Sin}[e+f x]} \sqrt{\frac{c \text{Sec}\left[\frac{1}{2} (e+f x)\right]^2 (c+d \text{Sin}[e+f x])}{c^2-d^2}}\right) \Bigg/$$

$$\left.\left(4 \sqrt{-a^2+b^2} (b c-a d) \left(d+\sqrt{-c^2+d^2}\right)^3 \sqrt{c+d \text{Sin}[e+f x]} \left(-\frac{c \text{Tan}\left[\frac{1}{2} (e+f x)\right]}{d+\sqrt{-c^2+d^2}}\right)^{3/2}\right)\right)+$$

$$\left(c d \sqrt{-c^2+d^2} \text{Cos}[e+f x] \left(\left(-a c+\left(b+\sqrt{-a^2+b^2}\right) \left(d+\sqrt{-c^2+d^2}\right)\right) \text{EllipticPi}\left[\frac{2 a \sqrt{-c^2+d^2}}{-b c-\sqrt{-a^2+b^2}\, c+a \left(d+\sqrt{-c^2+d^2}\right)},\right.\right.\right.$$

$$\text{ArcSin}\left[\frac{\sqrt{\frac{d+\sqrt{-c^2+d^2}+c\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{\sqrt{-c^2+d^2}}}}{\sqrt{2}}\right], \frac{2\sqrt{-c^2+d^2}}{d+\sqrt{-c^2+d^2}}\right]+\left(a c+\left(-b+\sqrt{-a^2+b^2}\right)\left(d+\sqrt{-c^2+d^2}\right)\right)$$

$$\text{EllipticPi}\left[\frac{2 a\sqrt{-c^2+d^2}}{-b c+\sqrt{-a^2+b^2}\,c+a\left(d+\sqrt{-c^2+d^2}\right)}, \text{ArcSin}\left[\frac{\sqrt{\frac{d+\sqrt{-c^2+d^2}+c\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{\sqrt{-c^2+d^2}}}}{\sqrt{2}}\right], \frac{2\sqrt{-c^2+d^2}}{d+\sqrt{-c^2+d^2}}\right]\right)\sqrt{\text{Sin}[e+f x]}$$

$$\left.\sqrt{\frac{c\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2(c+d\,\text{Sin}[e+f x])}{c^2-d^2}}\right) \Big/ \left(2\sqrt{-a^2+b^2}\,(b c-a d)\left(d+\sqrt{-c^2+d^2}\right)^2(c+d\,\text{Sin}[e+f x])^{3/2}\sqrt{-\frac{c\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{d+\sqrt{-c^2+d^2}}}\right)-$$

$$\left(c\sqrt{-c^2+d^2}\,\text{Cos}[e+f x]\left(\left(-a c+\left(b+\sqrt{-a^2+b^2}\right)\left(d+\sqrt{-c^2+d^2}\right)\right)\text{EllipticPi}\left[\frac{2 a\sqrt{-c^2+d^2}}{-b c-\sqrt{-a^2+b^2}\,c+a\left(d+\sqrt{-c^2+d^2}\right)},\right.\right.\right.$$

$$\text{ArcSin}\left[\frac{\sqrt{\frac{d+\sqrt{-c^2+d^2}+c\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{\sqrt{-c^2+d^2}}}}{\sqrt{2}}\right], \frac{2\sqrt{-c^2+d^2}}{d+\sqrt{-c^2+d^2}}\right]+\left(a c+\left(-b+\sqrt{-a^2+b^2}\right)\left(d+\sqrt{-c^2+d^2}\right)\right)$$

$$\text{EllipticPi}\left[\frac{2 a\sqrt{-c^2+d^2}}{-b c+\sqrt{-a^2+b^2}\,c+a\left(d+\sqrt{-c^2+d^2}\right)}, \text{ArcSin}\left[\frac{\sqrt{\frac{d+\sqrt{-c^2+d^2}+c\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{\sqrt{-c^2+d^2}}}}{\sqrt{2}}\right], \frac{2\sqrt{-c^2+d^2}}{d+\sqrt{-c^2+d^2}}\right]\right)$$

$$\left.\sqrt{\frac{c\,\mathrm{Sec}\left[\frac{1}{2}(e+f x)\right]^2 (c+d\,\mathrm{Sin}[e+f x])}{c^2-d^2}}\right)\Big/\left(2\sqrt{-a^2+b^2}\,(b c-a d)\left(d+\sqrt{-c^2+d^2}\right)^2\sqrt{\mathrm{Sin}[e+f x]}\right.$$

$$\left.\sqrt{c+d\,\mathrm{Sin}[e+f x]}\,\sqrt{-\frac{c\,\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]}{d+\sqrt{-c^2+d^2}}}\right)-$$

$$\left(c\sqrt{-c^2+d^2}\left(\left(-a c+\left(b+\sqrt{-a^2+b^2}\right)\left(d+\sqrt{-c^2+d^2}\right)\right)\mathrm{EllipticPi}\left[\frac{2 a\sqrt{-c^2+d^2}}{-b c-\sqrt{-a^2+b^2}\,c+a\left(d+\sqrt{-c^2+d^2}\right)},\right.\right.\right.$$

$$\left.\mathrm{ArcSin}\left[\frac{\sqrt{\frac{d+\sqrt{-c^2+d^2}+c\,\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]}{\sqrt{-c^2+d^2}}}}{\sqrt{2}}\right],\frac{2\sqrt{-c^2+d^2}}{d+\sqrt{-c^2+d^2}}\right]+\left(a c+\left(-b+\sqrt{-a^2+b^2}\right)\left(d+\sqrt{-c^2+d^2}\right)\right)$$

$$\left.\mathrm{EllipticPi}\left[\frac{2 a\sqrt{-c^2+d^2}}{-b c+\sqrt{-a^2+b^2}\,c+a\left(d+\sqrt{-c^2+d^2}\right)},\mathrm{ArcSin}\left[\frac{\sqrt{\frac{d+\sqrt{-c^2+d^2}+c\,\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]}{\sqrt{-c^2+d^2}}}}{\sqrt{2}}\right],\frac{2\sqrt{-c^2+d^2}}{d+\sqrt{-c^2+d^2}}\right]\right)$$

$$\left.\sqrt{\mathrm{Sin}[e+f x]}\left(\frac{c\,d\,\mathrm{Cos}[e+f x]\,\mathrm{Sec}\left[\frac{1}{2}(e+f x)\right]^2}{c^2-d^2}+\frac{c\,\mathrm{Sec}\left[\frac{1}{2}(e+f x)\right]^2 (c+d\,\mathrm{Sin}[e+f x])\,\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]}{c^2-d^2}\right)\right)\Big/$$

$$\left(2\sqrt{-a^2+b^2}\,(b\,c-a\,d)\left(d+\sqrt{-c^2+d^2}\right)^2\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}\sqrt{\frac{c\,\mathrm{Sec}\left[\frac{1}{2}(e+f\,x)\right]^2(c+d\,\mathrm{Sin}[e+f\,x])}{c^2-d^2}}\sqrt{-\frac{c\,\mathrm{Tan}\left[\frac{1}{2}(e+f\,x)\right]}{d+\sqrt{-c^2+d^2}}}\right)-$$

$$\left(c\sqrt{-c^2+d^2}\sqrt{\mathrm{Sin}[e+f\,x]}\sqrt{\frac{c\,\mathrm{Sec}\left[\frac{1}{2}(e+f\,x)\right]^2(c+d\,\mathrm{Sin}[e+f\,x])}{c^2-d^2}}\right.$$

$$\left(\left(c\left(-a\,c+\left(b+\sqrt{-a^2+b^2}\right)\left(d+\sqrt{-c^2+d^2}\right)\right)\mathrm{Sec}\left[\frac{1}{2}(e+f\,x)\right]^2\right)\Big/\left(4\sqrt{2}\sqrt{-c^2+d^2}\sqrt{\frac{d+\sqrt{-c^2+d^2}+c\,\mathrm{Tan}\left[\frac{1}{2}(e+f\,x)\right]}{\sqrt{-c^2+d^2}}}\right.\right.$$

$$\sqrt{1-\frac{d+\sqrt{-c^2+d^2}+c\,\mathrm{Tan}\left[\frac{1}{2}(e+f\,x)\right]}{2\sqrt{-c^2+d^2}}}\sqrt{1-\frac{d+\sqrt{-c^2+d^2}+c\,\mathrm{Tan}\left[\frac{1}{2}(e+f\,x)\right]}{d+\sqrt{-c^2+d^2}}}$$

$$\left.\left.\left(1-\frac{a\left(d+\sqrt{-c^2+d^2}+c\,\mathrm{Tan}\left[\frac{1}{2}(e+f\,x)\right]\right)}{-b\,c-\sqrt{-a^2+b^2}\,c+a\left(d+\sqrt{-c^2+d^2}\right)}\right)\right)\right)+\left(c\left(a\,c+\left(-b+\sqrt{-a^2+b^2}\right)\left(d+\sqrt{-c^2+d^2}\right)\right)\mathrm{Sec}\left[\frac{1}{2}(e+f\,x)\right]^2\right)\Big/$$

$$\left(4\sqrt{2}\sqrt{-c^2+d^2}\sqrt{\frac{d+\sqrt{-c^2+d^2}+c\,\mathrm{Tan}\left[\frac{1}{2}(e+f\,x)\right]}{\sqrt{-c^2+d^2}}}\sqrt{1-\frac{d+\sqrt{-c^2+d^2}+c\,\mathrm{Tan}\left[\frac{1}{2}(e+f\,x)\right]}{2\sqrt{-c^2+d^2}}}\right.$$

$$\left.\left.\left.\sqrt{1-\frac{d+\sqrt{-c^2+d^2}+c\,\mathrm{Tan}\left[\frac{1}{2}(e+f\,x)\right]}{d+\sqrt{-c^2+d^2}}}\left(1-\frac{a\left(d+\sqrt{-c^2+d^2}+c\,\mathrm{Tan}\left[\frac{1}{2}(e+f\,x)\right]\right)}{-b\,c+\sqrt{-a^2+b^2}\,c+a\left(d+\sqrt{-c^2+d^2}\right)}\right)\right)\right)\right)\Big/$$

$$\left.\left.\left.\left(\sqrt{-a^2+b^2}\,(b\,c-a\,d)\left(d+\sqrt{-c^2+d^2}\right)^2\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}\sqrt{-\frac{c\,\mathrm{Tan}\left[\frac{1}{2}(e+f\,x)\right]}{d+\sqrt{-c^2+d^2}}}\right)\right)\right)\right)$$

- **Problem 48: Unable to integrate problem.**

$$\int \text{Csc}[e+f x]\,\sqrt{a+b\,\text{Sin}[e+f x]}\,\sqrt{c+d\,\text{Sin}[e+f x]}\,dx$$

Optimal (type 4, 391 leaves, 3 steps):

$$-\frac{1}{\sqrt{a+b}\,f}2\sqrt{c+d}\,\text{EllipticPi}\left[\frac{a\,(c+d)}{(a+b)\,c},\,\text{ArcSin}\left[\frac{\sqrt{a+b}\,\sqrt{c+d\,\text{Sin}[e+f x]}}{\sqrt{c+d}\,\sqrt{a+b\,\text{Sin}[e+f x]}}\right],\,\frac{(a-b)\,(c+d)}{(a+b)\,(c-d)}\right]$$
$$\text{Sec}[e+f x]\,\sqrt{-\frac{(b c-a d)\,(1-\text{Sin}[e+f x])}{(c+d)\,(a+b\,\text{Sin}[e+f x])}}\,\sqrt{\frac{(b c-a d)\,(1+\text{Sin}[e+f x])}{(c-d)\,(a+b\,\text{Sin}[e+f x])}}\,(a+b\,\text{Sin}[e+f x])+$$
$$\frac{1}{\sqrt{a+b}\,f}2\sqrt{c+d}\,\text{EllipticPi}\left[\frac{b\,(c+d)}{(a+b)\,d},\,\text{ArcSin}\left[\frac{\sqrt{a+b}\,\sqrt{c+d\,\text{Sin}[e+f x]}}{\sqrt{c+d}\,\sqrt{a+b\,\text{Sin}[e+f x]}}\right],\,\frac{(a-b)\,(c+d)}{(a+b)\,(c-d)}\right]\text{Sec}[e+f x]$$
$$\sqrt{-\frac{(b c-a d)\,(1-\text{Sin}[e+f x])}{(c+d)\,(a+b\,\text{Sin}[e+f x])}}\,\sqrt{\frac{(b c-a d)\,(1+\text{Sin}[e+f x])}{(c-d)\,(a+b\,\text{Sin}[e+f x])}}\,(a+b\,\text{Sin}[e+f x])$$

Result (type 8, 37 leaves):

$$\int \text{Csc}[e+f x]\,\sqrt{a+b\,\text{Sin}[e+f x]}\,\sqrt{c+d\,\text{Sin}[e+f x]}\,dx$$

Problem 49: Unable to integrate problem.

$$\int \frac{\text{Csc}[e+f x]\,\sqrt{a+b\,\text{Sin}[e+f x]}}{\sqrt{c+d\,\text{Sin}[e+f x]}}\,dx$$

Optimal (type 4, 198 leaves, 1 step):

$$-\frac{1}{\sqrt{a+b}\,c\,f}2\sqrt{c+d}\,\text{EllipticPi}\left[\frac{a\,(c+d)}{(a+b)\,c},\,\text{ArcSin}\left[\frac{\sqrt{a+b}\,\sqrt{c+d\,\text{Sin}[e+f x]}}{\sqrt{c+d}\,\sqrt{a+b\,\text{Sin}[e+f x]}}\right],\,\frac{(a-b)\,(c+d)}{(a+b)\,(c-d)}\right]$$
$$\text{Sec}[e+f x]\,\sqrt{-\frac{(b c-a d)\,(1-\text{Sin}[e+f x])}{(c+d)\,(a+b\,\text{Sin}[e+f x])}}\,\sqrt{\frac{(b c-a d)\,(1+\text{Sin}[e+f x])}{(c-d)\,(a+b\,\text{Sin}[e+f x])}}\,(a+b\,\text{Sin}[e+f x])$$

Result (type 8, 37 leaves):

$$\int \frac{\text{Csc}[e+f x]\,\sqrt{a+b\,\text{Sin}[e+f x]}}{\sqrt{c+d\,\text{Sin}[e+f x]}}\,dx$$

Problem 50: Unable to integrate problem.

$$\int \frac{\text{Csc}[e+f x]}{\sqrt{a+b\,\text{Sin}[e+f x]}\,\sqrt{c+d\,\text{Sin}[e+f x]}}\,dx$$

Optimal (type 4, 398 leaves, 3 steps):

$$-\frac{1}{a\sqrt{a+b}\,c\,f}2\sqrt{c+d}\,\text{EllipticPi}\left[\frac{a\,(c+d)}{(a+b)\,c},\,\text{ArcSin}\left[\frac{\sqrt{a+b}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}{\sqrt{c+d}\,\sqrt{a+b\,\text{Sin}[e+f\,x]}}\right],\,\frac{(a-b)\,(c+d)}{(a+b)\,(c-d)}\right]$$

$$\text{Sec}[e+f\,x]\,\sqrt{-\frac{(b\,c-a\,d)\,(1-\text{Sin}[e+f\,x])}{(c+d)\,(a+b\,\text{Sin}[e+f\,x])}}\,\sqrt{\frac{(b\,c-a\,d)\,(1+\text{Sin}[e+f\,x])}{(c-d)\,(a+b\,\text{Sin}[e+f\,x])}}\,(a+b\,\text{Sin}[e+f\,x])-$$

$$\frac{1}{a\sqrt{c+d}\,(b\,c-a\,d)\,f}2\,b\sqrt{a+b}\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{c+d}\,\sqrt{a+b\,\text{Sin}[e+f\,x]}}{\sqrt{a+b}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}\right],\,\frac{(a+b)\,(c-d)}{(a-b)\,(c+d)}\right]\,\text{Sec}[e+f\,x]$$

$$\sqrt{\frac{(b\,c-a\,d)\,(1-\text{Sin}[e+f\,x])}{(a+b)\,(c+d\,\text{Sin}[e+f\,x])}}\,\sqrt{-\frac{(b\,c-a\,d)\,(1+\text{Sin}[e+f\,x])}{(a-b)\,(c+d\,\text{Sin}[e+f\,x])}}\,(c+d\,\text{Sin}[e+f\,x])$$

Result (type 8, 37 leaves) :

$$\int\frac{\text{Csc}[e+f\,x]}{\sqrt{a+b\,\text{Sin}[e+f\,x]}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}\,dx$$

- **Problem 51: Result more than twice size of optimal antiderivative.**

$$\int(a+a\,\text{Sin}[e+f\,x])^m\,(A+B\,\text{Sin}[e+f\,x])^p\,(c-c\,\text{Sin}[e+f\,x])^n\,dx$$

Optimal (type 6, 157 leaves, 4 steps) :

$$\frac{1}{a\,f\,(1+2\,m)}2^{\frac{1}{2}+n}\,\text{AppellF1}\left[\frac{1}{2}+m,\,\frac{1}{2}-n,\,-p,\,\frac{3}{2}+m,\,\frac{1}{2}\,(1+\text{Sin}[e+f\,x]),\,-\frac{B\,(1+\text{Sin}[e+f\,x])}{A-B}\right]$$

$$\text{Sec}[e+f\,x]\,(1-\text{Sin}[e+f\,x])^{\frac{1}{2}-n}\,(a+a\,\text{Sin}[e+f\,x])^{1+m}\,(A+B\,\text{Sin}[e+f\,x])^p\,\left(\frac{A+B\,\text{Sin}[e+f\,x]}{A-B}\right)^{-p}\,(c-c\,\text{Sin}[e+f\,x])^n$$

Result (type 6, 417 leaves) :

$$\left(2\,(A+B)\,(3+2n)\,\text{AppellF1}\left[\frac{1}{2}+n,\frac{1}{2}-m,-p,\frac{3}{2}+n,\text{Cos}\left[\frac{1}{4}(2e+\pi+2fx)\right]^2,\frac{2B\,\text{Sin}\left[\frac{1}{4}(2e-\pi+2fx)\right]^2}{A+B}\right]\left(\text{Cos}\left[\frac{1}{4}(2e-\pi+2fx)\right]^2\right)^{-\frac{1}{2}+m}\right.$$
$$\left.\text{Cot}\left[\frac{1}{4}(2e+\pi+2fx)\right]\,(a\,(1+\text{Sin}[e+fx]))^m\,(A+B\,\text{Sin}[e+fx])^p\,(c-c\,\text{Sin}[e+fx])^n\left(\text{Sin}\left[\frac{1}{4}(2e+\pi+2fx)\right]^2\right)^{\frac{1}{2}-m}\right)\bigg/$$
$$\left(f\,(1+2n)\left(-(A+B)\,(3+2n)\,\text{AppellF1}\left[\frac{1}{2}+n,\frac{1}{2}-m,-p,\frac{3}{2}+n,\text{Cos}\left[\frac{1}{4}(2e+\pi+2fx)\right]^2,\frac{2B\,\text{Sin}\left[\frac{1}{4}(2e-\pi+2fx)\right]^2}{A+B}\right]+\right.\right.$$
$$\left(4Bp\,\text{AppellF1}\left[\frac{3}{2}+n,\frac{1}{2}-m,1-p,\frac{5}{2}+n,\text{Cos}\left[\frac{1}{4}(2e+\pi+2fx)\right]^2,\frac{2B\,\text{Sin}\left[\frac{1}{4}(2e-\pi+2fx)\right]^2}{A+B}\right]+\right.$$
$$\left.\left.\left.(A+B)\,(-1+2m)\,\text{AppellF1}\left[\frac{3}{2}+n,\frac{3}{2}-m,-p,\frac{5}{2}+n,\text{Cos}\left[\frac{1}{4}(2e+\pi+2fx)\right]^2,\frac{2B\,\text{Sin}\left[\frac{1}{4}(2e-\pi+2fx)\right]^2}{A+B}\right]\right)\text{Cos}\left[\frac{1}{4}(2e+\pi+2fx)\right]^2\right)\right)$$

Test results for the 358 problems in "4.1.3.1 (a+b sin)^m (c+d sin)^n (A+B sin).m"

- **Problem 1: Unable to integrate problem.**

$$\int (d\,\text{Sin}[e+fx])^n\,(a+a\,\text{Sin}[e+fx])^3\,(A+B\,\text{Sin}[e+fx])\,dx$$

Optimal (type 5, 373 leaves, 7 steps) :

$$-\frac{a^3\left(B\left(27+14n+2n^2\right)+A\left(28+15n+2n^2\right)\right)\text{Cos}[e+fx]\,(d\,\text{Sin}[e+fx])^{1+n}}{d\,f\,(2+n)\,(3+n)\,(4+n)}+$$
$$\left(a^3\left(B\left(15+19n+4n^2\right)+A\left(20+21n+4n^2\right)\right)\text{Cos}[e+fx]\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{1+n}{2},\frac{3+n}{2},\text{Sin}[e+fx]^2\right](d\,\text{Sin}[e+fx])^{1+n}\right)\bigg/$$
$$\left(d\,f\,(1+n)\,(2+n)\,(4+n)\sqrt{\text{Cos}[e+fx]^2}\right)+$$
$$\left(a^3\,(B\,(9+4n)+A\,(11+4n))\,\text{Cos}[e+fx]\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{2+n}{2},\frac{4+n}{2},\text{Sin}[e+fx]^2\right](d\,\text{Sin}[e+fx])^{2+n}\right)\bigg/$$
$$\left(d^2\,f\,(2+n)\,(3+n)\sqrt{\text{Cos}[e+fx]^2}\right)-\frac{a\,B\,\text{Cos}[e+fx]\,(d\,\text{Sin}[e+fx])^{1+n}\,(a+a\,\text{Sin}[e+fx])^2}{d\,f\,(4+n)}-$$
$$\frac{(A\,(4+n)+B\,(6+n))\,\text{Cos}[e+fx]\,(d\,\text{Sin}[e+fx])^{1+n}\left(a^3+a^3\,\text{Sin}[e+fx]\right)}{d\,f\,(3+n)\,(4+n)}$$

Result (type 9, 68 520 leaves) : Display of huge result suppressed !

■ **Problem 2: Unable to integrate problem.**

$$\int (d \operatorname{Sin}[e+f x])^n (a+a \operatorname{Sin}[e+f x])^2 (A+B \operatorname{Sin}[e+f x]) \, dx$$

Optimal (type 5, 277 leaves, 6 steps):

$$-\frac{a^2 (A (3+n)+B (4+n)) \operatorname{Cos}[e+f x] (d \operatorname{Sin}[e+f x])^{1+n}}{d f (2+n) (3+n)}+$$
$$\left(a^2 (2 B (1+n)+A (3+2 n)) \operatorname{Cos}[e+f x] \operatorname{Hypergeometric2F1}\left[\frac{1}{2}, \frac{1+n}{2}, \frac{3+n}{2}, \operatorname{Sin}[e+f x]^2\right] (d \operatorname{Sin}[e+f x])^{1+n}\right) \Big/$$
$$\left(d f (1+n) (2+n) \sqrt{\operatorname{Cos}[e+f x]^2}\right)+$$
$$\left(a^2 (2 A (3+n)+B (5+2 n)) \operatorname{Cos}[e+f x] \operatorname{Hypergeometric2F1}\left[\frac{1}{2}, \frac{2+n}{2}, \frac{4+n}{2}, \operatorname{Sin}[e+f x]^2\right] (d \operatorname{Sin}[e+f x])^{2+n}\right) \Big/$$
$$\left(d^2 f (2+n) (3+n) \sqrt{\operatorname{Cos}[e+f x]^2}\right)-\frac{B \operatorname{Cos}[e+f x] (d \operatorname{Sin}[e+f x])^{1+n} \left(a^2+a^2 \operatorname{Sin}[e+f x]\right)}{d f (3+n)}$$

Result (type 9, 25 571 leaves): Display of huge result suppressed!

■ **Problem 3: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int (d \operatorname{Sin}[e+f x])^n (a+a \operatorname{Sin}[e+f x]) (A+B \operatorname{Sin}[e+f x]) \, dx$$

Optimal (type 5, 191 leaves, 5 steps):

$$-\frac{a B \operatorname{Cos}[e+f x] (d \operatorname{Sin}[e+f x])^{1+n}}{d f (2+n)}+\frac{a (B (1+n)+A (2+n)) \operatorname{Cos}[e+f x] \operatorname{Hypergeometric2F1}\left[\frac{1}{2}, \frac{1+n}{2}, \frac{3+n}{2}, \operatorname{Sin}[e+f x]^2\right] (d \operatorname{Sin}[e+f x])^{1+n}}{d f (1+n) (2+n) \sqrt{\operatorname{Cos}[e+f x]^2}}+$$
$$\frac{a (A+B) \operatorname{Cos}[e+f x] \operatorname{Hypergeometric2F1}\left[\frac{1}{2}, \frac{2+n}{2}, \frac{4+n}{2}, \operatorname{Sin}[e+f x]^2\right] (d \operatorname{Sin}[e+f x])^{2+n}}{d^2 f (2+n) \sqrt{\operatorname{Cos}[e+f x]^2}}$$

Result (type 5, 392 leaves):

$$-\frac{1}{f\left(\text{Cos}\left[\frac{1}{2}(e+fx)\right]+\text{Sin}\left[\frac{1}{2}(e+fx)\right]\right)^2}$$

$$2^{-2-n}\,a\,e^{i f n x}\left(1-e^{2i(e+fx)}\right)^{-n}\left(-i\,e^{-i(e+fx)}\left(-1+e^{2i(e+fx)}\right)\right)^n\left(\frac{2(A+B)\,e^{-i(e+f(1+n)x)}\,\text{Hypergeometric2F1}\left[\frac{1}{2}(-1-n),-n,\frac{1-n}{2},e^{2i(e+fx)}\right]}{1+n}-\right.$$

$$\frac{2(A+B)\,e^{i(e-f(-1+n)x)}\,\text{Hypergeometric2F1}\left[\frac{1-n}{2},-n,\frac{3-n}{2},e^{2i(e+fx)}\right]}{-1+n}+$$

$$i\left(\frac{B\,e^{-i(2e+f(2+n)x)}\,\text{Hypergeometric2F1}\left[-1-\frac{n}{2},-n,-\frac{n}{2},e^{2i(e+fx)}\right]}{2+n}+\frac{1}{(-2+n)\,n}e^{-i f n x}\left(B\,e^{2i(e+fx)}\,n\,\text{Hypergeometric2F1}\left[1-\frac{n}{2},-n,2-\frac{n}{2},\right.\right.\right.$$

$$\left.\left.\left.\left.e^{2i(e+fx)}\right]-2(2A+B)(-2+n)\,\text{Hypergeometric2F1}\left[-n,-\frac{n}{2},1-\frac{n}{2},e^{2i(e+fx)}\right]\right)\right)\right)\text{Sin}[e+fx]^{-n}\,(d\,\text{Sin}[e+fx])^n\,(1+\text{Sin}[e+fx])$$

- **Problem 4: Unable to integrate problem.**

$$\int\frac{(d\,\text{Sin}[e+fx])^n\,(A+B\,\text{Sin}[e+fx])}{a+a\,\text{Sin}[e+fx]}\,dx$$

Optimal (type 5, 202 leaves, 4 steps) :

$$\frac{(B-A\,n+B\,n)\,\text{Cos}[e+fx]\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{1+n}{2},\frac{3+n}{2},\text{Sin}[e+fx]^2\right](d\,\text{Sin}[e+fx])^{1+n}}{a\,d\,f\,(1+n)\sqrt{\text{Cos}[e+fx]^2}}+$$

$$\frac{(A-B)(1+n)\,\text{Cos}[e+fx]\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{2+n}{2},\frac{4+n}{2},\text{Sin}[e+fx]^2\right](d\,\text{Sin}[e+fx])^{2+n}}{a\,d^2\,f\,(2+n)\sqrt{\text{Cos}[e+fx]^2}}+\frac{(A-B)\,\text{Cos}[e+fx]\,(d\,\text{Sin}[e+fx])^{1+n}}{d\,f\,(a+a\,\text{Sin}[e+fx])}$$

Result (type 8, 35 leaves) :

$$\int\frac{(d\,\text{Sin}[e+fx])^n\,(A+B\,\text{Sin}[e+fx])}{a+a\,\text{Sin}[e+fx]}\,dx$$

- **Problem 5: Unable to integrate problem.**

$$\int\frac{(d\,\text{Sin}[e+fx])^n\,(A+B\,\text{Sin}[e+fx])}{(a+a\,\text{Sin}[e+fx])^2}\,dx$$

Optimal (type 5, 279 leaves, 5 steps) :

$$-\left(n\,(A-2\,A\,n+2\,B\,(1+n))\,\mathrm{Cos}[e+f\,x]\,\mathrm{Hypergeometric2F1}\left[\frac{1}{2},\frac{1+n}{2},\frac{3+n}{2},\mathrm{Sin}[e+f\,x]^2\right]\,(d\,\mathrm{Sin}[e+f\,x])^{1+n}\right)\Big/\left(3\,a^2\,d\,f\,(1+n)\,\sqrt{\mathrm{Cos}[e+f\,x]^2}\right)+\left((1+n)\,(B+2\,A\,(1-n)+2\,B\,n)\,\mathrm{Cos}[e+f\,x]\,\mathrm{Hypergeometric2F1}\left[\frac{1}{2},\frac{2+n}{2},\frac{4+n}{2},\mathrm{Sin}[e+f\,x]^2\right]\,(d\,\mathrm{Sin}[e+f\,x])^{2+n}\right)\Big/\left(3\,a^2\,d^2\,f\,(2+n)\,\sqrt{\mathrm{Cos}[e+f\,x]^2}\right)+\frac{(B+2\,A\,(1-n)+2\,B\,n)\,\mathrm{Cos}[e+f\,x]\,(d\,\mathrm{Sin}[e+f\,x])^{1+n}}{3\,a^2\,d\,f\,(1+\mathrm{Sin}[e+f\,x])}+\frac{(A-B)\,\mathrm{Cos}[e+f\,x]\,(d\,\mathrm{Sin}[e+f\,x])^{1+n}}{3\,d\,f\,(a+a\,\mathrm{Sin}[e+f\,x])^2}$$

Result (type 8, 35 leaves) :

$$\int\frac{(d\,\mathrm{Sin}[e+f\,x])^n\,(A+B\,\mathrm{Sin}[e+f\,x])}{(a+a\,\mathrm{Sin}[e+f\,x])^2}\,dx$$

Problem 6: Unable to integrate problem.

$$\int\frac{(d\,\mathrm{Sin}[e+f\,x])^n\,(A+B\,\mathrm{Sin}[e+f\,x])}{(a+a\,\mathrm{Sin}[e+f\,x])^3}\,dx$$

Optimal (type 5, 362 leaves, 6 steps) :

$$-\left(n\,\left(B\,\left(3-n-4\,n^2\right)+A\,\left(2-9\,n+4\,n^2\right)\right)\,\mathrm{Cos}[e+f\,x]\,\mathrm{Hypergeometric2F1}\left[\frac{1}{2},\frac{1+n}{2},\frac{3+n}{2},\mathrm{Sin}[e+f\,x]^2\right]\,(d\,\mathrm{Sin}[e+f\,x])^{1+n}\right)\Big/\left(15\,a^3\,d\,f\,(1+n)\,\sqrt{\mathrm{Cos}[e+f\,x]^2}\right)+\left((1-n)\,(1+n)\,(7\,A+3\,B-4\,A\,n+4\,B\,n)\,\mathrm{Cos}[e+f\,x]\,\mathrm{Hypergeometric2F1}\left[\frac{1}{2},\frac{2+n}{2},\frac{4+n}{2},\mathrm{Sin}[e+f\,x]^2\right]\,(d\,\mathrm{Sin}[e+f\,x])^{2+n}\right)\Big/\left(15\,a^3\,d^2\,f\,(2+n)\,\sqrt{\mathrm{Cos}[e+f\,x]^2}\right)+\frac{(A-B)\,\mathrm{Cos}[e+f\,x]\,(d\,\mathrm{Sin}[e+f\,x])^{1+n}}{5\,d\,f\,(a+a\,\mathrm{Sin}[e+f\,x])^3}+\frac{(A\,(5-2\,n)+2\,B\,n)\,\mathrm{Cos}[e+f\,x]\,(d\,\mathrm{Sin}[e+f\,x])^{1+n}}{15\,a\,d\,f\,(a+a\,\mathrm{Sin}[e+f\,x])^2}+\frac{(1-n)\,(7\,A+3\,B-4\,A\,n+4\,B\,n)\,\mathrm{Cos}[e+f\,x]\,(d\,\mathrm{Sin}[e+f\,x])^{1+n}}{15\,d\,f\,\left(a^3+a^3\,\mathrm{Sin}[e+f\,x]\right)}$$

Result (type 8, 35 leaves) :

$$\int\frac{(d\,\mathrm{Sin}[e+f\,x])^n\,(A+B\,\mathrm{Sin}[e+f\,x])}{(a+a\,\mathrm{Sin}[e+f\,x])^3}\,dx$$

Problem 7: Result more than twice size of optimal antiderivative.

$$\int(d\,\mathrm{Sin}[e+f\,x])^n\,(a+a\,\mathrm{Sin}[e+f\,x])^{5/2}\,(A+B\,\mathrm{Sin}[e+f\,x])\,dx$$

Optimal (type 5, 336 leaves, 6 steps) :

$$-\left(2 a^3 \left(2 B \left(115 + 203 n + 104 n^2 + 16 n^3\right) + A \left(301 + 478 n + 224 n^2 + 32 n^3\right)\right) \mathrm{Cos}[e + f x]\right.$$
$$\left.\mathrm{Hypergeometric2F1}\left[\frac{1}{2}, -n, \frac{3}{2}, 1 - \mathrm{Sin}[e + f x]\right] \mathrm{Sin}[e + f x]^{-n} (d\,\mathrm{Sin}[e + f x])^n\right) \Big/ \left(f (3 + 2 n) (5 + 2 n) (7 + 2 n) \sqrt{a + a\,\mathrm{Sin}[e + f x]}\right) -$$
$$\frac{2 a^3 \left(2 B \left(35 + 23 n + 4 n^2\right) + A \left(77 + 50 n + 8 n^2\right)\right) \mathrm{Cos}[e + f x] (d\,\mathrm{Sin}[e + f x])^{1+n}}{d f (3 + 2 n) (5 + 2 n) (7 + 2 n) \sqrt{a + a\,\mathrm{Sin}[e + f x]}} -$$
$$\frac{2 a^2 (2 B (5 + n) + A (7 + 2 n)) \mathrm{Cos}[e + f x] (d\,\mathrm{Sin}[e + f x])^{1+n} \sqrt{a + a\,\mathrm{Sin}[e + f x]}}{d f (5 + 2 n) (7 + 2 n)} -$$
$$\frac{2 a B\,\mathrm{Cos}[e + f x] (d\,\mathrm{Sin}[e + f x])^{1+n} (a + a\,\mathrm{Sin}[e + f x])^{3/2}}{d f (7 + 2 n)}$$

Result (type 5, 791 leaves) :

$$\frac{1}{f\sqrt{\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2}\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^5} 2^{1+n}\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]\text{Sin}[e+f x]^{-n}(d\,\text{Sin}[e+f x])^n(a(1+\text{Sin}[e+f x]))^{5/2}$$

$$\text{Tan}\left[\frac{1}{2}(e+f x)\right]\left(\frac{\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}\right)^n\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)^n\left(\frac{A\,\text{Hypergeometric2F1}\left[\frac{1+n}{2},\frac{9}{2}+n,\frac{3+n}{2},-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]}{1+n}+\right.$$

$$\frac{(5A+2B)\,\text{Hypergeometric2F1}\left[1+\frac{n}{2},\frac{9}{2}+n,2+\frac{n}{2},-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{2+n}+$$

$$\frac{11A\,\text{Hypergeometric2F1}\left[\frac{3+n}{2},\frac{9}{2}+n,\frac{5+n}{2},-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}{3+n}+$$

$$\frac{10B\,\text{Hypergeometric2F1}\left[\frac{3+n}{2},\frac{9}{2}+n,\frac{5+n}{2},-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}{3+n}+$$

$$\frac{5(3A+4B)\,\text{Hypergeometric2F1}\left[2+\frac{n}{2},\frac{9}{2}+n,3+\frac{n}{2},-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Tan}\left[\frac{1}{2}(e+f x)\right]^3}{4+n}+$$

$$\frac{15A\,\text{Hypergeometric2F1}\left[\frac{9}{2}+n,\frac{5+n}{2},\frac{7+n}{2},-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Tan}\left[\frac{1}{2}(e+f x)\right]^4}{5+n}+$$

$$\frac{20B\,\text{Hypergeometric2F1}\left[\frac{9}{2}+n,\frac{5+n}{2},\frac{7+n}{2},-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Tan}\left[\frac{1}{2}(e+f x)\right]^4}{5+n}+$$

$$\frac{11A\,\text{Hypergeometric2F1}\left[3+\frac{n}{2},\frac{9}{2}+n,4+\frac{n}{2},-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Tan}\left[\frac{1}{2}(e+f x)\right]^5}{6+n}+$$

$$\frac{10B\,\text{Hypergeometric2F1}\left[3+\frac{n}{2},\frac{9}{2}+n,4+\frac{n}{2},-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Tan}\left[\frac{1}{2}(e+f x)\right]^5}{6+n}+$$

$$\frac{5A\,\text{Hypergeometric2F1}\left[\frac{9}{2}+n,\frac{7+n}{2},\frac{9+n}{2},-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Tan}\left[\frac{1}{2}(e+f x)\right]^6}{7+n}+$$

$$\frac{2B\,\text{Hypergeometric2F1}\left[\frac{9}{2}+n,\frac{7+n}{2},\frac{9+n}{2},-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Tan}\left[\frac{1}{2}(e+f x)\right]^6}{7+n}+$$

$$\left.\frac{A\,\text{Hypergeometric2F1}\left[4+\frac{n}{2},\frac{9}{2}+n,5+\frac{n}{2},-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Tan}\left[\frac{1}{2}(e+f x)\right]^7}{8+n}\right)$$

- **Problem 8: Result more than twice size of optimal antiderivative.**

$$\int(d\,\text{Sin}[e+f x])^n(a+a\,\text{Sin}[e+f x])^{3/2}(A+B\,\text{Sin}[e+f x])\,dx$$

Optimal (type 5, 229 leaves, 5 steps):

$$-\left(2 a^2 \left(2 B \left(9+13 n+4 n^2\right)+A \left(25+30 n+8 n^2\right)\right) \text{Cos}[e+f x] \text{Hypergeometric2F1}\left[\frac{1}{2},-n,\frac{3}{2},1-\text{Sin}[e+f x]\right] \text{Sin}[e+f x]^{-n} (d \text{Sin}[e+f x])^n\right) \Big/ \left(f (3+2 n) (5+2 n) \sqrt{a+a \text{Sin}[e+f x]}\right)-\frac{2 a^2 (2 B (3+n)+A (5+2 n)) \text{Cos}[e+f x] (d \text{Sin}[e+f x])^{1+n}}{d f (3+2 n) (5+2 n) \sqrt{a+a \text{Sin}[e+f x]}}-\frac{2 a B \text{Cos}[e+f x] (d \text{Sin}[e+f x])^{1+n} \sqrt{a+a \text{Sin}[e+f x]}}{d f (5+2 n)}$$

Result (type 5, 575 leaves):

$$\frac{1}{f \sqrt{\text{Sec}\left[\frac{1}{2} (e+f x)\right]^2} \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]+\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^3} 2^{1+n} \text{Sec}\left[\frac{1}{2} (e+f x)\right] \text{Sin}[e+f x]^{-n} (d \text{Sin}[e+f x])^n (a (1+\text{Sin}[e+f x]))^{3/2}$$
$$\text{Tan}\left[\frac{1}{2} (e+f x)\right] \left(\frac{\text{Tan}\left[\frac{1}{2} (e+f x)\right]}{1+\text{Tan}\left[\frac{1}{2} (e+f x)\right]^2}\right)^n \left(1+\text{Tan}\left[\frac{1}{2} (e+f x)\right]^2\right)^n \left(\frac{A \text{Hypergeometric2F1}\left[\frac{1+n}{2},\frac{7}{2}+n,\frac{3+n}{2},-\text{Tan}\left[\frac{1}{2} (e+f x)\right]^2\right]}{1+n}+\right.$$
$$\frac{(3 A+2 B) \text{Hypergeometric2F1}\left[1+\frac{n}{2},\frac{7}{2}+n,2+\frac{n}{2},-\text{Tan}\left[\frac{1}{2} (e+f x)\right]^2\right] \text{Tan}\left[\frac{1}{2} (e+f x)\right]}{2+n}+$$
$$\frac{4 A \text{Hypergeometric2F1}\left[\frac{3+n}{2},\frac{7}{2}+n,\frac{5+n}{2},-\text{Tan}\left[\frac{1}{2} (e+f x)\right]^2\right] \text{Tan}\left[\frac{1}{2} (e+f x)\right]^2}{3+n}+$$
$$\frac{6 B \text{Hypergeometric2F1}\left[\frac{3+n}{2},\frac{7}{2}+n,\frac{5+n}{2},-\text{Tan}\left[\frac{1}{2} (e+f x)\right]^2\right] \text{Tan}\left[\frac{1}{2} (e+f x)\right]^2}{3+n}+$$
$$\frac{2 (2 A+3 B) \text{Hypergeometric2F1}\left[2+\frac{n}{2},\frac{7}{2}+n,3+\frac{n}{2},-\text{Tan}\left[\frac{1}{2} (e+f x)\right]^2\right] \text{Tan}\left[\frac{1}{2} (e+f x)\right]^3}{4+n}+$$
$$\frac{3 A \text{Hypergeometric2F1}\left[\frac{7}{2}+n,\frac{5+n}{2},\frac{7+n}{2},-\text{Tan}\left[\frac{1}{2} (e+f x)\right]^2\right] \text{Tan}\left[\frac{1}{2} (e+f x)\right]^4}{5+n}+$$
$$\frac{2 B \text{Hypergeometric2F1}\left[\frac{7}{2}+n,\frac{5+n}{2},\frac{7+n}{2},-\text{Tan}\left[\frac{1}{2} (e+f x)\right]^2\right] \text{Tan}\left[\frac{1}{2} (e+f x)\right]^4}{5+n}+$$
$$\left.\frac{A \text{Hypergeometric2F1}\left[3+\frac{n}{2},\frac{7}{2}+n,4+\frac{n}{2},-\text{Tan}\left[\frac{1}{2} (e+f x)\right]^2\right] \text{Tan}\left[\frac{1}{2} (e+f x)\right]^5}{6+n}\right)$$

- **Problem 9: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int (d \text{Sin}[e+f x])^n \sqrt{a+a \text{Sin}[e+f x]} (A+B \text{Sin}[e+f x]) \, dx$$

Optimal (type 5, 137 leaves, 4 steps):

$$-\left(2\,a\,(2\,B\,(1+n)+A\,(3+2\,n))\,\text{Cos}[e+f\,x]\,\text{Hypergeometric2F1}\left[\frac{1}{2},-n,\frac{3}{2},1-\text{Sin}[e+f\,x]\right]\,\text{Sin}[e+f\,x]^{-n}\,(d\,\text{Sin}[e+f\,x])^n\right)\Big/\left(f\,(3+2\,n)\,\sqrt{a+a\,\text{Sin}[e+f\,x]}\right)-\frac{2\,a\,B\,\text{Cos}[e+f\,x]\,(d\,\text{Sin}[e+f\,x])^{1+n}}{d\,f\,(3+2\,n)\,\sqrt{a+a\,\text{Sin}[e+f\,x]}}$$

Result (type 5, 409 leaves):

$$-\frac{1}{\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]}(1+i)\,2^{-2-n}\,e^{-\frac{3\,i\,e}{2}+i\,f\,n\,x}\left(1-e^{2\,i\,(e+f\,x)}\right)^{-n}\left(-i\,e^{-i\,(e+f\,x)}\left(-1+e^{2\,i\,(e+f\,x)}\right)\right)^n\left(\frac{2\,B\,e^{-\frac{1}{2}i\,f\,(3+2\,n)\,x}\,\text{Hypergeometric2F1}\left[\frac{1}{4}(-3-2\,n),-n,\frac{1}{4}(1-2\,n),e^{2\,i\,(e+f\,x)}\right]}{f\,(3+2\,n)}+2\,e^{i\,e}\left(-\frac{i\,(2\,A+B)\,e^{-\frac{1}{2}i\,f\,(1+2\,n)\,x}\,\text{Hypergeometric2F1}\left[\frac{1}{4}(-1-2\,n),-n,\frac{1}{4}(3-2\,n),e^{2\,i\,(e+f\,x)}\right]}{f+2\,f\,n}+\frac{1}{f\,(-3+2\,n)\,(-1+2\,n)}e^{\frac{1}{2}i\,(2\,e+f\,(1-2\,n)\,x)}\left(-(2\,A+B)\,(-3+2\,n)\,\text{Hypergeometric2F1}\left[\frac{1}{4}(1-2\,n),-n,\frac{1}{4}(5-2\,n),e^{2\,i\,(e+f\,x)}\right]+i\,B\,e^{i\,(e+f\,x)}\,(-1+2\,n)\,\text{Hypergeometric2F1}\left[\frac{1}{4}(3-2\,n),-n,\frac{1}{4}(7-2\,n),e^{2\,i\,(e+f\,x)}\right]\right)\right)\right)\text{Sin}[e+f\,x]^{-n}\,(d\,\text{Sin}[e+f\,x])^n\,\sqrt{a\,(1+\text{Sin}[e+f\,x])}$$

- **Problem 10: Result more than twice size of optimal antiderivative.**

$$\int\frac{(d\,\text{Sin}[e+f\,x])^n\,(A+B\,\text{Sin}[e+f\,x])}{\sqrt{a+a\,\text{Sin}[e+f\,x]}}\,dx$$

Optimal (type 6, 152 leaves, 9 steps):

$$-\frac{1}{f\,\sqrt{a+a\,\text{Sin}[e+f\,x]}}(A-B)\,\text{AppellF1}\left[\frac{1}{2},-n,1,\frac{3}{2},1-\text{Sin}[e+f\,x],\frac{1}{2}(1-\text{Sin}[e+f\,x])\right]\text{Cos}[e+f\,x]\,\text{Sin}[e+f\,x]^{-n}\,(d\,\text{Sin}[e+f\,x])^n-\frac{2\,B\,\text{Cos}[e+f\,x]\,\text{Hypergeometric2F1}\left[\frac{1}{2},-n,\frac{3}{2},1-\text{Sin}[e+f\,x]\right]\text{Sin}[e+f\,x]^{-n}\,(d\,\text{Sin}[e+f\,x])^n}{f\,\sqrt{a+a\,\text{Sin}[e+f\,x]}}$$

Result (type 6, 818 leaves):

$$\frac{1}{f\sqrt{a\,(1+\text{Sin}[e+f\,x])}}\,\text{Sec}[e+f\,x]\,\text{Sin}[e+f\,x]^{-n}\,(d\,\text{Sin}[e+f\,x])^{n}$$

$$(1+\text{Sin}[e+f\,x])^{2}\,\Bigg(B\,\text{Sin}[e+f\,x]^{n}\,\Bigg(\Big(4\,a\,\text{AppellF1}\Big[1,\frac{1}{2},-n,2,\frac{1}{2}\,(1+\text{Sin}[e+f\,x]),1+\text{Sin}[e+f\,x]\Big]\Big)\Big/$$

$$\Big(8\,a\,\text{AppellF1}\Big[1,\frac{1}{2},-n,2,\frac{1}{2}\,(1+\text{Sin}[e+f\,x]),1+\text{Sin}[e+f\,x]\Big]+a\,\Big(-4\,n\,\text{AppellF1}\Big[2,\frac{1}{2},1-n,3,\frac{1}{2}\,(1+\text{Sin}[e+f\,x]),1+$$

$$\text{Sin}[e+f\,x]\Big]+\text{AppellF1}\Big[2,\frac{3}{2},-n,3,\frac{1}{2}\,(1+\text{Sin}[e+f\,x]),1+\text{Sin}[e+f\,x]\Big]\Big)\,(1+\text{Sin}[e+f\,x])\Big)+$$

$$\Big((-1+2\,n)\,\text{AppellF1}\Big[-\frac{1}{2}-n,-\frac{1}{2},-n,\frac{1}{2}-n,\frac{2}{1+\text{Sin}[e+f\,x]},\frac{1}{1+\text{Sin}[e+f\,x]}\Big]\,(-1+\text{Sin}[e+f\,x])\Big)\Big/$$

$$\Big((1+2\,n)\,\Big(2\,\Big(n\,\text{AppellF1}\Big[\frac{1}{2}-n,-\frac{1}{2},1-n,\frac{3}{2}-n,\frac{2}{1+\text{Sin}[e+f\,x]},\frac{1}{1+\text{Sin}[e+f\,x]}\Big]+\text{AppellF1}\Big[\frac{1}{2}-n,\frac{1}{2},-n,\frac{3}{2}-n,\frac{2}{1+\text{Sin}[e+f\,x]},$$

$$\frac{1}{1+\text{Sin}[e+f\,x]}\Big]\Big)+(-1+2\,n)\,\text{AppellF1}\Big[-\frac{1}{2}-n,-\frac{1}{2},-n,\frac{1}{2}-n,\frac{2}{1+\text{Sin}[e+f\,x]},\frac{1}{1+\text{Sin}[e+f\,x]}\Big]\,(1+\text{Sin}[e+f\,x])\Big)\Big)\Bigg)+$$

$$A\,\Bigg(\Big(4\,\text{AppellF1}\Big[1,\frac{1}{2},-n,2,\frac{1}{2}\,(1+\text{Sin}[e+f\,x]),1+\text{Sin}[e+f\,x]\Big]\,(-\text{Sin}[e+f\,x])^{-n}\,\big(-\text{Sin}[e+f\,x]^{2}\big)^{n}\Big)\Big/$$

$$\Big(8\,\text{AppellF1}\Big[1,\frac{1}{2},-n,2,\frac{1}{2}\,(1+\text{Sin}[e+f\,x]),1+\text{Sin}[e+f\,x]\Big]-\Big(4\,n\,\text{AppellF1}\Big[2,\frac{1}{2},1-n,3,\frac{1}{2}\,(1+\text{Sin}[e+f\,x]),1+\text{Sin}[e+f\,x]\Big]-$$

$$\text{AppellF1}\Big[2,\frac{3}{2},-n,3,\frac{1}{2}\,(1+\text{Sin}[e+f\,x]),1+\text{Sin}[e+f\,x]\Big]\Big)\,(1+\text{Sin}[e+f\,x])\Big)-$$

$$\Big((-1+2\,n)\,\text{AppellF1}\Big[-\frac{1}{2}-n,-\frac{1}{2},-n,\frac{1}{2}-n,\frac{2}{1+\text{Sin}[e+f\,x]},\frac{1}{1+\text{Sin}[e+f\,x]}\Big]\,(-1+\text{Sin}[e+f\,x])\,\text{Sin}[e+f\,x]^{n}\Big)\Big/$$

$$\Big((1+2\,n)\,\Big(2\,\Big(n\,\text{AppellF1}\Big[\frac{1}{2}-n,-\frac{1}{2},1-n,\frac{3}{2}-n,\frac{2}{1+\text{Sin}[e+f\,x]},\frac{1}{1+\text{Sin}[e+f\,x]}\Big]+\text{AppellF1}\Big[\frac{1}{2}-n,\frac{1}{2},-n,\frac{3}{2}-n,\frac{2}{1+\text{Sin}[e+f\,x]},$$

$$\frac{1}{1+\text{Sin}[e+f\,x]}\Big]\Big)+(-1+2\,n)\,\text{AppellF1}\Big[-\frac{1}{2}-n,-\frac{1}{2},-n,\frac{1}{2}-n,\frac{2}{1+\text{Sin}[e+f\,x]},\frac{1}{1+\text{Sin}[e+f\,x]}\Big]\,(1+\text{Sin}[e+f\,x])\Big)\Big)\Bigg)\Bigg)$$

- **Problem 11: Result more than twice size of optimal antiderivative.**

$$\int\frac{(d\,\text{Sin}[e+f\,x])^{n}\,(A+B\,\text{Sin}[e+f\,x])}{(a+a\,\text{Sin}[e+f\,x])^{3/2}}\,dx$$

Optimal (type 6, 226 leaves, 10 steps):

$$\frac{(A-B)\,\text{Cos}[e+f x]\,(d\,\text{Sin}[e+f x])^{1+n}}{2\,d\,f\,(a+a\,\text{Sin}[e+f x])^{3/2}}-\frac{1}{4\,a\,f\,\sqrt{a+a\,\text{Sin}[e+f x]}}$$

$$(A-4\,A\,n+B\,(3+4\,n))\,\text{AppellF1}\left[\frac{1}{2},-n,1,\frac{3}{2},1-\text{Sin}[e+f x],\frac{1}{2}\,(1-\text{Sin}[e+f x])\right]\,\text{Cos}[e+f x]\,\text{Sin}[e+f x]^{-n}\,(d\,\text{Sin}[e+f x])^{n}-$$

$$\frac{1}{2\,a\,f\,\sqrt{a+a\,\text{Sin}[e+f x]}}\,(A-B)\,(1+2\,n)\,\text{Cos}[e+f x]\,\text{Hypergeometric2F1}\left[\frac{1}{2},-n,\frac{3}{2},1-\text{Sin}[e+f x]\right]\,\text{Sin}[e+f x]^{-n}\,(d\,\text{Sin}[e+f x])^{n}$$

Result (type 6, 1568 leaves):

$$\Bigg(B\,\text{Cos}[e+f x]\,\text{Sin}[e+f x]^{1+n}\,(d\,\text{Sin}[e+f x])^{n}\,(1+\text{Sin}[e+f x])$$

$$\left(\frac{-a+a\,(1+\text{Sin}[e+f x])}{a}\right)^{-n}\,\Bigg(\Bigg(4\,a\,\text{AppellF1}\left[1,\frac{1}{2},-n,2,\frac{1}{2}\,(1+\text{Sin}[e+f x]),1+\text{Sin}[e+f x]\right]\,(1+\text{Sin}[e+f x])\Bigg)\Bigg/$$

$$\Bigg(8\,a\,\text{AppellF1}\left[1,\frac{1}{2},-n,2,\frac{1}{2}\,(1+\text{Sin}[e+f x]),1+\text{Sin}[e+f x]\right]+a\,\Bigg(-4\,n\,\text{AppellF1}\left[2,\frac{1}{2},1-n,3,\frac{1}{2}\,(1+\text{Sin}[e+f x]),\right.$$

$$\left.1+\text{Sin}[e+f x]\right]+\text{AppellF1}\left[2,\frac{3}{2},-n,3,\frac{1}{2}\,(1+\text{Sin}[e+f x]),1+\text{Sin}[e+f x]\right]\Bigg)\,(1+\text{Sin}[e+f x])\Bigg)-$$

$$\Bigg((-1+2\,n)\,\text{AppellF1}\left[-\frac{1}{2}-n,-\frac{1}{2},-n,\frac{1}{2}-n,\frac{2}{1+\text{Sin}[e+f x]},\frac{1}{1+\text{Sin}[e+f x]}\right]\,(1+\text{Sin}[e+f x])\,(-2\,a+a\,(1+\text{Sin}[e+f x]))\Bigg)\Bigg/$$

$$\Bigg((1+2\,n)\,\Bigg(2\,a\,\Bigg(n\,\text{AppellF1}\left[\frac{1}{2}-n,-\frac{1}{2},1-n,\frac{3}{2}-n,\frac{2}{1+\text{Sin}[e+f x]},\frac{1}{1+\text{Sin}[e+f x]}\right]+\text{AppellF1}\left[\frac{1}{2}-n,\frac{1}{2},-n,\frac{3}{2}-n,\frac{2}{1+\text{Sin}[e+f x]},\right.$$

$$\left.\frac{1}{1+\text{Sin}[e+f x]}\right]\Bigg)+a\,(-1+2\,n)\,\text{AppellF1}\left[-\frac{1}{2}-n,-\frac{1}{2},-n,\frac{1}{2}-n,\frac{2}{1+\text{Sin}[e+f x]},\frac{1}{1+\text{Sin}[e+f x]}\right]\,(1+\text{Sin}[e+f x])\Bigg)\Bigg)+$$

$$\Bigg(2\,(-3+2\,n)\,\text{AppellF1}\left[\frac{1}{2}-n,-\frac{1}{2},-n,\frac{3}{2}-n,\frac{2}{1+\text{Sin}[e+f x]},\frac{1}{1+\text{Sin}[e+f x]}\right]\,(-2\,a+a\,(1+\text{Sin}[e+f x]))\Bigg)\Bigg/\Bigg((-1+2\,n)$$

$$\Bigg(2\,a\,\Bigg(n\,\text{AppellF1}\left[\frac{3}{2}-n,-\frac{1}{2},1-n,\frac{5}{2}-n,\frac{2}{1+\text{Sin}[e+f x]},\frac{1}{1+\text{Sin}[e+f x]}\right]+\text{AppellF1}\left[\frac{3}{2}-n,\frac{1}{2},-n,\frac{5}{2}-n,\frac{2}{1+\text{Sin}[e+f x]},\right.$$

$$\left.\frac{1}{1+\text{Sin}[e+f x]}\right]\Bigg)+a\,(-3+2\,n)\,\text{AppellF1}\left[\frac{1}{2}-n,-\frac{1}{2},-n,\frac{3}{2}-n,\frac{2}{1+\text{Sin}[e+f x]},\frac{1}{1+\text{Sin}[e+f x]}\right]\,(1+\text{Sin}[e+f x])\Bigg)\Bigg)\Bigg)\Bigg)\Bigg/$$

$$\Bigg(2\,f\,\sqrt{a\,(1+\text{Sin}[e+f x])}\,(-a+a\,(1+\text{Sin}[e+f x]))\,\sqrt{\frac{2\,a^{2}\,(1+\text{Sin}[e+f x])-a^{2}\,(1+\text{Sin}[e+f x])^{2}}{a^{2}}}$$

$$\sqrt{1-\frac{(-a+a\,(1+\text{Sin}[e+f x]))^{2}}{a^{2}}}\Bigg)+$$

$$\Bigg(A\,\text{Cos}[e+f x]\,(d\,\text{Sin}[e+f x])^{n}\,(1+\text{Sin}[e+f x])\,\left(\frac{-a+a\,(1+\text{Sin}[e+f x])}{a}\right)^{-n}$$

$$\Bigg(\bigg(4\,a^2\,\text{AppellF1}\Big[1,\frac{1}{2},-n,2,\frac{1}{2}\,(1+\text{Sin}[e+f\,x]),1+\text{Sin}[e+f\,x]\Big]\,(-\text{Sin}[e+f\,x])^{-n}\,(1+\text{Sin}[e+f\,x])\,\bigg(-\frac{(a-a\,(1+\text{Sin}[e+f\,x]))^2}{a^2}\bigg)^n\bigg)\Big/$$

$$\bigg(8\,a\,\text{AppellF1}\Big[1,\frac{1}{2},-n,2,\frac{1}{2}\,(1+\text{Sin}[e+f\,x]),1+\text{Sin}[e+f\,x]\Big]+a\,\bigg(-4\,n\,\text{AppellF1}\Big[2,\frac{1}{2},1-n,3,\frac{1}{2}\,(1+\text{Sin}[e+f\,x]),$$

$$1+\text{Sin}[e+f\,x]\Big]+\text{AppellF1}\Big[2,\frac{3}{2},-n,3,\frac{1}{2}\,(1+\text{Sin}[e+f\,x]),1+\text{Sin}[e+f\,x]\Big]\bigg)\,(1+\text{Sin}[e+f\,x])\bigg)-\bigg(a\,(-1+2\,n)$$

$$\text{AppellF1}\Big[-\frac{1}{2}-n,-\frac{1}{2},-n,\frac{1}{2}-n,\frac{2}{1+\text{Sin}[e+f\,x]},\frac{1}{1+\text{Sin}[e+f\,x]}\Big]\,\text{Sin}[e+f\,x]^n\,(1+\text{Sin}[e+f\,x])\,(-2\,a+a\,(1+\text{Sin}[e+f\,x]))\bigg)\Big/$$

$$\bigg((1+2\,n)\,\bigg(2\,a\,\bigg(n\,\text{AppellF1}\Big[\frac{1}{2}-n,-\frac{1}{2},1-n,\frac{3}{2}-n,\frac{2}{1+\text{Sin}[e+f\,x]},\frac{1}{1+\text{Sin}[e+f\,x]}\Big]+\text{AppellF1}\Big[\frac{1}{2}-n,\frac{1}{2},-n,\frac{3}{2}-n,\frac{2}{1+\text{Sin}[e+f\,x]},$$

$$\frac{1}{1+\text{Sin}[e+f\,x]}\Big]\bigg)+a\,(-1+2\,n)\,\text{AppellF1}\Big[-\frac{1}{2}-n,-\frac{1}{2},-n,\frac{1}{2}-n,\frac{2}{1+\text{Sin}[e+f\,x]},\frac{1}{1+\text{Sin}[e+f\,x]}\Big]\,(1+\text{Sin}[e+f\,x])\bigg)\bigg)-$$

$$\bigg(2\,a\,(-3+2\,n)\,\text{AppellF1}\Big[\frac{1}{2}-n,-\frac{1}{2},-n,\frac{3}{2}-n,\frac{2}{1+\text{Sin}[e+f\,x]},\frac{1}{1+\text{Sin}[e+f\,x]}\Big]\,\text{Sin}[e+f\,x]^n\,(-2\,a+a\,(1+\text{Sin}[e+f\,x]))\bigg)\Big/\bigg((-1+2\,n)$$

$$\bigg(2\,a\,\bigg(n\,\text{AppellF1}\Big[\frac{3}{2}-n,-\frac{1}{2},1-n,\frac{5}{2}-n,\frac{2}{1+\text{Sin}[e+f\,x]},\frac{1}{1+\text{Sin}[e+f\,x]}\Big]+\text{AppellF1}\Big[\frac{3}{2}-n,\frac{1}{2},-n,\frac{5}{2}-n,\frac{2}{1+\text{Sin}[e+f\,x]},$$

$$\frac{1}{1+\text{Sin}[e+f\,x]}\Big]\bigg)+a\,(-3+2\,n)\,\text{AppellF1}\Big[\frac{1}{2}-n,-\frac{1}{2},-n,\frac{3}{2}-n,\frac{2}{1+\text{Sin}[e+f\,x]},\frac{1}{1+\text{Sin}[e+f\,x]}\Big]\,(1+\text{Sin}[e+f\,x])\bigg)\bigg)\bigg)\bigg)\Big/$$

$$\left(2\,a^2\,f\,\sqrt{a\,(1+\text{Sin}[e+f\,x])}\,\sqrt{\frac{2\,a^2\,(1+\text{Sin}[e+f\,x])-a^2\,(1+\text{Sin}[e+f\,x])^2}{a^2}}\,\sqrt{1-\frac{(-a+a\,(1+\text{Sin}[e+f\,x]))^2}{a^2}}\right)$$

- **Problem 12: Result more than twice size of optimal antiderivative.**

$$\int(d\,\text{Sin}[e+f\,x])^n\,(a+a\,\text{Sin}[e+f\,x])^m\,(A+B\,\text{Sin}[e+f\,x])\,dx$$

Optimal (type 6, 221 leaves, 9 steps):

$$-\frac{1}{f}2^{\frac{3}{2}+m}\,B\,\text{AppellF1}\Big[\frac{1}{2},-n,-\frac{1}{2}-m,\frac{3}{2},1-\text{Sin}[e+f\,x],\frac{1}{2}\,(1-\text{Sin}[e+f\,x])\Big]$$

$$\text{Cos}[e+f\,x]\,\text{Sin}[e+f\,x]^{-n}\,(d\,\text{Sin}[e+f\,x])^n\,(1+\text{Sin}[e+f\,x])^{-\frac{1}{2}-m}\,(a+a\,\text{Sin}[e+f\,x])^m-$$

$$\frac{1}{f}2^{\frac{1}{2}+m}\,(A-B)\,\text{AppellF1}\Big[\frac{1}{2},-n,\frac{1}{2}-m,\frac{3}{2},1-\text{Sin}[e+f\,x],\frac{1}{2}\,(1-\text{Sin}[e+f\,x])\Big]\,\text{Cos}[e+f\,x]$$

$$\text{Sin}[e+f\,x]^{-n}\,(d\,\text{Sin}[e+f\,x])^n\,(1+\text{Sin}[e+f\,x])^{-\frac{1}{2}-m}\,(a+a\,\text{Sin}[e+f\,x])^m$$

Result (type 6, 5918 leaves):

$$-\bigg(\bigg(6\,\text{Cos}\Big[\frac{1}{2}\,\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^{-1-2\,m}\,\bigg(\text{Sec}\Big[\frac{1}{2}\,\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\bigg)^{-2-m}\,\text{Sin}\Big[\frac{1}{2}\,\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\,(d\,\text{Sin}[e+f\,x])^n$$

$$(a+a\,\text{Sin}[e+f\,x])^m\left(A\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2m}\text{Sin}[e+f\,x]^n+B\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2m}\text{Sin}[e+f\,x]^{1+n}\right)$$

$$\left(\left((A-B)\,\text{AppellF1}\left[\frac{1}{2},-n,1+m+n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\Big/\right.$$

$$\left(3\,\text{AppellF1}\left[\frac{1}{2},-n,1+m+n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]-\right.$$

$$2\left(n\,\text{AppellF1}\left[\frac{3}{2},1-n,1+m+n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.$$

$$\left.\left.(1+m+n)\,\text{AppellF1}\left[\frac{3}{2},-n,2+m+n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)+$$

$$\left(2\,B\,\text{AppellF1}\left[\frac{1}{2},-n,2+m+n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\Big/$$

$$\left(3\,\text{AppellF1}\left[\frac{1}{2},-n,2+m+n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]-\right.$$

$$2\left(n\,\text{AppellF1}\left[\frac{3}{2},1-n,2+m+n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.$$

$$\left.\left.\left.(2+m+n)\,\text{AppellF1}\left[\frac{3}{2},-n,3+m+n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\right)\Big/$$

$$\left(f\left(3\left(\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{-1-m}\text{Sin}[e+f\,x]^n\left(\left((A-B)\,\text{AppellF1}\left[\frac{1}{2},-n,1+m+n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right.\right.\right.\right.$$

$$\left.\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\Big/\left(3\,\text{AppellF1}\left[\frac{1}{2},-n,1+m+n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]-\right.$$

$$2\left(n\,\text{AppellF1}\left[\frac{3}{2},1-n,1+m+n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.$$

$$\left.\left.(1+m+n)\,\text{AppellF1}\left[\frac{3}{2},-n,2+m+n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)+$$

$$\left(2\,B\,\text{AppellF1}\left[\frac{1}{2},-n,2+m+n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\Big/$$

$$\left(3\,\text{AppellF1}\left[\frac{1}{2},-n,2+m+n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]-\right.$$

$$2\left(n\,\text{AppellF1}\left[\frac{3}{2},1-n,2+m+n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.$$

$$\left.\left.(2+m+n)\,\text{AppellF1}\left[\frac{3}{2},-n,3+m+n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\right)-$$

$$6\,n\,\text{Cos}[e+f\,x]\left(\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{-2-m}\text{Sin}[e+f\,x]^{-1+n}\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]$$

$$\left(\left((A-B)\,\text{AppellF1}\left[\frac{1}{2},-n,1+m+n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\Big/\right.$$

$$\left(3\,\text{AppellF1}\left[\frac{1}{2},-n,1+m+n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]-\right.$$

$$2\left(n\,\text{AppellF1}\left[\frac{3}{2},1-n,1+m+n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.$$

$$\left.\left.(1+m+n)\,\text{AppellF1}\left[\frac{3}{2},-n,2+m+n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)+$$

$$\left(2\,B\,\text{AppellF1}\left[\frac{1}{2},-n,2+m+n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\Big/$$

$$\left(3\,\text{AppellF1}\left[\frac{1}{2},-n,2+m+n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]-\right.$$

$$2\left(n\,\text{AppellF1}\left[\frac{3}{2},1-n,2+m+n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.$$

$$\left.\left.\left.(2+m+n)\,\text{AppellF1}\left[\frac{3}{2},-n,3+m+n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\right)+$$

$$6\,(-2-m)\left(\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{-2-m}\text{Sin}[e+f\,x]^n\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2$$

$$\left(\left((A-B)\,\text{AppellF1}\left[\frac{1}{2},-n,1+m+n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\Big/\right.$$

$$\left(3\,\text{AppellF1}\left[\frac{1}{2},-n,1+m+n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]-\right.$$

$$2\left(n\,\text{AppellF1}\left[\frac{3}{2},1-n,1+m+n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.$$

$$\left.\left.(1+m+n)\,\text{AppellF1}\left[\frac{3}{2},-n,2+m+n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)+$$

$$\left(2\,B\,\text{AppellF1}\left[\frac{1}{2},-n,2+m+n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\Big/$$

$$\left(3\,\text{AppellF1}\left[\frac{1}{2},-n,2+m+n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]-\right.$$

$$2\left(n\,\text{AppellF1}\left[\frac{3}{2},1-n,2+m+n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.$$

$$\left.\left.\left.(2+m+n)\,\text{AppellF1}\left[\frac{3}{2},-n,3+m+n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\right)+$$

$$6\left(\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{-2-m}\text{Sin}[e+f\,x]^n\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\left(\left((A-B)\,\text{AppellF1}\left[\frac{1}{2},-n,1+m+n,\frac{3}{2},\right.\right.\right.$$

$$\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\Bigg)\Bigg)\Big/$$

$$\Bigg(3\,\text{AppellF1}\left[\frac{1}{2},-n,1+m+n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]-$$

$$2\Bigg(n\,\text{AppellF1}\left[\frac{3}{2},1-n,1+m+n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$(1+m+n)\,\text{AppellF1}\left[\frac{3}{2},-n,2+m+n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\Bigg)\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)+$$

$$\Bigg((A-B)\,\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg(-\frac{1}{3}n\,\text{AppellF1}\left[\frac{3}{2},1-n,1+m+n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{1}{3}(1+m+n)\,\text{AppellF1}\left[\frac{3}{2},-n,2+m+n,\frac{5}{2},\right.$$

$$\left.\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\Bigg)\Bigg)\Big/$$

$$\Bigg(3\,\text{AppellF1}\left[\frac{1}{2},-n,1+m+n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]-$$

$$2\Bigg(n\,\text{AppellF1}\left[\frac{3}{2},1-n,1+m+n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$(1+m+n)\,\text{AppellF1}\left[\frac{3}{2},-n,2+m+n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\Bigg)\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)+$$

$$\Bigg(2B\Bigg(-\frac{1}{3}n\,\text{AppellF1}\left[\frac{3}{2},1-n,2+m+n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2$$

$$\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{1}{3}(2+m+n)\,\text{AppellF1}\left[\frac{3}{2},-n,3+m+n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\Bigg)\Bigg)\Big/\Bigg(3\,\text{AppellF1}\left[\frac{1}{2},-n,2+m+n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\right.$$

$$\left.-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]-2\Bigg(n\,\text{AppellF1}\left[\frac{3}{2},1-n,2+m+n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$(2+m+n)\,\text{AppellF1}\left[\frac{3}{2},-n,3+m+n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\Bigg)\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)-$$

$$\Bigg((A-B)\,\text{AppellF1}\left[\frac{1}{2},-n,1+m+n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2$$

$$\Bigg(-2\Bigg(n\,\text{AppellF1}\left[\frac{3}{2},1-n,1+m+n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+(1+m+n)\,\text{AppellF1}\left[\frac{3}{2},-n,\right.$$

$$\left.2+m+n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\Bigg)\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]+3$$

$$(-\frac{1}{3}\, n\, \text{AppellF1}[\frac{3}{2}, 1-n, 1+m+n, \frac{5}{2}, \text{Tan}[\frac{1}{2}(-e+\frac{\pi}{2}-f x)]^2, -\text{Tan}[\frac{1}{2}(-e+\frac{\pi}{2}-f x)]^2]\, \text{Sec}[\frac{1}{2}(-e+\frac{\pi}{2}-f x)]^2$$

$$\text{Tan}[\frac{1}{2}(-e+\frac{\pi}{2}-f x)] - \frac{1}{3}(1+m+n)\, \text{AppellF1}[\frac{3}{2}, -n, 2+m+n, \frac{5}{2}, \text{Tan}[\frac{1}{2}(-e+\frac{\pi}{2}-f x)]^2, -\text{Tan}[\frac{1}{2}(-e+\frac{\pi}{2}-f x)]^2]$$

$$\text{Sec}[\frac{1}{2}(-e+\frac{\pi}{2}-f x)]^2\, \text{Tan}[\frac{1}{2}(-e+\frac{\pi}{2}-f x)]]) - 2\, \text{Tan}[\frac{1}{2}(-e+\frac{\pi}{2}-f x)]^2\, (n\, (-\frac{3}{5}(1+m+n)\, \text{AppellF1}[\frac{5}{2}, 1-n,$$

$$2+m+n, \frac{7}{2}, \text{Tan}[\frac{1}{2}(-e+\frac{\pi}{2}-f x)]^2, -\text{Tan}[\frac{1}{2}(-e+\frac{\pi}{2}-f x)]^2]\, \text{Sec}[\frac{1}{2}(-e+\frac{\pi}{2}-f x)]^2\, \text{Tan}[\frac{1}{2}(-e+\frac{\pi}{2}-f x)] +$$

$$\frac{3}{5}(1-n)\, \text{AppellF1}[\frac{5}{2}, 2-n, 1+m+n, \frac{7}{2}, \text{Tan}[\frac{1}{2}(-e+\frac{\pi}{2}-f x)]^2, -\text{Tan}[\frac{1}{2}(-e+\frac{\pi}{2}-f x)]^2]\, \text{Sec}[\frac{1}{2}(-e+\frac{\pi}{2}-f x)]^2$$

$$\text{Tan}[\frac{1}{2}(-e+\frac{\pi}{2}-f x)]]) + (1+m+n)\, (-\frac{3}{5}\, n\, \text{AppellF1}[\frac{5}{2}, 1-n, 2+m+n, \frac{7}{2}, \text{Tan}[\frac{1}{2}(-e+\frac{\pi}{2}-f x)]^2,$$

$$-\text{Tan}[\frac{1}{2}(-e+\frac{\pi}{2}-f x)]^2]\, \text{Sec}[\frac{1}{2}(-e+\frac{\pi}{2}-f x)]^2\, \text{Tan}[\frac{1}{2}(-e+\frac{\pi}{2}-f x)] - \frac{3}{5}(2+m+n)\, \text{AppellF1}[\frac{5}{2}, -n, 3+m+n,$$

$$\frac{7}{2}, \text{Tan}[\frac{1}{2}(-e+\frac{\pi}{2}-f x)]^2, -\text{Tan}[\frac{1}{2}(-e+\frac{\pi}{2}-f x)]^2]\, \text{Sec}[\frac{1}{2}(-e+\frac{\pi}{2}-f x)]^2\, \text{Tan}[\frac{1}{2}(-e+\frac{\pi}{2}-f x)]]))))\Big/$$

$$(3\, \text{AppellF1}[\frac{1}{2}, -n, 1+m+n, \frac{3}{2}, \text{Tan}[\frac{1}{2}(-e+\frac{\pi}{2}-f x)]^2, -\text{Tan}[\frac{1}{2}(-e+\frac{\pi}{2}-f x)]^2] - 2\, (n\, \text{AppellF1}[\frac{3}{2}, 1-n,$$

$$1+m+n, \frac{5}{2}, \text{Tan}[\frac{1}{2}(-e+\frac{\pi}{2}-f x)]^2, -\text{Tan}[\frac{1}{2}(-e+\frac{\pi}{2}-f x)]^2] + (1+m+n)$$

$$\text{AppellF1}[\frac{3}{2}, -n, 2+m+n, \frac{5}{2}, \text{Tan}[\frac{1}{2}(-e+\frac{\pi}{2}-f x)]^2, -\text{Tan}[\frac{1}{2}(-e+\frac{\pi}{2}-f x)]^2])\, \text{Tan}[\frac{1}{2}(-e+\frac{\pi}{2}-f x)]^2)^2 -$$

$$(2\, B\, \text{AppellF1}[\frac{1}{2}, -n, 2+m+n, \frac{3}{2}, \text{Tan}[\frac{1}{2}(-e+\frac{\pi}{2}-f x)]^2, -\text{Tan}[\frac{1}{2}(-e+\frac{\pi}{2}-f x)]^2]$$

$$(-2\, (n\, \text{AppellF1}[\frac{3}{2}, 1-n, 2+m+n, \frac{5}{2}, \text{Tan}[\frac{1}{2}(-e+\frac{\pi}{2}-f x)]^2, -\text{Tan}[\frac{1}{2}(-e+\frac{\pi}{2}-f x)]^2] + (2+m+n)\, \text{AppellF1}[\frac{3}{2}, -n,$$

$$3+m+n, \frac{5}{2}, \text{Tan}[\frac{1}{2}(-e+\frac{\pi}{2}-f x)]^2, -\text{Tan}[\frac{1}{2}(-e+\frac{\pi}{2}-f x)]^2])\, \text{Sec}[\frac{1}{2}(-e+\frac{\pi}{2}-f x)]^2\, \text{Tan}[\frac{1}{2}(-e+\frac{\pi}{2}-f x)] + 3$$

$$(-\frac{1}{3}\, n\, \text{AppellF1}[\frac{3}{2}, 1-n, 2+m+n, \frac{5}{2}, \text{Tan}[\frac{1}{2}(-e+\frac{\pi}{2}-f x)]^2, -\text{Tan}[\frac{1}{2}(-e+\frac{\pi}{2}-f x)]^2]\, \text{Sec}[\frac{1}{2}(-e+\frac{\pi}{2}-f x)]^2$$

$$\text{Tan}[\frac{1}{2}(-e+\frac{\pi}{2}-f x)] - \frac{1}{3}(2+m+n)\, \text{AppellF1}[\frac{3}{2}, -n, 3+m+n, \frac{5}{2}, \text{Tan}[\frac{1}{2}(-e+\frac{\pi}{2}-f x)]^2, -\text{Tan}[\frac{1}{2}(-e+\frac{\pi}{2}-f x)]^2]$$

$$\text{Sec}[\frac{1}{2}(-e+\frac{\pi}{2}-f x)]^2\, \text{Tan}[\frac{1}{2}(-e+\frac{\pi}{2}-f x)]]) - 2\, \text{Tan}[\frac{1}{2}(-e+\frac{\pi}{2}-f x)]^2\, (n\, (-\frac{3}{5}(2+m+n)\, \text{AppellF1}[\frac{5}{2}, 1-n,$$

$$3+m+n, \frac{7}{2}, \text{Tan}[\frac{1}{2}(-e+\frac{\pi}{2}-f x)]^2, -\text{Tan}[\frac{1}{2}(-e+\frac{\pi}{2}-f x)]^2]\, \text{Sec}[\frac{1}{2}(-e+\frac{\pi}{2}-f x)]^2\, \text{Tan}[\frac{1}{2}(-e+\frac{\pi}{2}-f x)] +$$

$$\frac{3}{5}(1-n)\,\text{AppellF1}\left[\frac{5}{2},\,2-n,\,2+m+n,\,\frac{7}{2},\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2$$

$$\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\Bigg)+(2+m+n)\left(-\frac{3}{5}\,n\,\text{AppellF1}\left[\frac{5}{2},\,1-n,\,3+m+n,\,\frac{7}{2},\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\right.\right.$$

$$-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Bigg]\,\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-\frac{3}{5}(3+m+n)\,\text{AppellF1}\left[\frac{5}{2},\,-n,\,4+m+n,\right.$$

$$\frac{7}{2},\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Bigg]\,\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\Bigg)\Bigg)\Bigg)\Bigg)\Bigg)\Bigg/$$

$$\Bigg(3\,\text{AppellF1}\left[\frac{1}{2},\,-n,\,2+m+n,\,\frac{3}{2},\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]-2\Bigg(n\,\text{AppellF1}\left[\frac{3}{2},\,1-n,\right.$$

$$2+m+n,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Bigg]+(2+m+n)$$

$$\text{AppellF1}\left[\frac{3}{2},\,-n,\,3+m+n,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\Bigg)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Bigg)^2\Bigg)\Bigg)\Bigg)\Bigg)$$

- **Problem 13: Unable to integrate problem.**

$$\int (d\,\text{Sin}[e+f\,x])^n\,(a-a\,\text{Sin}[e+f\,x])\,(a+a\,\text{Sin}[e+f\,x])^m\,dx$$

Optimal (type 6, 114 leaves, 4 steps):

$$\Bigg(\text{AppellF1}\left[1+n,\,-\frac{1}{2},\,\frac{1}{2}-m,\,2+n,\,\text{Sin}[e+f\,x],\,-\text{Sin}[e+f\,x]\right]\,\text{Sec}[e+f\,x]$$

$$(d\,\text{Sin}[e+f\,x])^{1+n}\,(1+\text{Sin}[e+f\,x])^{\frac{1}{2}-m}\,(a-a\,\text{Sin}[e+f\,x])\,(a+a\,\text{Sin}[e+f\,x])^m\Bigg)\Bigg/\left(d\,f\,(1+n)\,\sqrt{1-\text{Sin}[e+f\,x]}\right)$$

Result (type 8, 36 leaves):

$$\int (d\,\text{Sin}[e+f\,x])^n\,(a-a\,\text{Sin}[e+f\,x])\,(a+a\,\text{Sin}[e+f\,x])^m\,dx$$

- **Problem 14: Result more than twice size of optimal antiderivative.**

$$\int \text{Sin}[c+d\,x]^n\,(a+a\,\text{Sin}[c+d\,x])^{-2-n}\,(-1-n-(-2-n)\,\text{Sin}[c+d\,x])\,dx$$

Optimal (type 3, 37 leaves, 1 step):

$$-\frac{\text{Cos}[c+d\,x]\,\text{Sin}[c+d\,x]^{1+n}\,(a+a\,\text{Sin}[c+d\,x])^{-2-n}}{d}$$

Result (type 3, 107 leaves):

$$-\frac{1}{d}2^n \operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)$$
$$\left(\operatorname{Cos}\left[\frac{1}{4}(c+d x)\right]\left(-\operatorname{Sin}\left[\frac{1}{4}(c+d x)\right]+\operatorname{Sin}\left[\frac{3}{4}(c+d x)\right]\right)\right)^n (1+\operatorname{Cos}[c+d x]-\operatorname{Sin}[c+d x])\,(a\,(1+\operatorname{Sin}[c+d x]))^{-2-n}$$

Problem 21: Result more than twice size of optimal antiderivative.

$$\int \frac{(a+a \operatorname{Sin}[e+f x])\,(A+B \operatorname{Sin}[e+f x])}{c-c \operatorname{Sin}[e+f x]}\,dx$$

Optimal (type 3, 56 leaves, 4 steps):

$$-\frac{a\,(A+2 B)\,x}{c}+\frac{a B \operatorname{Cos}[e+f x]}{c f}+\frac{2 a\,(A+B) \operatorname{Cos}[e+f x]}{f\,(c-c \operatorname{Sin}[e+f x])}$$

Result (type 3, 125 leaves):

$$\left(a\left(-(A+2 B)\,x+\frac{B \operatorname{Cos}[e] \operatorname{Cos}[f x]}{f}-\frac{B \operatorname{Sin}[e] \operatorname{Sin}[f x]}{f}+\frac{4\,(A+B) \operatorname{Sin}\left[\frac{f x}{2}\right]}{f\left(\operatorname{Cos}\left[\frac{e}{2}\right]-\operatorname{Sin}\left[\frac{e}{2}\right]\right)\left(\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]-\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right)}\right)(1+\operatorname{Sin}[e+f x])\right)\Big/$$
$$\left(c\left(\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]+\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^2\right)$$

Problem 22: Result more than twice size of optimal antiderivative.

$$\int \frac{(a+a \operatorname{Sin}[e+f x])\,(A+B \operatorname{Sin}[e+f x])}{(c-c \operatorname{Sin}[e+f x])^2}\,dx$$

Optimal (type 3, 72 leaves, 4 steps):

$$\frac{a B x}{c^2}-\frac{a\,(A+7 B) \operatorname{Cos}[e+f x]}{3 c^2 f\,(1-\operatorname{Sin}[e+f x])}+\frac{2 a\,(A+B) \operatorname{Cos}[e+f x]}{3 f\,(c-c \operatorname{Sin}[e+f x])^2}$$

Result (type 3, 160 leaves):

$$-\left(a\left(-9 B f x \operatorname{Cos}\left[\frac{f x}{2}\right]-6\,(A+3 B) \operatorname{Cos}\left[e+\frac{f x}{2}\right]+2 A \operatorname{Cos}\left[e+\frac{3 f x}{2}\right]+14 B \operatorname{Cos}\left[e+\frac{3 f x}{2}\right]+3 B f x \operatorname{Cos}\left[2 e+\frac{3 f x}{2}\right]+24 B \operatorname{Sin}\left[\frac{f x}{2}\right]+\right.\right.$$
$$\left.\left.9 B f x \operatorname{Sin}\left[e+\frac{f x}{2}\right]+3 B f x \operatorname{Sin}\left[e+\frac{3 f x}{2}\right]\right)\right)\Big/\left(6 c^2 f\left(\operatorname{Cos}\left[\frac{e}{2}\right]-\operatorname{Sin}\left[\frac{e}{2}\right]\right)\left(\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]-\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^3\right)$$

Problem 32: Result more than twice size of optimal antiderivative.

$$\int \frac{(a+a \operatorname{Sin}[e+f x])^2\,(A+B \operatorname{Sin}[e+f x])}{(c-c \operatorname{Sin}[e+f x])^2}\,dx$$

Optimal (type 3, 109 leaves, 5 steps):

$$\frac{a^2\,(A+4 B)\,x}{c^2}-\frac{a^2\,(A+4 B) \operatorname{Cos}[e+f x]}{c^2 f}+\frac{a^2\,(A+B)\,c^2 \operatorname{Cos}[e+f x]^5}{3 f\,(c-c \operatorname{Sin}[e+f x])^4}-\frac{2 a^2\,(A+4 B) \operatorname{Cos}[e+f x]^3}{3 f\,(c-c \operatorname{Sin}[e+f x])^2}$$

Result (type 3, 238 leaves):

$$\frac{1}{3 f \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]+\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^4 (c-c\,\text{Sin}[e+f x])^2} a^2 \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]-\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right) \left(4 (A+B) \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]-\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)+ 3 (A+4 B) (e+f x) \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]-\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^3-3 B\,\text{Cos}[e+f x] \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]-\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^3+ 8 (A+B)\,\text{Sin}\left[\frac{1}{2} (e+f x)\right]-8 (2 A+5 B) \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]-\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^2 \text{Sin}\left[\frac{1}{2} (e+f x)\right]\right) (1+\text{Sin}[e+f x])^2$$

Problem 33: Result more than twice size of optimal antiderivative.

$$\int \frac{(a+a\,\text{Sin}[e+f x])^2 (A+B\,\text{Sin}[e+f x])}{(c-c\,\text{Sin}[e+f x])^3} \, dx$$

Optimal (type 3, 112 leaves, 5 steps):

$$-\frac{a^2 B x}{c^3}+\frac{a^2 (A+B) c^2 \text{Cos}[e+f x]^5}{5 f (c-c\,\text{Sin}[e+f x])^5}-\frac{2 a^2 B\,\text{Cos}[e+f x]^3}{3 f (c-c\,\text{Sin}[e+f x])^3}+\frac{2 a^2 B\,\text{Cos}[e+f x]}{f \left(c^3-c^3\,\text{Sin}[e+f x]\right)}$$

Result (type 3, 278 leaves):

$$\frac{1}{15 f \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]+\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^4 (c-c\,\text{Sin}[e+f x])^3} a^2 \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]-\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right) \left(12 (A+B) \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]-\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)-4 (3 A+8 B) \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]-\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^3- 15 B (e+f x) \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]-\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^5+24 (A+B)\,\text{Sin}\left[\frac{1}{2} (e+f x)\right]-8 (3 A+8 B) \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]-\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^2 \text{Sin}\left[\frac{1}{2} (e+f x)\right]+2 (3 A+43 B) \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]-\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^4 \text{Sin}\left[\frac{1}{2} (e+f x)\right]\right) (1+\text{Sin}[e+f x])^2$$

Problem 34: Result more than twice size of optimal antiderivative.

$$\int \frac{(a+a\,\text{Sin}[e+f x])^2 (A+B\,\text{Sin}[e+f x])}{(c-c\,\text{Sin}[e+f x])^4} \, dx$$

Optimal (type 3, 75 leaves, 3 steps):

$$\frac{a^2 (A+B) c^2 \text{Cos}[e+f x]^5}{7 f (c-c\,\text{Sin}[e+f x])^6}+\frac{a^2 (A-6 B) c\,\text{Cos}[e+f x]^5}{35 f (c-c\,\text{Sin}[e+f x])^5}$$

Result (type 3, 191 leaves):

$$-\left(a^2\left(-35\,(A+4\,B)\,\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+7\,(2\,A+13\,B)\,\text{Cos}\left[\frac{3}{2}\,(e+f\,x)\right]+35\,B\,\text{Cos}\left[\frac{5}{2}\,(e+f\,x)\right]+A\,\text{Cos}\left[\frac{7}{2}\,(e+f\,x)\right]-6\,B\,\text{Cos}\left[\frac{7}{2}\,(e+f\,x)\right]-70\,A\,\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]+70\,B\,\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]-35\,A\,\text{Sin}\left[\frac{3}{2}\,(e+f\,x)\right]+35\,B\,\text{Sin}\left[\frac{3}{2}\,(e+f\,x)\right]+7\,A\,\text{Sin}\left[\frac{5}{2}\,(e+f\,x)\right]-7\,B\,\text{Sin}\left[\frac{5}{2}\,(e+f\,x)\right]\right)\right)\Big/\left(140\,c^4\,f\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^7\right)$$

- **Problem 35: Result more than twice size of optimal antiderivative.**

$$\int\frac{(a+a\,\text{Sin}[e+f\,x])^2\,(A+B\,\text{Sin}[e+f\,x])}{(c-c\,\text{Sin}[e+f\,x])^5}\,dx$$

Optimal (type 3, 115 leaves, 4 steps):

$$\frac{a^2\,(A+B)\,c^2\,\text{Cos}[e+f\,x]^5}{9\,f\,(c-c\,\text{Sin}[e+f\,x])^7}+\frac{a^2\,(2\,A-7\,B)\,c\,\text{Cos}[e+f\,x]^5}{63\,f\,(c-c\,\text{Sin}[e+f\,x])^6}+\frac{a^2\,(2\,A-7\,B)\,\text{Cos}[e+f\,x]^5}{315\,f\,(c-c\,\text{Sin}[e+f\,x])^5}$$

Result (type 3, 261 leaves):

$$-\frac{1}{2520\,c^5\,f\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^4\,(-1+\text{Sin}[e+f\,x])^5}$$
$$a^2\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)\,(1+\text{Sin}[e+f\,x])^2\left(315\,(2\,A+3\,B)\,\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]-63\,(4\,A+11\,B)\,\text{Cos}\left[\frac{3}{2}\,(e+f\,x)\right]-315\,B\,\text{Cos}\left[\frac{5}{2}\,(e+f\,x)\right]-18\,A\,\text{Cos}\left[\frac{7}{2}\,(e+f\,x)\right]+63\,B\,\text{Cos}\left[\frac{7}{2}\,(e+f\,x)\right]+882\,A\,\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]+63\,B\,\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]+420\,A\,\text{Sin}\left[\frac{3}{2}\,(e+f\,x)\right]+105\,B\,\text{Sin}\left[\frac{3}{2}\,(e+f\,x)\right]-72\,A\,\text{Sin}\left[\frac{5}{2}\,(e+f\,x)\right]-63\,B\,\text{Sin}\left[\frac{5}{2}\,(e+f\,x)\right]+2\,A\,\text{Sin}\left[\frac{9}{2}\,(e+f\,x)\right]-7\,B\,\text{Sin}\left[\frac{9}{2}\,(e+f\,x)\right]\right)$$

- **Problem 38: Result more than twice size of optimal antiderivative.**

$$\int(a+a\,\text{Sin}[e+f\,x])^3\,(A+B\,\text{Sin}[e+f\,x])\,(c-c\,\text{Sin}[e+f\,x])^6\,dx$$

Optimal (type 3, 265 leaves, 9 steps):

$$\frac{11}{256}\,a^3\,(10\,A-3\,B)\,c^6\,x+\frac{11\,a^3\,(10\,A-3\,B)\,c^6\,\text{Cos}[e+f\,x]^7}{560\,f}+\frac{11\,a^3\,(10\,A-3\,B)\,c^6\,\text{Cos}[e+f\,x]\,\text{Sin}[e+f\,x]}{256\,f}+\frac{11\,a^3\,(10\,A-3\,B)\,c^6\,\text{Cos}[e+f\,x]^3\,\text{Sin}[e+f\,x]}{384\,f}+\frac{11\,a^3\,(10\,A-3\,B)\,c^6\,\text{Cos}[e+f\,x]^5\,\text{Sin}[e+f\,x]}{480\,f}-\frac{a^3\,B\,\text{Cos}[e+f\,x]^7\,\left(c^2-c^2\,\text{Sin}[e+f\,x]\right)^3}{10\,f}+\frac{a^3\,(10\,A-3\,B)\,\text{Cos}[e+f\,x]^7\,\left(c^3-c^3\,\text{Sin}[e+f\,x]\right)^2}{90\,f}+\frac{11\,a^3\,(10\,A-3\,B)\,\text{Cos}[e+f\,x]^7\,\left(c^6-c^6\,\text{Sin}[e+f\,x]\right)}{720\,f}$$

Result (type 3, 1033 leaves):

$$\frac{11\,(10 A-3 B)\,(e+f x)\,(a+a \operatorname{Sin}[e+f x])^3\,(c-c \operatorname{Sin}[e+f x])^6}{256 f\left(\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]-\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^{12}\left(\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]+\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^6}+$$

$$\frac{(33 A-19 B)\operatorname{Cos}[e+f x]\,(a+a \operatorname{Sin}[e+f x])^3\,(c-c \operatorname{Sin}[e+f x])^6}{128 f\left(\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]-\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^{12}\left(\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]+\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^6}+$$

$$\frac{(29 A-15 B)\operatorname{Cos}[3(e+f x)]\,(a+a \operatorname{Sin}[e+f x])^3\,(c-c \operatorname{Sin}[e+f x])^6}{192 f\left(\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]-\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^{12}\left(\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]+\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^6}+$$

$$\frac{(3 A-B)\operatorname{Cos}[5(e+f x)]\,(a+a \operatorname{Sin}[e+f x])^3\,(c-c \operatorname{Sin}[e+f x])^6}{64 f\left(\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]-\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^{12}\left(\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]+\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^6}+$$

$$\frac{(9 A+5 B)\operatorname{Cos}[7(e+f x)]\,(a+a \operatorname{Sin}[e+f x])^3\,(c-c \operatorname{Sin}[e+f x])^6}{1792 f\left(\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]-\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^{12}\left(\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]+\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^6}-$$

$$\frac{(A-3 B)\operatorname{Cos}[9(e+f x)]\,(a+a \operatorname{Sin}[e+f x])^3\,(c-c \operatorname{Sin}[e+f x])^6}{2304 f\left(\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]-\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^{12}\left(\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]+\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^6}+$$

$$\frac{(144 A-25 B)\,(a+a \operatorname{Sin}[e+f x])^3\,(c-c \operatorname{Sin}[e+f x])^6 \operatorname{Sin}[2(e+f x)]}{512 f\left(\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]-\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^{12}\left(\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]+\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^6}+$$

$$\frac{(6 A+7 B)\,(a+a \operatorname{Sin}[e+f x])^3\,(c-c \operatorname{Sin}[e+f x])^6 \operatorname{Sin}[4(e+f x)]}{256 f\left(\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]-\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^{12}\left(\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]+\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^6}-$$

$$\frac{(32 A-51 B)\,(a+a \operatorname{Sin}[e+f x])^3\,(c-c \operatorname{Sin}[e+f x])^6 \operatorname{Sin}[6(e+f x)]}{3072 f\left(\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]-\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^{12}\left(\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]+\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^6}-$$

$$\frac{(6 A-5 B)\,(a+a \operatorname{Sin}[e+f x])^3\,(c-c \operatorname{Sin}[e+f x])^6 \operatorname{Sin}[8(e+f x)]}{2048 f\left(\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]-\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^{12}\left(\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]+\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^6}-$$

$$\frac{B\,(a+a \operatorname{Sin}[e+f x])^3\,(c-c \operatorname{Sin}[e+f x])^6 \operatorname{Sin}[10(e+f x)]}{5120 f\left(\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]-\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^{12}\left(\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]+\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^6}$$

- **Problem 46: Result more than twice size of optimal antiderivative.**

$$\int \frac{(a+a \operatorname{Sin}[e+f x])^3\,(A+B \operatorname{Sin}[e+f x])}{(c-c \operatorname{Sin}[e+f x])^3}\,dx$$

Optimal (type 3, 153 leaves, 6 steps):

$$-\frac{a^3\,(A+6 B)\,x}{c^3}+\frac{a^3\,(A+6 B)\operatorname{Cos}[e+f x]}{c^3 f}+\frac{a^3\,(A+B)\,c^3 \operatorname{Cos}[e+f x]^7}{5 f\,(c-c \operatorname{Sin}[e+f x])^6}-\frac{2 a^3\,(A+6 B)\,c \operatorname{Cos}[e+f x]^5}{15 f\,(c-c \operatorname{Sin}[e+f x])^4}+\frac{2 a^3\,(A+6 B)\,c^3 \operatorname{Cos}[e+f x]^3}{3 f\left(c^3-c^3 \operatorname{Sin}[e+f x]\right)^2}$$

Result (type 3, 316 leaves):

$$\frac{1}{15 f \left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^6 (c-c \,\text{Sin}[e+f x])^3} a^3 \left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right) \left(24 (A+B) \left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)-4 (11 A+21 B) \left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^3- 15 (A+6 B) (e+f x) \left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^5+15 B \,\text{Cos}[e+f x] \left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^5+ 48 (A+B) \,\text{Sin}\left[\frac{1}{2}(e+f x)\right]-8 (11 A+21 B) \left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^2 \text{Sin}\left[\frac{1}{2}(e+f x)\right]+ 4 (23 A+93 B) \left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^4 \text{Sin}\left[\frac{1}{2}(e+f x)\right]\right) (1+\text{Sin}[e+f x])^3$$

Problem 47: Result more than twice size of optimal antiderivative.

$$\int \frac{(a+a \,\text{Sin}[e+f x])^3 (A+B \,\text{Sin}[e+f x])}{(c-c \,\text{Sin}[e+f x])^4} \, dx$$

Optimal (type 3, 151 leaves, 6 steps):

$$\frac{a^3 B x}{c^4}+\frac{a^3 (A+B) c^3 \,\text{Cos}[e+f x]^7}{7 f (c-c \,\text{Sin}[e+f x])^7}-\frac{2 a^3 B c \,\text{Cos}[e+f x]^5}{5 f (c-c \,\text{Sin}[e+f x])^5}+\frac{2 a^3 B c^2 \,\text{Cos}[e+f x]^3}{3 f \left(c^2-c^2 \,\text{Sin}[e+f x]\right)^3}-\frac{2 a^3 B \,\text{Cos}[e+f x]}{f \left(c^4-c^4 \,\text{Sin}[e+f x]\right)}$$

Result (type 3, 356 leaves):

$$\frac{1}{105 f \left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^6 (c-c \,\text{Sin}[e+f x])^4} a^3 \left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right) \left(120 (A+B) \left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)-12 (15 A+29 B) \left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^3+ 2 (45 A+199 B) \left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^5+105 B (e+f x) \left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^7+240 (A+B) \,\text{Sin}\left[\frac{1}{2}(e+f x)\right]- 24 (15 A+29 B) \left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^2 \text{Sin}\left[\frac{1}{2}(e+f x)\right]+4 (45 A+199 B) \left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^4 \text{Sin}\left[\frac{1}{2}(e+f x)\right]-2 (15 A+337 B) \left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^6 \text{Sin}\left[\frac{1}{2}(e+f x)\right]\right) (1+\text{Sin}[e+f x])^3$$

Problem 48: Result more than twice size of optimal antiderivative.

$$\int \frac{(a+a \,\text{Sin}[e+f x])^3 (A+B \,\text{Sin}[e+f x])}{(c-c \,\text{Sin}[e+f x])^5} \, dx$$

Optimal (type 3, 77 leaves, 3 steps):

$$\frac{a^3 (A+B) c^3 \operatorname{Cos}[e+f x]^7}{9 f (c-c \operatorname{Sin}[e+f x])^8}+\frac{a^3 (A-8 B) c^2 \operatorname{Cos}[e+f x]^7}{63 f (c-c \operatorname{Sin}[e+f x])^7}$$

Result (type 3, 283 leaves) :

$$-\frac{1}{504 c^5 f \left(\operatorname{Cos}\left[\frac{1}{2} (e+f x)\right]+\operatorname{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^6 (-1+\operatorname{Sin}[e+f x])^5} a^3 \left(\operatorname{Cos}\left[\frac{1}{2} (e+f x)\right]-\operatorname{Sin}\left[\frac{1}{2} (e+f x)\right]\right) (1+\operatorname{Sin}[e+f x])^3 \left(315 (A-B) \operatorname{Cos}\left[\frac{1}{2} (e+f x)\right]-189 (A-B) \operatorname{Cos}\left[\frac{3}{2} (e+f x)\right]-63 A \operatorname{Cos}\left[\frac{5}{2} (e+f x)\right]+63 B \operatorname{Cos}\left[\frac{5}{2} (e+f x)\right]+9 A \operatorname{Cos}\left[\frac{7}{2} (e+f x)\right]-9 B \operatorname{Cos}\left[\frac{7}{2} (e+f x)\right]+189 A \operatorname{Sin}\left[\frac{1}{2} (e+f x)\right]+693 B \operatorname{Sin}\left[\frac{1}{2} (e+f x)\right]+105 A \operatorname{Sin}\left[\frac{3}{2} (e+f x)\right]+483 B \operatorname{Sin}\left[\frac{3}{2} (e+f x)\right]-27 A \operatorname{Sin}\left[\frac{5}{2} (e+f x)\right]-225 B \operatorname{Sin}\left[\frac{5}{2} (e+f x)\right]-63 B \operatorname{Sin}\left[\frac{7}{2} (e+f x)\right]-A \operatorname{Sin}\left[\frac{9}{2} (e+f x)\right]+8 B \operatorname{Sin}\left[\frac{9}{2} (e+f x)\right]\right)$$

Problem 49: Result more than twice size of optimal antiderivative.

$$\int \frac{(a+a \operatorname{Sin}[e+f x])^3 (A+B \operatorname{Sin}[e+f x])}{(c-c \operatorname{Sin}[e+f x])^6} \, dx$$

Optimal (type 3, 118 leaves, 4 steps) :

$$\frac{a^3 (A+B) c^3 \operatorname{Cos}[e+f x]^7}{11 f (c-c \operatorname{Sin}[e+f x])^9}+\frac{a^3 (2 A-9 B) c^2 \operatorname{Cos}[e+f x]^7}{99 f (c-c \operatorname{Sin}[e+f x])^8}+\frac{a^3 (2 A-9 B) c \operatorname{Cos}[e+f x]^7}{693 f (c-c \operatorname{Sin}[e+f x])^7}$$

Result (type 3, 313 leaves) :

$$\frac{1}{11088 c^6 f \left(\operatorname{Cos}\left[\frac{1}{2} (e+f x)\right]+\operatorname{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^6 (-1+\operatorname{Sin}[e+f x])^6} a^3 \left(\operatorname{Cos}\left[\frac{1}{2} (e+f x)\right]-\operatorname{Sin}\left[\frac{1}{2} (e+f x)\right]\right) (1+\operatorname{Sin}[e+f x])^3 \left(462 (11 A+3 B) \operatorname{Cos}\left[\frac{1}{2} (e+f x)\right]-594 (5 A+2 B) \operatorname{Cos}\left[\frac{3}{2} (e+f x)\right]-924 A \operatorname{Cos}\left[\frac{5}{2} (e+f x)\right]-693 B \operatorname{Cos}\left[\frac{5}{2} (e+f x)\right]+110 A \operatorname{Cos}\left[\frac{7}{2} (e+f x)\right]+198 B \operatorname{Cos}\left[\frac{7}{2} (e+f x)\right]-2 A \operatorname{Cos}\left[\frac{11}{2} (e+f x)\right]+9 B \operatorname{Cos}\left[\frac{11}{2} (e+f x)\right]+4158 A \operatorname{Sin}\left[\frac{1}{2} (e+f x)\right]+5544 B \operatorname{Sin}\left[\frac{1}{2} (e+f x)\right]+2310 A \operatorname{Sin}\left[\frac{3}{2} (e+f x)\right]+4158 B \operatorname{Sin}\left[\frac{3}{2} (e+f x)\right]-594 A \operatorname{Sin}\left[\frac{5}{2} (e+f x)\right]-2178 B \operatorname{Sin}\left[\frac{5}{2} (e+f x)\right]-693 B \operatorname{Sin}\left[\frac{7}{2} (e+f x)\right]-22 A \operatorname{Sin}\left[\frac{9}{2} (e+f x)\right]+99 B \operatorname{Sin}\left[\frac{9}{2} (e+f x)\right]\right)$$

Problem 50: Result more than twice size of optimal antiderivative.

$$\int \frac{(a+a \operatorname{Sin}[e+f x])^3 (A+B \operatorname{Sin}[e+f x])}{(c-c \operatorname{Sin}[e+f x])^7} \, dx$$

Optimal (type 3, 156 leaves, 5 steps) :

$$\frac{a^3 (A+B) c^3 \operatorname{Cos}[e+f x]^7}{13 f (c-c \operatorname{Sin}[e+f x])^{10}}+\frac{a^3 (3 A-10 B) c^2 \operatorname{Cos}[e+f x]^7}{143 f (c-c \operatorname{Sin}[e+f x])^9}+\frac{2 a^3 (3 A-10 B) c \operatorname{Cos}[e+f x]^7}{1287 f (c-c \operatorname{Sin}[e+f x])^8}+\frac{2 a^3 (3 A-10 B) \operatorname{Cos}[e+f x]^7}{9009 f (c-c \operatorname{Sin}[e+f x])^7}$$

Result (type 3, 352 leaves):

$$\frac{1}{144144 f \left(\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]+\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^6 (c-c \operatorname{Sin}[e+f x])^7}$$
$$\left(\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]-\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right)(a+a \operatorname{Sin}[e+f x])^3\left(54054 A \operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]+30030 B \operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]-\right.$$
$$30888 A \operatorname{Cos}\left[\frac{3}{2}(e+f x)\right]-23166 B \operatorname{Cos}\left[\frac{3}{2}(e+f x)\right]-9009 A \operatorname{Cos}\left[\frac{5}{2}(e+f x)\right]-12012 B \operatorname{Cos}\left[\frac{5}{2}(e+f x)\right]+858 A \operatorname{Cos}\left[\frac{7}{2}(e+f x)\right]+$$
$$3146 B \operatorname{Cos}\left[\frac{7}{2}(e+f x)\right]-39 A \operatorname{Cos}\left[\frac{11}{2}(e+f x)\right]+130 B \operatorname{Cos}\left[\frac{11}{2}(e+f x)\right]+48906 A \operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]+47190 B \operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]+$$
$$27027 A \operatorname{Sin}\left[\frac{3}{2}(e+f x)\right]+36036 B \operatorname{Sin}\left[\frac{3}{2}(e+f x)\right]-6864 A \operatorname{Sin}\left[\frac{5}{2}(e+f x)\right]-19162 B \operatorname{Sin}\left[\frac{5}{2}(e+f x)\right]-$$
$$\left.6006 B \operatorname{Sin}\left[\frac{7}{2}(e+f x)\right]-234 A \operatorname{Sin}\left[\frac{9}{2}(e+f x)\right]+780 B \operatorname{Sin}\left[\frac{9}{2}(e+f x)\right]+3 A \operatorname{Sin}\left[\frac{13}{2}(e+f x)\right]-10 B \operatorname{Sin}\left[\frac{13}{2}(e+f x)\right]\right)$$

Problem 55: Result more than twice size of optimal antiderivative.

$$\int \frac{(A+B \operatorname{Sin}[e+f x])(c-c \operatorname{Sin}[e+f x])}{a+a \operatorname{Sin}[e+f x]} \, dx$$

Optimal (type 3, 57 leaves, 4 steps):

$$-\frac{(A-2 B) c x}{a}+\frac{B c \operatorname{Cos}[e+f x]}{a f}-\frac{2 (A-B) c \operatorname{Cos}[e+f x]}{f (a+a \operatorname{Sin}[e+f x])}$$

Result (type 3, 127 leaves):

$$\left(\left(-(A-2 B) x+\frac{B \operatorname{Cos}[e] \operatorname{Cos}[f x]}{f}-\frac{B \operatorname{Sin}[e] \operatorname{Sin}[f x]}{f}+\frac{4 (A-B) \operatorname{Sin}\left[\frac{f x}{2}\right]}{f\left(\operatorname{Cos}\left[\frac{e}{2}\right]+\operatorname{Sin}\left[\frac{e}{2}\right]\right)\left(\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]+\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right)}\right)(c-c \operatorname{Sin}[e+f x])\right) \Big/$$
$$\left(a\left(\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]-\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^2\right)$$

Problem 63: Result more than twice size of optimal antiderivative.

$$\int \frac{(A+B \operatorname{Sin}[e+f x])(c-c \operatorname{Sin}[e+f x])^2}{(a+a \operatorname{Sin}[e+f x])^2} \, dx$$

Optimal (type 3, 108 leaves, 5 steps):

$$\frac{(A-4 B) c^2 x}{a^2}+\frac{(A-4 B) c^2 \operatorname{Cos}[e+f x]}{a^2 f}-\frac{a^2 (A-B) c^2 \operatorname{Cos}[e+f x]^5}{3 f (a+a \operatorname{Sin}[e+f x])^4}+\frac{2 (A-4 B) c^2 \operatorname{Cos}[e+f x]^3}{3 f (a+a \operatorname{Sin}[e+f x])^2}$$

Result (type 3, 234 leaves):

$$\frac{1}{3 a^2 f \left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^4 (1+\text{Sin}[e+f x])^2}$$
$$\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)\left(8 (A-B) \text{Sin}\left[\frac{1}{2}(e+f x)\right]-4 (A-B)\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)-\right.$$
$$8 (2 A-5 B) \text{Sin}\left[\frac{1}{2}(e+f x)\right]\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^2+3 (A-4 B) (e+f x)\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^3-$$
$$\left.3 B \text{Cos}[e+f x]\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^3\right)(c-c \text{Sin}[e+f x])^2$$

- **Problem 64: Result more than twice size of optimal antiderivative.**

$$\int \frac{(A+B \text{Sin}[e+f x]) (c-c \text{Sin}[e+f x])}{(a+a \text{Sin}[e+f x])^2} \, dx$$

Optimal (type 3, 72 leaves, 4 steps):

$$-\frac{B c x}{a^2}+\frac{(A-7 B) c \text{Cos}[e+f x]}{3 a^2 f (1+\text{Sin}[e+f x])}-\frac{2 (A-B) c \text{Cos}[e+f x]}{3 f (a+a \text{Sin}[e+f x])^2}$$

Result (type 3, 156 leaves):

$$\left(c\left(-9 B f x \text{Cos}\left[\frac{f x}{2}\right]-6 (A-3 B) \text{Cos}\left[e+\frac{f x}{2}\right]+2 A \text{Cos}\left[e+\frac{3 f x}{2}\right]-14 B \text{Cos}\left[e+\frac{3 f x}{2}\right]+3 B f x \text{Cos}\left[2 e+\frac{3 f x}{2}\right]+24 B \text{Sin}\left[\frac{f x}{2}\right]-\right.\right.$$
$$\left.\left.9 B f x \text{Sin}\left[e+\frac{f x}{2}\right]-3 B f x \text{Sin}\left[e+\frac{3 f x}{2}\right]\right)\right) \Big/ \left(6 a^2 f\left(\text{Cos}\left[\frac{e}{2}\right]+\text{Sin}\left[\frac{e}{2}\right]\right)\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^3\right)$$

- **Problem 67: Result more than twice size of optimal antiderivative.**

$$\int \frac{A+B \text{Sin}[e+f x]}{(a+a \text{Sin}[e+f x])^2 (c-c \text{Sin}[e+f x])^3} \, dx$$

Optimal (type 3, 93 leaves, 4 steps):

$$\frac{(A+B) \text{Sec}[e+f x]^3}{5 a^2 f \left(c^3-c^3 \text{Sin}[e+f x]\right)}+\frac{(4 A-B) \text{Tan}[e+f x]}{5 a^2 c^3 f}+\frac{(4 A-B) \text{Tan}[e+f x]^3}{15 a^2 c^3 f}$$

Result (type 3, 237 leaves):

$$\frac{1}{960 a^2 c^3 f (-1+\text{Sin}[e+f x])^3 (1+\text{Sin}[e+f x])^2}$$
$$\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)(-240 B+54 (A+B) \text{Cos}[e+f x]-32 (4 A-B) \text{Cos}[2 (e+f x)]+$$
$$18 A \text{Cos}[3 (e+f x)]+18 B \text{Cos}[3 (e+f x)]-64 A \text{Cos}[4 (e+f x)]+16 B \text{Cos}[4 (e+f x)]-384 A \text{Sin}[e+f x]+96 B \text{Sin}[e+f x]-$$
$$18 A \text{Sin}[2 (e+f x)]-18 B \text{Sin}[2 (e+f x)]-128 A \text{Sin}[3 (e+f x)]+32 B \text{Sin}[3 (e+f x)]-9 A \text{Sin}[4 (e+f x)]-9 B \text{Sin}[4 (e+f x)])$$

Problem 68: Result more than twice size of optimal antiderivative.

$$\int \frac{A+B\,\mathrm{Sin}[e+f\,x]}{(a+a\,\mathrm{Sin}[e+f\,x])^2\,(c-c\,\mathrm{Sin}[e+f\,x])^4}\,dx$$

Optimal (type 3, 135 leaves, 5 steps):

$$\frac{(A+B)\,\mathrm{Sec}[e+f\,x]^3}{7\,a^2\,f\,\left(c^2-c^2\,\mathrm{Sin}[e+f\,x]\right)^2}+\frac{(5\,A-2\,B)\,\mathrm{Sec}[e+f\,x]^3}{35\,a^2\,f\,\left(c^4-c^4\,\mathrm{Sin}[e+f\,x]\right)}+\frac{4\,(5\,A-2\,B)\,\mathrm{Tan}[e+f\,x]}{35\,a^2\,c^4\,f}+\frac{4\,(5\,A-2\,B)\,\mathrm{Tan}[e+f\,x]^3}{105\,a^2\,c^4\,f}$$

Result (type 3, 285 leaves):

$$-\frac{1}{13440\,a^2\,c^4\,f\,(-1+\mathrm{Sin}[e+f\,x])^4\,(1+\mathrm{Sin}[e+f\,x])^2}$$
$$\left(\mathrm{Cos}\left[\frac{1}{2}(e+f\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)\left(\mathrm{Cos}\left[\frac{1}{2}(e+f\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)(-2688\,B+42\,(25\,A+4\,B)\,\mathrm{Cos}[e+f\,x]-$$
$$512\,(5\,A-2\,B)\,\mathrm{Cos}[2\,(e+f\,x)]+225\,A\,\mathrm{Cos}[3\,(e+f\,x)]+36\,B\,\mathrm{Cos}[3\,(e+f\,x)]-1280\,A\,\mathrm{Cos}[4\,(e+f\,x)]+512\,B\,\mathrm{Cos}[4\,(e+f\,x)]-$$
$$75\,A\,\mathrm{Cos}[5\,(e+f\,x)]-12\,B\,\mathrm{Cos}[5\,(e+f\,x)]-4480\,A\,\mathrm{Sin}[e+f\,x]+1792\,B\,\mathrm{Sin}[e+f\,x]-600\,A\,\mathrm{Sin}[2\,(e+f\,x)]-96\,B\,\mathrm{Sin}[2\,(e+f\,x)]-$$
$$960\,A\,\mathrm{Sin}[3\,(e+f\,x)]+384\,B\,\mathrm{Sin}[3\,(e+f\,x)]-300\,A\,\mathrm{Sin}[4\,(e+f\,x)]-48\,B\,\mathrm{Sin}[4\,(e+f\,x)]+320\,A\,\mathrm{Sin}[5\,(e+f\,x)]-128\,B\,\mathrm{Sin}[5\,(e+f\,x)])$$

Problem 72: Result more than twice size of optimal antiderivative.

$$\int \frac{(A+B\,\mathrm{Sin}[e+f\,x])\,(c-c\,\mathrm{Sin}[e+f\,x])^3}{(a+a\,\mathrm{Sin}[e+f\,x])^3}\,dx$$

Optimal (type 3, 153 leaves, 6 steps):

$$-\frac{(A-6\,B)\,c^3\,x}{a^3}-\frac{(A-6\,B)\,c^3\,\mathrm{Cos}[e+f\,x]}{a^3\,f}-\frac{a^3\,(A-B)\,c^3\,\mathrm{Cos}[e+f\,x]^7}{5\,f\,(a+a\,\mathrm{Sin}[e+f\,x])^6}+\frac{2\,a\,(A-6\,B)\,c^3\,\mathrm{Cos}[e+f\,x]^5}{15\,f\,(a+a\,\mathrm{Sin}[e+f\,x])^4}-\frac{2\,a^3\,(A-6\,B)\,c^3\,\mathrm{Cos}[e+f\,x]^3}{3\,f\,\left(a^3+a^3\,\mathrm{Sin}[e+f\,x]\right)^2}$$

Result (type 3, 308 leaves):

$$\frac{1}{15\,a^3\,f\,\left(\mathrm{Cos}\left[\frac{1}{2}(e+f\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)^6\,(1+\mathrm{Sin}[e+f\,x])^3}$$
$$\left(\mathrm{Cos}\left[\frac{1}{2}(e+f\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)\left(48\,(A-B)\,\mathrm{Sin}\left[\frac{1}{2}(e+f\,x)\right]-24\,(A-B)\left(\mathrm{Cos}\left[\frac{1}{2}(e+f\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)-\right.$$
$$8\,(11\,A-21\,B)\,\mathrm{Sin}\left[\frac{1}{2}(e+f\,x)\right]\left(\mathrm{Cos}\left[\frac{1}{2}(e+f\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)^2+4\,(11\,A-21\,B)\left(\mathrm{Cos}\left[\frac{1}{2}(e+f\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)^3+$$
$$4\,(23\,A-93\,B)\,\mathrm{Sin}\left[\frac{1}{2}(e+f\,x)\right]\left(\mathrm{Cos}\left[\frac{1}{2}(e+f\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)^4-15\,(A-6\,B)\,(e+f\,x)\left(\mathrm{Cos}\left[\frac{1}{2}(e+f\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)^5+$$
$$\left.15\,B\,\mathrm{Cos}[e+f\,x]\left(\mathrm{Cos}\left[\frac{1}{2}(e+f\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)^5\right)(c-c\,\mathrm{Sin}[e+f\,x])^3$$

Problem 73: Result more than twice size of optimal antiderivative.

$$\int \frac{(A+B\sin[e+fx])(c-c\sin[e+fx])^2}{(a+a\sin[e+fx])^3}\,dx$$

Optimal (type 3, 110 leaves, 5 steps):

$$\frac{Bc^2x}{a^3}-\frac{a^2(A-B)c^2\cos[e+fx]^5}{5f(a+a\sin[e+fx])^5}-\frac{2Bc^2\cos[e+fx]^3}{3f(a+a\sin[e+fx])^3}+\frac{2Bc^2\cos[e+fx]}{f\left(a^3+a^3\sin[e+fx]\right)}$$

Result (type 3, 272 leaves):

$$\frac{1}{15a^3f\left(\cos\left[\frac{1}{2}(e+fx)\right]-\sin\left[\frac{1}{2}(e+fx)\right]\right)^4(1+\sin[e+fx])^3}\left(\cos\left[\frac{1}{2}(e+fx)\right]+\sin\left[\frac{1}{2}(e+fx)\right]\right)\left(24(A-B)\sin\left[\frac{1}{2}(e+fx)\right]-12(A-B)\left(\cos\left[\frac{1}{2}(e+fx)\right]+\sin\left[\frac{1}{2}(e+fx)\right]\right)-8(3A-8B)\sin\left[\frac{1}{2}(e+fx)\right]\left(\cos\left[\frac{1}{2}(e+fx)\right]+\sin\left[\frac{1}{2}(e+fx)\right]\right)^2+4(3A-8B)\left(\cos\left[\frac{1}{2}(e+fx)\right]+\sin\left[\frac{1}{2}(e+fx)\right]\right)^3+2(3A-43B)\sin\left[\frac{1}{2}(e+fx)\right]\left(\cos\left[\frac{1}{2}(e+fx)\right]+\sin\left[\frac{1}{2}(e+fx)\right]\right)^4+15B(e+fx)\left(\cos\left[\frac{1}{2}(e+fx)\right]+\sin\left[\frac{1}{2}(e+fx)\right]\right)^5\right)(c-c\sin[e+fx])^2$$

Problem 76: Result more than twice size of optimal antiderivative.

$$\int \frac{A+B\sin[e+fx]}{(a+a\sin[e+fx])^3(c-c\sin[e+fx])^2}\,dx$$

Optimal (type 3, 90 leaves, 4 steps):

$$-\frac{(A-B)\sec[e+fx]^3}{5c^2f\left(a^3+a^3\sin[e+fx]\right)}+\frac{(4A+B)\tan[e+fx]}{5a^3c^2f}+\frac{(4A+B)\tan[e+fx]^3}{15a^3c^2f}$$

Result (type 3, 237 leaves):

$$\frac{1}{960a^3c^2f(-1+\sin[e+fx])^2(1+\sin[e+fx])^3}\left(\cos\left[\frac{1}{2}(e+fx)\right]-\sin\left[\frac{1}{2}(e+fx)\right]\right)\left(\cos\left[\frac{1}{2}(e+fx)\right]+\sin\left[\frac{1}{2}(e+fx)\right]\right)(240B+54(A-B)\cos[e+fx]-32(4A+B)\cos[2(e+fx)]+18A\cos[3(e+fx)]-18B\cos[3(e+fx)]-64A\cos[4(e+fx)]-16B\cos[4(e+fx)]+384A\sin[e+fx]+96B\sin[e+fx]+18A\sin[2(e+fx)]-18B\sin[2(e+fx)]+128A\sin[3(e+fx)]+32B\sin[3(e+fx)]+9A\sin[4(e+fx)]-9B\sin[4(e+fx)])$$

Problem 78: Result more than twice size of optimal antiderivative.

$$\int \frac{A+B\sin[e+fx]}{(a+a\sin[e+fx])^3(c-c\sin[e+fx])^4}\,dx$$

Optimal (type 3, 121 leaves, 4 steps):

$$\frac{(A+B)\,\text{Sec}[e+f x]^5}{7 a^3 f\left(c^4-c^4 \text{Sin}[e+f x]\right)}+\frac{(6 A-B)\,\text{Tan}[e+f x]}{7 a^3 c^4 f}+\frac{2\,(6 A-B)\,\text{Tan}[e+f x]^3}{21 a^3 c^4 f}+\frac{(6 A-B)\,\text{Tan}[e+f x]^5}{35 a^3 c^4 f}$$

Result (type 3, 325 leaves):

$$-\frac{1}{53760 a^3 c^4 f\,(-1+\text{Sin}[e+f x])^4\,(1+\text{Sin}[e+f x])^3}\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)$$
$$(-8960 B+1500 (A+B) \text{Cos}[e+f x]-640 (6 A-B) \text{Cos}[2 (e+f x)]+750 A \text{Cos}[3 (e+f x)]+750 B \text{Cos}[3 (e+f x)]-3072 A \text{Cos}[4 (e+f x)]+512 B \text{Cos}[4 (e+f x)]+150 A \text{Cos}[5 (e+f x)]+150 B \text{Cos}[5 (e+f x)]-768 A \text{Cos}[6 (e+f x)]+128 B \text{Cos}[6 (e+f x)]-15360 A \text{Sin}[e+f x]+2560 B \text{Sin}[e+f x]-375 A \text{Sin}[2 (e+f x)]-375 B \text{Sin}[2 (e+f x)]-7680 A \text{Sin}[3 (e+f x)]+1280 B \text{Sin}[3 (e+f x)]-300 A \text{Sin}[4 (e+f x)]-300 B \text{Sin}[4 (e+f x)]-1536 A \text{Sin}[5 (e+f x)]+256 B \text{Sin}[5 (e+f x)]-75 A \text{Sin}[6 (e+f x)]-75 B \text{Sin}[6 (e+f x)])$$

- **Problem 79: Result more than twice size of optimal antiderivative.**

$$\int \frac{A+B\,\text{Sin}[e+f x]}{(a+a\,\text{Sin}[e+f x])^3\,(c-c\,\text{Sin}[e+f x])^5}\,dx$$

Optimal (type 3, 162 leaves, 5 steps):

$$\frac{(A+B)\,\text{Sec}[e+f x]^5}{9 a^3 c^3 f\,(c-c\,\text{Sin}[e+f x])^2}+\frac{(7 A-2 B)\,\text{Sec}[e+f x]^5}{63 a^3 f\left(c^5-c^5 \text{Sin}[e+f x]\right)}+\frac{2\,(7 A-2 B)\,\text{Tan}[e+f x]}{21 a^3 c^5 f}+\frac{4\,(7 A-2 B)\,\text{Tan}[e+f x]^3}{63 a^3 c^5 f}+\frac{2\,(7 A-2 B)\,\text{Tan}[e+f x]^5}{105 a^3 c^5 f}$$

Result (type 3, 373 leaves):

$$\frac{1}{1290240 a^3 c^5 f\,(-1+\text{Sin}[e+f x])^5\,(1+\text{Sin}[e+f x])^3}$$
$$\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)(-184320 B+1125 (49 A+13 B) \text{Cos}[e+f x]-20480 (7 A-2 B) \text{Cos}[2 (e+f x)]+23275 A \text{Cos}[3 (e+f x)]+6175 B \text{Cos}[3 (e+f x)]-114688 A \text{Cos}[4 (e+f x)]+32768 B \text{Cos}[4 (e+f x)]+1225 A \text{Cos}[5 (e+f x)]+325 B \text{Cos}[5 (e+f x)]-28672 A \text{Cos}[6 (e+f x)]+8192 B \text{Cos}[6 (e+f x)]-1225 A \text{Cos}[7 (e+f x)]-325 B \text{Cos}[7 (e+f x)]-322560 A \text{Sin}[e+f x]+92160 B \text{Sin}[e+f x]-24500 A \text{Sin}[2 (e+f x)]-6500 B \text{Sin}[2 (e+f x)]-136192 A \text{Sin}[3 (e+f x)]+38912 B \text{Sin}[3 (e+f x)]-19600 A \text{Sin}[4 (e+f x)]-5200 B \text{Sin}[4 (e+f x)]-7168 A \text{Sin}[5 (e+f x)]+2048 B \text{Sin}[5 (e+f x)]-4900 A \text{Sin}[6 (e+f x)]-1300 B \text{Sin}[6 (e+f x)]+7168 A \text{Sin}[7 (e+f x)]-2048 B \text{Sin}[7 (e+f x)])$$

- **Problem 85: Result unnecessarily involves imaginary or complex numbers.**

$$\int \frac{(a+a\,\text{Sin}[e+f x])\,(A+B\,\text{Sin}[e+f x])}{\sqrt{c-c\,\text{Sin}[e+f x]}}\,dx$$

Optimal (type 3, 122 leaves, 5 steps):

$$\frac{2\sqrt{2}\,a\,(A+B)\,\text{ArcTanh}\left[\frac{\sqrt{c}\,\text{Cos}[e+f x]}{\sqrt{2}\,\sqrt{c-c\,\text{Sin}[e+f x]}}\right]}{\sqrt{c}\,f}-\frac{2 a\,(3 A+5 B)\,\text{Cos}[e+f x]}{3 f\sqrt{c-c\,\text{Sin}[e+f x]}}+\frac{2 a B\,\text{Cos}[e+f x]\,\sqrt{c-c\,\text{Sin}[e+f x]}}{3 c f}$$

Result (type 3, 200 leaves):

$$-\left(a\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)\left(3(2 A+3 B)\sqrt{c}-B\sqrt{c}\,\text{Cos}[2(e+f x)]+2(3 A+5 B)\sqrt{c}\,\text{Sin}[e+f x]-6 i\sqrt{2}(A+B)\,\text{Log}\left[\frac{2\left(-i\sqrt{2}\sqrt{c}+\sqrt{-c(1+\text{Sin}[e+f x])}\right)}{\sqrt{c-c\,\text{Sin}[e+f x]}}\right]\sqrt{-c(1+\text{Sin}[e+f x])}\right)\right)\Big/\left(3\sqrt{c}\,f\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)\sqrt{c-c\,\text{Sin}[e+f x]}\right)$$

- **Problem 86: Result unnecessarily involves imaginary or complex numbers.**

$$\int\frac{(a+a\,\text{Sin}[e+f x])(A+B\,\text{Sin}[e+f x])}{(c-c\,\text{Sin}[e+f x])^{3/2}}\,dx$$

Optimal (type 3, 115 leaves, 5 steps):

$$-\frac{a(A+5 B)\,\text{ArcTanh}\left[\frac{\sqrt{c}\,\text{Cos}[e+f x]}{\sqrt{2}\sqrt{c-c\,\text{Sin}[e+f x]}}\right]}{\sqrt{2}\,c^{3/2} f}+\frac{a(A+B)\,\text{Cos}[e+f x]}{f(c-c\,\text{Sin}[e+f x])^{3/2}}+\frac{2 a B\,\text{Cos}[e+f x]}{c f\sqrt{c-c\,\text{Sin}[e+f x]}}$$

Result (type 3, 218 leaves):

$$\left(a(-1+\text{Sin}[e+f x])(1+\text{Sin}[e+f x])\left(i\sqrt{2}(A+5 B)\,\text{Log}\left[\frac{2\left(-i\sqrt{2}\sqrt{c}+\sqrt{-c(1+\text{Sin}[e+f x])}\right)}{\sqrt{c-c\,\text{Sin}[e+f x]}}\right]\text{Sec}[e+f x]\sqrt{-c(1+\text{Sin}[e+f x])}-\frac{2\sqrt{c}\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)(A+3 B-2 B\,\text{Sin}[e+f x])}{\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^3}\right)\right)\Big/\left(2 c^{3/2} f\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^2\sqrt{c-c\,\text{Sin}[e+f x]}\right)$$

- **Problem 87: Result unnecessarily involves imaginary or complex numbers.**

$$\int\frac{(a+a\,\text{Sin}[e+f x])(A+B\,\text{Sin}[e+f x])}{(c-c\,\text{Sin}[e+f x])^{5/2}}\,dx$$

Optimal (type 3, 126 leaves, 5 steps):

$$-\frac{a(A-7 B)\,\text{ArcTanh}\left[\frac{\sqrt{c}\,\text{Cos}[e+f x]}{\sqrt{2}\sqrt{c-c\,\text{Sin}[e+f x]}}\right]}{8\sqrt{2}\,c^{5/2} f}+\frac{a(A+B)\,\text{Cos}[e+f x]}{2 f(c-c\,\text{Sin}[e+f x])^{5/2}}-\frac{a(A+9 B)\,\text{Cos}[e+f x]}{8 c f(c-c\,\text{Sin}[e+f x])^{3/2}}$$

Result (type 3, 223 leaves):

$$\left(a\,(-1+\text{Sin}[e+f\,x])\,(1+\text{Sin}[e+f\,x])\left(\mathbb{i}\sqrt{2}\,(A-7\,B)\,\text{Log}\left[\frac{2\left(-\mathbb{i}\sqrt{2}\,\sqrt{c}+\sqrt{-c\,(1+\text{Sin}[e+f\,x])}\right)}{\sqrt{c-c\,\text{Sin}[e+f\,x]}}\right]\text{Sec}[e+f\,x]\,\sqrt{-c\,(1+\text{Sin}[e+f\,x])}-\frac{2\sqrt{c}\,\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)\,(3\,A-5\,B+(A+9\,B)\,\text{Sin}[e+f\,x])}{\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^5}\right)\right)\Big/$$
$$\left(16\,c^{5/2}\,f\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^2\sqrt{c-c\,\text{Sin}[e+f\,x]}\right)$$

- **Problem 88: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int\frac{(a+a\,\text{Sin}[e+f\,x])\,(A+B\,\text{Sin}[e+f\,x])}{(c-c\,\text{Sin}[e+f\,x])^{7/2}}\,dx$$

Optimal (type 3, 163 leaves, 6 steps):

$$-\frac{a\,(A-3\,B)\,\text{ArcTanh}\left[\frac{\sqrt{c}\,\text{Cos}[e+f\,x]}{\sqrt{2}\,\sqrt{c-c\,\text{Sin}[e+f\,x]}}\right]}{32\sqrt{2}\,c^{7/2}\,f}+\frac{a\,(A+B)\,\text{Cos}[e+f\,x]}{3\,f\,(c-c\,\text{Sin}[e+f\,x])^{7/2}}-\frac{a\,(A+13\,B)\,\text{Cos}[e+f\,x]}{24\,c\,f\,(c-c\,\text{Sin}[e+f\,x])^{5/2}}-\frac{a\,(A-3\,B)\,\text{Cos}[e+f\,x]}{32\,c^2\,f\,(c-c\,\text{Sin}[e+f\,x])^{3/2}}$$

Result (type 3, 796 leaves):

$$a\left(\left(i\,(A-3B)\,\text{Cos}[e+fx]\,\text{Log}\left[\frac{2\left(-i\sqrt{2}\sqrt{c}+\sqrt{-2c-c\,(-1+\text{Sin}[e+fx])}\right)}{\sqrt{-c\,(-1+\text{Sin}[e+fx])}}\right]\right.\right.$$

$$\left.\sqrt{-2c-c\,(-1+\text{Sin}[e+fx])}\,(-1+\text{Sin}[e+fx])\,(1+\text{Sin}[e+fx])\right)\Big/\left(32\sqrt{2}\,c^{7/2}f\left(\text{Cos}\left[\frac{e}{2}+\frac{fx}{2}\right]+\text{Sin}\left[\frac{e}{2}+\frac{fx}{2}\right]\right)^2\right.$$

$$\left.\sqrt{1-\frac{(c+c\,(-1+\text{Sin}[e+fx]))^2}{c^2}}\sqrt{\frac{-2c^2\,(-1+\text{Sin}[e+fx])-c^2\,(-1+\text{Sin}[e+fx])^2}{c^2}}\sqrt{-c\,(-1+\text{Sin}[e+fx])}\right)+$$

$$\frac{1}{\left(\text{Cos}\left[\frac{e}{2}+\frac{fx}{2}\right]+\text{Sin}\left[\frac{e}{2}+\frac{fx}{2}\right]\right)^2}\left(\frac{2\left(A\,\text{Sin}\left[\frac{fx}{2}\right]+B\,\text{Sin}\left[\frac{fx}{2}\right]\right)}{3c^4f\left(\text{Cos}\left[\frac{e}{2}\right]-\text{Sin}\left[\frac{e}{2}\right]\right)\left(\text{Cos}\left[\frac{e}{2}+\frac{fx}{2}\right]-\text{Sin}\left[\frac{e}{2}+\frac{fx}{2}\right]\right)^7}+\right.$$

$$\frac{A\,\text{Cos}\left[\frac{e}{2}\right]+B\,\text{Cos}\left[\frac{e}{2}\right]+A\,\text{Sin}\left[\frac{e}{2}\right]+B\,\text{Sin}\left[\frac{e}{2}\right]}{3c^4f\left(\text{Cos}\left[\frac{e}{2}\right]-\text{Sin}\left[\frac{e}{2}\right]\right)\left(\text{Cos}\left[\frac{e}{2}+\frac{fx}{2}\right]-\text{Sin}\left[\frac{e}{2}+\frac{fx}{2}\right]\right)^6}+\frac{-A\,\text{Sin}\left[\frac{fx}{2}\right]-13B\,\text{Sin}\left[\frac{fx}{2}\right]}{12c^4f\left(\text{Cos}\left[\frac{e}{2}\right]-\text{Sin}\left[\frac{e}{2}\right]\right)\left(\text{Cos}\left[\frac{e}{2}+\frac{fx}{2}\right]-\text{Sin}\left[\frac{e}{2}+\frac{fx}{2}\right]\right)^5}+$$

$$\frac{-A\,\text{Cos}\left[\frac{e}{2}\right]-13B\,\text{Cos}\left[\frac{e}{2}\right]-A\,\text{Sin}\left[\frac{e}{2}\right]-13B\,\text{Sin}\left[\frac{e}{2}\right]}{24c^4f\left(\text{Cos}\left[\frac{e}{2}\right]-\text{Sin}\left[\frac{e}{2}\right]\right)\left(\text{Cos}\left[\frac{e}{2}+\frac{fx}{2}\right]-\text{Sin}\left[\frac{e}{2}+\frac{fx}{2}\right]\right)^4}+\frac{-A\,\text{Sin}\left[\frac{fx}{2}\right]+3B\,\text{Sin}\left[\frac{fx}{2}\right]}{16c^4f\left(\text{Cos}\left[\frac{e}{2}\right]-\text{Sin}\left[\frac{e}{2}\right]\right)\left(\text{Cos}\left[\frac{e}{2}+\frac{fx}{2}\right]-\text{Sin}\left[\frac{e}{2}+\frac{fx}{2}\right]\right)^3}+$$

$$\left.\left.\frac{-A\,\text{Cos}\left[\frac{e}{2}\right]+3B\,\text{Cos}\left[\frac{e}{2}\right]-A\,\text{Sin}\left[\frac{e}{2}\right]+3B\,\text{Sin}\left[\frac{e}{2}\right]}{32c^4f\left(\text{Cos}\left[\frac{e}{2}\right]-\text{Sin}\left[\frac{e}{2}\right]\right)\left(\text{Cos}\left[\frac{e}{2}+\frac{fx}{2}\right]-\text{Sin}\left[\frac{e}{2}+\frac{fx}{2}\right]\right)^2}\right)(1+\text{Sin}[e+fx])\sqrt{c-c\,\text{Sin}[e+fx]}\right)$$

- **Problem 89: Result more than twice size of optimal antiderivative.**

$$\int(a+a\,\text{Sin}[e+fx])^2\,(A+B\,\text{Sin}[e+fx])\,(c-c\,\text{Sin}[e+fx])^{7/2}\,dx$$

Optimal (type 3, 210 leaves, 6 steps):

$$\frac{256a^2\,(13A-3B)\,c^6\,\text{Cos}[e+fx]^5}{15015f\,(c-c\,\text{Sin}[e+fx])^{5/2}}+\frac{64a^2\,(13A-3B)\,c^5\,\text{Cos}[e+fx]^5}{3003f\,(c-c\,\text{Sin}[e+fx])^{3/2}}+\frac{8a^2\,(13A-3B)\,c^4\,\text{Cos}[e+fx]^5}{429f\sqrt{c-c\,\text{Sin}[e+fx]}}+$$

$$\frac{2a^2\,(13A-3B)\,c^3\,\text{Cos}[e+fx]^5\sqrt{c-c\,\text{Sin}[e+fx]}}{143f}-\frac{2a^2B\,c^2\,\text{Cos}[e+fx]^5\,(c-c\,\text{Sin}[e+fx])^{3/2}}{13f}$$

Result (type 3, 1355 leaves):

$$\frac{(7A-2B)\,\text{Cos}\left[\frac{1}{2}(e+fx)\right]\,(a+a\,\text{Sin}[e+fx])^2\,(c-c\,\text{Sin}[e+fx])^{7/2}}{8f\left(\text{Cos}\left[\frac{1}{2}(e+fx)\right]-\text{Sin}\left[\frac{1}{2}(e+fx)\right]\right)^7\left(\text{Cos}\left[\frac{1}{2}(e+fx)\right]+\text{Sin}\left[\frac{1}{2}(e+fx)\right]\right)^4}-$$

$$\frac{(4A+B)\,\text{Cos}\left[\frac{3}{2}(e+fx)\right](a+a\,\text{Sin}[e+fx])^2(c-c\,\text{Sin}[e+fx])^{7/2}}{32f\left(\text{Cos}\left[\frac{1}{2}(e+fx)\right]-\text{Sin}\left[\frac{1}{2}(e+fx)\right]\right)^7\left(\text{Cos}\left[\frac{1}{2}(e+fx)\right]+\text{Sin}\left[\frac{1}{2}(e+fx)\right]\right)^4}+$$

$$\frac{(22A-7B)\,\text{Cos}\left[\frac{5}{2}(e+fx)\right](a+a\,\text{Sin}[e+fx])^2(c-c\,\text{Sin}[e+fx])^{7/2}}{160f\left(\text{Cos}\left[\frac{1}{2}(e+fx)\right]-\text{Sin}\left[\frac{1}{2}(e+fx)\right]\right)^7\left(\text{Cos}\left[\frac{1}{2}(e+fx)\right]+\text{Sin}\left[\frac{1}{2}(e+fx)\right]\right)^4}+$$

$$\frac{(A-4B)\,\text{Cos}\left[\frac{7}{2}(e+fx)\right](a+a\,\text{Sin}[e+fx])^2(c-c\,\text{Sin}[e+fx])^{7/2}}{112f\left(\text{Cos}\left[\frac{1}{2}(e+fx)\right]-\text{Sin}\left[\frac{1}{2}(e+fx)\right]\right)^7\left(\text{Cos}\left[\frac{1}{2}(e+fx)\right]+\text{Sin}\left[\frac{1}{2}(e+fx)\right]\right)^4}+$$

$$\frac{A\,\text{Cos}\left[\frac{9}{2}(e+fx)\right](a+a\,\text{Sin}[e+fx])^2(c-c\,\text{Sin}[e+fx])^{7/2}}{48f\left(\text{Cos}\left[\frac{1}{2}(e+fx)\right]-\text{Sin}\left[\frac{1}{2}(e+fx)\right]\right)^7\left(\text{Cos}\left[\frac{1}{2}(e+fx)\right]+\text{Sin}\left[\frac{1}{2}(e+fx)\right]\right)^4}+$$

$$\frac{(2A-3B)\,\text{Cos}\left[\frac{11}{2}(e+fx)\right](a+a\,\text{Sin}[e+fx])^2(c-c\,\text{Sin}[e+fx])^{7/2}}{352f\left(\text{Cos}\left[\frac{1}{2}(e+fx)\right]-\text{Sin}\left[\frac{1}{2}(e+fx)\right]\right)^7\left(\text{Cos}\left[\frac{1}{2}(e+fx)\right]+\text{Sin}\left[\frac{1}{2}(e+fx)\right]\right)^4}+$$

$$\frac{B\,\text{Cos}\left[\frac{13}{2}(e+fx)\right](a+a\,\text{Sin}[e+fx])^2(c-c\,\text{Sin}[e+fx])^{7/2}}{416f\left(\text{Cos}\left[\frac{1}{2}(e+fx)\right]-\text{Sin}\left[\frac{1}{2}(e+fx)\right]\right)^7\left(\text{Cos}\left[\frac{1}{2}(e+fx)\right]+\text{Sin}\left[\frac{1}{2}(e+fx)\right]\right)^4}+$$

$$\frac{(7A-2B)\,\text{Sin}\left[\frac{1}{2}(e+fx)\right](a+a\,\text{Sin}[e+fx])^2(c-c\,\text{Sin}[e+fx])^{7/2}}{8f\left(\text{Cos}\left[\frac{1}{2}(e+fx)\right]-\text{Sin}\left[\frac{1}{2}(e+fx)\right]\right)^7\left(\text{Cos}\left[\frac{1}{2}(e+fx)\right]+\text{Sin}\left[\frac{1}{2}(e+fx)\right]\right)^4}+$$

$$\frac{(4A+B)(a+a\,\text{Sin}[e+fx])^2(c-c\,\text{Sin}[e+fx])^{7/2}\,\text{Sin}\left[\frac{3}{2}(e+fx)\right]}{32f\left(\text{Cos}\left[\frac{1}{2}(e+fx)\right]-\text{Sin}\left[\frac{1}{2}(e+fx)\right]\right)^7\left(\text{Cos}\left[\frac{1}{2}(e+fx)\right]+\text{Sin}\left[\frac{1}{2}(e+fx)\right]\right)^4}+$$

$$\frac{(22A-7B)(a+a\,\text{Sin}[e+fx])^2(c-c\,\text{Sin}[e+fx])^{7/2}\,\text{Sin}\left[\frac{5}{2}(e+fx)\right]}{160f\left(\text{Cos}\left[\frac{1}{2}(e+fx)\right]-\text{Sin}\left[\frac{1}{2}(e+fx)\right]\right)^7\left(\text{Cos}\left[\frac{1}{2}(e+fx)\right]+\text{Sin}\left[\frac{1}{2}(e+fx)\right]\right)^4}-$$

$$\frac{(A-4B)(a+a\,\text{Sin}[e+fx])^2(c-c\,\text{Sin}[e+fx])^{7/2}\,\text{Sin}\left[\frac{7}{2}(e+fx)\right]}{112f\left(\text{Cos}\left[\frac{1}{2}(e+fx)\right]-\text{Sin}\left[\frac{1}{2}(e+fx)\right]\right)^7\left(\text{Cos}\left[\frac{1}{2}(e+fx)\right]+\text{Sin}\left[\frac{1}{2}(e+fx)\right]\right)^4}+$$

$$\frac{A(a+a\,\text{Sin}[e+fx])^2(c-c\,\text{Sin}[e+fx])^{7/2}\,\text{Sin}\left[\frac{9}{2}(e+fx)\right]}{48f\left(\text{Cos}\left[\frac{1}{2}(e+fx)\right]-\text{Sin}\left[\frac{1}{2}(e+fx)\right]\right)^7\left(\text{Cos}\left[\frac{1}{2}(e+fx)\right]+\text{Sin}\left[\frac{1}{2}(e+fx)\right]\right)^4}-$$

$$\frac{(2A-3B)(a+a\,\text{Sin}[e+fx])^2(c-c\,\text{Sin}[e+fx])^{7/2}\,\text{Sin}\left[\frac{11}{2}(e+fx)\right]}{352f\left(\text{Cos}\left[\frac{1}{2}(e+fx)\right]-\text{Sin}\left[\frac{1}{2}(e+fx)\right]\right)^7\left(\text{Cos}\left[\frac{1}{2}(e+fx)\right]+\text{Sin}\left[\frac{1}{2}(e+fx)\right]\right)^4}+$$

$$\frac{B\,(a+a\,\mathrm{Sin}[e+f\,x])^2\,(c-c\,\mathrm{Sin}[e+f\,x])^{7/2}\,\mathrm{Sin}\left[\frac{13}{2}\,(e+f\,x)\right]}{416\,f\,\left(\mathrm{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^7\,\left(\mathrm{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^4}$$

- **Problem 90: Result more than twice size of optimal antiderivative.**

$$\int(a+a\,\mathrm{Sin}[e+f\,x])^2\,(A+B\,\mathrm{Sin}[e+f\,x])\,(c-c\,\mathrm{Sin}[e+f\,x])^{5/2}\,dx$$

Optimal (type 3, 167 leaves, 5 steps) :

$$\frac{64\,a^2\,(11\,A-B)\,c^5\,\mathrm{Cos}[e+f\,x]^5}{3465\,f\,(c-c\,\mathrm{Sin}[e+f\,x])^{5/2}}+\frac{16\,a^2\,(11\,A-B)\,c^4\,\mathrm{Cos}[e+f\,x]^5}{693\,f\,(c-c\,\mathrm{Sin}[e+f\,x])^{3/2}}+\frac{2\,a^2\,(11\,A-B)\,c^3\,\mathrm{Cos}[e+f\,x]^5}{99\,f\,\sqrt{c-c\,\mathrm{Sin}[e+f\,x]}}-\frac{2\,a^2\,B\,c^2\,\mathrm{Cos}[e+f\,x]^5\,\sqrt{c-c\,\mathrm{Sin}[e+f\,x]}}{11\,f}$$

Result (type 3, 1173 leaves) :

$$\frac{(6A-B)\,\text{Cos}\left[\frac{1}{2}(e+fx)\right](a+a\,\text{Sin}[e+fx])^2(c-c\,\text{Sin}[e+fx])^{5/2}}{8f\left(\text{Cos}\left[\frac{1}{2}(e+fx)\right]-\text{Sin}\left[\frac{1}{2}(e+fx)\right]\right)^5\left(\text{Cos}\left[\frac{1}{2}(e+fx)\right]+\text{Sin}\left[\frac{1}{2}(e+fx)\right]\right)^4}-$$

$$\frac{(4A+B)\,\text{Cos}\left[\frac{3}{2}(e+fx)\right](a+a\,\text{Sin}[e+fx])^2(c-c\,\text{Sin}[e+fx])^{5/2}}{24f\left(\text{Cos}\left[\frac{1}{2}(e+fx)\right]-\text{Sin}\left[\frac{1}{2}(e+fx)\right]\right)^5\left(\text{Cos}\left[\frac{1}{2}(e+fx)\right]+\text{Sin}\left[\frac{1}{2}(e+fx)\right]\right)^4}+$$

$$\frac{(8A-3B)\,\text{Cos}\left[\frac{5}{2}(e+fx)\right](a+a\,\text{Sin}[e+fx])^2(c-c\,\text{Sin}[e+fx])^{5/2}}{80f\left(\text{Cos}\left[\frac{1}{2}(e+fx)\right]-\text{Sin}\left[\frac{1}{2}(e+fx)\right]\right)^5\left(\text{Cos}\left[\frac{1}{2}(e+fx)\right]+\text{Sin}\left[\frac{1}{2}(e+fx)\right]\right)^4}-$$

$$\frac{(2A+3B)\,\text{Cos}\left[\frac{7}{2}(e+fx)\right](a+a\,\text{Sin}[e+fx])^2(c-c\,\text{Sin}[e+fx])^{5/2}}{112f\left(\text{Cos}\left[\frac{1}{2}(e+fx)\right]-\text{Sin}\left[\frac{1}{2}(e+fx)\right]\right)^5\left(\text{Cos}\left[\frac{1}{2}(e+fx)\right]+\text{Sin}\left[\frac{1}{2}(e+fx)\right]\right)^4}+$$

$$\frac{(2A-B)\,\text{Cos}\left[\frac{9}{2}(e+fx)\right](a+a\,\text{Sin}[e+fx])^2(c-c\,\text{Sin}[e+fx])^{5/2}}{144f\left(\text{Cos}\left[\frac{1}{2}(e+fx)\right]-\text{Sin}\left[\frac{1}{2}(e+fx)\right]\right)^5\left(\text{Cos}\left[\frac{1}{2}(e+fx)\right]+\text{Sin}\left[\frac{1}{2}(e+fx)\right]\right)^4}-$$

$$\frac{B\,\text{Cos}\left[\frac{11}{2}(e+fx)\right](a+a\,\text{Sin}[e+fx])^2(c-c\,\text{Sin}[e+fx])^{5/2}}{176f\left(\text{Cos}\left[\frac{1}{2}(e+fx)\right]-\text{Sin}\left[\frac{1}{2}(e+fx)\right]\right)^5\left(\text{Cos}\left[\frac{1}{2}(e+fx)\right]+\text{Sin}\left[\frac{1}{2}(e+fx)\right]\right)^4}+$$

$$\frac{(6A-B)\,\text{Sin}\left[\frac{1}{2}(e+fx)\right](a+a\,\text{Sin}[e+fx])^2(c-c\,\text{Sin}[e+fx])^{5/2}}{8f\left(\text{Cos}\left[\frac{1}{2}(e+fx)\right]-\text{Sin}\left[\frac{1}{2}(e+fx)\right]\right)^5\left(\text{Cos}\left[\frac{1}{2}(e+fx)\right]+\text{Sin}\left[\frac{1}{2}(e+fx)\right]\right)^4}+$$

$$\frac{(4A+B)(a+a\,\text{Sin}[e+fx])^2(c-c\,\text{Sin}[e+fx])^{5/2}\,\text{Sin}\left[\frac{3}{2}(e+fx)\right]}{24f\left(\text{Cos}\left[\frac{1}{2}(e+fx)\right]-\text{Sin}\left[\frac{1}{2}(e+fx)\right]\right)^5\left(\text{Cos}\left[\frac{1}{2}(e+fx)\right]+\text{Sin}\left[\frac{1}{2}(e+fx)\right]\right)^4}+$$

$$\frac{(8A-3B)(a+a\,\text{Sin}[e+fx])^2(c-c\,\text{Sin}[e+fx])^{5/2}\,\text{Sin}\left[\frac{5}{2}(e+fx)\right]}{80f\left(\text{Cos}\left[\frac{1}{2}(e+fx)\right]-\text{Sin}\left[\frac{1}{2}(e+fx)\right]\right)^5\left(\text{Cos}\left[\frac{1}{2}(e+fx)\right]+\text{Sin}\left[\frac{1}{2}(e+fx)\right]\right)^4}+$$

$$\frac{(2A+3B)(a+a\,\text{Sin}[e+fx])^2(c-c\,\text{Sin}[e+fx])^{5/2}\,\text{Sin}\left[\frac{7}{2}(e+fx)\right]}{112f\left(\text{Cos}\left[\frac{1}{2}(e+fx)\right]-\text{Sin}\left[\frac{1}{2}(e+fx)\right]\right)^5\left(\text{Cos}\left[\frac{1}{2}(e+fx)\right]+\text{Sin}\left[\frac{1}{2}(e+fx)\right]\right)^4}+$$

$$\frac{(2A-B)(a+a\,\text{Sin}[e+fx])^2(c-c\,\text{Sin}[e+fx])^{5/2}\,\text{Sin}\left[\frac{9}{2}(e+fx)\right]}{144f\left(\text{Cos}\left[\frac{1}{2}(e+fx)\right]-\text{Sin}\left[\frac{1}{2}(e+fx)\right]\right)^5\left(\text{Cos}\left[\frac{1}{2}(e+fx)\right]+\text{Sin}\left[\frac{1}{2}(e+fx)\right]\right)^4}+$$

$$\frac{B(a+a\,\text{Sin}[e+fx])^2(c-c\,\text{Sin}[e+fx])^{5/2}\,\text{Sin}\left[\frac{11}{2}(e+fx)\right]}{176f\left(\text{Cos}\left[\frac{1}{2}(e+fx)\right]-\text{Sin}\left[\frac{1}{2}(e+fx)\right]\right)^5\left(\text{Cos}\left[\frac{1}{2}(e+fx)\right]+\text{Sin}\left[\frac{1}{2}(e+fx)\right]\right)^4}$$

Problem 91: Result more than twice size of optimal antiderivative.

$$\int (a+a\,\text{Sin}[e+f\,x])^2\,(A+B\,\text{Sin}[e+f\,x])\,(c-c\,\text{Sin}[e+f\,x])^{3/2}\,dx$$

Optimal (type 3, 120 leaves, 4 steps):

$$\frac{8\,a^2\,(9\,A+B)\,c^4\,\text{Cos}[e+f\,x]^5}{315\,f\,(c-c\,\text{Sin}[e+f\,x])^{5/2}}+\frac{2\,a^2\,(9\,A+B)\,c^3\,\text{Cos}[e+f\,x]^5}{63\,f\,(c-c\,\text{Sin}[e+f\,x])^{3/2}}-\frac{2\,a^2\,B\,c^2\,\text{Cos}[e+f\,x]^5}{9\,f\,\sqrt{c-c\,\text{Sin}[e+f\,x]}}$$

Result (type 3, 955 leaves):

$$\frac{3\,A\,\text{Cos}\left[\frac{1}{2}(e+f\,x)\right](a+a\,\text{Sin}[e+f\,x])^2\,(c-c\,\text{Sin}[e+f\,x])^{3/2}}{4\,f\left(\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]-\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)^3\left(\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)^4}-$$
$$\frac{(3\,A+B)\,\text{Cos}\left[\frac{3}{2}(e+f\,x)\right](a+a\,\text{Sin}[e+f\,x])^2\,(c-c\,\text{Sin}[e+f\,x])^{3/2}}{12\,f\left(\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]-\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)^3\left(\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)^4}+$$
$$\frac{(A-B)\,\text{Cos}\left[\frac{5}{2}(e+f\,x)\right](a+a\,\text{Sin}[e+f\,x])^2\,(c-c\,\text{Sin}[e+f\,x])^{3/2}}{20\,f\left(\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]-\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)^3\left(\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)^4}-$$
$$\frac{(2\,A+B)\,\text{Cos}\left[\frac{7}{2}(e+f\,x)\right](a+a\,\text{Sin}[e+f\,x])^2\,(c-c\,\text{Sin}[e+f\,x])^{3/2}}{56\,f\left(\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]-\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)^3\left(\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)^4}-$$
$$\frac{B\,\text{Cos}\left[\frac{9}{2}(e+f\,x)\right](a+a\,\text{Sin}[e+f\,x])^2\,(c-c\,\text{Sin}[e+f\,x])^{3/2}}{72\,f\left(\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]-\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)^3\left(\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)^4}+$$
$$\frac{3\,A\,\text{Sin}\left[\frac{1}{2}(e+f\,x)\right](a+a\,\text{Sin}[e+f\,x])^2\,(c-c\,\text{Sin}[e+f\,x])^{3/2}}{4\,f\left(\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]-\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)^3\left(\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)^4}+$$
$$\frac{(3\,A+B)\,(a+a\,\text{Sin}[e+f\,x])^2\,(c-c\,\text{Sin}[e+f\,x])^{3/2}\,\text{Sin}\left[\frac{3}{2}(e+f\,x)\right]}{12\,f\left(\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]-\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)^3\left(\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)^4}+$$
$$\frac{(A-B)\,(a+a\,\text{Sin}[e+f\,x])^2\,(c-c\,\text{Sin}[e+f\,x])^{3/2}\,\text{Sin}\left[\frac{5}{2}(e+f\,x)\right]}{20\,f\left(\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]-\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)^3\left(\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)^4}+$$
$$\frac{(2\,A+B)\,(a+a\,\text{Sin}[e+f\,x])^2\,(c-c\,\text{Sin}[e+f\,x])^{3/2}\,\text{Sin}\left[\frac{7}{2}(e+f\,x)\right]}{56\,f\left(\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]-\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)^3\left(\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)^4}-$$
$$\frac{B\,(a+a\,\text{Sin}[e+f\,x])^2\,(c-c\,\text{Sin}[e+f\,x])^{3/2}\,\text{Sin}\left[\frac{9}{2}(e+f\,x)\right]}{72\,f\left(\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]-\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)^3\left(\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)^4}$$

- **Problem 93: Result unnecessarily involves imaginary or complex numbers.**

$$\int \frac{(a + a \sin[e + f x])^2 (A + B \sin[e + f x])}{\sqrt{c - c \sin[e + f x]}} \, dx$$

Optimal (type 3, 161 leaves, 6 steps):

$$\frac{4 \sqrt{2} a^2 (A + B) \text{ArcTanh}\left[\frac{\sqrt{c} \cos[e+f x]}{\sqrt{2} \sqrt{c-c \sin[e+f x]}}\right]}{\sqrt{c} f} - \frac{2 a^2 B c^2 \cos[e + f x]^5}{5 f (c - c \sin[e + f x])^{5/2}} - \frac{2 a^2 (A + B) c \cos[e + f x]^3}{3 f (c - c \sin[e + f x])^{3/2}} - \frac{4 a^2 (A + B) \cos[e + f x]}{f \sqrt{c - c \sin[e + f x]}}$$

Result (type 3, 175 leaves):

$$-\left(a^2 \left(\cos\left[\frac{1}{2} (e + f x)\right] - \sin\left[\frac{1}{2} (e + f x)\right]\right) (1 + \sin[e + f x])^2 \left((120 + 120 i) (-1)^{1/4} (A + B) \text{ArcTan}\left[\left(\frac{1}{2} + \frac{i}{2}\right) (-1)^{1/4} \left(1 + \tan\left[\frac{1}{4} (e + f x)\right]\right)\right] + \left(\cos\left[\frac{1}{2} (e + f x)\right] + \sin\left[\frac{1}{2} (e + f x)\right]\right) (70 A + 79 B - 3 B \cos[2 (e + f x)] + 2 (5 A + 11 B) \sin[e + f x])\right)\right) \Big/ \left(15 f \left(\cos\left[\frac{1}{2} (e + f x)\right] + \sin\left[\frac{1}{2} (e + f x)\right]\right)^4 \sqrt{c - c \sin[e + f x]}\right)$$

- **Problem 94: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int \frac{(a + a \sin[e + f x])^2 (A + B \sin[e + f x])}{(c - c \sin[e + f x])^{3/2}} \, dx$$

Optimal (type 3, 176 leaves, 6 steps):

$$-\frac{\sqrt{2} a^2 (3 A + 7 B) \text{ArcTanh}\left[\frac{\sqrt{c} \cos[e+f x]}{\sqrt{2} \sqrt{c-c \sin[e+f x]}}\right]}{c^{3/2} f} + \frac{a^2 (A + B) c^2 \cos[e + f x]^5}{2 f (c - c \sin[e + f x])^{7/2}} + \frac{a^2 (3 A + 7 B) \cos[e + f x]^3}{6 f (c - c \sin[e + f x])^{3/2}} + \frac{a^2 (3 A + 7 B) \cos[e + f x]}{c f \sqrt{c - c \sin[e + f x]}}$$

Result (type 3, 355 leaves):

$$\frac{1}{3 f \left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^4 (c-c \,\text{Sin}[e+f x])^{3/2}} a^2 \left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right) (1+\text{Sin}[e+f x])^2 \left(6 (A+B) \left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)+\right.$$
$$(6+6 i) (-1)^{1/4} (3 A+7 B) \,\text{ArcTan}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{1/4}\left(1+\text{Tan}\left[\frac{1}{4}(e+f x)\right]\right)\right] \left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^2+$$
$$3 (2 A+7 B) \,\text{Cos}\left[\frac{1}{2}(e+f x)\right] \left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^2-B \,\text{Cos}\left[\frac{3}{2}(e+f x)\right] \left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^2+$$
$$12 (A+B) \,\text{Sin}\left[\frac{1}{2}(e+f x)\right]+3 (2 A+7 B) \left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^2 \text{Sin}\left[\frac{1}{2}(e+f x)\right]+$$
$$\left.B \left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^2 \text{Sin}\left[\frac{3}{2}(e+f x)\right]\right)$$

- **Problem 95: Result unnecessarily involves imaginary or complex numbers.**

$$\int \frac{(a+a \,\text{Sin}[e+f x])^2 (A+B \,\text{Sin}[e+f x])}{(c-c \,\text{Sin}[e+f x])^{5/2}} \, dx$$

Optimal (type 3, 175 leaves, 6 steps):

$$\frac{3 a^2 (A+9 B) \,\text{ArcTanh}\left[\frac{\sqrt{c} \,\text{Cos}[e+f x]}{\sqrt{2} \sqrt{c-c \,\text{Sin}[e+f x]}}\right]}{4 \sqrt{2} \, c^{5/2} f}+\frac{a^2 (A+B) c^2 \,\text{Cos}[e+f x]^5}{4 f (c-c \,\text{Sin}[e+f x])^{9/2}}-\frac{a^2 (A+9 B) \,\text{Cos}[e+f x]^3}{8 f (c-c \,\text{Sin}[e+f x])^{5/2}}-\frac{3 a^2 (A+9 B) \,\text{Cos}[e+f x]}{8 c^2 f \sqrt{c-c \,\text{Sin}[e+f x]}}$$

Result (type 3, 344 leaves):

$$\frac{1}{4 f \left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^4 (c-c \,\text{Sin}[e+f x])^{5/2}} a^2 \left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right) \left(4 (A+B) \left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)-(5 A+13 B) \left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^3-\right.$$
$$(3+3 i) (-1)^{1/4} (A+9 B) \,\text{ArcTan}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{1/4}\left(1+\text{Tan}\left[\frac{1}{4}(e+f x)\right]\right)\right] \left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^4-$$
$$8 B \,\text{Cos}\left[\frac{1}{2}(e+f x)\right] \left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^4+8 (A+B) \,\text{Sin}\left[\frac{1}{2}(e+f x)\right]-2 (5 A+13 B)$$
$$\left.\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^2 \text{Sin}\left[\frac{1}{2}(e+f x)\right]-8 B \left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^4 \text{Sin}\left[\frac{1}{2}(e+f x)\right]\right) (1+\text{Sin}[e+f x])^2$$

- **Problem 96: Result unnecessarily involves imaginary or complex numbers.**

$$\int \frac{(a+a \,\text{Sin}[e+f x])^2 (A+B \,\text{Sin}[e+f x])}{(c-c \,\text{Sin}[e+f x])^{7/2}} \, dx$$

Optimal (type 3, 175 leaves, 6 steps):

$$\frac{a^2 (A-11 B) \text{ArcTanh}\left[\frac{\sqrt{c} \text{Cos}[e+f x]}{\sqrt{2} \sqrt{c-c \text{Sin}[e+f x]}}\right]}{16 \sqrt{2} c^{7/2} f}+\frac{a^2 (A+B) c^2 \text{Cos}[e+f x]^5}{6 f (c-c \text{Sin}[e+f x])^{11/2}}+\frac{a^2 (A-11 B) \text{Cos}[e+f x]^3}{24 f (c-c \text{Sin}[e+f x])^{7/2}}-\frac{a^2 (A-11 B) \text{Cos}[e+f x]}{16 c^2 f (c-c \text{Sin}[e+f x])^{3/2}}$$

Result (type 3, 342 leaves):

$$\frac{1}{48 f \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]+\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^4 (c-c \text{Sin}[e+f x])^{7/2}}$$
$$a^2 \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]-\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right) \left(32 (A+B) \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]-\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)-4 (7 A+19 B) \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]-\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^3+\right.$$
$$3 (A+21 B) \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]-\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^5-(3+3 i) (-1)^{1/4} (A-11 B) \text{ArcTan}\left[\left(\frac{1}{2}+\frac{i}{2}\right) (-1)^{1/4} \left(1+\text{Tan}\left[\frac{1}{4} (e+f x)\right]\right)\right]$$
$$\left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]-\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^6+64 (A+B) \text{Sin}\left[\frac{1}{2} (e+f x)\right]-8 (7 A+19 B) \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]-\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^2 \text{Sin}\left[\frac{1}{2} (e+f x)\right]+$$
$$\left.6 (A+21 B) \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]-\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^4 \text{Sin}\left[\frac{1}{2} (e+f x)\right]\right) (1+\text{Sin}[e+f x])^2$$

- **Problem 97: Result unnecessarily involves imaginary or complex numbers.**

$$\int \frac{(a+a \text{Sin}[e+f x])^2 (A+B \text{Sin}[e+f x])}{(c-c \text{Sin}[e+f x])^{9/2}} \, dx$$

Optimal (type 3, 222 leaves, 7 steps):

$$\frac{a^2 (3 A-13 B) \text{ArcTanh}\left[\frac{\sqrt{c} \text{Cos}[e+f x]}{\sqrt{2} \sqrt{c-c \text{Sin}[e+f x]}}\right]}{256 \sqrt{2} c^{9/2} f}+\frac{a^2 (A+B) c^2 \text{Cos}[e+f x]^5}{8 f (c-c \text{Sin}[e+f x])^{13/2}}+$$
$$\frac{a^2 (3 A-13 B) \text{Cos}[e+f x]^3}{48 f (c-c \text{Sin}[e+f x])^{9/2}}-\frac{a^2 (3 A-13 B) \text{Cos}[e+f x]}{64 c^2 f (c-c \text{Sin}[e+f x])^{5/2}}+\frac{a^2 (3 A-13 B) \text{Cos}[e+f x]}{256 c^3 f (c-c \text{Sin}[e+f x])^{3/2}}$$

Result (type 3, 357 leaves):

$$\frac{1}{6144 f \left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^4 (c-c\,\text{Sin}[e+f x])^{9/2}}$$
$$a^2 \left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right) (1+\text{Sin}[e+f x])^2 \left(2013\,A\,\text{Cos}\left[\frac{1}{2}(e+f x)\right]+1517\,B\,\text{Cos}\left[\frac{1}{2}(e+f x)\right]-999\,A\,\text{Cos}\left[\frac{3}{2}(e+f x)\right]-\right.$$
$$791\,B\,\text{Cos}\left[\frac{3}{2}(e+f x)\right]-69\,A\,\text{Cos}\left[\frac{5}{2}(e+f x)\right]-725\,B\,\text{Cos}\left[\frac{5}{2}(e+f x)\right]-9\,A\,\text{Cos}\left[\frac{7}{2}(e+f x)\right]+39\,B\,\text{Cos}\left[\frac{7}{2}(e+f x)\right]-$$
$$(24+24\,i)\,(-1)^{1/4}\,(3A-13B)\,\text{ArcTan}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{1/4}\left(1+\text{Tan}\left[\frac{1}{4}(e+f x)\right]\right)\right]\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^8+$$
$$2013\,A\,\text{Sin}\left[\frac{1}{2}(e+f x)\right]+1517\,B\,\text{Sin}\left[\frac{1}{2}(e+f x)\right]+999\,A\,\text{Sin}\left[\frac{3}{2}(e+f x)\right]+791\,B\,\text{Sin}\left[\frac{3}{2}(e+f x)\right]-$$
$$\left.69\,A\,\text{Sin}\left[\frac{5}{2}(e+f x)\right]-725\,B\,\text{Sin}\left[\frac{5}{2}(e+f x)\right]+9\,A\,\text{Sin}\left[\frac{7}{2}(e+f x)\right]-39\,B\,\text{Sin}\left[\frac{7}{2}(e+f x)\right]\right)$$

- **Problem 98: Result more than twice size of optimal antiderivative.**

$$\int (a+a\,\text{Sin}[e+f x])^3\,(A+B\,\text{Sin}[e+f x])\,(c-c\,\text{Sin}[e+f x])^{7/2}\,dx$$

Optimal (type 3, 210 leaves, 6 steps):

$$\frac{256\,a^3\,(15A-B)\,c^7\,\text{Cos}[e+f x]^7}{45045\,f\,(c-c\,\text{Sin}[e+f x])^{7/2}}+\frac{64\,a^3\,(15A-B)\,c^6\,\text{Cos}[e+f x]^7}{6435\,f\,(c-c\,\text{Sin}[e+f x])^{5/2}}+$$
$$\frac{8\,a^3\,(15A-B)\,c^5\,\text{Cos}[e+f x]^7}{715\,f\,(c-c\,\text{Sin}[e+f x])^{3/2}}+\frac{2\,a^3\,(15A-B)\,c^4\,\text{Cos}[e+f x]^7}{195\,f\,\sqrt{c-c\,\text{Sin}[e+f x]}}-\frac{2\,a^3\,B\,c^3\,\text{Cos}[e+f x]^7\,\sqrt{c-c\,\text{Sin}[e+f x]}}{15\,f}$$

Result (type 3, 1569 leaves):

$$\frac{5\,(8A-B)\,\text{Cos}\left[\frac{1}{2}(e+f x)\right]\,(a+a\,\text{Sin}[e+f x])^3\,(c-c\,\text{Sin}[e+f x])^{7/2}}{64\,f\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^7\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^6}-$$
$$\frac{5\,(6A+B)\,\text{Cos}\left[\frac{3}{2}(e+f x)\right]\,(a+a\,\text{Sin}[e+f x])^3\,(c-c\,\text{Sin}[e+f x])^{7/2}}{192\,f\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^7\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^6}+$$
$$\frac{3\,(10A-3B)\,\text{Cos}\left[\frac{5}{2}(e+f x)\right]\,(a+a\,\text{Sin}[e+f x])^3\,(c-c\,\text{Sin}[e+f x])^{7/2}}{320\,f\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^7\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^6}-$$
$$\frac{3\,(4A+3B)\,\text{Cos}\left[\frac{7}{2}(e+f x)\right]\,(a+a\,\text{Sin}[e+f x])^3\,(c-c\,\text{Sin}[e+f x])^{7/2}}{448\,f\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^7\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^6}+$$

$$\frac{(12 A-5 B) \operatorname{Cos}\left[\frac{9}{2}(e+f x)\right](a+a \operatorname{Sin}[e+f x])^3(c-c \operatorname{Sin}[e+f x])^{7/2}}{576 f\left(\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]-\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^7\left(\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]+\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^6}-$$

$$\frac{(2 A+5 B) \operatorname{Cos}\left[\frac{11}{2}(e+f x)\right](a+a \operatorname{Sin}[e+f x])^3(c-c \operatorname{Sin}[e+f x])^{7/2}}{704 f\left(\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]-\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^7\left(\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]+\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^6}+$$

$$\frac{(2 A-B) \operatorname{Cos}\left[\frac{13}{2}(e+f x)\right](a+a \operatorname{Sin}[e+f x])^3(c-c \operatorname{Sin}[e+f x])^{7/2}}{832 f\left(\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]-\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^7\left(\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]+\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^6}-$$

$$\frac{B \operatorname{Cos}\left[\frac{15}{2}(e+f x)\right](a+a \operatorname{Sin}[e+f x])^3(c-c \operatorname{Sin}[e+f x])^{7/2}}{960 f\left(\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]-\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^7\left(\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]+\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^6}+$$

$$\frac{5(8 A-B) \operatorname{Sin}\left[\frac{1}{2}(e+f x)\right](a+a \operatorname{Sin}[e+f x])^3(c-c \operatorname{Sin}[e+f x])^{7/2}}{64 f\left(\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]-\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^7\left(\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]+\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^6}+$$

$$\frac{5(6 A+B)(a+a \operatorname{Sin}[e+f x])^3(c-c \operatorname{Sin}[e+f x])^{7/2} \operatorname{Sin}\left[\frac{3}{2}(e+f x)\right]}{192 f\left(\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]-\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^7\left(\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]+\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^6}+$$

$$\frac{3(10 A-3 B)(a+a \operatorname{Sin}[e+f x])^3(c-c \operatorname{Sin}[e+f x])^{7/2} \operatorname{Sin}\left[\frac{5}{2}(e+f x)\right]}{320 f\left(\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]-\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^7\left(\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]+\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^6}+$$

$$\frac{3(4 A+3 B)(a+a \operatorname{Sin}[e+f x])^3(c-c \operatorname{Sin}[e+f x])^{7/2} \operatorname{Sin}\left[\frac{7}{2}(e+f x)\right]}{448 f\left(\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]-\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^7\left(\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]+\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^6}+$$

$$\frac{(12 A-5 B)(a+a \operatorname{Sin}[e+f x])^3(c-c \operatorname{Sin}[e+f x])^{7/2} \operatorname{Sin}\left[\frac{9}{2}(e+f x)\right]}{576 f\left(\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]-\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^7\left(\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]+\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^6}+$$

$$\frac{(2 A+5 B)(a+a \operatorname{Sin}[e+f x])^3(c-c \operatorname{Sin}[e+f x])^{7/2} \operatorname{Sin}\left[\frac{11}{2}(e+f x)\right]}{704 f\left(\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]-\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^7\left(\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]+\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^6}+$$

$$\frac{(2 A-B)(a+a \operatorname{Sin}[e+f x])^3(c-c \operatorname{Sin}[e+f x])^{7/2} \operatorname{Sin}\left[\frac{13}{2}(e+f x)\right]}{832 f\left(\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]-\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^7\left(\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]+\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^6}+$$

$$\frac{B(a+a \operatorname{Sin}[e+f x])^3(c-c \operatorname{Sin}[e+f x])^{7/2} \operatorname{Sin}\left[\frac{15}{2}(e+f x)\right]}{960 f\left(\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]-\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^7\left(\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]+\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^6}$$

- **Problem 99: Result more than twice size of optimal antiderivative.**

$$\int (a + a \operatorname{Sin}[e + f x])^3 (A + B \operatorname{Sin}[e + f x]) (c - c \operatorname{Sin}[e + f x])^{5/2} \, dx$$

Optimal (type 3, 161 leaves, 5 steps):

$$\frac{64 a^3 (13 A + B) c^6 \operatorname{Cos}[e + f x]^7}{9009 f (c - c \operatorname{Sin}[e + f x])^{7/2}} + \frac{16 a^3 (13 A + B) c^5 \operatorname{Cos}[e + f x]^7}{1287 f (c - c \operatorname{Sin}[e + f x])^{5/2}} + \frac{2 a^3 (13 A + B) c^4 \operatorname{Cos}[e + f x]^7}{143 f (c - c \operatorname{Sin}[e + f x])^{3/2}} - \frac{2 a^3 B c^3 \operatorname{Cos}[e + f x]^7}{13 f \sqrt{c - c \operatorname{Sin}[e + f x]}}$$

Result (type 3, 1351 leaves):

$$\frac{5 A \operatorname{Cos}\left[\frac{1}{2} (e + f x)\right] (a + a \operatorname{Sin}[e + f x])^3 (c - c \operatorname{Sin}[e + f x])^{5/2}}{8 f \left(\operatorname{Cos}\left[\frac{1}{2} (e + f x)\right] - \operatorname{Sin}\left[\frac{1}{2} (e + f x)\right]\right)^5 \left(\operatorname{Cos}\left[\frac{1}{2} (e + f x)\right] + \operatorname{Sin}\left[\frac{1}{2} (e + f x)\right]\right)^6} -$$

$$\frac{5 (4 A + B) \operatorname{Cos}\left[\frac{3}{2} (e + f x)\right] (a + a \operatorname{Sin}[e + f x])^3 (c - c \operatorname{Sin}[e + f x])^{5/2}}{96 f \left(\operatorname{Cos}\left[\frac{1}{2} (e + f x)\right] - \operatorname{Sin}\left[\frac{1}{2} (e + f x)\right]\right)^5 \left(\operatorname{Cos}\left[\frac{1}{2} (e + f x)\right] + \operatorname{Sin}\left[\frac{1}{2} (e + f x)\right]\right)^6} +$$

$$\frac{(2 A - B) \operatorname{Cos}\left[\frac{5}{2} (e + f x)\right] (a + a \operatorname{Sin}[e + f x])^3 (c - c \operatorname{Sin}[e + f x])^{5/2}}{32 f \left(\operatorname{Cos}\left[\frac{1}{2} (e + f x)\right] - \operatorname{Sin}\left[\frac{1}{2} (e + f x)\right]\right)^5 \left(\operatorname{Cos}\left[\frac{1}{2} (e + f x)\right] + \operatorname{Sin}\left[\frac{1}{2} (e + f x)\right]\right)^6} -$$

$$\frac{(5 A + 2 B) \operatorname{Cos}\left[\frac{7}{2} (e + f x)\right] (a + a \operatorname{Sin}[e + f x])^3 (c - c \operatorname{Sin}[e + f x])^{5/2}}{112 f \left(\operatorname{Cos}\left[\frac{1}{2} (e + f x)\right] - \operatorname{Sin}\left[\frac{1}{2} (e + f x)\right]\right)^5 \left(\operatorname{Cos}\left[\frac{1}{2} (e + f x)\right] + \operatorname{Sin}\left[\frac{1}{2} (e + f x)\right]\right)^6} +$$

$$\frac{(A - 2 B) \operatorname{Cos}\left[\frac{9}{2} (e + f x)\right] (a + a \operatorname{Sin}[e + f x])^3 (c - c \operatorname{Sin}[e + f x])^{5/2}}{144 f \left(\operatorname{Cos}\left[\frac{1}{2} (e + f x)\right] - \operatorname{Sin}\left[\frac{1}{2} (e + f x)\right]\right)^5 \left(\operatorname{Cos}\left[\frac{1}{2} (e + f x)\right] + \operatorname{Sin}\left[\frac{1}{2} (e + f x)\right]\right)^6} -$$

$$\frac{(2 A + B) \operatorname{Cos}\left[\frac{11}{2} (e + f x)\right] (a + a \operatorname{Sin}[e + f x])^3 (c - c \operatorname{Sin}[e + f x])^{5/2}}{352 f \left(\operatorname{Cos}\left[\frac{1}{2} (e + f x)\right] - \operatorname{Sin}\left[\frac{1}{2} (e + f x)\right]\right)^5 \left(\operatorname{Cos}\left[\frac{1}{2} (e + f x)\right] + \operatorname{Sin}\left[\frac{1}{2} (e + f x)\right]\right)^6} -$$

$$\frac{B \operatorname{Cos}\left[\frac{13}{2} (e + f x)\right] (a + a \operatorname{Sin}[e + f x])^3 (c - c \operatorname{Sin}[e + f x])^{5/2}}{416 f \left(\operatorname{Cos}\left[\frac{1}{2} (e + f x)\right] - \operatorname{Sin}\left[\frac{1}{2} (e + f x)\right]\right)^5 \left(\operatorname{Cos}\left[\frac{1}{2} (e + f x)\right] + \operatorname{Sin}\left[\frac{1}{2} (e + f x)\right]\right)^6} +$$

$$\frac{5 A \operatorname{Sin}\left[\frac{1}{2} (e + f x)\right] (a + a \operatorname{Sin}[e + f x])^3 (c - c \operatorname{Sin}[e + f x])^{5/2}}{8 f \left(\operatorname{Cos}\left[\frac{1}{2} (e + f x)\right] - \operatorname{Sin}\left[\frac{1}{2} (e + f x)\right]\right)^5 \left(\operatorname{Cos}\left[\frac{1}{2} (e + f x)\right] + \operatorname{Sin}\left[\frac{1}{2} (e + f x)\right]\right)^6} +$$

$$\frac{5 (4 A + B) (a + a \operatorname{Sin}[e + f x])^3 (c - c \operatorname{Sin}[e + f x])^{5/2} \operatorname{Sin}\left[\frac{3}{2} (e + f x)\right]}{96 f \left(\operatorname{Cos}\left[\frac{1}{2} (e + f x)\right] - \operatorname{Sin}\left[\frac{1}{2} (e + f x)\right]\right)^5 \left(\operatorname{Cos}\left[\frac{1}{2} (e + f x)\right] + \operatorname{Sin}\left[\frac{1}{2} (e + f x)\right]\right)^6} +$$

$$\frac{(2 A - B) (a + a \operatorname{Sin}[e + f x])^3 (c - c \operatorname{Sin}[e + f x])^{5/2} \operatorname{Sin}\left[\frac{5}{2} (e + f x)\right]}{32 f \left(\operatorname{Cos}\left[\frac{1}{2} (e + f x)\right] - \operatorname{Sin}\left[\frac{1}{2} (e + f x)\right]\right)^5 \left(\operatorname{Cos}\left[\frac{1}{2} (e + f x)\right] + \operatorname{Sin}\left[\frac{1}{2} (e + f x)\right]\right)^6} +$$

$$\frac{(5A+2B)(a+a\,\mathrm{Sin}[e+fx])^3(c-c\,\mathrm{Sin}[e+fx])^{5/2}\,\mathrm{Sin}\left[\frac{7}{2}(e+fx)\right]}{112\,f\left(\mathrm{Cos}\left[\frac{1}{2}(e+fx)\right]-\mathrm{Sin}\left[\frac{1}{2}(e+fx)\right]\right)^5\left(\mathrm{Cos}\left[\frac{1}{2}(e+fx)\right]+\mathrm{Sin}\left[\frac{1}{2}(e+fx)\right]\right)^6}+$$
$$\frac{(A-2B)(a+a\,\mathrm{Sin}[e+fx])^3(c-c\,\mathrm{Sin}[e+fx])^{5/2}\,\mathrm{Sin}\left[\frac{9}{2}(e+fx)\right]}{144\,f\left(\mathrm{Cos}\left[\frac{1}{2}(e+fx)\right]-\mathrm{Sin}\left[\frac{1}{2}(e+fx)\right]\right)^5\left(\mathrm{Cos}\left[\frac{1}{2}(e+fx)\right]+\mathrm{Sin}\left[\frac{1}{2}(e+fx)\right]\right)^6}+$$
$$\frac{(2A+B)(a+a\,\mathrm{Sin}[e+fx])^3(c-c\,\mathrm{Sin}[e+fx])^{5/2}\,\mathrm{Sin}\left[\frac{11}{2}(e+fx)\right]}{352\,f\left(\mathrm{Cos}\left[\frac{1}{2}(e+fx)\right]-\mathrm{Sin}\left[\frac{1}{2}(e+fx)\right]\right)^5\left(\mathrm{Cos}\left[\frac{1}{2}(e+fx)\right]+\mathrm{Sin}\left[\frac{1}{2}(e+fx)\right]\right)^6}-$$
$$\frac{B(a+a\,\mathrm{Sin}[e+fx])^3(c-c\,\mathrm{Sin}[e+fx])^{5/2}\,\mathrm{Sin}\left[\frac{13}{2}(e+fx)\right]}{416\,f\left(\mathrm{Cos}\left[\frac{1}{2}(e+fx)\right]-\mathrm{Sin}\left[\frac{1}{2}(e+fx)\right]\right)^5\left(\mathrm{Cos}\left[\frac{1}{2}(e+fx)\right]+\mathrm{Sin}\left[\frac{1}{2}(e+fx)\right]\right)^6}$$

- **Problem 100: Result more than twice size of optimal antiderivative.**

$$\int (a+a\,\mathrm{Sin}[e+fx])^3(A+B\,\mathrm{Sin}[e+fx])(c-c\,\mathrm{Sin}[e+fx])^{3/2}\,dx$$

Optimal (type 3, 124 leaves, 4 steps):

$$\frac{8a^3(11A+3B)c^5\,\mathrm{Cos}[e+fx]^7}{693\,f(c-c\,\mathrm{Sin}[e+fx])^{7/2}}+\frac{2a^3(11A+3B)c^4\,\mathrm{Cos}[e+fx]^7}{99\,f(c-c\,\mathrm{Sin}[e+fx])^{5/2}}-\frac{2a^3Bc^3\,\mathrm{Cos}[e+fx]^7}{11\,f(c-c\,\mathrm{Sin}[e+fx])^{3/2}}$$

Result (type 3, 1157 leaves):

$$\frac{(6 A+B) \operatorname{Cos}\left[\frac{1}{2}(e+f x)\right](a+a \operatorname{Sin}[e+f x])^3(c-c \operatorname{Sin}[e+f x])^{3/2}}{8 f\left(\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]-\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^3\left(\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]+\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^6}-$$

$$\frac{(8 A+3 B) \operatorname{Cos}\left[\frac{3}{2}(e+f x)\right](a+a \operatorname{Sin}[e+f x])^3(c-c \operatorname{Sin}[e+f x])^{3/2}}{24 f\left(\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]-\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^3\left(\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]+\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^6}-$$

$$\frac{B \operatorname{Cos}\left[\frac{5}{2}(e+f x)\right](a+a \operatorname{Sin}[e+f x])^3(c-c \operatorname{Sin}[e+f x])^{3/2}}{16 f\left(\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]-\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^3\left(\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]+\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^6}-$$

$$\frac{(6 A+B) \operatorname{Cos}\left[\frac{7}{2}(e+f x)\right](a+a \operatorname{Sin}[e+f x])^3(c-c \operatorname{Sin}[e+f x])^{3/2}}{112 f\left(\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]-\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^3\left(\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]+\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^6}-$$

$$\frac{(2 A+3 B) \operatorname{Cos}\left[\frac{9}{2}(e+f x)\right](a+a \operatorname{Sin}[e+f x])^3(c-c \operatorname{Sin}[e+f x])^{3/2}}{144 f\left(\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]-\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^3\left(\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]+\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^6}+$$

$$\frac{B \operatorname{Cos}\left[\frac{11}{2}(e+f x)\right](a+a \operatorname{Sin}[e+f x])^3(c-c \operatorname{Sin}[e+f x])^{3/2}}{176 f\left(\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]-\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^3\left(\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]+\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^6}+$$

$$\frac{(6 A+B) \operatorname{Sin}\left[\frac{1}{2}(e+f x)\right](a+a \operatorname{Sin}[e+f x])^3(c-c \operatorname{Sin}[e+f x])^{3/2}}{8 f\left(\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]-\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^3\left(\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]+\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^6}+$$

$$\frac{(8 A+3 B)(a+a \operatorname{Sin}[e+f x])^3(c-c \operatorname{Sin}[e+f x])^{3/2} \operatorname{Sin}\left[\frac{3}{2}(e+f x)\right]}{24 f\left(\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]-\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^3\left(\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]+\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^6}-$$

$$\frac{B(a+a \operatorname{Sin}[e+f x])^3(c-c \operatorname{Sin}[e+f x])^{3/2} \operatorname{Sin}\left[\frac{5}{2}(e+f x)\right]}{16 f\left(\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]-\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^3\left(\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]+\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^6}+$$

$$\frac{(6 A+B)(a+a \operatorname{Sin}[e+f x])^3(c-c \operatorname{Sin}[e+f x])^{3/2} \operatorname{Sin}\left[\frac{7}{2}(e+f x)\right]}{112 f\left(\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]-\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^3\left(\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]+\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^6}-$$

$$\frac{(2 A+3 B)(a+a \operatorname{Sin}[e+f x])^3(c-c \operatorname{Sin}[e+f x])^{3/2} \operatorname{Sin}\left[\frac{9}{2}(e+f x)\right]}{144 f\left(\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]-\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^3\left(\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]+\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^6}-$$

$$\frac{B(a+a \operatorname{Sin}[e+f x])^3(c-c \operatorname{Sin}[e+f x])^{3/2} \operatorname{Sin}\left[\frac{11}{2}(e+f x)\right]}{176 f\left(\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]-\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^3\left(\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]+\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^6}$$

- **Problem 102: Result unnecessarily involves imaginary or complex numbers.**

$$\int \frac{(a+a\,\mathrm{Sin}[e+f\,x])^3\,(A+B\,\mathrm{Sin}[e+f\,x])}{\sqrt{c-c\,\mathrm{Sin}[e+f\,x]}}\,dx$$

Optimal (type 3, 200 leaves, 7 steps):

$$\frac{8\sqrt{2}\,a^3\,(A+B)\,\mathrm{ArcTanh}\left[\frac{\sqrt{c}\,\mathrm{Cos}[e+f\,x]}{\sqrt{2}\,\sqrt{c-c\,\mathrm{Sin}[e+f\,x]}}\right]}{\sqrt{c}\,f}-\frac{2\,a^3\,B\,c^3\,\mathrm{Cos}[e+f\,x]^7}{7\,f\,(c-c\,\mathrm{Sin}[e+f\,x])^{7/2}}-\frac{2\,a^3\,(A+B)\,c^2\,\mathrm{Cos}[e+f\,x]^5}{5\,f\,(c-c\,\mathrm{Sin}[e+f\,x])^{5/2}}-\frac{4\,a^3\,(A+B)\,c\,\mathrm{Cos}[e+f\,x]^3}{3\,f\,(c-c\,\mathrm{Sin}[e+f\,x])^{3/2}}-\frac{8\,a^3\,(A+B)\,\mathrm{Cos}[e+f\,x]}{f\,\sqrt{c-c\,\mathrm{Sin}[e+f\,x]}}$$

Result (type 3, 193 leaves):

$$-\frac{1}{420\,f\,\left(\mathrm{Cos}\left[\frac{1}{2}(e+f\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)^6\sqrt{c-c\,\mathrm{Sin}[e+f\,x]}}\,a^3\left(\mathrm{Cos}\left[\frac{1}{2}(e+f\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)(1+\mathrm{Sin}[e+f\,x])^3\left((6720+6720\,i)\,(-1)^{1/4}\,(A+B)\,\mathrm{ArcTan}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{1/4}\left(1+\mathrm{Tan}\left[\frac{1}{4}(e+f\,x)\right]\right)\right]-2\left(\mathrm{Cos}\left[\frac{1}{2}(e+f\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)(-2086\,A-2236\,B+6\,(7\,A+22\,B)\,\mathrm{Cos}[2\,(e+f\,x)]-(448\,A+673\,B)\,\mathrm{Sin}[e+f\,x]+15\,B\,\mathrm{Sin}[3\,(e+f\,x)])\right)$$

- **Problem 103: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int \frac{(a+a\,\mathrm{Sin}[e+f\,x])^3\,(A+B\,\mathrm{Sin}[e+f\,x])}{(c-c\,\mathrm{Sin}[e+f\,x])^{3/2}}\,dx$$

Optimal (type 3, 218 leaves, 7 steps):

$$-\frac{2\sqrt{2}\,a^3\,(5\,A+9\,B)\,\mathrm{ArcTanh}\left[\frac{\sqrt{c}\,\mathrm{Cos}[e+f\,x]}{\sqrt{2}\,\sqrt{c-c\,\mathrm{Sin}[e+f\,x]}}\right]}{c^{3/2}\,f}+\frac{a^3\,(A+B)\,c^3\,\mathrm{Cos}[e+f\,x]^7}{2\,f\,(c-c\,\mathrm{Sin}[e+f\,x])^{9/2}}+\frac{a^3\,(5\,A+9\,B)\,c\,\mathrm{Cos}[e+f\,x]^5}{10\,f\,(c-c\,\mathrm{Sin}[e+f\,x])^{5/2}}+\frac{a^3\,(5\,A+9\,B)\,\mathrm{Cos}[e+f\,x]^3}{3\,f\,(c-c\,\mathrm{Sin}[e+f\,x])^{3/2}}+\frac{2\,a^3\,(5\,A+9\,B)\,\mathrm{Cos}[e+f\,x]}{c\,f\,\sqrt{c-c\,\mathrm{Sin}[e+f\,x]}}$$

Result (type 3, 444 leaves):

$$\frac{1}{30 f \left(\mathrm{Cos}\left[\frac{1}{2}(e+f x)\right]+\mathrm{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^6 (c-c\,\mathrm{Sin}[e+f x])^{3/2}}$$

$$a^3 \left(\mathrm{Cos}\left[\frac{1}{2}(e+f x)\right]-\mathrm{Sin}\left[\frac{1}{2}(e+f x)\right]\right)(1+\mathrm{Sin}[e+f x])^3 \left(120 (A+B) \left(\mathrm{Cos}\left[\frac{1}{2}(e+f x)\right]-\mathrm{Sin}\left[\frac{1}{2}(e+f x)\right]\right)+\right.$$

$$(120+120\,i)(-1)^{1/4}(5 A+9 B)\,\mathrm{ArcTan}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{1/4}\left(1+\mathrm{Tan}\left[\frac{1}{4}(e+f x)\right]\right)\right]\left(\mathrm{Cos}\left[\frac{1}{2}(e+f x)\right]-\mathrm{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^2+$$

$$30 (9 A+20 B)\,\mathrm{Cos}\left[\frac{1}{2}(e+f x)\right]\left(\mathrm{Cos}\left[\frac{1}{2}(e+f x)\right]-\mathrm{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^2-5 (2 A+9 B)\,\mathrm{Cos}\left[\frac{3}{2}(e+f x)\right]\left(\mathrm{Cos}\left[\frac{1}{2}(e+f x)\right]-\mathrm{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^2-$$

$$3 B\,\mathrm{Cos}\left[\frac{5}{2}(e+f x)\right]\left(\mathrm{Cos}\left[\frac{1}{2}(e+f x)\right]-\mathrm{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^2+240 (A+B)\,\mathrm{Sin}\left[\frac{1}{2}(e+f x)\right]+$$

$$30 (9 A+20 B)\left(\mathrm{Cos}\left[\frac{1}{2}(e+f x)\right]-\mathrm{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^2 \mathrm{Sin}\left[\frac{1}{2}(e+f x)\right]+$$

$$\left.5 (2 A+9 B)\left(\mathrm{Cos}\left[\frac{1}{2}(e+f x)\right]-\mathrm{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^2 \mathrm{Sin}\left[\frac{3}{2}(e+f x)\right]-3 B\left(\mathrm{Cos}\left[\frac{1}{2}(e+f x)\right]-\mathrm{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^2 \mathrm{Sin}\left[\frac{5}{2}(e+f x)\right]\right)$$

- **Problem 104: Result unnecessarily involves imaginary or complex numbers.**

$$\int \frac{(a+a\,\mathrm{Sin}[e+f x])^3 (A+B\,\mathrm{Sin}[e+f x])}{(c-c\,\mathrm{Sin}[e+f x])^{5/2}}\,dx$$

Optimal (type 3, 225 leaves, 7 steps):

$$\frac{5 a^3 (3 A+11 B)\,\mathrm{ArcTanh}\left[\frac{\sqrt{c}\,\mathrm{Cos}[e+f x]}{\sqrt{2}\,\sqrt{c-c\,\mathrm{Sin}[e+f x]}}\right]}{2\sqrt{2}\,c^{5/2} f}+\frac{a^3 (A+B)\,c^3\,\mathrm{Cos}[e+f x]^7}{4 f (c-c\,\mathrm{Sin}[e+f x])^{11/2}}-$$

$$\frac{a^3 (3 A+11 B)\,c\,\mathrm{Cos}[e+f x]^5}{8 f (c-c\,\mathrm{Sin}[e+f x])^{7/2}}-\frac{5 a^3 (3 A+11 B)\,\mathrm{Cos}[e+f x]^3}{24 c f (c-c\,\mathrm{Sin}[e+f x])^{3/2}}-\frac{5 a^3 (3 A+11 B)\,\mathrm{Cos}[e+f x]}{4 c^2 f\sqrt{c-c\,\mathrm{Sin}[e+f x]}}$$

Result (type 3, 434 leaves):

$$\frac{1}{6 f \left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^6 (c-c\,\text{Sin}[e+f x])^{5/2}} a^3 \left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)$$
$$(1+\text{Sin}[e+f x])^3 \left(12 (A+B) \left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)-3 (9 A+17 B) \left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^3-\right.$$
$$(15+15 i) (-1)^{1/4} (3 A+11 B) \text{ArcTan}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{1/4}\left(1+\text{Tan}\left[\frac{1}{4}(e+f x)\right]\right)\right]\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^4-$$
$$6 (2 A+11 B) \text{Cos}\left[\frac{1}{2}(e+f x)\right]\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^4+2 B\,\text{Cos}\left[\frac{3}{2}(e+f x)\right]\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^4+$$
$$24 (A+B) \text{Sin}\left[\frac{1}{2}(e+f x)\right]-6 (9 A+17 B)\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^2 \text{Sin}\left[\frac{1}{2}(e+f x)\right]-$$
$$\left.6 (2 A+11 B)\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^4 \text{Sin}\left[\frac{1}{2}(e+f x)\right]-2 B\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^4 \text{Sin}\left[\frac{3}{2}(e+f x)\right]\right)$$

- **Problem 105: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int \frac{(a+a\,\text{Sin}[e+f x])^3 (A+B\,\text{Sin}[e+f x])}{(c-c\,\text{Sin}[e+f x])^{7/2}}\,dx$$

Optimal (type 3, 217 leaves, 7 steps):

$$-\frac{5 a^3 (A+13 B) \text{ArcTanh}\left[\frac{\sqrt{c}\,\text{Cos}[e+f x]}{\sqrt{2}\sqrt{c-c\,\text{Sin}[e+f x]}}\right]}{8\sqrt{2}\,c^{7/2} f}+\frac{a^3 (A+B) c^3 \text{Cos}[e+f x]^7}{6 f (c-c\,\text{Sin}[e+f x])^{13/2}}-$$
$$\frac{a^3 (A+13 B) c\,\text{Cos}[e+f x]^5}{24 f (c-c\,\text{Sin}[e+f x])^{9/2}}+\frac{5 a^3 (A+13 B) \text{Cos}[e+f x]^3}{48 c f (c-c\,\text{Sin}[e+f x])^{5/2}}+\frac{5 a^3 (A+13 B) \text{Cos}[e+f x]}{16 c^3 f \sqrt{c-c\,\text{Sin}[e+f x]}}$$

Result (type 3, 910 leaves):

$$\frac{4\,(A+B)\,\left(\mathrm{Cos}\left[\frac{1}{2}(e+f x)\right]-\mathrm{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^2(a+a\,\mathrm{Sin}[e+f x])^3}{3 f\left(\mathrm{Cos}\left[\frac{1}{2}(e+f x)\right]+\mathrm{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^6(c-c\,\mathrm{Sin}[e+f x])^{7/2}}+\frac{(-13 A-25 B)\left(\mathrm{Cos}\left[\frac{1}{2}(e+f x)\right]-\mathrm{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^4(a+a\,\mathrm{Sin}[e+f x])^3}{6 f\left(\mathrm{Cos}\left[\frac{1}{2}(e+f x)\right]+\mathrm{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^6(c-c\,\mathrm{Sin}[e+f x])^{7/2}}+$$

$$\frac{(11 A+47 B)\left(\mathrm{Cos}\left[\frac{1}{2}(e+f x)\right]-\mathrm{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^6(a+a\,\mathrm{Sin}[e+f x])^3}{8 f\left(\mathrm{Cos}\left[\frac{1}{2}(e+f x)\right]+\mathrm{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^6(c-c\,\mathrm{Sin}[e+f x])^{7/2}}+$$

$$\left(\left(\frac{5}{8}+\frac{5\,i}{8}\right)(-1)^{1/4}(A+13 B)\,\mathrm{ArcTan}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{1/4}\,\mathrm{Sec}\left[\frac{1}{4}(e+f x)\right]\left(\mathrm{Cos}\left[\frac{1}{4}(e+f x)\right]+\mathrm{Sin}\left[\frac{1}{4}(e+f x)\right]\right)\right]\right.$$
$$\left.\left(\mathrm{Cos}\left[\frac{1}{2}(e+f x)\right]-\mathrm{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^7(a+a\,\mathrm{Sin}[e+f x])^3\right)\Big/\left(f\left(\mathrm{Cos}\left[\frac{1}{2}(e+f x)\right]+\mathrm{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^6(c-c\,\mathrm{Sin}[e+f x])^{7/2}\right)+$$

$$\frac{2 B\,\mathrm{Cos}\left[\frac{1}{2}(e+f x)\right]\left(\mathrm{Cos}\left[\frac{1}{2}(e+f x)\right]-\mathrm{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^7(a+a\,\mathrm{Sin}[e+f x])^3}{f\left(\mathrm{Cos}\left[\frac{1}{2}(e+f x)\right]+\mathrm{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^6(c-c\,\mathrm{Sin}[e+f x])^{7/2}}+$$

$$\frac{2 B\left(\mathrm{Cos}\left[\frac{1}{2}(e+f x)\right]-\mathrm{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^7\mathrm{Sin}\left[\frac{1}{2}(e+f x)\right](a+a\,\mathrm{Sin}[e+f x])^3}{f\left(\mathrm{Cos}\left[\frac{1}{2}(e+f x)\right]+\mathrm{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^6(c-c\,\mathrm{Sin}[e+f x])^{7/2}}+$$

$$\left(\left(\mathrm{Cos}\left[\frac{1}{2}(e+f x)\right]-\mathrm{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^3\left(-13 A\,\mathrm{Sin}\left[\frac{1}{2}(e+f x)\right]-25 B\,\mathrm{Sin}\left[\frac{1}{2}(e+f x)\right]\right)(a+a\,\mathrm{Sin}[e+f x])^3\right)\Big/$$
$$\left(3 f\left(\mathrm{Cos}\left[\frac{1}{2}(e+f x)\right]+\mathrm{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^6(c-c\,\mathrm{Sin}[e+f x])^{7/2}\right)+$$

$$\frac{8\left(\mathrm{Cos}\left[\frac{1}{2}(e+f x)\right]-\mathrm{Sin}\left[\frac{1}{2}(e+f x)\right]\right)\left(A\,\mathrm{Sin}\left[\frac{1}{2}(e+f x)\right]+B\,\mathrm{Sin}\left[\frac{1}{2}(e+f x)\right]\right)(a+a\,\mathrm{Sin}[e+f x])^3}{3 f\left(\mathrm{Cos}\left[\frac{1}{2}(e+f x)\right]+\mathrm{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^6(c-c\,\mathrm{Sin}[e+f x])^{7/2}}+$$

$$\frac{\left(\mathrm{Cos}\left[\frac{1}{2}(e+f x)\right]-\mathrm{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^5\left(11 A\,\mathrm{Sin}\left[\frac{1}{2}(e+f x)\right]+47 B\,\mathrm{Sin}\left[\frac{1}{2}(e+f x)\right]\right)(a+a\,\mathrm{Sin}[e+f x])^3}{4 f\left(\mathrm{Cos}\left[\frac{1}{2}(e+f x)\right]+\mathrm{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^6(c-c\,\mathrm{Sin}[e+f x])^{7/2}}$$

- **Problem 106: Result unnecessarily involves imaginary or complex numbers.**

$$\int\frac{(a+a\,\mathrm{Sin}[e+f x])^3\,(A+B\,\mathrm{Sin}[e+f x])}{(c-c\,\mathrm{Sin}[e+f x])^{9/2}}\,dx$$

Optimal (type 3, 217 leaves, 7 steps):

$$-\frac{5 a^3 (A-15 B)\,\mathrm{ArcTanh}\left[\frac{\sqrt{c}\,\mathrm{Cos}[e+f x]}{\sqrt{2}\,\sqrt{c-c\,\mathrm{Sin}[e+f x]}}\right]}{128\sqrt{2}\,c^{9/2} f}+\frac{a^3 (A+B)\,c^3\,\mathrm{Cos}[e+f x]^7}{8 f\,(c-c\,\mathrm{Sin}[e+f x])^{15/2}}+$$
$$\frac{a^3 (A-15 B)\,c\,\mathrm{Cos}[e+f x]^5}{48 f\,(c-c\,\mathrm{Sin}[e+f x])^{11/2}}-\frac{5 a^3 (A-15 B)\,\mathrm{Cos}[e+f x]^3}{192\,c f\,(c-c\,\mathrm{Sin}[e+f x])^{7/2}}+\frac{5 a^3 (A-15 B)\,\mathrm{Cos}[e+f x]}{128\,c^3 f\,(c-c\,\mathrm{Sin}[e+f x])^{3/2}}$$

Result (type 3, 431 leaves) :

$$\left(\left(\frac{5}{128}+\frac{5\,i}{128}\right)(-1)^{1/4}(A-15\,B)\,\text{ArcTan}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{1/4}\,\text{Sec}\left[\frac{1}{4}(e+f\,x)\right]\left(\text{Cos}\left[\frac{1}{4}(e+f\,x)\right]+\text{Sin}\left[\frac{1}{4}(e+f\,x)\right]\right)\right]\left(\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]-\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)^9(a+a\,\text{Sin}[e+f\,x])^3\right)\Big/\left(f\left(\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)^6(c-c\,\text{Sin}[e+f\,x])^{9/2}\right)+\frac{1}{3072\,f\left(\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)^6(c-c\,\text{Sin}[e+f\,x])^{9/2}}\left(\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]-\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)(a+a\,\text{Sin}[e+f\,x])^3\left(1765\,A\,\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]+405\,B\,\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]-895\,A\,\text{Cos}\left[\frac{3}{2}(e+f\,x)\right]-2703\,B\,\text{Cos}\left[\frac{3}{2}(e+f\,x)\right]-397\,A\,\text{Cos}\left[\frac{5}{2}(e+f\,x)\right]+579\,B\,\text{Cos}\left[\frac{5}{2}(e+f\,x)\right]+15\,A\,\text{Cos}\left[\frac{7}{2}(e+f\,x)\right]+543\,B\,\text{Cos}\left[\frac{7}{2}(e+f\,x)\right]+1765\,A\,\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]+405\,B\,\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]+895\,A\,\text{Sin}\left[\frac{3}{2}(e+f\,x)\right]+2703\,B\,\text{Sin}\left[\frac{3}{2}(e+f\,x)\right]-397\,A\,\text{Sin}\left[\frac{5}{2}(e+f\,x)\right]+579\,B\,\text{Sin}\left[\frac{5}{2}(e+f\,x)\right]-15\,A\,\text{Sin}\left[\frac{7}{2}(e+f\,x)\right]-543\,B\,\text{Sin}\left[\frac{7}{2}(e+f\,x)\right]\right)$$

- **Problem 107: Result unnecessarily involves imaginary or complex numbers.**

$$\int\frac{(a+a\,\text{Sin}[e+f\,x])^3\,(A+B\,\text{Sin}[e+f\,x])}{(c-c\,\text{Sin}[e+f\,x])^{11/2}}\,dx$$

Optimal (type 3, 266 leaves, 8 steps) :

$$-\frac{a^3\,(3\,A-17\,B)\,\text{ArcTanh}\left[\frac{\sqrt{c}\,\text{Cos}[e+f\,x]}{\sqrt{2}\,\sqrt{c-c\,\text{Sin}[e+f\,x]}}\right]}{512\,\sqrt{2}\,c^{11/2}\,f}+\frac{a^3\,(A+B)\,c^3\,\text{Cos}[e+f\,x]^7}{10\,f\,(c-c\,\text{Sin}[e+f\,x])^{17/2}}+\frac{a^3\,(3\,A-17\,B)\,c\,\text{Cos}[e+f\,x]^5}{80\,f\,(c-c\,\text{Sin}[e+f\,x])^{13/2}}-\frac{a^3\,(3\,A-17\,B)\,\text{Cos}[e+f\,x]^3}{96\,c\,f\,(c-c\,\text{Sin}[e+f\,x])^{9/2}}+\frac{a^3\,(3\,A-17\,B)\,\text{Cos}[e+f\,x]}{128\,c^3\,f\,(c-c\,\text{Sin}[e+f\,x])^{5/2}}-\frac{a^3\,(3\,A-17\,B)\,\text{Cos}[e+f\,x]}{512\,c^4\,f\,(c-c\,\text{Sin}[e+f\,x])^{3/2}}$$

Result (type 3, 485 leaves) :

$$\left(\left(\frac{1}{512}+\frac{i}{512}\right)(-1)^{1/4}(3A-17B)\,\text{ArcTan}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{1/4}\,\text{Sec}\left[\frac{1}{4}(e+fx)\right]\left(\text{Cos}\left[\frac{1}{4}(e+fx)\right]+\text{Sin}\left[\frac{1}{4}(e+fx)\right]\right)\right]\left(\text{Cos}\left[\frac{1}{2}(e+fx)\right]-\text{Sin}\left[\frac{1}{2}(e+fx)\right]\right)^{11}(a+a\,\text{Sin}[e+fx])^3\right)\Big/\left(f\left(\text{Cos}\left[\frac{1}{2}(e+fx)\right]+\text{Sin}\left[\frac{1}{2}(e+fx)\right]\right)^6(c-c\,\text{Sin}[e+fx])^{11/2}\right)+\left(\left(\text{Cos}\left[\frac{1}{2}(e+fx)\right]-\text{Sin}\left[\frac{1}{2}(e+fx)\right]\right)(a+a\,\text{Sin}[e+fx])^3\left(56370\,A\,\text{Cos}\left[\frac{1}{2}(e+fx)\right]+38970\,B\,\text{Cos}\left[\frac{1}{2}(e+fx)\right]-31140\,A\,\text{Cos}\left[\frac{3}{2}(e+fx)\right]-38580\,B\,\text{Cos}\left[\frac{3}{2}(e+fx)\right]-10404\,A\,\text{Cos}\left[\frac{5}{2}(e+fx)\right]-12724\,B\,\text{Cos}\left[\frac{5}{2}(e+fx)\right]+435\,A\,\text{Cos}\left[\frac{7}{2}(e+fx)\right]+7775\,B\,\text{Cos}\left[\frac{7}{2}(e+fx)\right]-45\,A\,\text{Cos}\left[\frac{9}{2}(e+fx)\right]+255\,B\,\text{Cos}\left[\frac{9}{2}(e+fx)\right]+56370\,A\,\text{Sin}\left[\frac{1}{2}(e+fx)\right]+38970\,B\,\text{Sin}\left[\frac{1}{2}(e+fx)\right]+31140\,A\,\text{Sin}\left[\frac{3}{2}(e+fx)\right]+38580\,B\,\text{Sin}\left[\frac{3}{2}(e+fx)\right]-10404\,A\,\text{Sin}\left[\frac{5}{2}(e+fx)\right]-12724\,B\,\text{Sin}\left[\frac{5}{2}(e+fx)\right]-435\,A\,\text{Sin}\left[\frac{7}{2}(e+fx)\right]-7775\,B\,\text{Sin}\left[\frac{7}{2}(e+fx)\right]-45\,A\,\text{Sin}\left[\frac{9}{2}(e+fx)\right]+255\,B\,\text{Sin}\left[\frac{9}{2}(e+fx)\right]\right)\right)\Big/\left(122880\,f\left(\text{Cos}\left[\frac{1}{2}(e+fx)\right]+\text{Sin}\left[\frac{1}{2}(e+fx)\right]\right)^6(c-c\,\text{Sin}[e+fx])^{11/2}\right)$$

Problem 108: Result more than twice size of optimal antiderivative.

$$\int\frac{(A+B\,\text{Sin}[e+fx])\,(c-c\,\text{Sin}[e+fx])^{7/2}}{a+a\,\text{Sin}[e+fx]}\,dx$$

Optimal (type 3, 200 leaves, 6 steps):

$$-\frac{128\,(7A-9B)\,c^4\,\text{Cos}[e+fx]}{35\,a\,f\,\sqrt{c-c\,\text{Sin}[e+fx]}}-\frac{32\,(7A-9B)\,c^3\,\text{Cos}[e+fx]\,\sqrt{c-c\,\text{Sin}[e+fx]}}{35\,a\,f}-\frac{12\,(7A-9B)\,c^2\,\text{Cos}[e+fx]\,(c-c\,\text{Sin}[e+fx])^{3/2}}{35\,a\,f}-\frac{(7A-9B)\,c\,\text{Cos}[e+fx]\,(c-c\,\text{Sin}[e+fx])^{5/2}}{7\,a\,f}-\frac{(A-B)\,\text{Sec}[e+fx]\,(c-c\,\text{Sin}[e+fx])^{9/2}}{a\,c\,f}$$

Result (type 3, 864 leaves):

$$-\frac{16 (A-B) \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]+\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right) (c-c \,\text{Sin}[e+f x])^{7/2}}{f \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]-\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^7 (a+a \,\text{Sin}[e+f x])}-$$

$$\frac{(76 A-111 B) \,\text{Cos}\left[\frac{1}{2} (e+f x)\right] \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]+\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^2 (c-c \,\text{Sin}[e+f x])^{7/2}}{4 f \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]-\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^7 (a+a \,\text{Sin}[e+f x])}-$$

$$\frac{(6 A-13 B) \,\text{Cos}\left[\frac{3}{2} (e+f x)\right] \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]+\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^2 (c-c \,\text{Sin}[e+f x])^{7/2}}{4 f \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]-\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^7 (a+a \,\text{Sin}[e+f x])}+$$

$$\frac{(2 A-9 B) \,\text{Cos}\left[\frac{5}{2} (e+f x)\right] \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]+\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^2 (c-c \,\text{Sin}[e+f x])^{7/2}}{20 f \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]-\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^7 (a+a \,\text{Sin}[e+f x])}-$$

$$\frac{B \,\text{Cos}\left[\frac{7}{2} (e+f x)\right] \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]+\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^2 (c-c \,\text{Sin}[e+f x])^{7/2}}{28 f \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]-\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^7 (a+a \,\text{Sin}[e+f x])}-$$

$$\frac{(76 A-111 B) \,\text{Sin}\left[\frac{1}{2} (e+f x)\right] \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]+\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^2 (c-c \,\text{Sin}[e+f x])^{7/2}}{4 f \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]-\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^7 (a+a \,\text{Sin}[e+f x])}+$$

$$\frac{(6 A-13 B) \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]+\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^2 (c-c \,\text{Sin}[e+f x])^{7/2} \,\text{Sin}\left[\frac{3}{2} (e+f x)\right]}{4 f \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]-\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^7 (a+a \,\text{Sin}[e+f x])}+$$

$$\frac{(2 A-9 B) \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]+\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^2 (c-c \,\text{Sin}[e+f x])^{7/2} \,\text{Sin}\left[\frac{5}{2} (e+f x)\right]}{20 f \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]-\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^7 (a+a \,\text{Sin}[e+f x])}+$$

$$\frac{B \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]+\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^2 (c-c \,\text{Sin}[e+f x])^{7/2} \,\text{Sin}\left[\frac{7}{2} (e+f x)\right]}{28 f \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]-\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^7 (a+a \,\text{Sin}[e+f x])}$$

- **Problem 112: Result unnecessarily involves imaginary or complex numbers.**

$$\int \frac{A+B \,\text{Sin}[e+f x]}{(a+a \,\text{Sin}[e+f x]) \sqrt{c-c \,\text{Sin}[e+f x]}} \, dx$$

Optimal (type 3, 91 leaves, 4 steps):

$$\frac{(A+B) \,\text{ArcTanh}\left[\frac{\sqrt{c} \,\text{Cos}[e+f x]}{\sqrt{2} \sqrt{c-c \,\text{Sin}[e+f x]}}\right]}{\sqrt{2} \, a \sqrt{c} \, f}-\frac{(A-B) \,\text{Sec}[e+f x] \sqrt{c-c \,\text{Sin}[e+f x]}}{a c f}$$

Result (type 3, 140 leaves):

$$\left(\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)\left(-A+B-(1+i)(-1)^{1/4}(A+B)\text{ArcTan}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{1/4}\left(1+\text{Tan}\left[\frac{1}{4}(e+f x)\right]\right)\right]\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)\right)\right)\Big/\left(a f (1+\text{Sin}[e+f x])\sqrt{c-c\,\text{Sin}[e+f x]}\right)$$

- **Problem 113: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int\frac{A+B\,\text{Sin}[e+f x]}{(a+a\,\text{Sin}[e+f x])(c-c\,\text{Sin}[e+f x])^{3/2}}\,dx$$

Optimal (type 3, 136 leaves, 5 steps):

$$\frac{(3A-B)\,\text{ArcTanh}\left[\frac{\sqrt{c}\,\text{Cos}[e+f x]}{\sqrt{2}\sqrt{c-c\,\text{Sin}[e+f x]}}\right]}{4\sqrt{2}\,a\,c^{3/2}f}+\frac{(3A-B)\,\text{Cos}[e+f x]}{4 a f (c-c\,\text{Sin}[e+f x])^{3/2}}-\frac{(A-B)\,\text{Sec}[e+f x]}{a c f\sqrt{c-c\,\text{Sin}[e+f x]}}$$

Result (type 3, 284 leaves):

$$\frac{1}{4 a f (1+\text{Sin}[e+f x])(c-c\,\text{Sin}[e+f x])^{3/2}}\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)\left(2(-A+B)\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^2+(A+B)\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)-(1+i)(-1)^{1/4}(3A-B)\,\text{ArcTan}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{1/4}\left(1+\text{Tan}\left[\frac{1}{4}(e+f x)\right]\right)\right]\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^2\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)+2(A+B)\,\text{Sin}\left[\frac{1}{2}(e+f x)\right]\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)\right)$$

- **Problem 114: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int\frac{A+B\,\text{Sin}[e+f x]}{(a+a\,\text{Sin}[e+f x])(c-c\,\text{Sin}[e+f x])^{5/2}}\,dx$$

Optimal (type 3, 180 leaves, 6 steps):

$$\frac{3(5A-3B)\,\text{ArcTanh}\left[\frac{\sqrt{c}\,\text{Cos}[e+f x]}{\sqrt{2}\sqrt{c-c\,\text{Sin}[e+f x]}}\right]}{32\sqrt{2}\,a\,c^{5/2}f}+\frac{3(5A-3B)\,\text{Cos}[e+f x]}{32 a c f (c-c\,\text{Sin}[e+f x])^{3/2}}+\frac{(A+B)\,\text{Sec}[e+f x]}{4 a c f (c-c\,\text{Sin}[e+f x])^{3/2}}-\frac{(5A-3B)\,\text{Sec}[e+f x]}{8 a c^2 f\sqrt{c-c\,\text{Sin}[e+f x]}}$$

Result (type 3, 404 leaves):

$$\frac{1}{32\,a\,f\,(1+\mathrm{Sin}[e+f\,x])\,(c-c\,\mathrm{Sin}[e+f\,x])^{5/2}}\left(\mathrm{Cos}\left[\frac{1}{2}(e+f\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)\left(\mathrm{Cos}\left[\frac{1}{2}(e+f\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)$$
$$\left(8\,(-A+B)\left(\mathrm{Cos}\left[\frac{1}{2}(e+f\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)^4+4\,(A+B)\left(\mathrm{Cos}\left[\frac{1}{2}(e+f\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)\left(\mathrm{Cos}\left[\frac{1}{2}(e+f\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)+\right.$$
$$(7\,A-B)\left(\mathrm{Cos}\left[\frac{1}{2}(e+f\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)^3\left(\mathrm{Cos}\left[\frac{1}{2}(e+f\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)-$$
$$(3+3\,i)\,(-1)^{1/4}\,(5\,A-3\,B)\,\mathrm{ArcTan}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{1/4}\left(1+\mathrm{Tan}\left[\frac{1}{4}(e+f\,x)\right]\right)\right]\left(\mathrm{Cos}\left[\frac{1}{2}(e+f\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)^4$$
$$\left(\mathrm{Cos}\left[\frac{1}{2}(e+f\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)+8\,(A+B)\,\mathrm{Sin}\left[\frac{1}{2}(e+f\,x)\right]\left(\mathrm{Cos}\left[\frac{1}{2}(e+f\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)+$$
$$\left.2\,(7\,A-B)\left(\mathrm{Cos}\left[\frac{1}{2}(e+f\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)^2\mathrm{Sin}\left[\frac{1}{2}(e+f\,x)\right]\left(\mathrm{Cos}\left[\frac{1}{2}(e+f\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)\right)$$

- **Problem 115: Result more than twice size of optimal antiderivative.**

$$\int\frac{(A+B\,\mathrm{Sin}[e+f\,x])\,(c-c\,\mathrm{Sin}[e+f\,x])^{9/2}}{(a+a\,\mathrm{Sin}[e+f\,x])^2}\,dx$$

Optimal (type 3, 242 leaves, 7 steps) :

$$\frac{2048\,(7\,A-13\,B)\,c^4\,\mathrm{Sec}[e+f\,x]\,\sqrt{c-c\,\mathrm{Sin}[e+f\,x]}}{105\,a^2\,f}-\frac{512\,(7\,A-13\,B)\,c^3\,\mathrm{Sec}[e+f\,x]\,(c-c\,\mathrm{Sin}[e+f\,x])^{3/2}}{105\,a^2\,f}-$$
$$\frac{64\,(7\,A-13\,B)\,c^2\,\mathrm{Sec}[e+f\,x]\,(c-c\,\mathrm{Sin}[e+f\,x])^{5/2}}{105\,a^2\,f}-\frac{16\,(7\,A-13\,B)\,c\,\mathrm{Sec}[e+f\,x]\,(c-c\,\mathrm{Sin}[e+f\,x])^{7/2}}{105\,a^2\,f}-$$
$$\frac{(7\,A-13\,B)\,\mathrm{Sec}[e+f\,x]\,(c-c\,\mathrm{Sin}[e+f\,x])^{9/2}}{21\,a^2\,f}-\frac{(A-B)\,\mathrm{Sec}[e+f\,x]^3\,(c-c\,\mathrm{Sin}[e+f\,x])^{13/2}}{3\,a^2\,c^2\,f}$$

Result (type 3, 953 leaves) :

$$-\frac{32\,(A-B)\,\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)\,(c-c\,\text{Sin}[e+f\,x])^{9/2}}{3\,f\,\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^9\,(a+a\,\text{Sin}[e+f\,x])^2}+\frac{32\,(2\,A-3\,B)\,\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^3\,(c-c\,\text{Sin}[e+f\,x])^{9/2}}{f\,\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^9\,(a+a\,\text{Sin}[e+f\,x])^2}+$$

$$\frac{(164\,A-351\,B)\,\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]\,\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^4\,(c-c\,\text{Sin}[e+f\,x])^{9/2}}{4\,f\,\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^9\,(a+a\,\text{Sin}[e+f\,x])^2}+$$

$$\frac{(26\,A-83\,B)\,\text{Cos}\left[\frac{3}{2}\,(e+f\,x)\right]\,\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^4\,(c-c\,\text{Sin}[e+f\,x])^{9/2}}{12\,f\,\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^9\,(a+a\,\text{Sin}[e+f\,x])^2}-$$

$$\frac{(2\,A-13\,B)\,\text{Cos}\left[\frac{5}{2}\,(e+f\,x)\right]\,\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^4\,(c-c\,\text{Sin}[e+f\,x])^{9/2}}{20\,f\,\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^9\,(a+a\,\text{Sin}[e+f\,x])^2}+$$

$$\frac{B\,\text{Cos}\left[\frac{7}{2}\,(e+f\,x)\right]\,\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^4\,(c-c\,\text{Sin}[e+f\,x])^{9/2}}{28\,f\,\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^9\,(a+a\,\text{Sin}[e+f\,x])^2}+$$

$$\frac{(164\,A-351\,B)\,\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\,\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^4\,(c-c\,\text{Sin}[e+f\,x])^{9/2}}{4\,f\,\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^9\,(a+a\,\text{Sin}[e+f\,x])^2}-$$

$$\frac{(26\,A-83\,B)\,\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^4\,(c-c\,\text{Sin}[e+f\,x])^{9/2}\,\text{Sin}\left[\frac{3}{2}\,(e+f\,x)\right]}{12\,f\,\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^9\,(a+a\,\text{Sin}[e+f\,x])^2}-$$

$$\frac{(2\,A-13\,B)\,\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^4\,(c-c\,\text{Sin}[e+f\,x])^{9/2}\,\text{Sin}\left[\frac{5}{2}\,(e+f\,x)\right]}{20\,f\,\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^9\,(a+a\,\text{Sin}[e+f\,x])^2}-$$

$$\frac{B\,\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^4\,(c-c\,\text{Sin}[e+f\,x])^{9/2}\,\text{Sin}\left[\frac{7}{2}\,(e+f\,x)\right]}{28\,f\,\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^9\,(a+a\,\text{Sin}[e+f\,x])^2}$$

- **Problem 120: Result unnecessarily involves imaginary or complex numbers.**

$$\int\frac{A+B\,\text{Sin}[e+f\,x]}{(a+a\,\text{Sin}[e+f\,x])^2\,\sqrt{c-c\,\text{Sin}[e+f\,x]}}\,dx$$

Optimal (type 3, 135 leaves, 5 steps):

$$\frac{(A+B)\,\text{ArcTanh}\left[\frac{\sqrt{c}\,\text{Cos}[e+f\,x]}{\sqrt{2}\,\sqrt{c-c\,\text{Sin}[e+f\,x]}}\right]}{2\,\sqrt{2}\,a^2\,\sqrt{c}\,f}-\frac{(A+B)\,\text{Sec}[e+f\,x]\,\sqrt{c-c\,\text{Sin}[e+f\,x]}}{2\,a^2\,c\,f}-\frac{(A-B)\,\text{Sec}[e+f\,x]^3\,(c-c\,\text{Sin}[e+f\,x])^{3/2}}{3\,a^2\,c^2\,f}$$

Result (type 3, 176 leaves):

$$\left(\left(\mathrm{Cos}\left[\frac{1}{2}(e+fx)\right]-\mathrm{Sin}\left[\frac{1}{2}(e+fx)\right]\right)\left(\mathrm{Cos}\left[\frac{1}{2}(e+fx)\right]+\mathrm{Sin}\left[\frac{1}{2}(e+fx)\right]\right)\right.$$
$$\left(2(-A+B)-3(A+B)\left(\mathrm{Cos}\left[\frac{1}{2}(e+fx)\right]+\mathrm{Sin}\left[\frac{1}{2}(e+fx)\right]\right)^2-(3+3i)(-1)^{1/4}(A+B)\,\mathrm{ArcTan}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{1/4}\left(1+\mathrm{Tan}\left[\frac{1}{4}(e+fx)\right]\right)\right]\right.$$
$$\left.\left.\left(\mathrm{Cos}\left[\frac{1}{2}(e+fx)\right]+\mathrm{Sin}\left[\frac{1}{2}(e+fx)\right]\right)^3\right)\right)\Big/\left(6a^2f(1+\mathrm{Sin}[e+fx])^2\sqrt{c-c\,\mathrm{Sin}[e+fx]}\right)$$

- **Problem 121: Result unnecessarily involves imaginary or complex numbers.**

$$\int\frac{A+B\,\mathrm{Sin}[e+fx]}{(a+a\,\mathrm{Sin}[e+fx])^2(c-c\,\mathrm{Sin}[e+fx])^{3/2}}\,dx$$

Optimal (type 3, 175 leaves, 6 steps):

$$\frac{(5A+B)\,\mathrm{ArcTanh}\left[\frac{\sqrt{c}\,\mathrm{Cos}[e+fx]}{\sqrt{2}\sqrt{c-c\,\mathrm{Sin}[e+fx]}}\right]}{8\sqrt{2}\,a^2c^{3/2}f}+\frac{(5A+B)\,\mathrm{Cos}[e+fx]}{8a^2f(c-c\,\mathrm{Sin}[e+fx])^{3/2}}-\frac{(5A+B)\,\mathrm{Sec}[e+fx]}{6a^2cf\sqrt{c-c\,\mathrm{Sin}[e+fx]}}-\frac{(A-B)\,\mathrm{Sec}[e+fx]^3\sqrt{c-c\,\mathrm{Sin}[e+fx]}}{3a^2c^2f}$$

Result (type 3, 300 leaves):

$$\frac{1}{24a^2f(1+\mathrm{Sin}[e+fx])^2(c-c\,\mathrm{Sin}[e+fx])^{3/2}}\left(\mathrm{Cos}\left[\frac{1}{2}(e+fx)\right]-\mathrm{Sin}\left[\frac{1}{2}(e+fx)\right]\right)$$
$$\left(\mathrm{Cos}\left[\frac{1}{2}(e+fx)\right]+\mathrm{Sin}\left[\frac{1}{2}(e+fx)\right]\right)\left(-12A\,\mathrm{Cos}[e+fx]^2+4(-A+B)\left(\mathrm{Cos}\left[\frac{1}{2}(e+fx)\right]-\mathrm{Sin}\left[\frac{1}{2}(e+fx)\right]\right)^2+\right.$$
$$3(A+B)\left(\mathrm{Cos}\left[\frac{1}{2}(e+fx)\right]-\mathrm{Sin}\left[\frac{1}{2}(e+fx)\right]\right)\left(\mathrm{Cos}\left[\frac{1}{2}(e+fx)\right]+\mathrm{Sin}\left[\frac{1}{2}(e+fx)\right]\right)^3-$$
$$(3+3i)(-1)^{1/4}(5A+B)\,\mathrm{ArcTan}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{1/4}\left(1+\mathrm{Tan}\left[\frac{1}{4}(e+fx)\right]\right)\right]\left(\mathrm{Cos}\left[\frac{1}{2}(e+fx)\right]-\mathrm{Sin}\left[\frac{1}{2}(e+fx)\right]\right)^2$$
$$\left.\left(\mathrm{Cos}\left[\frac{1}{2}(e+fx)\right]+\mathrm{Sin}\left[\frac{1}{2}(e+fx)\right]\right)^3+6(A+B)\,\mathrm{Sin}\left[\frac{1}{2}(e+fx)\right]\left(\mathrm{Cos}\left[\frac{1}{2}(e+fx)\right]+\mathrm{Sin}\left[\frac{1}{2}(e+fx)\right]\right)^3\right)$$

- **Problem 122: Result unnecessarily involves imaginary or complex numbers.**

$$\int\frac{A+B\,\mathrm{Sin}[e+fx]}{(a+a\,\mathrm{Sin}[e+fx])^2(c-c\,\mathrm{Sin}[e+fx])^{5/2}}\,dx$$

Optimal (type 3, 225 leaves, 7 steps):

$$\frac{5(7A-B)\,\mathrm{ArcTanh}\left[\frac{\sqrt{c}\,\mathrm{Cos}[e+fx]}{\sqrt{2}\sqrt{c-c\,\mathrm{Sin}[e+fx]}}\right]}{64\sqrt{2}\,a^2c^{5/2}f}+\frac{5(7A-B)\,\mathrm{Cos}[e+fx]}{64a^2cf(c-c\,\mathrm{Sin}[e+fx])^{3/2}}+$$
$$\frac{(7A-B)\,\mathrm{Sec}[e+fx]}{24a^2cf(c-c\,\mathrm{Sin}[e+fx])^{3/2}}-\frac{5(7A-B)\,\mathrm{Sec}[e+fx]}{48a^2c^2f\sqrt{c-c\,\mathrm{Sin}[e+fx]}}-\frac{(A-B)\,\mathrm{Sec}[e+fx]^3}{3a^2c^2f\sqrt{c-c\,\mathrm{Sin}[e+fx]}}$$

Result (type 3, 430 leaves) :

$$\frac{1}{192 a^2 f (1+\text{Sin}[e+f x])^2 (c-c \text{Sin}[e+f x])^{5/2}} \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]-\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right) \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]+\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right) \left(3 (11 A+3 B) \text{Cos}[e+f x]^3+16 (-A+B) \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]-\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^4+24 (-3 A+B) \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]-\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^4 \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]+\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^2+12 (A+B) \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]-\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right) \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]+\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^3-(15+15 i) (-1)^{1/4} (7 A-B) \text{ArcTan}\left[\left(\frac{1}{2}+\frac{i}{2}\right) (-1)^{1/4} \left(1+\text{Tan}\left[\frac{1}{4} (e+f x)\right]\right)\right] \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]-\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^4 \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]+\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^3+24 (A+B) \text{Sin}\left[\frac{1}{2} (e+f x)\right] \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]+\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^3+6 (11 A+3 B) \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]-\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^2 \text{Sin}\left[\frac{1}{2} (e+f x)\right] \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]+\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^3\right)$$

Problem 123: Result more than twice size of optimal antiderivative.

$$\int \frac{(A+B \text{Sin}[e+f x]) (c-c \text{Sin}[e+f x])^{9/2}}{(a+a \text{Sin}[e+f x])^3} \, dx$$

Optimal (type 3, 242 leaves, 7 steps) :

$$-\frac{2048 (A-3 B) c^3 \text{Sec}[e+f x]^3 (c-c \text{Sin}[e+f x])^{3/2}}{15 a^3 f}+\frac{512 (A-3 B) c^2 \text{Sec}[e+f x]^3 (c-c \text{Sin}[e+f x])^{5/2}}{5 a^3 f}-\frac{64 (A-3 B) c \text{Sec}[e+f x]^3 (c-c \text{Sin}[e+f x])^{7/2}}{5 a^3 f}-\frac{16 (A-3 B) \text{Sec}[e+f x]^3 (c-c \text{Sin}[e+f x])^{9/2}}{15 a^3 f}-\frac{(A-3 B) \text{Sec}[e+f x]^3 (c-c \text{Sin}[e+f x])^{11/2}}{5 a^3 c f}-\frac{(A-B) \text{Sec}[e+f x]^5 (c-c \text{Sin}[e+f x])^{15/2}}{5 a^3 c^3 f}$$

Result (type 3, 840 leaves) :

$$-\frac{32\,(A-B)\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)(c-c\,\text{Sin}[e+f x])^{9/2}}{5 f\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^9(a+a\,\text{Sin}[e+f x])^3}+\frac{32\,(2 A-3 B)\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^3(c-c\,\text{Sin}[e+f x])^{9/2}}{3 f\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^9(a+a\,\text{Sin}[e+f x])^3}-$$

$$\frac{16\,(3 A-7 B)\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^5(c-c\,\text{Sin}[e+f x])^{9/2}}{f\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^9(a+a\,\text{Sin}[e+f x])^3}-$$

$$\frac{(15 A-56 B)\,\text{Cos}\left[\frac{1}{2}(e+f x)\right]\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^6(c-c\,\text{Sin}[e+f x])^{9/2}}{f\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^9(a+a\,\text{Sin}[e+f x])^3}-$$

$$\frac{(2 A-15 B)\,\text{Cos}\left[\frac{3}{2}(e+f x)\right]\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^6(c-c\,\text{Sin}[e+f x])^{9/2}}{6 f\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^9(a+a\,\text{Sin}[e+f x])^3}-$$

$$\frac{B\,\text{Cos}\left[\frac{5}{2}(e+f x)\right]\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^6(c-c\,\text{Sin}[e+f x])^{9/2}}{10 f\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^9(a+a\,\text{Sin}[e+f x])^3}-$$

$$\frac{(15 A-56 B)\,\text{Sin}\left[\frac{1}{2}(e+f x)\right]\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^6(c-c\,\text{Sin}[e+f x])^{9/2}}{f\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^9(a+a\,\text{Sin}[e+f x])^3}+$$

$$\frac{(2 A-15 B)\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^6(c-c\,\text{Sin}[e+f x])^{9/2}\,\text{Sin}\left[\frac{3}{2}(e+f x)\right]}{6 f\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^9(a+a\,\text{Sin}[e+f x])^3}-$$

$$\frac{B\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^6(c-c\,\text{Sin}[e+f x])^{9/2}\,\text{Sin}\left[\frac{5}{2}(e+f x)\right]}{10 f\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^9(a+a\,\text{Sin}[e+f x])^3}$$

- **Problem 128: Result unnecessarily involves imaginary or complex numbers.**

$$\int\frac{A+B\,\text{Sin}[e+f x]}{(a+a\,\text{Sin}[e+f x])^3\sqrt{c-c\,\text{Sin}[e+f x]}}\,dx$$

Optimal (type 3, 174 leaves, 6 steps):

$$\frac{(A+B)\,\text{ArcTanh}\left[\frac{\sqrt{c}\,\text{Cos}[e+f x]}{\sqrt{2}\,\sqrt{c-c\,\text{Sin}[e+f x]}}\right]}{4\sqrt{2}\,a^3\sqrt{c}\,f}-\frac{(A+B)\,\text{Sec}[e+f x]\sqrt{c-c\,\text{Sin}[e+f x]}}{4 a^3 c f}-$$

$$\frac{(A+B)\,\text{Sec}[e+f x]^3(c-c\,\text{Sin}[e+f x])^{3/2}}{6 a^3 c^2 f}-\frac{(A-B)\,\text{Sec}[e+f x]^5(c-c\,\text{Sin}[e+f x])^{5/2}}{5 a^3 c^3 f}$$

Result (type 3, 204 leaves):

$$\frac{1}{60 a^3 f (1+\text{Sin}[e+f x])^3 \sqrt{c-c \text{Sin}[e+f x]}}\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)$$
$$\left(12(-A+B)-10(A+B)\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^2-15(A+B)\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^4-\right.$$
$$\left.(15+15 i)(-1)^{1/4}(A+B)\text{ArcTan}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{1/4}\left(1+\text{Tan}\left[\frac{1}{4}(e+f x)\right]\right)\right]\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^5\right)$$

- **Problem 129: Result unnecessarily involves imaginary or complex numbers.**

$$\int \frac{A+B\,\text{Sin}[e+f x]}{(a+a\,\text{Sin}[e+f x])^3 (c-c\,\text{Sin}[e+f x])^{3/2}}\,dx$$

Optimal (type 3, 224 leaves, 7 steps):

$$\frac{(7A+3B)\text{ArcTanh}\left[\frac{\sqrt{c}\,\text{Cos}[e+f x]}{\sqrt{2}\sqrt{c-c\,\text{Sin}[e+f x]}}\right]}{16\sqrt{2}\,a^3 c^{3/2} f}+\frac{(7A+3B)\text{Cos}[e+f x]}{16 a^3 f (c-c\,\text{Sin}[e+f x])^{3/2}}-\frac{(7A+3B)\text{Sec}[e+f x]}{12 a^3 c f\sqrt{c-c\,\text{Sin}[e+f x]}}-$$
$$\frac{(7A+3B)\text{Sec}[e+f x]^3\sqrt{c-c\,\text{Sin}[e+f x]}}{30 a^3 c^2 f}-\frac{(A-B)\text{Sec}[e+f x]^5 (c-c\,\text{Sin}[e+f x])^{3/2}}{5 a^3 c^3 f}$$

Result (type 3, 357 leaves):

$$\frac{1}{240 a^3 f (1+\text{Sin}[e+f x])^3 (c-c\,\text{Sin}[e+f x])^{3/2}}\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)$$
$$\left(-40 A\,\text{Cos}[e+f x]^2+24(-A+B)\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^2-30(3A+B)\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^2\right.$$
$$\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^4+15(A+B)\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^5-$$
$$(15+15 i)(-1)^{1/4}(7A+3B)\text{ArcTan}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{1/4}\left(1+\text{Tan}\left[\frac{1}{4}(e+f x)\right]\right)\right]\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^2$$
$$\left.\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^5+30(A+B)\text{Sin}\left[\frac{1}{2}(e+f x)\right]\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^5\right)$$

- **Problem 130: Result unnecessarily involves imaginary or complex numbers.**

$$\int \frac{A+B\,\text{Sin}[e+f x]}{(a+a\,\text{Sin}[e+f x])^3 (c-c\,\text{Sin}[e+f x])^{5/2}}\,dx$$

Optimal (type 3, 258 leaves, 8 steps):

$$\frac{7\,(9A+B)\,\text{ArcTanh}\left[\frac{\sqrt{c}\,\text{Cos}[e+f x]}{\sqrt{2}\,\sqrt{c-c\,\text{Sin}[e+f x]}}\right]}{128\sqrt{2}\,a^3 c^{5/2} f}+\frac{7\,(9A+B)\,\text{Cos}[e+f x]}{128\,a^3 c f\,(c-c\,\text{Sin}[e+f x])^{3/2}}+\frac{7\,(9A+B)\,\text{Sec}[e+f x]}{240\,a^3 c f\,(c-c\,\text{Sin}[e+f x])^{3/2}}-\frac{7\,(9A+B)\,\text{Sec}[e+f x]}{96\,a^3 c^2 f\sqrt{c-c\,\text{Sin}[e+f x]}}-\frac{(9A+B)\,\text{Sec}[e+f x]^3}{30\,a^3 c^2 f\sqrt{c-c\,\text{Sin}[e+f x]}}-\frac{(A-B)\,\text{Sec}[e+f x]^5\sqrt{c-c\,\text{Sin}[e+f x]}}{5\,a^3 c^3 f}$$

Result (type 3, 479 leaves) :

$$\frac{1}{1920\,a^3 f\,(1+\text{Sin}[e+f x])^3\,(c-c\,\text{Sin}[e+f x])^{5/2}}\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)$$
$$\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)\left(-720\,A\,\text{Cos}[e+f x]^4+96\,(-A+B)\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^4+\right.$$
$$80\,(-3A+B)\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^4\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^2+60\,(A+B)\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)$$
$$\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^5+15\,(15A+7B)\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^3\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^5-$$
$$(105+105\,i)\,(-1)^{1/4}\,(9A+B)\,\text{ArcTan}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{1/4}\left(1+\text{Tan}\left[\frac{1}{4}(e+f x)\right]\right)\right]\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^4$$
$$\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^5+120\,(A+B)\,\text{Sin}\left[\frac{1}{2}(e+f x)\right]\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^5+$$
$$\left.30\,(15A+7B)\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^2\text{Sin}\left[\frac{1}{2}(e+f x)\right]\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^5\right)$$

- **Problem 135: Result unnecessarily involves imaginary or complex numbers.**

$$\int\frac{\sqrt{a+a\,\text{Sin}[e+f x]}\,(A+B\,\text{Sin}[e+f x])}{\sqrt{c-c\,\text{Sin}[e+f x]}}\,dx$$

Optimal (type 3, 100 leaves, 5 steps) :

$$-\frac{a\,(A+B)\,\text{Cos}[e+f x]\,\text{Log}[1-\text{Sin}[e+f x]]}{f\sqrt{a+a\,\text{Sin}[e+f x]}\,\sqrt{c-c\,\text{Sin}[e+f x]}}+\frac{a\,B\,\text{Cos}[e+f x]\sqrt{c-c\,\text{Sin}[e+f x]}}{c f\sqrt{a+a\,\text{Sin}[e+f x]}}$$

Result (type 3, 133 leaves) :

$$-\left(\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)\sqrt{a\,(1+\text{Sin}[e+f x])}\right.$$
$$\left.\left(2\,i\,(A+B)\,\text{ArcTan}\left[e^{i\,(e+f x)}\right]+(A+B)\left(-i\,f x+\text{Log}\left[1+e^{2\,i\,(e+f x)}\right]\right)+B\,\text{Sin}[e+f x]\right)\right)\Big/$$
$$\left(f\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)\sqrt{c-c\,\text{Sin}[e+f x]}\right)$$

Problem 136: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{\sqrt{a+a\,\text{Sin}[e+f\,x]}\,(A+B\,\text{Sin}[e+f\,x])}{(c-c\,\text{Sin}[e+f\,x])^{3/2}}\,dx$$

Optimal (type 3, 99 leaves, 5 steps):

$$\frac{a\,(A+B)\,\text{Cos}[e+f\,x]}{f\,\sqrt{a+a\,\text{Sin}[e+f\,x]}\,(c-c\,\text{Sin}[e+f\,x])^{3/2}}+\frac{a\,B\,\text{Cos}[e+f\,x]\,\text{Log}[1-\text{Sin}[e+f\,x]]}{c\,f\,\sqrt{a+a\,\text{Sin}[e+f\,x]}\,\sqrt{c-c\,\text{Sin}[e+f\,x]}}$$

Result (type 3, 177 leaves):

$$\left(\left(\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]-\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)\sqrt{a\,(1+\text{Sin}[e+f\,x])}\right.$$
$$\left.\left(-A-B+i\,B\,f\,x-B\,\text{Log}\left[1+e^{2\,i\,(e+f\,x)}\right]+2\,i\,B\,\text{ArcTan}\left[e^{i\,(e+f\,x)}\right](-1+\text{Sin}[e+f\,x])+B\left(-i\,f\,x+\text{Log}\left[1+e^{2\,i\,(e+f\,x)}\right]\right)\text{Sin}[e+f\,x]\right)\right)\Big/$$
$$\left(c\,f\left(\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)(-1+\text{Sin}[e+f\,x])\,\sqrt{c-c\,\text{Sin}[e+f\,x]}\right)$$

Problem 158: Result more than twice size of optimal antiderivative.

$$\int \frac{(a+a\,\text{Sin}[e+f\,x])^{5/2}\,(A+B\,\text{Sin}[e+f\,x])}{(c-c\,\text{Sin}[e+f\,x])^{11/2}}\,dx$$

Optimal (type 3, 146 leaves, 3 steps):

$$\frac{(A+B)\,\text{Cos}[e+f\,x]\,(a+a\,\text{Sin}[e+f\,x])^{5/2}}{10\,f\,(c-c\,\text{Sin}[e+f\,x])^{11/2}}+\frac{(A-4\,B)\,\text{Cos}[e+f\,x]\,(a+a\,\text{Sin}[e+f\,x])^{5/2}}{40\,c\,f\,(c-c\,\text{Sin}[e+f\,x])^{9/2}}+\frac{(A-4\,B)\,\text{Cos}[e+f\,x]\,(a+a\,\text{Sin}[e+f\,x])^{5/2}}{240\,c^2\,f\,(c-c\,\text{Sin}[e+f\,x])^{7/2}}$$

Result (type 3, 348 leaves):

$$\frac{4\,(A+B)\left(\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]-\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)(a\,(1+\text{Sin}[e+f\,x]))^{5/2}}{5\,f\left(\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)^5(c-c\,\text{Sin}[e+f\,x])^{11/2}}+\frac{(-A-2\,B)\left(\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]-\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)^3(a\,(1+\text{Sin}[e+f\,x]))^{5/2}}{f\left(\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)^5(c-c\,\text{Sin}[e+f\,x])^{11/2}}+$$
$$\frac{(A+5\,B)\left(\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]-\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)^5(a\,(1+\text{Sin}[e+f\,x]))^{5/2}}{3\,f\left(\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)^5(c-c\,\text{Sin}[e+f\,x])^{11/2}}-\frac{B\left(\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]-\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)^7(a\,(1+\text{Sin}[e+f\,x]))^{5/2}}{2\,f\left(\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)^5(c-c\,\text{Sin}[e+f\,x])^{11/2}}$$

Problem 160: Result more than twice size of optimal antiderivative.

$$\int (a+a\,\text{Sin}[e+f\,x])^{7/2}\,(A+B\,\text{Sin}[e+f\,x])\,(c-c\,\text{Sin}[e+f\,x])^{9/2}\,dx$$

Optimal (type 3, 250 leaves, 5 steps):

$$-\frac{a^4 (9 A-B) \text{Cos}[e+f x] (c-c \text{Sin}[e+f x])^{9/2}}{315 f \sqrt{a+a \text{Sin}[e+f x]}}-\frac{a^3 (9 A-B) \text{Cos}[e+f x] \sqrt{a+a \text{Sin}[e+f x]} (c-c \text{Sin}[e+f x])^{9/2}}{126 f}-\frac{a^2 (9 A-B) \text{Cos}[e+f x] (a+a \text{Sin}[e+f x])^{3/2} (c-c \text{Sin}[e+f x])^{9/2}}{84 f}-\frac{a (9 A-B) \text{Cos}[e+f x] (a+a \text{Sin}[e+f x])^{5/2} (c-c \text{Sin}[e+f x])^{9/2}}{72 f}-\frac{B \text{Cos}[e+f x] (a+a \text{Sin}[e+f x])^{7/2} (c-c \text{Sin}[e+f x])^{9/2}}{9 f}$$

Result (type 3, 870 leaves):

$$\frac{7 (A-B) \text{Cos}[2 (e+f x)] (a (1+\text{Sin}[e+f x]))^{7/2} (c-c \text{Sin}[e+f x])^{9/2}}{128 f \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]-\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^9 \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]+\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^7}+\frac{7 (A-B) \text{Cos}[4 (e+f x)] (a (1+\text{Sin}[e+f x]))^{7/2} (c-c \text{Sin}[e+f x])^{9/2}}{256 f \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]-\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^9 \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]+\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^7}+\frac{(A-B) \text{Cos}[6 (e+f x)] (a (1+\text{Sin}[e+f x]))^{7/2} (c-c \text{Sin}[e+f x])^{9/2}}{128 f \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]-\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^9 \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]+\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^7}+\frac{(A-B) \text{Cos}[8 (e+f x)] (a (1+\text{Sin}[e+f x]))^{7/2} (c-c \text{Sin}[e+f x])^{9/2}}{1024 f \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]-\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^9 \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]+\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^7}+\frac{7 (10 A-B) \text{Sin}[e+f x] (a (1+\text{Sin}[e+f x]))^{7/2} (c-c \text{Sin}[e+f x])^{9/2}}{128 f \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]-\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^9 \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]+\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^7}+\frac{7 A (a (1+\text{Sin}[e+f x]))^{7/2} (c-c \text{Sin}[e+f x])^{9/2} \text{Sin}[3 (e+f x)]}{64 f \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]-\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^9 \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]+\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^7}+\frac{(7 A+2 B) (a (1+\text{Sin}[e+f x]))^{7/2} (c-c \text{Sin}[e+f x])^{9/2} \text{Sin}[5 (e+f x)]}{320 f \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]-\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^9 \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]+\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^7}+\frac{(4 A+5 B) (a (1+\text{Sin}[e+f x]))^{7/2} (c-c \text{Sin}[e+f x])^{9/2} \text{Sin}[7 (e+f x)]}{1792 f \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]-\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^9 \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]+\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^7}+\frac{B (a (1+\text{Sin}[e+f x]))^{7/2} (c-c \text{Sin}[e+f x])^{9/2} \text{Sin}[9 (e+f x)]}{2304 f \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]-\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^9 \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]+\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^7}$$

- **Problem 170: Result more than twice size of optimal antiderivative.**

$$\int \frac{(a+a \text{Sin}[e+f x])^{7/2} (A+B \text{Sin}[e+f x])}{(c-c \text{Sin}[e+f x])^{11/2}} \, dx$$

Optimal (type 3, 96 leaves, 2 steps):

$$\frac{(A+B) \operatorname{Cos}[e+f x] (a+a \operatorname{Sin}[e+f x])^{7/2}}{10 f (c-c \operatorname{Sin}[e+f x])^{11/2}}+\frac{(A-9 B) \operatorname{Cos}[e+f x] (a+a \operatorname{Sin}[e+f x])^{7/2}}{80 c f (c-c \operatorname{Sin}[e+f x])^{9/2}}$$

Result (type 3, 434 leaves):

$$\frac{8 (A+B) \left(\operatorname{Cos}\left[\frac{1}{2} (e+f x)\right]-\operatorname{Sin}\left[\frac{1}{2} (e+f x)\right]\right) (a (1+\operatorname{Sin}[e+f x]))^{7/2}}{5 f \left(\operatorname{Cos}\left[\frac{1}{2} (e+f x)\right]+\operatorname{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^7 (c-c \operatorname{Sin}[e+f x])^{11/2}}+$$
$$\frac{(-3 A-5 B) \left(\operatorname{Cos}\left[\frac{1}{2} (e+f x)\right]-\operatorname{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^3 (a (1+\operatorname{Sin}[e+f x]))^{7/2}}{f \left(\operatorname{Cos}\left[\frac{1}{2} (e+f x)\right]+\operatorname{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^7 (c-c \operatorname{Sin}[e+f x])^{11/2}}+$$
$$\frac{2 (A+3 B) \left(\operatorname{Cos}\left[\frac{1}{2} (e+f x)\right]-\operatorname{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^5 (a (1+\operatorname{Sin}[e+f x]))^{7/2}}{f \left(\operatorname{Cos}\left[\frac{1}{2} (e+f x)\right]+\operatorname{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^7 (c-c \operatorname{Sin}[e+f x])^{11/2}}+$$
$$\frac{(-A-7 B) \left(\operatorname{Cos}\left[\frac{1}{2} (e+f x)\right]-\operatorname{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^7 (a (1+\operatorname{Sin}[e+f x]))^{7/2}}{2 f \left(\operatorname{Cos}\left[\frac{1}{2} (e+f x)\right]+\operatorname{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^7 (c-c \operatorname{Sin}[e+f x])^{11/2}}+\frac{B \left(\operatorname{Cos}\left[\frac{1}{2} (e+f x)\right]-\operatorname{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^9 (a (1+\operatorname{Sin}[e+f x]))^{7/2}}{f \left(\operatorname{Cos}\left[\frac{1}{2} (e+f x)\right]+\operatorname{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^7 (c-c \operatorname{Sin}[e+f x])^{11/2}}$$

- **Problem 171: Result more than twice size of optimal antiderivative.**

$$\int \frac{(a+a \operatorname{Sin}[e+f x])^{7/2} (A+B \operatorname{Sin}[e+f x])}{(c-c \operatorname{Sin}[e+f x])^{13/2}} \, dx$$

Optimal (type 3, 146 leaves, 3 steps):

$$\frac{(A+B) \operatorname{Cos}[e+f x] (a+a \operatorname{Sin}[e+f x])^{7/2}}{12 f (c-c \operatorname{Sin}[e+f x])^{13/2}}+\frac{(A-5 B) \operatorname{Cos}[e+f x] (a+a \operatorname{Sin}[e+f x])^{7/2}}{60 c f (c-c \operatorname{Sin}[e+f x])^{11/2}}+\frac{(A-5 B) \operatorname{Cos}[e+f x] (a+a \operatorname{Sin}[e+f x])^{7/2}}{480 c^2 f (c-c \operatorname{Sin}[e+f x])^{9/2}}$$

Result (type 3, 442 leaves):

$$\frac{4 (A+B) \left(\operatorname{Cos}\left[\frac{1}{2} (e+f x)\right]-\operatorname{Sin}\left[\frac{1}{2} (e+f x)\right]\right) (a (1+\operatorname{Sin}[e+f x]))^{7/2}}{3 f \left(\operatorname{Cos}\left[\frac{1}{2} (e+f x)\right]+\operatorname{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^7 (c-c \operatorname{Sin}[e+f x])^{13/2}}-$$
$$\frac{4 (3 A+5 B) \left(\operatorname{Cos}\left[\frac{1}{2} (e+f x)\right]-\operatorname{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^3 (a (1+\operatorname{Sin}[e+f x]))^{7/2}}{5 f \left(\operatorname{Cos}\left[\frac{1}{2} (e+f x)\right]+\operatorname{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^7 (c-c \operatorname{Sin}[e+f x])^{13/2}}+$$
$$\frac{3 (A+3 B) \left(\operatorname{Cos}\left[\frac{1}{2} (e+f x)\right]-\operatorname{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^5 (a (1+\operatorname{Sin}[e+f x]))^{7/2}}{2 f \left(\operatorname{Cos}\left[\frac{1}{2} (e+f x)\right]+\operatorname{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^7 (c-c \operatorname{Sin}[e+f x])^{13/2}}+$$
$$\frac{(-A-7 B) \left(\operatorname{Cos}\left[\frac{1}{2} (e+f x)\right]-\operatorname{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^7 (a (1+\operatorname{Sin}[e+f x]))^{7/2}}{3 f \left(\operatorname{Cos}\left[\frac{1}{2} (e+f x)\right]+\operatorname{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^7 (c-c \operatorname{Sin}[e+f x])^{13/2}}+\frac{B \left(\operatorname{Cos}\left[\frac{1}{2} (e+f x)\right]-\operatorname{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^9 (a (1+\operatorname{Sin}[e+f x]))^{7/2}}{2 f \left(\operatorname{Cos}\left[\frac{1}{2} (e+f x)\right]+\operatorname{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^7 (c-c \operatorname{Sin}[e+f x])^{13/2}}$$

Problem 172: Result more than twice size of optimal antiderivative.

$$\int \frac{(a+a\,\mathrm{Sin}[e+f\,x])^{7/2}\,(A+B\,\mathrm{Sin}[e+f\,x])}{(c-c\,\mathrm{Sin}[e+f\,x])^{15/2}}\,dx$$

Optimal (type 3, 202 leaves, 4 steps):

$$\frac{(A+B)\,\mathrm{Cos}[e+f\,x]\,(a+a\,\mathrm{Sin}[e+f\,x])^{7/2}}{14\,f\,(c-c\,\mathrm{Sin}[e+f\,x])^{15/2}}+\frac{(3\,A-11\,B)\,\mathrm{Cos}[e+f\,x]\,(a+a\,\mathrm{Sin}[e+f\,x])^{7/2}}{168\,c\,f\,(c-c\,\mathrm{Sin}[e+f\,x])^{13/2}}+\frac{(3\,A-11\,B)\,\mathrm{Cos}[e+f\,x]\,(a+a\,\mathrm{Sin}[e+f\,x])^{7/2}}{840\,c^2\,f\,(c-c\,\mathrm{Sin}[e+f\,x])^{11/2}}+\frac{(3\,A-11\,B)\,\mathrm{Cos}[e+f\,x]\,(a+a\,\mathrm{Sin}[e+f\,x])^{7/2}}{6720\,c^3\,f\,(c-c\,\mathrm{Sin}[e+f\,x])^{9/2}}$$

Result (type 3, 442 leaves):

$$\frac{8\,(A+B)\left(\mathrm{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)(a\,(1+\mathrm{Sin}[e+f\,x]))^{7/2}}{7\,f\left(\mathrm{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^7(c-c\,\mathrm{Sin}[e+f\,x])^{15/2}}-\frac{2\,(3\,A+5\,B)\left(\mathrm{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^3(a\,(1+\mathrm{Sin}[e+f\,x]))^{7/2}}{3\,f\left(\mathrm{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^7(c-c\,\mathrm{Sin}[e+f\,x])^{15/2}}+\frac{6\,(A+3\,B)\left(\mathrm{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^5(a\,(1+\mathrm{Sin}[e+f\,x]))^{7/2}}{5\,f\left(\mathrm{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^7(c-c\,\mathrm{Sin}[e+f\,x])^{15/2}}+\frac{(-A-7\,B)\left(\mathrm{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^7(a\,(1+\mathrm{Sin}[e+f\,x]))^{7/2}}{4\,f\left(\mathrm{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^7(c-c\,\mathrm{Sin}[e+f\,x])^{15/2}}+\frac{B\left(\mathrm{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^9(a\,(1+\mathrm{Sin}[e+f\,x]))^{7/2}}{3\,f\left(\mathrm{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^7(c-c\,\mathrm{Sin}[e+f\,x])^{15/2}}$$

Problem 176: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{(A+B\,\mathrm{Sin}[e+f\,x])\,\sqrt{c-c\,\mathrm{Sin}[e+f\,x]}}{\sqrt{a+a\,\mathrm{Sin}[e+f\,x]}}\,dx$$

Optimal (type 3, 96 leaves, 5 steps):

$$\frac{(A-B)\,c\,\mathrm{Cos}[e+f\,x]\,\mathrm{Log}[1+\mathrm{Sin}[e+f\,x]]}{f\,\sqrt{a+a\,\mathrm{Sin}[e+f\,x]}\,\sqrt{c-c\,\mathrm{Sin}[e+f\,x]}}-\frac{B\,\mathrm{Cos}[e+f\,x]\,\sqrt{c-c\,\mathrm{Sin}[e+f\,x]}}{f\,\sqrt{a+a\,\mathrm{Sin}[e+f\,x]}}$$

Result (type 3, 136 leaves):

$$\left(\left(\mathrm{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)\left(-2\,i\,(A-B)\,\mathrm{ArcTan}\left[e^{i\,(e+f\,x)}\right]+(A-B)\left(-i\,f\,x+\mathrm{Log}\left[1+e^{2\,i\,(e+f\,x)}\right]\right)+B\,\mathrm{Sin}[e+f\,x]\right)\sqrt{c-c\,\mathrm{Sin}[e+f\,x]}\right)\Big/\left(f\left(\mathrm{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)\sqrt{a\,(1+\mathrm{Sin}[e+f\,x])}\right)$$

Problem 183: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{(A+B\,\text{Sin}[e+f\,x])\,\sqrt{c-c\,\text{Sin}[e+f\,x]}}{(a+a\,\text{Sin}[e+f\,x])^{3/2}}\,dx$$

Optimal (type 3, 100 leaves, 5 steps):

$$-\frac{(A-B)\,c\,\text{Cos}[e+f\,x]}{f\,(a+a\,\text{Sin}[e+f\,x])^{3/2}\,\sqrt{c-c\,\text{Sin}[e+f\,x]}}+\frac{B\,c\,\text{Cos}[e+f\,x]\,\text{Log}[1+\text{Sin}[e+f\,x]]}{a\,f\,\sqrt{a+a\,\text{Sin}[e+f\,x]}\,\sqrt{c-c\,\text{Sin}[e+f\,x]}}$$

Result (type 3, 161 leaves):

$$\left(\left(\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)\sqrt{c-c\,\text{Sin}[e+f\,x]}\right.$$
$$\left.\left(-A+B-i\,B\,f\,x+B\,\text{Log}\left[1+e^{2\,i\,(e+f\,x)}\right]+B\left(-i\,f\,x+\text{Log}\left[1+e^{2\,i\,(e+f\,x)}\right]\right)\text{Sin}[e+f\,x]-2\,i\,B\,\text{ArcTan}\left[e^{i\,(e+f\,x)}\right]\,(1+\text{Sin}[e+f\,x])\right)\right)\Big/$$
$$\left(f\left(\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]-\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)(a\,(1+\text{Sin}[e+f\,x]))^{3/2}\right)$$

Problem 195: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int (a+a\,\text{Sin}[e+f\,x])^m\,(A+B\,\text{Sin}[e+f\,x])\,(c-c\,\text{Sin}[e+f\,x])^n\,dx$$

Optimal (type 5, 174 leaves, 5 steps):

$$\frac{1}{f\,(1+2\,m)\,(1+m+n)}2^{\frac{1}{2}+n}\,c\,(B\,(m-n)+A\,(1+m+n))\,\text{Cos}[e+f\,x]\,\text{Hypergeometric2F1}\left[\frac{1}{2}(1+2\,m),\,\frac{1}{2}(1-2\,n),\,\frac{1}{2}(3+2\,m),\,\frac{1}{2}(1+\text{Sin}[e+f\,x])\right]$$
$$(1-\text{Sin}[e+f\,x])^{\frac{1}{2}-n}\,(a+a\,\text{Sin}[e+f\,x])^m\,(c-c\,\text{Sin}[e+f\,x])^{-1+n}-\frac{B\,\text{Cos}[e+f\,x]\,(a+a\,\text{Sin}[e+f\,x])^m\,(c-c\,\text{Sin}[e+f\,x])^n}{f\,(1+m+n)}$$

Result (type 6, 15 882 leaves):

$$-\left(\left(\left(4^{1+n}\,(3+2\,n)\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{-2\,m}\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{-2\,n}\,(a+a\,\text{Sin}[e+f\,x])^m\,(c-c\,\text{Sin}[e+f\,x])^n\right.\right.\right.$$
$$\left(A\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2\,m}\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2\,n}+B\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2\,m}\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2\,n}\,\text{Sin}[e+f\,x]\right)$$
$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\left(\frac{\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}\right)^{2\,n}\left(\frac{1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}\right)^{2\,m}$$
$$\left(-\left(\left(A\,\text{AppellF1}\left[\frac{1}{2}+n,\,-2\,m,\,1+2\,(m+n),\,\frac{3}{2}+n,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^2\right)\Big/\right.\right.$$
$$\left(-(3+2\,n)\,\text{AppellF1}\left[\frac{1}{2}+n,\,-2\,m,\,1+2\,(m+n),\,\frac{3}{2}+n,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.$$

$$2\,\Big(2\,m\,\text{AppellF1}\Big[\frac{3}{2}+n,\,1-2\,m,\,1+2\,(m+n),\,\frac{5}{2}+n,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+(1+2\,m+2\,n)$$

$$\text{AppellF1}\Big[\frac{3}{2}+n,\,-2\,m,\,2\,(1+m+n),\,\frac{5}{2}+n,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)\Big)-$$

$$\Big(B\,\text{AppellF1}\Big[\frac{1}{2}+n,\,-2\,m,\,1+2\,(m+n),\,\frac{3}{2}+n,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\,\Big(1+\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)^2\Big)\Big/$$

$$\Big(-(3+2\,n)\,\text{AppellF1}\Big[\frac{1}{2}+n,\,-2\,m,\,1+2\,(m+n),\,\frac{3}{2}+n,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+$$

$$2\,\Big(2\,m\,\text{AppellF1}\Big[\frac{3}{2}+n,\,1-2\,m,\,1+2\,(m+n),\,\frac{5}{2}+n,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+(1+2\,m+2\,n)$$

$$\text{AppellF1}\Big[\frac{3}{2}+n,\,-2\,m,\,2\,(1+m+n),\,\frac{5}{2}+n,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)+$$

$$\Big(8\,B\,\text{AppellF1}\Big[\frac{1}{2}+n,\,-2\,m,\,3+2\,(m+n),\,\frac{3}{2}+n,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\Big)\Big/$$

$$\Big((3+2\,n)\,\text{AppellF1}\Big[\frac{1}{2}+n,\,-2\,m,\,3+2\,(m+n),\,\frac{3}{2}+n,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]-$$

$$2\,\Big(2\,m\,\text{AppellF1}\Big[\frac{3}{2}+n,\,1-2\,m,\,3+2\,(m+n),\,\frac{5}{2}+n,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+(3+2\,m+2\,n)$$

$$\text{AppellF1}\Big[\frac{3}{2}+n,\,-2\,m,\,2\,(2+m+n),\,\frac{5}{2}+n,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)+$$

$$\Big(8\,B\,\text{AppellF1}\Big[\frac{1}{2}+n,\,-2\,m,\,2\,(1+m+n),\,\frac{3}{2}+n,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\,\Big(1+\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)\Big)\Big/$$

$$\Big(-(3+2\,n)\,\text{AppellF1}\Big[\frac{1}{2}+n,\,-2\,m,\,2\,(1+m+n),\,\frac{3}{2}+n,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+$$

$$4\,\Big(m\,\text{AppellF1}\Big[\frac{3}{2}+n,\,1-2\,m,\,2\,(1+m+n),\,\frac{5}{2}+n,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+(1+m+n)$$

$$\text{AppellF1}\Big[\frac{3}{2}+n,\,-2\,m,\,3+2\,(m+n),\,\frac{5}{2}+n,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)\Big)\Big)\Big/$$

$$\Big(f\,(1+2\,n)\,\Big(1+\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)^3\,\Big(-\frac{1}{(1+2\,n)\,\Big(1+\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)^4}\,3\times2^{1+2\,n}\,(3+2\,n)\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2$$

$$\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\,\left(\frac{\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]}{1+\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2}\right)^{2\,n}\left(\frac{1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2}{1+\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2}\right)^{2\,m}$$

$$\Bigg(-\Bigg(\Bigg(A\,\text{AppellF1}\Big[\frac{1}{2}+n,\,-2m,\,1+2(m+n),\,\frac{3}{2}+n,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\Big(1+\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big)^2\Bigg)\Bigg/$$

$$\Bigg(-(3+2n)\,\text{AppellF1}\Big[\frac{1}{2}+n,\,-2m,\,1+2(m+n),\,\frac{3}{2}+n,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]+$$

$$2\Bigg(2m\,\text{AppellF1}\Big[\frac{3}{2}+n,\,1-2m,\,1+2(m+n),\,\frac{5}{2}+n,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]+(1+2m+2n)$$

$$\text{AppellF1}\Big[\frac{3}{2}+n,\,-2m,\,2(1+m+n),\,\frac{5}{2}+n,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\Bigg)\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Bigg)\Bigg)-$$

$$\Bigg(B\,\text{AppellF1}\Big[\frac{1}{2}+n,\,-2m,\,1+2(m+n),\,\frac{3}{2}+n,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\Big(1+\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big)^2\Bigg)\Bigg/$$

$$\Bigg(-(3+2n)\,\text{AppellF1}\Big[\frac{1}{2}+n,\,-2m,\,1+2(m+n),\,\frac{3}{2}+n,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]+2$$

$$\Bigg(2m\,\text{AppellF1}\Big[\frac{3}{2}+n,\,1-2m,\,1+2(m+n),\,\frac{5}{2}+n,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]+(1+2m+2n)$$

$$\text{AppellF1}\Big[\frac{3}{2}+n,\,-2m,\,2(1+m+n),\,\frac{5}{2}+n,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\Bigg)\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Bigg)+$$

$$\Bigg(8B\,\text{AppellF1}\Big[\frac{1}{2}+n,\,-2m,\,3+2(m+n),\,\frac{3}{2}+n,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\Bigg)\Bigg/$$

$$\Bigg((3+2n)\,\text{AppellF1}\Big[\frac{1}{2}+n,\,-2m,\,3+2(m+n),\,\frac{3}{2}+n,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]-2$$

$$\Bigg(2m\,\text{AppellF1}\Big[\frac{3}{2}+n,\,1-2m,\,3+2(m+n),\,\frac{5}{2}+n,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]+(3+2m+2n)$$

$$\text{AppellF1}\Big[\frac{3}{2}+n,\,-2m,\,2(2+m+n),\,\frac{5}{2}+n,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\Bigg)\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Bigg)+$$

$$\Bigg(8B\,\text{AppellF1}\Big[\frac{1}{2}+n,\,-2m,\,2(1+m+n),\,\frac{3}{2}+n,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\Big(1+\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big)\Bigg)\Bigg/$$

$$\Bigg(-(3+2n)\,\text{AppellF1}\Big[\frac{1}{2}+n,\,-2m,\,2(1+m+n),\,\frac{3}{2}+n,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]+4$$

$$\Bigg(m\,\text{AppellF1}\Big[\frac{3}{2}+n,\,1-2m,\,2(1+m+n),\,\frac{5}{2}+n,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]+(1+m+n)$$

$$\text{AppellF1}\Big[\frac{3}{2}+n,\,-2m,\,3+2(m+n),\,\frac{5}{2}+n,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\Bigg)\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Bigg)\Bigg)+$$

$$\frac{1}{(1+2n)\Big(1+\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big)^3}\,4^n\,(3+2n)\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\left(\frac{\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]}{1+\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2}\right)^{2n}\left(\frac{1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2}{1+\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2}\right)^{2m}$$

$$\Bigg(-\Bigg(\Bigg(\text{A AppellF1}\left[\frac{1}{2}+n,\,-2\,m,\,1+2\,(m+n),\,\frac{3}{2}+n,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^2\Bigg)\Big/$$

$$\Bigg(-(3+2\,n)\,\text{AppellF1}\left[\frac{1}{2}+n,\,-2\,m,\,1+2\,(m+n),\,\frac{3}{2}+n,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+$$

$$2\,\Bigg(2\,m\,\text{AppellF1}\left[\frac{3}{2}+n,\,1-2\,m,\,1+2\,(m+n),\,\frac{5}{2}+n,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+(1+2\,m+2\,n)$$

$$\text{AppellF1}\left[\frac{3}{2}+n,\,-2\,m,\,2\,(1+m+n),\,\frac{5}{2}+n,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\Bigg)\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Bigg)\Bigg)-$$

$$\Bigg(\text{B AppellF1}\left[\frac{1}{2}+n,\,-2\,m,\,1+2\,(m+n),\,\frac{3}{2}+n,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^2\Bigg)\Big/$$

$$\Bigg(-(3+2\,n)\,\text{AppellF1}\left[\frac{1}{2}+n,\,-2\,m,\,1+2\,(m+n),\,\frac{3}{2}+n,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+$$

$$2\,\Bigg(2\,m\,\text{AppellF1}\left[\frac{3}{2}+n,\,1-2\,m,\,1+2\,(m+n),\,\frac{5}{2}+n,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+(1+2\,m+2\,n)$$

$$\text{AppellF1}\left[\frac{3}{2}+n,\,-2\,m,\,2\,(1+m+n),\,\frac{5}{2}+n,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\Bigg)\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Bigg)+$$

$$\Bigg(8\,\text{B AppellF1}\left[\frac{1}{2}+n,\,-2\,m,\,3+2\,(m+n),\,\frac{3}{2}+n,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\Bigg)\Big/$$

$$\Bigg((3+2\,n)\,\text{AppellF1}\left[\frac{1}{2}+n,\,-2\,m,\,3+2\,(m+n),\,\frac{3}{2}+n,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]-$$

$$2\,\Bigg(2\,m\,\text{AppellF1}\left[\frac{3}{2}+n,\,1-2\,m,\,3+2\,(m+n),\,\frac{5}{2}+n,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+(3+2\,m+2\,n)$$

$$\text{AppellF1}\left[\frac{3}{2}+n,\,-2\,m,\,2\,(2+m+n),\,\frac{5}{2}+n,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\Bigg)\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Bigg)+$$

$$\Bigg(8\,\text{B AppellF1}\left[\frac{1}{2}+n,\,-2\,m,\,2\,(1+m+n),\,\frac{3}{2}+n,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\Bigg)\Big/$$

$$\Bigg(-(3+2\,n)\,\text{AppellF1}\left[\frac{1}{2}+n,\,-2\,m,\,2\,(1+m+n),\,\frac{3}{2}+n,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+$$

$$4\,\Bigg(m\,\text{AppellF1}\left[\frac{3}{2}+n,\,1-2\,m,\,2\,(1+m+n),\,\frac{5}{2}+n,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+(1+m+n)$$

$$\text{AppellF1}\left[\frac{3}{2}+n,\,-2\,m,\,3+2\,(m+n),\,\frac{5}{2}+n,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\Bigg)\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Bigg)\Bigg)+$$

$$\frac{1}{(1+2\,n)\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^3}\,2^{3+2\,n}\,n\,(3+2\,n)\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\left(\frac{\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}\right)^{-1+2\,n}$$

$$\left(\frac{1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}\right)^{2m}\left(-\frac{\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{2\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^2}+\frac{\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{4\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)}\right)$$

$$\left(-\left(\left(A\,\text{AppellF1}\left[\frac{1}{2}+n,-2m,1+2(m+n),\frac{3}{2}+n,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^2\right)\Big/\right.\right.$$
$$\left(-(3+2n)\,\text{AppellF1}\left[\frac{1}{2}+n,-2m,1+2(m+n),\frac{3}{2}+n,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$
$$2\left(2m\,\text{AppellF1}\left[\frac{3}{2}+n,1-2m,1+2(m+n),\frac{5}{2}+n,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+(1+2m+2n)\right.$$
$$\left.\left.\text{AppellF1}\left[\frac{3}{2}+n,-2m,2(1+m+n),\frac{5}{2}+n,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\right)-$$
$$\left(B\,\text{AppellF1}\left[\frac{1}{2}+n,-2m,1+2(m+n),\frac{3}{2}+n,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^2\right)\Big/$$
$$\left(-(3+2n)\,\text{AppellF1}\left[\frac{1}{2}+n,-2m,1+2(m+n),\frac{3}{2}+n,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$
$$2\left(2m\,\text{AppellF1}\left[\frac{3}{2}+n,1-2m,1+2(m+n),\frac{5}{2}+n,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+(1+2m+2n)\right.$$
$$\left.\left.\text{AppellF1}\left[\frac{3}{2}+n,-2m,2(1+m+n),\frac{5}{2}+n,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)+$$
$$\left(8B\,\text{AppellF1}\left[\frac{1}{2}+n,-2m,3+2(m+n),\frac{3}{2}+n,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\Big/$$
$$\left((3+2n)\,\text{AppellF1}\left[\frac{1}{2}+n,-2m,3+2(m+n),\frac{3}{2}+n,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]-\right.$$
$$2\left(2m\,\text{AppellF1}\left[\frac{3}{2}+n,1-2m,3+2(m+n),\frac{5}{2}+n,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+(3+2m+2n)\right.$$
$$\left.\left.\text{AppellF1}\left[\frac{3}{2}+n,-2m,2(2+m+n),\frac{5}{2}+n,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)+$$
$$\left(8B\,\text{AppellF1}\left[\frac{1}{2}+n,-2m,2(1+m+n),\frac{3}{2}+n,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\right)\Big/$$
$$\left(-(3+2n)\,\text{AppellF1}\left[\frac{1}{2}+n,-2m,2(1+m+n),\frac{3}{2}+n,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$
$$4\left(m\,\text{AppellF1}\left[\frac{3}{2}+n,1-2m,2(1+m+n),\frac{5}{2}+n,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+(1+m+n)\right.$$
$$\left.\left.\text{AppellF1}\left[\frac{3}{2}+n,-2m,3+2(m+n),\frac{5}{2}+n,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)+$$

$$\frac{1}{(1+2n)\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)^3} 2^{3+2n} m (3+2n) \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right] \left(\frac{\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2}\right)^{2n}$$

$$\left(\frac{1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2}\right)^{-1+2m}$$

$$\left(-\frac{\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2 \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)}{2\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)^2} - \frac{\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2 \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]}{2\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)}\right)$$

$$\left(-\left(\left(A\,\text{AppellF1}\left[\frac{1}{2}+n, -2m, 1+2(m+n), \frac{3}{2}+n, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)^2\right)\Big/\right.\right.$$

$$\left(-(3+2n)\,\text{AppellF1}\left[\frac{1}{2}+n, -2m, 1+2(m+n), \frac{3}{2}+n, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+\right.$$

$$2\left(2m\,\text{AppellF1}\left[\frac{3}{2}+n, 1-2m, 1+2(m+n), \frac{5}{2}+n, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+(1+2m+2n)\right.$$

$$\left.\left.\left.\text{AppellF1}\left[\frac{3}{2}+n, -2m, 2(1+m+n), \frac{5}{2}+n, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)\right)-$$

$$\left(B\,\text{AppellF1}\left[\frac{1}{2}+n, -2m, 1+2(m+n), \frac{3}{2}+n, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)^2\right)\Big/$$

$$\left(-(3+2n)\,\text{AppellF1}\left[\frac{1}{2}+n, -2m, 1+2(m+n), \frac{3}{2}+n, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+\right.$$

$$2\left(2m\,\text{AppellF1}\left[\frac{3}{2}+n, 1-2m, 1+2(m+n), \frac{5}{2}+n, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+(1+2m+2n)\right.$$

$$\left.\left.\text{AppellF1}\left[\frac{3}{2}+n, -2m, 2(1+m+n), \frac{5}{2}+n, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)+$$

$$\left(8B\,\text{AppellF1}\left[\frac{1}{2}+n, -2m, 3+2(m+n), \frac{3}{2}+n, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right)\Big/$$

$$\left((3+2n)\,\text{AppellF1}\left[\frac{1}{2}+n, -2m, 3+2(m+n), \frac{3}{2}+n, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]-\right.$$

$$2\left(2m\,\text{AppellF1}\left[\frac{3}{2}+n, 1-2m, 3+2(m+n), \frac{5}{2}+n, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+(3+2m+2n)\right.$$

$$\left.\left.\text{AppellF1}\left[\frac{3}{2}+n, -2m, 2(2+m+n), \frac{5}{2}+n, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)+$$

$$\left(8B\,\text{AppellF1}\left[\frac{1}{2}+n, -2m, 2(1+m+n), \frac{3}{2}+n, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)\right)\Big/$$

$$\left(-(3+2n)\,\text{AppellF1}\left[\frac{1}{2}+n,-2m,2(1+m+n),\frac{3}{2}+n,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$4\left(m\,\text{AppellF1}\left[\frac{3}{2}+n,1-2m,2(1+m+n),\frac{5}{2}+n,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+(1+m+n)\right.$$

$$\left.\left.\text{AppellF1}\left[\frac{3}{2}+n,-2m,3+2(m+n),\frac{5}{2}+n,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)+$$

$$\frac{1}{(1+2n)\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^3}4^{1+n}(3+2n)\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\left(\frac{\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}\right)^{2n}$$

$$\left(\frac{1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}\right)^{2m}$$

$$\left(-\left(\left(A\,\text{AppellF1}\left[\frac{1}{2}+n,-2m,1+2(m+n),\frac{3}{2}+n,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right.\right.\right.$$

$$\left.\left.\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\right)\right/$$

$$\left(-(3+2n)\,\text{AppellF1}\left[\frac{1}{2}+n,-2m,1+2(m+n),\frac{3}{2}+n,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$2\left(2m\,\text{AppellF1}\left[\frac{3}{2}+n,1-2m,1+2(m+n),\frac{5}{2}+n,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+(1+2m+2n)\right.$$

$$\left.\left.\left.\text{AppellF1}\left[\frac{3}{2}+n,-2m,2(1+m+n),\frac{5}{2}+n,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\right)-$$

$$\left(B\,\text{AppellF1}\left[\frac{1}{2}+n,-2m,1+2(m+n),\frac{3}{2}+n,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right.$$

$$\left.\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\right)\Big/$$

$$\left(-(3+2n)\,\text{AppellF1}\left[\frac{1}{2}+n,-2m,1+2(m+n),\frac{3}{2}+n,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$2\left(2m\,\text{AppellF1}\left[\frac{3}{2}+n,1-2m,1+2(m+n),\frac{5}{2}+n,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+(1+2m+2n)\right.$$

$$\left.\left.\text{AppellF1}\left[\frac{3}{2}+n,-2m,2(1+m+n),\frac{5}{2}+n,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)-$$

$$\left(A\left(-\frac{1}{\frac{3}{2}+n}m\left(\frac{1}{2}+n\right)\text{AppellF1}\left[\frac{3}{2}+n,1-2m,1+2(m+n),\frac{5}{2}+n,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right.\right.$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{1}{2\left(\frac{3}{2}+n\right)}\left(\frac{1}{2}+n\right)(1+2(m+n))$$

$$\text{AppellF1}\left[\frac{3}{2}+n,-2m,2+2(m+n),\frac{5}{2}+n,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]$$

$$\left.\left.\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^2\right)\Big/$$

$$\left(-(3+2n)\,\text{AppellF1}\left[\frac{1}{2}+n,-2m,1+2(m+n),\frac{3}{2}+n,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$2\left(2m\,\text{AppellF1}\left[\frac{3}{2}+n,1-2m,1+2(m+n),\frac{5}{2}+n,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+(1+2m+2n)\right.$$

$$\left.\left.\text{AppellF1}\left[\frac{3}{2}+n,-2m,2(1+m+n),\frac{5}{2}+n,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)-$$

$$\left(B\left(-\frac{1}{\frac{3}{2}+n}m\left(\frac{1}{2}+n\right)\text{AppellF1}\left[\frac{3}{2}+n,1-2m,1+2(m+n),\frac{5}{2}+n,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right.\right.$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{1}{2\left(\frac{3}{2}+n\right)}\left(\frac{1}{2}+n\right)(1+2(m+n))$$

$$\text{AppellF1}\left[\frac{3}{2}+n,-2m,2+2(m+n),\frac{5}{2}+n,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]$$

$$\left.\left.\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^2\right)\Big/$$

$$\left(-(3+2n)\,\text{AppellF1}\left[\frac{1}{2}+n,-2m,1+2(m+n),\frac{3}{2}+n,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$2\left(2m\,\text{AppellF1}\left[\frac{3}{2}+n,1-2m,1+2(m+n),\frac{5}{2}+n,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+(1+2m+2n)\right.$$

$$\left.\left.\text{AppellF1}\left[\frac{3}{2}+n,-2m,2(1+m+n),\frac{5}{2}+n,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)+$$

$$\left(8B\left(-\frac{1}{\frac{3}{2}+n}m\left(\frac{1}{2}+n\right)\text{AppellF1}\left[\frac{3}{2}+n,1-2m,3+2(m+n),\frac{5}{2}+n,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right.\right.$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{1}{2\left(\frac{3}{2}+n\right)}\left(\frac{1}{2}+n\right)(3+2(m+n))\,\text{AppellF1}\left[\frac{3}{2}+n,-2m,4+2(m+n),\right.$$

$$\left.\left.\left.\frac{5}{2}+n,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)\right)\Big/$$

$$\left((3+2\,n)\,\text{AppellF1}\left[\frac{1}{2}+n,\,-2\,m,\,3+2\,(m+n),\,\frac{3}{2}+n,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]-\right.$$

$$2\left(2\,m\,\text{AppellF1}\left[\frac{3}{2}+n,\,1-2\,m,\,3+2\,(m+n),\,\frac{5}{2}+n,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+(3+2\,m+2\,n)\right.$$

$$\left.\left.\text{AppellF1}\left[\frac{3}{2}+n,\,-2\,m,\,2\,(2+m+n),\,\frac{5}{2}+n,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)+$$

$$\left(4\,B\,\text{AppellF1}\left[\frac{1}{2}+n,\,-2\,m,\,2\,(1+m+n),\,\frac{3}{2}+n,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\right.\right.$$

$$\left.\left.\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\right)\Big/\left(-(3+2\,n)\,\text{AppellF1}\left[\frac{1}{2}+n,\,-2\,m,\,2\,(1+m+n),\,\frac{3}{2}+n,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.$$

$$4\left(m\,\text{AppellF1}\left[\frac{3}{2}+n,\,1-2\,m,\,2\,(1+m+n),\,\frac{5}{2}+n,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+(1+m+n)\right.$$

$$\left.\left.\text{AppellF1}\left[\frac{3}{2}+n,\,-2\,m,\,3+2\,(m+n),\,\frac{5}{2}+n,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)+$$

$$\left(8\,B\left(-\frac{1}{\frac{3}{2}+n}m\left(\frac{1}{2}+n\right)\text{AppellF1}\left[\frac{3}{2}+n,\,1-2\,m,\,2\,(1+m+n),\,\frac{5}{2}+n,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right.\right.$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-\frac{1}{\frac{3}{2}+n}\left(\frac{1}{2}+n\right)(1+m+n)$$

$$\text{AppellF1}\left[\frac{3}{2}+n,\,-2\,m,\,1+2\,(1+m+n),\,\frac{5}{2}+n,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]$$

$$\left.\left.\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\right)\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\right)\Big/$$

$$\left(-(3+2\,n)\,\text{AppellF1}\left[\frac{1}{2}+n,\,-2\,m,\,2\,(1+m+n),\,\frac{3}{2}+n,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.$$

$$4\left(m\,\text{AppellF1}\left[\frac{3}{2}+n,\,1-2\,m,\,2\,(1+m+n),\,\frac{5}{2}+n,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+(1+m+n)\right.$$

$$\left.\left.\text{AppellF1}\left[\frac{3}{2}+n,\,-2\,m,\,3+2\,(m+n),\,\frac{5}{2}+n,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)-$$

$$\left(8\,B\,\text{AppellF1}\left[\frac{1}{2}+n,\,-2\,m,\,2\,(1+m+n),\,\frac{3}{2}+n,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\right.$$

$$\left(2\left(m\,\text{AppellF1}\left[\frac{3}{2}+n,\,1-2\,m,\,2\,(1+m+n),\,\frac{5}{2}+n,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+(1+m+n)\right.\right.$$

$$\text{AppellF1}\left[\frac{3}{2}+n,\,-2m,\,3+2(m+n),\,\frac{5}{2}+n,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\Bigg)\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-(3+2n)\Bigg(-\frac{1}{\frac{3}{2}+n}m\left(\frac{1}{2}+n\right)\text{AppellF1}\left[\frac{3}{2}+n,\,1-2m,\,2(1+m+n),\,\frac{5}{2}+n,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\right.$$

$$\left.-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{1}{\frac{3}{2}+n}\left(\frac{1}{2}+n\right)(1+m+n)\,\text{AppellF1}\left[\frac{3}{2}+n,\,-2m,\right.$$

$$\left.1+2(1+m+n),\,\frac{5}{2}+n,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\Bigg)+$$

$$4\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg(m\Bigg(-\frac{1}{\frac{5}{2}+n}\left(\frac{3}{2}+n\right)(1+m+n)\,\text{AppellF1}\left[\frac{5}{2}+n,\,1-2m,\,1+2(1+m+n),\,\frac{7}{2}+n,\right.$$

$$\left.\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]+$$

$$\frac{1}{2\left(\frac{5}{2}+n\right)}(1-2m)\left(\frac{3}{2}+n\right)\text{AppellF1}\left[\frac{5}{2}+n,\,2-2m,\,2(1+m+n),\,\frac{7}{2}+n,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\right.$$

$$\left.-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\Bigg)+(1+m+n)$$

$$\Bigg(-\frac{1}{\frac{5}{2}+n}m\left(\frac{3}{2}+n\right)\text{AppellF1}\left[\frac{5}{2}+n,\,1-2m,\,3+2(m+n),\,\frac{7}{2}+n,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{1}{2\left(\frac{5}{2}+n\right)}\left(\frac{3}{2}+n\right)(3+2(m+n))\,\text{AppellF1}\left[\frac{5}{2}+n,\,-2m,\,4+2(m+n),\right.$$

$$\left.\frac{7}{2}+n,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\Bigg)\Bigg)\Bigg)\Bigg)\Bigg)\Bigg/$$

$$\Bigg(-(3+2n)\,\text{AppellF1}\left[\frac{1}{2}+n,\,-2m,\,2(1+m+n),\,\frac{3}{2}+n,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$4\Bigg(m\,\text{AppellF1}\left[\frac{3}{2}+n,\,1-2m,\,2(1+m+n),\,\frac{5}{2}+n,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+(1+m+n)$$

$$\text{AppellF1}\left[\frac{3}{2}+n,\,-2m,\,3+2(m+n),\,\frac{5}{2}+n,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\Bigg)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)^2+$$

$$\Bigg(A\,\text{AppellF1}\left[\frac{1}{2}+n,\,-2m,\,1+2(m+n),\,\frac{3}{2}+n,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^2$$

$$\Bigg(\Bigg(2\,m\,\text{AppellF1}\Big[\frac{3}{2}+n,\,1-2\,m,\,1+2\,(m+n),\,\frac{5}{2}+n,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+$$

$$(1+2\,m+2\,n)\,\text{AppellF1}\Big[\frac{3}{2}+n,\,-2\,m,\,2\,(1+m+n),\,\frac{5}{2}+n,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\Bigg)$$

$$\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]-(3+2\,n)\,\Bigg(-\frac{1}{\frac{3}{2}+n}m\,\Big(\frac{1}{2}+n\Big)\,\text{AppellF1}\Big[\frac{3}{2}+n,\,1-2\,m,\,1+2\,(m+n),$$

$$\frac{5}{2}+n,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]-\frac{1}{2\,\big(\frac{3}{2}+n\big)}$$

$$\Big(\frac{1}{2}+n\Big)\,(1+2\,(m+n))\,\text{AppellF1}\Big[\frac{3}{2}+n,\,-2\,m,\,2+2\,(m+n),\,\frac{5}{2}+n,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]$$

$$\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\Bigg)+2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\,\Bigg(2\,m\,\Bigg(-\frac{1}{2\,\big(\frac{5}{2}+n\big)}$$

$$\Big(\frac{3}{2}+n\Big)\,(1+2\,(m+n))\,\text{AppellF1}\Big[\frac{5}{2}+n,\,1-2\,m,\,2+2\,(m+n),\,\frac{7}{2}+n,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]$$

$$\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]+\frac{1}{2\,\big(\frac{5}{2}+n\big)}(1-2\,m)\,\Big(\frac{3}{2}+n\Big)\,\text{AppellF1}\Big[\frac{5}{2}+n,\,2-2\,m,\,1+2\,(m+n),\,\frac{7}{2}+$$

$$n,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\Bigg)+(1+2\,m+2\,n)$$

$$\Bigg(-\frac{1}{\frac{5}{2}+n}m\,\Big(\frac{3}{2}+n\Big)\,\text{AppellF1}\Big[\frac{5}{2}+n,\,1-2\,m,\,2\,(1+m+n),\,\frac{7}{2}+n,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]$$

$$\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]-\frac{1}{\frac{5}{2}+n}\Big(\frac{3}{2}+n\Big)\,(1+m+n)\,\text{AppellF1}\Big[\frac{5}{2}+n,\,-2\,m,\,1+2\,(1+m+n),$$

$$\frac{7}{2}+n,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\Bigg)\Bigg)\Bigg)\Bigg)\Bigg)\Big/$$

$$\Bigg(-(3+2\,n)\,\text{AppellF1}\Big[\frac{1}{2}+n,\,-2\,m,\,1+2\,(m+n),\,\frac{3}{2}+n,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+$$

$$2\,\Bigg(2\,m\,\text{AppellF1}\Big[\frac{3}{2}+n,\,1-2\,m,\,1+2\,(m+n),\,\frac{5}{2}+n,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+(1+2\,m+2\,n)$$

$$\text{AppellF1}\Big[\frac{3}{2}+n,\,-2\,m,\,2\,(1+m+n),\,\frac{5}{2}+n,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\Bigg)\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Bigg)^2+$$

$$\Big(B\,\text{AppellF1}\Big[\frac{1}{2}+n,-2m,1+2(m+n),\frac{3}{2}+n,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-fx\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-fx\Big)\Big]^2\Big]\Big(1+\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-fx\Big)\Big]^2\Big)^2$$

$$\Big(\Big(2m\,\text{AppellF1}\Big[\frac{3}{2}+n,1-2m,1+2(m+n),\frac{5}{2}+n,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-fx\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-fx\Big)\Big]^2\Big]+$$

$$(1+2m+2n)\,\text{AppellF1}\Big[\frac{3}{2}+n,-2m,2(1+m+n),\frac{5}{2}+n,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-fx\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-fx\Big)\Big]^2\Big]\Big)$$

$$\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-fx\Big)\Big]^2\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-fx\Big)\Big]-(3+2n)\Big(-\frac{1}{\frac{3}{2}+n}m\Big(\frac{1}{2}+n\Big)\text{AppellF1}\Big[\frac{3}{2}+n,1-2m,1+2(m+n),$$

$$\frac{5}{2}+n,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-fx\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-fx\Big)\Big]^2\Big]\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-fx\Big)\Big]^2\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-fx\Big)\Big]-\frac{1}{2\left(\frac{3}{2}+n\right)}$$

$$\Big(\frac{1}{2}+n\Big)(1+2(m+n))\,\text{AppellF1}\Big[\frac{3}{2}+n,-2m,2+2(m+n),\frac{5}{2}+n,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-fx\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-fx\Big)\Big]^2\Big]$$

$$\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-fx\Big)\Big]^2\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-fx\Big)\Big]\Big)+2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-fx\Big)\Big]^2\Big(2m\Big(-\frac{1}{2\left(\frac{5}{2}+n\right)}$$

$$\Big(\frac{3}{2}+n\Big)(1+2(m+n))\,\text{AppellF1}\Big[\frac{5}{2}+n,1-2m,2+2(m+n),\frac{7}{2}+n,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-fx\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-fx\Big)\Big]^2\Big]$$

$$\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-fx\Big)\Big]^2\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-fx\Big)\Big]+\frac{1}{2\left(\frac{5}{2}+n\right)}(1-2m)\Big(\frac{3}{2}+n\Big)\text{AppellF1}\Big[\frac{5}{2}+n,2-2m,1+2(m+n),\frac{7}{2}+$$

$$n,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-fx\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-fx\Big)\Big]^2\Big]\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-fx\Big)\Big]^2\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-fx\Big)\Big]\Big)+(1+2m+2n)$$

$$\Big(-\frac{1}{\frac{5}{2}+n}m\Big(\frac{3}{2}+n\Big)\text{AppellF1}\Big[\frac{5}{2}+n,1-2m,2(1+m+n),\frac{7}{2}+n,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-fx\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-fx\Big)\Big]^2\Big]$$

$$\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-fx\Big)\Big]^2\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-fx\Big)\Big]-\frac{1}{\frac{5}{2}+n}\Big(\frac{3}{2}+n\Big)(1+m+n)\,\text{AppellF1}\Big[\frac{5}{2}+n,-2m,1+2(1+m+n),$$

$$\frac{7}{2}+n,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-fx\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-fx\Big)\Big]^2\Big]\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-fx\Big)\Big]^2\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-fx\Big)\Big]\Big)\Big)\Big)\Big)\Big)\Big/$$

$$\Big(-(3+2n)\,\text{AppellF1}\Big[\frac{1}{2}+n,-2m,1+2(m+n),\frac{3}{2}+n,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-fx\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-fx\Big)\Big]^2\Big]+$$

$$2\Big(2m\,\text{AppellF1}\Big[\frac{3}{2}+n,1-2m,1+2(m+n),\frac{5}{2}+n,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-fx\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-fx\Big)\Big]^2\Big]+(1+2m+2n)$$

$$\text{AppellF1}\left[\frac{3}{2}+n,-2m,2(1+m+n),\frac{5}{2}+n,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\Bigg)^2-$$

$$\Bigg(8\,B\,\text{AppellF1}\left[\frac{1}{2}+n,-2m,3+2(m+n),\frac{3}{2}+n,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]$$

$$\Bigg(-\Bigg(2\,m\,\text{AppellF1}\left[\frac{3}{2}+n,1-2m,3+2(m+n),\frac{5}{2}+n,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+$$

$$(3+2m+2n)\,\text{AppellF1}\left[\frac{3}{2}+n,-2m,2(2+m+n),\frac{5}{2}+n,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\Bigg)$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]+(3+2n)\Bigg(-\frac{1}{\frac{3}{2}+n}m\left(\frac{1}{2}+n\right)\text{AppellF1}\left[\frac{3}{2}+n,1-2m,3+2(m+n),\right.$$

$$\left.\frac{5}{2}+n,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]-\frac{1}{2\left(\frac{3}{2}+n\right)}$$

$$\left(\frac{1}{2}+n\right)(3+2(m+n))\,\text{AppellF1}\left[\frac{3}{2}+n,-2m,4+2(m+n),\frac{5}{2}+n,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]\Bigg)-2\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\Bigg(2m\Bigg(-\frac{1}{2\left(\frac{5}{2}+n\right)}$$

$$\left(\frac{3}{2}+n\right)(3+2(m+n))\,\text{AppellF1}\left[\frac{5}{2}+n,1-2m,4+2(m+n),\frac{7}{2}+n,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]+\frac{1}{2\left(\frac{5}{2}+n\right)}(1-2m)\left(\frac{3}{2}+n\right)\text{AppellF1}\left[\frac{5}{2}+n,2-2m,3+2(m+n),\frac{7}{2}+\right.$$

$$\left.n,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]\Bigg)+(3+2m+2n)$$

$$\Bigg(-\frac{1}{\frac{5}{2}+n}m\left(\frac{3}{2}+n\right)\text{AppellF1}\left[\frac{5}{2}+n,1-2m,2(2+m+n),\frac{7}{2}+n,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]-\frac{1}{\frac{5}{2}+n}\left(\frac{3}{2}+n\right)(2+m+n)\,\text{AppellF1}\left[\frac{5}{2}+n,-2m,1+2(2+m+n),\right.$$

$$\left.\frac{7}{2}+n,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]\Bigg)\Bigg)\Bigg)\Bigg)\Bigg)\Bigg/$$

$$\Bigg((3+2n)\,\text{AppellF1}\left[\frac{1}{2}+n,-2m,3+2(m+n),\frac{3}{2}+n,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]-$$

$$2\left(2\,m\,\text{AppellF1}\left[\frac{3}{2}+n,\,1-2m,\,3+2(m+n),\,\frac{5}{2}+n,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+(3+2m+2n)\,\text{AppellF1}\left[\frac{3}{2}+n,\,-2m,\,2(2+m+n),\,\frac{5}{2}+n,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\Bigg)\Bigg)\Bigg)$$

- **Problem 196: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int (a+a\,\text{Sin}[e+f\,x])^m\,(A+B\,\text{Sin}[e+f\,x])\,(c-c\,\text{Sin}[e+f\,x])^3\,dx$$

Optimal (type 5, 145 leaves, 5 steps):

$$\frac{1}{7\,f\,(4+m)}2^{\frac{1}{2}+m}\,a^4\,c^3\,(B\,(3-m)-A\,(4+m))\,\text{Cos}[e+f\,x]^7\,\text{Hypergeometric2F1}\left[\frac{7}{2},\,\frac{1}{2}-m,\,\frac{9}{2},\,\frac{1}{2}\,(1-\text{Sin}[e+f\,x])\right](1+\text{Sin}[e+f\,x])^{\frac{1}{2}-m}\,(a+a\,\text{Sin}[e+f\,x])^{-4+m}-\frac{a^3\,B\,c^3\,\text{Cos}[e+f\,x]^7\,(a+a\,\text{Sin}[e+f\,x])^{-3+m}}{f\,(4+m)}$$

Result (type 6, 31 879 leaves): Display of huge result suppressed!

- **Problem 197: Attempted integration timed out after 120 seconds.**

$$\int (a+a\,\text{Sin}[e+f\,x])^m\,(A+B\,\text{Sin}[e+f\,x])\,(c-c\,\text{Sin}[e+f\,x])^2\,dx$$

Optimal (type 5, 145 leaves, 5 steps):

$$\frac{1}{5\,f\,(3+m)}2^{\frac{1}{2}+m}\,a^3\,c^2\,(B\,(2-m)-A\,(3+m))\,\text{Cos}[e+f\,x]^5\,\text{Hypergeometric2F1}\left[\frac{5}{2},\,\frac{1}{2}-m,\,\frac{7}{2},\,\frac{1}{2}\,(1-\text{Sin}[e+f\,x])\right](1+\text{Sin}[e+f\,x])^{\frac{1}{2}-m}\,(a+a\,\text{Sin}[e+f\,x])^{-3+m}-\frac{a^2\,B\,c^2\,\text{Cos}[e+f\,x]^5\,(a+a\,\text{Sin}[e+f\,x])^{-2+m}}{f\,(3+m)}$$

Result (type 1, 1 leaves):

???

- **Problem 198: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int (a+a\,\text{Sin}[e+f\,x])^m\,(A+B\,\text{Sin}[e+f\,x])\,(c-c\,\text{Sin}[e+f\,x])\,dx$$

Optimal (type 5, 139 leaves, 5 steps):

$$\frac{1}{3\,f\,(2+m)}2^{\frac{1}{2}+m}\,a^2\,c\,(B\,(1-m)-A\,(2+m))\,\text{Cos}[e+f\,x]^3\,\text{Hypergeometric2F1}\left[\frac{3}{2},\,\frac{1}{2}-m,\,\frac{5}{2},\,\frac{1}{2}\,(1-\text{Sin}[e+f\,x])\right](1+\text{Sin}[e+f\,x])^{\frac{1}{2}-m}\,(a+a\,\text{Sin}[e+f\,x])^{-2+m}-\frac{a\,B\,c\,\text{Cos}[e+f\,x]^3\,(a+a\,\text{Sin}[e+f\,x])^{-1+m}}{f\,(2+m)}$$

Result (type 5, 460 leaves):

$$\frac{1}{f\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^2}$$

$$i\, 4^{-1-m}\, c\, e^{i f m x}\left(1+i e^{-i(e+f x)}\right)^{-2 m}\left(e^{-\frac{1}{4} i(2 e+\pi+2 f x)}\left(i+e^{i(e+f x)}\right)\right)^{2 m}\left(-\frac{i B e^{-i(2 e+f(2+m) x)}\, \text{Hypergeometric2F1}\left[-2-m,-2 m,-1-m,-i e^{-i(e+f x)}\right]}{2+m}+\right.$$
$$\frac{2(-i A+B)\, e^{-i(e+f(1+m) x)}\, \text{Hypergeometric2F1}\left[-1-m,-2 m,-m,-i e^{-i(e+f x)}\right]}{1+m}+$$
$$\frac{2 i A e^{i(e-f(-1+m) x)}\, \text{Hypergeometric2F1}\left[1-m,-2 m,2-m,-i e^{-i(e+f x)}\right]}{-1+m}+$$
$$\frac{2 B e^{i(e-f(-1+m) x)}\, \text{Hypergeometric2F1}\left[1-m,-2 m,2-m,-i e^{-i(e+f x)}\right]}{-1+m}+$$
$$\left.\frac{i B e^{2 i e-i f(-2+m) x}\, \text{Hypergeometric2F1}\left[2-m,-2 m,3-m,-i e^{-i(e+f x)}\right]}{-2+m}+\frac{4 A e^{-i f m x}\, \text{Hypergeometric2F1}\left[-2 m,-m,1-m,-i e^{-i(e+f x)}\right]}{m}\right)$$
$$(-1+\text{Sin}[e+f x])\,(a(1+\text{Sin}[e+f x]))^m\, \text{Sin}\left[\frac{1}{4}(2 e+\pi+2 f x)\right]^{-2 m}$$

- **Problem 199: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int (a+a\,\text{Sin}[e+f x])^m\,(A+B\,\text{Sin}[e+f x])\, dx$$

Optimal (type 5, 117 leaves, 3 steps):

$$-\frac{B\,\text{Cos}[e+f x]\,(a+a\,\text{Sin}[e+f x])^m}{f(1+m)}-\frac{1}{f(1+m)}$$
$$2^{\frac{1}{2}+m}(A+A m+B m)\,\text{Cos}[e+f x]\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{1}{2}-m,\frac{3}{2},\frac{1}{2}(1-\text{Sin}[e+f x])\right](1+\text{Sin}[e+f x])^{-\frac{1}{2}-m}(a+a\,\text{Sin}[e+f x])^m$$

Result (type 5, 295 leaves):

$$-\frac{1}{f}(a(1+\text{Sin}[e+f x]))^m\left(\frac{1}{-1+m^2}2^{-1-2 m} B e^{-i(e+f x)}\left(1+i e^{-i(e+f x)}\right)^{-2 m}\left(e^{-\frac{1}{4} i(2 e+\pi+2 f x)}\left(i+e^{i(e+f x)}\right)\right)^{2 m}\right.$$
$$\left(e^{2 i(e+f x)}(-1+m)\,\text{Hypergeometric2F1}\left[-1-m,-2 m,-m,-i e^{-i(e+f x)}\right]-(1+m)\,\text{Hypergeometric2F1}\left[1-m,-2 m,2-m,-i e^{-i(e+f x)}\right]\right)+$$
$$\left(2\sqrt{2}\, A\,\text{Cos}\left[\frac{1}{4}(2 e-\pi+2 f x)\right]^{1+2 m}\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{1}{2}+m,\frac{3}{2}+m,\text{Sin}\left[\frac{1}{4}(2 e+\pi+2 f x)\right]^2\right]\text{Sin}\left[\frac{1}{4}(2 e-\pi+2 f x)\right]\right)\Big/$$
$$\left.\left((1+2 m)\sqrt{1-\text{Sin}[e+f x]}\right)\right)\text{Sin}\left[\frac{1}{4}(2 e+\pi+2 f x)\right]^{-2 m}$$

- **Problem 200: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int \frac{(a+a\,\text{Sin}[e+f x])^m\,(A+B\,\text{Sin}[e+f x])}{c-c\,\text{Sin}[e+f x]}\, dx$$

Optimal (type 5, 123 leaves, 5 steps):

$$\frac{1}{c\,f\,m}2^{\frac{1}{2}+m}(B+A\,m+B\,m)\,\text{Hypergeometric2F1}\left[-\frac{1}{2},\frac{1}{2}-m,\frac{1}{2},\frac{1}{2}(1-\text{Sin}[e+f\,x])\right]\text{Sec}[e+f\,x]\,(1+\text{Sin}[e+f\,x])^{\frac{1}{2}-m}(a+a\,\text{Sin}[e+f\,x])^m-\frac{B\,\text{Sec}[e+f\,x]\,(a+a\,\text{Sin}[e+f\,x])^{1+m}}{a\,c\,f\,m}$$

Result (type 6, 8388 leaves):

$$-\Bigg(\Bigg(\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{-2m}\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\left(\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]-\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)^2(a+a\,\text{Sin}[e+f\,x])^m$$

$$\left(\frac{A\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2m}}{\left(\text{Cos}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f\,x\right)\right]-\text{Sin}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f\,x\right)\right]\right)^2}+\frac{B\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2m}\text{Sin}[e+f\,x]}{\left(\text{Cos}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f\,x\right)\right]-\text{Sin}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f\,x\right)\right]\right)^2}\right)$$

$$\left(\frac{1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}\right)^{2m}\Bigg(-\left((A+B)\,\text{AppellF1}\left[-\frac{1}{2},-2m,2m,\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\Big/$$

$$\Bigg(\text{AppellF1}\left[-\frac{1}{2},-2m,2m,\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]-$$

$$4m\Bigg(\text{AppellF1}\left[\frac{1}{2},1-2m,2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+$$

$$\text{AppellF1}\left[\frac{1}{2},-2m,1+2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\Bigg)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Bigg)+$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Bigg(\left(3(A+B)\,\text{AppellF1}\left[\frac{1}{2},-2m,2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\Big/$$

$$\Bigg(3\,\text{AppellF1}\left[\frac{1}{2},-2m,2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]-$$

$$4m\Bigg(\text{AppellF1}\left[\frac{3}{2},1-2m,2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+$$

$$\text{AppellF1}\left[\frac{3}{2},-2m,1+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\Bigg)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Bigg)-$$

$$\left(8B\,\text{AppellF1}\left[\frac{1}{2},-2m,1+2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\Big/$$

$$\Bigg(\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\Bigg(\text{AppellF1}\left[\frac{1}{2},-2m,1+2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]-\frac{2}{3}$$

$$\Bigg(2m\,\text{AppellF1}\left[\frac{3}{2},1-2m,1+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+$$

$$(1+2\,m)\,\text{AppellF1}\Big[\frac{3}{2},-2\,m,2+2\,m,\frac{5}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)\Big)\Big)\Big)\Big)\Big/$$

$$\Bigg(2\,f\,(c-c\,\text{Sin}[e+f\,x])\,\Bigg(-\frac{1}{8}\,\text{Csc}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\,\left(\frac{1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2}{1+\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2}\right)^{2\,m}\Big(-\Big(\Big((A+B)\,\text{AppellF1}\Big[-\frac{1}{2},-2\,m,2\,m,\frac{1}{2},$$

$$\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\Big)\Big/\Big(\text{AppellF1}\Big[-\frac{1}{2},-2\,m,2\,m,\frac{1}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,$$

$$-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]-4\,m\,\Big(\text{AppellF1}\Big[\frac{1}{2},1-2\,m,2\,m,\frac{3}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+$$

$$\text{AppellF1}\Big[\frac{1}{2},-2\,m,1+2\,m,\frac{3}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)\Big)+$$

$$\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\,\Big(\Big(3\,(A+B)\,\text{AppellF1}\Big[\frac{1}{2},-2\,m,2\,m,\frac{3}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\Big)\Big/$$

$$\Big(3\,\text{AppellF1}\Big[\frac{1}{2},-2\,m,2\,m,\frac{3}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]-$$

$$4\,m\,\Big(\text{AppellF1}\Big[\frac{3}{2},1-2\,m,2\,m,\frac{5}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+$$

$$\text{AppellF1}\Big[\frac{3}{2},-2\,m,1+2\,m,\frac{5}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)-$$

$$\Big(8\,B\,\text{AppellF1}\Big[\frac{1}{2},-2\,m,1+2\,m,\frac{3}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\Big)\Big/$$

$$\Big(\Big(1+\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)\,\Big(\text{AppellF1}\Big[\frac{1}{2},-2\,m,1+2\,m,\frac{3}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]-$$

$$\frac{2}{3}\,\Big(2\,m\,\text{AppellF1}\Big[\frac{3}{2},1-2\,m,1+2\,m,\frac{5}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+$$

$$(1+2\,m)\,\text{AppellF1}\Big[\frac{3}{2},-2\,m,2+2\,m,\frac{5}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)\Big)\Big)\Big)+$$

$$m\,\text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\,\left(\frac{1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2}{1+\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2}\right)^{-1+2\,m}\Bigg(-\frac{\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\,\Big(1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)}{2\,\Big(1+\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)^2}-$$

$$\frac{\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]}{2\,\Big(1+\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)}\Bigg)$$

$$\left(-\left(\left((A+B)\,\text{AppellF1}\left[-\frac{1}{2},-2m,2m,\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\Big/\right.\right.$$

$$\left(\text{AppellF1}\left[-\frac{1}{2},-2m,2m,\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]-4m\right.$$

$$\left(\text{AppellF1}\left[\frac{1}{2},1-2m,2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$\left.\left.\text{AppellF1}\left[\frac{1}{2},-2m,1+2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\right)+$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\left(\left(3(A+B)\,\text{AppellF1}\left[\frac{1}{2},-2m,2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\Big/\right.$$

$$\left(3\,\text{AppellF1}\left[\frac{1}{2},-2m,2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]-\right.$$

$$4m\left(\text{AppellF1}\left[\frac{3}{2},1-2m,2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$\left.\left.\text{AppellF1}\left[\frac{3}{2},-2m,1+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)-$$

$$\left(8\,B\,\text{AppellF1}\left[\frac{1}{2},-2m,1+2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\Big/\left(\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\right.$$

$$\left(\text{AppellF1}\left[\frac{1}{2},-2m,1+2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]-\frac{2}{3}\left(2m\,\text{AppellF1}\left[\frac{3}{2},1-2m,1+2m,\frac{5}{2},\right.\right.$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+(1+2m)\,\text{AppellF1}\left[\frac{3}{2},-2m,2+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,$$

$$\left.\left.\left.\left.-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\right)\right)\right)+\frac{1}{2}\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\left(\frac{1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}\right)^{2m}$$

$$\left(-\left(\left((A+B)\left(m\,\text{AppellF1}\left[\frac{1}{2},1-2m,2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right.\right.\right.\right.$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]+m\,\text{AppellF1}\left[\frac{1}{2},-2m,1+2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]$$

$$\left.\left.\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)\right)\Big/\left(\text{AppellF1}\left[-\frac{1}{2},-2m,2m,\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\right.\right.$$

$$-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]-4m\left(\text{AppellF1}\left[\frac{1}{2},1-2m,2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$\left.\left.\text{AppellF1}\left[\frac{1}{2},-2m,1+2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)+$$

$$\left((A+B)\,\text{AppellF1}\left[-\frac{1}{2},-2m,2m,\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right.$$

$$\left(m\,\text{AppellF1}\left[\frac{1}{2},1-2m,2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]+\right.$$

$$m\,\text{AppellF1}\left[\frac{1}{2},-2m,1+2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]-2m\left(\text{AppellF1}\left[\frac{1}{2},1-2m,2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+\text{AppellF1}\left[\frac{1}{2},\right.\right.$$

$$\left.\left.-2m,1+2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right)\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]-4m$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\left(-\frac{2}{3}m\,\text{AppellF1}\left[\frac{3}{2},1-2m,1+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right.$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]+\frac{1}{6}(1-2m)\,\text{AppellF1}\left[\frac{3}{2},2-2m,2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,\right.$$

$$\left.-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]-\frac{1}{6}(1+2m)\,\text{AppellF1}\left[\frac{3}{2},-2m,2+2m,\right.$$

$$\left.\left.\left.\left.\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]\right)\right)\right)\right/$$

$$\left(\text{AppellF1}\left[-\frac{1}{2},-2m,2m,\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]-4m\left(\text{AppellF1}\left[\frac{1}{2},1-2m,\right.\right.\right.$$

$$2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+\text{AppellF1}\left[\frac{1}{2},-2m,1+2m,\frac{3}{2},$$

$$\left.\left.\left.\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)^2+\frac{1}{2}\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]\left(\left(3(A+B)\,\text{AppellF1}\left[\frac{1}{2},-2m,2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right)\right/$$

$$\left(3\,\text{AppellF1}\left[\frac{1}{2},-2m,2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]-\right.$$

$$4m\left(\text{AppellF1}\left[\frac{3}{2},1-2m,2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+\right.$$

$$\left.\left.\text{AppellF1}\left[\frac{3}{2},-2m,1+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)-$$

$$\left(8\,B\,\text{AppellF1}\left[\frac{1}{2},-2m,1+2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right)\Big/$$

$$\left(\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)\left(\text{AppellF1}\left[\frac{1}{2},-2m,1+2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]-\right.\right.$$

$$\frac{2}{3} \Big(2\, m\, \text{AppellF1}\Big[\frac{3}{2}, 1-2\, m, 1+2\, m, \frac{5}{2}, \text{Tan}\Big[\frac{1}{4} \Big(-e+\frac{\pi}{2}-f\, x\Big)\Big]^2, -\text{Tan}\Big[\frac{1}{4} \Big(-e+\frac{\pi}{2}-f\, x\Big)\Big]^2\Big] + (1+2\, m)\, \text{AppellF1}\Big[\frac{3}{2}, -2\, m,$$

$$2+2\, m, \frac{5}{2}, \text{Tan}\Big[\frac{1}{4} \Big(-e+\frac{\pi}{2}-f\, x\Big)\Big]^2, -\text{Tan}\Big[\frac{1}{4} \Big(-e+\frac{\pi}{2}-f\, x\Big)\Big]^2\Big]\Big)\, \text{Tan}\Big[\frac{1}{4} \Big(-e+\frac{\pi}{2}-f\, x\Big)\Big]^2\Big)\Big)\Big) + \text{Tan}\Big[\frac{1}{4} \Big(-e+\frac{\pi}{2}-f\, x\Big)\Big]^2$$

$$\Big(\Big(3\, (A+B)\, \Big(-\frac{1}{3}\, m\, \text{AppellF1}\Big[\frac{3}{2}, 1-2\, m, 2\, m, \frac{5}{2}, \text{Tan}\Big[\frac{1}{4} \Big(-e+\frac{\pi}{2}-f\, x\Big)\Big]^2, -\text{Tan}\Big[\frac{1}{4} \Big(-e+\frac{\pi}{2}-f\, x\Big)\Big]^2\Big]\, \text{Sec}\Big[\frac{1}{4} \Big(-e+\frac{\pi}{2}-f\, x\Big)\Big]^2$$

$$\text{Tan}\Big[\frac{1}{4} \Big(-e+\frac{\pi}{2}-f\, x\Big)\Big] - \frac{1}{3}\, m\, \text{AppellF1}\Big[\frac{3}{2}, -2\, m, 1+2\, m, \frac{5}{2}, \text{Tan}\Big[\frac{1}{4} \Big(-e+\frac{\pi}{2}-f\, x\Big)\Big]^2, -\text{Tan}\Big[\frac{1}{4} \Big(-e+\frac{\pi}{2}-f\, x\Big)\Big]^2\Big]$$

$$\text{Sec}\Big[\frac{1}{4} \Big(-e+\frac{\pi}{2}-f\, x\Big)\Big]^2\, \text{Tan}\Big[\frac{1}{4} \Big(-e+\frac{\pi}{2}-f\, x\Big)\Big]\Big)\Big) \Big/ \Big(3\, \text{AppellF1}\Big[\frac{1}{2}, -2\, m, 2\, m, \frac{3}{2}, \text{Tan}\Big[\frac{1}{4} \Big(-e+\frac{\pi}{2}-f\, x\Big)\Big]^2,$$

$$-\text{Tan}\Big[\frac{1}{4} \Big(-e+\frac{\pi}{2}-f\, x\Big)\Big]^2\Big] - 4\, m\, \Big(\text{AppellF1}\Big[\frac{3}{2}, 1-2\, m, 2\, m, \frac{5}{2}, \text{Tan}\Big[\frac{1}{4} \Big(-e+\frac{\pi}{2}-f\, x\Big)\Big]^2, -\text{Tan}\Big[\frac{1}{4} \Big(-e+\frac{\pi}{2}-f\, x\Big)\Big]^2\Big] +$$

$$\text{AppellF1}\Big[\frac{3}{2}, -2\, m, 1+2\, m, \frac{5}{2}, \text{Tan}\Big[\frac{1}{4} \Big(-e+\frac{\pi}{2}-f\, x\Big)\Big]^2, -\text{Tan}\Big[\frac{1}{4} \Big(-e+\frac{\pi}{2}-f\, x\Big)\Big]^2\Big]\Big)\, \text{Tan}\Big[\frac{1}{4} \Big(-e+\frac{\pi}{2}-f\, x\Big)\Big]^2\Big) +$$

$$\Big(4\, B\, \text{AppellF1}\Big[\frac{1}{2}, -2\, m, 1+2\, m, \frac{3}{2}, \text{Tan}\Big[\frac{1}{4} \Big(-e+\frac{\pi}{2}-f\, x\Big)\Big]^2, -\text{Tan}\Big[\frac{1}{4} \Big(-e+\frac{\pi}{2}-f\, x\Big)\Big]^2\Big]\, \text{Sec}\Big[\frac{1}{4} \Big(-e+\frac{\pi}{2}-f\, x\Big)\Big]^2$$

$$\text{Tan}\Big[\frac{1}{4} \Big(-e+\frac{\pi}{2}-f\, x\Big)\Big]\Big) \Big/ \Big(\Big(1+\text{Tan}\Big[\frac{1}{4} \Big(-e+\frac{\pi}{2}-f\, x\Big)\Big]^2\Big)^2\, \Big(\text{AppellF1}\Big[\frac{1}{2}, -2\, m, 1+2\, m, \frac{3}{2}, \text{Tan}\Big[\frac{1}{4} \Big(-e+\frac{\pi}{2}-f\, x\Big)\Big]^2,$$

$$-\text{Tan}\Big[\frac{1}{4} \Big(-e+\frac{\pi}{2}-f\, x\Big)\Big]^2\Big] - \frac{2}{3} \Big(2\, m\, \text{AppellF1}\Big[\frac{3}{2}, 1-2\, m, 1+2\, m, \frac{5}{2}, \text{Tan}\Big[\frac{1}{4} \Big(-e+\frac{\pi}{2}-f\, x\Big)\Big]^2, -\text{Tan}\Big[\frac{1}{4} \Big(-e+\frac{\pi}{2}-f\, x\Big)\Big]^2\Big] +$$

$$(1+2\, m)\, \text{AppellF1}\Big[\frac{3}{2}, -2\, m, 2+2\, m, \frac{5}{2}, \text{Tan}\Big[\frac{1}{4} \Big(-e+\frac{\pi}{2}-f\, x\Big)\Big]^2, -\text{Tan}\Big[\frac{1}{4} \Big(-e+\frac{\pi}{2}-f\, x\Big)\Big]^2\Big]\Big)\, \text{Tan}\Big[\frac{1}{4} \Big(-e+\frac{\pi}{2}-f\, x\Big)\Big]^2\Big)\Big) -$$

$$\Big(8\, B\, \Big(-\frac{1}{3}\, m\, \text{AppellF1}\Big[\frac{3}{2}, 1-2\, m, 1+2\, m, \frac{5}{2}, \text{Tan}\Big[\frac{1}{4} \Big(-e+\frac{\pi}{2}-f\, x\Big)\Big]^2, -\text{Tan}\Big[\frac{1}{4} \Big(-e+\frac{\pi}{2}-f\, x\Big)\Big]^2\Big]\, \text{Sec}\Big[\frac{1}{4} \Big(-e+\frac{\pi}{2}-f\, x\Big)\Big]^2$$

$$\text{Tan}\Big[\frac{1}{4} \Big(-e+\frac{\pi}{2}-f\, x\Big)\Big] - \frac{1}{6}\, (1+2\, m)\, \text{AppellF1}\Big[\frac{3}{2}, -2\, m, 2+2\, m, \frac{5}{2}, \text{Tan}\Big[\frac{1}{4} \Big(-e+\frac{\pi}{2}-f\, x\Big)\Big]^2,$$

$$-\text{Tan}\Big[\frac{1}{4} \Big(-e+\frac{\pi}{2}-f\, x\Big)\Big]^2\Big]\, \text{Sec}\Big[\frac{1}{4} \Big(-e+\frac{\pi}{2}-f\, x\Big)\Big]^2\, \text{Tan}\Big[\frac{1}{4} \Big(-e+\frac{\pi}{2}-f\, x\Big)\Big]\Big)\Big) \Big/$$

$$\Big(\Big(1+\text{Tan}\Big[\frac{1}{4} \Big(-e+\frac{\pi}{2}-f\, x\Big)\Big]^2\Big)\, \Big(\text{AppellF1}\Big[\frac{1}{2}, -2\, m, 1+2\, m, \frac{3}{2}, \text{Tan}\Big[\frac{1}{4} \Big(-e+\frac{\pi}{2}-f\, x\Big)\Big]^2, -\text{Tan}\Big[\frac{1}{4} \Big(-e+\frac{\pi}{2}-f\, x\Big)\Big]^2\Big] -$$

$$\frac{2}{3} \Big(2\, m\, \text{AppellF1}\Big[\frac{3}{2}, 1-2\, m, 1+2\, m, \frac{5}{2}, \text{Tan}\Big[\frac{1}{4} \Big(-e+\frac{\pi}{2}-f\, x\Big)\Big]^2, -\text{Tan}\Big[\frac{1}{4} \Big(-e+\frac{\pi}{2}-f\, x\Big)\Big]^2\Big] +$$

$$(1+2\, m)\, \text{AppellF1}\Big[\frac{3}{2}, -2\, m, 2+2\, m, \frac{5}{2}, \text{Tan}\Big[\frac{1}{4} \Big(-e+\frac{\pi}{2}-f\, x\Big)\Big]^2, -\text{Tan}\Big[\frac{1}{4} \Big(-e+\frac{\pi}{2}-f\, x\Big)\Big]^2\Big]\Big)\, \text{Tan}\Big[\frac{1}{4} \Big(-e+\frac{\pi}{2}-f\, x\Big)\Big]^2\Big)\Big) -$$

$$\Big(3\, (A+B)\, \text{AppellF1}\Big[\frac{1}{2}, -2\, m, 2\, m, \frac{3}{2}, \text{Tan}\Big[\frac{1}{4} \Big(-e+\frac{\pi}{2}-f\, x\Big)\Big]^2, -\text{Tan}\Big[\frac{1}{4} \Big(-e+\frac{\pi}{2}-f\, x\Big)\Big]^2\Big]$$

$$\Big(-2\,m\,\Big(\text{AppellF1}\Big[\frac{3}{2},\,1-2\,m,\,2\,m,\,\frac{5}{2},\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]+\text{AppellF1}\Big[\frac{3}{2},\,-2\,m,\,1+2\,m,$$

$$\frac{5}{2},\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]\Big)\,\text{Sec}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]+$$

$$3\,\Big(-\frac{1}{3}\,m\,\text{AppellF1}\Big[\frac{3}{2},\,1-2\,m,\,2\,m,\,\frac{5}{2},\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2$$

$$\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]-\frac{1}{3}\,m\,\text{AppellF1}\Big[\frac{3}{2},\,-2\,m,\,1+2\,m,\,\frac{5}{2},\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]$$

$$\text{Sec}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]\Big)-4\,m\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\,\Big(-\frac{6}{5}\,m\,\text{AppellF1}\Big[\frac{5}{2},\,1-2\,m,$$

$$1+2\,m,\,\frac{7}{2},\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]+$$

$$\frac{3}{10}\,(1-2\,m)\,\text{AppellF1}\Big[\frac{5}{2},\,2-2\,m,\,2\,m,\,\frac{7}{2},\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2$$

$$\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]-\frac{3}{10}\,(1+2\,m)\,\text{AppellF1}\Big[\frac{5}{2},\,-2\,m,\,2+2\,m,\,\frac{7}{2},\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]$$

$$\text{Sec}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]\Big)\Big)\Big)\Big/\Big(3\,\text{AppellF1}\Big[\frac{1}{2},\,-2\,m,\,2\,m,\,\frac{3}{2},\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,$$

$$-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]-4\,m\,\Big(\text{AppellF1}\Big[\frac{3}{2},\,1-2\,m,\,2\,m,\,\frac{5}{2},\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]+$$

$$\text{AppellF1}\Big[\frac{3}{2},\,-2\,m,\,1+2\,m,\,\frac{5}{2},\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big)^2+$$

$$\Big(8\,B\,\text{AppellF1}\Big[\frac{1}{2},\,-2\,m,\,1+2\,m,\,\frac{3}{2},\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]\,\Big(-\frac{1}{3}\,m\,\text{AppellF1}\Big[\frac{3}{2},\,1-2\,m,$$

$$1+2\,m,\,\frac{5}{2},\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]-$$

$$\frac{1}{6}\,(1+2\,m)\,\text{AppellF1}\Big[\frac{3}{2},\,-2\,m,\,2+2\,m,\,\frac{5}{2},\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2$$

$$\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]-\frac{1}{3}\,\Big(2\,m\,\text{AppellF1}\Big[\frac{3}{2},\,1-2\,m,\,1+2\,m,\,\frac{5}{2},\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]+$$

$$(1+2\,m)\,\text{AppellF1}\Big[\frac{3}{2},\,-2\,m,\,2+2\,m,\,\frac{5}{2},\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]\Big)\,\text{Sec}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\,\text{Tan}\Big[$$

$$\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]-\frac{2}{3}\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\,\Big(2\,m\,\Big(-\frac{3}{10}\,(1+2\,m)\,\text{AppellF1}\Big[\frac{5}{2},\,1-2\,m,\,2+2\,m,\,\frac{7}{2},\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,$$

$$-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]+\frac{3}{10}\,(1-2\,m)\,\text{AppellF1}\Big[\frac{5}{2},\,2-2\,m,$$

$$1+2m,\frac{7}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]\Bigg)+$$

$$(1+2m)\left(-\frac{3}{5}m\,\text{AppellF1}\left[\frac{5}{2},1-2m,2+2m,\frac{7}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right.$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]-\frac{3}{10}(2+2m)\,\text{AppellF1}\left[\frac{5}{2},-2m,3+2m,\frac{7}{2},\right.$$

$$\left.\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]\Bigg)\Bigg)\Bigg)\Bigg)\Bigg/$$

$$\left(\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)\left(\text{AppellF1}\left[\frac{1}{2},-2m,1+2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]-\right.\right.$$

$$\frac{2}{3}\left(2m\,\text{AppellF1}\left[\frac{3}{2},1-2m,1+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+(1+2m)\right.$$

$$\left.\left.\left.\text{AppellF1}\left[\frac{3}{2},-2m,2+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)\right)\right)\right)\right)$$

- **Problem 201: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int\frac{(a+a\,\text{Sin}[e+fx])^m\,(A+B\,\text{Sin}[e+fx])}{(c-c\,\text{Sin}[e+fx])^2}\,dx$$

Optimal (type 5, 148 leaves, 5 steps):

$$\frac{1}{3ac^2f(1-m)}2^{\frac{1}{2}+m}(A(1-m)-B(2+m))\,\text{Hypergeometric2F1}\left[-\frac{3}{2},\frac{1}{2}-m,-\frac{1}{2},\frac{1}{2}(1-\text{Sin}[e+fx])\right]$$

$$\text{Sec}[e+fx]^3(1+\text{Sin}[e+fx])^{\frac{1}{2}-m}(a+a\,\text{Sin}[e+fx])^{1+m}+\frac{B\,\text{Sec}[e+fx]^3(a+a\,\text{Sin}[e+fx])^{2+m}}{a^2c^2f(1-m)}$$

Result (type 6, 15419 leaves):

$$-\left(\left(\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-fx\right)\right]^{-2m}\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^3\left(\text{Cos}\left[\frac{1}{2}(e+fx)\right]-\text{Sin}\left[\frac{1}{2}(e+fx)\right]\right)^4(a+a\,\text{Sin}[e+fx])^m\right.\right.$$

$$\left(\frac{A\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-fx\right)\right]^{2m}}{\left(\text{Cos}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+fx\right)\right]-\text{Sin}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+fx\right)\right]\right)^4}+\frac{B\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-fx\right)\right]^{2m}\text{Sin}[e+fx]}{\left(\text{Cos}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+fx\right)\right]-\text{Sin}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+fx\right)\right]\right)^4}\right)$$

$$\left(\frac{1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2}\right)^{2m}\left(-\left(\left((A+B)\,\text{AppellF1}\left[-\frac{3}{2},-2m,2m,-\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right)\right/\right.$$

$$\left(\text{AppellF1}\left[-\frac{3}{2},-2m,2m,-\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+\right.$$

$$4\,m\left(\text{AppellF1}\left[-\frac{1}{2},1-2m,2m,\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+\text{AppellF1}\left[-\frac{1}{2},\right.\right.$$

$$\left.\left.-2m,1+2m,\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\Big)\Big)+$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\left(-\left(\left(3\,(3A-5B)\,\text{AppellF1}\left[-\frac{1}{2},-2m,2m,\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right)\Big/\right.\right.$$

$$\left(\text{AppellF1}\left[-\frac{1}{2},-2m,2m,\frac{1}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]-4m\right.$$

$$\left(\text{AppellF1}\left[\frac{1}{2},1-2m,2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+\right.$$

$$\left.\left.\text{AppellF1}\left[\frac{1}{2},-2m,1+2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)\Big)+$$

$$\left(20\,(A+B)\,m\,\text{AppellF1}\left[\frac{3}{2},-2m,2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right.$$

$$\left(\text{AppellF1}\left[\frac{3}{2},1-2m,2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+\right.$$

$$\left.\text{AppellF1}\left[\frac{3}{2},-2m,1+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^6-$$

$$3\,\text{AppellF1}\left[\frac{1}{2},-2m,2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2$$

$$\left(-12\,(3A-5B)\,m\left(\text{AppellF1}\left[\frac{5}{2},1-2m,2m,\frac{7}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+\text{AppellF1}\left[\frac{5}{2},-2m,\right.\right.\right.$$

$$\left.1+2m,\frac{7}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2+5\,\text{AppellF1}\left[\frac{3}{2},-2m,2m,\frac{5}{2},\right.$$

$$\left.\left.\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\left(B\left(-15+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)+A\left(9+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)\right)\right)\Big)\Big/$$

$$\left(\left(3\,\text{AppellF1}\left[\frac{1}{2},-2m,2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]-4m\left(\text{AppellF1}\left[\frac{3}{2},1-2m,2m,\right.\right.\right.\right.$$

$$\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\Big]+\text{AppellF1}\left[\frac{3}{2},-2m,1+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,\right.$$

$$\left.\left.-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\Big)\left(-5\,\text{AppellF1}\left[\frac{3}{2},-2m,2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,\right.\right.$$

$$-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\Big]+4m\left(\text{AppellF1}\left[\frac{5}{2},1-2m,2m,\frac{7}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+\right.$$

$$\text{AppellF1}\left[\frac{5}{2},\,-2\,m,\,1+2\,m,\,\frac{7}{2},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Bigg)\Bigg)\Bigg)\Bigg)\Bigg)\Bigg/$$

$$\Bigg(48\,f\,(c-c\,\text{Sin}[e+f\,x])^2\,\Bigg(-\frac{1}{64}\,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,\text{Csc}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\left(\frac{1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}\right)^{2\,m}$$

$$\Bigg(-\Bigg(\Bigg((A+B)\,\text{AppellF1}\left[-\frac{3}{2},\,-2\,m,\,2\,m,\,-\frac{1}{2},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\Bigg)\Bigg/$$

$$\Bigg(\text{AppellF1}\left[-\frac{3}{2},\,-2\,m,\,2\,m,\,-\frac{1}{2},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+4\,m$$

$$\Bigg(\text{AppellF1}\left[-\frac{1}{2},\,1-2\,m,\,2\,m,\,\frac{1}{2},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+$$

$$\text{AppellF1}\left[-\frac{1}{2},\,-2\,m,\,1+2\,m,\,\frac{1}{2},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\Bigg)\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Bigg)\Bigg)+$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,\Bigg(-\Bigg(\Bigg(3\,(3\,A-5\,B)\,\text{AppellF1}\left[-\frac{1}{2},\,-2\,m,\,2\,m,\,\frac{1}{2},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\Bigg)\Bigg/$$

$$\Bigg(\text{AppellF1}\left[-\frac{1}{2},\,-2\,m,\,2\,m,\,\frac{1}{2},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]-4\,m\,\Bigg(\text{AppellF1}\left[\frac{1}{2},\,1-2\,m,\,2\,m,\,\frac{3}{2},\right.$$

$$\left.\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\text{AppellF1}\left[\frac{1}{2},\,-2\,m,\,1+2\,m,\,\frac{3}{2},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\right.$$

$$\left.-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\Bigg)\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Bigg)\Bigg)+\Bigg(20\,(A+B)\,m\,\text{AppellF1}\left[\frac{3}{2},\,-2\,m,\,2\,m,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\right.$$

$$\left.-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\,\Bigg(\text{AppellF1}\left[\frac{3}{2},\,1-2\,m,\,2\,m,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+$$

$$\text{AppellF1}\left[\frac{3}{2},\,-2\,m,\,1+2\,m,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\Bigg)\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^6-$$

$$3\,\text{AppellF1}\left[\frac{1}{2},\,-2\,m,\,2\,m,\,\frac{3}{2},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2$$

$$\Bigg(-12\,(3\,A-5\,B)\,m\,\Bigg(\text{AppellF1}\left[\frac{5}{2},\,1-2\,m,\,2\,m,\,\frac{7}{2},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\text{AppellF1}\left[\frac{5}{2},\,-2\,m,\right.$$

$$\left.1+2\,m,\,\frac{7}{2},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\Bigg)\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2+5\,\text{AppellF1}\left[\frac{3}{2},\,-2\,m,\,2\,m,\,\frac{5}{2},\right.$$

$$\left.\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\,\Bigg(B\left(-15+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)+A\left(9+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\Bigg)\Bigg)\Bigg)\Bigg)\Bigg/$$

$$\Bigg(\Bigg(3\,\text{AppellF1}\left[\frac{1}{2},\,-2\,m,\,2\,m,\,\frac{3}{2},\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]-4\,m\,\Bigg(\text{AppellF1}\left[\frac{3}{2},\,1-2\,m,\right.$$

$$2 m, \frac{5}{2}, \operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big] + \operatorname{AppellF1}\Big[\frac{3}{2}, -2 m, 1+2 m, \frac{5}{2}, \operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,$$

$$-\operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\Big) \operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big) \Big(-5 \operatorname{AppellF1}\Big[\frac{3}{2}, -2 m, 2 m, \frac{5}{2}, \operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,$$

$$-\operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big] + 4 m \Big(\operatorname{AppellF1}\Big[\frac{5}{2}, 1-2 m, 2 m, \frac{7}{2}, \operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big] +$$

$$\operatorname{AppellF1}\Big[\frac{5}{2}, -2 m, 1+2 m, \frac{7}{2}, \operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\Big) \operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big)\Big)\Big)\Big) +$$

$$\frac{1}{24} m \operatorname{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^3 \left(\frac{1-\operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{1+\operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}\right)^{-1+2 m} \Bigg(-\frac{\operatorname{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right] \left(1-\operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)}{2\left(1+\operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^2} -$$

$$\frac{\operatorname{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]}{2\left(1+\operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)}\Bigg)$$

$$\Big(-\Big(\Big((A+B) \operatorname{AppellF1}\Big[-\frac{3}{2}, -2 m, 2 m, -\frac{1}{2}, \operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\Big)\Big/$$

$$\Big(\operatorname{AppellF1}\Big[-\frac{3}{2}, -2 m, 2 m, -\frac{1}{2}, \operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big] + 4 m$$

$$\Big(\operatorname{AppellF1}\Big[-\frac{1}{2}, 1-2 m, 2 m, \frac{1}{2}, \operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big] +$$

$$\operatorname{AppellF1}\Big[-\frac{1}{2}, -2 m, 1+2 m, \frac{1}{2}, \operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\Big) \operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big)\Big) +$$

$$\operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \Big(-\Big(\Big(3 (3 A-5 B) \operatorname{AppellF1}\Big[-\frac{1}{2}, -2 m, 2 m, \frac{1}{2}, \operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\Big)\Big/$$

$$\Big(\operatorname{AppellF1}\Big[-\frac{1}{2}, -2 m, 2 m, \frac{1}{2}, \operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big] -$$

$$4 m \Big(\operatorname{AppellF1}\Big[\frac{1}{2}, 1-2 m, 2 m, \frac{3}{2}, \operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big] +$$

$$\operatorname{AppellF1}\Big[\frac{1}{2}, -2 m, 1+2 m, \frac{3}{2}, \operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\Big) \operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big)\Big) +$$

$$\Big(20 (A+B) m \operatorname{AppellF1}\Big[\frac{3}{2}, -2 m, 2 m, \frac{5}{2}, \operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]$$

$$\Big(\operatorname{AppellF1}\Big[\frac{3}{2}, 1-2 m, 2 m, \frac{5}{2}, \operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big] +$$

$$\operatorname{AppellF1}\Big[\frac{3}{2}, -2 m, 1+2 m, \frac{5}{2}, \operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\Big) \operatorname{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^6 -$$

$$3\,\text{AppellF1}\Big[\frac{1}{2},-2m,2m,\frac{3}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2$$

$$\Big(-12\,(3A-5B)\,m\,\Big(\text{AppellF1}\Big[\frac{5}{2},1-2m,2m,\frac{7}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]+\text{AppellF1}\Big[\frac{5}{2},-2m,$$

$$1+2m,\frac{7}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2+5\,\text{AppellF1}\Big[\frac{3}{2},-2m,2m,\frac{5}{2},$$

$$\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\,\Big(B\,\Big(-15+\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big)+A\,\Big(9+\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big)\Big)\Big)\Big)\Big)\Big/$$

$$\Big(\Big(3\,\text{AppellF1}\Big[\frac{1}{2},-2m,2m,\frac{3}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]-4m\,\Big(\text{AppellF1}\Big[\frac{3}{2},1-2m,$$

$$2m,\frac{5}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]+\text{AppellF1}\Big[\frac{3}{2},-2m,1+2m,\frac{5}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,$$

$$-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big)\,\Big(-5\,\text{AppellF1}\Big[\frac{3}{2},-2m,2m,\frac{5}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,$$

$$-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]+4m\,\Big(\text{AppellF1}\Big[\frac{5}{2},1-2m,2m,\frac{7}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]+$$

$$\text{AppellF1}\Big[\frac{5}{2},-2m,1+2m,\frac{7}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big)\Big)\Big)\Big)+$$

$$\frac{1}{48}\,\text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^3\left(\frac{1-\text{Tan}\big[\frac{1}{4}\big(-e+\frac{\pi}{2}-f x\big)\big]^2}{1+\text{Tan}\big[\frac{1}{4}\big(-e+\frac{\pi}{2}-f x\big)\big]^2}\right)^{2m}\Big(-\Big(\Big(\Big((A+B)\,\Big(-3m\,\text{AppellF1}\Big[-\frac{1}{2},1-2m,2m,\frac{1}{2},$$

$$\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]-3m\,\text{AppellF1}\Big[-\frac{1}{2},$$

$$-2m,1+2m,\frac{1}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]\Big)\Big)\Big/$$

$$\Big(\text{AppellF1}\Big[-\frac{3}{2},-2m,2m,-\frac{1}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]+4m$$

$$\Big(\text{AppellF1}\Big[-\frac{1}{2},1-2m,2m,\frac{1}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]+$$

$$\text{AppellF1}\Big[-\frac{1}{2},-2m,1+2m,\frac{1}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big)\Big)+$$

$$\Big((A+B)\,\text{AppellF1}\Big[-\frac{3}{2},-2m,2m,-\frac{1}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\,\Big(-3m\,\text{AppellF1}\Big[-\frac{1}{2},$$

$$1-2m,2m,\frac{1}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]-3$$

$$m\,\text{AppellF1}\Big[-\frac{1}{2},-2m,1+2m,\frac{1}{2},\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2$$

$$\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)] + 2 m (\text{AppellF1}[-\tfrac{1}{2}, 1-2 m, 2 m, \tfrac{1}{2}, \text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2, -\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2] +$$

$$\text{AppellF1}[-\tfrac{1}{2}, -2 m, 1+2 m, \tfrac{1}{2}, \text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2, -\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2]) \text{Sec}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2$$

$$\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)] + 4 m \text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2 (2 m \text{AppellF1}[\tfrac{1}{2}, 1-2 m, 1+2 m, \tfrac{3}{2}, \text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2,$$

$$-\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2] \text{Sec}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2 \text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)] - \tfrac{1}{2}(1-2 m) \text{AppellF1}[\tfrac{1}{2}, 2-2 m, 2 m, \tfrac{3}{2},$$

$$\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2, -\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2] \text{Sec}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2 \text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)] + \tfrac{1}{2}(1+2 m) \text{AppellF1}[\tfrac{1}{2},$$

$$-2 m, 2+2 m, \tfrac{3}{2}, \text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2, -\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2] \text{Sec}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2 \text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]))) /$$

$$(\text{AppellF1}[-\tfrac{3}{2}, -2 m, 2 m, -\tfrac{1}{2}, \text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2, -\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2] + 4 m (\text{AppellF1}[-\tfrac{1}{2}, 1-2 m,$$

$$2 m, \tfrac{1}{2}, \text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2, -\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2] + \text{AppellF1}[-\tfrac{1}{2}, -2 m, 1+2 m, \tfrac{1}{2},$$

$$\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2, -\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2]) \text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2)^2 + \tfrac{1}{2} \text{Sec}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2$$

$$\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)] (-((3(3 A-5 B) \text{AppellF1}[-\tfrac{1}{2}, -2 m, 2 m, \tfrac{1}{2}, \text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2, -\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2]) /$$

$$(\text{AppellF1}[-\tfrac{1}{2}, -2 m, 2 m, \tfrac{1}{2}, \text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2, -\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2] -$$

$$4 m (\text{AppellF1}[\tfrac{1}{2}, 1-2 m, 2 m, \tfrac{3}{2}, \text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2, -\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2] +$$

$$\text{AppellF1}[\tfrac{1}{2}, -2 m, 1+2 m, \tfrac{3}{2}, \text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2, -\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2]) \text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2)) +$$

$$(20(A+B) m \text{AppellF1}[\tfrac{3}{2}, -2 m, 2 m, \tfrac{5}{2}, \text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2, -\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2]$$

$$(\text{AppellF1}[\tfrac{3}{2}, 1-2 m, 2 m, \tfrac{5}{2}, \text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2, -\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2] +$$

$$\text{AppellF1}[\tfrac{3}{2}, -2 m, 1+2 m, \tfrac{5}{2}, \text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2, -\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2]) \text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^6 -$$

$$3 \text{AppellF1}[\tfrac{1}{2}, -2 m, 2 m, \tfrac{3}{2}, \text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2, -\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2] \text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2$$

$$(-12(3 A-5 B) m (\text{AppellF1}[\tfrac{5}{2}, 1-2 m, 2 m, \tfrac{7}{2}, \text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2, -\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2] + \text{AppellF1}[\tfrac{5}{2}, -2 m,$$

$$1+2 m, \frac{7}{2}, \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2, -\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\Big) \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2 + 5\, \text{AppellF1}\Big[\frac{3}{2}, -2 m, 2 m, \frac{5}{2},$$

$$\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2, -\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big] \Big(B\Big(-15+\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big) + A\Big(9+\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big)\Big)\Big)\Big)\Big)\Big/$$

$$\Big(\Big(3\, \text{AppellF1}\Big[\frac{1}{2}, -2 m, 2 m, \frac{3}{2}, \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2, -\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big] - 4 m \Big(\text{AppellF1}\Big[\frac{3}{2}, 1-2 m,$$

$$2 m, \frac{5}{2}, \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2, -\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big] + \text{AppellF1}\Big[\frac{3}{2}, -2 m, 1+2 m, \frac{5}{2}, \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,$$

$$-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\Big) \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big) \Big(-5\, \text{AppellF1}\Big[\frac{3}{2}, -2 m, 2 m, \frac{5}{2}, \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,$$

$$-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big] + 4 m \Big(\text{AppellF1}\Big[\frac{5}{2}, 1-2 m, 2 m, \frac{7}{2}, \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2, -\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big] +$$

$$\text{AppellF1}\Big[\frac{5}{2}, -2 m, 1+2 m, \frac{7}{2}, \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2, -\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\Big) \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big)\Big)\Big) +$$

$$\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2 \Big(-\Big(\Big(3\,(3 A-5 B) \Big(m\, \text{AppellF1}\Big[\frac{1}{2}, 1-2 m, 2 m, \frac{3}{2}, \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2, -\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]$$

$$\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2 \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big] + m\, \text{AppellF1}\Big[\frac{1}{2}, -2 m, 1+2 m, \frac{3}{2},$$

$$\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2, -\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big] \text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2 \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]\Big)\Big)\Big/$$

$$\Big(\text{AppellF1}\Big[-\frac{1}{2}, -2 m, 2 m, \frac{1}{2}, \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2, -\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big] -$$

$$4 m \Big(\text{AppellF1}\Big[\frac{1}{2}, 1-2 m, 2 m, \frac{3}{2}, \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2, -\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big] +$$

$$\text{AppellF1}\Big[\frac{1}{2}, -2 m, 1+2 m, \frac{3}{2}, \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2, -\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\Big) \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big)\Big) +$$

$$\Big(3\,(3 A-5 B)\, \text{AppellF1}\Big[-\frac{1}{2}, -2 m, 2 m, \frac{1}{2}, \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2, -\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big] \Big(m\, \text{AppellF1}\Big[\frac{1}{2},$$

$$1-2 m, 2 m, \frac{3}{2}, \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2, -\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big] \text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2 \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big] +$$

$$m\, \text{AppellF1}\Big[\frac{1}{2}, -2 m, 1+2 m, \frac{3}{2}, \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2, -\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big] \text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2$$

$$\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big] - 2 m \Big(\text{AppellF1}\Big[\frac{1}{2}, 1-2 m, 2 m, \frac{3}{2}, \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2, -\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big] + \text{AppellF1}\Big[\frac{1}{2},$$

$$-2 m, 1+2 m, \frac{3}{2}, \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2, -\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\Big) \text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2 \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big] -$$

$$4\,m\,\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\left(-\frac{2}{3}\,m\,\mathrm{AppellF1}\left[\frac{3}{2},1-2\,m,1+2\,m,\frac{5}{2},\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right.$$

$$\mathrm{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]+\frac{1}{6}\,(1-2\,m)\,\mathrm{AppellF1}\left[\frac{3}{2},2-2\,m,2\,m,\frac{5}{2},\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\right.$$

$$\left.-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\mathrm{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-\frac{1}{6}\,(1+2\,m)\,\mathrm{AppellF1}\left[\frac{3}{2},-2\,m,2+2\,m,\right.$$

$$\left.\left.\left.\left.\frac{5}{2},\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\mathrm{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\right)\right)\right)\Big/$$

$$\left(\mathrm{AppellF1}\left[-\frac{1}{2},-2\,m,2\,m,\frac{1}{2},\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]-4\,m\left(\mathrm{AppellF1}\left[\frac{1}{2},1-2\,m,\right.\right.\right.$$

$$2\,m,\frac{3}{2},\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\mathrm{AppellF1}\left[\frac{1}{2},-2\,m,1+2\,m,\right.$$

$$\left.\left.\left.\frac{3}{2},\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^2-$$

$$\left(\left(-2\,m\left(\mathrm{AppellF1}\left[\frac{3}{2},1-2\,m,2\,m,\frac{5}{2},\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\mathrm{AppellF1}\left[\frac{3}{2},-2\,m,\right.\right.\right.\right.$$

$$\left.\left.1+2\,m,\frac{5}{2},\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\mathrm{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]+$$

$$3\left(-\frac{1}{3}\,m\,\mathrm{AppellF1}\left[\frac{3}{2},1-2\,m,2\,m,\frac{5}{2},\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\mathrm{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right.$$

$$\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-\frac{1}{3}\,m\,\mathrm{AppellF1}\left[\frac{3}{2},-2\,m,1+2\,m,\frac{5}{2},\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]$$

$$\left.\mathrm{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\right)-4\,m\,\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\left(-\frac{6}{5}\,m\,\mathrm{AppellF1}\left[\frac{5}{2},1-2\,m,\right.\right.$$

$$1+2\,m,\frac{7}{2},\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\mathrm{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]+$$

$$\frac{3}{10}\,(1-2\,m)\,\mathrm{AppellF1}\left[\frac{5}{2},2-2\,m,2\,m,\frac{7}{2},\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\mathrm{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2$$

$$\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-\frac{3}{10}\,(1+2\,m)\,\mathrm{AppellF1}\left[\frac{5}{2},-2\,m,2+2\,m,\frac{7}{2},\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]$$

$$\left.\left.\mathrm{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\right)\right)\left(20\,(A+B)\,m\,\mathrm{AppellF1}\left[\frac{3}{2},-2\,m,2\,m,\frac{5}{2},\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\right.\right.$$

$$\left.-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\left(\mathrm{AppellF1}\left[\frac{3}{2},1-2\,m,2\,m,\frac{5}{2},\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.$$

$$\left.\mathrm{AppellF1}\left[\frac{3}{2},-2\,m,1+2\,m,\frac{5}{2},\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^6-$$

$$3\,\text{AppellF1}\left[\frac{1}{2},-2m,2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2$$

$$\left(-12\,(3A-5B)\,m\left(\text{AppellF1}\left[\frac{5}{2},1-2m,2m,\frac{7}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.\right.$$

$$\left.\text{AppellF1}\left[\frac{5}{2},-2m,1+2m,\frac{7}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2+5\,\text{AppellF1}\left[\frac{3}{2},-2m,2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]$$

$$\left.\left.\left.\left.\left(B\left(-15+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)+A\left(9+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\right)\right)\right)\right)\right)\Big/$$

$$\left(\left(3\,\text{AppellF1}\left[\frac{1}{2},-2m,2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]-4m\left(\text{AppellF1}\left[\frac{3}{2},1-2m,\right.\right.\right.\right.$$

$$2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\text{AppellF1}\left[\frac{3}{2},-2m,1+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,$$

$$\left.\left.-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^2\left(-5\,\text{AppellF1}\left[\frac{3}{2},-2m,2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\right.\right.$$

$$-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+4m\left(\text{AppellF1}\left[\frac{5}{2},1-2m,2m,\frac{7}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$\left.\left.\text{AppellF1}\left[\frac{5}{2},-2m,1+2m,\frac{7}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)-$$

$$\left(\left(2m\left(\text{AppellF1}\left[\frac{5}{2},1-2m,2m,\frac{7}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\text{AppellF1}\left[\frac{5}{2},-2m,\right.\right.\right.\right.$$

$$\left.1+2m,\frac{7}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-$$

$$5\left(-\frac{3}{5}m\,\text{AppellF1}\left[\frac{5}{2},1-2m,2m,\frac{7}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right.$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{3}{5}m\,\text{AppellF1}\left[\frac{5}{2},-2m,1+2m,\frac{7}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]$$

$$\left.\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)+4m\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2$$

$$\left(-\frac{10}{7}m\,\text{AppellF1}\left[\frac{7}{2},1-2m,1+2m,\frac{9}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right.$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]+\frac{5}{14}(1-2m)\,\text{AppellF1}\left[\frac{7}{2},2-2m,2m,\frac{9}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{5}{14}(1+2m)\,\text{AppellF1}\left[\frac{7}{2},-2m,2+2m,\frac{9}{2},\right.$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right] \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\Bigg)\Bigg)$$

$$\Bigg(20\,(A+B)\,m\,\text{AppellF1}\left[\frac{3}{2}, -2m, 2m, \frac{5}{2}, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]$$

$$\Bigg(\text{AppellF1}\left[\frac{3}{2}, 1-2m, 2m, \frac{5}{2}, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$\text{AppellF1}\left[\frac{3}{2}, -2m, 1+2m, \frac{5}{2}, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\Bigg) \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^6 -$$

$$3\,\text{AppellF1}\left[\frac{1}{2}, -2m, 2m, \frac{3}{2}, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right] \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2$$

$$\Bigg(-12\,(3A-5B)\,m\,\Bigg(\text{AppellF1}\left[\frac{5}{2}, 1-2m, 2m, \frac{7}{2}, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$\text{AppellF1}\left[\frac{5}{2}, -2m, 1+2m, \frac{7}{2}, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\Bigg)$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 + 5\,\text{AppellF1}\left[\frac{3}{2}, -2m, 2m, \frac{5}{2}, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]$$

$$\left(B\left(-15+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right) + A\left(9+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\right)\Bigg)\Bigg)\Bigg)\Bigg) \Big/$$

$$\Bigg(\Bigg(3\,\text{AppellF1}\left[\frac{1}{2}, -2m, 2m, \frac{3}{2}, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right] - 4m\,\Bigg(\text{AppellF1}\left[\frac{3}{2}, 1-2m,\right.$$

$$\left.2m, \frac{5}{2}, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right] + \text{AppellF1}\left[\frac{3}{2}, -2m, 1+2m, \frac{5}{2}, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\right.$$

$$\left.-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\Bigg) \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg) \Bigg(-5\,\text{AppellF1}\left[\frac{3}{2}, -2m, 2m, \frac{5}{2}, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\right.$$

$$\left.-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right] + 4m\,\Bigg(\text{AppellF1}\left[\frac{5}{2}, 1-2m, 2m, \frac{7}{2}, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$\text{AppellF1}\left[\frac{5}{2}, -2m, 1+2m, \frac{7}{2}, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\Bigg) \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)^2\Bigg) +$$

$$\Bigg(30\,(A+B)\,m\,\text{AppellF1}\left[\frac{3}{2}, -2m, 2m, \frac{5}{2}, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right] \Bigg(\text{AppellF1}\left[\frac{3}{2},\right.$$

$$\left.1-2m, 2m, \frac{5}{2}, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right] + \text{AppellF1}\left[\frac{3}{2}, -2m, 1+2m, \frac{5}{2},\right.$$

$$\left.\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\Bigg) \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^5 +$$

$$20\,(A+B)\,m\,\Bigg(\text{AppellF1}\left[\frac{3}{2}, 1-2m, 2m, \frac{5}{2}, \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right] +$$

$$\text{AppellF1}\left[\frac{3}{2},-2m,1+2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\Big)$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^6\Big(-\frac{3}{5}m\,\text{AppellF1}\left[\frac{5}{2},1-2m,2m,\frac{7}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{3}{5}m\,\text{AppellF1}\Big[\frac{5}{2},-2m,1+2m,\frac{7}{2},$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\Big)+$$

$$20(A+B)m\,\text{AppellF1}\left[\frac{3}{2},-2m,2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^6$$

$$\Big(-\frac{6}{5}m\,\text{AppellF1}\left[\frac{5}{2},1-2m,1+2m,\frac{7}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]+\frac{3}{10}(1-2m)\,\text{AppellF1}\left[\frac{5}{2},2-2m,2m,\frac{7}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{3}{10}(1+2m)\,\text{AppellF1}\Big[\frac{5}{2},-2m,2+2m,\frac{7}{2},$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\Big)-$$

$$\frac{3}{2}\text{AppellF1}\left[\frac{1}{2},-2m,2m,\frac{3}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]$$

$$\Big(-12(3A-5B)m\Big(\text{AppellF1}\left[\frac{5}{2},1-2m,2m,\frac{7}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\text{AppellF1}\Big[\frac{5}{2},-2m,$$

$$1+2m,\frac{7}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\Big)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2+5\,\text{AppellF1}\Big[\frac{3}{2},-2m,2m,\frac{5}{2},$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\left(B\left(-15+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)+A\left(9+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\right)\Big)-$$

$$3\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big(-\frac{1}{3}m\,\text{AppellF1}\left[\frac{3}{2},1-2m,2m,\frac{5}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{1}{3}m\,\text{AppellF1}\Big[\frac{3}{2},-2m,1+2m,\frac{5}{2},$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\Big)$$

$$\Big(-12(3A-5B)m\Big(\text{AppellF1}\left[\frac{5}{2},1-2m,2m,\frac{7}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\text{AppellF1}\Big[\frac{5}{2},-2m,$$

$$1+2m,\frac{7}{2},\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\Big)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2+5\,\text{AppellF1}\Big[\frac{3}{2},-2m,2m,\frac{5}{2},$$

$$\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2,\ -\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2]\ (B(-15+\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2)+A(9+\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2)))) -$$

$$3\,\text{AppellF1}[\tfrac{1}{2},\ -2m,\ 2m,\ \tfrac{3}{2},\ \text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2,\ -\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2]\ \text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2$$

$$(-6\,(3A-5B)\,m\,(\text{AppellF1}[\tfrac{5}{2},\ 1-2m,\ 2m,\ \tfrac{7}{2},\ \text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2,\ -\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2]+$$

$$\text{AppellF1}[\tfrac{5}{2},\ -2m,\ 1+2m,\ \tfrac{7}{2},\ \text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2,\ -\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2])\ \text{Sec}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2$$

$$\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]+5\,\text{AppellF1}[\tfrac{3}{2},\ -2m,\ 2m,\ \tfrac{5}{2},\ \text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2,\ -\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2]$$

$$(\tfrac{1}{2}A\,\text{Sec}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2\ \text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]+\tfrac{1}{2}B\,\text{Sec}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2\ \text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)])-12\,(3A-5B)$$

$$m\,\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2\ (-\tfrac{10}{7}m\,\text{AppellF1}[\tfrac{7}{2},\ 1-2m,\ 1+2m,\ \tfrac{9}{2},\ \text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2,\ -\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2]$$

$$\text{Sec}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2\ \text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]+\tfrac{5}{14}(1-2m)\,\text{AppellF1}[\tfrac{7}{2},\ 2-2m,\ 2m,\ \tfrac{9}{2},\ \text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2,$$

$$-\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2]\ \text{Sec}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2\ \text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]-\tfrac{5}{14}(1+2m)\,\text{AppellF1}[\tfrac{7}{2},\ -2m,$$

$$2+2m,\ \tfrac{9}{2},\ \text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2,\ -\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2]\ \text{Sec}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2\ \text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)])+$$

$$5\,(-\tfrac{3}{5}m\,\text{AppellF1}[\tfrac{5}{2},\ 1-2m,\ 2m,\ \tfrac{7}{2},\ \text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2,\ -\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2]\ \text{Sec}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2$$

$$\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]-\tfrac{3}{5}m\,\text{AppellF1}[\tfrac{5}{2},\ -2m,\ 1+2m,\ \tfrac{7}{2},\ \text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2,\ -\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2]$$

$$\text{Sec}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2\ \text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]))\ (B(-15+\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2)+A(9+\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2))))\ /$$

$$((3\,\text{AppellF1}[\tfrac{1}{2},\ -2m,\ 2m,\ \tfrac{3}{2},\ \text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2,\ -\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2]-4m\,(\text{AppellF1}[\tfrac{3}{2},\ 1-2m,$$

$$2m,\ \tfrac{5}{2},\ \text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2,\ -\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2]+\text{AppellF1}[\tfrac{3}{2},\ -2m,\ 1+2m,\ \tfrac{5}{2},\ \text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2,$$

$$-\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2])\ \text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2)\ (-5\,\text{AppellF1}[\tfrac{3}{2},\ -2m,\ 2m,\ \tfrac{5}{2},\ \text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2,$$

$$-\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2]+4m\,(\text{AppellF1}[\tfrac{5}{2},\ 1-2m,\ 2m,\ \tfrac{7}{2},\ \text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2,\ -\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2]+$$

$$\text{AppellF1}[\tfrac{5}{2},\ -2m,\ 1+2m,\ \tfrac{7}{2},\ \text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2,\ -\text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2])\ \text{Tan}[\tfrac{1}{4}(-e+\tfrac{\pi}{2}-f x)]^2)))))))$$

Problem 202: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{(a + a \sin[e + f x])^m (A + B \sin[e + f x])}{(c - c \sin[e + f x])^3} \, dx$$

Optimal (type 5, 148 leaves, 5 steps):

$$\frac{1}{5 a^2 c^3 f (2 - m)} 2^{\frac{1}{2}+m} (A (2 - m) - B (3 + m)) \text{Hypergeometric2F1}\left[-\frac{5}{2}, \frac{1}{2} - m, -\frac{3}{2}, \frac{1}{2} (1 - \sin[e + f x])\right] \sec[e + f x]^5 (1 + \sin[e + f x])^{\frac{1}{2}-m} (a + a \sin[e + f x])^{2+m} + \frac{B \sec[e + f x]^5 (a + a \sin[e + f x])^{3+m}}{a^3 c^3 f (2 - m)}$$

Result (type 6, 34 716 leaves): Display of huge result suppressed!

Problem 203: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{(a + a \sin[e + f x])^m (A + B \sin[e + f x])}{\sqrt{c - c \sin[e + f x]}} \, dx$$

Optimal (type 5, 118 leaves, 4 steps):

$$-\frac{2 B \cos[e + f x] (a + a \sin[e + f x])^m}{f (1 + 2 m) \sqrt{c - c \sin[e + f x]}} + \frac{(A + B) \cos[e + f x] \text{Hypergeometric2F1}\left[1, \frac{1}{2} + m, \frac{3}{2} + m, \frac{1}{2} (1 + \sin[e + f x])\right] (a + a \sin[e + f x])^m}{f (1 + 2 m) \sqrt{c - c \sin[e + f x]}}$$

Result (type 6, 7013 leaves):

$$-\Bigg(\Bigg(\sqrt{2} \left(\cos\left[\frac{1}{2} (e + f x)\right] - \sin\left[\frac{1}{2} (e + f x)\right]\right) (a + a \sin[e + f x])^m$$

$$\left(\frac{A \cos\left[\frac{1}{2} \left(-e + \frac{\pi}{2} - f x\right)\right]^{2 m}}{\cos\left[\frac{\pi}{4} + \frac{1}{2} \left(e - \frac{\pi}{2} + f x\right)\right] - \sin\left[\frac{\pi}{4} + \frac{1}{2} \left(e - \frac{\pi}{2} + f x\right)\right]} + \frac{B \cos\left[\frac{1}{2} \left(-e + \frac{\pi}{2} - f x\right)\right]^{2 m} \sin[e + f x]}{\cos\left[\frac{\pi}{4} + \frac{1}{2} \left(e - \frac{\pi}{2} + f x\right)\right] - \sin\left[\frac{\pi}{4} + \frac{1}{2} \left(e - \frac{\pi}{2} + f x\right)\right]}\right)$$

$$\left(2 B \left(\cos\left[\frac{1}{2} \left(-e + \frac{\pi}{2} - f x\right)\right] - \cos\left[\frac{1}{2} \left(-e + \frac{\pi}{2} - f x\right)\right]\right]^{-2 m}\right) + \Bigg(A (1 + m) \text{AppellF1}\Big[1 + 2 m, 2 m, 1, 2 + 2 m,$$

$$\frac{1}{2} \left(1 - \tan\left[\frac{1}{4} \left(-e + \frac{\pi}{2} - f x\right)\right]^2\right), 1 - \tan\left[\frac{1}{4} \left(-e + \frac{\pi}{2} - f x\right)\right]^2\Big] \cot\left[\frac{1}{4} \left(-e + \frac{\pi}{2} - f x\right)\right]^2 \left(1 - \tan\left[\frac{1}{4} \left(-e + \frac{\pi}{2} - f x\right)\right]^2\right)\Bigg) \Big/$$

$$\Bigg(-2 (1 + m) \text{AppellF1}\Big[1 + 2 m, 2 m, 1, 2 + 2 m, \frac{1}{2} \left(1 - \tan\left[\frac{1}{4} \left(-e + \frac{\pi}{2} - f x\right)\right]^2\right), 1 - \tan\left[\frac{1}{4} \left(-e + \frac{\pi}{2} - f x\right)\right]^2\Big] +$$

$$\Bigg(\text{AppellF1}\Big[2 + 2 m, 2 m, 2, 3 + 2 m, \frac{1}{2} \left(1 - \tan\left[\frac{1}{4} \left(-e + \frac{\pi}{2} - f x\right)\right]^2\right), 1 - \tan\left[\frac{1}{4} \left(-e + \frac{\pi}{2} - f x\right)\right]^2\Big] + m$$

$$\text{AppellF1}\Big[2 + 2 m, 1 + 2 m, 1, 3 + 2 m, \frac{1}{2} \left(1 - \tan\left[\frac{1}{4} \left(-e + \frac{\pi}{2} - f x\right)\right]^2\right), 1 - \tan\left[\frac{1}{4} \left(-e + \frac{\pi}{2} - f x\right)\right]^2\Big]\Bigg) \left(-1 + \tan\left[\frac{1}{4} \left(-e + \frac{\pi}{2} - f x\right)\right]^2\right)\Bigg) +$$

$$\Bigg(B (1 + m) \text{AppellF1}\Big[1 + 2 m, 2 m, 1, 2 + 2 m, \frac{1}{2} \left(1 - \tan\left[\frac{1}{4} \left(-e + \frac{\pi}{2} - f x\right)\right]^2\right), 1 - \tan\left[\frac{1}{4} \left(-e + \frac{\pi}{2} - f x\right)\right]^2\Big]$$

$$\text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\,\Big(1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)\Big)\Big/$$

$$\Big(-2\,(1+m)\,\text{AppellF1}\Big[1+2\,m,\,2\,m,\,1,\,2+2\,m,\,\frac{1}{2}\Big(1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big),\,1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+$$

$$\Big(\text{AppellF1}\Big[2+2\,m,\,2\,m,\,2,\,3+2\,m,\,\frac{1}{2}\Big(1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big),\,1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+m\,\text{AppellF1}\Big[2+2\,m,\,1+$$

$$2\,m,\,1,\,3+2\,m,\,\frac{1}{2}\Big(1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big),\,1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\Big)\,\Big(-1+\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)\Big)\Big)\Big)\Big/$$

$$\Big(f\,(1+2\,m)\,\sqrt{c-c\,\text{Sin}[e+f\,x]}\,\Big(-\frac{1}{1+2\,m}\sqrt{2}\,m\,\text{Cos}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^{-1+2\,m}\,\text{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]$$

$$\Big(2\,B\,\Big(\text{Cos}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]-\text{Cos}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^{-2\,m}\Big)+\Big(A\,(1+m)\,\text{AppellF1}\Big[1+2\,m,\,2\,m,\,1,\,2+2\,m,$$

$$\frac{1}{2}\Big(1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big),\,1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\,\text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\,\Big(1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)\Big)\Big/$$

$$\Big(-2\,(1+m)\,\text{AppellF1}\Big[1+2\,m,\,2\,m,\,1,\,2+2\,m,\,\frac{1}{2}\Big(1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big),\,1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+$$

$$\Big(\text{AppellF1}\Big[2+2\,m,\,2\,m,\,2,\,3+2\,m,\,\frac{1}{2}\Big(1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big),\,1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+m\,\text{AppellF1}\Big[2+2\,m,$$

$$1+2\,m,\,1,\,3+2\,m,\,\frac{1}{2}\Big(1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big),\,1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\Big)\,\Big(-1+\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)\Big)+$$

$$\Big(B\,(1+m)\,\text{AppellF1}\Big[1+2\,m,\,2\,m,\,1,\,2+2\,m,\,\frac{1}{2}\Big(1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big),\,1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]$$

$$\text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\,\Big(1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)\Big)\Big/$$

$$\Big(-2\,(1+m)\,\text{AppellF1}\Big[1+2\,m,\,2\,m,\,1,\,2+2\,m,\,\frac{1}{2}\Big(1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big),\,1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+$$

$$\Big(\text{AppellF1}\Big[2+2\,m,\,2\,m,\,2,\,3+2\,m,\,\frac{1}{2}\Big(1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big),\,1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+m\,\text{AppellF1}\Big[2+2\,m,$$

$$1+2\,m,\,1,\,3+2\,m,\,\frac{1}{2}\Big(1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big),\,1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\Big)\,\Big(-1+\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)\Big)\Big)\Big)+$$

$$\frac{1}{1+2\,m}\sqrt{2}\,\text{Cos}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^{2\,m}\,\Big(2\,B\,\Big(-\frac{1}{2}\text{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]-m\,\text{Cos}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^{-1-2\,m}\,\text{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\Big)-$$

$$\Big(A\,(1+m)\,\text{AppellF1}\Big[1+2\,m,\,2\,m,\,1,\,2+2\,m,\,\frac{1}{2}\Big(1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big),\,1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\,\text{Csc}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\,\text{Sec}\Big[\frac{1}{4}$$

$$\left(-e+\frac{\pi}{2}-f\,x\right)\Big]\Big)\Big/\ \Big(2\ \Big(-2\ (1+m)\ \text{AppellF1}\Big[1+2\,m,\ 2\,m,\ 1,\ 2+2\,m,\ \frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right),\ 1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]+$$

$$\Big(\text{AppellF1}\Big[2+2\,m,\ 2\,m,\ 2,\ 3+2\,m,\ \frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right),\ 1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]+m\,\text{AppellF1}\Big[2+2\,m,$$

$$1+2\,m,\ 1,\ 3+2\,m,\ \frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right),\ 1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]\Big)\ \left(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\Big)\Big)-$$

$$\Big(B\ (1+m)\ \text{AppellF1}\Big[1+2\,m,\ 2\,m,\ 1,\ 2+2\,m,\ \frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right),\ 1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]\ \text{Csc}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\ \text{Sec}\Big[\frac{1}{4}$$

$$\left(-e+\frac{\pi}{2}-f\,x\right)\Big]\Big)\Big/\ \Big(2\ \Big(-2\ (1+m)\ \text{AppellF1}\Big[1+2\,m,\ 2\,m,\ 1,\ 2+2\,m,\ \frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right),\ 1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]+$$

$$\Big(\text{AppellF1}\Big[2+2\,m,\ 2\,m,\ 2,\ 3+2\,m,\ \frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right),\ 1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]+m\,\text{AppellF1}\Big[2+2\,m,$$

$$1+2\,m,\ 1,\ 3+2\,m,\ \frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right),\ 1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]\Big)\ \left(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\Big)\Big)-$$

$$\Big(A\ (1+m)\ \text{AppellF1}\Big[1+2\,m,\ 2\,m,\ 1,\ 2+2\,m,\ \frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right),\ 1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]$$

$$\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\ \text{Csc}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\ \left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\Big)\Big/$$

$$\Big(2\ \Big(-2\ (1+m)\ \text{AppellF1}\Big[1+2\,m,\ 2\,m,\ 1,\ 2+2\,m,\ \frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right),\ 1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]+$$

$$\Big(\text{AppellF1}\Big[2+2\,m,\ 2\,m,\ 2,\ 3+2\,m,\ \frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right),\ 1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]+m\,\text{AppellF1}\Big[2+2\,m,$$

$$1+2\,m,\ 1,\ 3+2\,m,\ \frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right),\ 1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]\Big)\ \left(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\Big)\Big)-$$

$$\Big(B\ (1+m)\ \text{AppellF1}\Big[1+2\,m,\ 2\,m,\ 1,\ 2+2\,m,\ \frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right),\ 1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]$$

$$\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\ \text{Csc}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\ \left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\Big)\Big/$$

$$\Big(2\ \Big(-2\ (1+m)\ \text{AppellF1}\Big[1+2\,m,\ 2\,m,\ 1,\ 2+2\,m,\ \frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right),\ 1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]+$$

$$\Big(\text{AppellF1}\Big[2+2\,m,\ 2\,m,\ 2,\ 3+2\,m,\ \frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right),\ 1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]+m\,\text{AppellF1}\Big[2+2\,m,$$

$$1+2\,m,\ 1,\ 3+2\,m,\ \frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right),\ 1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]\Big)\ \left(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\Big)\Big)+$$

$$\Big(A\ (1+m)\ \text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\ \Big(-\frac{1}{2\ (2+2\,m)}\ (1+2\,m)\ \text{AppellF1}\Big[2+2\,m,\ 2\,m,\ 2,\ 3+2\,m,\ \frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right),$$

$$1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\ \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{1}{2\ (2+2\ m)}$$

$$m\ (1+2\ m)\ \text{AppellF1}\Big[2+2\ m,\ 1+2\ m,\ 1,\ 3+2\ m,\ \frac{1}{2}\Big(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big),\ 1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\Big)\Big)\ \Big(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big)\Big)\Big/$$

$$\Big(-2\ (1+m)\ \text{AppellF1}\Big[1+2\ m,\ 2\ m,\ 1,\ 2+2\ m,\ \frac{1}{2}\Big(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big),\ 1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]+$$

$$\Big(\text{AppellF1}\Big[2+2\ m,\ 2\ m,\ 2,\ 3+2\ m,\ \frac{1}{2}\Big(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big),\ 1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]+m\ \text{AppellF1}\Big[2+2\ m,$$

$$1+2\ m,\ 1,\ 3+2\ m,\ \frac{1}{2}\Big(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big),\ 1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\Big)\ \Big(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big)\Big)+$$

$$\Big(B\ (1+m)\ \text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big(-\frac{1}{2\ (2+2\ m)}(1+2\ m)\ \text{AppellF1}\Big[2+2\ m,\ 2\ m,\ 2,\ 3+2\ m,\ \frac{1}{2}\Big(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big),$$

$$1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\ \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{1}{2\ (2+2\ m)}$$

$$m\ (1+2\ m)\ \text{AppellF1}\Big[2+2\ m,\ 1+2\ m,\ 1,\ 3+2\ m,\ \frac{1}{2}\Big(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big),\ 1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\Big)\Big)\ \Big(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big)\Big)\Big/$$

$$\Big(-2\ (1+m)\ \text{AppellF1}\Big[1+2\ m,\ 2\ m,\ 1,\ 2+2\ m,\ \frac{1}{2}\Big(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big),\ 1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]+$$

$$\Big(\text{AppellF1}\Big[2+2\ m,\ 2\ m,\ 2,\ 3+2\ m,\ \frac{1}{2}\Big(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big),\ 1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]+m\ \text{AppellF1}\Big[2+2\ m,$$

$$1+2\ m,\ 1,\ 3+2\ m,\ \frac{1}{2}\Big(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big),\ 1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\Big)\ \Big(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big)\Big)-$$

$$\Big(A\ (1+m)\ \text{AppellF1}\Big[1+2\ m,\ 2\ m,\ 1,\ 2+2\ m,\ \frac{1}{2}\Big(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big),\ 1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\ \text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2$$

$$\Big(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big)\ \Big(\frac{1}{2}\Big(\text{AppellF1}\Big[2+2\ m,\ 2\ m,\ 2,\ 3+2\ m,\ \frac{1}{2}\Big(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big),\ 1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]+$$

$$m\ \text{AppellF1}\Big[2+2\ m,\ 1+2\ m,\ 1,\ 3+2\ m,\ \frac{1}{2}\Big(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big),\ 1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\Big)\ \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-2\ (1+m)\ \Big(-\frac{1}{2\ (2+2\ m)}(1+2\ m)\ \text{AppellF1}\Big[2+2\ m,\ 2\ m,\ 2,\ 3+2\ m,\ \frac{1}{2}\Big(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big),\ 1-$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\ \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{1}{2\ (2+2\ m)}m\ (1+2\ m)\ \text{AppellF1}\Big[2+2\ m,\ 1+2\ m,$$

$$1,\ 3+2m,\ \frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right),\ 1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2]\ \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]])+$$

$$\left(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\ (-\frac{1}{3+2m}(2+2m)\ \text{AppellF1}[3+2m,\ 2m,\ 3,\ 4+2m,\ \frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right),\ 1-$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2]\ \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]]-\frac{1}{2\,(3+2m)}m\,(2+2m)\ \text{AppellF1}[3+2m,\ 1+2m,$$

$$2,\ 4+2m,\ \frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right),\ 1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2]\ \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]]+$$

$$m\ (-\frac{1}{2\,(3+2m)}(2+2m)\ \text{AppellF1}[3+2m,\ 1+2m,\ 2,\ 4+2m,\ \frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right),\ 1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2]$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]]-\frac{1}{4\,(3+2m)}(1+2m)\ (2+2m)\ \text{AppellF1}[3+2m,\ 2+2m,\ 1,\ 4+2m,$$

$$\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right),\ 1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2]\ \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]])))))\Big/$$

$$(-2\,(1+m)\ \text{AppellF1}[1+2m,\ 2m,\ 1,\ 2+2m,\ \frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right),\ 1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2]+$$

$$(\text{AppellF1}[2+2m,\ 2m,\ 2,\ 3+2m,\ \frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right),\ 1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2]+m\,\text{AppellF1}[2+2m,$$

$$1+2m,\ 1,\ 3+2m,\ \frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right),\ 1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2])\ \left(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right))^2-$$

$$(B\,(1+m)\ \text{AppellF1}[1+2m,\ 2m,\ 1,\ 2+2m,\ \frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right),\ 1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2]\ \text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2$$

$$\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\ (\frac{1}{2}(\text{AppellF1}[2+2m,\ 2m,\ 2,\ 3+2m,\ \frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right),\ 1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2]+$$

$$m\,\text{AppellF1}[2+2m,\ 1+2m,\ 1,\ 3+2m,\ \frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right),\ 1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2])\ \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-2\,(1+m)\ (-\frac{1}{2\,(2+2m)}(1+2m)\ \text{AppellF1}[2+2m,\ 2m,\ 2,\ 3+2m,\ \frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right),\ 1-$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2]\ \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]]-\frac{1}{2\,(2+2m)}m\,(1+2m)\ \text{AppellF1}[2+2m,\ 1+2m,$$

$$1,\ 3+2m,\ \frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right),\ 1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2]\ \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]])+$$

$$\left(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\ (-\frac{1}{3+2m}(2+2m)\ \text{AppellF1}[3+2m,\ 2m,\ 3,\ 4+2m,\ \frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right),\ 1-$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2]\ \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]]-\frac{1}{2\,(3+2m)}m\,(2+2m)\ \text{AppellF1}[3+2m,\ 1+2m,$$

$$2,\ 4+2\,m,\ \frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right),\ 1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]\ \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]+$$

$$m\left(-\frac{1}{2\,(3+2\,m)}\,(2+2\,m)\ \text{AppellF1}\Big[3+2\,m,\ 1+2\,m,\ 2,\ 4+2\,m,\ \frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right),\ 1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]\right.$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-\frac{1}{4\,(3+2\,m)}\,(1+2\,m)\ (2+2\,m)\ \text{AppellF1}\Big[3+2\,m,\ 2+2\,m,\ 1,\ 4+2\,m,$$

$$\left.\left.\left.\left.\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right),\ 1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]\ \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\right)\right)\right)\right)\Big/$$

$$\left(-2\,(1+m)\ \text{AppellF1}\Big[1+2\,m,\ 2\,m,\ 1,\ 2+2\,m,\ \frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right),\ 1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]+\right.$$

$$\left(\text{AppellF1}\Big[2+2\,m,\ 2\,m,\ 2,\ 3+2\,m,\ \frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right),\ 1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]+m\ \text{AppellF1}\Big[2+2\,m,\right.$$

$$\left.\left.\left.\left.1+2\,m,\ 1,\ 3+2\,m,\ \frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right),\ 1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]\right)\left(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\right)^2\right)\right)\right)$$

- **Problem 204: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int\frac{(A+B\,\text{Sin}[e+f\,x])\ (c+c\,\text{Sin}[e+f\,x])^m}{\sqrt{a-a\,\text{Sin}[e+f\,x]}}\,dx$$

Optimal (type 5, 118 leaves, 4 steps):

$$-\frac{2\,B\,\text{Cos}[e+f\,x]\ (c+c\,\text{Sin}[e+f\,x])^m}{f\,(1+2\,m)\,\sqrt{a-a\,\text{Sin}[e+f\,x]}}+\frac{(A+B)\ \text{Cos}[e+f\,x]\ \text{Hypergeometric2F1}\left[1,\ \frac{1}{2}+m,\ \frac{3}{2}+m,\ \frac{1}{2}\,(1+\text{Sin}[e+f\,x])\right]\ (c+c\,\text{Sin}[e+f\,x])^m}{f\,(1+2\,m)\,\sqrt{a-a\,\text{Sin}[e+f\,x]}}$$

Result (type 6, 7013 leaves):

$$-\left(\left(\left(\sqrt{2}\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)\ (c+c\,\text{Sin}[e+f\,x])^m\right.\right.\right.$$

$$\left(\frac{A\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2\,m}}{\text{Cos}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f\,x\right)\right]-\text{Sin}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f\,x\right)\right]}+\frac{B\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2\,m}\ \text{Sin}[e+f\,x]}{\text{Cos}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f\,x\right)\right]-\text{Sin}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f\,x\right)\right]}\right)$$

$$\left(2\,B\left(\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{-2\,m}\right)+\left(A\,(1+m)\ \text{AppellF1}\Big[1+2\,m,\ 2\,m,\ 1,\ 2+2\,m,\right.\right.$$

$$\left.\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right),\ 1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]\ \text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\right)\Big/$$

$$\left(-2\,(1+m)\ \text{AppellF1}\Big[1+2\,m,\ 2\,m,\ 1,\ 2+2\,m,\ \frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right),\ 1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]+\right.$$

$$\left(\text{AppellF1}\left[2+2m,\,2m,\,2,\,3+2m,\,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right),\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+m\right.$$

$$\left.\text{AppellF1}\left[2+2m,\,1+2m,\,1,\,3+2m,\,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right),\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\left(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\Bigg)+$$

$$\left(B\,(1+m)\,\text{AppellF1}\left[1+2m,\,2m,\,1,\,2+2m,\,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right),\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right.$$

$$\left.\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\right)\Big/$$

$$\left(-2\,(1+m)\,\text{AppellF1}\left[1+2m,\,2m,\,1,\,2+2m,\,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right),\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$\left(\text{AppellF1}\left[2+2m,\,2m,\,2,\,3+2m,\,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right),\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+m\,\text{AppellF1}\left[2+2m,\,1+\right.\right.$$

$$\left.\left.\left.2m,\,1,\,3+2m,\,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right),\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\left(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\right)\right)\Bigg)\Big/$$

$$\left(f\,(1+2m)\,\sqrt{a-a\,\text{Sin}[e+f x]}\,\left(-\frac{1}{1+2m}\sqrt{2}\,m\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{-1+2m}\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\right.\right.$$

$$\left(2\,B\left(\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]-\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{-2m}\right)+\left(A\,(1+m)\,\text{AppellF1}\left[1+2m,\,2m,\,1,\,2+2m,\right.\right.\right.$$

$$\left.\left.\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right),\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\right)\Big/$$

$$\left(-2\,(1+m)\,\text{AppellF1}\left[1+2m,\,2m,\,1,\,2+2m,\,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right),\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$\left(\text{AppellF1}\left[2+2m,\,2m,\,2,\,3+2m,\,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right),\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+m\,\text{AppellF1}\left[2+2m,\right.\right.$$

$$\left.\left.\left.1+2m,\,1,\,3+2m,\,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right),\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\left(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\right)+$$

$$\left(B\,(1+m)\,\text{AppellF1}\left[1+2m,\,2m,\,1,\,2+2m,\,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right),\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right.$$

$$\left.\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\right)\Big/$$

$$\left(-2\,(1+m)\,\text{AppellF1}\left[1+2m,\,2m,\,1,\,2+2m,\,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right),\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$\left(\text{AppellF1}\left[2+2m,\,2m,\,2,\,3+2m,\,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right),\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+m\,\text{AppellF1}\left[2+2m,\right.\right.$$

$$1+2 m, 1, 3+2 m, \frac{1}{2} (1-\text{Tan}[\frac{1}{4} (-e+\frac{\pi}{2}-f x)]^2), 1-\text{Tan}[\frac{1}{4} (-e+\frac{\pi}{2}-f x)]^2]) (-1+\text{Tan}[\frac{1}{4} (-e+\frac{\pi}{2}-f x)]^2))) +$$

$$\frac{1}{1+2 m} \sqrt{2}\, \text{Cos}[\frac{1}{2} (-e+\frac{\pi}{2}-f x)]^{2 m} (2 B (-\frac{1}{2} \text{Sin}[\frac{1}{2} (-e+\frac{\pi}{2}-f x)]-m\, \text{Cos}[\frac{1}{2} (-e+\frac{\pi}{2}-f x)]^{-1-2 m} \text{Sin}[\frac{1}{2} (-e+\frac{\pi}{2}-f x)]) -$$

$$(A (1+m) \text{AppellF1}[1+2 m, 2 m, 1, 2+2 m, \frac{1}{2} (1-\text{Tan}[\frac{1}{4} (-e+\frac{\pi}{2}-f x)]^2), 1-\text{Tan}[\frac{1}{4} (-e+\frac{\pi}{2}-f x)]^2] \text{Csc}[\frac{1}{4} (-e+\frac{\pi}{2}-f x)] \text{Sec}[\frac{1}{4}$$

$$(-e+\frac{\pi}{2}-f x)]) / (2 (-2 (1+m) \text{AppellF1}[1+2 m, 2 m, 1, 2+2 m, \frac{1}{2} (1-\text{Tan}[\frac{1}{4} (-e+\frac{\pi}{2}-f x)]^2), 1-\text{Tan}[\frac{1}{4} (-e+\frac{\pi}{2}-f x)]^2] +$$

$$(\text{AppellF1}[2+2 m, 2 m, 2, 3+2 m, \frac{1}{2} (1-\text{Tan}[\frac{1}{4} (-e+\frac{\pi}{2}-f x)]^2), 1-\text{Tan}[\frac{1}{4} (-e+\frac{\pi}{2}-f x)]^2] + m\, \text{AppellF1}[2+2 m,$$

$$1+2 m, 1, 3+2 m, \frac{1}{2} (1-\text{Tan}[\frac{1}{4} (-e+\frac{\pi}{2}-f x)]^2), 1-\text{Tan}[\frac{1}{4} (-e+\frac{\pi}{2}-f x)]^2]) (-1+\text{Tan}[\frac{1}{4} (-e+\frac{\pi}{2}-f x)]^2))) -$$

$$(B (1+m) \text{AppellF1}[1+2 m, 2 m, 1, 2+2 m, \frac{1}{2} (1-\text{Tan}[\frac{1}{4} (-e+\frac{\pi}{2}-f x)]^2), 1-\text{Tan}[\frac{1}{4} (-e+\frac{\pi}{2}-f x)]^2] \text{Csc}[\frac{1}{4} (-e+\frac{\pi}{2}-f x)] \text{Sec}[\frac{1}{4}$$

$$(-e+\frac{\pi}{2}-f x)]) / (2 (-2 (1+m) \text{AppellF1}[1+2 m, 2 m, 1, 2+2 m, \frac{1}{2} (1-\text{Tan}[\frac{1}{4} (-e+\frac{\pi}{2}-f x)]^2), 1-\text{Tan}[\frac{1}{4} (-e+\frac{\pi}{2}-f x)]^2] +$$

$$(\text{AppellF1}[2+2 m, 2 m, 2, 3+2 m, \frac{1}{2} (1-\text{Tan}[\frac{1}{4} (-e+\frac{\pi}{2}-f x)]^2), 1-\text{Tan}[\frac{1}{4} (-e+\frac{\pi}{2}-f x)]^2] + m\, \text{AppellF1}[2+2 m,$$

$$1+2 m, 1, 3+2 m, \frac{1}{2} (1-\text{Tan}[\frac{1}{4} (-e+\frac{\pi}{2}-f x)]^2), 1-\text{Tan}[\frac{1}{4} (-e+\frac{\pi}{2}-f x)]^2]) (-1+\text{Tan}[\frac{1}{4} (-e+\frac{\pi}{2}-f x)]^2))) -$$

$$(A (1+m) \text{AppellF1}[1+2 m, 2 m, 1, 2+2 m, \frac{1}{2} (1-\text{Tan}[\frac{1}{4} (-e+\frac{\pi}{2}-f x)]^2), 1-\text{Tan}[\frac{1}{4} (-e+\frac{\pi}{2}-f x)]^2]$$

$$\text{Cot}[\frac{1}{4} (-e+\frac{\pi}{2}-f x)] \text{Csc}[\frac{1}{4} (-e+\frac{\pi}{2}-f x)]^2 (1-\text{Tan}[\frac{1}{4} (-e+\frac{\pi}{2}-f x)]^2)) /$$

$$(2 (-2 (1+m) \text{AppellF1}[1+2 m, 2 m, 1, 2+2 m, \frac{1}{2} (1-\text{Tan}[\frac{1}{4} (-e+\frac{\pi}{2}-f x)]^2), 1-\text{Tan}[\frac{1}{4} (-e+\frac{\pi}{2}-f x)]^2] +$$

$$(\text{AppellF1}[2+2 m, 2 m, 2, 3+2 m, \frac{1}{2} (1-\text{Tan}[\frac{1}{4} (-e+\frac{\pi}{2}-f x)]^2), 1-\text{Tan}[\frac{1}{4} (-e+\frac{\pi}{2}-f x)]^2] + m\, \text{AppellF1}[2+2 m,$$

$$1+2 m, 1, 3+2 m, \frac{1}{2} (1-\text{Tan}[\frac{1}{4} (-e+\frac{\pi}{2}-f x)]^2), 1-\text{Tan}[\frac{1}{4} (-e+\frac{\pi}{2}-f x)]^2]) (-1+\text{Tan}[\frac{1}{4} (-e+\frac{\pi}{2}-f x)]^2))) -$$

$$(B (1+m) \text{AppellF1}[1+2 m, 2 m, 1, 2+2 m, \frac{1}{2} (1-\text{Tan}[\frac{1}{4} (-e+\frac{\pi}{2}-f x)]^2), 1-\text{Tan}[\frac{1}{4} (-e+\frac{\pi}{2}-f x)]^2]$$

$$\text{Cot}[\frac{1}{4} (-e+\frac{\pi}{2}-f x)] \text{Csc}[\frac{1}{4} (-e+\frac{\pi}{2}-f x)]^2 (1-\text{Tan}[\frac{1}{4} (-e+\frac{\pi}{2}-f x)]^2)) /$$

$$(2 (-2 (1+m) \text{AppellF1}[1+2 m, 2 m, 1, 2+2 m, \frac{1}{2} (1-\text{Tan}[\frac{1}{4} (-e+\frac{\pi}{2}-f x)]^2), 1-\text{Tan}[\frac{1}{4} (-e+\frac{\pi}{2}-f x)]^2] +$$

$$\Big(\text{AppellF1}\Big[2+2m,\ 2m,\ 2,\ 3+2m,\ \frac{1}{2}\Big(1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big),\ 1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]+m\,\text{AppellF1}\Big[2+2m,$$

$$1+2m,\ 1,\ 3+2m,\ \frac{1}{2}\Big(1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big),\ 1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\Big)\Big(-1+\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big)\Big)\Big)+$$

$$\Big(A\,(1+m)\,\text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big(-\frac{1}{2\,(2+2m)}(1+2m)\,\text{AppellF1}\Big[2+2m,\ 2m,\ 2,\ 3+2m,\ \frac{1}{2}\Big(1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big),$$

$$1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]-\frac{1}{2\,(2+2m)}$$

$$m\,(1+2m)\,\text{AppellF1}\Big[2+2m,\ 1+2m,\ 1,\ 3+2m,\ \frac{1}{2}\Big(1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big),\ 1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]$$

$$\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]\Big)\Big(1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big)\Big)\Big/$$

$$\Big(-2\,(1+m)\,\text{AppellF1}\Big[1+2m,\ 2m,\ 1,\ 2+2m,\ \frac{1}{2}\Big(1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big),\ 1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]+$$

$$\Big(\text{AppellF1}\Big[2+2m,\ 2m,\ 2,\ 3+2m,\ \frac{1}{2}\Big(1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big),\ 1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]+m\,\text{AppellF1}\Big[2+2m,$$

$$1+2m,\ 1,\ 3+2m,\ \frac{1}{2}\Big(1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big),\ 1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\Big)\Big(-1+\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big)\Big)+$$

$$\Big(B\,(1+m)\,\text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big(-\frac{1}{2\,(2+2m)}(1+2m)\,\text{AppellF1}\Big[2+2m,\ 2m,\ 2,\ 3+2m,\ \frac{1}{2}\Big(1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big),$$

$$1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]-\frac{1}{2\,(2+2m)}$$

$$m\,(1+2m)\,\text{AppellF1}\Big[2+2m,\ 1+2m,\ 1,\ 3+2m,\ \frac{1}{2}\Big(1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big),\ 1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]$$

$$\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]\Big)\Big(1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big)\Big)\Big/$$

$$\Big(-2\,(1+m)\,\text{AppellF1}\Big[1+2m,\ 2m,\ 1,\ 2+2m,\ \frac{1}{2}\Big(1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big),\ 1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]+$$

$$\Big(\text{AppellF1}\Big[2+2m,\ 2m,\ 2,\ 3+2m,\ \frac{1}{2}\Big(1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big),\ 1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]+m\,\text{AppellF1}\Big[2+2m,$$

$$1+2m,\ 1,\ 3+2m,\ \frac{1}{2}\Big(1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big),\ 1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\Big)\Big(-1+\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big)\Big)-$$

$$\Big(A\,(1+m)\,\text{AppellF1}\Big[1+2m,\ 2m,\ 1,\ 2+2m,\ \frac{1}{2}\Big(1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big),\ 1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\,\text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2$$

$$\Big(1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big)\Big(\frac{1}{2}\Big(\text{AppellF1}\Big[2+2m,\ 2m,\ 2,\ 3+2m,\ \frac{1}{2}\Big(1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big),\ 1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]+$$

$$m\,\text{AppellF1}\left[2+2m,1+2m,1,3+2m,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right),1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-2(1+m)\left(-\frac{1}{2(2+2m)}(1+2m)\,\text{AppellF1}\left[2+2m,2m,2,3+2m,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right),1-\right.\right.$$

$$\left.\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{1}{2(2+2m)}m(1+2m)\,\text{AppellF1}\left[2+2m,1+2m,\right.$$

$$\left.\left.1,3+2m,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right),1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)+$$

$$\left(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\left(-\frac{1}{3+2m}(2+2m)\,\text{AppellF1}\left[3+2m,2m,3,4+2m,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right),1-\right.\right.$$

$$\left.\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{1}{2(3+2m)}m(2+2m)\,\text{AppellF1}\left[3+2m,1+2m,\right.$$

$$\left.2,4+2m,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right),1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]+$$

$$m\left(-\frac{1}{2(3+2m)}(2+2m)\,\text{AppellF1}\left[3+2m,1+2m,2,4+2m,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right),1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right.$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{1}{4(3+2m)}(1+2m)(2+2m)\,\text{AppellF1}\left[3+2m,2+2m,1,4+2m,\right.$$

$$\left.\left.\left.\left.\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right),1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)\right)\right)\right)\Big/$$

$$\left(-2(1+m)\,\text{AppellF1}\left[1+2m,2m,1,2+2m,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right),1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$\left(\text{AppellF1}\left[2+2m,2m,2,3+2m,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right),1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+m\,\text{AppellF1}\left[2+2m,\right.\right.$$

$$\left.\left.\left.1+2m,1,3+2m,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right),1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\left(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\right)^2-$$

$$\left(B(1+m)\,\text{AppellF1}\left[1+2m,2m,1,2+2m,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right),1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right.$$

$$\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\left(\frac{1}{2}\left(\text{AppellF1}\left[2+2m,2m,2,3+2m,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right),1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.\right.$$

$$\left.m\,\text{AppellF1}\left[2+2m,1+2m,1,3+2m,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right),1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-2(1+m)\left(-\frac{1}{2(2+2m)}(1+2m)\,\text{AppellF1}\left[2+2m,2m,2,3+2m,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right),1-\right.\right.$$

$$\left.\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{1}{2(2+2m)}m(1+2m)\,\text{AppellF1}\left[2+2m,1+2m,\right.$$

$$1,\ 3+2m,\ \frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right),\ 1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\ \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\Big)+$$

$$\left(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\ \Big(-\frac{1}{3+2m}(2+2m)\ \text{AppellF1}\Big[3+2m,\ 2m,\ 3,\ 4+2m,\ \frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right),\ 1-$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\ \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{1}{2(3+2m)}m\ (2+2m)\ \text{AppellF1}\Big[3+2m,\ 1+2m,$$

$$2,\ 4+2m,\ \frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right),\ 1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\ \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]+$$

$$m\ \Big(-\frac{1}{2(3+2m)}(2+2m)\ \text{AppellF1}\Big[3+2m,\ 1+2m,\ 2,\ 4+2m,\ \frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right),\ 1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{1}{4(3+2m)}(1+2m)\ (2+2m)\ \text{AppellF1}\Big[3+2m,\ 2+2m,\ 1,\ 4+2m,$$

$$\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right),\ 1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\ \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\Big)\Big)\Big)\Big)\Big/$$

$$\Big(-2(1+m)\ \text{AppellF1}\Big[1+2m,\ 2m,\ 1,\ 2+2m,\ \frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right),\ 1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]+$$

$$\Big(\text{AppellF1}\Big[2+2m,\ 2m,\ 2,\ 3+2m,\ \frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right),\ 1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]+m\ \text{AppellF1}\Big[2+2m,$$

$$1+2m,\ 1,\ 3+2m,\ \frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right),\ 1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\Big)\ \left(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^2\Big)\Big)\Big)\Big)$$

- **Problem 205: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int (a+a\,\text{Sin}[e+f x])^m\ (A+B\,\text{Sin}[e+f x])\ (c-c\,\text{Sin}[e+f x])^{5/2}\,dx$$

Optimal (type 3, 275 leaves, 4 steps):

$$-\frac{64\,c^3\ (B\ (5-2m)-A\ (7+2m))\ \text{Cos}[e+f x]\ (a+a\,\text{Sin}[e+f x])^m}{f\ (5+2m)\ (7+2m)\ \left(3+8m+4m^2\right)\sqrt{c-c\,\text{Sin}[e+f x]}}-$$

$$\frac{16\,c^2\ (B\ (5-2m)-A\ (7+2m))\ \text{Cos}[e+f x]\ (a+a\,\text{Sin}[e+f x])^m\sqrt{c-c\,\text{Sin}[e+f x]}}{f\ (7+2m)\ \left(15+16m+4m^2\right)}-$$

$$\frac{2\,c\ (B\ (5-2m)-A\ (7+2m))\ \text{Cos}[e+f x]\ (a+a\,\text{Sin}[e+f x])^m\ (c-c\,\text{Sin}[e+f x])^{3/2}}{f\ (5+2m)\ (7+2m)}-\frac{2\,B\,\text{Cos}[e+f x]\ (a+a\,\text{Sin}[e+f x])^m\ (c-c\,\text{Sin}[e+f x])^{5/2}}{f\ (7+2m)}$$

Result (type 3, 667 leaves):

$$\frac{1}{f\left(\text{Cos}\left[\frac{1}{2}(e+fx)\right]-\text{Sin}\left[\frac{1}{2}(e+fx)\right]\right)^5}(a(1+\text{Sin}[e+fx]))^m(c-c\,\text{Sin}[e+fx])^{5/2}$$

$$\left(\left(\left(2100A-1575B+1272Am-110Bm+304Am^2-68Bm^2+32Am^3-8Bm^3\right)\left(\left(\frac{1}{8}+\frac{i}{8}\right)\text{Cos}\left[\frac{1}{2}(e+fx)\right]+\left(\frac{1}{8}-\frac{i}{8}\right)\text{Sin}\left[\frac{1}{2}(e+fx)\right]\right)\right)\Big/\right.$$
$$((1+2m)(3+2m)(5+2m)(7+2m))+\left(\left(2100A-1575B+1272Am-110Bm+304Am^2-68Bm^2+32Am^3-8Bm^3\right)\right.$$
$$\left.\left(\left(\frac{1}{8}-\frac{i}{8}\right)\text{Cos}\left[\frac{1}{2}(e+fx)\right]+\left(\frac{1}{8}+\frac{i}{8}\right)\text{Sin}\left[\frac{1}{2}(e+fx)\right]\right)\right)\Big/((1+2m)(3+2m)(5+2m)(7+2m))+$$
$$\left(\left(350A-385B+184Am-104Bm+24Am^2-12Bm^2\right)\left(\left(\frac{1}{8}-\frac{i}{8}\right)\text{Cos}\left[\frac{3}{2}(e+fx)\right]-\left(\frac{1}{8}+\frac{i}{8}\right)\text{Sin}\left[\frac{3}{2}(e+fx)\right]\right)\right)\Big/((3+2m)(5+2m)(7+2m))+$$
$$\left(\left(350A-385B+184Am-104Bm+24Am^2-12Bm^2\right)\left(\left(\frac{1}{8}+\frac{i}{8}\right)\text{Cos}\left[\frac{3}{2}(e+fx)\right]-\left(\frac{1}{8}-\frac{i}{8}\right)\text{Sin}\left[\frac{3}{2}(e+fx)\right]\right)\right)\Big/((3+2m)(5+2m)(7+2m))+$$
$$\frac{(14A-35B+4Am-6Bm)\left(\left(-\frac{1}{8}+\frac{i}{8}\right)\text{Cos}\left[\frac{5}{2}(e+fx)\right]-\left(\frac{1}{8}+\frac{i}{8}\right)\text{Sin}\left[\frac{5}{2}(e+fx)\right]\right)}{(5+2m)(7+2m)}+$$
$$\frac{(14A-35B+4Am-6Bm)\left(\left(-\frac{1}{8}-\frac{i}{8}\right)\text{Cos}\left[\frac{5}{2}(e+fx)\right]-\left(\frac{1}{8}-\frac{i}{8}\right)\text{Sin}\left[\frac{5}{2}(e+fx)\right]\right)}{(5+2m)(7+2m)}+$$
$$\left.\frac{\left(\frac{1}{8}-\frac{i}{8}\right)B\,\text{Cos}\left[\frac{7}{2}(e+fx)\right]-\left(\frac{1}{8}+\frac{i}{8}\right)B\,\text{Sin}\left[\frac{7}{2}(e+fx)\right]}{7+2m}+\frac{\left(\frac{1}{8}+\frac{i}{8}\right)B\,\text{Cos}\left[\frac{7}{2}(e+fx)\right]-\left(\frac{1}{8}-\frac{i}{8}\right)B\,\text{Sin}\left[\frac{7}{2}(e+fx)\right]}{7+2m}\right)$$

- **Problem 208: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int\frac{(a+a\,\text{Sin}[e+fx])^m(A+B\,\text{Sin}[e+fx])}{\sqrt{c-c\,\text{Sin}[e+fx]}}\,dx$$

Optimal (type 5, 118 leaves, 4 steps):

$$-\frac{2B\,\text{Cos}[e+fx](a+a\,\text{Sin}[e+fx])^m}{f(1+2m)\sqrt{c-c\,\text{Sin}[e+fx]}}+\frac{(A+B)\,\text{Cos}[e+fx]\,\text{Hypergeometric2F1}\left[1,\frac{1}{2}+m,\frac{3}{2}+m,\frac{1}{2}(1+\text{Sin}[e+fx])\right](a+a\,\text{Sin}[e+fx])^m}{f(1+2m)\sqrt{c-c\,\text{Sin}[e+fx]}}$$

Result (type 6, 7013 leaves):

$$-\left(\left(\sqrt{2}\left(\text{Cos}\left[\frac{1}{2}(e+fx)\right]-\text{Sin}\left[\frac{1}{2}(e+fx)\right]\right)(a+a\,\text{Sin}[e+fx])^m\right.\right.$$
$$\left(\frac{A\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-fx\right)\right]^{2m}}{\text{Cos}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+fx\right)\right]-\text{Sin}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+fx\right)\right]}+\frac{B\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-fx\right)\right]^{2m}\text{Sin}[e+fx]}{\text{Cos}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+fx\right)\right]-\text{Sin}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+fx\right)\right]}\right)$$

$$\left(2\,B\left(\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{-2\,m}\right)+\left(A\,(1+m)\,\text{AppellF1}\left[1+2\,m,\,2\,m,\,1,\,2+2\,m,\right.\right.\right.$$

$$\left.\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right),\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\Big)\Big/$$

$$\left(-2\,(1+m)\,\text{AppellF1}\left[1+2\,m,\,2\,m,\,1,\,2+2\,m,\,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right),\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.$$

$$\left(\text{AppellF1}\left[2+2\,m,\,2\,m,\,2,\,3+2\,m,\,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right),\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+m\right.$$

$$\left.\left.\text{AppellF1}\left[2+2\,m,\,1+2\,m,\,1,\,3+2\,m,\,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right),\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\left(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\right)+$$

$$\left(B\,(1+m)\,\text{AppellF1}\left[1+2\,m,\,2\,m,\,1,\,2+2\,m,\,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right),\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right.$$

$$\left.\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\right)\Big/$$

$$\left(-2\,(1+m)\,\text{AppellF1}\left[1+2\,m,\,2\,m,\,1,\,2+2\,m,\,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right),\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.$$

$$\left(\text{AppellF1}\left[2+2\,m,\,2\,m,\,2,\,3+2\,m,\,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right),\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+m\,\text{AppellF1}\left[2+2\,m,\,1+\right.\right.$$

$$\left.\left.\left.2\,m,\,1,\,3+2\,m,\,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right),\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\left(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\right)\right)\Big/$$

$$\left(f\,(1+2\,m)\,\sqrt{c-c\,\text{Sin}[e+f\,x]}\,\left(-\frac{1}{1+2\,m}\sqrt{2}\,m\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{-1+2\,m}\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\right.\right.$$

$$\left(2\,B\left(\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{-2\,m}\right)+\left(A\,(1+m)\,\text{AppellF1}\left[1+2\,m,\,2\,m,\,1,\,2+2\,m,\right.\right.\right.$$

$$\left.\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right),\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\Big)\Big/$$

$$\left(-2\,(1+m)\,\text{AppellF1}\left[1+2\,m,\,2\,m,\,1,\,2+2\,m,\,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right),\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.$$

$$\left(\text{AppellF1}\left[2+2\,m,\,2\,m,\,2,\,3+2\,m,\,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right),\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+m\,\text{AppellF1}\left[2+2\,m,\right.\right.$$

$$\left.\left.1+2\,m,\,1,\,3+2\,m,\,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right),\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\left(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\right)+$$

$$\left(B\,(1+m)\,\text{AppellF1}\left[1+2\,m,\,2\,m,\,1,\,2+2\,m,\,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right),\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right.$$

$$\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\Bigg)\Bigg/$$

$$\Bigg(-2(1+m)\,\text{AppellF1}\left[1+2m,2m,1,2+2m,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right),1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$\Bigg(\text{AppellF1}\left[2+2m,2m,2,3+2m,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right),1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+m\,\text{AppellF1}\Big[2+2m,$$

$$1+2m,1,3+2m,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right),1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\Bigg)\left(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\Bigg)\Bigg)+$$

$$\frac{1}{1+2m}\sqrt{2}\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2m}\Bigg(2B\left(-\frac{1}{2}\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]-m\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{-1-2m}\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)-$$

$$\Bigg(A(1+m)\,\text{AppellF1}\left[1+2m,2m,1,2+2m,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right),1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Csc}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\text{Sec}\Big[\frac{1}{4}$$

$$\left(-e+\frac{\pi}{2}-f x\right)\Big]\Bigg)\Bigg/\Bigg(2\Bigg(-2(1+m)\,\text{AppellF1}\left[1+2m,2m,1,2+2m,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right),1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$\Bigg(\text{AppellF1}\left[2+2m,2m,2,3+2m,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right),1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+m\,\text{AppellF1}\Big[2+2m,$$

$$1+2m,1,3+2m,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right),1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\Bigg)\left(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\Bigg)\Bigg)-$$

$$\Bigg(B(1+m)\,\text{AppellF1}\left[1+2m,2m,1,2+2m,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right),1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Csc}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\text{Sec}\Big[\frac{1}{4}$$

$$\left(-e+\frac{\pi}{2}-f x\right)\Big]\Bigg)\Bigg/\Bigg(2\Bigg(-2(1+m)\,\text{AppellF1}\left[1+2m,2m,1,2+2m,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right),1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$\Bigg(\text{AppellF1}\left[2+2m,2m,2,3+2m,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right),1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+m\,\text{AppellF1}\Big[2+2m,$$

$$1+2m,1,3+2m,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right),1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\Bigg)\left(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\Bigg)\Bigg)-$$

$$\Bigg(A(1+m)\,\text{AppellF1}\left[1+2m,2m,1,2+2m,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right),1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]$$

$$\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\text{Csc}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\Bigg)\Bigg/$$

$$\Bigg(2\Bigg(-2(1+m)\,\text{AppellF1}\left[1+2m,2m,1,2+2m,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right),1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$\Bigg(\text{AppellF1}\left[2+2m,2m,2,3+2m,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right),1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+m\,\text{AppellF1}\Big[2+2m,$$

$$1+2m,1,3+2m,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right),1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\Bigg)\left(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\Bigg)\Bigg)-$$

$$\left(B\,(1+m)\,\text{AppellF1}\left[1+2m,\,2m,\,1,\,2+2m,\,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right),\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right.$$

$$\left.\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\,\text{Csc}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\right)\Big/$$

$$\left(2\left(-2\,(1+m)\,\text{AppellF1}\left[1+2m,\,2m,\,1,\,2+2m,\,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right),\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.\right.$$

$$\left(\text{AppellF1}\left[2+2m,\,2m,\,2,\,3+2m,\,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right),\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+m\,\text{AppellF1}\left[2+2m,\right.\right.$$

$$\left.\left.\left.\left.1+2m,\,1,\,3+2m,\,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right),\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\left(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\right)\right)+$$

$$\left(A\,(1+m)\,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\left(-\frac{1}{2\,(2+2m)}(1+2m)\,\text{AppellF1}\left[2+2m,\,2m,\,2,\,3+2m,\,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right),\right.\right.\right.$$

$$\left.1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-\frac{1}{2\,(2+2m)}$$

$$m\,(1+2m)\,\text{AppellF1}\left[2+2m,\,1+2m,\,1,\,3+2m,\,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right),\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]$$

$$\left.\left.\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\right)\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\right)\Big/$$

$$\left(-2\,(1+m)\,\text{AppellF1}\left[1+2m,\,2m,\,1,\,2+2m,\,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right),\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.$$

$$\left(\text{AppellF1}\left[2+2m,\,2m,\,2,\,3+2m,\,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right),\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+m\,\text{AppellF1}\left[2+2m,\right.\right.$$

$$\left.\left.\left.1+2m,\,1,\,3+2m,\,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right),\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\left(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\right)+$$

$$\left(B\,(1+m)\,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\left(-\frac{1}{2\,(2+2m)}(1+2m)\,\text{AppellF1}\left[2+2m,\,2m,\,2,\,3+2m,\,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right),\right.\right.\right.$$

$$\left.1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-\frac{1}{2\,(2+2m)}$$

$$m\,(1+2m)\,\text{AppellF1}\left[2+2m,\,1+2m,\,1,\,3+2m,\,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right),\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]$$

$$\left.\left.\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\right)\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\right)\Big/$$

$$\left(-2\,(1+m)\,\text{AppellF1}\left[1+2m,\,2m,\,1,\,2+2m,\,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right),\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.$$

$$\left(\text{AppellF1}\left[2+2m,\,2m,\,2,\,3+2m,\,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right),\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+m\,\text{AppellF1}\left[2+2m,\right.\right.$$

$$1+2\,m,\ 1,\ 3+2\,m,\ \frac{1}{2}\ (1-\text{Tan}[\frac{1}{4}\ (-e+\frac{\pi}{2}-f\,x)]^2),\ 1-\text{Tan}[\frac{1}{4}\ (-e+\frac{\pi}{2}-f\,x)]^2])\ (-1+\text{Tan}[\frac{1}{4}\ (-e+\frac{\pi}{2}-f\,x)]^2))\ -$$

$$(A\ (1+m)\ \text{AppellF1}[1+2\,m,\ 2\,m,\ 1,\ 2+2\,m,\ \frac{1}{2}\ (1-\text{Tan}[\frac{1}{4}\ (-e+\frac{\pi}{2}-f\,x)]^2),\ 1-\text{Tan}[\frac{1}{4}\ (-e+\frac{\pi}{2}-f\,x)]^2]\ \text{Cot}[\frac{1}{4}\ (-e+\frac{\pi}{2}-f\,x)]^2$$

$$(1-\text{Tan}[\frac{1}{4}\ (-e+\frac{\pi}{2}-f\,x)]^2)\ (\frac{1}{2}\ (\text{AppellF1}[2+2\,m,\ 2\,m,\ 2,\ 3+2\,m,\ \frac{1}{2}\ (1-\text{Tan}[\frac{1}{4}\ (-e+\frac{\pi}{2}-f\,x)]^2),\ 1-\text{Tan}[\frac{1}{4}\ (-e+\frac{\pi}{2}-f\,x)]^2]\ +$$

$$m\,\text{AppellF1}[2+2\,m,\ 1+2\,m,\ 1,\ 3+2\,m,\ \frac{1}{2}\ (1-\text{Tan}[\frac{1}{4}\ (-e+\frac{\pi}{2}-f\,x)]^2),\ 1-\text{Tan}[\frac{1}{4}\ (-e+\frac{\pi}{2}-f\,x)]^2])\ \text{Sec}[\frac{1}{4}\ (-e+\frac{\pi}{2}-f\,x)]^2$$

$$\text{Tan}[\frac{1}{4}\ (-e+\frac{\pi}{2}-f\,x)]-2\ (1+m)\ (-\frac{1}{2\ (2+2\,m)}(1+2\,m)\ \text{AppellF1}[2+2\,m,\ 2\,m,\ 2,\ 3+2\,m,\ \frac{1}{2}\ (1-\text{Tan}[\frac{1}{4}\ (-e+\frac{\pi}{2}-f\,x)]^2),\ 1-$$

$$\text{Tan}[\frac{1}{4}\ (-e+\frac{\pi}{2}-f\,x)]^2]\ \text{Sec}[\frac{1}{4}\ (-e+\frac{\pi}{2}-f\,x)]^2\ \text{Tan}[\frac{1}{4}\ (-e+\frac{\pi}{2}-f\,x)]-\frac{1}{2\ (2+2\,m)}m\ (1+2\,m)\ \text{AppellF1}[2+2\,m,\ 1+2\,m,$$

$$1,\ 3+2\,m,\ \frac{1}{2}\ (1-\text{Tan}[\frac{1}{4}\ (-e+\frac{\pi}{2}-f\,x)]^2),\ 1-\text{Tan}[\frac{1}{4}\ (-e+\frac{\pi}{2}-f\,x)]^2]\ \text{Sec}[\frac{1}{4}\ (-e+\frac{\pi}{2}-f\,x)]^2\ \text{Tan}[\frac{1}{4}\ (-e+\frac{\pi}{2}-f\,x)])\ +$$

$$(-1+\text{Tan}[\frac{1}{4}\ (-e+\frac{\pi}{2}-f\,x)]^2)\ (-\frac{1}{3+2\,m}(2+2\,m)\ \text{AppellF1}[3+2\,m,\ 2\,m,\ 3,\ 4+2\,m,\ \frac{1}{2}\ (1-\text{Tan}[\frac{1}{4}\ (-e+\frac{\pi}{2}-f\,x)]^2),\ 1-$$

$$\text{Tan}[\frac{1}{4}\ (-e+\frac{\pi}{2}-f\,x)]^2]\ \text{Sec}[\frac{1}{4}\ (-e+\frac{\pi}{2}-f\,x)]^2\ \text{Tan}[\frac{1}{4}\ (-e+\frac{\pi}{2}-f\,x)]-\frac{1}{2\ (3+2\,m)}m\ (2+2\,m)\ \text{AppellF1}[3+2\,m,\ 1+2\,m,$$

$$2,\ 4+2\,m,\ \frac{1}{2}\ (1-\text{Tan}[\frac{1}{4}\ (-e+\frac{\pi}{2}-f\,x)]^2),\ 1-\text{Tan}[\frac{1}{4}\ (-e+\frac{\pi}{2}-f\,x)]^2]\ \text{Sec}[\frac{1}{4}\ (-e+\frac{\pi}{2}-f\,x)]^2\ \text{Tan}[\frac{1}{4}\ (-e+\frac{\pi}{2}-f\,x)]\ +$$

$$m\ (-\frac{1}{2\ (3+2\,m)}(2+2\,m)\ \text{AppellF1}[3+2\,m,\ 1+2\,m,\ 2,\ 4+2\,m,\ \frac{1}{2}\ (1-\text{Tan}[\frac{1}{4}\ (-e+\frac{\pi}{2}-f\,x)]^2),\ 1-\text{Tan}[\frac{1}{4}\ (-e+\frac{\pi}{2}-f\,x)]^2]$$

$$\text{Sec}[\frac{1}{4}\ (-e+\frac{\pi}{2}-f\,x)]^2\ \text{Tan}[\frac{1}{4}\ (-e+\frac{\pi}{2}-f\,x)]-\frac{1}{4\ (3+2\,m)}(1+2\,m)\ (2+2\,m)\ \text{AppellF1}[3+2\,m,\ 2+2\,m,\ 1,\ 4+2\,m,$$

$$\frac{1}{2}\ (1-\text{Tan}[\frac{1}{4}\ (-e+\frac{\pi}{2}-f\,x)]^2),\ 1-\text{Tan}[\frac{1}{4}\ (-e+\frac{\pi}{2}-f\,x)]^2]\ \text{Sec}[\frac{1}{4}\ (-e+\frac{\pi}{2}-f\,x)]^2\ \text{Tan}[\frac{1}{4}\ (-e+\frac{\pi}{2}-f\,x)])))))\Big/$$

$$(-2\ (1+m)\ \text{AppellF1}[1+2\,m,\ 2\,m,\ 1,\ 2+2\,m,\ \frac{1}{2}\ (1-\text{Tan}[\frac{1}{4}\ (-e+\frac{\pi}{2}-f\,x)]^2),\ 1-\text{Tan}[\frac{1}{4}\ (-e+\frac{\pi}{2}-f\,x)]^2]\ +$$

$$(\text{AppellF1}[2+2\,m,\ 2\,m,\ 2,\ 3+2\,m,\ \frac{1}{2}\ (1-\text{Tan}[\frac{1}{4}\ (-e+\frac{\pi}{2}-f\,x)]^2),\ 1-\text{Tan}[\frac{1}{4}\ (-e+\frac{\pi}{2}-f\,x)]^2]+m\,\text{AppellF1}[2+2\,m,$$

$$1+2\,m,\ 1,\ 3+2\,m,\ \frac{1}{2}\ (1-\text{Tan}[\frac{1}{4}\ (-e+\frac{\pi}{2}-f\,x)]^2),\ 1-\text{Tan}[\frac{1}{4}\ (-e+\frac{\pi}{2}-f\,x)]^2])\ (-1+\text{Tan}[\frac{1}{4}\ (-e+\frac{\pi}{2}-f\,x)]^2))^2\ -$$

$$(B\ (1+m)\ \text{AppellF1}[1+2\,m,\ 2\,m,\ 1,\ 2+2\,m,\ \frac{1}{2}\ (1-\text{Tan}[\frac{1}{4}\ (-e+\frac{\pi}{2}-f\,x)]^2),\ 1-\text{Tan}[\frac{1}{4}\ (-e+\frac{\pi}{2}-f\,x)]^2]\ \text{Cot}[\frac{1}{4}\ (-e+\frac{\pi}{2}-f\,x)]^2$$

$$(1-\text{Tan}[\frac{1}{4}\ (-e+\frac{\pi}{2}-f\,x)]^2)\ (\frac{1}{2}\ (\text{AppellF1}[2+2\,m,\ 2\,m,\ 2,\ 3+2\,m,\ \frac{1}{2}\ (1-\text{Tan}[\frac{1}{4}\ (-e+\frac{\pi}{2}-f\,x)]^2),\ 1-\text{Tan}[\frac{1}{4}\ (-e+\frac{\pi}{2}-f\,x)]^2]\ +$$

$$m\,\text{AppellF1}[2+2m,1+2m,1,3+2m,\frac{1}{2}(1-\text{Tan}[\frac{1}{4}(-e+\frac{\pi}{2}-f x)]^2),1-\text{Tan}[\frac{1}{4}(-e+\frac{\pi}{2}-f x)]^2]\,\text{Sec}[\frac{1}{4}(-e+\frac{\pi}{2}-f x)]^2$$

$$\text{Tan}[\frac{1}{4}(-e+\frac{\pi}{2}-f x)]-2(1+m)\,(-\frac{1}{2(2+2m)}(1+2m)\,\text{AppellF1}[2+2m,2m,2,3+2m,\frac{1}{2}(1-\text{Tan}[\frac{1}{4}(-e+\frac{\pi}{2}-f x)]^2),1-$$

$$\text{Tan}[\frac{1}{4}(-e+\frac{\pi}{2}-f x)]^2]\,\text{Sec}[\frac{1}{4}(-e+\frac{\pi}{2}-f x)]^2\,\text{Tan}[\frac{1}{4}(-e+\frac{\pi}{2}-f x)]-\frac{1}{2(2+2m)}m\,(1+2m)\,\text{AppellF1}[2+2m,1+2m,$$

$$1,3+2m,\frac{1}{2}(1-\text{Tan}[\frac{1}{4}(-e+\frac{\pi}{2}-f x)]^2),1-\text{Tan}[\frac{1}{4}(-e+\frac{\pi}{2}-f x)]^2]\,\text{Sec}[\frac{1}{4}(-e+\frac{\pi}{2}-f x)]^2\,\text{Tan}[\frac{1}{4}(-e+\frac{\pi}{2}-f x)])+$$

$$(-1+\text{Tan}[\frac{1}{4}(-e+\frac{\pi}{2}-f x)]^2)\,(-\frac{1}{3+2m}(2+2m)\,\text{AppellF1}[3+2m,2m,3,4+2m,\frac{1}{2}(1-\text{Tan}[\frac{1}{4}(-e+\frac{\pi}{2}-f x)]^2),1-$$

$$\text{Tan}[\frac{1}{4}(-e+\frac{\pi}{2}-f x)]^2]\,\text{Sec}[\frac{1}{4}(-e+\frac{\pi}{2}-f x)]^2\,\text{Tan}[\frac{1}{4}(-e+\frac{\pi}{2}-f x)]-\frac{1}{2(3+2m)}m\,(2+2m)\,\text{AppellF1}[3+2m,1+2m,$$

$$2,4+2m,\frac{1}{2}(1-\text{Tan}[\frac{1}{4}(-e+\frac{\pi}{2}-f x)]^2),1-\text{Tan}[\frac{1}{4}(-e+\frac{\pi}{2}-f x)]^2]\,\text{Sec}[\frac{1}{4}(-e+\frac{\pi}{2}-f x)]^2\,\text{Tan}[\frac{1}{4}(-e+\frac{\pi}{2}-f x)]+$$

$$m\,(-\frac{1}{2(3+2m)}(2+2m)\,\text{AppellF1}[3+2m,1+2m,2,4+2m,\frac{1}{2}(1-\text{Tan}[\frac{1}{4}(-e+\frac{\pi}{2}-f x)]^2),1-\text{Tan}[\frac{1}{4}(-e+\frac{\pi}{2}-f x)]^2]$$

$$\text{Sec}[\frac{1}{4}(-e+\frac{\pi}{2}-f x)]^2\,\text{Tan}[\frac{1}{4}(-e+\frac{\pi}{2}-f x)]-\frac{1}{4(3+2m)}(1+2m)\,(2+2m)\,\text{AppellF1}[3+2m,2+2m,1,4+2m,$$

$$\frac{1}{2}(1-\text{Tan}[\frac{1}{4}(-e+\frac{\pi}{2}-f x)]^2),1-\text{Tan}[\frac{1}{4}(-e+\frac{\pi}{2}-f x)]^2]\,\text{Sec}[\frac{1}{4}(-e+\frac{\pi}{2}-f x)]^2\,\text{Tan}[\frac{1}{4}(-e+\frac{\pi}{2}-f x)])))))\Big/$$

$$(-2(1+m)\,\text{AppellF1}[1+2m,2m,1,2+2m,\frac{1}{2}(1-\text{Tan}[\frac{1}{4}(-e+\frac{\pi}{2}-f x)]^2),1-\text{Tan}[\frac{1}{4}(-e+\frac{\pi}{2}-f x)]^2]+$$

$$(\text{AppellF1}[2+2m,2m,2,3+2m,\frac{1}{2}(1-\text{Tan}[\frac{1}{4}(-e+\frac{\pi}{2}-f x)]^2),1-\text{Tan}[\frac{1}{4}(-e+\frac{\pi}{2}-f x)]^2]+m\,\text{AppellF1}[2+2m,$$

$$1+2m,1,3+2m,\frac{1}{2}(1-\text{Tan}[\frac{1}{4}(-e+\frac{\pi}{2}-f x)]^2),1-\text{Tan}[\frac{1}{4}(-e+\frac{\pi}{2}-f x)]^2])\,(-1+\text{Tan}[\frac{1}{4}(-e+\frac{\pi}{2}-f x)]^2)^2))))$$

- **Problem 209: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int\frac{(a+a\,\text{Sin}[e+f x])^m\,(A+B\,\text{Sin}[e+f x])}{(c-c\,\text{Sin}[e+f x])^{3/2}}\,dx$$

Optimal (type 5, 134 leaves, 4 steps) :

$$\frac{(A+B)\,\text{Cos}[e+f x]\,(a+a\,\text{Sin}[e+f x])^m}{2 f\,(c-c\,\text{Sin}[e+f x])^{3/2}}+$$

$$\left((A\,(1-2 m)-B\,(3+2 m))\,\text{Cos}[e+f x]\,\text{Hypergeometric2F1}\left[1,\frac{1}{2}+m,\frac{3}{2}+m,\frac{1}{2}\,(1+\text{Sin}[e+f x])\right]\,(a+a\,\text{Sin}[e+f x])^m\right)\Big/$$

$$\left(4 c f\,(1+2 m)\,\sqrt{c-c\,\text{Sin}[e+f x]}\right)$$

Result (type 6, 14 818 leaves) :

$$-\left(\left(\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{-2 m}\left(\text{Cos}\left[\frac{1}{2}\,(e+f x)\right]-\text{Sin}\left[\frac{1}{2}\,(e+f x)\right]\right)^3 (a+a\,\text{Sin}[e+f x])^m\right.\right.$$

$$\left(\frac{A\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2 m}}{\left(\text{Cos}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]-\text{Sin}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]\right)^3}+\frac{B\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2 m}\text{Sin}[e+f x]}{\left(\text{Cos}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]-\text{Sin}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f x\right)\right]\right)^3}\right)$$

$$\left(\frac{1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}\right)^{2 m}\left(-\left(A\,\text{AppellF1}\left[1,-2 m,2 m,2,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\Big/\right.$$

$$\left(-m\left(\text{AppellF1}\left[2,1-2 m,2 m,3,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.\right.$$

$$\left.\text{AppellF1}\left[2,-2 m,1+2 m,3,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)+$$

$$\left.\text{AppellF1}\left[1,-2 m,2 m,2,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)-$$

$$\left(B\,\text{AppellF1}\left[1,-2 m,2 m,2,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\Big/$$

$$\left(-m\left(\text{AppellF1}\left[2,1-2 m,2 m,3,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.\right.$$

$$\left.\text{AppellF1}\left[2,-2 m,1+2 m,3,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)+$$

$$\left.\text{AppellF1}\left[1,-2 m,2 m,2,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)+$$

$$\left(A\,\text{AppellF1}\left[1,-2 m,2 m,2,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\Big/$$

$$\left(\text{AppellF1}\left[1,-2 m,2 m,2,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]-\right.$$

$$m\left(\text{AppellF1}\left[2,1-2 m,2 m,3,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$\text{AppellF1}\left[2,-2m,1+2m,3,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\Big)+$$

$$\Big(B\,\text{AppellF1}\left[1,-2m,2m,2,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\Big)\Big/$$

$$\Big(\text{AppellF1}\left[1,-2m,2m,2,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]-$$

$$m\Big(\text{AppellF1}\left[2,1-2m,2m,3,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+$$

$$\text{AppellF1}\left[2,-2m,1+2m,3,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\Big)-$$

$$\Big(4A(1+m)\,\text{AppellF1}\left[1+2m,2m,1,2+2m,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]$$

$$\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\left(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)\Big)\Big/$$

$$\Big((1+2m)\Big(-2(1+m)\,\text{AppellF1}\left[1+2m,2m,1,2+2m,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+$$

$$\Big(\text{AppellF1}\left[2+2m,2m,2,3+2m,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+m\,\text{AppellF1}\Big[2+2m,$$

$$1+2m,1,3+2m,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\Big]\Big)\left(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)\Big)\Big)+$$

$$\Big(12B(1+m)\,\text{AppellF1}\left[1+2m,2m,1,2+2m,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]$$

$$\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\left(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)\Big)\Big/$$

$$\Big((1+2m)\Big(-2(1+m)\,\text{AppellF1}\left[1+2m,2m,1,2+2m,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+$$

$$\Big(\text{AppellF1}\left[2+2m,2m,2,3+2m,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+m\,\text{AppellF1}\Big[2+2m,1+2m,$$

$$1,3+2m,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\Big]\Big)\left(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)\Big)\Big)\Big)\Big/\Big(8\sqrt{2}\,f$$

$$(c-c\,\text{Sin}[e+fx])^{3/2}\left(\frac{1}{4\sqrt{2}}m\left(\frac{1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2}\right)^{-1+2m}\left(-\frac{\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)}{2\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)^2}-\right.\right.$$

$$\frac{\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]}{2\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)}\Bigg)\left(-\left(A\,\text{AppellF1}\left[1,-2m,2m,2,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\right/$$

$$\left(-m\left(\text{AppellF1}\left[2,1-2m,2m,3,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\text{AppellF1}\left[2,-2m,1+2m,\right.\right.\right.$$

$$\left.\left.3,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)+\text{AppellF1}\left[1,-2m,2m,2,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\right.$$

$$\left.\left.-\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)-\left(B\,\text{AppellF1}\left[1,-2m,2m,2,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\right.\right.$$

$$\left.\left.-\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\Big/\left(-m\left(\text{AppellF1}\left[2,1-2m,2m,3,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.\right.$$

$$\left.\text{AppellF1}\left[2,-2m,1+2m,3,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)+$$

$$\left.\text{AppellF1}\left[1,-2m,2m,2,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)+$$

$$\left(A\,\text{AppellF1}\left[1,-2m,2m,2,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\Big/$$

$$\left(\text{AppellF1}\left[1,-2m,2m,2,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]-\right.$$

$$m\left(\text{AppellF1}\left[2,1-2m,2m,3,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$\left.\left.\text{AppellF1}\left[2,-2m,1+2m,3,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)+$$

$$\left(B\,\text{AppellF1}\left[1,-2m,2m,2,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\Big/$$

$$\left(\text{AppellF1}\left[1,-2m,2m,2,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]-\right.$$

$$m\left(\text{AppellF1}\left[2,1-2m,2m,3,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\text{AppellF1}\left[2,-2m,1+2m,3,\right.\right.$$

$$\left.\left.\left.\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)-\left(4A\,(1+m)\,\text{AppellF1}\left[1+2m,2m,1,2+\right.\right.$$

$$\left.\left.2m,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\left(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\right)\Big/$$

$$\left((1+2m)\left(-2\,(1+m)\,\text{AppellF1}\left[1+2m,2m,1,2+2m,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.\right.$$

$$\Big(\text{AppellF1}\Big[2+2m,\,2m,\,2,\,3+2m,\,\frac{1}{2}-\frac{1}{2}\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+m\,\text{AppellF1}\Big[2+2m,$$

$$1+2m,\,1,\,3+2m,\,\frac{1}{2}-\frac{1}{2}\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\Big)\Big(-1+\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)\Big)\Big)+$$

$$\Big(12\,B\,(1+m)\,\text{AppellF1}\Big[1+2m,\,2m,\,1,\,2+2m,\,\frac{1}{2}-\frac{1}{2}\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]$$

$$\text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big(-1+\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)\Big)\Big/$$

$$\Big((1+2m)\Big(-2\,(1+m)\,\text{AppellF1}\Big[1+2m,\,2m,\,1,\,2+2m,\,\frac{1}{2}-\frac{1}{2}\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+$$

$$\Big(\text{AppellF1}\Big[2+2m,\,2m,\,2,\,3+2m,\,\frac{1}{2}-\frac{1}{2}\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+m\,\text{AppellF1}\Big[2+2m,$$

$$1+2m,\,1,\,3+2m,\,\frac{1}{2}-\frac{1}{2}\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\Big)\Big(-1+\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)\Big)\Big)\Big)+$$

$$\frac{1}{8\sqrt{2}}\left(\frac{1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2}{1+\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2}\right)^{2m}\Big(-\Big(A\Big(\frac{1}{2}m\,\text{AppellF1}\Big[2,\,1-2m,\,2m,\,3,\,\text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]$$

$$\text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\,\text{Csc}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2+\frac{1}{2}m\,\text{AppellF1}\Big[2,\,-2m,\,1+2m,\,3,$$

$$\text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\,\text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\,\text{Csc}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)\Big)\Big/$$

$$\Big(-m\Big(\text{AppellF1}\Big[2,\,1-2m,\,2m,\,3,\,\text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+\text{AppellF1}\Big[2,\,-2m,$$

$$1+2m,\,3,\,\text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\Big)+$$

$$\text{AppellF1}\Big[1,\,-2m,\,2m,\,2,\,\text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)-$$

$$\Big(B\Big(\frac{1}{2}m\,\text{AppellF1}\Big[2,\,1-2m,\,2m,\,3,\,\text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\,\text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\,\text{Csc}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2+$$

$$\frac{1}{2}m\,\text{AppellF1}\Big[2,\,-2m,\,1+2m,\,3,\,\text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\,\text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]$$

$$\text{Csc}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)\Big)\Big/\Big(-m\Big(\text{AppellF1}\Big[2,\,1-2m,\,2m,\,3,\,\text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+$$

$$\text{AppellF1}\Big[2,\,-2m,\,1+2m,\,3,\,\text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\Big)+$$

$$\text{AppellF1}\left[1,-2m,2m,2,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\Big)+$$

$$\Big(A\,\text{AppellF1}\left[1,-2m,2m,2,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]\Big)\Big/$$

$$\Big(2\Big(\text{AppellF1}\left[1,-2m,2m,2,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]-$$

$$m\Big(\text{AppellF1}\left[2,1-2m,2m,3,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+$$

$$\text{AppellF1}\left[2,-2m,1+2m,3,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\Big)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\Big)\Big)+$$

$$\Big(B\,\text{AppellF1}\left[1,-2m,2m,2,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]\Big)\Big/$$

$$\Big(2\Big(\text{AppellF1}\left[1,-2m,2m,2,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]-$$

$$m\Big(\text{AppellF1}\left[2,1-2m,2m,3,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+$$

$$\text{AppellF1}\left[2,-2m,1+2m,3,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\Big)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\Big)\Big)+$$

$$\Big(A\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\Big(-\frac{1}{2}m\,\text{AppellF1}\left[2,1-2m,2m,3,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]-\frac{1}{2}m\,\text{AppellF1}\left[2,-2m,1+2m,3,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,\right.$$

$$\left.-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]\Big)\Big)\Big/\Big(\text{AppellF1}\left[1,-2m,2m,2,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-\right.\right.\right.$$

$$\left.\left.fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\Big]-m\Big(\text{AppellF1}\left[2,1-2m,2m,3,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+$$

$$\text{AppellF1}\left[2,-2m,1+2m,3,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\Big)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\Big)+$$

$$\Big(B\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\Big(-\frac{1}{2}m\,\text{AppellF1}\left[2,1-2m,2m,3,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]-\frac{1}{2}m\,\text{AppellF1}\Big[2,-2m,1+2m,3,$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\Big]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]\Big)\Big)\Big/$$

$$\Big(\text{AppellF1}\left[1,-2m,2m,2,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]-m\Big(\text{AppellF1}\Big[2,1-2m,2m,3,$$

$$\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]+\text{AppellF1}\Big[2,\ -2\,m,\ 1+2\,m,\ 3,\ \text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,$$

$$-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]\Big)\ \text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big)+\Big(A\ \text{AppellF1}\Big[1,\ -2\,m,\ 2\,m,\ 2,\ \text{Cot}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,$$

$$-\text{Cot}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]\ \Big(-m\ \Big(\frac{4}{3}\,m\ \text{AppellF1}\Big[3,\ 1-2\,m,\ 1+2\,m,\ 4,\ \text{Cot}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\ -\text{Cot}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]$$

$$\text{Cot}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]\ \text{Csc}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2-\frac{1}{3}\,(1-2\,m)\ \text{AppellF1}\Big[3,\ 2-2\,m,\ 2\,m,\ 4,\ \text{Cot}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,$$

$$-\text{Cot}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]\ \text{Cot}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]\ \text{Csc}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2+\frac{1}{3}\,(1+2\,m)\ \text{AppellF1}\Big[3,\ -2\,m,$$

$$2+2\,m,\ 4,\ \text{Cot}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\ -\text{Cot}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]\ \text{Cot}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]\ \text{Csc}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big)+$$

$$\frac{1}{2}\ \text{AppellF1}\Big[1,\ -2\,m,\ 2\,m,\ 2,\ \text{Cot}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\ -\text{Cot}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]\ \text{Sec}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2$$

$$\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]+\Big(\frac{1}{2}\,m\ \text{AppellF1}\Big[2,\ 1-2\,m,\ 2\,m,\ 3,\ \text{Cot}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\ -\text{Cot}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]$$

$$\text{Cot}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]\ \text{Csc}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2+\frac{1}{2}\,m\ \text{AppellF1}\Big[2,\ -2\,m,\ 1+2\,m,\ 3,\ \text{Cot}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,$$

$$-\text{Cot}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]\ \text{Cot}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]\ \text{Csc}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big)\ \text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big)\Big)\Big/$$

$$\Big(-m\ \Big(\text{AppellF1}\Big[2,\ 1-2\,m,\ 2\,m,\ 3,\ \text{Cot}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\ -\text{Cot}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]+\text{AppellF1}\Big[2,\ -2\,m,$$

$$1+2\,m,\ 3,\ \text{Cot}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\ -\text{Cot}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]\Big)+$$

$$\text{AppellF1}\Big[1,\ -2\,m,\ 2\,m,\ 2,\ \text{Cot}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\ -\text{Cot}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]\ \text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big)^2+$$

$$\Big(B\ \text{AppellF1}\Big[1,\ -2\,m,\ 2\,m,\ 2,\ \text{Cot}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\ -\text{Cot}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]$$

$$\Big(-m\ \Big(\frac{4}{3}\,m\ \text{AppellF1}\Big[3,\ 1-2\,m,\ 1+2\,m,\ 4,\ \text{Cot}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\ -\text{Cot}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]\ \text{Cot}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]$$

$$\text{Csc}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2-\frac{1}{3}\,(1-2\,m)\ \text{AppellF1}\Big[3,\ 2-2\,m,\ 2\,m,\ 4,\ \text{Cot}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\ -\text{Cot}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]$$

$$\text{Cot}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]\ \text{Csc}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2+\frac{1}{3}\,(1+2\,m)\ \text{AppellF1}\Big[3,\ -2\,m,\ 2+2\,m,\ 4,$$

$$\text{Cot}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\ -\text{Cot}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]\ \text{Cot}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]\ \text{Csc}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big)+$$

$$\frac{1}{2}\text{AppellF1}\left[1,-2m,2m,2,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2$$
$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]+\left(\frac{1}{2}m\,\text{AppellF1}\left[2,1-2m,2m,3,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right.$$
$$\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]\text{Csc}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2+\frac{1}{2}m\,\text{AppellF1}\left[2,-2m,1+2m,3,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,\right.$$
$$\left.\left.-\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]\text{Csc}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\Big)\Big)\Big/$$
$$\left(-m\left(\text{AppellF1}\left[2,1-2m,2m,3,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+\text{AppellF1}\left[2,-2m,\right.\right.\right.$$
$$\left.\left.1+2m,3,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right)+$$
$$\left.\text{AppellF1}\left[1,-2m,2m,2,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)^2-$$
$$\left(A\,\text{AppellF1}\left[1,-2m,2m,2,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\left(-\frac{1}{2}m\right.\right.$$
$$\text{AppellF1}\left[2,1-2m,2m,3,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]-$$
$$\frac{1}{2}m\,\text{AppellF1}\left[2,-2m,1+2m,3,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2$$
$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]-\frac{1}{2}m\left(\text{AppellF1}\left[2,1-2m,2m,3,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+\text{AppellF1}\left[2,\right.\right.$$
$$\left.\left.-2m,1+2m,3,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right)\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]-$$
$$m\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\left(-\frac{4}{3}m\,\text{AppellF1}\left[3,1-2m,1+2m,4,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right.$$
$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]+\frac{1}{3}(1-2m)\,\text{AppellF1}\left[3,2-2m,2m,4,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,\right.$$
$$\left.-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]-\frac{1}{3}(1+2m)\,\text{AppellF1}\left[3,-2m,2+2m,\right.$$
$$\left.\left.\left.4,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]\right)\right)\right)\Big/$$
$$\left(\text{AppellF1}\left[1,-2m,2m,2,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]-m\left(\text{AppellF1}\left[2,1-2m,2m,\right.\right.\right.$$
$$3,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+\text{AppellF1}\left[2,-2m,1+2m,\right.$$

$$3,\ \mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]\Big)\ \mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big)^2 -$$

$$\Big(B\ \mathrm{AppellF1}\left[1,\ -2\,m,\ 2\,m,\ 2,\ \mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\ \mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\ \Big(-\frac{1}{2}\,m$$

$$\mathrm{AppellF1}\left[2,\ 1-2\,m,\ 2\,m,\ 3,\ \mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\ \mathrm{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\ \mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right] -$$

$$\frac{1}{2}\,m\ \mathrm{AppellF1}\left[2,\ -2\,m,\ 1+2\,m,\ 3,\ \mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\ \mathrm{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2$$

$$\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right] - \frac{1}{2}\,m\ \Big(\mathrm{AppellF1}\left[2,\ 1-2\,m,\ 2\,m,\ 3,\ \mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right] + \mathrm{AppellF1}\Big[2,$$

$$-2\,m,\ 1+2\,m,\ 3,\ \mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]\Big)\ \mathrm{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\ \mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right] -$$

$$m\ \mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\ \Big(-\frac{4}{3}\,m\ \mathrm{AppellF1}\left[3,\ 1-2\,m,\ 1+2\,m,\ 4,\ \mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]$$

$$\mathrm{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\ \mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right] + \frac{1}{3}\,(1-2\,m)\ \mathrm{AppellF1}\Big[3,\ 2-2\,m,\ 2\,m,\ 4,\ \mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,$$

$$-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]\ \mathrm{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\ \mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right] - \frac{1}{3}\,(1+2\,m)\ \mathrm{AppellF1}\Big[3,\ -2\,m,\ 2+2\,m,$$

$$4,\ \mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]\ \mathrm{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\ \mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\Big)\Big)\Big) \Big/$$

$$\Big(\mathrm{AppellF1}\left[1,\ -2\,m,\ 2\,m,\ 2,\ \mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right] - m\ \Big(\mathrm{AppellF1}\Big[2,\ 1-2\,m,\ 2\,m,$$

$$3,\ \mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big] + \mathrm{AppellF1}\Big[2,\ -2\,m,\ 1+2\,m,$$

$$3,\ \mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]\Big)\ \mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big)^2 -$$

$$\Big(2\,A\,(1+m)\ \mathrm{AppellF1}\left[1+2\,m,\ 2\,m,\ 1,\ 2+2\,m,\ \frac{1}{2}-\frac{1}{2}\,\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ 1-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]$$

$$\mathrm{Csc}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\ \mathrm{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\Big) \Big/$$

$$\Big((1+2\,m)\ \Big(-2\,(1+m)\ \mathrm{AppellF1}\left[1+2\,m,\ 2\,m,\ 1,\ 2+2\,m,\ \frac{1}{2}-\frac{1}{2}\,\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ 1-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right] +$$

$$\Big(\mathrm{AppellF1}\left[2+2\,m,\ 2\,m,\ 2,\ 3+2\,m,\ \frac{1}{2}-\frac{1}{2}\,\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ 1-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right] + m\ \mathrm{AppellF1}\Big[2+2\,m,$$

$$1+2\,m,\ 1,\ 3+2\,m,\ \frac{1}{2}-\frac{1}{2}\,\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ 1-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]\Big)\ \Big(-1+\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big)\Big)\Big) +$$

$$\left(6\,B\,(1+m)\,\text{AppellF1}\left[1+2m,\,2m,\,1,\,2+2m,\,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right.$$
$$\left.\text{Csc}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\right)\Big/$$
$$\left((1+2m)\left(-2\,(1+m)\,\text{AppellF1}\left[1+2m,\,2m,\,1,\,2+2m,\,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.\right.$$
$$\left(\text{AppellF1}\left[2+2m,\,2m,\,2,\,3+2m,\,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+m\,\text{AppellF1}\left[2+2m,\right.\right.$$
$$\left.\left.\left.\left.1+2m,\,1,\,3+2m,\,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\left(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\right)\right)+$$
$$\left(2\,A\,(1+m)\,\text{AppellF1}\left[1+2m,\,2m,\,1,\,2+2m,\,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right.$$
$$\left.\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\text{Csc}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\left(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\right)\Big/$$
$$\left((1+2m)\left(-2\,(1+m)\,\text{AppellF1}\left[1+2m,\,2m,\,1,\,2+2m,\,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.\right.$$
$$\left(\text{AppellF1}\left[2+2m,\,2m,\,2,\,3+2m,\,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+m\,\text{AppellF1}\left[2+2m,\right.\right.$$
$$\left.\left.\left.\left.1+2m,\,1,\,3+2m,\,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\left(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\right)\right)-$$
$$\left(6\,B\,(1+m)\,\text{AppellF1}\left[1+2m,\,2m,\,1,\,2+2m,\,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right.$$
$$\left.\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\text{Csc}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\left(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\right)\Big/$$
$$\left((1+2m)\left(-2\,(1+m)\,\text{AppellF1}\left[1+2m,\,2m,\,1,\,2+2m,\,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.\right.$$
$$\left(\text{AppellF1}\left[2+2m,\,2m,\,2,\,3+2m,\,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+m\,\text{AppellF1}\left[2+2m,\right.\right.$$
$$\left.\left.\left.\left.1+2m,\,1,\,3+2m,\,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\left(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\right)\right)-$$
$$\left(4\,A\,(1+m)\,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\left(-\frac{1}{2\,(2+2m)}(1+2m)\,\text{AppellF1}\left[2+2m,\,2m,\,2,\,3+2m,\,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\right.\right.\right.$$
$$\left.1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-\frac{1}{2\,(2+2m)}$$
$$m\,(1+2m)\,\text{AppellF1}\left[2+2m,\,1+2m,\,1,\,3+2m,\,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\Big) \left(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\Big)\Big/$$

$$\Big((1+2 m) \Big(-2 (1+m) \text{AppellF1}\left[1+2 m, 2 m, 1, 2+2 m, \frac{1}{2}-\frac{1}{2} \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, 1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$\Big(\text{AppellF1}\left[2+2 m, 2 m, 2, 3+2 m, \frac{1}{2}-\frac{1}{2} \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, 1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+m \text{AppellF1}\Big[2+2 m,$$

$$1+2 m, 1, 3+2 m, \frac{1}{2}-\frac{1}{2} \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, 1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\Big) \left(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\Big)\Big)+$$

$$\Big(12 B (1+m) \text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \Big(-\frac{1}{2 (2+2 m)} (1+2 m) \text{AppellF1}\Big[2+2 m, 2 m, 2, 3+2 m, \frac{1}{2}-\frac{1}{2} \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,$$

$$1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big] \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{1}{2 (2+2 m)}$$

$$m (1+2 m) \text{AppellF1}\left[2+2 m, 1+2 m, 1, 3+2 m, \frac{1}{2}-\frac{1}{2} \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, 1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\Big) \left(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\Big)\Big/$$

$$\Big((1+2 m) \Big(-2 (1+m) \text{AppellF1}\left[1+2 m, 2 m, 1, 2+2 m, \frac{1}{2}-\frac{1}{2} \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, 1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$\Big(\text{AppellF1}\left[2+2 m, 2 m, 2, 3+2 m, \frac{1}{2}-\frac{1}{2} \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, 1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+m \text{AppellF1}\Big[2+2 m,$$

$$1+2 m, 1, 3+2 m, \frac{1}{2}-\frac{1}{2} \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, 1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\Big) \left(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\Big)\Big)+$$

$$\Big(4 A (1+m) \text{AppellF1}\left[1+2 m, 2 m, 1, 2+2 m, \frac{1}{2}-\frac{1}{2} \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, 1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right] \text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2$$

$$\left(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right) \Big(\frac{1}{2} \Big(\text{AppellF1}\left[2+2 m, 2 m, 2, 3+2 m, \frac{1}{2}-\frac{1}{2} \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, 1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$m \text{AppellF1}\left[2+2 m, 1+2 m, 1, 3+2 m, \frac{1}{2}-\frac{1}{2} \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, 1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\Big) \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-2 (1+m) \Big(-\frac{1}{2 (2+2 m)} (1+2 m) \text{AppellF1}\Big[2+2 m, 2 m, 2, 3+2 m, \frac{1}{2}-\frac{1}{2} \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, 1-$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big] \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{1}{2 (2+2 m)} m (1+2 m) \text{AppellF1}\Big[2+2 m, 1+2 m,$$

$$1, 3+2 m, \frac{1}{2}-\frac{1}{2} \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, 1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big] \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\Big)+$$

$$\left(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right) \Big(-\frac{1}{3+2 m} (2+2 m) \text{AppellF1}\Big[3+2 m, 2 m, 3, 4+2 m, \frac{1}{2}-\frac{1}{2} \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, 1-$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2] \;\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2 \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right] - \frac{1}{2\,(3+2\,m)} m\,(2+2\,m)\;\text{AppellF1}[3+2\,m,\,1+2\,m,$$

$$2,\,4+2\,m,\,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2]\;\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2 \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right] +$$

$$m\,(-\frac{1}{2\,(3+2\,m)}(2+2\,m)\;\text{AppellF1}[3+2\,m,\,1+2\,m,\,2,\,4+2\,m,\,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2]$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2 \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right] - \frac{1}{4\,(3+2\,m)}(1+2\,m)\,(2+2\,m)\;\text{AppellF1}[3+2\,m,\,2+2\,m,\,1,\,4+2\,m,$$

$$\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2]\;\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2 \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]]))))\Big/$$

$$((1+2\,m)\,(-2\,(1+m)\;\text{AppellF1}[1+2\,m,\,2\,m,\,1,\,2+2\,m,\,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2] +$$

$$(\text{AppellF1}[2+2\,m,\,2\,m,\,2,\,3+2\,m,\,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2] + m\,\text{AppellF1}[2+2\,m,$$

$$1+2\,m,\,1,\,3+2\,m,\,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2])\;(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2))^2) -$$

$$(12\,B\,(1+m)\;\text{AppellF1}[1+2\,m,\,2\,m,\,1,\,2+2\,m,\,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2]\;\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2$$

$$(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2)\;(\frac{1}{2}(\text{AppellF1}[2+2\,m,\,2\,m,\,2,\,3+2\,m,\,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2] +$$

$$m\,\text{AppellF1}[2+2\,m,\,1+2\,m,\,1,\,3+2\,m,\,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2])\;\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right] - 2\,(1+m)\,(-\frac{1}{2\,(2+2\,m)}(1+2\,m)\;\text{AppellF1}[2+2\,m,\,2\,m,\,2,\,3+2\,m,\,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,1-$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2]\;\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2 \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right] - \frac{1}{2\,(2+2\,m)} m\,(1+2\,m)\;\text{AppellF1}[2+2\,m,\,1+2\,m,$$

$$1,\,3+2\,m,\,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2]\;\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2 \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]) +$$

$$(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2)\;(-\frac{1}{3+2\,m}(2+2\,m)\;\text{AppellF1}[3+2\,m,\,2\,m,\,3,\,4+2\,m,\,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,1-$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2]\;\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2 \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right] - \frac{1}{2\,(3+2\,m)} m\,(2+2\,m)\;\text{AppellF1}[3+2\,m,\,1+2\,m,$$

$$2,\,4+2\,m,\,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2]\;\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2 \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right] +$$

$$m\,(-\frac{1}{2\,(3+2\,m)}(2+2\,m)\;\text{AppellF1}[3+2\,m,\,1+2\,m,\,2,\,4+2\,m,\,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2]$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{1}{4(3+2m)}(1+2m)(2+2m)\,\text{AppellF1}\Big[3+2m,2+2m,1,4+2m,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\Bigg)\Bigg)\Bigg)\Bigg)\Bigg/$$

$$\Bigg((1+2m)\Bigg(-2(1+m)\,\text{AppellF1}\Big[1+2m,2m,1,2+2m,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]+\Bigg(\text{AppellF1}\Big[2+2m,2m,2,3+2m,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]+m\,\text{AppellF1}\Big[2+2m,1+2m,1,3+2m,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\Bigg)\left(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^2\Bigg)\Bigg)\Bigg)\Bigg)\Bigg)$$

- **Problem 210: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int \frac{(a+a\,\text{Sin}[e+f x])^m (A+B\,\text{Sin}[e+f x])}{(c-c\,\text{Sin}[e+f x])^{5/2}}\,dx$$

Optimal (type 5, 134 leaves, 4 steps):

$$\frac{(A+B)\,\text{Cos}[e+f x]\,(a+a\,\text{Sin}[e+f x])^m}{4 f\,(c-c\,\text{Sin}[e+f x])^{5/2}}+\left((A(3-2m)-B(5+2m))\,\text{Cos}[e+f x]\,\text{Hypergeometric2F1}\left[2,\frac{1}{2}+m,\frac{3}{2}+m,\frac{1}{2}(1+\text{Sin}[e+f x])\right](a+a\,\text{Sin}[e+f x])^m\right)\Big/\left(16 c^2 f(1+2m)\sqrt{c-c\,\text{Sin}[e+f x]}\right)$$

Result (type 6, 28 451 leaves): Display of huge result suppressed!

- **Problem 214: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int (a+a\,\text{Sin}[e+f x])^m (A+B\,\text{Sin}[e+f x])(c-c\,\text{Sin}[e+f x])^{-1-m}\,dx$$

Optimal (type 5, 163 leaves, 5 steps):

$$\frac{(A+B)\,\text{Cos}[e+f x]\,(a+a\,\text{Sin}[e+f x])^m (c-c\,\text{Sin}[e+f x])^{-1-m}}{f(1+2m)}-\frac{1}{f(1+2m)}2^{\frac{1}{2}-m}B\,\text{Cos}[e+f x]\,\text{Hypergeometric2F1}\left[\frac{1}{2}(1+2m),\frac{1}{2}(1+2m),\frac{1}{2}(3+2m),\frac{1}{2}(1+\text{Sin}[e+f x])\right](1-\text{Sin}[e+f x])^{\frac{1}{2}+m}(a+a\,\text{Sin}[e+f x])^m (c-c\,\text{Sin}[e+f x])^{-1-m}$$

Result (type 6, 6197 leaves):

$$-\Bigg(\Bigg(2^{-1-3m}\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{-2m}\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^{-2(-1-m)}(a+a\,\text{Sin}[e+f x])^m$$

$$(c - c\,\mathrm{Sin}[e + f x])^{-1-m} \left(A\,\mathrm{Cos}\left[\frac{1}{2}\left(-e + \frac{\pi}{2} - f x\right)\right]^{2m} \left(\mathrm{Cos}\left[\frac{\pi}{4} + \frac{1}{2}\left(e - \frac{\pi}{2} + f x\right)\right] - \mathrm{Sin}\left[\frac{\pi}{4} + \frac{1}{2}\left(e - \frac{\pi}{2} + f x\right)\right]\right)^{-2-2m} +\right.$$

$$\left. B\,\mathrm{Cos}\left[\frac{1}{2}\left(-e + \frac{\pi}{2} - f x\right)\right]^{2m} \mathrm{Sin}[e + f x] \left(\mathrm{Cos}\left[\frac{\pi}{4} + \frac{1}{2}\left(e - \frac{\pi}{2} + f x\right)\right] - \mathrm{Sin}\left[\frac{\pi}{4} + \frac{1}{2}\left(e - \frac{\pi}{2} + f x\right)\right]\right)^{-2-2m}\right) \left(\frac{1}{1 + \mathrm{Tan}\left[\frac{1}{4}\left(-e + \frac{\pi}{2} - f x\right)\right]^2}\right)^{2m}$$

$$\left(\frac{\mathrm{Tan}\left[\frac{1}{4}\left(-e + \frac{\pi}{2} - f x\right)\right]}{1 + \mathrm{Tan}\left[\frac{1}{4}\left(-e + \frac{\pi}{2} - f x\right)\right]^2}\right)^{-2m} \left(\left(8 B (-3 + 2 m)\,\mathrm{AppellF1}\left[\frac{1}{2} - m, -2 m, 1, \frac{3}{2} - m, \mathrm{Tan}\left[\frac{1}{4}\left(-e + \frac{\pi}{2} - f x\right)\right]^2, -\mathrm{Tan}\left[\frac{1}{4}\left(-e + \frac{\pi}{2} - f x\right)\right]^2\right]\right.\right.$$

$$\left.\mathrm{Tan}\left[\frac{1}{4}\left(-e + \frac{\pi}{2} - f x\right)\right]^2 \left(1 - \mathrm{Tan}\left[\frac{1}{4}\left(-e + \frac{\pi}{2} - f x\right)\right]^2\right)^{2m}\right) \Big/$$

$$\left((-1 + 2 m) \left(1 + \mathrm{Tan}\left[\frac{1}{4}\left(-e + \frac{\pi}{2} - f x\right)\right]^2\right) \left((-3 + 2 m)\,\mathrm{AppellF1}\left[\frac{1}{2} - m, -2 m, 1, \frac{3}{2} - m, \mathrm{Tan}\left[\frac{1}{4}\left(-e + \frac{\pi}{2} - f x\right)\right]^2, -\mathrm{Tan}\left[\frac{1}{4}\left(-e + \frac{\pi}{2} - f x\right)\right]^2\right] +\right.\right.$$

$$2 \left(2 m\,\mathrm{AppellF1}\left[\frac{3}{2} - m, 1 - 2 m, 1, \frac{5}{2} - m, \mathrm{Tan}\left[\frac{1}{4}\left(-e + \frac{\pi}{2} - f x\right)\right]^2, -\mathrm{Tan}\left[\frac{1}{4}\left(-e + \frac{\pi}{2} - f x\right)\right]^2\right] + \mathrm{AppellF1}\left[\right.\right.$$

$$\left.\left.\left.\left.\frac{3}{2} - m, -2 m, 2, \frac{5}{2} - m, \mathrm{Tan}\left[\frac{1}{4}\left(-e + \frac{\pi}{2} - f x\right)\right]^2, -\mathrm{Tan}\left[\frac{1}{4}\left(-e + \frac{\pi}{2} - f x\right)\right]^2\right]\right) \mathrm{Tan}\left[\frac{1}{4}\left(-e + \frac{\pi}{2} - f x\right)\right]^2\right)\right) -$$

$$\frac{1}{-1 + 4 m^2}(A + B) \left((-1 + 2 m)\,\mathrm{Hypergeometric2F1}\left[-\frac{1}{2} - m, -2 m, \frac{1}{2} - m, \mathrm{Tan}\left[\frac{1}{4}\left(-e + \frac{\pi}{2} - f x\right)\right]^2\right] +\right.$$

$$\left.\left.(1 + 2 m)\,\mathrm{Hypergeometric2F1}\left[\frac{1}{2} - m, -2 m, \frac{3}{2} - m, \mathrm{Tan}\left[\frac{1}{4}\left(-e + \frac{\pi}{2} - f x\right)\right]^2\right] \mathrm{Tan}\left[\frac{1}{4}\left(-e + \frac{\pi}{2} - f x\right)\right]^2\right)\right) \Big/$$

$$\left(f \left(-2^{-3-3m}\,\mathrm{Csc}\left[\frac{1}{4}\left(-e + \frac{\pi}{2} - f x\right)\right]^2 \left(\frac{1}{1 + \mathrm{Tan}\left[\frac{1}{4}\left(-e + \frac{\pi}{2} - f x\right)\right]^2}\right)^{2m} \left(\frac{\mathrm{Tan}\left[\frac{1}{4}\left(-e + \frac{\pi}{2} - f x\right)\right]}{1 + \mathrm{Tan}\left[\frac{1}{4}\left(-e + \frac{\pi}{2} - f x\right)\right]^2}\right)^{-2m} \left(\left(8 B (-3 + 2 m)\,\mathrm{AppellF1}\left[\frac{1}{2} - m,\right.\right.\right.\right.$$

$$\left.-2 m, 1, \frac{3}{2} - m, \mathrm{Tan}\left[\frac{1}{4}\left(-e + \frac{\pi}{2} - f x\right)\right]^2, -\mathrm{Tan}\left[\frac{1}{4}\left(-e + \frac{\pi}{2} - f x\right)\right]^2\right] \mathrm{Tan}\left[\frac{1}{4}\left(-e + \frac{\pi}{2} - f x\right)\right]^2 \left(1 - \mathrm{Tan}\left[\frac{1}{4}\left(-e + \frac{\pi}{2} - f x\right)\right]^2\right)^{2m}\Bigg) \Big/$$

$$\left((-1 + 2 m) \left(1 + \mathrm{Tan}\left[\frac{1}{4}\left(-e + \frac{\pi}{2} - f x\right)\right]^2\right) \left((-3 + 2 m)\,\mathrm{AppellF1}\left[\frac{1}{2} - m, -2 m, 1, \frac{3}{2} - m, \mathrm{Tan}\left[\frac{1}{4}\left(-e + \frac{\pi}{2} - f x\right)\right]^2,\right.\right.\right.$$

$$\left.-\mathrm{Tan}\left[\frac{1}{4}\left(-e + \frac{\pi}{2} - f x\right)\right]^2\right] + 2 \left(2 m\,\mathrm{AppellF1}\left[\frac{3}{2} - m, 1 - 2 m, 1, \frac{5}{2} - m, \mathrm{Tan}\left[\frac{1}{4}\left(-e + \frac{\pi}{2} - f x\right)\right]^2, -\mathrm{Tan}\left[\frac{1}{4}\left(-e + \frac{\pi}{2} - f x\right)\right]^2\right] +\right.$$

$$\left.\left.\left.\mathrm{AppellF1}\left[\frac{3}{2} - m, -2 m, 2, \frac{5}{2} - m, \mathrm{Tan}\left[\frac{1}{4}\left(-e + \frac{\pi}{2} - f x\right)\right]^2, -\mathrm{Tan}\left[\frac{1}{4}\left(-e + \frac{\pi}{2} - f x\right)\right]^2\right]\right) \mathrm{Tan}\left[\frac{1}{4}\left(-e + \frac{\pi}{2} - f x\right)\right]^2\right)\right) -$$

$$\frac{1}{-1 + 4 m^2}(A + B) \left((-1 + 2 m)\,\mathrm{Hypergeometric2F1}\left[-\frac{1}{2} - m, -2 m, \frac{1}{2} - m, \mathrm{Tan}\left[\frac{1}{4}\left(-e + \frac{\pi}{2} - f x\right)\right]^2\right] +\right.$$

$$(1+2m)\,\text{Hypergeometric2F1}\left[\frac{1}{2}-m,-2m,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\Bigg)\Bigg)-$$

$$2^{-1-3m}\,m\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\left(\frac{1}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2}\right)^{1+2m}\left(\frac{\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2}\right)^{-2m}$$

$$\Bigg(\Bigg(8B(-3+2m)\,\text{AppellF1}\left[\frac{1}{2}-m,-2m,1,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)^{2m}\Bigg)\Bigg/$$

$$\Bigg((-1+2m)\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)\Bigg((-3+2m)\,\text{AppellF1}\left[\frac{1}{2}-m,-2m,1,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,\right.$$

$$\left.-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+2\Bigg(2m\,\text{AppellF1}\left[\frac{3}{2}-m,1-2m,1,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+$$

$$\text{AppellF1}\left[\frac{3}{2}-m,-2m,2,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\Bigg)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\Bigg)\Bigg)-$$

$$\frac{1}{-1+4m^2}(A+B)\Bigg((-1+2m)\,\text{Hypergeometric2F1}\left[-\frac{1}{2}-m,-2m,\frac{1}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+$$

$$(1+2m)\,\text{Hypergeometric2F1}\left[\frac{1}{2}-m,-2m,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\Bigg)-$$

$$2^{-3m}\,m\,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]\left(\frac{1}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2}\right)^{2m}\left(\frac{\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2}\right)^{-1-2m}$$

$$\left(-\frac{\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2}{2\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)^2}+\frac{\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2}{4\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)}\right)$$

$$\Bigg(\Bigg(8B(-3+2m)\,\text{AppellF1}\left[\frac{1}{2}-m,-2m,1,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)^{2m}\Bigg)\Bigg/$$

$$\Bigg((-1+2m)\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)\Bigg((-3+2m)\,\text{AppellF1}\left[\frac{1}{2}-m,-2m,1,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,\right.$$

$$\left.-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+2\Bigg(2m\,\text{AppellF1}\left[\frac{3}{2}-m,1-2m,1,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+$$

$$\text{AppellF1}\left[\frac{3}{2}-m,-2m,2,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\Bigg)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\Bigg)\Bigg)-$$

$$\frac{1}{-1+4 m^2}(A+B)\ \Big(\Big((-1+2 m)\ \text{Hypergeometric2F1}\Big[-\frac{1}{2}-m,-2 m,\frac{1}{2}-m,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big]+$$

$$(1+2 m)\ \text{Hypergeometric2F1}\Big[\frac{1}{2}-m,-2 m,\frac{3}{2}-m,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big]\ \text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big)\Big)+$$

$$2^{-1-3 m}\ \text{Cot}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]\ \left(\frac{1}{1+\text{Tan}\big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\big]^2}\right)^{2 m}\left(\frac{\text{Tan}\big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\big]}{1+\text{Tan}\big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\big]^2}\right)^{-2 m}$$

$$\Big(-\Big(\Big(4 B\ (-3+2 m)\ \text{AppellF1}\Big[\frac{1}{2}-m,-2 m,1,\frac{3}{2}-m,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big]$$

$$\text{Sec}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\ \text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^3\ \left(1-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\right)^{2 m}\Big)\Big/$$

$$\Big((-1+2 m)\ \left(1+\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\right)^2\ \Big((-3+2 m)\ \text{AppellF1}\Big[\frac{1}{2}-m,-2 m,1,\frac{3}{2}-m,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2,$$

$$-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big]+2\ \Big(2 m\ \text{AppellF1}\Big[\frac{3}{2}-m,1-2 m,1,\frac{5}{2}-m,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big]+$$

$$\text{AppellF1}\Big[\frac{3}{2}-m,-2 m,2,\frac{5}{2}-m,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big]\Big)\ \text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big)\Big)\Big)+$$

$$\Big(4 B\ (-3+2 m)\ \text{AppellF1}\Big[\frac{1}{2}-m,-2 m,1,\frac{3}{2}-m,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big]\ \text{Sec}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2$$

$$\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]\ \left(1-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\right)^{2 m}\Big)\Big/\ \Big((-1+2 m)\ \left(1+\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\right)$$

$$\Big((-3+2 m)\ \text{AppellF1}\Big[\frac{1}{2}-m,-2 m,1,\frac{3}{2}-m,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big]+2$$

$$\Big(2 m\ \text{AppellF1}\Big[\frac{3}{2}-m,1-2 m,1,\frac{5}{2}-m,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big]+\text{AppellF1}\Big[\frac{3}{2}-m,-2 m,2,\frac{5}{2}-m,$$

$$\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big]\Big)\ \text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big)\Big)+\Big(8 B\ (-3+2 m)\ \text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2$$

$$\Big(-\frac{1}{\frac{3}{2}-m}\left(\frac{1}{2}-m\right)\ m\ \text{AppellF1}\Big[\frac{3}{2}-m,1-2 m,1,\frac{5}{2}-m,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big]$$

$$\text{Sec}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\ \text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]-\frac{1}{2\left(\frac{3}{2}-m\right)}\left(\frac{1}{2}-m\right)\ \text{AppellF1}\Big[\frac{3}{2}-m,-2 m,2,\frac{5}{2}-m,\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2,$$

$$-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big]\ \text{Sec}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\ \text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]\Big)\ \left(1-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\right)^{2 m}\Big)\Big/$$

$$\Big((-1+2\,m)\,\Big(1+\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)\,\Big((-3+2\,m)\,\text{AppellF1}\Big[\frac{1}{2}-m,\,-2\,m,\,1,\,\frac{3}{2}-m,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,$$

$$-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+2\,\Big(2\,m\,\text{AppellF1}\Big[\frac{3}{2}-m,\,1-2\,m,\,1,\,\frac{5}{2}-m,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+$$

$$\text{AppellF1}\Big[\frac{3}{2}-m,\,-2\,m,\,2,\,\frac{5}{2}-m,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)\Big)-$$

$$\Big(8\,B\,m\,(-3+2\,m)\,\text{AppellF1}\Big[\frac{1}{2}-m,\,-2\,m,\,1,\,\frac{3}{2}-m,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]$$

$$\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^3\,\Big(1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)^{-1+2\,m}\Big)\Big/$$

$$\Big((-1+2\,m)\,\Big(1+\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)\,\Big((-3+2\,m)\,\text{AppellF1}\Big[\frac{1}{2}-m,\,-2\,m,\,1,\,\frac{3}{2}-m,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,$$

$$-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+2\,\Big(2\,m\,\text{AppellF1}\Big[\frac{3}{2}-m,\,1-2\,m,\,1,\,\frac{5}{2}-m,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+$$

$$\text{AppellF1}\Big[\frac{3}{2}-m,\,-2\,m,\,2,\,\frac{5}{2}-m,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)\Big)-$$

$$\Big(8\,B\,(-3+2\,m)\,\text{AppellF1}\Big[\frac{1}{2}-m,\,-2\,m,\,1,\,\frac{3}{2}-m,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2$$

$$\Big(1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)^{2\,m}\,\Big(\Big(2\,m\,\text{AppellF1}\Big[\frac{3}{2}-m,\,1-2\,m,\,1,\,\frac{5}{2}-m,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+$$

$$\text{AppellF1}\Big[\frac{3}{2}-m,\,-2\,m,\,2,\,\frac{5}{2}-m,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\Big)\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2$$

$$\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]+(-3+2\,m)\,\Big(-\frac{1}{\frac{3}{2}-m}\Big(\frac{1}{2}-m\Big)\,m\,\text{AppellF1}\Big[\frac{3}{2}-m,\,1-2\,m,\,1,\,\frac{5}{2}-m,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,$$

$$-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]-\frac{1}{2\,\big(\frac{3}{2}-m\big)}\Big(\frac{1}{2}-m\Big)\,\text{AppellF1}\Big[\frac{3}{2}-m,\,-2\,m,\,2,$$

$$\frac{5}{2}-m,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\Big)+2$$

$$\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\,\Big(-\frac{1}{\frac{5}{2}-m}\Big(\frac{3}{2}-m\Big)\,m\,\text{AppellF1}\Big[\frac{5}{2}-m,\,1-2\,m,\,2,\,\frac{7}{2}-m,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,$$

$$-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]-\frac{1}{\frac{5}{2}-m}\Big(\frac{3}{2}-m\Big)\,\text{AppellF1}\Big[\frac{5}{2}-m,\,-2\,m,$$

$$3,\ \frac{7}{2}-m,\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\ \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]+$$

$$2 m\left(-\frac{1}{2\left(\frac{5}{2}-m\right)}\left(\frac{3}{2}-m\right)\ \text{AppellF1}\left[\frac{5}{2}-m,\ 1-2 m,\ 2,\ \frac{7}{2}-m,\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right.$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]+\frac{1}{2\left(\frac{5}{2}-m\right)}(1-2 m)\left(\frac{3}{2}-m\right)\ \text{AppellF1}\left[\frac{5}{2}-m,\ 2-2 m,\ 1,\ \frac{7}{2}-m,\right.$$

$$\left.\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\ \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\Bigg)\Bigg)\Bigg)\Bigg)\Bigg)\Bigg/$$

$$\left((-1+2 m)\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\left((-3+2 m)\ \text{AppellF1}\left[\frac{1}{2}-m,\ -2 m,\ 1,\ \frac{3}{2}-m,\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\right.\right.\right.$$

$$-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+2\left(2 m\ \text{AppellF1}\left[\frac{3}{2}-m,\ 1-2 m,\ 1,\ \frac{5}{2}-m,\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.$$

$$\left.\left.\left.\text{AppellF1}\left[\frac{3}{2}-m,\ -2 m,\ 2,\ \frac{5}{2}-m,\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^2\right)-$$

$$\frac{1}{-1+4 m^2}(A+B)\left(\frac{1}{2}(1+2 m)\ \text{Hypergeometric2F1}\left[\frac{1}{2}-m,\ -2 m,\ \frac{3}{2}-m,\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\ \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right.$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]+\frac{1}{2}\left(-\frac{1}{2}-m\right)(-1+2 m)\ \text{Csc}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\ \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\left(-\text{Hypergeometric2F1}\left[-\frac{1}{2}-m,\right.\right.$$

$$\left.\left.-2 m,\ \frac{1}{2}-m,\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{2 m}\right)+\frac{1}{2}\left(\frac{1}{2}-m\right)(1+2 m)\ \text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\ \text{Tan}\Big[$$

$$\left.\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\Big]\left(-\text{Hypergeometric2F1}\left[\frac{1}{2}-m,\ -2 m,\ \frac{3}{2}-m,\ \text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{2 m}\right)\right)\Bigg)\Bigg)\Bigg)\Bigg)$$

- **Problem 215: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int (a+a\,\text{Sin}[e+f x])^m\,(A+B\,\text{Sin}[e+f x])\,(c-c\,\text{Sin}[e+f x])^{-m}\,dx$$

Optimal (type 5, 158 leaves, 5 steps):

$$\frac{1}{f(1+2 m)}2^{\frac{1}{2}-m}\,c\,(A+2 B m)\ \text{Cos}[e+f x]\ \text{Hypergeometric2F1}\left[\frac{1}{2}(1+2 m),\ \frac{1}{2}(1+2 m),\ \frac{1}{2}(3+2 m),\ \frac{1}{2}(1+\text{Sin}[e+f x])\right]$$

$$(1-\text{Sin}[e+f x])^{\frac{1}{2}+m}\,(a+a\,\text{Sin}[e+f x])^m\,(c-c\,\text{Sin}[e+f x])^{-1-m}-\frac{B\,\text{Cos}[e+f x]\,(a+a\,\text{Sin}[e+f x])^m\,(c-c\,\text{Sin}[e+f x])^{-m}}{f}$$

Result (type 6, 15 390 leaves):

$$-\Bigg(\Bigg(2^{2-3 m} (-3+2 m) \text{Cos}\left[\frac{1}{2} \left(-e+\frac{\pi }{2}-f x\right)\right]^{-2 m} \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]-\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^{2 m} (a+a \text{Sin}[e+f x])^m$$

$$(c-c \text{Sin}[e+f x])^{-m} \left(A \text{Cos}\left[\frac{1}{2} \left(-e+\frac{\pi }{2}-f x\right)\right]^{2 m} \left(\text{Cos}\left[\frac{\pi }{4}+\frac{1}{2} \left(e-\frac{\pi }{2}+f x\right)\right]-\text{Sin}\left[\frac{\pi }{4}+\frac{1}{2} \left(e-\frac{\pi }{2}+f x\right)\right]\right)^{-2 m}+\right.$$

$$\left.B \text{Cos}\left[\frac{1}{2} \left(-e+\frac{\pi }{2}-f x\right)\right]^{2 m} \text{Sin}[e+f x] \left(\text{Cos}\left[\frac{\pi }{4}+\frac{1}{2} \left(e-\frac{\pi }{2}+f x\right)\right]-\text{Sin}\left[\frac{\pi }{4}+\frac{1}{2} \left(e-\frac{\pi }{2}+f x\right)\right]\right)^{-2 m}\right)$$

$$\text{Tan}\left[\frac{1}{4} \left(-e+\frac{\pi }{2}-f x\right)\right] \left(\frac{\text{Tan}\left[\frac{1}{4} \left(-e+\frac{\pi }{2}-f x\right)\right]}{1+\text{Tan}\left[\frac{1}{4} \left(-e+\frac{\pi }{2}-f x\right)\right]^2}\right)^{-2 m} \left(\frac{1-\text{Tan}\left[\frac{1}{4} \left(-e+\frac{\pi }{2}-f x\right)\right]^2}{1+\text{Tan}\left[\frac{1}{4} \left(-e+\frac{\pi }{2}-f x\right)\right]^2}\right)^{2 m}$$

$$\Bigg(-\Bigg(\Bigg(A \text{AppellF1}\left[\frac{1}{2}-m,-2 m,1,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4} \left(-e+\frac{\pi }{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4} \left(-e+\frac{\pi }{2}-f x\right)\right]^2\right] \left(1+\text{Tan}\left[\frac{1}{4} \left(-e+\frac{\pi }{2}-f x\right)\right]^2\right)^2\Bigg)\Bigg/$$

$$\Bigg((-3+2 m) \text{AppellF1}\left[\frac{1}{2}-m,-2 m,1,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4} \left(-e+\frac{\pi }{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4} \left(-e+\frac{\pi }{2}-f x\right)\right]^2\right]+$$

$$2 \Bigg(2 m \text{AppellF1}\left[\frac{3}{2}-m,1-2 m,1,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4} \left(-e+\frac{\pi }{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4} \left(-e+\frac{\pi }{2}-f x\right)\right]^2\right]+\text{AppellF1}\Bigg[$$

$$\frac{3}{2}-m,-2 m,2,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4} \left(-e+\frac{\pi }{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4} \left(-e+\frac{\pi }{2}-f x\right)\right]^2\Bigg]\Bigg) \text{Tan}\left[\frac{1}{4} \left(-e+\frac{\pi }{2}-f x\right)\right]^2\Bigg)\Bigg)-$$

$$\Bigg(B \text{AppellF1}\left[\frac{1}{2}-m,-2 m,1,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4} \left(-e+\frac{\pi }{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4} \left(-e+\frac{\pi }{2}-f x\right)\right]^2\right] \left(1+\text{Tan}\left[\frac{1}{4} \left(-e+\frac{\pi }{2}-f x\right)\right]^2\right)^2\Bigg)\Bigg/$$

$$\Bigg((-3+2 m) \text{AppellF1}\left[\frac{1}{2}-m,-2 m,1,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4} \left(-e+\frac{\pi }{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4} \left(-e+\frac{\pi }{2}-f x\right)\right]^2\right]+$$

$$2 \Bigg(2 m \text{AppellF1}\left[\frac{3}{2}-m,1-2 m,1,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4} \left(-e+\frac{\pi }{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4} \left(-e+\frac{\pi }{2}-f x\right)\right]^2\right]+$$

$$\text{AppellF1}\left[\frac{3}{2}-m,-2 m,2,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4} \left(-e+\frac{\pi }{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4} \left(-e+\frac{\pi }{2}-f x\right)\right]^2\right]\Bigg) \text{Tan}\left[\frac{1}{4} \left(-e+\frac{\pi }{2}-f x\right)\right]^2\Bigg)+$$

$$\Bigg(8 B \text{AppellF1}\left[\frac{1}{2}-m,-2 m,2,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4} \left(-e+\frac{\pi }{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4} \left(-e+\frac{\pi }{2}-f x\right)\right]^2\right] \left(1+\text{Tan}\left[\frac{1}{4} \left(-e+\frac{\pi }{2}-f x\right)\right]^2\right)\Bigg)\Bigg/$$

$$\Bigg((-3+2 m) \text{AppellF1}\left[\frac{1}{2}-m,-2 m,2,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4} \left(-e+\frac{\pi }{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4} \left(-e+\frac{\pi }{2}-f x\right)\right]^2\right]+$$

$$4 \Bigg(m \text{AppellF1}\left[\frac{3}{2}-m,1-2 m,2,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4} \left(-e+\frac{\pi }{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4} \left(-e+\frac{\pi }{2}-f x\right)\right]^2\right]+$$

$$\text{AppellF1}\left[\frac{3}{2}-m,-2 m,3,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4} \left(-e+\frac{\pi }{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4} \left(-e+\frac{\pi }{2}-f x\right)\right]^2\right]\Bigg) \text{Tan}\left[\frac{1}{4} \left(-e+\frac{\pi }{2}-f x\right)\right]^2\Bigg)-$$

$$\Bigg(8 B \text{AppellF1}\left[\frac{1}{2}-m,-2 m,3,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4} \left(-e+\frac{\pi }{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4} \left(-e+\frac{\pi }{2}-f x\right)\right]^2\right]\Bigg)\Bigg/$$

$$\Bigl((-3+2m)\,\text{AppellF1}\Bigl[\frac{1}{2}-m,\,-2m,\,3,\,\frac{3}{2}-m,\,\text{Tan}\Bigl[\frac{1}{4}\Bigl(-e+\frac{\pi}{2}-f x\Bigr)\Bigr]^2,\,-\text{Tan}\Bigl[\frac{1}{4}\Bigl(-e+\frac{\pi}{2}-f x\Bigr)\Bigr]^2\Bigr]+$$

$$2\Bigl(2m\,\text{AppellF1}\Bigl[\frac{3}{2}-m,\,1-2m,\,3,\,\frac{5}{2}-m,\,\text{Tan}\Bigl[\frac{1}{4}\Bigl(-e+\frac{\pi}{2}-f x\Bigr)\Bigr]^2,\,-\text{Tan}\Bigl[\frac{1}{4}\Bigl(-e+\frac{\pi}{2}-f x\Bigr)\Bigr]^2\Bigr]+$$

$$3\,\text{AppellF1}\Bigl[\frac{3}{2}-m,\,-2m,\,4,\,\frac{5}{2}-m,\,\text{Tan}\Bigl[\frac{1}{4}\Bigl(-e+\frac{\pi}{2}-f x\Bigr)\Bigr]^2,\,-\text{Tan}\Bigl[\frac{1}{4}\Bigl(-e+\frac{\pi}{2}-f x\Bigr)\Bigr]^2\Bigr]\Bigr)\,\text{Tan}\Bigl[\frac{1}{4}\Bigl(-e+\frac{\pi}{2}-f x\Bigr)\Bigr]^2\Bigr)\Bigr)\Bigg/$$

$$\Bigl(f\,(-1+2m)\,\Bigl(1+\text{Tan}\Bigl[\frac{1}{4}\Bigl(-e+\frac{\pi}{2}-f x\Bigr)\Bigr]^2\Bigr)^3\,\Bigl(-\frac{1}{(-1+2m)\,\bigl(1+\text{Tan}\bigl[\frac{1}{4}\bigl(-e+\frac{\pi}{2}-f x\bigr)\bigr]^2\bigr)^4}\,3\times 2^{1-3m}\,(-3+2m)\,\text{Sec}\Bigl[\frac{1}{4}\Bigl(-e+\frac{\pi}{2}-f x\Bigr)\Bigr]^2$$

$$\text{Tan}\Bigl[\frac{1}{4}\Bigl(-e+\frac{\pi}{2}-f x\Bigr)\Bigr]^2\left(\frac{\text{Tan}\bigl[\frac{1}{4}\bigl(-e+\frac{\pi}{2}-f x\bigr)\bigr]}{1+\text{Tan}\bigl[\frac{1}{4}\bigl(-e+\frac{\pi}{2}-f x\bigr)\bigr]^2}\right)^{-2m}\left(\frac{1-\text{Tan}\bigl[\frac{1}{4}\bigl(-e+\frac{\pi}{2}-f x\bigr)\bigr]^2}{1+\text{Tan}\bigl[\frac{1}{4}\bigl(-e+\frac{\pi}{2}-f x\bigr)\bigr]^2}\right)^{2m}$$

$$\Bigl(-\Bigl(\Bigl(A\,\text{AppellF1}\Bigl[\frac{1}{2}-m,\,-2m,\,1,\,\frac{3}{2}-m,\,\text{Tan}\Bigl[\frac{1}{4}\Bigl(-e+\frac{\pi}{2}-f x\Bigr)\Bigr]^2,\,-\text{Tan}\Bigl[\frac{1}{4}\Bigl(-e+\frac{\pi}{2}-f x\Bigr)\Bigr]^2\Bigr]\,\Bigl(1+\text{Tan}\Bigl[\frac{1}{4}\Bigl(-e+\frac{\pi}{2}-f x\Bigr)\Bigr]^2\Bigr)^2\Bigr)\Big/$$

$$\Bigl((-3+2m)\,\text{AppellF1}\Bigl[\frac{1}{2}-m,\,-2m,\,1,\,\frac{3}{2}-m,\,\text{Tan}\Bigl[\frac{1}{4}\Bigl(-e+\frac{\pi}{2}-f x\Bigr)\Bigr]^2,\,-\text{Tan}\Bigl[\frac{1}{4}\Bigl(-e+\frac{\pi}{2}-f x\Bigr)\Bigr]^2\Bigr]+$$

$$2\Bigl(2m\,\text{AppellF1}\Bigl[\frac{3}{2}-m,\,1-2m,\,1,\,\frac{5}{2}-m,\,\text{Tan}\Bigl[\frac{1}{4}\Bigl(-e+\frac{\pi}{2}-f x\Bigr)\Bigr]^2,\,-\text{Tan}\Bigl[\frac{1}{4}\Bigl(-e+\frac{\pi}{2}-f x\Bigr)\Bigr]^2\Bigr]+$$

$$\text{AppellF1}\Bigl[\frac{3}{2}-m,\,-2m,\,2,\,\frac{5}{2}-m,\,\text{Tan}\Bigl[\frac{1}{4}\Bigl(-e+\frac{\pi}{2}-f x\Bigr)\Bigr]^2,\,-\text{Tan}\Bigl[\frac{1}{4}\Bigl(-e+\frac{\pi}{2}-f x\Bigr)\Bigr]^2\Bigr]\Bigr)\,\text{Tan}\Bigl[\frac{1}{4}\Bigl(-e+\frac{\pi}{2}-f x\Bigr)\Bigr]^2\Bigr)\Bigr)-$$

$$\Bigl(B\,\text{AppellF1}\Bigl[\frac{1}{2}-m,\,-2m,\,1,\,\frac{3}{2}-m,\,\text{Tan}\Bigl[\frac{1}{4}\Bigl(-e+\frac{\pi}{2}-f x\Bigr)\Bigr]^2,\,-\text{Tan}\Bigl[\frac{1}{4}\Bigl(-e+\frac{\pi}{2}-f x\Bigr)\Bigr]^2\Bigr]\,\Bigl(1+\text{Tan}\Bigl[\frac{1}{4}\Bigl(-e+\frac{\pi}{2}-f x\Bigr)\Bigr]^2\Bigr)^2\Bigr)\Big/$$

$$\Bigl((-3+2m)\,\text{AppellF1}\Bigl[\frac{1}{2}-m,\,-2m,\,1,\,\frac{3}{2}-m,\,\text{Tan}\Bigl[\frac{1}{4}\Bigl(-e+\frac{\pi}{2}-f x\Bigr)\Bigr]^2,\,-\text{Tan}\Bigl[\frac{1}{4}\Bigl(-e+\frac{\pi}{2}-f x\Bigr)\Bigr]^2\Bigr]+2$$

$$\Bigl(2m\,\text{AppellF1}\Bigl[\frac{3}{2}-m,\,1-2m,\,1,\,\frac{5}{2}-m,\,\text{Tan}\Bigl[\frac{1}{4}\Bigl(-e+\frac{\pi}{2}-f x\Bigr)\Bigr]^2,\,-\text{Tan}\Bigl[\frac{1}{4}\Bigl(-e+\frac{\pi}{2}-f x\Bigr)\Bigr]^2\Bigr]+$$

$$\text{AppellF1}\Bigl[\frac{3}{2}-m,\,-2m,\,2,\,\frac{5}{2}-m,\,\text{Tan}\Bigl[\frac{1}{4}\Bigl(-e+\frac{\pi}{2}-f x\Bigr)\Bigr]^2,\,-\text{Tan}\Bigl[\frac{1}{4}\Bigl(-e+\frac{\pi}{2}-f x\Bigr)\Bigr]^2\Bigr]\Bigr)\,\text{Tan}\Bigl[\frac{1}{4}\Bigl(-e+\frac{\pi}{2}-f x\Bigr)\Bigr]^2\Bigr)+$$

$$\Bigl(8B\,\text{AppellF1}\Bigl[\frac{1}{2}-m,\,-2m,\,2,\,\frac{3}{2}-m,\,\text{Tan}\Bigl[\frac{1}{4}\Bigl(-e+\frac{\pi}{2}-f x\Bigr)\Bigr]^2,\,-\text{Tan}\Bigl[\frac{1}{4}\Bigl(-e+\frac{\pi}{2}-f x\Bigr)\Bigr]^2\Bigr]\,\Bigl(1+\text{Tan}\Bigl[\frac{1}{4}\Bigl(-e+\frac{\pi}{2}-f x\Bigr)\Bigr]^2\Bigr)\Bigr)\Big/$$

$$\Bigl((-3+2m)\,\text{AppellF1}\Bigl[\frac{1}{2}-m,\,-2m,\,2,\,\frac{3}{2}-m,\,\text{Tan}\Bigl[\frac{1}{4}\Bigl(-e+\frac{\pi}{2}-f x\Bigr)\Bigr]^2,\,-\text{Tan}\Bigl[\frac{1}{4}\Bigl(-e+\frac{\pi}{2}-f x\Bigr)\Bigr]^2\Bigr]+4$$

$$\Bigl(m\,\text{AppellF1}\Bigl[\frac{3}{2}-m,\,1-2m,\,2,\,\frac{5}{2}-m,\,\text{Tan}\Bigl[\frac{1}{4}\Bigl(-e+\frac{\pi}{2}-f x\Bigr)\Bigr]^2,\,-\text{Tan}\Bigl[\frac{1}{4}\Bigl(-e+\frac{\pi}{2}-f x\Bigr)\Bigr]^2\Bigr]+\text{AppellF1}\Bigl[\frac{3}{2}-m,\,-2m,\,3,\,\frac{5}{2}-m,$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\Big)\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big)-\Big(8\,B\,\text{AppellF1}\Big[\frac{1}{2}-m,-2m,3,\frac{3}{2}-m,$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\Big)\Big/\Big((-3+2m)\,\text{AppellF1}\Big[\frac{1}{2}-m,-2m,3,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,$$

$$-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]+2\Big(2m\,\text{AppellF1}\Big[\frac{3}{2}-m,1-2m,3,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]+$$

$$3\,\text{AppellF1}\Big[\frac{3}{2}-m,-2m,4,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\Big)\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big)\Big)+$$

$$\frac{1}{(-1+2m)\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^3}\,2^{-3m}\,(-3+2m)\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\left(\frac{\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}\right)^{-2m}$$

$$\left(\frac{1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}\right)^{2m}$$

$$\Big(-\Big(\Big(A\,\text{AppellF1}\Big[\frac{1}{2}-m,-2m,1,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^2\Big)\Big/$$

$$\Big((-3+2m)\,\text{AppellF1}\Big[\frac{1}{2}-m,-2m,1,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]+$$

$$2\Big(2m\,\text{AppellF1}\Big[\frac{3}{2}-m,1-2m,1,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]+$$

$$\text{AppellF1}\Big[\frac{3}{2}-m,-2m,2,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\Big)\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big)\Big)-$$

$$\Big(B\,\text{AppellF1}\Big[\frac{1}{2}-m,-2m,1,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^2\Big)\Big/$$

$$\Big((-3+2m)\,\text{AppellF1}\Big[\frac{1}{2}-m,-2m,1,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]+$$

$$2\Big(2m\,\text{AppellF1}\Big[\frac{3}{2}-m,1-2m,1,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]+$$

$$\text{AppellF1}\Big[\frac{3}{2}-m,-2m,2,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\Big)\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big)+$$

$$\Big(8\,B\,\text{AppellF1}\Big[\frac{1}{2}-m,-2m,2,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\Big)\Big/$$

$$\Big((-3+2m)\,\text{AppellF1}\Big[\frac{1}{2}-m,-2m,2,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]+$$

$$4\ \Big(m\ \text{AppellF1}\Big[\frac{3}{2}-m,\ 1-2m,\ 2,\ \frac{5}{2}-m,\ \text{Tan}\Big[\frac{1}{4}\ \Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\ \Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+$$

$$\text{AppellF1}\Big[\frac{3}{2}-m,\ -2m,\ 3,\ \frac{5}{2}-m,\ \text{Tan}\Big[\frac{1}{4}\ \Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\ \Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\Big)\ \text{Tan}\Big[\frac{1}{4}\ \Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)-$$

$$\Big(8\,B\ \text{AppellF1}\Big[\frac{1}{2}-m,\ -2m,\ 3,\ \frac{3}{2}-m,\ \text{Tan}\Big[\frac{1}{4}\ \Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\ \Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\Big)\Big/$$

$$\Big((-3+2m)\ \text{AppellF1}\Big[\frac{1}{2}-m,\ -2m,\ 3,\ \frac{3}{2}-m,\ \text{Tan}\Big[\frac{1}{4}\ \Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\ \Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+$$

$$2\ \Big(2m\ \text{AppellF1}\Big[\frac{3}{2}-m,\ 1-2m,\ 3,\ \frac{5}{2}-m,\ \text{Tan}\Big[\frac{1}{4}\ \Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\ \Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+$$

$$3\ \text{AppellF1}\Big[\frac{3}{2}-m,\ -2m,\ 4,\ \frac{5}{2}-m,\ \text{Tan}\Big[\frac{1}{4}\ \Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\ \Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\Big)\ \text{Tan}\Big[\frac{1}{4}\ \Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)\Big)-$$

$$\frac{1}{(-1+2m)\ \Big(1+\text{Tan}\big[\frac{1}{4}\ \big(-e+\frac{\pi}{2}-f\,x\big)\big]^2\Big)^3}\ 2^{3-3m}\ m\ (-3+2m)\ \text{Tan}\Big[\frac{1}{4}\ \Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\ \left(\frac{\text{Tan}\big[\frac{1}{4}\ \big(-e+\frac{\pi}{2}-f\,x\big)\big]}{1+\text{Tan}\big[\frac{1}{4}\ \big(-e+\frac{\pi}{2}-f\,x\big)\big]^2}\right)^{-1-2m}$$

$$\left(\frac{1-\text{Tan}\big[\frac{1}{4}\ \big(-e+\frac{\pi}{2}-f\,x\big)\big]^2}{1+\text{Tan}\big[\frac{1}{4}\ \big(-e+\frac{\pi}{2}-f\,x\big)\big]^2}\right)^{2m}\ \left(-\frac{\text{Sec}\big[\frac{1}{4}\ \big(-e+\frac{\pi}{2}-f\,x\big)\big]^2\ \text{Tan}\big[\frac{1}{4}\ \big(-e+\frac{\pi}{2}-f\,x\big)\big]^2}{2\ \Big(1+\text{Tan}\big[\frac{1}{4}\ \big(-e+\frac{\pi}{2}-f\,x\big)\big]^2\Big)^2}+\frac{\text{Sec}\big[\frac{1}{4}\ \big(-e+\frac{\pi}{2}-f\,x\big)\big]^2}{4\ \Big(1+\text{Tan}\big[\frac{1}{4}\ \big(-e+\frac{\pi}{2}-f\,x\big)\big]^2\Big)}\right)$$

$$\Big(-\Big(\Big(A\ \text{AppellF1}\Big[\frac{1}{2}-m,\ -2m,\ 1,\ \frac{3}{2}-m,\ \text{Tan}\Big[\frac{1}{4}\ \Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\ \Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\ \Big(1+\text{Tan}\Big[\frac{1}{4}\ \Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)^2\Big)\Big/$$

$$\Big((-3+2m)\ \text{AppellF1}\Big[\frac{1}{2}-m,\ -2m,\ 1,\ \frac{3}{2}-m,\ \text{Tan}\Big[\frac{1}{4}\ \Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\ \Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+$$

$$2\ \Big(2m\ \text{AppellF1}\Big[\frac{3}{2}-m,\ 1-2m,\ 1,\ \frac{5}{2}-m,\ \text{Tan}\Big[\frac{1}{4}\ \Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\ \Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+$$

$$\text{AppellF1}\Big[\frac{3}{2}-m,\ -2m,\ 2,\ \frac{5}{2}-m,\ \text{Tan}\Big[\frac{1}{4}\ \Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\ \Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\Big)\ \text{Tan}\Big[\frac{1}{4}\ \Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)\Big)-$$

$$\Big(B\ \text{AppellF1}\Big[\frac{1}{2}-m,\ -2m,\ 1,\ \frac{3}{2}-m,\ \text{Tan}\Big[\frac{1}{4}\ \Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\ \Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\ \Big(1+\text{Tan}\Big[\frac{1}{4}\ \Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)^2\Big)\Big/$$

$$\Big((-3+2m)\ \text{AppellF1}\Big[\frac{1}{2}-m,\ -2m,\ 1,\ \frac{3}{2}-m,\ \text{Tan}\Big[\frac{1}{4}\ \Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\ \Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+$$

$$2\ \Big(2m\ \text{AppellF1}\Big[\frac{3}{2}-m,\ 1-2m,\ 1,\ \frac{5}{2}-m,\ \text{Tan}\Big[\frac{1}{4}\ \Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\ \Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+$$

$$\text{AppellF1}\Big[\frac{3}{2}-m,\ -2m,\ 2,\ \frac{5}{2}-m,\ \text{Tan}\Big[\frac{1}{4}\ \Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\ \Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\Big)\ \text{Tan}\Big[\frac{1}{4}\ \Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)+$$

$$\left(8\,B\,\text{AppellF1}\left[\frac{1}{2}-m,-2m,2,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\right)\Big/$$

$$\left((-3+2m)\,\text{AppellF1}\left[\frac{1}{2}-m,-2m,2,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.$$

$$4\left(m\,\text{AppellF1}\left[\frac{3}{2}-m,1-2m,2,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.$$

$$\left.\left.\text{AppellF1}\left[\frac{3}{2}-m,-2m,3,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)-$$

$$\left(8\,B\,\text{AppellF1}\left[\frac{1}{2}-m,-2m,3,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\Big/$$

$$\left((-3+2m)\,\text{AppellF1}\left[\frac{1}{2}-m,-2m,3,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.$$

$$2\left(2m\,\text{AppellF1}\left[\frac{3}{2}-m,1-2m,3,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.$$

$$\left.\left.3\,\text{AppellF1}\left[\frac{3}{2}-m,-2m,4,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\right)+$$

$$\frac{1}{(-1+2m)\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^3}\,2^{3-3m}\,m\,(-3+2m)\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\left(\frac{\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}\right)^{-2m}$$

$$\left(\frac{1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}\right)^{-1+2m}$$

$$\left(-\frac{\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)}{2\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^2}-\frac{\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]}{2\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)}\right)$$

$$\left(-\left(\left(A\,\text{AppellF1}\left[\frac{1}{2}-m,-2m,1,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^2\right)\Big/\right.\right.$$

$$\left((-3+2m)\,\text{AppellF1}\left[\frac{1}{2}-m,-2m,1,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.$$

$$2\left(2m\,\text{AppellF1}\left[\frac{3}{2}-m,1-2m,1,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.$$

$$\left.\left.\left.\text{AppellF1}\left[\frac{3}{2}-m,-2m,2,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\right)-$$

$$\left(B\,\text{AppellF1}\left[\frac{1}{2}-m,-2m,1,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^2\right)\Big/$$

$$\Bigg(\left(-3+2\,m\right)\text{AppellF1}\left[\frac{1}{2}-m,\,-2\,m,\,1,\,\frac{3}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2},\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}\right]+$$

$$2\,\Bigg(2\,m\,\text{AppellF1}\left[\frac{3}{2}-m,\,1-2\,m,\,1,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2},\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}\right]+$$

$$\text{AppellF1}\left[\frac{3}{2}-m,\,-2\,m,\,2,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2},\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}\right]\Bigg)\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}\Bigg)+$$

$$\Bigg(8\,B\,\text{AppellF1}\left[\frac{1}{2}-m,\,-2\,m,\,2,\,\frac{3}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2},\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}\right)\Bigg)\Big/$$

$$\Bigg(\left(-3+2\,m\right)\text{AppellF1}\left[\frac{1}{2}-m,\,-2\,m,\,2,\,\frac{3}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2},\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}\right]+$$

$$4\,\Bigg(m\,\text{AppellF1}\left[\frac{3}{2}-m,\,1-2\,m,\,2,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2},\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}\right]+$$

$$\text{AppellF1}\left[\frac{3}{2}-m,\,-2\,m,\,3,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2},\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}\right]\Bigg)\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}\Bigg)-$$

$$\Bigg(8\,B\,\text{AppellF1}\left[\frac{1}{2}-m,\,-2\,m,\,3,\,\frac{3}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2},\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}\right]\Bigg)\Big/$$

$$\Bigg(\left(-3+2\,m\right)\text{AppellF1}\left[\frac{1}{2}-m,\,-2\,m,\,3,\,\frac{3}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2},\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}\right]+$$

$$2\,\Bigg(2\,m\,\text{AppellF1}\left[\frac{3}{2}-m,\,1-2\,m,\,3,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2},\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}\right]+$$

$$3\,\text{AppellF1}\left[\frac{3}{2}-m,\,-2\,m,\,4,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2},\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}\right]\Bigg)\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}\Bigg)\Bigg)+$$

$$\frac{1}{\left(-1+2\,m\right)\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}\right)^{3}}\,2^{2-3\,m}\left(-3+2\,m\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\left(\frac{\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}}\right)^{-2\,m}$$

$$\left(\frac{1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}}\right)^{2\,m}$$

$$\Bigg(-\Bigg(\Bigg(A\,\text{AppellF1}\left[\frac{1}{2}-m,\,-2\,m,\,1,\,\frac{3}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2},\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}\right]\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}\right)\Bigg)\Big/\Bigg(\left(-3+2\,m\right)\text{AppellF1}\left[\frac{1}{2}-m,\,-2\,m,\,1,\,\frac{3}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2},\right.$$

$$\left.-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}\right]+2\,\Bigg(2\,m\,\text{AppellF1}\left[\frac{3}{2}-m,\,1-2\,m,\,1,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2},\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}\right]+$$

$$\text{AppellF1}\Big[\frac{3}{2}-m,\,-2\,m,\,2,\,\frac{5}{2}-m,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)\Big)\,-$$

$$\Big(B\,\text{AppellF1}\Big[\frac{1}{2}-m,\,-2\,m,\,1,\,\frac{3}{2}-m,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2$$

$$\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\,\Big(1+\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)\Big)\Big/\Big((-3+2\,m)\,\text{AppellF1}\Big[\frac{1}{2}-m,\,-2\,m,\,1,\,\frac{3}{2}-m,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,$$

$$-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+2\,\Big(2\,m\,\text{AppellF1}\Big[\frac{3}{2}-m,\,1-2\,m,\,1,\,\frac{5}{2}-m,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+$$

$$\text{AppellF1}\Big[\frac{3}{2}-m,\,-2\,m,\,2,\,\frac{5}{2}-m,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)\,-$$

$$\Big(A\,\Big(-\frac{1}{\frac{3}{2}-m}\Big(\frac{1}{2}-m\Big)\,m\,\text{AppellF1}\Big[\frac{3}{2}-m,\,1-2\,m,\,1,\,\frac{5}{2}-m,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]$$

$$\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]-\frac{1}{2\,\big(\frac{3}{2}-m\big)}\Big(\frac{1}{2}-m\Big)\,\text{AppellF1}\Big[\frac{3}{2}-m,\,-2\,m,\,2,\,\frac{5}{2}-m,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,$$

$$-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\Big)\,\Big(1+\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)^2\Big)\Big/$$

$$\Big((-3+2\,m)\,\text{AppellF1}\Big[\frac{1}{2}-m,\,-2\,m,\,1,\,\frac{3}{2}-m,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+$$

$$2\,\Big(2\,m\,\text{AppellF1}\Big[\frac{3}{2}-m,\,1-2\,m,\,1,\,\frac{5}{2}-m,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+$$

$$\text{AppellF1}\Big[\frac{3}{2}-m,\,-2\,m,\,2,\,\frac{5}{2}-m,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)\,-$$

$$\Big(B\,\Big(-\frac{1}{\frac{3}{2}-m}\Big(\frac{1}{2}-m\Big)\,m\,\text{AppellF1}\Big[\frac{3}{2}-m,\,1-2\,m,\,1,\,\frac{5}{2}-m,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]$$

$$\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]-\frac{1}{2\,\big(\frac{3}{2}-m\big)}\Big(\frac{1}{2}-m\Big)\,\text{AppellF1}\Big[\frac{3}{2}-m,\,-2\,m,\,2,\,\frac{5}{2}-m,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,$$

$$-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\Big)\,\Big(1+\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)^2\Big)\Big/$$

$$\Big((-3+2\,m)\,\text{AppellF1}\Big[\frac{1}{2}-m,\,-2\,m,\,1,\,\frac{3}{2}-m,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+$$

$$2\,\Big(2\,m\,\text{AppellF1}\Big[\frac{3}{2}-m,\,1-2\,m,\,1,\,\frac{5}{2}-m,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+$$

$$\text{AppellF1}\left[\frac{3}{2}-m,-2m,2,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\Big)\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big)+$$

$$\Big(4\,B\,\text{AppellF1}\left[\frac{1}{2}-m,-2m,2,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\Big)\Big/\Big((-3+2m)\,\text{AppellF1}\left[\frac{1}{2}-m,-2m,2,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$4\,\Big(m\,\text{AppellF1}\left[\frac{3}{2}-m,1-2m,2,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$\text{AppellF1}\left[\frac{3}{2}-m,-2m,3,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\Big)\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big)+$$

$$\Big(8\,B\,\Big(-\frac{1}{\frac{3}{2}-m}\left(\frac{1}{2}-m\right)m\,\text{AppellF1}\left[\frac{3}{2}-m,1-2m,2,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{1}{\frac{3}{2}-m}\left(\frac{1}{2}-m\right)\text{AppellF1}\left[\frac{3}{2}-m,-2m,3,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\right.$$

$$\left.-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\Big)\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\Big)\Big/$$

$$\Big((-3+2m)\,\text{AppellF1}\left[\frac{1}{2}-m,-2m,2,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$4\,\Big(m\,\text{AppellF1}\left[\frac{3}{2}-m,1-2m,2,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$\text{AppellF1}\left[\frac{3}{2}-m,-2m,3,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\Big)\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big)-$$

$$\Big(8\,B\,\Big(-\frac{1}{\frac{3}{2}-m}\left(\frac{1}{2}-m\right)m\,\text{AppellF1}\left[\frac{3}{2}-m,1-2m,3,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{1}{2\left(\frac{3}{2}-m\right)}3\left(\frac{1}{2}-m\right)\text{AppellF1}\left[\frac{3}{2}-m,-2m,4,\frac{5}{2}-m,\right.$$

$$\left.\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\Big)\Big)\Big/$$

$$\Big((-3+2m)\,\text{AppellF1}\left[\frac{1}{2}-m,-2m,3,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$2\,\Big(2\,m\,\text{AppellF1}\left[\frac{3}{2}-m,1-2m,3,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$3\,\text{AppellF1}\Big[\tfrac{3}{2}-m,\,-2m,\,4,\,\tfrac{5}{2}-m,\,\text{Tan}\Big[\tfrac{1}{4}\big(-e+\tfrac{\pi}{2}-f x\big)\Big]^2,\,-\text{Tan}\Big[\tfrac{1}{4}\big(-e+\tfrac{\pi}{2}-f x\big)\Big]^2\Big]\Big)\,\text{Tan}\Big[\tfrac{1}{4}\big(-e+\tfrac{\pi}{2}-f x\big)\Big]^2\Big)+$$

$$\Big(A\,\text{AppellF1}\Big[\tfrac{1}{2}-m,\,-2m,\,1,\,\tfrac{3}{2}-m,\,\text{Tan}\Big[\tfrac{1}{4}\big(-e+\tfrac{\pi}{2}-f x\big)\Big]^2,\,-\text{Tan}\Big[\tfrac{1}{4}\big(-e+\tfrac{\pi}{2}-f x\big)\Big]^2\Big]\,\Big(1+\text{Tan}\Big[\tfrac{1}{4}\big(-e+\tfrac{\pi}{2}-f x\big)\Big]^2\Big)^2$$

$$\Big(\Big(2m\,\text{AppellF1}\Big[\tfrac{3}{2}-m,\,1-2m,\,1,\,\tfrac{5}{2}-m,\,\text{Tan}\Big[\tfrac{1}{4}\big(-e+\tfrac{\pi}{2}-f x\big)\Big]^2,\,-\text{Tan}\Big[\tfrac{1}{4}\big(-e+\tfrac{\pi}{2}-f x\big)\Big]^2\Big]+\text{AppellF1}\Big[\tfrac{3}{2}-m,\,-2m,$$

$$2,\,\tfrac{5}{2}-m,\,\text{Tan}\Big[\tfrac{1}{4}\big(-e+\tfrac{\pi}{2}-f x\big)\Big]^2,\,-\text{Tan}\Big[\tfrac{1}{4}\big(-e+\tfrac{\pi}{2}-f x\big)\Big]^2\Big]\Big)\,\text{Sec}\Big[\tfrac{1}{4}\big(-e+\tfrac{\pi}{2}-f x\big)\Big]^2\,\text{Tan}\Big[\tfrac{1}{4}\big(-e+\tfrac{\pi}{2}-f x\big)\Big]+$$

$$(-3+2m)\,\Big(-\frac{1}{\frac{3}{2}-m}\Big(\frac{1}{2}-m\Big)\,m\,\text{AppellF1}\Big[\tfrac{3}{2}-m,\,1-2m,\,1,\,\tfrac{5}{2}-m,\,\text{Tan}\Big[\tfrac{1}{4}\big(-e+\tfrac{\pi}{2}-f x\big)\Big]^2,\,-\text{Tan}\Big[\tfrac{1}{4}\big(-e+\tfrac{\pi}{2}-f x\big)\Big]^2\Big]$$

$$\text{Sec}\Big[\tfrac{1}{4}\big(-e+\tfrac{\pi}{2}-f x\big)\Big]^2\,\text{Tan}\Big[\tfrac{1}{4}\big(-e+\tfrac{\pi}{2}-f x\big)\Big]-\frac{1}{2\left(\frac{3}{2}-m\right)}\Big(\frac{1}{2}-m\Big)\,\text{AppellF1}\Big[\tfrac{3}{2}-m,\,-2m,\,2,\,\tfrac{5}{2}-m,$$

$$\text{Tan}\Big[\tfrac{1}{4}\big(-e+\tfrac{\pi}{2}-f x\big)\Big]^2,\,-\text{Tan}\Big[\tfrac{1}{4}\big(-e+\tfrac{\pi}{2}-f x\big)\Big]^2\Big]\,\text{Sec}\Big[\tfrac{1}{4}\big(-e+\tfrac{\pi}{2}-f x\big)\Big]^2\,\text{Tan}\Big[\tfrac{1}{4}\big(-e+\tfrac{\pi}{2}-f x\big)\Big]\Big)+$$

$$2\,\text{Tan}\Big[\tfrac{1}{4}\big(-e+\tfrac{\pi}{2}-f x\big)\Big]^2\,\Big(-\frac{1}{\frac{5}{2}-m}\Big(\frac{3}{2}-m\Big)\,m\,\text{AppellF1}\Big[\tfrac{5}{2}-m,\,1-2m,\,2,\,\tfrac{7}{2}-m,\,\text{Tan}\Big[\tfrac{1}{4}\big(-e+\tfrac{\pi}{2}-f x\big)\Big]^2,$$

$$-\text{Tan}\Big[\tfrac{1}{4}\big(-e+\tfrac{\pi}{2}-f x\big)\Big]^2\Big]\,\text{Sec}\Big[\tfrac{1}{4}\big(-e+\tfrac{\pi}{2}-f x\big)\Big]^2\,\text{Tan}\Big[\tfrac{1}{4}\big(-e+\tfrac{\pi}{2}-f x\big)\Big]-\frac{1}{\frac{5}{2}-m}\Big(\frac{3}{2}-m\Big)\,\text{AppellF1}\Big[\tfrac{5}{2}-m,\,-2m,$$

$$3,\,\tfrac{7}{2}-m,\,\text{Tan}\Big[\tfrac{1}{4}\big(-e+\tfrac{\pi}{2}-f x\big)\Big]^2,\,-\text{Tan}\Big[\tfrac{1}{4}\big(-e+\tfrac{\pi}{2}-f x\big)\Big]^2\Big]\,\text{Sec}\Big[\tfrac{1}{4}\big(-e+\tfrac{\pi}{2}-f x\big)\Big]^2\,\text{Tan}\Big[\tfrac{1}{4}\big(-e+\tfrac{\pi}{2}-f x\big)\Big]+$$

$$2m\,\Big(-\frac{1}{2\left(\frac{5}{2}-m\right)}\Big(\frac{3}{2}-m\Big)\,\text{AppellF1}\Big[\tfrac{5}{2}-m,\,1-2m,\,2,\,\tfrac{7}{2}-m,\,\text{Tan}\Big[\tfrac{1}{4}\big(-e+\tfrac{\pi}{2}-f x\big)\Big]^2,\,-\text{Tan}\Big[\tfrac{1}{4}\big(-e+\tfrac{\pi}{2}-f x\big)\Big]^2\Big]$$

$$\text{Sec}\Big[\tfrac{1}{4}\big(-e+\tfrac{\pi}{2}-f x\big)\Big]^2\,\text{Tan}\Big[\tfrac{1}{4}\big(-e+\tfrac{\pi}{2}-f x\big)\Big]+\frac{1}{2\left(\frac{5}{2}-m\right)}(1-2m)\,\Big(\frac{3}{2}-m\Big)\,\text{AppellF1}\Big[\tfrac{5}{2}-m,\,2-2m,\,1,\,\tfrac{7}{2}-m,$$

$$\text{Tan}\Big[\tfrac{1}{4}\big(-e+\tfrac{\pi}{2}-f x\big)\Big]^2,\,-\text{Tan}\Big[\tfrac{1}{4}\big(-e+\tfrac{\pi}{2}-f x\big)\Big]^2\Big]\,\text{Sec}\Big[\tfrac{1}{4}\big(-e+\tfrac{\pi}{2}-f x\big)\Big]^2\,\text{Tan}\Big[\tfrac{1}{4}\big(-e+\tfrac{\pi}{2}-f x\big)\Big]\Big)\Big)\Big)\Big)\Big)\Big/$$

$$\Big((-3+2m)\,\text{AppellF1}\Big[\tfrac{1}{2}-m,\,-2m,\,1,\,\tfrac{3}{2}-m,\,\text{Tan}\Big[\tfrac{1}{4}\big(-e+\tfrac{\pi}{2}-f x\big)\Big]^2,\,-\text{Tan}\Big[\tfrac{1}{4}\big(-e+\tfrac{\pi}{2}-f x\big)\Big]^2\Big]+$$

$$2\,\Big(2m\,\text{AppellF1}\Big[\tfrac{3}{2}-m,\,1-2m,\,1,\,\tfrac{5}{2}-m,\,\text{Tan}\Big[\tfrac{1}{4}\big(-e+\tfrac{\pi}{2}-f x\big)\Big]^2,\,-\text{Tan}\Big[\tfrac{1}{4}\big(-e+\tfrac{\pi}{2}-f x\big)\Big]^2\Big]+$$

$$\text{AppellF1}\left[\frac{3}{2}-m,\,-2\,m,\,2,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\Big)\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big)^2+$$

$$\Bigg(B\,\text{AppellF1}\left[\frac{1}{2}-m,\,-2\,m,\,1,\,\frac{3}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^2$$

$$\Bigg(\Bigg(2\,m\,\text{AppellF1}\left[\frac{3}{2}-m,\,1-2\,m,\,1,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\text{AppellF1}\Big[\frac{3}{2}-m,\,-2\,m,$$

$$2,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]\Bigg)\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]+$$

$$(-3+2\,m)\,\Bigg(-\frac{1}{\frac{3}{2}-m}\left(\frac{1}{2}-m\right)m\,\text{AppellF1}\left[\frac{3}{2}-m,\,1-2\,m,\,1,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-\frac{1}{2\left(\frac{3}{2}-m\right)}\left(\frac{1}{2}-m\right)\text{AppellF1}\Big[\frac{3}{2}-m,\,-2\,m,\,2,\,\frac{5}{2}-m,$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\Bigg)+$$

$$2\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Bigg(-\frac{1}{\frac{5}{2}-m}\left(\frac{3}{2}-m\right)m\,\text{AppellF1}\Big[\frac{5}{2}-m,\,1-2\,m,\,2,\,\frac{7}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,$$

$$-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-\frac{1}{\frac{5}{2}-m}\left(\frac{3}{2}-m\right)\text{AppellF1}\Big[\frac{5}{2}-m,\,-2\,m,$$

$$3,\,\frac{7}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]+$$

$$2\,m\,\Bigg(-\frac{1}{2\left(\frac{5}{2}-m\right)}\left(\frac{3}{2}-m\right)\text{AppellF1}\left[\frac{5}{2}-m,\,1-2\,m,\,2,\,\frac{7}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]+\frac{1}{2\left(\frac{5}{2}-m\right)}(1-2\,m)\left(\frac{3}{2}-m\right)\text{AppellF1}\Big[\frac{5}{2}-m,\,2-2\,m,\,1,\,\frac{7}{2}-m,$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\Bigg)\Bigg)\Bigg)\Bigg)\Bigg)\Bigg/$$

$$\Bigg((-3+2\,m)\,\text{AppellF1}\left[\frac{1}{2}-m,\,-2\,m,\,1,\,\frac{3}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+$$

$$2\,\Bigg(2\,m\,\text{AppellF1}\left[\frac{3}{2}-m,\,1-2\,m,\,1,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+$$

$$\text{AppellF1}\Big[\frac{3}{2}-m,\ -2\,m,\ 2,\ \frac{5}{2}-m,\ \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\Big)\ \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)^2 -$$

$$\Big(8\,B\,\text{AppellF1}\Big[\frac{1}{2}-m,\ -2\,m,\ 2,\ \frac{3}{2}-m,\ \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\ \Big(1+\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)$$

$$\Big(2\,\Big(m\,\text{AppellF1}\Big[\frac{3}{2}-m,\ 1-2\,m,\ 2,\ \frac{5}{2}-m,\ \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+\text{AppellF1}\Big[\frac{3}{2}-m,\ -2\,m,$$

$$3,\ \frac{5}{2}-m,\ \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\Big)\ \text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\ \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]+$$

$$(-3+2\,m)\ \Big(-\frac{1}{\frac{3}{2}-m}\Big(\frac{1}{2}-m\Big)\,m\,\text{AppellF1}\Big[\frac{3}{2}-m,\ 1-2\,m,\ 2,\ \frac{5}{2}-m,\ \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]$$

$$\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\ \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]-\frac{1}{\frac{3}{2}-m}\Big(\frac{1}{2}-m\Big)\ \text{AppellF1}\Big[\frac{3}{2}-m,\ -2\,m,\ 3,\ \frac{5}{2}-m,$$

$$\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\ \text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\ \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\Big)+$$

$$4\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\ \Big(-\frac{1}{\frac{5}{2}-m}\Big(\frac{3}{2}-m\Big)\,m\,\text{AppellF1}\Big[\frac{5}{2}-m,\ 1-2\,m,\ 3,\ \frac{7}{2}-m,\ \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,$$

$$-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\ \text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\ \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]-\frac{1}{2\,\big(\frac{5}{2}-m\big)}3\ \Big(\frac{3}{2}-m\Big)\ \text{AppellF1}\Big[\frac{5}{2}-m,\ -2\,m,$$

$$4,\ \frac{7}{2}-m,\ \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\ \text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\ \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]+$$

$$m\ \Big(-\frac{1}{\frac{5}{2}-m}\Big(\frac{3}{2}-m\Big)\ \text{AppellF1}\Big[\frac{5}{2}-m,\ 1-2\,m,\ 3,\ \frac{7}{2}-m,\ \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]$$

$$\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\ \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]+\frac{1}{2\,\big(\frac{5}{2}-m\big)}(1-2\,m)\ \Big(\frac{3}{2}-m\Big)\ \text{AppellF1}\Big[\frac{5}{2}-m,\ 2-2\,m,\ 2,\ \frac{7}{2}-m,$$

$$\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]\ \text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\ \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\Big)\Big)\Big)\Big)\Big)\Big/$$

$$\Big((-3+2\,m)\ \text{AppellF1}\Big[\frac{1}{2}-m,\ -2\,m,\ 2,\ \frac{3}{2}-m,\ \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+$$

$$4\,\Big(m\,\text{AppellF1}\Big[\frac{3}{2}-m,\ 1-2\,m,\ 2,\ \frac{5}{2}-m,\ \text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big]+$$

$$\text{AppellF1}\left[\frac{3}{2}-m,-2m,3,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\Bigg)^2+$$

$$\Bigg(8\,B\,\text{AppellF1}\left[\frac{1}{2}-m,-2m,3,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]$$

$$\Bigg(\Bigg(2\,m\,\text{AppellF1}\left[\frac{3}{2}-m,1-2m,3,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+3\,\text{AppellF1}\left[\frac{3}{2}-m,-2m,\right.$$

$$\left.4,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\Bigg)\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]+$$

$$(-3+2m)\left(-\frac{1}{\frac{3}{2}-m}\left(\frac{1}{2}-m\right)m\,\text{AppellF1}\left[\frac{3}{2}-m,1-2m,3,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right.$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]-\frac{1}{2\left(\frac{3}{2}-m\right)}3\left(\frac{1}{2}-m\right)\text{AppellF1}\left[\frac{3}{2}-m,-2m,4,\frac{5}{2}-m,\right.$$

$$\left.\left.\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]\right)+$$

$$2\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\Bigg(2m\left(-\frac{1}{2\left(\frac{5}{2}-m\right)}3\left(\frac{3}{2}-m\right)\text{AppellF1}\left[\frac{5}{2}-m,1-2m,4,\frac{7}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,\right.\right.$$

$$\left.-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]+\frac{1}{2\left(\frac{5}{2}-m\right)}(1-2m)\left(\frac{3}{2}-m\right)\text{AppellF1}\left[\frac{5}{2}-m,\right.$$

$$\left.\left.2-2m,3,\frac{7}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]\right)+$$

$$3\left(-\frac{1}{\frac{5}{2}-m}\left(\frac{3}{2}-m\right)m\,\text{AppellF1}\left[\frac{5}{2}-m,1-2m,4,\frac{7}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right.$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]-\frac{1}{\frac{5}{2}-m}2\left(\frac{3}{2}-m\right)\text{AppellF1}\left[\frac{5}{2}-m,-2m,5,\frac{7}{2}-m,\right.$$

$$\left.\left.\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]\right)\Bigg)\Bigg)\Bigg)\Bigg)\Bigg/$$

$$\Bigg((-3+2m)\,\text{AppellF1}\left[\frac{1}{2}-m,-2m,3,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+$$

$$2\left(2\,m\,\text{AppellF1}\left[\frac{3}{2}-m,\,1-2\,m,\,3,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+3\,\text{AppellF1}\left[\frac{3}{2}-m,\,-2\,m,\,4,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Bigg)^2\Bigg)\Bigg)\Bigg)$$

- **Problem 216: Attempted integration timed out after 120 seconds.**

$$\int (a+a\,\text{Sin}[e+f\,x])^m\,(A+B\,\text{Sin}[e+f\,x])\,(c-c\,\text{Sin}[e+f\,x])^{1-m}\,dx$$

Optimal (type 5, 170 leaves, 5 steps):

$$\frac{1}{f\,(1+2\,m)}2^{\frac{1}{2}-m}\,c^2\,(2\,A-B\,(1-2\,m))\,\text{Cos}[e+f\,x]\,\text{Hypergeometric2F1}\left[\frac{1}{2}\,(-1+2\,m),\,\frac{1}{2}\,(1+2\,m),\,\frac{1}{2}\,(3+2\,m),\,\frac{1}{2}\,(1+\text{Sin}[e+f\,x])\right]\,(1-\text{Sin}[e+f\,x])^{\frac{1}{2}+m}\,(a+a\,\text{Sin}[e+f\,x])^m\,(c-c\,\text{Sin}[e+f\,x])^{-1-m}-\frac{B\,\text{Cos}[e+f\,x]\,(a+a\,\text{Sin}[e+f\,x])^m\,(c-c\,\text{Sin}[e+f\,x])^{1-m}}{2\,f}$$

Result (type 1, 1 leaves):

???

- **Problem 217: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int (a+a\,\text{Sin}[e+f\,x])^m\,(A+B\,\text{Sin}[e+f\,x])\,(c-c\,\text{Sin}[e+f\,x])^{2-m}\,dx$$

Optimal (type 5, 173 leaves, 5 steps):

$$\frac{1}{3\,f\,(1+2\,m)}2^{\frac{5}{2}-m}\,c^3\,(3\,A-2\,B\,(1-m))\,\text{Cos}[e+f\,x]\,\text{Hypergeometric2F1}\left[\frac{1}{2}\,(-3+2\,m),\,\frac{1}{2}\,(1+2\,m),\,\frac{1}{2}\,(3+2\,m),\,\frac{1}{2}\,(1+\text{Sin}[e+f\,x])\right]\,(1-\text{Sin}[e+f\,x])^{\frac{1}{2}+m}\,(a+a\,\text{Sin}[e+f\,x])^m\,(c-c\,\text{Sin}[e+f\,x])^{-1-m}-\frac{B\,\text{Cos}[e+f\,x]\,(a+a\,\text{Sin}[e+f\,x])^m\,(c-c\,\text{Sin}[e+f\,x])^{2-m}}{3\,f}$$

Result (type 6, 37 061 leaves): Display of huge result suppressed!

- **Problem 232: Result more than twice size of optimal antiderivative.**

$$\int \text{Csc}[c+d\,x]^5\,(a+a\,\text{Sin}[c+d\,x])^3\,(A-A\,\text{Sin}[c+d\,x])\,dx$$

Optimal (type 3, 86 leaves, 10 steps):

$$\frac{5\,a^3\,A\,\text{ArcTanh}[\text{Cos}[c+d\,x]]}{8\,d}-\frac{2\,a^3\,A\,\text{Cot}[c+d\,x]^3}{3\,d}-\frac{3\,a^3\,A\,\text{Cot}[c+d\,x]\,\text{Csc}[c+d\,x]}{8\,d}-\frac{a^3\,A\,\text{Cot}[c+d\,x]\,\text{Csc}[c+d\,x]^3}{4\,d}$$

Result (type 3, 210 leaves):

$$a^3 A \left(\frac{\text{Cot}\left[\frac{1}{2}(c+d x)\right]}{3 d}-\frac{3 \text{Csc}\left[\frac{1}{2}(c+d x)\right]^2}{32 d}-\frac{\text{Cot}\left[\frac{1}{2}(c+d x)\right] \text{Csc}\left[\frac{1}{2}(c+d x)\right]^2}{12 d}-\frac{\text{Csc}\left[\frac{1}{2}(c+d x)\right]^4}{64 d}+\frac{5 \text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right]}{8 d}-\frac{5 \text{Log}\left[\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]}{8 d}+\frac{3 \text{Sec}\left[\frac{1}{2}(c+d x)\right]^2}{32 d}+\frac{\text{Sec}\left[\frac{1}{2}(c+d x)\right]^4}{64 d}-\frac{\text{Tan}\left[\frac{1}{2}(c+d x)\right]}{3 d}+\frac{\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{2}(c+d x)\right]}{12 d}\right)$$

Problem 233: Result more than twice size of optimal antiderivative.

$$\int \text{Csc}[c+d x]^6 (a+a \text{Sin}[c+d x])^3 (A-A \text{Sin}[c+d x]) \, dx$$

Optimal (type 3, 105 leaves, 12 steps):

$$\frac{a^3 A \text{ArcTanh}[\text{Cos}[c+d x]]}{4 d}-\frac{2 a^3 A \text{Cot}[c+d x]^3}{3 d}-\frac{a^3 A \text{Cot}[c+d x]^5}{5 d}+\frac{a^3 A \text{Cot}[c+d x] \text{Csc}[c+d x]}{4 d}-\frac{a^3 A \text{Cot}[c+d x] \text{Csc}[c+d x]^3}{2 d}$$

Result (type 3, 268 leaves):

$$a^3 A \left(\frac{7 \text{Cot}\left[\frac{1}{2}(c+d x)\right]}{30 d}+\frac{\text{Csc}\left[\frac{1}{2}(c+d x)\right]^2}{16 d}-\frac{19 \text{Cot}\left[\frac{1}{2}(c+d x)\right] \text{Csc}\left[\frac{1}{2}(c+d x)\right]^2}{480 d}-\frac{\text{Csc}\left[\frac{1}{2}(c+d x)\right]^4}{32 d}-\frac{\text{Cot}\left[\frac{1}{2}(c+d x)\right] \text{Csc}\left[\frac{1}{2}(c+d x)\right]^4}{160 d}+\frac{\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right]}{4 d}-\frac{\text{Log}\left[\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]}{4 d}-\frac{\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2}{16 d}+\frac{\text{Sec}\left[\frac{1}{2}(c+d x)\right]^4}{32 d}-\frac{7 \text{Tan}\left[\frac{1}{2}(c+d x)\right]}{30 d}+\frac{19 \text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{2}(c+d x)\right]}{480 d}+\frac{\text{Sec}\left[\frac{1}{2}(c+d x)\right]^4 \text{Tan}\left[\frac{1}{2}(c+d x)\right]}{160 d}\right)$$

Problem 234: Result more than twice size of optimal antiderivative.

$$\int \text{Csc}[c+d x]^7 (a+a \text{Sin}[c+d x])^3 (A-A \text{Sin}[c+d x]) \, dx$$

Optimal (type 3, 130 leaves, 12 steps):

$$\frac{3 a^3 A \text{ArcTanh}[\text{Cos}[c+d x]]}{16 d}-\frac{2 a^3 A \text{Cot}[c+d x]^3}{3 d}-\frac{2 a^3 A \text{Cot}[c+d x]^5}{5 d}+\frac{3 a^3 A \text{Cot}[c+d x] \text{Csc}[c+d x]}{16 d}-\frac{5 a^3 A \text{Cot}[c+d x] \text{Csc}[c+d x]^3}{24 d}-\frac{a^3 A \text{Cot}[c+d x] \text{Csc}[c+d x]^5}{6 d}$$

Result (type 3, 306 leaves):

$$a^3 A \left(\frac{2\,\text{Cot}\left[\frac{1}{2}(c+d x)\right]}{15 d}+\frac{3\,\text{Csc}\left[\frac{1}{2}(c+d x)\right]^2}{64 d}+\frac{\text{Cot}\left[\frac{1}{2}(c+d x)\right]\text{Csc}\left[\frac{1}{2}(c+d x)\right]^2}{240 d}-\frac{\text{Csc}\left[\frac{1}{2}(c+d x)\right]^4}{64 d}-\frac{\text{Cot}\left[\frac{1}{2}(c+d x)\right]\text{Csc}\left[\frac{1}{2}(c+d x)\right]^4}{80 d}-\frac{\text{Csc}\left[\frac{1}{2}(c+d x)\right]^6}{384 d}+\frac{3\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right]}{16 d}-\frac{3\,\text{Log}\left[\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]}{16 d}-\frac{3\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2}{64 d}+\frac{\text{Sec}\left[\frac{1}{2}(c+d x)\right]^4}{64 d}+\frac{\text{Sec}\left[\frac{1}{2}(c+d x)\right]^6}{384 d}-\frac{2\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]}{15 d}-\frac{\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]}{240 d}+\frac{\text{Sec}\left[\frac{1}{2}(c+d x)\right]^4\text{Tan}\left[\frac{1}{2}(c+d x)\right]}{80 d}\right)$$

- **Problem 236: Result more than twice size of optimal antiderivative.**

$$\int \frac{\text{Sin}[c+d x]^3 (A-A\,\text{Sin}[c+d x])}{(a+a\,\text{Sin}[c+d x])^3}\,dx$$

Optimal (type 3, 103 leaves, 9 steps):

$$\frac{4 A x}{a^3}+\frac{A\,\text{Cos}[c+d x]}{a^3 d}+\frac{2 A\,\text{Cos}[c+d x]}{5 a^3 d (1+\text{Sin}[c+d x])^3}-\frac{31 A\,\text{Cos}[c+d x]}{15 a^3 d (1+\text{Sin}[c+d x])^2}+\frac{104 A\,\text{Cos}[c+d x]}{15 a^3 d (1+\text{Sin}[c+d x])}$$

Result (type 3, 228 leaves):

$$-\frac{1}{120 a^3 d \left(\text{Cos}\left[\frac{c}{2}\right]+\text{Sin}\left[\frac{c}{2}\right]\right)\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^5} A \left(-1200\,d x\,\text{Cos}\left[\frac{d x}{2}\right]+1665\,\text{Cos}\left[c+\frac{d x}{2}\right]-1675\,\text{Cos}\left[c+\frac{3 d x}{2}\right]+600\,d x\,\text{Cos}\left[2 c+\frac{3 d x}{2}\right]+120\,d x\,\text{Cos}\left[2 c+\frac{5 d x}{2}\right]+75\,\text{Cos}\left[3 c+\frac{5 d x}{2}\right]+15\,\text{Cos}\left[3 c+\frac{7 d x}{2}\right]+2495\,\text{Sin}\left[\frac{d x}{2}\right]-1200\,d x\,\text{Sin}\left[c+\frac{d x}{2}\right]-600\,d x\,\text{Sin}\left[c+\frac{3 d x}{2}\right]+405\,\text{Sin}\left[2 c+\frac{3 d x}{2}\right]-491\,\text{Sin}\left[2 c+\frac{5 d x}{2}\right]+120\,d x\,\text{Sin}\left[3 c+\frac{5 d x}{2}\right]+15\,\text{Sin}\left[4 c+\frac{7 d x}{2}\right]\right)$$

- **Problem 237: Result more than twice size of optimal antiderivative.**

$$\int \frac{\text{Sin}[c+d x]^2 (A-A\,\text{Sin}[c+d x])}{(a+a\,\text{Sin}[c+d x])^3}\,dx$$

Optimal (type 3, 89 leaves, 8 steps):

$$-\frac{A x}{a^3}-\frac{2 A\,\text{Cos}[c+d x]}{5 a^3 d (1+\text{Sin}[c+d x])^3}+\frac{7 A\,\text{Cos}[c+d x]}{5 a^3 d (1+\text{Sin}[c+d x])^2}-\frac{13 A\,\text{Cos}[c+d x]}{5 a^3 d (1+\text{Sin}[c+d x])}$$

Result (type 3, 189 leaves):

$$\left(A\left(-50\,d\,x\,\mathrm{Cos}\left[\frac{d\,x}{2}\right]+110\,\mathrm{Cos}\left[c+\frac{d\,x}{2}\right]-90\,\mathrm{Cos}\left[c+\frac{3\,d\,x}{2}\right]+25\,d\,x\,\mathrm{Cos}\left[2\,c+\frac{3\,d\,x}{2}\right]+5\,d\,x\,\mathrm{Cos}\left[2\,c+\frac{5\,d\,x}{2}\right]+150\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]-50\,d\,x\,\mathrm{Sin}\left[c+\frac{d\,x}{2}\right]-25\,d\,x\,\mathrm{Sin}\left[c+\frac{3\,d\,x}{2}\right]+40\,\mathrm{Sin}\left[2\,c+\frac{3\,d\,x}{2}\right]-26\,\mathrm{Sin}\left[2\,c+\frac{5\,d\,x}{2}\right]+5\,d\,x\,\mathrm{Sin}\left[3\,c+\frac{5\,d\,x}{2}\right]\right)\right)\Big/\left(20\,a^3\,d\left(\mathrm{Cos}\left[\frac{c}{2}\right]+\mathrm{Sin}\left[\frac{c}{2}\right]\right)\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^5\right)$$

- **Problem 240: Result more than twice size of optimal antiderivative.**

$$\int\frac{\mathrm{Csc}[c+d\,x]\,(A-A\,\mathrm{Sin}[c+d\,x])}{(a+a\,\mathrm{Sin}[c+d\,x])^3}\,dx$$

Optimal (type 3, 98 leaves, 9 steps):

$$-\frac{A\,\mathrm{ArcTanh}[\mathrm{Cos}[c+d\,x]]}{a^3\,d}+\frac{2\,A\,\mathrm{Cos}[c+d\,x]}{5\,a^3\,d\,(1+\mathrm{Sin}[c+d\,x])^3}+\frac{3\,A\,\mathrm{Cos}[c+d\,x]}{5\,a^3\,d\,(1+\mathrm{Sin}[c+d\,x])^2}+\frac{8\,A\,\mathrm{Cos}[c+d\,x]}{5\,a^3\,d\,(1+\mathrm{Sin}[c+d\,x])}$$

Result (type 3, 313 leaves):

$$\left(\left(\left(\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)\left(2\,\mathrm{Cos}\left[\frac{c}{2}\right]-2\,\mathrm{Sin}\left[\frac{c}{2}\right]+3\,\mathrm{Cos}\left[\frac{c}{2}\right]\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2-3\,\mathrm{Sin}\left[\frac{c}{2}\right]\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2\right)-5\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]\right]\left(\mathrm{Cos}\left[\frac{c}{2}\right]+\mathrm{Sin}\left[\frac{c}{2}\right]\right)\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4+5\,\mathrm{Log}\left[\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]\left(\mathrm{Cos}\left[\frac{c}{2}\right]+\mathrm{Sin}\left[\frac{c}{2}\right]\right)\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^4\right)+2\,\mathrm{Sin}\left[\frac{d\,x}{2}\right](-17+4\,\mathrm{Cos}[2\,(c+d\,x)]-19\,\mathrm{Sin}[c+d\,x])\right)(A-A\,\mathrm{Sin}[c+d\,x])\right)\Big/\left(5\,a^3\,d\left(\mathrm{Cos}\left[\frac{c}{2}\right]+\mathrm{Sin}\left[\frac{c}{2}\right]\right)\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^2\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)^5\right)$$

- **Problem 241: Result more than twice size of optimal antiderivative.**

$$\int\frac{\mathrm{Csc}[c+d\,x]^2\,(A-A\,\mathrm{Sin}[c+d\,x])}{(a+a\,\mathrm{Sin}[c+d\,x])^3}\,dx$$

Optimal (type 3, 113 leaves, 15 steps):

$$\frac{4\,A\,\mathrm{ArcTanh}[\mathrm{Cos}[c+d\,x]]}{a^3\,d}-\frac{A\,\mathrm{Cot}[c+d\,x]}{a^3\,d}-\frac{2\,A\,\mathrm{Cot}[c+d\,x]}{5\,a^3\,d\,(1+\mathrm{Csc}[c+d\,x])^3}+\frac{31\,A\,\mathrm{Cot}[c+d\,x]}{15\,a^3\,d\,(1+\mathrm{Csc}[c+d\,x])^2}-\frac{104\,A\,\mathrm{Cot}[c+d\,x]}{15\,a^3\,d\,(1+\mathrm{Csc}[c+d\,x])}$$

Result (type 3, 252 leaves):

$$\frac{1}{a^3}A\left(-\frac{\text{Cot}\left[\frac{1}{2}(c+d x)\right]}{2 d}+\frac{4\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right]}{d}-\frac{4\,\text{Log}\left[\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]}{d}+\frac{4\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]}{5 d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^5}-\frac{2}{5 d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^4}+\frac{38\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]}{15 d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3}-\frac{19}{15 d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2}+\frac{158\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]}{15 d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)}+\frac{\text{Tan}\left[\frac{1}{2}(c+d x)\right]}{2 d}\right)$$

- **Problem 242: Result more than twice size of optimal antiderivative.**

$$\int\frac{\text{Csc}[c+d x]^3\,(A-A\,\text{Sin}[c+d x])}{(a+a\,\text{Sin}[c+d x])^3}\,dx$$

Optimal (type 3, 138 leaves, 13 steps):

$$-\frac{19\,A\,\text{ArcTanh}[\text{Cos}[c+d x]]}{2 a^3 d}+\frac{4\,A\,\text{Cot}[c+d x]}{a^3 d}-\frac{A\,\text{Cot}[c+d x]\,\text{Csc}[c+d x]}{2 a^3 d}+\frac{2\,A\,\text{Cos}[c+d x]}{5 a^3 d\,(1+\text{Sin}[c+d x])^3}+\frac{29\,A\,\text{Cos}[c+d x]}{15 a^3 d\,(1+\text{Sin}[c+d x])^2}+\frac{164\,A\,\text{Cos}[c+d x]}{15 a^3 d\,(1+\text{Sin}[c+d x])}$$

Result (type 3, 290 leaves):

$$\frac{1}{a^3}A\left(\frac{2\,\text{Cot}\left[\frac{1}{2}(c+d x)\right]}{d}-\frac{\text{Csc}\left[\frac{1}{2}(c+d x)\right]^2}{8 d}-\frac{19\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right]}{2 d}+\frac{19\,\text{Log}\left[\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]}{2 d}+\frac{\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2}{8 d}-\frac{4\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]}{5 d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^5}+\frac{2}{5 d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^4}-\frac{58\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]}{15 d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3}+\frac{29}{15 d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2}-\frac{328\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]}{15 d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)}-\frac{2\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]}{d}\right)$$

- **Problem 243: Result more than twice size of optimal antiderivative.**

$$\int\frac{\text{Csc}[c+d x]^4\,(A-A\,\text{Sin}[c+d x])}{(a+a\,\text{Sin}[c+d x])^3}\,dx$$

Optimal (type 3, 153 leaves, 15 steps):

$$\frac{18\,A\,\text{ArcTanh}[\text{Cos}[c+d x]]}{a^3 d}-\frac{10\,A\,\text{Cot}[c+d x]}{a^3 d}-\frac{A\,\text{Cot}[c+d x]^3}{3 a^3 d}+\frac{2\,A\,\text{Cot}[c+d x]\,\text{Csc}[c+d x]}{a^3 d}-\frac{2\,A\,\text{Cos}[c+d x]}{5 a^3 d\,(1+\text{Sin}[c+d x])^3}-\frac{13\,A\,\text{Cos}[c+d x]}{5 a^3 d\,(1+\text{Sin}[c+d x])^2}-\frac{93\,A\,\text{Cos}[c+d x]}{5 a^3 d\,(1+\text{Sin}[c+d x])}$$

Result (type 3, 348 leaves):

$$\frac{1}{a^3} A \left(-\frac{29 \operatorname{Cot}\left[\frac{1}{2}(c+d x)\right]}{6 d}+\frac{\operatorname{Csc}\left[\frac{1}{2}(c+d x)\right]^2}{2 d}-\frac{\operatorname{Cot}\left[\frac{1}{2}(c+d x)\right] \operatorname{Csc}\left[\frac{1}{2}(c+d x)\right]^2}{24 d}+\right.$$

$$\frac{18 \operatorname{Log}\left[\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]\right]}{d}-\frac{18 \operatorname{Log}\left[\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right]}{d}-\frac{\operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^2}{2 d}+\frac{4 \operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]}{5 d\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^5}-$$

$$\frac{2}{5 d\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^4}+\frac{26 \operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]}{5 d\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^3}-\frac{13}{5 d\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2}+$$

$$\left.\frac{186 \operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]}{5 d\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)}+\frac{29 \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]}{6 d}+\frac{\operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]}{24 d}\right)$$

- **Problem 248: Result unnecessarily involves imaginary or complex numbers.**

$$\int \frac{(a+a \operatorname{Sin}[e+f x])(A+B \operatorname{Sin}[e+f x])}{c+d \operatorname{Sin}[e+f x]} \, dx$$

Optimal (type 3, 98 leaves, 6 steps):

$$-\frac{a(B c-(A+B) d) x}{d^2}+\frac{2 a(c-d)(B c-A d) \operatorname{ArcTan}\left[\frac{d+c \operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]}{\sqrt{c^2-d^2}}\right]}{d^2 \sqrt{c^2-d^2} f}-\frac{a B \operatorname{Cos}[e+f x]}{d f}$$

Result (type 3, 196 leaves):

$$\left(a\left(A d x+B(-c+d) x-\frac{B d \operatorname{Cos}[e] \operatorname{Cos}[f x]}{f}+\frac{2(c-d)(B c-A d) \operatorname{ArcTan}\left[\frac{\operatorname{Sec}\left[\frac{f x}{2}\right](\operatorname{Cos}[e]-i \operatorname{Sin}[e])\left(d \operatorname{Cos}\left[e+\frac{f x}{2}\right]+c \operatorname{Sin}\left[\frac{f x}{2}\right]\right)}{\sqrt{c^2-d^2} \sqrt{(\operatorname{Cos}[e]-i \operatorname{Sin}[e])^2}}\right](\operatorname{Cos}[e]-i \operatorname{Sin}[e])}{\sqrt{c^2-d^2} f \sqrt{(\operatorname{Cos}[e]-i \operatorname{Sin}[e])^2}}+\right.\right.$$

$$\left.\left.\frac{B d \operatorname{Sin}[e] \operatorname{Sin}[f x]}{f}\right)(1+\operatorname{Sin}[e+f x])\right) \Big/ \left(d^2\left(\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]+\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^2\right)$$

- **Problem 249: Result unnecessarily involves imaginary or complex numbers.**

$$\int \frac{(a+a \operatorname{Sin}[e+f x])(A+B \operatorname{Sin}[e+f x])}{(c+d \operatorname{Sin}[e+f x])^2} \, dx$$

Optimal (type 3, 124 leaves, 6 steps):

$$\frac{a B x}{d^2}+\frac{2 a \left((A+B)(c-d) d^2-B c \left(c^2-d^2\right)\right) \text{ArcTan}\left[\frac{d+c \text{Tan}\left[\frac{1}{2}(e+f x)\right]}{\sqrt{c^2-d^2}}\right]}{d^2 \left(c^2-d^2\right)^{3/2} f}+\frac{a (B c-A d) \text{Cos}[e+f x]}{d (c+d) f (c+d \text{Sin}[e+f x])}$$

Result (type 3, 217 leaves):

$$\left(a (1+\text{Sin}[e+f x]) \left(B x+\frac{2 \left(A d^2-B \left(c^2+c d-d^2\right)\right) \text{ArcTan}\left[\frac{\text{Sec}\left[\frac{f x}{2}\right] (\text{Cos}[e]-i \text{Sin}[e]) \left(d \text{Cos}\left[e+\frac{f x}{2}\right]+c \text{Sin}\left[\frac{f x}{2}\right]\right)}{\sqrt{c^2-d^2} \sqrt{(\text{Cos}[e]-i \text{Sin}[e])^2}}\right] (\text{Cos}[e]-i \text{Sin}[e])}{(c+d) \sqrt{c^2-d^2} f \sqrt{(\text{Cos}[e]-i \text{Sin}[e])^2}}+\frac{(-B c+A d) \text{Csc}[e] (c \text{Cos}[e]+d \text{Sin}[f x])}{(c+d) f (c+d \text{Sin}[e+f x])}\right)\right) \Big/ \left(d^2 \left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^2\right)$$

Problem 250: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{(a+a \text{Sin}[e+f x]) (A+B \text{Sin}[e+f x])}{(c+d \text{Sin}[e+f x])^3} \, dx$$

Optimal (type 3, 176 leaves, 7 steps):

$$\frac{a (2 A c+B c-A d-2 B d) \text{ArcTan}\left[\frac{d+c \text{Tan}\left[\frac{1}{2}(e+f x)\right]}{\sqrt{c^2-d^2}}\right]}{(c+d) \left(c^2-d^2\right)^{3/2} f}+\frac{a (B c-A d) \text{Cos}[e+f x]}{2 d (c+d) f (c+d \text{Sin}[e+f x])^2}-\frac{a \left(A (c-2 d) d+B \left(c^2+2 c d-2 d^2\right)\right) \text{Cos}[e+f x]}{2 (c-d) d (c+d)^2 f (c+d \text{Sin}[e+f x])}$$

Result (type 3, 345 leaves):

$$\left(a (1+\text{Sin}[e+f x]) \left(\frac{4 (2 A c+B c-A d-2 B d) \text{ArcTan}\left[\frac{\text{Sec}\left[\frac{f x}{2}\right] (\text{Cos}[e]-i \text{Sin}[e]) \left(d \text{Cos}\left[e+\frac{f x}{2}\right]+c \text{Sin}\left[\frac{f x}{2}\right]\right)}{\sqrt{c^2-d^2} \sqrt{(\text{Cos}[e]-i \text{Sin}[e])^2}}\right] (\text{Cos}[e]-i \text{Sin}[e])}{\sqrt{c^2-d^2} \sqrt{(\text{Cos}[e]-i \text{Sin}[e])^2}}+1 \Big/ \left(d^2 (c+d \text{Sin}[e+f x])^2\right) \left(\left(2 c^2+d^2\right) \left(A (c-2 d) d+B \left(c^2+2 c d-2 d^2\right)\right) \text{Cot}[e]+d \text{Csc}[e] \left(-d \left(A (c-2 d) d+B \left(c^2+2 c d-2 d^2\right)\right) \text{Cos}[e+2 f x]+\left(B c \left(2 c^2+6 c d-5 d^2\right)-A d \left(-4 c^2+6 c d+d^2\right)\right) \text{Sin}[f x]+\left(A d^2 (-2 c+d)+B c \left(2 c^2+2 c d-3 d^2\right)\right) \text{Sin}[2 e+f x]\right)\right)\right)\right) \Big/ \left(4 (c-d) (c+d)^2 f \left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^2\right)$$

Problem 264: Result more than twice size of optimal antiderivative.

$$\int \frac{(a + a \operatorname{Sin}[e + f x])^3 (A + B \operatorname{Sin}[e + f x])}{(c + d \operatorname{Sin}[e + f x])^3} \, dx$$

Optimal (type 3, 305 leaves, 8 steps):

$$-\frac{a^3 (3 B c - A d - 3 B d) x}{d^4} - \frac{a^3 (c - d) \left(A d \left(2 c^2 + 6 c d + 7 d^2\right) - 3 B \left(2 c^3 + 4 c^2 d + c d^2 - 2 d^3\right)\right) \operatorname{ArcTan}\left[\frac{d + c \operatorname{Tan}\left[\frac{1}{2} (e + f x)\right]}{\sqrt{c^2 - d^2}}\right]}{d^4 (c + d)^2 \sqrt{c^2 - d^2} \, f} -$$
$$\frac{a^3 (3 B c (2 c + 3 d) - A d (2 c + 5 d)) \operatorname{Cos}[e + f x]}{2 d^3 (c + d)^2 f} + \frac{a (B c - A d) \operatorname{Cos}[e + f x] (a + a \operatorname{Sin}[e + f x])^2}{2 d (c + d) f (c + d \operatorname{Sin}[e + f x])^2} -$$
$$\frac{\left(A d (c + 4 d) - B \left(3 c^2 + 4 c d - 2 d^2\right)\right) \operatorname{Cos}[e + f x] \left(a^3 + a^3 \operatorname{Sin}[e + f x]\right)}{2 d^2 (c + d)^2 f (c + d \operatorname{Sin}[e + f x])}$$

Result (type 3, 830 leaves):

$$\frac{1}{4 d^4 (c + d)^2 f \left(\operatorname{Cos}\left[\frac{1}{2} (e + f x)\right] + \operatorname{Sin}\left[\frac{1}{2} (e + f x)\right]\right)^6}$$
$$a^3 (1 + \operatorname{Sin}[e + f x])^3 \left(\frac{4 (c - d) \left(-A d \left(2 c^2 + 6 c d + 7 d^2\right) + 3 B \left(2 c^3 + 4 c^2 d + c d^2 - 2 d^3\right)\right) \operatorname{ArcTan}\left[\frac{d + c \operatorname{Tan}\left[\frac{1}{2} (e + f x)\right]}{\sqrt{c^2 - d^2}}\right]}{\sqrt{c^2 - d^2}} + \right.$$
$$\frac{1}{(c + d \operatorname{Sin}[e + f x])^2} \left(-12 B c^5 e + 4 A c^4 d e - 12 B c^4 d e + 8 A c^3 d^2 e + 6 B c^3 d^2 e + 6 A c^2 d^3 e + 6 B c^2 d^3 e + 4 A c d^4 e + 6 B c d^4 e + 2 A d^5 e + 6 B d^5 e - \right.$$
$$12 B c^5 f x + 4 A c^4 d f x - 12 B c^4 d f x + 8 A c^3 d^2 f x + 6 B c^3 d^2 f x + 6 A c^2 d^3 f x + 6 B c^2 d^3 f x + 4 A c d^4 f x + 6 B c d^4 f x + 2 A d^5 f x +$$
$$6 B d^5 f x - d \left(2 A d \left(-2 c^3 - 4 c^2 d + 5 c d^2 + d^3\right) + B \left(12 c^4 + 12 c^3 d - 9 c^2 d^2 + 4 c d^3 + d^4\right)\right) \operatorname{Cos}[e + f x] - 2 d^2 (c + d)^2 (-3 B c + A d + 3 B d)$$
$$(e + f x) \operatorname{Cos}[2 (e + f x)] + B c^2 d^3 \operatorname{Cos}[3 (e + f x)] + 2 B c d^4 \operatorname{Cos}[3 (e + f x)] + B d^5 \operatorname{Cos}[3 (e + f x)] - 24 B c^4 d e \operatorname{Sin}[e + f x] +$$
$$8 A c^3 d^2 e \operatorname{Sin}[e + f x] - 24 B c^3 d^2 e \operatorname{Sin}[e + f x] + 16 A c^2 d^3 e \operatorname{Sin}[e + f x] + 24 B c^2 d^3 e \operatorname{Sin}[e + f x] + 8 A c d^4 e \operatorname{Sin}[e + f x] +$$
$$24 B c d^4 e \operatorname{Sin}[e + f x] - 24 B c^4 d f x \operatorname{Sin}[e + f x] + 8 A c^3 d^2 f x \operatorname{Sin}[e + f x] - 24 B c^3 d^2 f x \operatorname{Sin}[e + f x] + 16 A c^2 d^3 f x \operatorname{Sin}[e + f x] +$$
$$24 B c^2 d^3 f x \operatorname{Sin}[e + f x] + 8 A c d^4 f x \operatorname{Sin}[e + f x] + 24 B c d^4 f x \operatorname{Sin}[e + f x] - 9 B c^3 d^2 \operatorname{Sin}[2 (e + f x)] + 3 A c^2 d^3 \operatorname{Sin}[2 (e + f x)] -$$
$$\left.\left. 9 B c^2 d^3 \operatorname{Sin}[2 (e + f x)] + 3 A c d^4 \operatorname{Sin}[2 (e + f x)] + 4 B c d^4 \operatorname{Sin}[2 (e + f x)] - 6 A d^5 \operatorname{Sin}[2 (e + f x)] - 2 B d^5 \operatorname{Sin}[2 (e + f x)]\right)\right)$$

Problem 265: Result more than twice size of optimal antiderivative.

$$\int \frac{(A + B \operatorname{Sin}[e + f x]) (c + d \operatorname{Sin}[e + f x])^3}{a + a \operatorname{Sin}[e + f x]} \, dx$$

Optimal (type 3, 220 leaves, 3 steps):

$$\frac{\left(3 A d \left(2 c^2-2 c d+d^2\right)+B \left(2 c^3-6 c^2 d+9 c d^2-3 d^3\right)\right) x}{2 a}+\frac{2 d \left(3 A \left(c^2-3 c d+d^2\right)-B \left(7 c^2-9 c d+4 d^2\right)\right) \text{Cos}[e+f x]}{3 a f}+$$
$$\frac{d^2 (6 A c-11 B c-9 A d+9 B d) \text{Cos}[e+f x] \text{Sin}[e+f x]}{6 a f}+\frac{(3 A-4 B) d \text{Cos}[e+f x] (c+d \text{Sin}[e+f x])^2}{3 a f}-\frac{(A-B) \text{Cos}[e+f x] (c+d \text{Sin}[e+f x])^3}{f (a+a \text{Sin}[e+f x])}$$

Result (type 3, 788 leaves):

$$\frac{1}{24 a f (1+\text{Sin}[e+f x])}\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)\left(3 \left(4 A d \left(6 c^2 (e+f x)-3 c d (1+2 e+2 f x)+d^2 (1+3 e+3 f x)\right)+\right.\right.$$
$$\left.B \left(8 c^3 (e+f x)-12 c^2 d (1+2 e+2 f x)+12 c d^2 (1+3 e+3 f x)-d^3 (7+12 e+12 f x)\right)\right) \text{Cos}\left[\frac{1}{2}(e+f x)\right]+$$
$$9 d \left(A d (-4 c+d)+B \left(-4 c^2+3 c d-2 d^2\right)\right) \text{Cos}\left[\frac{3}{2}(e+f x)\right]+9 B c d^2 \text{Cos}\left[\frac{5}{2}(e+f x)\right]+3 A d^3 \text{Cos}\left[\frac{5}{2}(e+f x)\right]-2 B d^3 \text{Cos}\left[\frac{5}{2}(e+f x)\right]+$$
$$B d^3 \text{Cos}\left[\frac{7}{2}(e+f x)\right]+48 A c^3 \text{Sin}\left[\frac{1}{2}(e+f x)\right]-48 B c^3 \text{Sin}\left[\frac{1}{2}(e+f x)\right]-144 A c^2 d \text{Sin}\left[\frac{1}{2}(e+f x)\right]+180 B c^2 d \text{Sin}\left[\frac{1}{2}(e+f x)\right]+$$
$$180 A c d^2 \text{Sin}\left[\frac{1}{2}(e+f x)\right]-180 B c d^2 \text{Sin}\left[\frac{1}{2}(e+f x)\right]-60 A d^3 \text{Sin}\left[\frac{1}{2}(e+f x)\right]+69 B d^3 \text{Sin}\left[\frac{1}{2}(e+f x)\right]+24 B c^3 e \text{Sin}\left[\frac{1}{2}(e+f x)\right]+$$
$$72 A c^2 d e \text{Sin}\left[\frac{1}{2}(e+f x)\right]-72 B c^2 d e \text{Sin}\left[\frac{1}{2}(e+f x)\right]-72 A c d^2 e \text{Sin}\left[\frac{1}{2}(e+f x)\right]+108 B c d^2 e \text{Sin}\left[\frac{1}{2}(e+f x)\right]+$$
$$36 A d^3 e \text{Sin}\left[\frac{1}{2}(e+f x)\right]-36 B d^3 e \text{Sin}\left[\frac{1}{2}(e+f x)\right]+24 B c^3 f x \text{Sin}\left[\frac{1}{2}(e+f x)\right]+72 A c^2 d f x \text{Sin}\left[\frac{1}{2}(e+f x)\right]-$$
$$72 B c^2 d f x \text{Sin}\left[\frac{1}{2}(e+f x)\right]-72 A c d^2 f x \text{Sin}\left[\frac{1}{2}(e+f x)\right]+108 B c d^2 f x \text{Sin}\left[\frac{1}{2}(e+f x)\right]+36 A d^3 f x \text{Sin}\left[\frac{1}{2}(e+f x)\right]-$$
$$36 B d^3 f x \text{Sin}\left[\frac{1}{2}(e+f x)\right]-36 B c^2 d \text{Sin}\left[\frac{3}{2}(e+f x)\right]-36 A c d^2 \text{Sin}\left[\frac{3}{2}(e+f x)\right]+27 B c d^2 \text{Sin}\left[\frac{3}{2}(e+f x)\right]+9 A d^3 \text{Sin}\left[\frac{3}{2}(e+f x)\right]-$$
$$\left.18 B d^3 \text{Sin}\left[\frac{3}{2}(e+f x)\right]-9 B c d^2 \text{Sin}\left[\frac{5}{2}(e+f x)\right]-3 A d^3 \text{Sin}\left[\frac{5}{2}(e+f x)\right]+2 B d^3 \text{Sin}\left[\frac{5}{2}(e+f x)\right]+B d^3 \text{Sin}\left[\frac{7}{2}(e+f x)\right]\right)$$

Problem 268: Result more than twice size of optimal antiderivative.

$$\int \frac{A+B \text{Sin}[e+f x]}{a+a \text{Sin}[e+f x]} \, dx$$

Optimal (type 3, 35 leaves, 2 steps):

$$\frac{B x}{a}-\frac{(A-B) \text{Cos}[e+f x]}{f (a+a \text{Sin}[e+f x])}$$

Result (type 3, 79 leaves):

$$\frac{1}{a f (1+\text{Sin}[e+f x])}\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)\left(B (e+f x) \text{Cos}\left[\frac{1}{2}(e+f x)\right]+(2 A+B (-2+e+f x)) \text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)$$

Problem 272: Result more than twice size of optimal antiderivative.

$$\int \frac{(A+B\,\text{Sin}[e+f\,x])\,(c+d\,\text{Sin}[e+f\,x])^3}{(a+a\,\text{Sin}[e+f\,x])^2}\,dx$$

Optimal (type 3, 228 leaves, 3 steps):

$$\frac{d\left(2\,A\,(3\,c-2\,d)\,d+B\left(6\,c^2-12\,c\,d+7\,d^2\right)\right)x}{2\,a^2}+$$
$$\frac{2\,d\left(A\left(c^2+6\,c\,d-5\,d^2\right)+B\left(2\,c^2-15\,c\,d+8\,d^2\right)\right)\text{Cos}[e+f\,x]}{3\,a^2\,f}+\frac{d^2\,(B\,(4\,c-21\,d)+2\,A\,(c+6\,d))\,\text{Cos}[e+f\,x]\,\text{Sin}[e+f\,x]}{6\,a^2\,f}-$$
$$\frac{(2\,B\,(c-4\,d)+A\,(c+5\,d))\,\text{Cos}[e+f\,x]\,(c+d\,\text{Sin}[e+f\,x])^2}{3\,a^2\,f\,(1+\text{Sin}[e+f\,x])}-\frac{(A-B)\,\text{Cos}[e+f\,x]\,(c+d\,\text{Sin}[e+f\,x])^3}{3\,f\,(a+a\,\text{Sin}[e+f\,x])^2}$$

Result (type 3, 1032 leaves):

$$\frac{1}{48 f (a + a \sin[e + f x])^2} \left(\cos\left[\frac{1}{2}(e + f x)\right] + \sin\left[\frac{1}{2}(e + f x)\right]\right)$$
$$\left(48 B c^3 \cos\left[\frac{1}{2}(e+fx)\right] + 144 A c^2 d \cos\left[\frac{1}{2}(e+fx)\right] - 288 B c^2 d \cos\left[\frac{1}{2}(e+fx)\right] - 288 A c d^2 \cos\left[\frac{1}{2}(e+fx)\right] + 360 B c d^2 \cos\left[\frac{1}{2}(e+fx)\right] + \right.$$
$$120 A d^3 \cos\left[\frac{1}{2}(e+fx)\right] - 147 B d^3 \cos\left[\frac{1}{2}(e+fx)\right] + 216 B c^2 d (e+fx) \cos\left[\frac{1}{2}(e+fx)\right] + 216 A c d^2 (e+fx) \cos\left[\frac{1}{2}(e+fx)\right] -$$
$$432 B c d^2 (e+fx) \cos\left[\frac{1}{2}(e+fx)\right] - 144 A d^3 (e+fx) \cos\left[\frac{1}{2}(e+fx)\right] + 252 B d^3 (e+fx) \cos\left[\frac{1}{2}(e+fx)\right] - 16 A c^3 \cos\left[\frac{3}{2}(e+fx)\right] -$$
$$32 B c^3 \cos\left[\frac{3}{2}(e+fx)\right] - 96 A c^2 d \cos\left[\frac{3}{2}(e+fx)\right] + 240 B c^2 d \cos\left[\frac{3}{2}(e+fx)\right] + 240 A c d^2 \cos\left[\frac{3}{2}(e+fx)\right] - 492 B c d^2 \cos\left[\frac{3}{2}(e+fx)\right] -$$
$$164 A d^3 \cos\left[\frac{3}{2}(e+fx)\right] + 239 B d^3 \cos\left[\frac{3}{2}(e+fx)\right] - 72 B c^2 d (e+fx) \cos\left[\frac{3}{2}(e+fx)\right] - 72 A c d^2 (e+fx) \cos\left[\frac{3}{2}(e+fx)\right] +$$
$$144 B c d^2 (e+fx) \cos\left[\frac{3}{2}(e+fx)\right] + 48 A d^3 (e+fx) \cos\left[\frac{3}{2}(e+fx)\right] - 84 B d^3 (e+fx) \cos\left[\frac{3}{2}(e+fx)\right] + 36 B c d^2 \cos\left[\frac{5}{2}(e+fx)\right] +$$
$$12 A d^3 \cos\left[\frac{5}{2}(e+fx)\right] - 15 B d^3 \cos\left[\frac{5}{2}(e+fx)\right] + 3 B d^3 \cos\left[\frac{7}{2}(e+fx)\right] + 48 A c^3 \sin\left[\frac{1}{2}(e+fx)\right] + 48 B c^3 \sin\left[\frac{1}{2}(e+fx)\right] +$$
$$144 A c^2 d \sin\left[\frac{1}{2}(e+fx)\right] - 432 B c^2 d \sin\left[\frac{1}{2}(e+fx)\right] - 432 A c d^2 \sin\left[\frac{1}{2}(e+fx)\right] + 792 B c d^2 \sin\left[\frac{1}{2}(e+fx)\right] +$$
$$264 A d^3 \sin\left[\frac{1}{2}(e+fx)\right] - 381 B d^3 \sin\left[\frac{1}{2}(e+fx)\right] + 216 B c^2 d (e+fx) \sin\left[\frac{1}{2}(e+fx)\right] + 216 A c d^2 (e+fx) \sin\left[\frac{1}{2}(e+fx)\right] -$$
$$432 B c d^2 (e+fx) \sin\left[\frac{1}{2}(e+fx)\right] - 144 A d^3 (e+fx) \sin\left[\frac{1}{2}(e+fx)\right] + 252 B d^3 (e+fx) \sin\left[\frac{1}{2}(e+fx)\right] -$$
$$108 B c d^2 \sin\left[\frac{3}{2}(e+fx)\right] - 36 A d^3 \sin\left[\frac{3}{2}(e+fx)\right] + 63 B d^3 \sin\left[\frac{3}{2}(e+fx)\right] + 72 B c^2 d (e+fx) \sin\left[\frac{3}{2}(e+fx)\right] +$$
$$72 A c d^2 (e+fx) \sin\left[\frac{3}{2}(e+fx)\right] - 144 B c d^2 (e+fx) \sin\left[\frac{3}{2}(e+fx)\right] - 48 A d^3 (e+fx) \sin\left[\frac{3}{2}(e+fx)\right] +$$
$$\left. 84 B d^3 (e+fx) \sin\left[\frac{3}{2}(e+fx)\right] - 36 B c d^2 \sin\left[\frac{5}{2}(e+fx)\right] - 12 A d^3 \sin\left[\frac{5}{2}(e+fx)\right] + 15 B d^3 \sin\left[\frac{5}{2}(e+fx)\right] + 3 B d^3 \sin\left[\frac{7}{2}(e+fx)\right]\right)$$

- **Problem 273: Result more than twice size of optimal antiderivative.**

$$\int \frac{(A + B \sin[e + f x]) (c + d \sin[e + f x])^2}{(a + a \sin[e + f x])^2} \, dx$$

Optimal (type 3, 132 leaves, 5 steps):

$$\frac{d (2 B (c - d) + A d) x}{a^2} + \frac{(A - 4 B) d^2 \cos[e + f x]}{3 a^2 f} - \frac{(c - d) (2 B (c - 3 d) + A (c + 3 d)) \cos[e + f x]}{3 a^2 f (1 + \sin[e + f x])} - \frac{(A - B) \cos[e + f x] (c + d \sin[e + f x])^2}{3 f (a + a \sin[e + f x])^2}$$

Result (type 3, 338 leaves):

$$\frac{1}{12 a^2 f (1+\text{Sin}[e+f x])^2}\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)\left(6\left(A d (4 c+d (-4+3 e+3 f x))+B\left(2 c^2+d^2 (5-6 e-6 f x)+2 c d (-4+3 e+3 f x)\right)\right)\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\left(B\left(8 c^2+d^2 (41-12 e-12 f x)+4 c d (-10+3 e+3 f x)\right)+2 A\left(2 c^2+8 c d+d^2 (-10+3 e+3 f x)\right)\right)\text{Cos}\left[\frac{3}{2}(e+f x)\right]+3 B d^2\,\text{Cos}\left[\frac{5}{2}(e+f x)\right]+6\left(2 A c^2+2 B c^2+4 A c d-12 B c d-6 A d^2+9 B d^2+8 B c d e+4 A d^2 e-8 B d^2 e+8 B c d f x+4 A d^2 f x-8 B d^2 f x-2 d (-2 B c (e+f x)-A d (e+f x)+2 B d (1+e+f x))\,\text{Cos}[e+f x]-B d^2\,\text{Cos}[2 (e+f x)]\right)\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)$$

- **Problem 274: Result more than twice size of optimal antiderivative.**

$$\int\frac{(A+B\,\text{Sin}[e+f x])\,(c+d\,\text{Sin}[e+f x])}{(a+a\,\text{Sin}[e+f x])^2}\,dx$$

Optimal (type 3, 85 leaves, 4 steps):

$$\frac{B d x}{a^2}-\frac{(A c+2 B c+2 A d-5 B d)\,\text{Cos}[e+f x]}{3 a^2 f (1+\text{Sin}[e+f x])}-\frac{(A-B)\,(c-d)\,\text{Cos}[e+f x]}{3 f (a+a\,\text{Sin}[e+f x])^2}$$

Result (type 3, 180 leaves):

$$\frac{1}{3 a^2 f (1+\text{Sin}[e+f x])^2}\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)\left(2 (A-B)\,(c-d)\,\text{Sin}\left[\frac{1}{2}(e+f x)\right]-(A-B)\,(c-d)\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)+2 (A c+2 B c+2 A d-5 B d)\,\text{Sin}\left[\frac{1}{2}(e+f x)\right]\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^2+3 B d (e+f x)\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^3\right)$$

- **Problem 278: Result more than twice size of optimal antiderivative.**

$$\int\frac{A+B\,\text{Sin}[e+f x]}{(a+a\,\text{Sin}[e+f x])^2\,(c+d\,\text{Sin}[e+f x])^3}\,dx$$

Optimal (type 3, 386 leaves, 8 steps):

$$\frac{d\left(A\,d\left(12\,c^2+16\,c\,d+7\,d^2\right)-B\left(6\,c^3+12\,c^2\,d+13\,c\,d^2+4\,d^3\right)\right)\text{ArcTan}\left[\frac{d+c\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]}{\sqrt{c^2-d^2}}\right]}{a^2\,(c-d)^4\,(c+d)^2\,\sqrt{c^2-d^2}\,f}-$$

$$\frac{d\left(A\left(2\,c^2-16\,c\,d-21\,d^2\right)+B\left(4\,c^2+19\,c\,d+12\,d^2\right)\right)\text{Cos}[e+f\,x]}{6\,a^2\,(c-d)^3\,(c+d)\,f\,(c+d\,\text{Sin}[e+f\,x])^2}-\frac{(A\,c+2\,B\,c-8\,A\,d+5\,B\,d)\,\text{Cos}[e+f\,x]}{3\,a^2\,(c-d)^2\,f\,(1+\text{Sin}[e+f\,x])\,(c+d\,\text{Sin}[e+f\,x])^2}-$$

$$\frac{(A-B)\,\text{Cos}[e+f\,x]}{3\,(c-d)\,f\,(a+a\,\text{Sin}[e+f\,x])^2\,(c+d\,\text{Sin}[e+f\,x])^2}-\frac{d\left(A\left(2\,c^3-16\,c^2\,d-59\,c\,d^2-32\,d^3\right)+B\left(4\,c^3+37\,c^2\,d+44\,c\,d^2+20\,d^3\right)\right)\text{Cos}[e+f\,x]}{6\,a^2\,(c-d)^4\,(c+d)^2\,f\,(c+d\,\text{Sin}[e+f\,x])}$$

Result (type 3, 1522 leaves) :

$$-\left(d\left(6\,B\,c^3-12\,A\,c^2\,d+12\,B\,c^2\,d-16\,A\,c\,d^2+13\,B\,c\,d^2-7\,A\,d^3+4\,B\,d^3\right)\text{ArcTan}\left[\frac{\text{Sec}\left[\frac{1}{2}(e+f\,x)\right]\left(d\,\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]+c\,\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)}{\sqrt{c^2-d^2}}\right]\right.$$

$$\left.\left(\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)^4\right)\Big/\left((c-d)^4\,(c+d)^2\,\sqrt{c^2-d^2}\,f\,(a+a\,\text{Sin}[e+f\,x])^2\right)+$$

$$\frac{1}{48\,(c-d)^4\,(c+d)^2\,f\,(a+a\,\text{Sin}[e+f\,x])^2\,(c+d\,\text{Sin}[e+f\,x])^2}\left(\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)$$

$$\left(48\,B\,c^5\,\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]-96\,A\,c^4\,d\,\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]+240\,B\,c^4\,d\,\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]-524\,A\,c^3\,d^2\,\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]+536\,B\,c^3\,d^2\,\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]-\right.$$

$$776\,A\,c^2\,d^3\,\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]+701\,B\,c^2\,d^3\,\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]-487\,A\,c\,d^4\,\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]+400\,B\,c\,d^4\,\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]-$$

$$112\,A\,d^5\,\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]+70\,B\,d^5\,\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]-16\,A\,c^5\,\text{Cos}\left[\frac{3}{2}(e+f\,x)\right]-32\,B\,c^5\,\text{Cos}\left[\frac{3}{2}(e+f\,x)\right]+80\,A\,c^4\,d\,\text{Cos}\left[\frac{3}{2}(e+f\,x)\right]-$$

$$224\,B\,c^4\,d\,\text{Cos}\left[\frac{3}{2}(e+f\,x)\right]+536\,A\,c^3\,d^2\,\text{Cos}\left[\frac{3}{2}(e+f\,x)\right]-728\,B\,c^3\,d^2\,\text{Cos}\left[\frac{3}{2}(e+f\,x)\right]+1028\,A\,c^2\,d^3\,\text{Cos}\left[\frac{3}{2}(e+f\,x)\right]-$$

$$893\,B\,c^2\,d^3\,\text{Cos}\left[\frac{3}{2}(e+f\,x)\right]+695\,A\,c\,d^4\,\text{Cos}\left[\frac{3}{2}(e+f\,x)\right]-482\,B\,c\,d^4\,\text{Cos}\left[\frac{3}{2}(e+f\,x)\right]+134\,A\,d^5\,\text{Cos}\left[\frac{3}{2}(e+f\,x)\right]-$$

$$98\,B\,d^5\,\text{Cos}\left[\frac{3}{2}(e+f\,x)\right]+24\,B\,c^3\,d^2\,\text{Cos}\left[\frac{5}{2}(e+f\,x)\right]-12\,A\,c^2\,d^3\,\text{Cos}\left[\frac{5}{2}(e+f\,x)\right]+21\,B\,c^2\,d^3\,\text{Cos}\left[\frac{5}{2}(e+f\,x)\right]-15\,A\,c\,d^4\,\text{Cos}\left[\frac{5}{2}(e+f\,x)\right]-$$

$$18\,B\,c\,d^4\,\text{Cos}\left[\frac{5}{2}(e+f\,x)\right]+6\,A\,d^5\,\text{Cos}\left[\frac{5}{2}(e+f\,x)\right]-6\,B\,d^5\,\text{Cos}\left[\frac{5}{2}(e+f\,x)\right]+4\,A\,c^3\,d^2\,\text{Cos}\left[\frac{7}{2}(e+f\,x)\right]+8\,B\,c^3\,d^2\,\text{Cos}\left[\frac{7}{2}(e+f\,x)\right]-$$

$$32\,A\,c^2\,d^3\,\text{Cos}\left[\frac{7}{2}(e+f\,x)\right]+59\,B\,c^2\,d^3\,\text{Cos}\left[\frac{7}{2}(e+f\,x)\right]-97\,A\,c\,d^4\,\text{Cos}\left[\frac{7}{2}(e+f\,x)\right]+76\,B\,c\,d^4\,\text{Cos}\left[\frac{7}{2}(e+f\,x)\right]-52\,A\,d^5\,\text{Cos}\left[\frac{7}{2}(e+f\,x)\right]+$$

$$34\,B\,d^5\,\text{Cos}\left[\frac{7}{2}(e+f\,x)\right]+48\,A\,c^5\,\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]+48\,B\,c^5\,\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]-224\,A\,c^4\,d\,\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]+416\,B\,c^4\,d\,\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]-$$

$$872\,A\,c^3\,d^2\,\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]+992\,B\,c^3\,d^2\,\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]-1144\,A\,c^2\,d^3\,\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]+967\,B\,c^2\,d^3\,\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]-$$

$685\,A\,c\,d^4\,\mathrm{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]+496\,B\,c\,d^4\,\mathrm{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]-168\,A\,d^5\,\mathrm{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]+126\,B\,d^5\,\mathrm{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]+48\,B\,c^4\,d\,\mathrm{Sin}\left[\frac{3}{2}\,(e+f\,x)\right]-$

$132\,A\,c^3\,d^2\,\mathrm{Sin}\left[\frac{3}{2}\,(e+f\,x)\right]+96\,B\,c^3\,d^2\,\mathrm{Sin}\left[\frac{3}{2}\,(e+f\,x)\right]-204\,A\,c^2\,d^3\,\mathrm{Sin}\left[\frac{3}{2}\,(e+f\,x)\right]+207\,B\,c^2\,d^3\,\mathrm{Sin}\left[\frac{3}{2}\,(e+f\,x)\right]-$

$165\,A\,c\,d^4\,\mathrm{Sin}\left[\frac{3}{2}\,(e+f\,x)\right]+174\,B\,c\,d^4\,\mathrm{Sin}\left[\frac{3}{2}\,(e+f\,x)\right]-66\,A\,d^5\,\mathrm{Sin}\left[\frac{3}{2}\,(e+f\,x)\right]+42\,B\,d^5\,\mathrm{Sin}\left[\frac{3}{2}\,(e+f\,x)\right]-16\,A\,c^4\,d\,\mathrm{Sin}\left[\frac{5}{2}\,(e+f\,x)\right]-$

$32\,B\,c^4\,d\,\mathrm{Sin}\left[\frac{5}{2}\,(e+f\,x)\right]+116\,A\,c^3\,d^2\,\mathrm{Sin}\left[\frac{5}{2}\,(e+f\,x)\right]-224\,B\,c^3\,d^2\,\mathrm{Sin}\left[\frac{5}{2}\,(e+f\,x)\right]+412\,A\,c^2\,d^3\,\mathrm{Sin}\left[\frac{5}{2}\,(e+f\,x)\right]-$

$409\,B\,c^2\,d^3\,\mathrm{Sin}\left[\frac{5}{2}\,(e+f\,x)\right]+403\,A\,c\,d^4\,\mathrm{Sin}\left[\frac{5}{2}\,(e+f\,x)\right]-286\,B\,c\,d^4\,\mathrm{Sin}\left[\frac{5}{2}\,(e+f\,x)\right]+114\,A\,d^5\,\mathrm{Sin}\left[\frac{5}{2}\,(e+f\,x)\right]-78\,B\,d^5\,\mathrm{Sin}\left[\frac{5}{2}\,(e+f\,x)\right]+$

$15\,B\,c^2\,d^3\,\mathrm{Sin}\left[\frac{7}{2}\,(e+f\,x)\right]-21\,A\,c\,d^4\,\mathrm{Sin}\left[\frac{7}{2}\,(e+f\,x)\right]+12\,B\,c\,d^4\,\mathrm{Sin}\left[\frac{7}{2}\,(e+f\,x)\right]-12\,A\,d^5\,\mathrm{Sin}\left[\frac{7}{2}\,(e+f\,x)\right]+6\,B\,d^5\,\mathrm{Sin}\left[\frac{7}{2}\,(e+f\,x)\right]\Big)$

Problem 280: Result more than twice size of optimal antiderivative.

$$\int \frac{(A+B\,\mathrm{Sin}[e+f\,x])\,(c+d\,\mathrm{Sin}[e+f\,x])^2}{(a+a\,\mathrm{Sin}[e+f\,x])^3}\,dx$$

Optimal (type 3, 164 leaves, 5 steps):

$$\frac{B\,d^2\,x}{a^3}-\frac{(c-d)\,(B\,(3\,c-7\,d)+2\,A\,(c+d))\,\mathrm{Cos}[e+f\,x]}{15\,a\,f\,(a+a\,\mathrm{Sin}[e+f\,x])^2}-\frac{\left(B\,\left(3\,c^2+14\,c\,d-29\,d^2\right)+2\,A\,\left(c^2+3\,c\,d+2\,d^2\right)\right)\,\mathrm{Cos}[e+f\,x]}{15\,f\,\left(a^3+a^3\,\mathrm{Sin}[e+f\,x]\right)}-\frac{(A-B)\,\mathrm{Cos}[e+f\,x]\,(c+d\,\mathrm{Sin}[e+f\,x])^2}{5\,f\,(a+a\,\mathrm{Sin}[e+f\,x])^3}$$

Result (type 3, 514 leaves):

$\frac{1}{60\,a^3\,f\,(1+\mathrm{Sin}[e+f\,x])^3}\left(\mathrm{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)$

$\Big(30\,\left(2\,A\,d\,(c+d)+B\,\left(c^2+4\,c\,d+d^2\,(-9+5\,e+5\,f\,x)\right)\right)\,\mathrm{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]-5\,\left(4\,A\,\left(c^2+3\,c\,d+2\,d^2\right)+B\,\left(6\,c^2+16\,c\,d+d^2\,(-46+15\,e+15\,f\,x)\right)\right)$

$\mathrm{Cos}\left[\frac{3}{2}\,(e+f\,x)\right]-15\,B\,d^2\,e\,\mathrm{Cos}\left[\frac{5}{2}\,(e+f\,x)\right]-15\,B\,d^2\,f\,x\,\mathrm{Cos}\left[\frac{5}{2}\,(e+f\,x)\right]+40\,A\,c^2\,\mathrm{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]+30\,B\,c^2\,\mathrm{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]+$

$60\,A\,c\,d\,\mathrm{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]+160\,B\,c\,d\,\mathrm{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]+80\,A\,d^2\,\mathrm{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]-370\,B\,d^2\,\mathrm{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]+150\,B\,d^2\,e\,\mathrm{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]+$

$150\,B\,d^2\,f\,x\,\mathrm{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]+60\,B\,c\,d\,\mathrm{Sin}\left[\frac{3}{2}\,(e+f\,x)\right]+30\,A\,d^2\,\mathrm{Sin}\left[\frac{3}{2}\,(e+f\,x)\right]-90\,B\,d^2\,\mathrm{Sin}\left[\frac{3}{2}\,(e+f\,x)\right]+$

$75\,B\,d^2\,e\,\mathrm{Sin}\left[\frac{3}{2}\,(e+f\,x)\right]+75\,B\,d^2\,f\,x\,\mathrm{Sin}\left[\frac{3}{2}\,(e+f\,x)\right]-4\,A\,c^2\,\mathrm{Sin}\left[\frac{5}{2}\,(e+f\,x)\right]-6\,B\,c^2\,\mathrm{Sin}\left[\frac{5}{2}\,(e+f\,x)\right]-12\,A\,c\,d\,\mathrm{Sin}\left[\frac{5}{2}\,(e+f\,x)\right]-$

$28\,B\,c\,d\,\mathrm{Sin}\left[\frac{5}{2}\,(e+f\,x)\right]-14\,A\,d^2\,\mathrm{Sin}\left[\frac{5}{2}\,(e+f\,x)\right]+64\,B\,d^2\,\mathrm{Sin}\left[\frac{5}{2}\,(e+f\,x)\right]-15\,B\,d^2\,e\,\mathrm{Sin}\left[\frac{5}{2}\,(e+f\,x)\right]-15\,B\,d^2\,f\,x\,\mathrm{Sin}\left[\frac{5}{2}\,(e+f\,x)\right]\Big)$

Problem 283: Result more than twice size of optimal antiderivative.

$$\int \frac{A + B \sin[e + f x]}{(a + a \sin[e + f x])^3 (c + d \sin[e + f x])} \, dx$$

Optimal (type 3, 229 leaves, 7 steps):

$$\frac{2 d^2 (B c - A d) \operatorname{ArcTan}\left[\frac{d + c \tan\left[\frac{1}{2} (e + f x)\right]}{\sqrt{c^2 - d^2}}\right]}{a^3 (c - d)^3 \sqrt{c^2 - d^2} f} - \frac{(A - B) \cos[e + f x]}{5 (c - d) f (a + a \sin[e + f x])^3} - \frac{(2 A c + 3 B c - 7 A d + 2 B d) \cos[e + f x]}{15 a (c - d)^2 f (a + a \sin[e + f x])^2} - \frac{\left(B \left(3 c^2 - 16 c d - 2 d^2\right) + A \left(2 c^2 - 9 c d + 22 d^2\right)\right) \cos[e + f x]}{15 (c - d)^3 f \left(a^3 + a^3 \sin[e + f x]\right)}$$

Result (type 3, 502 leaves):

$$\frac{1}{30 a^3 (c - d)^3 f (1 + \sin[e + f x])^3} \left(\cos\left[\frac{1}{2} (e + f x)\right] + \sin\left[\frac{1}{2} (e + f x)\right]\right) \left(15 B c^2 \cos\left[\frac{1}{2} (e + f x)\right] - 15 A c d \cos\left[\frac{1}{2} (e + f x)\right] - 75 B c d \cos\left[\frac{1}{2} (e + f x)\right] + 75 A d^2 \cos\left[\frac{1}{2} (e + f x)\right] - 10 A c^2 \cos\left[\frac{3}{2} (e + f x)\right] - 15 B c^2 \cos\left[\frac{3}{2} (e + f x)\right] + 45 A c d \cos\left[\frac{3}{2} (e + f x)\right] + 65 B c d \cos\left[\frac{3}{2} (e + f x)\right] - 95 A d^2 \cos\left[\frac{3}{2} (e + f x)\right] + 10 B d^2 \cos\left[\frac{3}{2} (e + f x)\right] + 20 A c^2 \sin\left[\frac{1}{2} (e + f x)\right] + 15 B c^2 \sin\left[\frac{1}{2} (e + f x)\right] - 75 A c d \sin\left[\frac{1}{2} (e + f x)\right] - 85 B c d \sin\left[\frac{1}{2} (e + f x)\right] + 145 A d^2 \sin\left[\frac{1}{2} (e + f x)\right] - 20 B d^2 \sin\left[\frac{1}{2} (e + f x)\right] - \frac{60 d^2 (-B c + A d) \operatorname{ArcTan}\left[\frac{d + c \tan\left[\frac{1}{2} (e + f x)\right]}{\sqrt{c^2 - d^2}}\right] \left(\cos\left[\frac{1}{2} (e + f x)\right] + \sin\left[\frac{1}{2} (e + f x)\right]\right)^5}{\sqrt{c^2 - d^2}} - 15 B c d \sin\left[\frac{3}{2} (e + f x)\right] + 15 A d^2 \sin\left[\frac{3}{2} (e + f x)\right] - 2 A c^2 \sin\left[\frac{5}{2} (e + f x)\right] - 3 B c^2 \sin\left[\frac{5}{2} (e + f x)\right] + 9 A c d \sin\left[\frac{5}{2} (e + f x)\right] + 16 B c d \sin\left[\frac{5}{2} (e + f x)\right] - 22 A d^2 \sin\left[\frac{5}{2} (e + f x)\right] + 2 B d^2 \sin\left[\frac{5}{2} (e + f x)\right]\right)$$

Problem 284: Result more than twice size of optimal antiderivative.

$$\int \frac{A + B \sin[e + f x]}{(a + a \sin[e + f x])^3 (c + d \sin[e + f x])^2} \, dx$$

Optimal (type 3, 381 leaves, 8 steps) :

$$-\frac{2\,d^2\,\left(A\,d\,(4\,c+3\,d)-B\,\left(3\,c^2+3\,c\,d+d^2\right)\right)\,\text{ArcTan}\left[\frac{d+c\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]}{\sqrt{c^2-d^2}}\right]}{a^3\,(c-d)^4\,(c+d)\,\sqrt{c^2-d^2}\,f}-\frac{d\,\left(B\,\left(3\,c^3-23\,c^2\,d-63\,c\,d^2-22\,d^3\right)+A\,\left(2\,c^3-12\,c^2\,d+43\,c\,d^2+72\,d^3\right)\right)\,\text{Cos}[e+f\,x]}{15\,a^3\,(c-d)^4\,(c+d)\,f\,(c+d\,\text{Sin}[e+f\,x])}-\frac{(A-B)\,\text{Cos}[e+f\,x]}{5\,(c-d)\,f\,(a+a\,\text{Sin}[e+f\,x])^3\,(c+d\,\text{Sin}[e+f\,x])}-\frac{(2\,A\,c+3\,B\,c-9\,A\,d+4\,B\,d)\,\text{Cos}[e+f\,x]}{15\,a\,(c-d)^2\,f\,(a+a\,\text{Sin}[e+f\,x])^2\,(c+d\,\text{Sin}[e+f\,x])}-\frac{\left(B\,\left(3\,c^2-23\,c\,d-15\,d^2\right)+A\,\left(2\,c^2-12\,c\,d+45\,d^2\right)\right)\,\text{Cos}[e+f\,x]}{15\,(c-d)^3\,f\,\left(a^3+a^3\,\text{Sin}[e+f\,x]\right)\,(c+d\,\text{Sin}[e+f\,x])}$$

Result (type 3, 1253 leaves) :

$$\left(2\,d^2\left(3\,B\,c^2-4\,A\,c\,d+3\,B\,c\,d-3\,A\,d^2+B\,d^2\right)\text{ArcTan}\left[\frac{\text{Sec}\left[\frac{1}{2}(e+f\,x)\right]\left(d\,\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]+c\,\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)}{\sqrt{c^2-d^2}}\right]\right.$$

$$\left.\left(\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)^6\right)\Big/\left((c-d)^4\,(c+d)\,\sqrt{c^2-d^2}\,f\,(a+a\,\text{Sin}[e+f\,x])^3\right)+$$

$$\frac{1}{120\,(c-d)^4\,(c+d)\,f\,(a+a\,\text{Sin}[e+f\,x])^3\,(c+d\,\text{Sin}[e+f\,x])}\left(\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)$$

$$\left(60\,B\,c^4\,\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]-80\,A\,c^3\,d\,\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]-390\,B\,c^3\,d\,\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]+540\,A\,c^2\,d^2\,\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]-1090\,B\,c^2\,d^2\,\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]+\right.$$

$$1430\,A\,c\,d^3\,\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]-885\,B\,c\,d^3\,\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]+735\,A\,d^4\,\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]-320\,B\,d^4\,\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]-40\,A\,c^4\,\text{Cos}\left[\frac{3}{2}(e+f\,x)\right]-$$

$$60\,B\,c^4\,\text{Cos}\left[\frac{3}{2}(e+f\,x)\right]+196\,A\,c^3\,d\,\text{Cos}\left[\frac{3}{2}(e+f\,x)\right]+304\,B\,c^3\,d\,\text{Cos}\left[\frac{3}{2}(e+f\,x)\right]-476\,A\,c^2\,d^2\,\text{Cos}\left[\frac{3}{2}(e+f\,x)\right]+1076\,B\,c^2\,d^2\,\text{Cos}\left[\frac{3}{2}(e+f\,x)\right]-$$

$$1546\,A\,c\,d^3\,\text{Cos}\left[\frac{3}{2}(e+f\,x)\right]+1181\,B\,c\,d^3\,\text{Cos}\left[\frac{3}{2}(e+f\,x)\right]-969\,A\,d^4\,\text{Cos}\left[\frac{3}{2}(e+f\,x)\right]+334\,B\,d^4\,\text{Cos}\left[\frac{3}{2}(e+f\,x)\right]+$$

$$60\,B\,c^2\,d^2\,\text{Cos}\left[\frac{5}{2}(e+f\,x)\right]-90\,A\,c\,d^3\,\text{Cos}\left[\frac{5}{2}(e+f\,x)\right]+15\,B\,c\,d^3\,\text{Cos}\left[\frac{5}{2}(e+f\,x)\right]-15\,A\,d^4\,\text{Cos}\left[\frac{5}{2}(e+f\,x)\right]+30\,B\,d^4\,\text{Cos}\left[\frac{5}{2}(e+f\,x)\right]+$$

$$4\,A\,c^3\,d\,\text{Cos}\left[\frac{7}{2}(e+f\,x)\right]+6\,B\,c^3\,d\,\text{Cos}\left[\frac{7}{2}(e+f\,x)\right]-24\,A\,c^2\,d^2\,\text{Cos}\left[\frac{7}{2}(e+f\,x)\right]-46\,B\,c^2\,d^2\,\text{Cos}\left[\frac{7}{2}(e+f\,x)\right]+86\,A\,c\,d^3\,\text{Cos}\left[\frac{7}{2}(e+f\,x)\right]-$$

$$111\,B\,c\,d^3\,\text{Cos}\left[\frac{7}{2}(e+f\,x)\right]+129\,A\,d^4\,\text{Cos}\left[\frac{7}{2}(e+f\,x)\right]-44\,B\,d^4\,\text{Cos}\left[\frac{7}{2}(e+f\,x)\right]+80\,A\,c^4\,\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]+60\,B\,c^4\,\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]-$$

$$340\,A\,c^3\,d\,\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]-440\,B\,c^3\,d\,\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]+820\,A\,c^2\,d^2\,\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]-1520\,B\,c^2\,d^2\,\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]+$$

$$2140\,A\,c\,d^3\,\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]-1435\,B\,c\,d^3\,\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]+975\,A\,d^4\,\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]-340\,B\,d^4\,\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]-90\,B\,c^3\,d\,\text{Sin}\left[\frac{3}{2}(e+f\,x)\right]+$$

$$120\,A\,c^2\,d^2\,\text{Sin}\left[\frac{3}{2}(e+f\,x)\right]-390\,B\,c^2\,d^2\,\text{Sin}\left[\frac{3}{2}(e+f\,x)\right]+540\,A\,c\,d^3\,\text{Sin}\left[\frac{3}{2}(e+f\,x)\right]-315\,B\,c\,d^3\,\text{Sin}\left[\frac{3}{2}(e+f\,x)\right]+$$

$$285\,A\,d^4\,\text{Sin}\left[\frac{3}{2}(e+f\,x)\right]-150\,B\,d^4\,\text{Sin}\left[\frac{3}{2}(e+f\,x)\right]-8\,A\,c^4\,\text{Sin}\left[\frac{5}{2}(e+f\,x)\right]-12\,B\,c^4\,\text{Sin}\left[\frac{5}{2}(e+f\,x)\right]+28\,A\,c^3\,d\,\text{Sin}\left[\frac{5}{2}(e+f\,x)\right]+$$

$$62\,B\,c^3\,d\,\text{Sin}\left[\frac{5}{2}(e+f\,x)\right]-52\,A\,c^2\,d^2\,\text{Sin}\left[\frac{5}{2}(e+f\,x)\right]+362\,B\,c^2\,d^2\,\text{Sin}\left[\frac{5}{2}(e+f\,x)\right]-568\,A\,c\,d^3\,\text{Sin}\left[\frac{5}{2}(e+f\,x)\right]+$$

$$\left.553\,B\,c\,d^3\,\text{Sin}\left[\frac{5}{2}(e+f\,x)\right]-555\,A\,d^4\,\text{Sin}\left[\frac{5}{2}(e+f\,x)\right]+190\,B\,d^4\,\text{Sin}\left[\frac{5}{2}(e+f\,x)\right]-15\,B\,c\,d^3\,\text{Sin}\left[\frac{7}{2}(e+f\,x)\right]+15\,A\,d^4\,\text{Sin}\left[\frac{7}{2}(e+f\,x)\right]\right)$$

- **Problem 290: Result is not expressed in closed-form.**

$$\int\frac{\sqrt{a+a\,\text{Sin}[e+f\,x]}\,(A+B\,\text{Sin}[e+f\,x])}{c+d\,\text{Sin}[e+f\,x]}\,dx$$

Optimal (type 3, 100 leaves, 3 steps):

$$\frac{2\sqrt{a}\,(B c - A d)\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\sqrt{d}\,\text{Cos}[e+f x]}{\sqrt{c+d}\,\sqrt{a+a\,\text{Sin}[e+f x]}}\right]}{d^{3/2}\,\sqrt{c+d}\,f} - \frac{2\,a\,B\,\text{Cos}[e+f x]}{d\,f\,\sqrt{a+a\,\text{Sin}[e+f x]}}$$

Result (type 7, 903 leaves):

$$\frac{1}{d^{3/2}\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)}$$

$$\left(\frac{1}{2}+\frac{i}{2}\right)\left(-\frac{(2-2 i) B \sqrt{d}\, \text{Cos}\left[\frac{f x}{2}\right]\left(\text{Cos}\left[\frac{e}{2}\right]-\text{Sin}\left[\frac{e}{2}\right]\right)}{f}+\frac{1}{\sqrt{c+d}\,(\text{Cos}[e]+i(-1+\text{Sin}[e]))\sqrt{\text{Cos}[e]-i\,\text{Sin}[e]}}\right.$$

$$(-B c+A d)\left(\text{Cos}\left[\frac{e}{2}\right]+i\,\text{Sin}\left[\frac{e}{2}\right]\right)\left((-1+i)\, x\, \text{Cos}[e]+\frac{1}{4 f}\text{RootSum}\left[-d+2 i c\, e^{i e}\, \#1^2+d\, e^{2 i e}\, \#1^4\, \&,\right.\right.$$

$$1/\left(d-i c\, e^{i e}\, \#1^2\right)\left((1+i)\, d \sqrt{e^{-i e}}\, f x-(2-2 i)\, d \sqrt{e^{-i e}}\, \text{Log}\left[e^{\frac{i f x}{2}}-\#1\right]-i \sqrt{d}\, \sqrt{c+d}\, f x\, \#1+2 \sqrt{d}\, \sqrt{c+d}\, \text{Log}\left[e^{\frac{i f x}{2}}-\#1\right] \#1+\right.$$

$$\left.\left.\frac{(1-i)\, c f x\, \#1^2}{\sqrt{e^{-i e}}}+\frac{(2+2 i)\, c\, \text{Log}\left[e^{\frac{i f x}{2}}-\#1\right] \#1^2}{\sqrt{e^{-i e}}}-\sqrt{d}\, \sqrt{c+d}\, e^{i e} f x\, \#1^3-2 i \sqrt{d}\, \sqrt{c+d}\, e^{i e}\, \text{Log}\left[e^{\frac{i f x}{2}}-\#1\right] \#1^3\right)\&\right]$$

$$\left.(\text{Cos}[e]+i(-1+\text{Sin}[e]))\sqrt{\text{Cos}[e]-i\,\text{Sin}[e]}+(1+i)\, x\, \text{Sin}[e]\right)+\frac{1}{\sqrt{c+d}\,(\text{Cos}[e]+i(-1+\text{Sin}[e]))\sqrt{\text{Cos}[e]-i\,\text{Sin}[e]}}$$

$$(-B c+A d)\left(\text{Cos}\left[\frac{e}{2}\right]+i\,\text{Sin}\left[\frac{e}{2}\right]\right)\left((1-i)\, x\, \text{Cos}[e]-(1+i)\, x\, \text{Sin}[e]+\frac{1}{4 f}\text{RootSum}\left[-d+2 i c\, e^{i e}\, \#1^2+d\, e^{2 i e}\, \#1^4\, \&,\right.\right.$$

$$1/\left(d-i c\, e^{i e}\, \#1^2\right)\left((1-i)\, d \sqrt{e^{-i e}}\, f x+(2+2 i)\, d \sqrt{e^{-i e}}\, \text{Log}\left[e^{\frac{i f x}{2}}-\#1\right]+\sqrt{d}\, \sqrt{c+d}\, f x\, \#1+2 i \sqrt{d}\, \sqrt{c+d}\, \text{Log}\left[e^{\frac{i f x}{2}}-\#1\right] \#1-\right.$$

$$\left.\left.\frac{(1+i)\, c f x\, \#1^2}{\sqrt{e^{-i e}}}+\frac{(2-2 i)\, c\, \text{Log}\left[e^{\frac{i f x}{2}}-\#1\right] \#1^2}{\sqrt{e^{-i e}}}-i \sqrt{d}\, \sqrt{c+d}\, e^{i e} f x\, \#1^3+2 \sqrt{d}\, \sqrt{c+d}\, e^{i e}\, \text{Log}\left[e^{\frac{i f x}{2}}-\#1\right] \#1^3\right)\&\right]$$

$$\left.\left.\sqrt{\text{Cos}[e]-i\,\text{Sin}[e]}\,(-1-i\,\text{Cos}[e]+\text{Sin}[e])\right)+\frac{(2-2 i) B \sqrt{d}\left(\text{Cos}\left[\frac{e}{2}\right]+\text{Sin}\left[\frac{e}{2}\right]\right)\text{Sin}\left[\frac{f x}{2}\right]}{f}\right)\sqrt{a(1+\text{Sin}[e+f x])}$$

- **Problem 291: Result is not expressed in closed-form.**

$$\int \frac{\sqrt{a+a\,\text{Sin}[e+f x]}\,(A+B\,\text{Sin}[e+f x])}{(c+d\,\text{Sin}[e+f x])^2}\, dx$$

Optimal (type 3, 126 leaves, 3 steps) :

$$-\frac{\sqrt{a}\,\left(A\,d+B\,(c+2\,d)\right)\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\sqrt{d}\,\text{Cos}[e+f\,x]}{\sqrt{c+d}\,\sqrt{a+a\,\text{Sin}[e+f\,x]}}\right]}{d^{3/2}\,(c+d)^{3/2}\,f}+\frac{a\,(B\,c-A\,d)\,\text{Cos}[e+f\,x]}{d\,(c+d)\,f\,\sqrt{a+a\,\text{Sin}[e+f\,x]}\,\left(c+d\,\text{Sin}[e+f\,x]\right)}$$

Result (type 7, 901 leaves) :

$$\frac{1}{d^{3/2}\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)}$$

$$\left(\frac{1}{4}+\frac{i}{4}\right)\sqrt{a\,(1+\text{Sin}[e+f\,x])}\,\left(\frac{1}{(c+d)^{3/2}\,\left(\text{Cos}[e]+i\,(-1+\text{Sin}[e])\right)\sqrt{\text{Cos}[e]-i\,\text{Sin}[e]}}\,\left(A\,d+B\,(c+2\,d)\right)\,\left(\text{Cos}\left[\frac{e}{2}\right]+i\,\text{Sin}\left[\frac{e}{2}\right]\right)\right.$$

$$\left((-1+i)\,x\,\text{Cos}[e]+\frac{1}{4\,f}\text{RootSum}\left[-d+2\,i\,c\,e^{i\,e}\,\#1^2+d\,e^{2\,i\,e}\,\#1^4\,\&,\,1\Big/\left(d-i\,c\,e^{i\,e}\,\#1^2\right)\left((1+i)\,d\,\sqrt{e^{-i\,e}}\,f\,x-(2-2\,i)\,d\,\sqrt{e^{-i\,e}}\,\text{Log}\left[e^{\frac{i\,f\,x}{2}}-\#1\right]-\right.\right.\right.$$

$$i\,\sqrt{d}\,\sqrt{c+d}\,f\,x\,\#1+2\,\sqrt{d}\,\sqrt{c+d}\,\text{Log}\left[e^{\frac{i\,f\,x}{2}}-\#1\right]\#1+\frac{(1-i)\,c\,f\,x\,\#1^2}{\sqrt{e^{-i\,e}}}+\frac{(2+2\,i)\,c\,\text{Log}\left[e^{\frac{i\,f\,x}{2}}-\#1\right]\#1^2}{\sqrt{e^{-i\,e}}}-\sqrt{d}\,\sqrt{c+d}\,e^{i\,e}\,f\,x\,\#1^3-$$

$$\left.\left.2\,i\,\sqrt{d}\,\sqrt{c+d}\,e^{i\,e}\,\text{Log}\left[e^{\frac{i\,f\,x}{2}}-\#1\right]\#1^3\right)\&\right]\left(\text{Cos}[e]+i\,(-1+\text{Sin}[e])\right)\sqrt{\text{Cos}[e]-i\,\text{Sin}[e]}+(1+i)\,x\,\text{Sin}[e]\right)+$$

$$\frac{1}{(c+d)^{3/2}\,\left(\text{Cos}[e]+i\,(-1+\text{Sin}[e])\right)\sqrt{\text{Cos}[e]-i\,\text{Sin}[e]}}\,\left(A\,d+B\,(c+2\,d)\right)\,\left(\text{Cos}\left[\frac{e}{2}\right]+i\,\text{Sin}\left[\frac{e}{2}\right]\right)$$

$$\left((1-i)\,x\,\text{Cos}[e]-(1+i)\,x\,\text{Sin}[e]+\frac{1}{4\,f}\text{RootSum}\left[-d+2\,i\,c\,e^{i\,e}\,\#1^2+d\,e^{2\,i\,e}\,\#1^4\,\&,\right.\right.$$

$$1\Big/\left(d-i\,c\,e^{i\,e}\,\#1^2\right)\left((1-i)\,d\,\sqrt{e^{-i\,e}}\,f\,x+(2+2\,i)\,d\,\sqrt{e^{-i\,e}}\,\text{Log}\left[e^{\frac{i\,f\,x}{2}}-\#1\right]+\sqrt{d}\,\sqrt{c+d}\,f\,x\,\#1+2\,i\,\sqrt{d}\,\sqrt{c+d}\,\text{Log}\left[e^{\frac{i\,f\,x}{2}}-\#1\right]\#1-\right.$$

$$\left.\left.\frac{(1+i)\,c\,f\,x\,\#1^2}{\sqrt{e^{-i\,e}}}+\frac{(2-2\,i)\,c\,\text{Log}\left[e^{\frac{i\,f\,x}{2}}-\#1\right]\#1^2}{\sqrt{e^{-i\,e}}}-i\,\sqrt{d}\,\sqrt{c+d}\,e^{i\,e}\,f\,x\,\#1^3+2\,\sqrt{d}\,\sqrt{c+d}\,e^{i\,e}\,\text{Log}\left[e^{\frac{i\,f\,x}{2}}-\#1\right]\#1^3\right)\&\right]$$

$$\left.\left.\sqrt{\text{Cos}[e]-i\,\text{Sin}[e]}\,\left(-1-i\,\text{Cos}[e]+\text{Sin}[e]\right)\right)-\frac{(2-2\,i)\,\sqrt{d}\,(-B\,c+A\,d)\,\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)}{(c+d)\,f\,\left(c+d\,\text{Sin}[e+f\,x]\right)}\right)$$

Problem 292: Result is not expressed in closed-form.

$$\int \frac{\sqrt{a + a \operatorname{Sin}[e + f x]}\ (A + B \operatorname{Sin}[e + f x])}{(c + d \operatorname{Sin}[e + f x])^3}\, dx$$

Optimal (type 3, 192 leaves, 4 steps):

$$-\frac{\sqrt{a}\ (3 A d + B (c + 4 d))\ \operatorname{ArcTanh}\left[\frac{\sqrt{a}\ \sqrt{d}\ \operatorname{Cos}[e+f x]}{\sqrt{c+d}\ \sqrt{a+a \operatorname{Sin}[e+f x]}}\right]}{4 d^{3/2}\ (c + d)^{5/2}\ f} + \frac{a\ (B c - A d)\ \operatorname{Cos}[e + f x]}{2 d\ (c + d)\ f \sqrt{a + a \operatorname{Sin}[e + f x]}\ (c + d \operatorname{Sin}[e + f x])^2} - \frac{a\ (3 A d + B\ (c + 4 d))\ \operatorname{Cos}[e + f x]}{4 d\ (c + d)^2\ f \sqrt{a + a \operatorname{Sin}[e + f x]}\ (c + d \operatorname{Sin}[e + f x])}$$

Result (type 7, 967 leaves):

$$\frac{1}{d^{3/2}\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)}$$

$$\left(\frac{1}{16}+\frac{i}{16}\right)\sqrt{a(1+\text{Sin}[e+f x])}\Bigg(\frac{1}{(c+d)^{5/2}(\text{Cos}[e]+i(-1+\text{Sin}[e]))\sqrt{\text{Cos}[e]-i\,\text{Sin}[e]}}(3 A d+B(c+4 d))\left(\text{Cos}\left[\frac{e}{2}\right]+i\,\text{Sin}\left[\frac{e}{2}\right]\right)$$

$$\Bigg((-1+i)\,x\,\text{Cos}[e]+\frac{1}{4 f}\text{RootSum}\Big[-d+2 i c e^{i e}\#1^2+d e^{2 i e}\#1^4\&,1\big/\left(d-i c e^{i e}\#1^2\right)\Big((1+i) d\sqrt{e^{-i e}}\,f x-(2-2 i) d\sqrt{e^{-i e}}\,\text{Log}\left[e^{\frac{i f x}{2}}-\#1\right]-$$

$$i\sqrt{d}\sqrt{c+d}\,f x\#1+2\sqrt{d}\sqrt{c+d}\,\text{Log}\left[e^{\frac{i f x}{2}}-\#1\right]\#1+\frac{(1-i) c f x\#1^2}{\sqrt{e^{-i e}}}+\frac{(2+2 i) c\,\text{Log}\left[e^{\frac{i f x}{2}}-\#1\right]\#1^2}{\sqrt{e^{-i e}}}-\sqrt{d}\sqrt{c+d}\,e^{i e} f x\#1^3-$$

$$2 i\sqrt{d}\sqrt{c+d}\,e^{i e}\,\text{Log}\left[e^{\frac{i f x}{2}}-\#1\right]\#1^3\Big)\&\Big](\text{Cos}[e]+i(-1+\text{Sin}[e]))\sqrt{\text{Cos}[e]-i\,\text{Sin}[e]}+(1+i)\,x\,\text{Sin}[e]\Bigg)+$$

$$\frac{1}{(c+d)^{5/2}(\text{Cos}[e]+i(-1+\text{Sin}[e]))\sqrt{\text{Cos}[e]-i\,\text{Sin}[e]}}(3 A d+B(c+4 d))\left(\text{Cos}\left[\frac{e}{2}\right]+i\,\text{Sin}\left[\frac{e}{2}\right]\right)$$

$$\Bigg((1-i)\,x\,\text{Cos}[e]-(1+i)\,x\,\text{Sin}[e]+\frac{1}{4 f}\text{RootSum}\Big[-d+2 i c e^{i e}\#1^2+d e^{2 i e}\#1^4\&,1\big/\left(d-i c e^{i e}\#1^2\right)\Big((1-i) d\sqrt{e^{-i e}}\,f x+(2+2 i) d$$

$$\sqrt{e^{-i e}}\,\text{Log}\left[e^{\frac{i f x}{2}}-\#1\right]+\sqrt{d}\sqrt{c+d}\,f x\#1+2 i\sqrt{d}\sqrt{c+d}\,\text{Log}\left[e^{\frac{i f x}{2}}-\#1\right]\#1-\frac{(1+i) c f x\#1^2}{\sqrt{e^{-i e}}}+\frac{(2-2 i) c\,\text{Log}\left[e^{\frac{i f x}{2}}-\#1\right]\#1^2}{\sqrt{e^{-i e}}}-$$

$$i\sqrt{d}\sqrt{c+d}\,e^{i e} f x\#1^3+2\sqrt{d}\sqrt{c+d}\,e^{i e}\,\text{Log}\left[e^{\frac{i f x}{2}}-\#1\right]\#1^3\Big)\&\Big]\sqrt{\text{Cos}[e]-i\,\text{Sin}[e]}\,(-1-i\,\text{Cos}[e]+\text{Sin}[e])\Bigg)-$$

$$\frac{(4-4 i)\sqrt{d}\,(-B c+A d)\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)}{(c+d) f\,(c+d\,\text{Sin}[e+f x])^2}-\frac{(2-2 i)\sqrt{d}\,(3 A d+B(c+4 d))\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)}{(c+d)^2 f\,(c+d\,\text{Sin}[e+f x])}\Bigg)$$

- **Problem 293: Result more than twice size of optimal antiderivative.**

$$\int(a+a\,\text{Sin}[e+f x])^{3/2}(A+B\,\text{Sin}[e+f x])(c+d\,\text{Sin}[e+f x])^3\,dx$$

Optimal (type 3, 374 leaves, 6 steps):

$$\frac{4 a^2 (c+d) \left(15 c^2+10 c d+7 d^2\right) \left(11 A (c-17 d) d-3 B \left(c^2-9 c d+56 d^2\right)\right) \text{Cos}[e+f x]}{3465 d^2 f \sqrt{a+a \text{Sin}[e+f x]}}+$$

$$\frac{8 a (5 c-d) (c+d) \left(11 A (c-17 d) d-3 B \left(c^2-9 c d+56 d^2\right)\right) \text{Cos}[e+f x] \sqrt{a+a \text{Sin}[e+f x]}}{3465 d f}+$$

$$\frac{4 (c+d) \left(11 A (c-17 d) d-3 B \left(c^2-9 c d+56 d^2\right)\right) \text{Cos}[e+f x] (a+a \text{Sin}[e+f x])^{3/2}}{1155 f}+$$

$$\frac{2 a^2 \left(11 A (c-17 d) d-3 B \left(c^2-9 c d+56 d^2\right)\right) \text{Cos}[e+f x] (c+d \text{Sin}[e+f x])^3}{693 d^2 f \sqrt{a+a \text{Sin}[e+f x]}}+$$

$$\frac{2 a^2 (3 B (c-4 d)-11 A d) \text{Cos}[e+f x] (c+d \text{Sin}[e+f x])^4}{99 d^2 f \sqrt{a+a \text{Sin}[e+f x]}}-\frac{2 a B \text{Cos}[e+f x] \sqrt{a+a \text{Sin}[e+f x]} (c+d \text{Sin}[e+f x])^4}{11 d f}$$

Result (type 3, 1101 leaves) :

$$\frac{1}{55440 f \left(\cos\left[\frac{1}{2}(e+f x)\right]+\sin\left[\frac{1}{2}(e+f x)\right]\right)^3}$$

$$(a (1+\sin[e+f x]))^{3/2} \left(-166320 A c^3 \cos\left[\frac{1}{2}(e+f x)\right]-110880 B c^3 \cos\left[\frac{1}{2}(e+f x)\right]-332640 A c^2 d \cos\left[\frac{1}{2}(e+f x)\right]-\right.$$
$$291060 B c^2 d \cos\left[\frac{1}{2}(e+f x)\right]-291060 A c d^2 \cos\left[\frac{1}{2}(e+f x)\right]-249480 B c d^2 \cos\left[\frac{1}{2}(e+f x)\right]-83160 A d^3 \cos\left[\frac{1}{2}(e+f x)\right]-$$
$$76230 B d^3 \cos\left[\frac{1}{2}(e+f x)\right]-18480 A c^3 \cos\left[\frac{3}{2}(e+f x)\right]-27720 B c^3 \cos\left[\frac{3}{2}(e+f x)\right]-83160 A c^2 d \cos\left[\frac{3}{2}(e+f x)\right]-$$
$$69300 B c^2 d \cos\left[\frac{3}{2}(e+f x)\right]-69300 A c d^2 \cos\left[\frac{3}{2}(e+f x)\right]-69300 B c d^2 \cos\left[\frac{3}{2}(e+f x)\right]-23100 A d^3 \cos\left[\frac{3}{2}(e+f x)\right]-$$
$$20790 B d^3 \cos\left[\frac{3}{2}(e+f x)\right]+5544 B c^3 \cos\left[\frac{5}{2}(e+f x)\right]+16632 A c^2 d \cos\left[\frac{5}{2}(e+f x)\right]+24948 B c^2 d \cos\left[\frac{5}{2}(e+f x)\right]+$$
$$24948 A c d^2 \cos\left[\frac{5}{2}(e+f x)\right]+24948 B c d^2 \cos\left[\frac{5}{2}(e+f x)\right]+8316 A d^3 \cos\left[\frac{5}{2}(e+f x)\right]+9009 B d^3 \cos\left[\frac{5}{2}(e+f x)\right]+$$
$$5940 B c^2 d \cos\left[\frac{7}{2}(e+f x)\right]+5940 A c d^2 \cos\left[\frac{7}{2}(e+f x)\right]+8910 B c d^2 \cos\left[\frac{7}{2}(e+f x)\right]+2970 A d^3 \cos\left[\frac{7}{2}(e+f x)\right]+$$
$$3465 B d^3 \cos\left[\frac{7}{2}(e+f x)\right]-2310 B c d^2 \cos\left[\frac{9}{2}(e+f x)\right]-770 A d^3 \cos\left[\frac{9}{2}(e+f x)\right]-1155 B d^3 \cos\left[\frac{9}{2}(e+f x)\right]-$$
$$315 B d^3 \cos\left[\frac{11}{2}(e+f x)\right]+166320 A c^3 \sin\left[\frac{1}{2}(e+f x)\right]+110880 B c^3 \sin\left[\frac{1}{2}(e+f x)\right]+332640 A c^2 d \sin\left[\frac{1}{2}(e+f x)\right]+$$
$$291060 B c^2 d \sin\left[\frac{1}{2}(e+f x)\right]+291060 A c d^2 \sin\left[\frac{1}{2}(e+f x)\right]+249480 B c d^2 \sin\left[\frac{1}{2}(e+f x)\right]+83160 A d^3 \sin\left[\frac{1}{2}(e+f x)\right]+$$
$$76230 B d^3 \sin\left[\frac{1}{2}(e+f x)\right]-18480 A c^3 \sin\left[\frac{3}{2}(e+f x)\right]-27720 B c^3 \sin\left[\frac{3}{2}(e+f x)\right]-83160 A c^2 d \sin\left[\frac{3}{2}(e+f x)\right]-$$
$$69300 B c^2 d \sin\left[\frac{3}{2}(e+f x)\right]-69300 A c d^2 \sin\left[\frac{3}{2}(e+f x)\right]-69300 B c d^2 \sin\left[\frac{3}{2}(e+f x)\right]-23100 A d^3 \sin\left[\frac{3}{2}(e+f x)\right]-$$
$$20790 B d^3 \sin\left[\frac{3}{2}(e+f x)\right]-5544 B c^3 \sin\left[\frac{5}{2}(e+f x)\right]-16632 A c^2 d \sin\left[\frac{5}{2}(e+f x)\right]-24948 B c^2 d \sin\left[\frac{5}{2}(e+f x)\right]-$$
$$24948 A c d^2 \sin\left[\frac{5}{2}(e+f x)\right]-24948 B c d^2 \sin\left[\frac{5}{2}(e+f x)\right]-8316 A d^3 \sin\left[\frac{5}{2}(e+f x)\right]-9009 B d^3 \sin\left[\frac{5}{2}(e+f x)\right]+$$
$$5940 B c^2 d \sin\left[\frac{7}{2}(e+f x)\right]+5940 A c d^2 \sin\left[\frac{7}{2}(e+f x)\right]+8910 B c d^2 \sin\left[\frac{7}{2}(e+f x)\right]+2970 A d^3 \sin\left[\frac{7}{2}(e+f x)\right]+$$
$$\left.3465 B d^3 \sin\left[\frac{7}{2}(e+f x)\right]+2310 B c d^2 \sin\left[\frac{9}{2}(e+f x)\right]+770 A d^3 \sin\left[\frac{9}{2}(e+f x)\right]+1155 B d^3 \sin\left[\frac{9}{2}(e+f x)\right]-315 B d^3 \sin\left[\frac{11}{2}(e+f x)\right]\right)$$

- **Problem 297: Result more than twice size of optimal antiderivative.**

$$\int \frac{(a+a \sin[e+f x])^{3/2} (A+B \sin[e+f x])}{c+d \sin[e+f x]} \, dx$$

Optimal (type 3, 153 leaves, 4 steps) :

$$-\frac{2\,a^{3/2}\,(c-d)\,(B\,c-A\,d)\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\sqrt{d}\,\text{Cos}[e+f\,x]}{\sqrt{c+d}\,\sqrt{a+a\,\text{Sin}[e+f\,x]}}\right]}{d^{5/2}\,\sqrt{c+d}\,f}+\frac{2\,a^2\,(3\,B\,c-3\,A\,d-4\,B\,d)\,\text{Cos}[e+f\,x]}{3\,d^2\,f\,\sqrt{a+a\,\text{Sin}[e+f\,x]}}-\frac{2\,a\,B\,\text{Cos}[e+f\,x]\,\sqrt{a+a\,\text{Sin}[e+f\,x]}}{3\,d\,f}$$

Result (type 3, 356 leaves) :

$$\frac{1}{6\,d^{5/2}\,f\,\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^3}\,(a\,(1+\text{Sin}[e+f\,x]))^{3/2}$$
$$\left(-6\,\sqrt{d}\,(-2\,B\,c+2\,A\,d+3\,B\,d)\,\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]-2\,B\,d^{3/2}\,\text{Cos}\left[\frac{3}{2}\,(e+f\,x)\right]-\frac{1}{\sqrt{c+d}}3\,(c-d)\,(B\,c-A\,d)\,\left(e+f\,x-2\,\text{Log}\left[\text{Sec}\left[\frac{1}{4}\,(e+f\,x)\right]^2\right]+\right.\right.$$
$$\left.\left.2\,\text{Log}\left[-\text{Sec}\left[\frac{1}{4}\,(e+f\,x)\right]^2\,\left(c+d+\sqrt{d}\,\sqrt{c+d}\,\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]-\sqrt{d}\,\sqrt{c+d}\,\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)\right]\right)+\frac{1}{\sqrt{c+d}}3\,(c-d)\,(B\,c-A\,d)$$
$$\left(e+f\,x-2\,\text{Log}\left[\text{Sec}\left[\frac{1}{4}\,(e+f\,x)\right]^2\right]+2\,\text{Log}\left[(c+d)\,\text{Sec}\left[\frac{1}{4}\,(e+f\,x)\right]^2+\sqrt{d}\,\sqrt{c+d}\,\left(-1+2\,\text{Tan}\left[\frac{1}{4}\,(e+f\,x)\right]+\text{Tan}\left[\frac{1}{4}\,(e+f\,x)\right]^2\right)\right]\right)+$$
$$\left.6\,\sqrt{d}\,(-2\,B\,c+2\,A\,d+3\,B\,d)\,\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]-2\,B\,d^{3/2}\,\text{Sin}\left[\frac{3}{2}\,(e+f\,x)\right]\right)$$

- **Problem 300: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int (a+a\,\text{Sin}[e+f\,x])^{5/2}\,(A+B\,\text{Sin}[e+f\,x])\,(c+d\,\text{Sin}[e+f\,x])^3\,dx$$

Optimal (type 3, 534 leaves, 7 steps) :

$$-\left(4\,a^3\,(c+d)\,\left(15\,c^2+10\,c\,d+7\,d^2\right)\,\left(13\,A\,d\,\left(3\,c^2-38\,c\,d+355\,d^2\right)-B\,\left(15\,c^3-150\,c^2\,d+799\,c\,d^2-4184\,d^3\right)\right)\,\text{Cos}[e+f\,x]\right)\Big/$$
$$\left(45045\,d^3\,f\,\sqrt{a+a\,\text{Sin}[e+f\,x]}\right)-\frac{1}{45045\,d^2\,f}$$
$$8\,a^2\,(5\,c-d)\,(c+d)\,\left(13\,A\,d\,\left(3\,c^2-38\,c\,d+355\,d^2\right)-B\,\left(15\,c^3-150\,c^2\,d+799\,c\,d^2-4184\,d^3\right)\right)\,\text{Cos}[e+f\,x]\,\sqrt{a+a\,\text{Sin}[e+f\,x]}-$$
$$\frac{1}{15015\,d\,f}4\,a\,(c+d)\,\left(13\,A\,d\,\left(3\,c^2-38\,c\,d+355\,d^2\right)-B\,\left(15\,c^3-150\,c^2\,d+799\,c\,d^2-4184\,d^3\right)\right)\,\text{Cos}[e+f\,x]\,(a+a\,\text{Sin}[e+f\,x])^{3/2}-$$
$$\left(2\,a^3\,\left(13\,A\,d\,\left(3\,c^2-38\,c\,d+355\,d^2\right)-B\,\left(15\,c^3-150\,c^2\,d+799\,c\,d^2-4184\,d^3\right)\right)\,\text{Cos}[e+f\,x]\,(c+d\,\text{Sin}[e+f\,x])^3\right)\Big/\left(9009\,d^3\,f\,\sqrt{a+a\,\text{Sin}[e+f\,x]}\right)-$$
$$\frac{2\,a^3\,\left(15\,B\,c^2-39\,A\,c\,d-75\,B\,c\,d+299\,A\,d^2+280\,B\,d^2\right)\,\text{Cos}[e+f\,x]\,(c+d\,\text{Sin}[e+f\,x])^4}{1287\,d^3\,f\,\sqrt{a+a\,\text{Sin}[e+f\,x]}}+$$
$$\frac{2\,a^2\,(5\,B\,c-13\,A\,d-16\,B\,d)\,\text{Cos}[e+f\,x]\,\sqrt{a+a\,\text{Sin}[e+f\,x]}\,(c+d\,\text{Sin}[e+f\,x])^4}{143\,d^2\,f}-\frac{2\,a\,B\,\text{Cos}[e+f\,x]\,(a+a\,\text{Sin}[e+f\,x])^{3/2}\,(c+d\,\text{Sin}[e+f\,x])^4}{13\,d\,f}$$

Result (type 3, 1565 leaves) :

$$\frac{B\,d^3\,\text{Cos}\left[\frac{13}{2}\,(e+f\,x)\right]\,(a\,(1+\text{Sin}[e+f\,x]))^{5/2}}{416\,f\,\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^5}+$$

$$\left(\left(40\,A\,c^3+30\,B\,c^3+90\,A\,c^2\,d+78\,B\,c^2\,d+78\,A\,c\,d^2+69\,B\,c\,d^2+23\,A\,d^3+21\,B\,d^3\right)\left(\left(-\frac{1}{16}-\frac{i}{16}\right)\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\left(\frac{1}{16}-\frac{i}{16}\right)\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)\right.$$
$$\left.(a\,(1+\text{Sin}[e+f\,x]))^{5/2}\right)\Big/\left(f\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^5\right)+$$

$$\left(\left(40\,A\,c^3+30\,B\,c^3+90\,A\,c^2\,d+78\,B\,c^2\,d+78\,A\,c\,d^2+69\,B\,c\,d^2+23\,A\,d^3+21\,B\,d^3\right)\left(\left(-\frac{1}{16}+\frac{i}{16}\right)\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\left(\frac{1}{16}+\frac{i}{16}\right)\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)\right.$$
$$\left.(a\,(1+\text{Sin}[e+f\,x]))^{5/2}\right)\Big/\left(f\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^5\right)+$$

$$\left(\left(80\,A\,c^3+88\,B\,c^3+264\,A\,c^2\,d+240\,B\,c^2\,d+240\,A\,c\,d^2+228\,B\,c\,d^2+76\,A\,d^3+71\,B\,d^3\right)(a\,(1+\text{Sin}[e+f\,x]))^{5/2}\right.$$
$$\left.\left(\left(-\frac{1}{192}+\frac{i}{192}\right)\text{Cos}\left[\frac{3}{2}\,(e+f\,x)\right]-\left(\frac{1}{192}+\frac{i}{192}\right)\text{Sin}\left[\frac{3}{2}\,(e+f\,x)\right]\right)\right)\Big/\left(f\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^5\right)+$$

$$\left(\left(80\,A\,c^3+88\,B\,c^3+264\,A\,c^2\,d+240\,B\,c^2\,d+240\,A\,c\,d^2+228\,B\,c\,d^2+76\,A\,d^3+71\,B\,d^3\right)(a\,(1+\text{Sin}[e+f\,x]))^{5/2}\right.$$
$$\left.\left(\left(-\frac{1}{192}-\frac{i}{192}\right)\text{Cos}\left[\frac{3}{2}\,(e+f\,x)\right]-\left(\frac{1}{192}-\frac{i}{192}\right)\text{Sin}\left[\frac{3}{2}\,(e+f\,x)\right]\right)\right)\Big/\left(f\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^5\right)+$$

$$\left(\left(16\,A\,c^3+40\,B\,c^3+120\,A\,c^2\,d+144\,B\,c^2\,d+144\,A\,c\,d^2+150\,B\,c\,d^2+50\,A\,d^3+51\,B\,d^3\right)(a\,(1+\text{Sin}[e+f\,x]))^{5/2}\right.$$
$$\left.\left(\left(\frac{1}{320}-\frac{i}{320}\right)\text{Cos}\left[\frac{5}{2}\,(e+f\,x)\right]-\left(\frac{1}{320}+\frac{i}{320}\right)\text{Sin}\left[\frac{5}{2}\,(e+f\,x)\right]\right)\right)\Big/\left(f\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^5\right)+$$

$$\left(\left(16\,A\,c^3+40\,B\,c^3+120\,A\,c^2\,d+144\,B\,c^2\,d+144\,A\,c\,d^2+150\,B\,c\,d^2+50\,A\,d^3+51\,B\,d^3\right)(a\,(1+\text{Sin}[e+f\,x]))^{5/2}\right.$$
$$\left.\left(\left(\frac{1}{320}+\frac{i}{320}\right)\text{Cos}\left[\frac{5}{2}\,(e+f\,x)\right]-\left(\frac{1}{320}-\frac{i}{320}\right)\text{Sin}\left[\frac{5}{2}\,(e+f\,x)\right]\right)\right)\Big/\left(f\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^5\right)+$$

$$\left(\left(4\,B\,c^3+12\,A\,c^2\,d+30\,B\,c^2\,d+30\,A\,c\,d^2+39\,B\,c\,d^2+13\,A\,d^3+15\,B\,d^3\right)(a\,(1+\text{Sin}[e+f\,x]))^{5/2}\right.$$
$$\left.\left(\left(\frac{1}{224}+\frac{i}{224}\right)\text{Cos}\left[\frac{7}{2}\,(e+f\,x)\right]+\left(\frac{1}{224}-\frac{i}{224}\right)\text{Sin}\left[\frac{7}{2}\,(e+f\,x)\right]\right)\right)\Big/\left(f\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^5\right)+$$

$$\left(\left(4\,B\,c^3+12\,A\,c^2\,d+30\,B\,c^2\,d+30\,A\,c\,d^2+39\,B\,c\,d^2+13\,A\,d^3+15\,B\,d^3\right)(a\,(1+\text{Sin}[e+f\,x]))^{5/2}\right.$$
$$\left.\left(\left(\frac{1}{224}-\frac{i}{224}\right)\text{Cos}\left[\frac{7}{2}\,(e+f\,x)\right]+\left(\frac{1}{224}+\frac{i}{224}\right)\text{Sin}\left[\frac{7}{2}\,(e+f\,x)\right]\right)\right)\Big/\left(f\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^5\right)+$$

$$\left(\left(6\,B\,c^2+6\,A\,c\,d+15\,B\,c\,d+5\,A\,d^2+7\,B\,d^2\right)\,\left(a\,\left(1+\text{Sin}[e+f\,x]\right)\right)^{5/2}\,\left(\left(-\frac{1}{288}-\frac{i}{288}\right)\,d\,\text{Cos}\left[\frac{9}{2}\,(e+f\,x)\right]+\left(\frac{1}{288}-\frac{i}{288}\right)\,d\,\text{Sin}\left[\frac{9}{2}\,(e+f\,x)\right]\right)\right)\Big/$$
$$\left(f\,\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^5\right)+$$
$$\left(\left(6\,B\,c^2+6\,A\,c\,d+15\,B\,c\,d+5\,A\,d^2+7\,B\,d^2\right)\,\left(a\,\left(1+\text{Sin}[e+f\,x]\right)\right)^{5/2}\,\left(\left(-\frac{1}{288}+\frac{i}{288}\right)\,d\,\text{Cos}\left[\frac{9}{2}\,(e+f\,x)\right]+\left(\frac{1}{288}+\frac{i}{288}\right)\,d\,\text{Sin}\left[\frac{9}{2}\,(e+f\,x)\right]\right)\right)\Big/$$
$$\left(f\,\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^5\right)+$$
$$\left(\left(6\,B\,c+2\,A\,d+5\,B\,d\right)\,\left(a\,\left(1+\text{Sin}[e+f\,x]\right)\right)^{5/2}\,\left(\left(-\frac{1}{704}+\frac{i}{704}\right)\,d^2\,\text{Cos}\left[\frac{11}{2}\,(e+f\,x)\right]-\left(\frac{1}{704}+\frac{i}{704}\right)\,d^2\,\text{Sin}\left[\frac{11}{2}\,(e+f\,x)\right]\right)\right)\Big/$$
$$\left(f\,\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^5\right)+$$
$$\left(\left(6\,B\,c+2\,A\,d+5\,B\,d\right)\,\left(a\,\left(1+\text{Sin}[e+f\,x]\right)\right)^{5/2}\,\left(\left(-\frac{1}{704}-\frac{i}{704}\right)\,d^2\,\text{Cos}\left[\frac{11}{2}\,(e+f\,x)\right]-\left(\frac{1}{704}-\frac{i}{704}\right)\,d^2\,\text{Sin}\left[\frac{11}{2}\,(e+f\,x)\right]\right)\right)\Big/$$
$$\left(f\,\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^5\right)-\frac{B\,d^3\,\left(a\,\left(1+\text{Sin}[e+f\,x]\right)\right)^{5/2}\,\text{Sin}\left[\frac{13}{2}\,(e+f\,x)\right]}{416\,f\,\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^5}$$

- **Problem 301: Result more than twice size of optimal antiderivative.**

$$\int (a+a\,\text{Sin}[e+f\,x])^{5/2}\,(A+B\,\text{Sin}[e+f\,x])\,(c+d\,\text{Sin}[e+f\,x])^2\,dx$$

Optimal (type 3, 429 leaves, 6 steps):

$$-\frac{2\,a^3\,\left(15\,c^2+10\,c\,d+7\,d^2\right)\,\left(11\,A\,d\,\left(c^2-10\,c\,d+73\,d^2\right)-B\,\left(5\,c^3-40\,c^2\,d+169\,c\,d^2-710\,d^3\right)\right)\,\text{Cos}[e+f\,x]}{3465\,d^3\,f\,\sqrt{a+a\,\text{Sin}[e+f\,x]}}-$$
$$\frac{1}{3465\,d^2\,f}4\,a^2\,(5\,c-d)\,\left(11\,A\,d\,\left(c^2-10\,c\,d+73\,d^2\right)-B\,\left(5\,c^3-40\,c^2\,d+169\,c\,d^2-710\,d^3\right)\right)\,\text{Cos}[e+f\,x]\,\sqrt{a+a\,\text{Sin}[e+f\,x]}-$$
$$\frac{2\,a\,\left(11\,A\,d\,\left(c^2-10\,c\,d+73\,d^2\right)-B\,\left(5\,c^3-40\,c^2\,d+169\,c\,d^2-710\,d^3\right)\right)\,\text{Cos}[e+f\,x]\,(a+a\,\text{Sin}[e+f\,x])^{3/2}}{1155\,d\,f}+$$
$$\frac{2\,a^3\,\left(11\,A\,(3\,c-19\,d)\,d-B\,\left(15\,c^2-65\,c\,d+194\,d^2\right)\right)\,\text{Cos}[e+f\,x]\,(c+d\,\text{Sin}[e+f\,x])^3}{693\,d^3\,f\,\sqrt{a+a\,\text{Sin}[e+f\,x]}}+$$
$$\frac{2\,a^2\,(5\,B\,c-11\,A\,d-14\,B\,d)\,\text{Cos}[e+f\,x]\,\sqrt{a+a\,\text{Sin}[e+f\,x]}\,(c+d\,\text{Sin}[e+f\,x])^3}{99\,d^2\,f}-\frac{2\,a\,B\,\text{Cos}[e+f\,x]\,(a+a\,\text{Sin}[e+f\,x])^{3/2}\,(c+d\,\text{Sin}[e+f\,x])^3}{11\,d\,f}$$

Result (type 3, 891 leaves):

$$\frac{1}{55440\, f \left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^5}$$

$$(a (1+\text{Sin}[e+f x]))^{5/2} \left(-277200 A c^2 \text{Cos}\left[\frac{1}{2}(e+f x)\right]-207900 B c^2 \text{Cos}\left[\frac{1}{2}(e+f x)\right]-415800 A c d \text{Cos}\left[\frac{1}{2}(e+f x)\right]-\right.$$
$$360360 B c d \text{Cos}\left[\frac{1}{2}(e+f x)\right]-180180 A d^2 \text{Cos}\left[\frac{1}{2}(e+f x)\right]-159390 B d^2 \text{Cos}\left[\frac{1}{2}(e+f x)\right]-46200 A c^2 \text{Cos}\left[\frac{3}{2}(e+f x)\right]-$$
$$50820 B c^2 \text{Cos}\left[\frac{3}{2}(e+f x)\right]-101640 A c d \text{Cos}\left[\frac{3}{2}(e+f x)\right]-92400 B c d \text{Cos}\left[\frac{3}{2}(e+f x)\right]-46200 A d^2 \text{Cos}\left[\frac{3}{2}(e+f x)\right]-$$
$$43890 B d^2 \text{Cos}\left[\frac{3}{2}(e+f x)\right]+5544 A c^2 \text{Cos}\left[\frac{5}{2}(e+f x)\right]+13860 B c^2 \text{Cos}\left[\frac{5}{2}(e+f x)\right]+27720 A c d \text{Cos}\left[\frac{5}{2}(e+f x)\right]+$$
$$33264 B c d \text{Cos}\left[\frac{5}{2}(e+f x)\right]+16632 A d^2 \text{Cos}\left[\frac{5}{2}(e+f x)\right]+17325 B d^2 \text{Cos}\left[\frac{5}{2}(e+f x)\right]+1980 B c^2 \text{Cos}\left[\frac{7}{2}(e+f x)\right]+$$
$$3960 A c d \text{Cos}\left[\frac{7}{2}(e+f x)\right]+9900 B c d \text{Cos}\left[\frac{7}{2}(e+f x)\right]+4950 A d^2 \text{Cos}\left[\frac{7}{2}(e+f x)\right]+6435 B d^2 \text{Cos}\left[\frac{7}{2}(e+f x)\right]-1540 B c d \text{Cos}\left[\frac{9}{2}(e+f x)\right]-$$
$$770 A d^2 \text{Cos}\left[\frac{9}{2}(e+f x)\right]-1925 B d^2 \text{Cos}\left[\frac{9}{2}(e+f x)\right]-315 B d^2 \text{Cos}\left[\frac{11}{2}(e+f x)\right]+277200 A c^2 \text{Sin}\left[\frac{1}{2}(e+f x)\right]+$$
$$207900 B c^2 \text{Sin}\left[\frac{1}{2}(e+f x)\right]+415800 A c d \text{Sin}\left[\frac{1}{2}(e+f x)\right]+360360 B c d \text{Sin}\left[\frac{1}{2}(e+f x)\right]+180180 A d^2 \text{Sin}\left[\frac{1}{2}(e+f x)\right]+$$
$$159390 B d^2 \text{Sin}\left[\frac{1}{2}(e+f x)\right]-46200 A c^2 \text{Sin}\left[\frac{3}{2}(e+f x)\right]-50820 B c^2 \text{Sin}\left[\frac{3}{2}(e+f x)\right]-101640 A c d \text{Sin}\left[\frac{3}{2}(e+f x)\right]-$$
$$92400 B c d \text{Sin}\left[\frac{3}{2}(e+f x)\right]-46200 A d^2 \text{Sin}\left[\frac{3}{2}(e+f x)\right]-43890 B d^2 \text{Sin}\left[\frac{3}{2}(e+f x)\right]-5544 A c^2 \text{Sin}\left[\frac{5}{2}(e+f x)\right]-$$
$$13860 B c^2 \text{Sin}\left[\frac{5}{2}(e+f x)\right]-27720 A c d \text{Sin}\left[\frac{5}{2}(e+f x)\right]-33264 B c d \text{Sin}\left[\frac{5}{2}(e+f x)\right]-16632 A d^2 \text{Sin}\left[\frac{5}{2}(e+f x)\right]-$$
$$17325 B d^2 \text{Sin}\left[\frac{5}{2}(e+f x)\right]+1980 B c^2 \text{Sin}\left[\frac{7}{2}(e+f x)\right]+3960 A c d \text{Sin}\left[\frac{7}{2}(e+f x)\right]+9900 B c d \text{Sin}\left[\frac{7}{2}(e+f x)\right]+4950 A d^2 \text{Sin}\left[\frac{7}{2}(e+f x)\right]+$$
$$\left.6435 B d^2 \text{Sin}\left[\frac{7}{2}(e+f x)\right]+1540 B c d \text{Sin}\left[\frac{9}{2}(e+f x)\right]+770 A d^2 \text{Sin}\left[\frac{9}{2}(e+f x)\right]+1925 B d^2 \text{Sin}\left[\frac{9}{2}(e+f x)\right]-315 B d^2 \text{Sin}\left[\frac{11}{2}(e+f x)\right]\right)$$

- **Problem 302: Result more than twice size of optimal antiderivative.**

$$\int (a+a \text{Sin}[e+f x])^{5/2} (A+B \text{Sin}[e+f x]) (c+d \text{Sin}[e+f x]) \, dx$$

Optimal (type 3, 212 leaves, 6 steps):

$$-\frac{64 a^3 (21 A c+15 B c+15 A d+13 B d) \text{Cos}[e+f x]}{315 f \sqrt{a+a \text{Sin}[e+f x]}}-\frac{16 a^2 (21 A c+15 B c+15 A d+13 B d) \text{Cos}[e+f x] \sqrt{a+a \text{Sin}[e+f x]}}{315 f}-\frac{2 a (21 A c+15 B c+15 A d+13 B d) \text{Cos}[e+f x] (a+a \text{Sin}[e+f x])^{3/2}}{105 f}-\frac{2 (9 B c+9 A d-2 B d) \text{Cos}[e+f x] (a+a \text{Sin}[e+f x])^{5/2}}{63 f}-\frac{2 B d \text{Cos}[e+f x] (a+a \text{Sin}[e+f x])^{7/2}}{9 a f}$$

Result (type 3, 673 leaves):

$$-\frac{(20 A c+15 B c+15 A d+13 B d) \text{Cos}\left[\frac{1}{2} (e+f x)\right] (a (1+\text{Sin}[e+f x]))^{5/2}}{4 f \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]+\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^5}-\frac{(10 A c+11 B c+11 A d+10 B d) \text{Cos}\left[\frac{3}{2} (e+f x)\right] (a (1+\text{Sin}[e+f x]))^{5/2}}{12 f \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]+\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^5}+\frac{(2 A c+5 B c+5 A d+6 B d) \text{Cos}\left[\frac{5}{2} (e+f x)\right] (a (1+\text{Sin}[e+f x]))^{5/2}}{20 f \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]+\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^5}+\frac{(2 B c+2 A d+5 B d) \text{Cos}\left[\frac{7}{2} (e+f x)\right] (a (1+\text{Sin}[e+f x]))^{5/2}}{56 f \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]+\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^5}-\frac{B d \text{Cos}\left[\frac{9}{2} (e+f x)\right] (a (1+\text{Sin}[e+f x]))^{5/2}}{72 f \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]+\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^5}+\frac{(20 A c+15 B c+15 A d+13 B d) \text{Sin}\left[\frac{1}{2} (e+f x)\right] (a (1+\text{Sin}[e+f x]))^{5/2}}{4 f \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]+\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^5}-\frac{(10 A c+11 B c+11 A d+10 B d) (a (1+\text{Sin}[e+f x]))^{5/2} \text{Sin}\left[\frac{3}{2} (e+f x)\right]}{12 f \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]+\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^5}-\frac{(2 A c+5 B c+5 A d+6 B d) (a (1+\text{Sin}[e+f x]))^{5/2} \text{Sin}\left[\frac{5}{2} (e+f x)\right]}{20 f \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]+\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^5}+\frac{(2 B c+2 A d+5 B d) (a (1+\text{Sin}[e+f x]))^{5/2} \text{Sin}\left[\frac{7}{2} (e+f x)\right]}{56 f \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]+\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^5}+\frac{B d (a (1+\text{Sin}[e+f x]))^{5/2} \text{Sin}\left[\frac{9}{2} (e+f x)\right]}{72 f \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]+\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^5}$$

- **Problem 304: Result more than twice size of optimal antiderivative.**

$$\int \frac{(a+a \text{Sin}[e+f x])^{5/2} (A+B \text{Sin}[e+f x])}{c+d \text{Sin}[e+f x]} \, dx$$

Optimal (type 3, 218 leaves, 5 steps):

$$\frac{2 a^{5/2} (c-d)^2 (B c-A d) \text{ArcTanh}\left[\frac{\sqrt{a} \sqrt{d} \text{Cos}[e+f x]}{\sqrt{c+d} \sqrt{a+a \text{Sin}[e+f x]}}\right]}{d^{7/2} \sqrt{c+d} f}+\frac{2 a^3 \left(5 A (3 c-7 d) d-B \left(15 c^2-35 c d+32 d^2\right)\right) \text{Cos}[e+f x]}{15 d^3 f \sqrt{a+a \text{Sin}[e+f x]}}+\frac{2 a^2 (5 B c-5 A d-8 B d) \text{Cos}[e+f x] \sqrt{a+a \text{Sin}[e+f x]}}{15 d^2 f}-\frac{2 a B \text{Cos}[e+f x] (a+a \text{Sin}[e+f x])^{3/2}}{5 d f}$$

Result (type 3, 450 leaves):

$$\frac{1}{30\,d^{7/2}\,f\,\left(\operatorname{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\operatorname{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^5}$$
$$(a\,(1+\operatorname{Sin}[e+f\,x]))^{5/2}\left(-30\,\sqrt{d}\,\left(A\,d\,(-2\,c+5\,d)+B\,\left(2\,c^2-5\,c\,d+5\,d^2\right)\right)\operatorname{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]-5\,d^{3/2}\,(-2\,B\,c+2\,A\,d+5\,B\,d)\operatorname{Cos}\left[\frac{3}{2}\,(e+f\,x)\right]+\right.$$
$$3\,B\,d^{5/2}\operatorname{Cos}\left[\frac{5}{2}\,(e+f\,x)\right]+\frac{1}{\sqrt{c+d}}15\,(c-d)^2\,(B\,c-A\,d)\,\left(e+f\,x-2\operatorname{Log}\left[\operatorname{Sec}\left[\frac{1}{4}\,(e+f\,x)\right]^2\right]+\right.$$
$$\left.\left.2\operatorname{Log}\left[-\operatorname{Sec}\left[\frac{1}{4}\,(e+f\,x)\right]^2\left(c+d+\sqrt{d}\,\sqrt{c+d}\operatorname{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]-\sqrt{d}\,\sqrt{c+d}\operatorname{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)\right]\right)-\frac{1}{\sqrt{c+d}}15\,(c-d)^2\,(B\,c-A\,d)$$
$$\left(e+f\,x-2\operatorname{Log}\left[\operatorname{Sec}\left[\frac{1}{4}\,(e+f\,x)\right]^2\right]+2\operatorname{Log}\left[(c+d)\operatorname{Sec}\left[\frac{1}{4}\,(e+f\,x)\right]^2+\sqrt{d}\,\sqrt{c+d}\,\left(-1+2\operatorname{Tan}\left[\frac{1}{4}\,(e+f\,x)\right]+\operatorname{Tan}\left[\frac{1}{4}\,(e+f\,x)\right]^2\right)\right]\right)+$$
$$\left.30\,\sqrt{d}\,\left(A\,d\,(-2\,c+5\,d)+B\,\left(2\,c^2-5\,c\,d+5\,d^2\right)\right)\operatorname{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]-5\,d^{3/2}\,(-2\,B\,c+2\,A\,d+5\,B\,d)\operatorname{Sin}\left[\frac{3}{2}\,(e+f\,x)\right]-3\,B\,d^{5/2}\operatorname{Sin}\left[\frac{5}{2}\,(e+f\,x)\right]\right)$$

- **Problem 307: Result unnecessarily involves imaginary or complex numbers.**

$$\int\frac{(A+B\operatorname{Sin}[e+f\,x])\,(c+d\operatorname{Sin}[e+f\,x])^3}{\sqrt{a+a\operatorname{Sin}[e+f\,x]}}\,dx$$

Optimal (type 3, 284 leaves, 7 steps):

$$-\frac{\sqrt{2}\,(A-B)\,(c-d)^3\operatorname{ArcTanh}\left[\frac{\sqrt{a}\operatorname{Cos}[e+f\,x]}{\sqrt{2}\,\sqrt{a+a\operatorname{Sin}[e+f\,x]}}\right]}{\sqrt{a}\,f}-\frac{4\,\left(7\,A\,d\,\left(21\,c^2-12\,c\,d+7\,d^2\right)+B\,\left(36\,c^3-63\,c^2\,d+144\,c\,d^2-37\,d^3\right)\right)\operatorname{Cos}[e+f\,x]}{105\,f\,\sqrt{a+a\operatorname{Sin}[e+f\,x]}}-$$
$$\frac{2\,d\,\left(7\,A\,(9\,c-d)\,d+B\,\left(24\,c^2-15\,c\,d+31\,d^2\right)\right)\operatorname{Cos}[e+f\,x]\,\sqrt{a+a\operatorname{Sin}[e+f\,x]}}{105\,a\,f}-$$
$$\frac{2\,(6\,B\,c+7\,A\,d-B\,d)\operatorname{Cos}[e+f\,x]\,(c+d\operatorname{Sin}[e+f\,x])^2}{35\,f\,\sqrt{a+a\operatorname{Sin}[e+f\,x]}}-\frac{2\,B\operatorname{Cos}[e+f\,x]\,(c+d\operatorname{Sin}[e+f\,x])^3}{7\,f\,\sqrt{a+a\operatorname{Sin}[e+f\,x]}}$$

Result (type 3, 375 leaves):

$$\frac{1}{420 f \sqrt{a (1+\text{Sin}[e+f x])}} \left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right) \left((840+840 i) (-1)^{3/4} (A-B) (c-d)^3 \text{ArcTanh}\left[\left(\frac{1}{2}+\frac{i}{2}\right) (-1)^{3/4} \left(-1+\text{Tan}\left[\frac{1}{4}(e+f x)\right]\right)\right] - 105 \left(4 A d \left(6 c^2-3 c d+2 d^2\right)+B \left(8 c^3-12 c^2 d+24 c d^2-5 d^3\right)\right) \text{Cos}\left[\frac{1}{2}(e+f x)\right] - 35 d \left(2 A (6 c-d) d+B \left(12 c^2-6 c d+5 d^2\right)\right) \text{Cos}\left[\frac{3}{2}(e+f x)\right]+21 d^2 (6 B c+2 A d-B d) \text{Cos}\left[\frac{5}{2}(e+f x)\right]+ 15 B d^3 \text{Cos}\left[\frac{7}{2}(e+f x)\right]+105 \left(4 A d \left(6 c^2-3 c d+2 d^2\right)+B \left(8 c^3-12 c^2 d+24 c d^2-5 d^3\right)\right) \text{Sin}\left[\frac{1}{2}(e+f x)\right]- 35 d \left(2 A (6 c-d) d+B \left(12 c^2-6 c d+5 d^2\right)\right) \text{Sin}\left[\frac{3}{2}(e+f x)\right]+21 d^2 (-2 A d+B (-6 c+d)) \text{Sin}\left[\frac{5}{2}(e+f x)\right]+15 B d^3 \text{Sin}\left[\frac{7}{2}(e+f x)\right]\right)$$

- **Problem 308: Result unnecessarily involves imaginary or complex numbers.**

$$\int \frac{(A+B \text{Sin}[e+f x]) (c+d \text{Sin}[e+f x])^2}{\sqrt{a+a \text{Sin}[e+f x]}} \, dx$$

Optimal (type 3, 200 leaves, 6 steps):

$$-\frac{\sqrt{2} (A-B) (c-d)^2 \text{ArcTanh}\left[\frac{\sqrt{a} \text{Cos}[e+f x]}{\sqrt{2} \sqrt{a+a \text{Sin}[e+f x]}}\right]}{\sqrt{a} f}-\frac{4 \left(5 A (3 c-d) d+B \left(6 c^2-7 c d+7 d^2\right)\right) \text{Cos}[e+f x]}{15 f \sqrt{a+a \text{Sin}[e+f x]}}- \frac{2 d (4 B c+5 A d-B d) \text{Cos}[e+f x] \sqrt{a+a \text{Sin}[e+f x]}}{15 a f}-\frac{2 B \text{Cos}[e+f x] (c+d \text{Sin}[e+f x])^2}{5 f \sqrt{a+a \text{Sin}[e+f x]}}$$

Result (type 3, 246 leaves):

$$\frac{1}{30 f \sqrt{a (1+\text{Sin}[e+f x])}} \left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right) \left((60+60 i) (-1)^{3/4} (A-B) (c-d)^2 \text{ArcTanh}\left[\left(\frac{1}{2}+\frac{i}{2}\right) (-1)^{3/4} \left(-1+\text{Tan}\left[\frac{1}{4}(e+f x)\right]\right)\right] - 30 \left(A (4 c-d) d+2 B \left(c^2-c d+d^2\right)\right) \text{Cos}\left[\frac{1}{2}(e+f x)\right]+5 d (-2 A d+B (-4 c+d)) \text{Cos}\left[\frac{3}{2}(e+f x)\right]+3 B d^2 \text{Cos}\left[\frac{5}{2}(e+f x)\right]+ 30 \left(A (4 c-d) d+2 B \left(c^2-c d+d^2\right)\right) \text{Sin}\left[\frac{1}{2}(e+f x)\right]+5 d (-2 A d+B (-4 c+d)) \text{Sin}\left[\frac{3}{2}(e+f x)\right]-3 B d^2 \text{Sin}\left[\frac{5}{2}(e+f x)\right]\right)$$

- **Problem 309: Result unnecessarily involves imaginary or complex numbers.**

$$\int \frac{(A+B \text{Sin}[e+f x]) (c+d \text{Sin}[e+f x])}{\sqrt{a+a \text{Sin}[e+f x]}} \, dx$$

Optimal (type 3, 130 leaves, 5 steps):

$$-\frac{\sqrt{2}\,(A-B)\,(c-d)\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\text{Cos}[e+f\,x]}{\sqrt{2}\,\sqrt{a+a\,\text{Sin}[e+f\,x]}}\right]}{\sqrt{a}\,f}-\frac{2\,(3\,B\,c+3\,A\,d-2\,B\,d)\,\text{Cos}[e+f\,x]}{3\,f\,\sqrt{a+a\,\text{Sin}[e+f\,x]}}-\frac{2\,B\,d\,\text{Cos}[e+f\,x]\,\sqrt{a+a\,\text{Sin}[e+f\,x]}}{3\,a\,f}$$

Result (type 3, 135 leaves):

$$-\frac{1}{3\,f\,\sqrt{a\,(1+\text{Sin}[e+f\,x])}}\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)\left((-6-6\,i)\,(-1)^{3/4}\,(A-B)\,(c-d)\,\text{ArcTanh}\left[\left(\frac{1}{2}+\frac{i}{2}\right)\,(-1)^{3/4}\left(-1+\text{Tan}\left[\frac{1}{4}\,(e+f\,x)\right]\right)\right]+2\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)\,(3\,B\,c+3\,A\,d-B\,d+B\,d\,\text{Sin}[e+f\,x])\right)$$

Problem 310: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{A+B\,\text{Sin}[e+f\,x]}{\sqrt{a+a\,\text{Sin}[e+f\,x]}}\,dx$$

Optimal (type 3, 79 leaves, 3 steps):

$$-\frac{\sqrt{2}\,(A-B)\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\text{Cos}[e+f\,x]}{\sqrt{2}\,\sqrt{a+a\,\text{Sin}[e+f\,x]}}\right]}{\sqrt{a}\,f}-\frac{2\,B\,\text{Cos}[e+f\,x]}{f\,\sqrt{a+a\,\text{Sin}[e+f\,x]}}$$

Result (type 3, 106 leaves):

$$\frac{1}{f\,\sqrt{a\,(1+\text{Sin}[e+f\,x])}}2\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)\left((1+i)\,(-1)^{3/4}\,(A-B)\,\text{ArcTanh}\left[\left(\frac{1}{2}+\frac{i}{2}\right)\,(-1)^{3/4}\left(-1+\text{Tan}\left[\frac{1}{4}\,(e+f\,x)\right]\right)\right]+B\left(-\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)\right)$$

Problem 311: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{A+B\,\text{Sin}[e+f\,x]}{\sqrt{a+a\,\text{Sin}[e+f\,x]}\,(c+d\,\text{Sin}[e+f\,x])}\,dx$$

Optimal (type 3, 136 leaves, 5 steps):

$$-\frac{\sqrt{2}\,(A-B)\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\text{Cos}[e+f\,x]}{\sqrt{2}\,\sqrt{a+a\,\text{Sin}[e+f\,x]}}\right]}{\sqrt{a}\,(c-d)\,f}-\frac{2\,(B\,c-A\,d)\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\sqrt{d}\,\text{Cos}[e+f\,x]}{\sqrt{c+d}\,\sqrt{a+a\,\text{Sin}[e+f\,x]}}\right]}{\sqrt{a}\,(c-d)\,\sqrt{d}\,\sqrt{c+d}\,f}$$

Result (type 3, 238 leaves):

$$\frac{1}{(c-d)\sqrt{d}\,\sqrt{c+d}\,f\sqrt{a\,(1+\text{Sin}[e+f\,x])}}(-1)^{3/4}\left((2+2\,i)\,(A-B)\sqrt{d}\,\sqrt{c+d}\,\text{ArcTanh}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{3/4}\left(-1+\text{Tan}\left[\frac{1}{4}(e+f\,x)\right]\right)\right]+\right.$$
$$(-1)^{1/4}(B\,c-A\,d)\left(\text{Log}\left[\text{Sec}\left[\frac{1}{4}(e+f\,x)\right]^2\left(\sqrt{c+d}+\sqrt{d}\,\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]-\sqrt{d}\,\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)\right]-\right.$$
$$\left.\left.\text{Log}\left[\text{Sec}\left[\frac{1}{4}(e+f\,x)\right]^2\left(\sqrt{c+d}-\sqrt{d}\,\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]+\sqrt{d}\,\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)\right]\right)\right)\left(\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)$$

- **Problem 312: Result unnecessarily involves imaginary or complex numbers.**

$$\int\frac{A+B\,\text{Sin}[e+f\,x]}{\sqrt{a+a\,\text{Sin}[e+f\,x]}\,(c+d\,\text{Sin}[e+f\,x])^2}\,dx$$

Optimal (type 3, 207 leaves, 6 steps):

$$-\frac{\sqrt{2}\,(A-B)\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\text{Cos}[e+f\,x]}{\sqrt{2}\,\sqrt{a+a\,\text{Sin}[e+f\,x]}}\right]}{\sqrt{a}\,(c-d)^2\,f}+$$
$$\frac{\left(A\,d\,(3\,c+d)-B\left(c^2+c\,d+2\,d^2\right)\right)\text{ArcTanh}\left[\frac{\sqrt{a}\,\sqrt{d}\,\text{Cos}[e+f\,x]}{\sqrt{c+d}\,\sqrt{a+a\,\text{Sin}[e+f\,x]}}\right]}{\sqrt{a}\,(c-d)^2\sqrt{d}\,(c+d)^{3/2}\,f}-\frac{(B\,c-A\,d)\,\text{Cos}[e+f\,x]}{\left(c^2-d^2\right)f\sqrt{a+a\,\text{Sin}[e+f\,x]}\,(c+d\,\text{Sin}[e+f\,x])}$$

Result (type 3, 374 leaves):

$$\frac{1}{4\,(c-d)^2\,f\sqrt{a\,(1+\text{Sin}[e+f\,x])}}\left(\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)$$
$$\left((8+8\,i)\,(-1)^{3/4}(A-B)\,\text{ArcTanh}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{3/4}\left(-1+\text{Tan}\left[\frac{1}{4}(e+f\,x)\right]\right)\right]-\frac{1}{\sqrt{d}\,(c+d)^{3/2}}\left(-A\,d\,(3\,c+d)+B\left(c^2+c\,d+2\,d^2\right)\right)\right.$$
$$\left(e+f\,x-2\,\text{Log}\left[\text{Sec}\left[\frac{1}{4}(e+f\,x)\right]^2\right]+2\,\text{Log}\left[\text{Sec}\left[\frac{1}{4}(e+f\,x)\right]^2\left(\sqrt{c+d}+\sqrt{d}\,\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]-\sqrt{d}\,\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)\right]\right)+$$
$$\frac{1}{\sqrt{d}\,(c+d)^{3/2}}\left(-A\,d\,(3\,c+d)+B\left(c^2+c\,d+2\,d^2\right)\right)$$
$$\left(e+f\,x-2\,\text{Log}\left[\text{Sec}\left[\frac{1}{4}(e+f\,x)\right]^2\right]+2\,\text{Log}\left[\text{Sec}\left[\frac{1}{4}(e+f\,x)\right]^2\left(\sqrt{c+d}-\sqrt{d}\,\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]+\sqrt{d}\,\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)\right]\right)-$$
$$\left.\frac{4\,(c-d)\,(B\,c-A\,d)\left(\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]-\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)}{(c+d)\,(c+d\,\text{Sin}[e+f\,x])}\right)$$

- **Problem 313: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int\frac{A+B\,\text{Sin}[e+f\,x]}{\sqrt{a+a\,\text{Sin}[e+f\,x]}\,(c+d\,\text{Sin}[e+f\,x])^3}\,dx$$

Optimal (type 3, 309 leaves, 7 steps):

$$-\frac{\sqrt{2}\,(A-B)\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\text{Cos}[e+f x]}{\sqrt{2}\,\sqrt{a+a\,\text{Sin}[e+f x]}}\right]}{\sqrt{a}\,(c-d)^3 f}+\frac{\left(A d\left(15 c^2+10 c d+7 d^2\right)-B\left(3 c^3+6 c^2 d+19 c d^2+4 d^3\right)\right)\text{ArcTanh}\left[\frac{\sqrt{a}\,\sqrt{d}\,\text{Cos}[e+f x]}{\sqrt{c+d}\,\sqrt{a+a\,\text{Sin}[e+f x]}}\right]}{4\sqrt{a}\,(c-d)^3\sqrt{d}\,(c+d)^{5/2} f}-\frac{(B c-A d)\,\text{Cos}[e+f x]}{2\left(c^2-d^2\right) f\sqrt{a+a\,\text{Sin}[e+f x]}\,(c+d\,\text{Sin}[e+f x])^2}+\frac{\left(A d\,(7 c+d)-B\left(3 c^2+c d+4 d^2\right)\right)\text{Cos}[e+f x]}{4\left(c^2-d^2\right)^2 f\sqrt{a+a\,\text{Sin}[e+f x]}\,(c+d\,\text{Sin}[e+f x])}$$

Result (type 3, 847 leaves):

$$\left((2+2\,\mathrm{i})\,(A-B)\,\text{ArcTanh}\left[\left(\frac{1}{2}+\frac{\mathrm{i}}{2}\right)(-1)^{3/4}\,\text{Sec}\left[\frac{1}{4}(e+f x)\right]\left(\text{Cos}\left[\frac{1}{4}(e+f x)\right]-\text{Sin}\left[\frac{1}{4}(e+f x)\right]\right)\right]\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)\right)\Big/$$
$$\left(\left((-1)^{1/4} c^3-3\,(-1)^{1/4} c^2 d+3\,(-1)^{1/4} c\,d^2-(-1)^{1/4} d^3\right) f\sqrt{a\,(1+\text{Sin}[e+f x])}\right)-$$
$$\left(\left(-A d\left(15 c^2+10 c d+7 d^2\right)+B\left(3 c^3+6 c^2 d+19 c d^2+4 d^3\right)\right)\left(e+f x-2\,\text{Log}\left[\text{Sec}\left[\frac{1}{4}(e+f x)\right]^2\right]+\right.\right.$$
$$\left.\left.2\,\text{Log}\left[\text{Sec}\left[\frac{1}{4}(e+f x)\right]^2\left(\sqrt{c+d}+\sqrt{d}\,\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\sqrt{d}\,\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)\right]\right)\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)\right)\Big/$$
$$\left(16\,(c-d)^3\sqrt{d}\,(c+d)^{5/2} f\sqrt{a\,(1+\text{Sin}[e+f x])}\right)+\left(\left(-A d\left(15 c^2+10 c d+7 d^2\right)+B\left(3 c^3+6 c^2 d+19 c d^2+4 d^3\right)\right)\right.$$
$$\left(e+f x-2\,\text{Log}\left[\text{Sec}\left[\frac{1}{4}(e+f x)\right]^2\right]+2\,\text{Log}\left[\text{Sec}\left[\frac{1}{4}(e+f x)\right]^2\left(\sqrt{c+d}-\sqrt{d}\,\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\sqrt{d}\,\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)\right]\right)$$
$$\left.\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)\right)\Big/\left(16\,(c-d)^3\sqrt{d}\,(c+d)^{5/2} f\sqrt{a\,(1+\text{Sin}[e+f x])}\right)+$$
$$\left(\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)\left(-B c\,\text{Cos}\left[\frac{1}{2}(e+f x)\right]+A d\,\text{Cos}\left[\frac{1}{2}(e+f x)\right]+B c\,\text{Sin}\left[\frac{1}{2}(e+f x)\right]-A d\,\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)\right)\Big/$$
$$\left(2\,(c-d)\,(c+d)\,f\sqrt{a\,(1+\text{Sin}[e+f x])}\,(c+d\,\text{Sin}[e+f x])^2\right)+$$
$$\left(\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)\left(-3 B c^2\,\text{Cos}\left[\frac{1}{2}(e+f x)\right]+7 A c d\,\text{Cos}\left[\frac{1}{2}(e+f x)\right]-B c d\,\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\right.\right.$$
$$A d^2\,\text{Cos}\left[\frac{1}{2}(e+f x)\right]-4 B d^2\,\text{Cos}\left[\frac{1}{2}(e+f x)\right]+3 B c^2\,\text{Sin}\left[\frac{1}{2}(e+f x)\right]-7 A c d\,\text{Sin}\left[\frac{1}{2}(e+f x)\right]+B c d\,\text{Sin}\left[\frac{1}{2}(e+f x)\right]-$$
$$\left.\left.A d^2\,\text{Sin}\left[\frac{1}{2}(e+f x)\right]+4 B d^2\,\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)\right)\Big/\left(4\,(c-d)^2\,(c+d)^2 f\sqrt{a\,(1+\text{Sin}[e+f x])}\,(c+d\,\text{Sin}[e+f x])\right)$$

- **Problem 314: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int\frac{(A+B\,\text{Sin}[e+f x])\,(c+d\,\text{Sin}[e+f x])^3}{(a+a\,\text{Sin}[e+f x])^{3/2}}\,dx$$

Optimal (type 3, 283 leaves, 7 steps):

$$-\frac{(c-d)^2\,(3B(c-5d)+A(c+11d))\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\text{Cos}[e+fx]}{\sqrt{2}\,\sqrt{a+a\,\text{Sin}[e+fx]}}\right]}{2\sqrt{2}\,a^{3/2}\,f}+$$

$$\frac{d\left(15Ac^2-99Bc^2-120Acd+168Bcd+65Ad^2-93Bd^2\right)\text{Cos}[e+fx]}{15af\sqrt{a+a\,\text{Sin}[e+fx]}}+\frac{d^2\,(15Ac-51Bc-35Ad+39Bd)\,\text{Cos}[e+fx]\,\sqrt{a+a\,\text{Sin}[e+fx]}}{30a^2f}+$$

$$\frac{(5A-9B)\,d\,\text{Cos}[e+fx]\,(c+d\,\text{Sin}[e+fx])^2}{10af\sqrt{a+a\,\text{Sin}[e+fx]}}-\frac{(A-B)\,\text{Cos}[e+fx]\,(c+d\,\text{Sin}[e+fx])^3}{2f\,(a+a\,\text{Sin}[e+fx])^{3/2}}$$

Result (type 3, 684 leaves) :

$$\frac{1}{60f\,(a\,(1+\text{Sin}[e+fx]))^{3/2}}$$
$$\left(\text{Cos}\left[\frac{1}{2}(e+fx)\right]+\text{Sin}\left[\frac{1}{2}(e+fx)\right]\right)\left(-30Ac^3\,\text{Cos}\left[\frac{1}{2}(e+fx)\right]+30Bc^3\,\text{Cos}\left[\frac{1}{2}(e+fx)\right]+90Ac^2d\,\text{Cos}\left[\frac{1}{2}(e+fx)\right]-270Bc^2d\,\text{Cos}\left[\frac{1}{2}(e+fx)\right]-\right.$$
$$270Acd^2\,\text{Cos}\left[\frac{1}{2}(e+fx)\right]+330Bcd^2\,\text{Cos}\left[\frac{1}{2}(e+fx)\right]+110Ad^3\,\text{Cos}\left[\frac{1}{2}(e+fx)\right]-165Bd^3\,\text{Cos}\left[\frac{1}{2}(e+fx)\right]-$$
$$180Bc^2d\,\text{Cos}\left[\frac{3}{2}(e+fx)\right]-180Acd^2\,\text{Cos}\left[\frac{3}{2}(e+fx)\right]+210Bcd^2\,\text{Cos}\left[\frac{3}{2}(e+fx)\right]+70Ad^3\,\text{Cos}\left[\frac{3}{2}(e+fx)\right]-$$
$$123Bd^3\,\text{Cos}\left[\frac{3}{2}(e+fx)\right]+30Bcd^2\,\text{Cos}\left[\frac{5}{2}(e+fx)\right]+10Ad^3\,\text{Cos}\left[\frac{5}{2}(e+fx)\right]-9Bd^3\,\text{Cos}\left[\frac{5}{2}(e+fx)\right]+3Bd^3\,\text{Cos}\left[\frac{7}{2}(e+fx)\right]+$$
$$30Ac^3\,\text{Sin}\left[\frac{1}{2}(e+fx)\right]-30Bc^3\,\text{Sin}\left[\frac{1}{2}(e+fx)\right]-90Ac^2d\,\text{Sin}\left[\frac{1}{2}(e+fx)\right]+270Bc^2d\,\text{Sin}\left[\frac{1}{2}(e+fx)\right]+270Acd^2\,\text{Sin}\left[\frac{1}{2}(e+fx)\right]-$$
$$330Bcd^2\,\text{Sin}\left[\frac{1}{2}(e+fx)\right]-110Ad^3\,\text{Sin}\left[\frac{1}{2}(e+fx)\right]+165Bd^3\,\text{Sin}\left[\frac{1}{2}(e+fx)\right]+(30+30\,i)\,(-1)^{3/4}\,(c-d)^2$$
$$(3B(c-5d)+A(c+11d))\,\text{ArcTanh}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{3/4}\left(-1+\text{Tan}\left[\frac{1}{4}(e+fx)\right]\right)\right]\left(\text{Cos}\left[\frac{1}{2}(e+fx)\right]+\text{Sin}\left[\frac{1}{2}(e+fx)\right]\right)^2-$$
$$180Bc^2d\,\text{Sin}\left[\frac{3}{2}(e+fx)\right]-180Acd^2\,\text{Sin}\left[\frac{3}{2}(e+fx)\right]+210Bcd^2\,\text{Sin}\left[\frac{3}{2}(e+fx)\right]+70Ad^3\,\text{Sin}\left[\frac{3}{2}(e+fx)\right]-$$
$$\left.123Bd^3\,\text{Sin}\left[\frac{3}{2}(e+fx)\right]-30Bcd^2\,\text{Sin}\left[\frac{5}{2}(e+fx)\right]-10Ad^3\,\text{Sin}\left[\frac{5}{2}(e+fx)\right]+9Bd^3\,\text{Sin}\left[\frac{5}{2}(e+fx)\right]+3Bd^3\,\text{Sin}\left[\frac{7}{2}(e+fx)\right]\right)$$

- **Problem 315: Result unnecessarily involves imaginary or complex numbers.**

$$\int\frac{(A+B\,\text{Sin}[e+fx])\,(c+d\,\text{Sin}[e+fx])^2}{(a+a\,\text{Sin}[e+fx])^{3/2}}\,dx$$

Optimal (type 3, 203 leaves, 6 steps) :

$$-\frac{(c-d)\,(A c+3 B c+7 A d-11 B d)\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\text{Cos}[e+f x]}{\sqrt{2}\,\sqrt{a+a\,\text{Sin}[e+f x]}}\right]}{2\sqrt{2}\,a^{3/2}\,f}+\frac{d\,(3 A c-15 B c-9 A d+13 B d)\,\text{Cos}[e+f x]}{3 a f\sqrt{a+a\,\text{Sin}[e+f x]}}+\frac{(3 A-7 B)\,d^2\,\text{Cos}[e+f x]\,\sqrt{a+a\,\text{Sin}[e+f x]}}{6 a^2 f}-\frac{(A-B)\,\text{Cos}[e+f x]\,(c+d\,\text{Sin}[e+f x])^2}{2 f\,(a+a\,\text{Sin}[e+f x])^{3/2}}$$

Result (type 3, 357 leaves) :

$$\frac{1}{6 f\,(a\,(1+\text{Sin}[e+f x]))^{3/2}}\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)\left(6\,(A-B)\,(c-d)^2\,\text{Sin}\left[\frac{1}{2}(e+f x)\right]-3\,(A-B)\,(c-d)^2\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)+\right.$$
$$(3+3\,i)\,(-1)^{3/4}\,(c-d)\,(A c+3 B c+7 A d-11 B d)\,\text{ArcTanh}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{3/4}\left(-1+\text{Tan}\left[\frac{1}{4}(e+f x)\right]\right)\right]\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^2+$$
$$6 d\,(-4 B c-2 A d+3 B d)\,\text{Cos}\left[\frac{1}{2}(e+f x)\right]\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^2-$$
$$2 B d^2\,\text{Cos}\left[\frac{3}{2}(e+f x)\right]\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^2-6 d\,(-4 B c-2 A d+3 B d)\,\text{Sin}\left[\frac{1}{2}(e+f x)\right]$$
$$\left.\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^2-2 B d^2\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^2\text{Sin}\left[\frac{3}{2}(e+f x)\right]\right)$$

- **Problem 316: Result unnecessarily involves imaginary or complex numbers.**

$$\int\frac{(A+B\,\text{Sin}[e+f x])\,(c+d\,\text{Sin}[e+f x])}{(a+a\,\text{Sin}[e+f x])^{3/2}}\,dx$$

Optimal (type 3, 133 leaves, 5 steps) :

$$-\frac{(A c+3 B c+3 A d-7 B d)\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\text{Cos}[e+f x]}{\sqrt{2}\,\sqrt{a+a\,\text{Sin}[e+f x]}}\right]}{2\sqrt{2}\,a^{3/2}\,f}-\frac{(A-B)\,(c-d)\,\text{Cos}[e+f x]}{2 f\,(a+a\,\text{Sin}[e+f x])^{3/2}}-\frac{2 B d\,\text{Cos}[e+f x]}{a f\sqrt{a+a\,\text{Sin}[e+f x]}}$$

Result (type 3, 246 leaves) :

$$\frac{1}{2 f\,(a\,(1+\text{Sin}[e+f x]))^{3/2}}\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)\left(2\,(A-B)\,(c-d)\,\text{Sin}\left[\frac{1}{2}(e+f x)\right]-(A-B)\,(c-d)\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)+\right.$$
$$(1+i)\,(-1)^{3/4}\,(A c+3 B c+3 A d-7 B d)\,\text{ArcTanh}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{3/4}\left(-1+\text{Tan}\left[\frac{1}{4}(e+f x)\right]\right)\right]\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^2-$$
$$\left.4 B d\,\text{Cos}\left[\frac{1}{2}(e+f x)\right]\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^2+4 B d\,\text{Sin}\left[\frac{1}{2}(e+f x)\right]\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^2\right)$$

- **Problem 317: Result unnecessarily involves imaginary or complex numbers.**

$$\int \frac{A+B\,\text{Sin}[e+f\,x]}{(a+a\,\text{Sin}[e+f\,x])^{3/2}}\,dx$$

Optimal (type 3, 87 leaves, 3 steps):

$$-\frac{(A+3\,B)\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\text{Cos}[e+f\,x]}{\sqrt{2}\,\sqrt{a+a\,\text{Sin}[e+f\,x]}}\right]}{2\,\sqrt{2}\,a^{3/2}\,f}-\frac{(A-B)\,\text{Cos}[e+f\,x]}{2\,f\,(a+a\,\text{Sin}[e+f\,x])^{3/2}}$$

Result (type 3, 150 leaves):

$$\left(\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)\left(2\,(A-B)\,\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]+(-A+B)\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)+(1+i)\,(-1)^{3/4}\,(A+3\,B)\,\text{ArcTanh}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{3/4}\left(-1+\text{Tan}\left[\frac{1}{4}\,(e+f\,x)\right]\right)\right]\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^2\right)\right)\Big/\left(2\,f\,(a\,(1+\text{Sin}[e+f\,x]))^{3/2}\right)$$

- **Problem 318: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int \frac{A+B\,\text{Sin}[e+f\,x]}{(a+a\,\text{Sin}[e+f\,x])^{3/2}\,(c+d\,\text{Sin}[e+f\,x])}\,dx$$

Optimal (type 3, 187 leaves, 6 steps):

$$-\frac{(A\,(c-5\,d)+B\,(3\,c+d))\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\text{Cos}[e+f\,x]}{\sqrt{2}\,\sqrt{a+a\,\text{Sin}[e+f\,x]}}\right]}{2\,\sqrt{2}\,a^{3/2}\,(c-d)^2\,f}+\frac{2\,\sqrt{d}\,(B\,c-A\,d)\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\sqrt{d}\,\text{Cos}[e+f\,x]}{\sqrt{c+d}\,\sqrt{a+a\,\text{Sin}[e+f\,x]}}\right]}{a^{3/2}\,(c-d)^2\,\sqrt{c+d}\,f}-\frac{(A-B)\,\text{Cos}[e+f\,x]}{2\,(c-d)\,f\,(a+a\,\text{Sin}[e+f\,x])^{3/2}}$$

Result (type 3, 419 leaves):

$$\frac{1}{2\,(c-d)^2\,f\,(a\,(1+\text{Sin}[e+f\,x]))^{3/2}}\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)\left(2\,(A-B)\,(c-d)\,\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]+(-A+B)\,(c-d)\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)+\right.$$
$$(1+i)\,(-1)^{3/4}\,(A\,(c-5\,d)+B\,(3\,c+d))\,\text{ArcTanh}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{3/4}\left(-1+\text{Tan}\left[\frac{1}{4}\,(e+f\,x)\right]\right)\right]\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^2+\frac{1}{\sqrt{c+d}}$$
$$\sqrt{d}\,(B\,c-A\,d)\left(e+f\,x-2\,\text{Log}\left[\text{Sec}\left[\frac{1}{4}\,(e+f\,x)\right]^2\right]+2\,\text{Log}\left[\text{Sec}\left[\frac{1}{4}\,(e+f\,x)\right]^2\left(\sqrt{c+d}+\sqrt{d}\,\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]-\sqrt{d}\,\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)\right]\right)$$
$$\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^2+\frac{1}{\sqrt{c+d}}\sqrt{d}\,(-B\,c+A\,d)\left(e+f\,x-2\,\text{Log}\left[\text{Sec}\left[\frac{1}{4}\,(e+f\,x)\right]^2\right]+\right.$$
$$\left.\left.2\,\text{Log}\left[\text{Sec}\left[\frac{1}{4}\,(e+f\,x)\right]^2\left(\sqrt{c+d}-\sqrt{d}\,\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\sqrt{d}\,\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)\right]\right)\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^2\right)$$

- **Problem 319: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int \frac{A+B\,\text{Sin}[e+f\,x]}{(a+a\,\text{Sin}[e+f\,x])^{3/2}\,(c+d\,\text{Sin}[e+f\,x])^2}\,dx$$

Optimal (type 3, 292 leaves, 7 steps):

$$-\frac{(A\,c+3\,B\,c-9\,A\,d+5\,B\,d)\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\text{Cos}[e+f\,x]}{\sqrt{2}\,\sqrt{a+a\,\text{Sin}[e+f\,x]}}\right]}{2\,\sqrt{2}\,a^{3/2}\,(c-d)^3\,f}-\frac{\sqrt{d}\,\left(A\,d\,(5\,c+3\,d)-B\,\left(3\,c^2+3\,c\,d+2\,d^2\right)\right)\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\sqrt{d}\,\text{Cos}[e+f\,x]}{\sqrt{c+d}\,\sqrt{a+a\,\text{Sin}[e+f\,x]}}\right]}{a^{3/2}\,(c-d)^3\,(c+d)^{3/2}\,f}-\frac{(A-B)\,\text{Cos}[e+f\,x]}{2\,(c-d)\,f\,(a+a\,\text{Sin}[e+f\,x])^{3/2}\,(c+d\,\text{Sin}[e+f\,x])}+\frac{d\,(B\,(3\,c+d)-A\,(c+3\,d))\,\text{Cos}[e+f\,x]}{2\,a\,(c-d)^2\,(c+d)\,f\,\sqrt{a+a\,\text{Sin}[e+f\,x]}\,(c+d\,\text{Sin}[e+f\,x])}$$

Result (type 3, 745 leaves):

$$\frac{(-A+B)\,\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^2}{2\,(c-d)^2\,f\,(a\,(1+\text{Sin}[e+f\,x]))^{3/2}}+$$
$$\left((1+i)\,(A\,c+3\,B\,c-9\,A\,d+5\,B\,d)\,\text{ArcTanh}\left[\left(\frac{1}{2}+\frac{i}{2}\right)\,(-1)^{3/4}\,\text{Sec}\left[\frac{1}{4}\,(e+f\,x)\right]\,\left(\text{Cos}\left[\frac{1}{4}\,(e+f\,x)\right]-\text{Sin}\left[\frac{1}{4}\,(e+f\,x)\right]\right)\right]\right.$$
$$\left.\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^3\right)\Big/\left(\left(2\,(-1)^{1/4}\,c^3-6\,(-1)^{1/4}\,c^2\,d+6\,(-1)^{1/4}\,c\,d^2-2\,(-1)^{1/4}\,d^3\right)\,f\,(a\,(1+\text{Sin}[e+f\,x]))^{3/2}\right)+$$
$$\left(\sqrt{d}\,\left(-A\,d\,(5\,c+3\,d)+B\,\left(3\,c^2+3\,c\,d+2\,d^2\right)\right)\,\left(e+f\,x-2\,\text{Log}\left[\text{Sec}\left[\frac{1}{4}\,(e+f\,x)\right]^2\right]+\right.\right.$$
$$\left.\left.2\,\text{Log}\left[\text{Sec}\left[\frac{1}{4}\,(e+f\,x)\right]^2\,\left(\sqrt{c+d}+\sqrt{d}\,\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]-\sqrt{d}\,\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)\right]\right)\,\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^3\right)\Big/$$
$$\left(4\,(c-d)^3\,(c+d)^{3/2}\,f\,(a\,(1+\text{Sin}[e+f\,x]))^{3/2}\right)+\left(\sqrt{d}\,\left(A\,d\,(5\,c+3\,d)-B\,\left(3\,c^2+3\,c\,d+2\,d^2\right)\right)\right.$$
$$\left(e+f\,x-2\,\text{Log}\left[\text{Sec}\left[\frac{1}{4}\,(e+f\,x)\right]^2\right]+2\,\text{Log}\left[\text{Sec}\left[\frac{1}{4}\,(e+f\,x)\right]^2\,\left(\sqrt{c+d}-\sqrt{d}\,\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\sqrt{d}\,\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)\right]\right)$$
$$\left.\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^3\right)\Big/\left(4\,(c-d)^3\,(c+d)^{3/2}\,f\,(a\,(1+\text{Sin}[e+f\,x]))^{3/2}\right)+$$
$$\frac{\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)\,\left(A\,\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]-B\,\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)}{(c-d)^2\,f\,(a\,(1+\text{Sin}[e+f\,x]))^{3/2}}+$$
$$\left(\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^3\,\left(B\,c\,d\,\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]-A\,d^2\,\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]-B\,c\,d\,\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]+A\,d^2\,\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)\right)\Big/$$
$$\left((c-d)^2\,(c+d)\,f\,(a\,(1+\text{Sin}[e+f\,x]))^{3/2}\,(c+d\,\text{Sin}[e+f\,x])\right)$$

- **Problem 320: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int \frac{A+B\,\text{Sin}[e+f\,x]}{(a+a\,\text{Sin}[e+f\,x])^{3/2}\,(c+d\,\text{Sin}[e+f\,x])^3}\,dx$$

Optimal (type 3, 402 leaves, 8 steps):

$$-\frac{(A\,(c-13\,d)+3\,B\,(c+3\,d))\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\text{Cos}[e+f\,x]}{\sqrt{2}\,\sqrt{a+a\,\text{Sin}[e+f\,x]}}\right]}{2\,\sqrt{2}\,a^{3/2}\,(c-d)^4\,f}-$$
$$\frac{\sqrt{d}\,\left(A\,d\,\left(35\,c^2+42\,c\,d+19\,d^2\right)-3\,B\,\left(5\,c^3+10\,c^2\,d+13\,c\,d^2+4\,d^3\right)\right)\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\sqrt{d}\,\text{Cos}[e+f\,x]}{\sqrt{c+d}\,\sqrt{a+a\,\text{Sin}[e+f\,x]}}\right]}{4\,a^{3/2}\,(c-d)^4\,(c+d)^{5/2}\,f}-$$
$$\frac{(A-B)\,\text{Cos}[e+f\,x]}{2\,(c-d)\,f\,(a+a\,\text{Sin}[e+f\,x])^{3/2}\,(c+d\,\text{Sin}[e+f\,x])^2}+\frac{d\,(B\,(2\,c+d)-A\,(c+2\,d))\,\text{Cos}[e+f\,x]}{2\,a\,(c-d)^2\,(c+d)\,f\,\sqrt{a+a\,\text{Sin}[e+f\,x]}\,(c+d\,\text{Sin}[e+f\,x])^2}+$$
$$\frac{d\,\left(3\,B\,\left(3\,c^2+3\,c\,d+2\,d^2\right)-A\,\left(2\,c^2+15\,c\,d+7\,d^2\right)\right)\,\text{Cos}[e+f\,x]}{4\,a\,(c-d)^3\,(c+d)^2\,f\,\sqrt{a+a\,\text{Sin}[e+f\,x]}\,(c+d\,\text{Sin}[e+f\,x])}$$

Result (type 3, 1395 leaves):

$$\Bigg((1+i)\,(A\,c+3\,B\,c-13\,A\,d+9\,B\,d)$$

$$\text{ArcTanh}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{3/4}\,\text{Sec}\left[\frac{1}{4}\,(e+f\,x)\right]\left(\text{Cos}\left[\frac{1}{4}\,(e+f\,x)\right]-\text{Sin}\left[\frac{1}{4}\,(e+f\,x)\right]\right)\right]\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^3\Bigg)\Big/$$

$$\left(\left(2\,(-1)^{1/4}\,c^4-8\,(-1)^{1/4}\,c^3\,d+12\,(-1)^{1/4}\,c^2\,d^2-8\,(-1)^{1/4}\,c\,d^3+2\,(-1)^{1/4}\,d^4\right)f\,(a\,(1+\text{Sin}[e+f\,x]))^{3/2}\right)+$$

$$\Bigg(\sqrt{d}\,\left(-A\,d\,\left(35\,c^2+42\,c\,d+19\,d^2\right)+3\,B\,\left(5\,c^3+10\,c^2\,d+13\,c\,d^2+4\,d^3\right)\right)$$

$$\left(e+f\,x-2\,\text{Log}\left[\text{Sec}\left[\frac{1}{4}\,(e+f\,x)\right]^2\right]+2\,\text{Log}\left[\text{Sec}\left[\frac{1}{4}\,(e+f\,x)\right]^2\left(\sqrt{c+d}+\sqrt{d}\,\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]-\sqrt{d}\,\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)\right]\right)$$

$$\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^3\Bigg)\Big/\left(16\,(c-d)^4\,(c+d)^{5/2}\,f\,(a\,(1+\text{Sin}[e+f\,x]))^{3/2}\right)-$$

$$\Bigg(\sqrt{d}\,\left(-A\,d\,\left(35\,c^2+42\,c\,d+19\,d^2\right)+3\,B\,\left(5\,c^3+10\,c^2\,d+13\,c\,d^2+4\,d^3\right)\right)\left(e+f\,x-2\,\text{Log}\left[\text{Sec}\left[\frac{1}{4}\,(e+f\,x)\right]^2\right]+\right.$$

$$\left.2\,\text{Log}\left[\text{Sec}\left[\frac{1}{4}\,(e+f\,x)\right]^2\left(\sqrt{c+d}-\sqrt{d}\,\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\sqrt{d}\,\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)\right]\right)\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^3\Bigg)\Big/$$

$$\left(16\,(c-d)^4\,(c+d)^{5/2}\,f\,(a\,(1+\text{Sin}[e+f\,x]))^{3/2}\right)+\frac{1}{16\,(c-d)^3\,(c+d)^2\,f\,(a\,(1+\text{Sin}[e+f\,x]))^{3/2}\,(c+d\,\text{Sin}[e+f\,x])^2}$$

$$\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)\Bigg(-8\,A\,c^4\,\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+8\,B\,c^4\,\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]-8\,A\,c^3\,d\,\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+$$

$$26\,B\,c^3\,d\,\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]-22\,A\,c^2\,d^2\,\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+6\,B\,c^2\,d^2\,\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]-10\,A\,c\,d^3\,\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+$$

$$4\,B\,c\,d^3\,\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+4\,B\,d^4\,\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]-8\,A\,c^3\,d\,\text{Cos}\left[\frac{3}{2}\,(e+f\,x)\right]+26\,B\,c^3\,d\,\text{Cos}\left[\frac{3}{2}\,(e+f\,x)\right]-40\,A\,c^2\,d^2\,\text{Cos}\left[\frac{3}{2}\,(e+f\,x)\right]+$$

$$31\,B\,c^2\,d^2\,\text{Cos}\left[\frac{3}{2}\,(e+f\,x)\right]-25\,A\,c\,d^3\,\text{Cos}\left[\frac{3}{2}\,(e+f\,x)\right]+13\,B\,c\,d^3\,\text{Cos}\left[\frac{3}{2}\,(e+f\,x)\right]+A\,d^4\,\text{Cos}\left[\frac{3}{2}\,(e+f\,x)\right]+2\,B\,d^4\,\text{Cos}\left[\frac{3}{2}\,(e+f\,x)\right]+$$

$$2\,A\,c^2\,d^2\,\text{Cos}\left[\frac{5}{2}\,(e+f\,x)\right]-9\,B\,c^2\,d^2\,\text{Cos}\left[\frac{5}{2}\,(e+f\,x)\right]+15\,A\,c\,d^3\,\text{Cos}\left[\frac{5}{2}\,(e+f\,x)\right]-9\,B\,c\,d^3\,\text{Cos}\left[\frac{5}{2}\,(e+f\,x)\right]+7\,A\,d^4\,\text{Cos}\left[\frac{5}{2}\,(e+f\,x)\right]-$$

$$6\,B\,d^4\,\text{Cos}\left[\frac{5}{2}\,(e+f\,x)\right]+8\,A\,c^4\,\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]-8\,B\,c^4\,\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]+8\,A\,c^3\,d\,\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]-26\,B\,c^3\,d\,\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]+$$

$$22\,A\,c^2\,d^2\,\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]-6\,B\,c^2\,d^2\,\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]+10\,A\,c\,d^3\,\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]-4\,B\,c\,d^3\,\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]-4\,B\,d^4\,\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]-$$

$$8\,A\,c^3\,d\,\text{Sin}\left[\frac{3}{2}\,(e+f\,x)\right]+26\,B\,c^3\,d\,\text{Sin}\left[\frac{3}{2}\,(e+f\,x)\right]-40\,A\,c^2\,d^2\,\text{Sin}\left[\frac{3}{2}\,(e+f\,x)\right]+31\,B\,c^2\,d^2\,\text{Sin}\left[\frac{3}{2}\,(e+f\,x)\right]-$$

$$25\,A\,c\,d^3\,\text{Sin}\left[\frac{3}{2}\,(e+f\,x)\right]+13\,B\,c\,d^3\,\text{Sin}\left[\frac{3}{2}\,(e+f\,x)\right]+A\,d^4\,\text{Sin}\left[\frac{3}{2}\,(e+f\,x)\right]+2\,B\,d^4\,\text{Sin}\left[\frac{3}{2}\,(e+f\,x)\right]-2\,A\,c^2\,d^2\,\text{Sin}\left[\frac{5}{2}\,(e+f\,x)\right]+$$

$$9\,B\,c^2\,d^2\,\text{Sin}\left[\frac{5}{2}\,(e+f\,x)\right]-15\,A\,c\,d^3\,\text{Sin}\left[\frac{5}{2}\,(e+f\,x)\right]+9\,B\,c\,d^3\,\text{Sin}\left[\frac{5}{2}\,(e+f\,x)\right]-7\,A\,d^4\,\text{Sin}\left[\frac{5}{2}\,(e+f\,x)\right]+6\,B\,d^4\,\text{Sin}\left[\frac{5}{2}\,(e+f\,x)\right]\Bigg)$$

Problem 321: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{(A+B\,\text{Sin}[e+f\,x])\,(c+d\,\text{Sin}[e+f\,x])^3}{(a+a\,\text{Sin}[e+f\,x])^{5/2}}\,dx$$

Optimal (type 3, 308 leaves, 7 steps):

$$-\frac{(c-d)\,\left(B\,\left(5\,c^2+62\,c\,d-163\,d^2\right)+3\,A\,\left(c^2+6\,c\,d+25\,d^2\right)\right)\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\text{Cos}[e+f\,x]}{\sqrt{2}\,\sqrt{a+a\,\text{Sin}[e+f\,x]}}\right]}{16\,\sqrt{2}\,a^{5/2}\,f}+\frac{d\,\left(A\,\left(9\,c^2+36\,c\,d-93\,d^2\right)+B\,\left(15\,c^2-228\,c\,d+197\,d^2\right)\right)\,\text{Cos}[e+f\,x]}{24\,a^2\,f\,\sqrt{a+a\,\text{Sin}[e+f\,x]}}+\frac{d^2\,(9\,A\,c+15\,B\,c+39\,A\,d-95\,B\,d)\,\text{Cos}[e+f\,x]\,\sqrt{a+a\,\text{Sin}[e+f\,x]}}{48\,a^3\,f}-\frac{(3\,A\,c+5\,B\,c+9\,A\,d-17\,B\,d)\,\text{Cos}[e+f\,x]\,(c+d\,\text{Sin}[e+f\,x])^2}{16\,a\,f\,(a+a\,\text{Sin}[e+f\,x])^{3/2}}-\frac{(A-B)\,\text{Cos}[e+f\,x]\,(c+d\,\text{Sin}[e+f\,x])^3}{4\,f\,(a+a\,\text{Sin}[e+f\,x])^{5/2}}$$

Result (type 3, 523 leaves):

$$\frac{1}{48\,f\,(a\,(1+\text{Sin}[e+f\,x]))^{5/2}}\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)\left(24\,(A-B)\,(c-d)^3\,\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]-12\,(A-B)\,(c-d)^3\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)+6\,(c-d)^2\,(B\,(5\,c-29\,d)+3\,A\,(c+7\,d))\,\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^2-3\,(c-d)^2\,(B\,(5\,c-29\,d)+3\,A\,(c+7\,d))\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^3+(3+3\,i)\,(-1)^{3/4}\,(c-d)\,\left(B\,\left(5\,c^2+62\,c\,d-163\,d^2\right)+3\,A\,\left(c^2+6\,c\,d+25\,d^2\right)\right)\,\text{ArcTanh}\left[\left(\frac{1}{2}+\frac{i}{2}\right)\,(-1)^{3/4}\left(-1+\text{Tan}\left[\frac{1}{4}\,(e+f\,x)\right]\right)\right]\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^4-16\,B\,d^3\,\text{Cos}\left[\frac{3}{2}\,(e+f\,x)\right]\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^4+(24+24\,i)\,d^2\,(-6\,B\,c-2\,A\,d+5\,B\,d)\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+i\,\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^4+(24+24\,i)\,d^2\,(6\,B\,c+2\,A\,d-5\,B\,d)\left(i\,\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^4-16\,B\,d^3\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^4\,\text{Sin}\left[\frac{3}{2}\,(e+f\,x)\right]\right)$$

Problem 322: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{(A+B\,\text{Sin}[e+f\,x])\,(c+d\,\text{Sin}[e+f\,x])^2}{(a+a\,\text{Sin}[e+f\,x])^{5/2}}\,dx$$

Optimal (type 3, 219 leaves, 6 steps):

$$-\frac{\left(B\left(5c^2+38cd-75d^2\right)+A\left(3c^2+10cd+19d^2\right)\right)\text{ArcTanh}\left[\frac{\sqrt{a}\,\text{Cos}[e+fx]}{\sqrt{2}\,\sqrt{a+a\,\text{Sin}[e+fx]}}\right]}{16\sqrt{2}\,a^{5/2}f}-\frac{(c-d)\,(3Ac+5Bc+5Ad-13Bd)\,\text{Cos}[e+fx]}{16af\,(a+a\,\text{Sin}[e+fx])^{3/2}}+\frac{(A-9B)\,d^2\,\text{Cos}[e+fx]}{4a^2f\sqrt{a+a\,\text{Sin}[e+fx]}}-\frac{(A-B)\,\text{Cos}[e+fx]\,(c+d\,\text{Sin}[e+fx])^2}{4f\,(a+a\,\text{Sin}[e+fx])^{5/2}}$$

Result (type 3, 544 leaves) :

$$\frac{1}{32f\,(a\,(1+\text{Sin}[e+fx]))^{5/2}}\left(\text{Cos}\left[\frac{1}{2}(e+fx)\right]+\text{Sin}\left[\frac{1}{2}(e+fx)\right]\right)\left(-11Ac^2\text{Cos}\left[\frac{1}{2}(e+fx)\right]+3Bc^2\text{Cos}\left[\frac{1}{2}(e+fx)\right]+6Acd\,\text{Cos}\left[\frac{1}{2}(e+fx)\right]+10Bcd\,\text{Cos}\left[\frac{1}{2}(e+fx)\right]+\right.$$
$$5Ad^2\text{Cos}\left[\frac{1}{2}(e+fx)\right]-45Bd^2\text{Cos}\left[\frac{1}{2}(e+fx)\right]-3Ac^2\text{Cos}\left[\frac{3}{2}(e+fx)\right]-5Bc^2\text{Cos}\left[\frac{3}{2}(e+fx)\right]-10Acd\,\text{Cos}\left[\frac{3}{2}(e+fx)\right]+$$
$$26Bcd\,\text{Cos}\left[\frac{3}{2}(e+fx)\right]+13Ad^2\text{Cos}\left[\frac{3}{2}(e+fx)\right]-69Bd^2\text{Cos}\left[\frac{3}{2}(e+fx)\right]+16Bd^2\text{Cos}\left[\frac{5}{2}(e+fx)\right]+11Ac^2\text{Sin}\left[\frac{1}{2}(e+fx)\right]-$$
$$3Bc^2\text{Sin}\left[\frac{1}{2}(e+fx)\right]-6Acd\,\text{Sin}\left[\frac{1}{2}(e+fx)\right]-10Bcd\,\text{Sin}\left[\frac{1}{2}(e+fx)\right]-5Ad^2\text{Sin}\left[\frac{1}{2}(e+fx)\right]+45Bd^2\text{Sin}\left[\frac{1}{2}(e+fx)\right]+$$
$$(2+2i)\,(-1)^{3/4}\left(B\left(5c^2+38cd-75d^2\right)+A\left(3c^2+10cd+19d^2\right)\right)\text{ArcTanh}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{3/4}\left(-1+\text{Tan}\left[\frac{1}{4}(e+fx)\right]\right)\right]$$
$$\left(\text{Cos}\left[\frac{1}{2}(e+fx)\right]+\text{Sin}\left[\frac{1}{2}(e+fx)\right]\right)^4-3Ac^2\text{Sin}\left[\frac{3}{2}(e+fx)\right]-5Bc^2\text{Sin}\left[\frac{3}{2}(e+fx)\right]-10Acd\,\text{Sin}\left[\frac{3}{2}(e+fx)\right]+$$
$$\left.26Bcd\,\text{Sin}\left[\frac{3}{2}(e+fx)\right]+13Ad^2\text{Sin}\left[\frac{3}{2}(e+fx)\right]-69Bd^2\text{Sin}\left[\frac{3}{2}(e+fx)\right]-16Bd^2\text{Sin}\left[\frac{5}{2}(e+fx)\right]\right)$$

- **Problem 323: Result unnecessarily involves imaginary or complex numbers.**

$$\int\frac{(A+B\,\text{Sin}[e+fx])\,(c+d\,\text{Sin}[e+fx])}{(a+a\,\text{Sin}[e+fx])^{5/2}}\,dx$$

Optimal (type 3, 151 leaves, 5 steps) :

$$-\frac{(3Ac+5Bc+5Ad+19Bd)\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\text{Cos}[e+fx]}{\sqrt{2}\,\sqrt{a+a\,\text{Sin}[e+fx]}}\right]}{16\sqrt{2}\,a^{5/2}f}-\frac{(A-B)\,(c-d)\,\text{Cos}[e+fx]}{4f\,(a+a\,\text{Sin}[e+fx])^{5/2}}-\frac{(3Ac+5Bc+5Ad-13Bd)\,\text{Cos}[e+fx]}{16af\,(a+a\,\text{Sin}[e+fx])^{3/2}}$$

Result (type 3, 267 leaves) :

$$\frac{1}{16\,f\,(a\,(1+\text{Sin}[e+f\,x]))^{5/2}}\left(\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)\left(8\,(A-B)\,(c-d)\,\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]-4\,(A-B)\,(c-d)\left(\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)+2\,(3\,A\,c+5\,B\,c+5\,A\,d-13\,B\,d)\,\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]\left(\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)^2-(3\,A\,c+5\,B\,c+5\,A\,d-13\,B\,d)\left(\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)^3+(1+i)\,(-1)^{3/4}\,(3\,A\,c+5\,B\,c+5\,A\,d+19\,B\,d)\,\text{ArcTanh}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{3/4}\left(-1+\text{Tan}\left[\frac{1}{4}(e+f\,x)\right]\right)\right]\left(\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)^4\right)$$

- **Problem 324: Result unnecessarily involves imaginary or complex numbers.**

$$\int\frac{A+B\,\text{Sin}[e+f\,x]}{(a+a\,\text{Sin}[e+f\,x])^{5/2}}\,dx$$

Optimal (type 3, 126 leaves, 4 steps):

$$-\frac{(3\,A+5\,B)\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\text{Cos}[e+f\,x]}{\sqrt{2}\,\sqrt{a+a\,\text{Sin}[e+f\,x]}}\right]}{16\,\sqrt{2}\,a^{5/2}\,f}-\frac{(A-B)\,\text{Cos}[e+f\,x]}{4\,f\,(a+a\,\text{Sin}[e+f\,x])^{5/2}}-\frac{(3\,A+5\,B)\,\text{Cos}[e+f\,x]}{16\,a\,f\,(a+a\,\text{Sin}[e+f\,x])^{3/2}}$$

Result (type 3, 227 leaves):

$$\frac{1}{16\,f\,(a\,(1+\text{Sin}[e+f\,x]))^{5/2}}\left(\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)\left(8\,(A-B)\,\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]+4\,(-A+B)\left(\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)+2\,(3\,A+5\,B)\,\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]\left(\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)^2-(3\,A+5\,B)\left(\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)^3+(1+i)\,(-1)^{3/4}\,(3\,A+5\,B)\,\text{ArcTanh}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{3/4}\left(-1+\text{Tan}\left[\frac{1}{4}(e+f\,x)\right]\right)\right]\left(\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]+\text{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)^4\right)$$

- **Problem 325: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int\frac{A+B\,\text{Sin}[e+f\,x]}{(a+a\,\text{Sin}[e+f\,x])^{5/2}\,(c+d\,\text{Sin}[e+f\,x])}\,dx$$

Optimal (type 3, 261 leaves, 7 steps):

$$-\frac{\left(B\,(5\,c^2-34\,c\,d-3\,d^2)+A\,(3\,c^2-14\,c\,d+43\,d^2)\right)\text{ArcTanh}\left[\frac{\sqrt{a}\,\text{Cos}[e+f\,x]}{\sqrt{2}\,\sqrt{a+a\,\text{Sin}[e+f\,x]}}\right]}{16\,\sqrt{2}\,a^{5/2}\,(c-d)^3\,f}-\frac{2\,d^{3/2}\,(B\,c-A\,d)\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\sqrt{d}\,\text{Cos}[e+f\,x]}{\sqrt{c+d}\,\sqrt{a+a\,\text{Sin}[e+f\,x]}}\right]}{a^{5/2}\,(c-d)^3\,\sqrt{c+d}\,f}-\frac{(A-B)\,\text{Cos}[e+f\,x]}{4\,(c-d)\,f\,(a+a\,\text{Sin}[e+f\,x])^{5/2}}-\frac{(3\,A\,c+5\,B\,c-11\,A\,d+3\,B\,d)\,\text{Cos}[e+f\,x]}{16\,a\,(c-d)^2\,f\,(a+a\,\text{Sin}[e+f\,x])^{3/2}}$$

Result (type 3, 550 leaves):

$$\frac{1}{16\,(c-d)^3 f\,(a\,(1+\text{Sin}[e+f x]))^{5/2}}\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)\left(8\,(A-B)\,(c-d)^2\,\text{Sin}\left[\frac{1}{2}(e+f x)\right]+4\,(-A+B)\,(c-d)^2\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)+\right.$$
$$2\,(c-d)\,(3 A c+5 B c-11 A d+3 B d)\,\text{Sin}\left[\frac{1}{2}(e+f x)\right]\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^2-$$
$$(c-d)\,(3 A c+5 B c-11 A d+3 B d)\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^3+(1+i)\,(-1)^{3/4}\left(B\left(5 c^2-34 c d-3 d^2\right)+A\left(3 c^2-14 c d+43 d^2\right)\right)$$
$$\text{ArcTanh}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{3/4}\left(-1+\text{Tan}\left[\frac{1}{4}(e+f x)\right]\right)\right]\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^4+\frac{1}{\sqrt{c+d}}$$
$$8\,d^{3/2}\,(-B c+A d)\left(e+f x-2\,\text{Log}\left[\text{Sec}\left[\frac{1}{4}(e+f x)\right]^2\right]+2\,\text{Log}\left[\text{Sec}\left[\frac{1}{4}(e+f x)\right]^2\left(\sqrt{c+d}+\sqrt{d}\,\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\sqrt{d}\,\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)\right]\right)$$
$$\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^4+\frac{1}{\sqrt{c+d}}8\,d^{3/2}\,(B c-A d)\left(e+f x-2\,\text{Log}\left[\text{Sec}\left[\frac{1}{4}(e+f x)\right]^2\right]+\right.$$
$$\left.\left.2\,\text{Log}\left[\text{Sec}\left[\frac{1}{4}(e+f x)\right]^2\left(\sqrt{c+d}-\sqrt{d}\,\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\sqrt{d}\,\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)\right]\right)\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^4\right)$$

- **Problem 326: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int\frac{A+B\,\text{Sin}[e+f x]}{(a+a\,\text{Sin}[e+f x])^{5/2}\,(c+d\,\text{Sin}[e+f x])^2}\,dx$$

Optimal (type 3, 395 leaves, 8 steps):

$$-\frac{\left(B\left(5 c^2-58 c d-43 d^2\right)+A\left(3 c^2-22 c d+115 d^2\right)\right)\text{ArcTanh}\left[\frac{\sqrt{a}\,\text{Cos}[e+f x]}{\sqrt{2}\,\sqrt{a+a\,\text{Sin}[e+f x]}}\right]}{16\sqrt{2}\,a^{5/2}\,(c-d)^4 f}+$$
$$\frac{d^{3/2}\left(A d\,(7 c+5 d)-B\left(5 c^2+5 c d+2 d^2\right)\right)\text{ArcTanh}\left[\frac{\sqrt{a}\,\sqrt{d}\,\text{Cos}[e+f x]}{\sqrt{c+d}\,\sqrt{a+a\,\text{Sin}[e+f x]}}\right]}{a^{5/2}\,(c-d)^4\,(c+d)^{3/2} f}-\frac{(A-B)\,\text{Cos}[e+f x]}{4\,(c-d)\,f\,(a+a\,\text{Sin}[e+f x])^{5/2}\,(c+d\,\text{Sin}[e+f x])}-$$
$$\frac{(3 A c+5 B c-15 A d+7 B d)\,\text{Cos}[e+f x]}{16\,a\,(c-d)^2 f\,(a+a\,\text{Sin}[e+f x])^{3/2}\,(c+d\,\text{Sin}[e+f x])}-\frac{d\left(A\left(3 c^2-16 c d-35 d^2\right)+B\left(5 c^2+32 c d+11 d^2\right)\right)\text{Cos}[e+f x]}{16\,a^2\,(c-d)^3\,(c+d)\,f\sqrt{a+a\,\text{Sin}[e+f x]}\,(c+d\,\text{Sin}[e+f x])}$$

Result (type 3, 1318 leaves):

$$\left((1+i)\left(3 A c^2+5 B c^2-22 A c d-58 B c d+115 A d^2-43 B d^2\right)\right.$$

$$\left.\text{ArcTanh}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{3/4}\text{Sec}\left[\frac{1}{4}(e+f x)\right]\left(\text{Cos}\left[\frac{1}{4}(e+f x)\right]-\text{Sin}\left[\frac{1}{4}(e+f x)\right]\right)\right]\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^5\right)\Big/$$

$$\left(\left(16(-1)^{1/4}c^4-64(-1)^{1/4}c^3 d+96(-1)^{1/4}c^2 d^2-64(-1)^{1/4}c d^3+16(-1)^{1/4}d^4\right)f\,(a(1+\text{Sin}[e+f x]))^{5/2}\right)+$$

$$\left(d^{3/2}\left(A d(7 c+5 d)-B\left(5 c^2+5 c d+2 d^2\right)\right)\left(e+f x-2\,\text{Log}\left[\text{Sec}\left[\frac{1}{4}(e+f x)\right]^2\right]+\right.\right.$$

$$\left.\left.2\,\text{Log}\left[\text{Sec}\left[\frac{1}{4}(e+f x)\right]^2\left(\sqrt{c+d}+\sqrt{d}\,\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\sqrt{d}\,\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)\right]\right)\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^5\right)\Big/$$

$$\left(4(c-d)^4(c+d)^{3/2}f\,(a(1+\text{Sin}[e+f x]))^{5/2}\right)+\left(d^{3/2}\left(-A d(7 c+5 d)+B\left(5 c^2+5 c d+2 d^2\right)\right)\right.$$

$$\left(e+f x-2\,\text{Log}\left[\text{Sec}\left[\frac{1}{4}(e+f x)\right]^2\right]+2\,\text{Log}\left[\text{Sec}\left[\frac{1}{4}(e+f x)\right]^2\left(\sqrt{c+d}-\sqrt{d}\,\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\sqrt{d}\,\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)\right]\right)$$

$$\left.\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^5\right)\Big/\left(4(c-d)^4(c+d)^{3/2}f\,(a(1+\text{Sin}[e+f x]))^{5/2}\right)+$$

$$\frac{1}{64(c-d)^3(c+d)f\,(a(1+\text{Sin}[e+f x]))^{5/2}(c+d\,\text{Sin}[e+f x])}\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)$$

$$\left(-22 A c^3\text{Cos}\left[\frac{1}{2}(e+f x)\right]+6 B c^3\text{Cos}\left[\frac{1}{2}(e+f x)\right]+40 A c^2 d\,\text{Cos}\left[\frac{1}{2}(e+f x)\right]-40 B c^2 d\,\text{Cos}\left[\frac{1}{2}(e+f x)\right]+54 A c d^2\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\right.$$

$$70 B c d^2\text{Cos}\left[\frac{1}{2}(e+f x)\right]+24 A d^3\text{Cos}\left[\frac{1}{2}(e+f x)\right]+8 B d^3\text{Cos}\left[\frac{1}{2}(e+f x)\right]-6 A c^3\text{Cos}\left[\frac{3}{2}(e+f x)\right]-10 B c^3\text{Cos}\left[\frac{3}{2}(e+f x)\right]+$$

$$21 A c^2 d\,\text{Cos}\left[\frac{3}{2}(e+f x)\right]-29 B c^2 d\,\text{Cos}\left[\frac{3}{2}(e+f x)\right]+54 A c d^2\text{Cos}\left[\frac{3}{2}(e+f x)\right]-86 B c d^2\text{Cos}\left[\frac{3}{2}(e+f x)\right]+$$

$$75 A d^3\text{Cos}\left[\frac{3}{2}(e+f x)\right]-19 B d^3\text{Cos}\left[\frac{3}{2}(e+f x)\right]+3 A c^2 d\,\text{Cos}\left[\frac{5}{2}(e+f x)\right]+5 B c^2 d\,\text{Cos}\left[\frac{5}{2}(e+f x)\right]-16 A c d^2\text{Cos}\left[\frac{5}{2}(e+f x)\right]+$$

$$32 B c d^2\text{Cos}\left[\frac{5}{2}(e+f x)\right]-35 A d^3\text{Cos}\left[\frac{5}{2}(e+f x)\right]+11 B d^3\text{Cos}\left[\frac{5}{2}(e+f x)\right]+22 A c^3\text{Sin}\left[\frac{1}{2}(e+f x)\right]-6 B c^3\text{Sin}\left[\frac{1}{2}(e+f x)\right]-$$

$$40 A c^2 d\,\text{Sin}\left[\frac{1}{2}(e+f x)\right]+40 B c^2 d\,\text{Sin}\left[\frac{1}{2}(e+f x)\right]-54 A c d^2\text{Sin}\left[\frac{1}{2}(e+f x)\right]+70 B c d^2\text{Sin}\left[\frac{1}{2}(e+f x)\right]-24 A d^3\text{Sin}\left[\frac{1}{2}(e+f x)\right]-$$

$$8 B d^3\text{Sin}\left[\frac{1}{2}(e+f x)\right]-6 A c^3\text{Sin}\left[\frac{3}{2}(e+f x)\right]-10 B c^3\text{Sin}\left[\frac{3}{2}(e+f x)\right]+21 A c^2 d\,\text{Sin}\left[\frac{3}{2}(e+f x)\right]-29 B c^2 d\,\text{Sin}\left[\frac{3}{2}(e+f x)\right]+$$

$$54 A c d^2\text{Sin}\left[\frac{3}{2}(e+f x)\right]-86 B c d^2\text{Sin}\left[\frac{3}{2}(e+f x)\right]+75 A d^3\text{Sin}\left[\frac{3}{2}(e+f x)\right]-19 B d^3\text{Sin}\left[\frac{3}{2}(e+f x)\right]-3 A c^2 d\,\text{Sin}\left[\frac{5}{2}(e+f x)\right]-$$

$$\left.5 B c^2 d\,\text{Sin}\left[\frac{5}{2}(e+f x)\right]+16 A c d^2\text{Sin}\left[\frac{5}{2}(e+f x)\right]-32 B c d^2\text{Sin}\left[\frac{5}{2}(e+f x)\right]+35 A d^3\text{Sin}\left[\frac{5}{2}(e+f x)\right]-11 B d^3\text{Sin}\left[\frac{5}{2}(e+f x)\right]\right)$$

■ Problem 327: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{A+B\,\mathrm{Sin}[e+f\,x]}{(a+a\,\mathrm{Sin}[e+f\,x])^{5/2}\,(c+d\,\mathrm{Sin}[e+f\,x])^3}\,dx$$

Optimal (type 3, 519 leaves, 9 steps):

$$-\frac{\left(B\left(5c^2-82cd-115d^2\right)+3A\left(c^2-10cd+73d^2\right)\right)\mathrm{ArcTanh}\left[\frac{\sqrt{a}\,\mathrm{Cos}[e+f x]}{\sqrt{2}\,\sqrt{a+a\,\mathrm{Sin}[e+f x]}}\right]}{16\sqrt{2}\,a^{5/2}\,(c-d)^5\,f}+\frac{d^{3/2}\left(3Ad\left(21c^2+30cd+13d^2\right)-B\left(35c^3+70c^2d+67cd^2+20d^3\right)\right)\mathrm{ArcTanh}\left[\frac{\sqrt{a}\,\sqrt{d}\,\mathrm{Cos}[e+f x]}{\sqrt{c+d}\,\sqrt{a+a\,\mathrm{Sin}[e+f x]}}\right]}{4a^{5/2}\,(c-d)^5\,(c+d)^{5/2}\,f}-\frac{(A-B)\,\mathrm{Cos}[e+f x]}{4(c-d)\,f\,(a+a\,\mathrm{Sin}[e+f x])^{5/2}\,(c+d\,\mathrm{Sin}[e+f x])^2}-\frac{(3Ac+5Bc-19Ad+11Bd)\,\mathrm{Cos}[e+f x]}{16a\,(c-d)^2\,f\,(a+a\,\mathrm{Sin}[e+f x])^{3/2}\,(c+d\,\mathrm{Sin}[e+f x])^2}-\frac{d\left(A\left(3c^2-20cd-31d^2\right)+B\left(5c^2+28cd+15d^2\right)\right)\mathrm{Cos}[e+f x]}{16a^2\,(c-d)^3\,(c+d)\,f\,\sqrt{a+a\,\mathrm{Sin}[e+f x]}\,(c+d\,\mathrm{Sin}[e+f x])^2}-\frac{d\left(3A\left(c^3-7c^2d-37cd^2-21d^3\right)+B\left(5c^3+73c^2d+79cd^2+35d^3\right)\right)\mathrm{Cos}[e+f x]}{16a^2\,(c-d)^4\,(c+d)^2\,f\,\sqrt{a+a\,\mathrm{Sin}[e+f x]}\,(c+d\,\mathrm{Sin}[e+f x])}$$

Result (type 3, 2103 leaves):

$$\Bigg((1+i)\left(3Ac^2+5Bc^2-30Acd-82Bcd+219Ad^2-115Bd^2\right)\mathrm{ArcTanh}\left[\left(\frac{1}{2}+\frac{i}{2}\right)(-1)^{3/4}\,\mathrm{Sec}\left[\frac{1}{4}(e+f x)\right]\left(\mathrm{Cos}\left[\frac{1}{4}(e+f x)\right]-\mathrm{Sin}\left[\frac{1}{4}(e+f x)\right]\right)\right]\left(\mathrm{Cos}\left[\frac{1}{2}(e+f x)\right]+\mathrm{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^5\Bigg)\Big/\left(\left(16(-1)^{1/4}c^5-80(-1)^{1/4}c^4d+160(-1)^{1/4}c^3d^2-160(-1)^{1/4}c^2d^3+80(-1)^{1/4}cd^4-16(-1)^{1/4}d^5\right)f\,(a(1+\mathrm{Sin}[e+f x]))^{5/2}\right)-$$

$$\Bigg(d^{3/2}\left(-3Ad\left(21c^2+30cd+13d^2\right)+B\left(35c^3+70c^2d+67cd^2+20d^3\right)\right)\left(e+f x-2\,\mathrm{Log}\left[\mathrm{Sec}\left[\frac{1}{4}(e+f x)\right]^2\right]+2\,\mathrm{Log}\left[\mathrm{Sec}\left[\frac{1}{4}(e+f x)\right]^2\left(\sqrt{c+d}+\sqrt{d}\,\mathrm{Cos}\left[\frac{1}{2}(e+f x)\right]-\sqrt{d}\,\mathrm{Sin}\left[\frac{1}{2}(e+f x)\right]\right)\right]\right)\left(\mathrm{Cos}\left[\frac{1}{2}(e+f x)\right]+\mathrm{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^5\Bigg)\Big/\left(16(c-d)^5(c+d)^{5/2}f\,(a(1+\mathrm{Sin}[e+f x]))^{5/2}\right)+$$

$$\Bigg(d^{3/2}\left(-3Ad\left(21c^2+30cd+13d^2\right)+B\left(35c^3+70c^2d+67cd^2+20d^3\right)\right)\left(e+f x-2\,\mathrm{Log}\left[\mathrm{Sec}\left[\frac{1}{4}(e+f x)\right]^2\right]+2\,\mathrm{Log}\left[\mathrm{Sec}\left[\frac{1}{4}(e+f x)\right]^2\left(\sqrt{c+d}-\sqrt{d}\,\mathrm{Cos}\left[\frac{1}{2}(e+f x)\right]+\sqrt{d}\,\mathrm{Sin}\left[\frac{1}{2}(e+f x)\right]\right)\right]\right)\left(\mathrm{Cos}\left[\frac{1}{2}(e+f x)\right]+\mathrm{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^5\Bigg)\Big/\left(16(c-d)^5(c+d)^{5/2}f\,(a(1+\mathrm{Sin}[e+f x]))^{5/2}\right)+$$

$$\frac{1}{128(c-d)^4(c+d)^2f\,(a(1+\mathrm{Sin}[e+f x]))^{5/2}\,(c+d\,\mathrm{Sin}[e+f x])^2}\left(\mathrm{Cos}\left[\frac{1}{2}(e+f x)\right]+\mathrm{Sin}\left[\frac{1}{2}(e+f x)\right]\right)$$

$$\Big(-44\,A\,c^5\,\mathrm{Cos}\Big[\frac{1}{2}\,(e+f\,x)\Big]+12\,B\,c^5\,\mathrm{Cos}\Big[\frac{1}{2}\,(e+f\,x)\Big]+84\,A\,c^4\,d\,\mathrm{Cos}\Big[\frac{1}{2}\,(e+f\,x)\Big]-116\,B\,c^4\,d\,\mathrm{Cos}\Big[\frac{1}{2}\,(e+f\,x)\Big]+249\,A\,c^3\,d^2\,\mathrm{Cos}\Big[\frac{1}{2}\,(e+f\,x)\Big]-$$

$$433\,B\,c^3\,d^2\,\mathrm{Cos}\Big[\frac{1}{2}\,(e+f\,x)\Big]+385\,A\,c^2\,d^3\,\mathrm{Cos}\Big[\frac{1}{2}\,(e+f\,x)\Big]-277\,B\,c^2\,d^3\,\mathrm{Cos}\Big[\frac{1}{2}\,(e+f\,x)\Big]+239\,A\,c\,d^4\,\mathrm{Cos}\Big[\frac{1}{2}\,(e+f\,x)\Big]-$$

$$95\,B\,c\,d^4\,\mathrm{Cos}\Big[\frac{1}{2}\,(e+f\,x)\Big]+47\,A\,d^5\,\mathrm{Cos}\Big[\frac{1}{2}\,(e+f\,x)\Big]-51\,B\,d^5\,\mathrm{Cos}\Big[\frac{1}{2}\,(e+f\,x)\Big]-12\,A\,c^5\,\mathrm{Cos}\Big[\frac{3}{2}\,(e+f\,x)\Big]-20\,B\,c^5\,\mathrm{Cos}\Big[\frac{3}{2}\,(e+f\,x)\Big]+$$

$$40\,A\,c^4\,d\,\mathrm{Cos}\Big[\frac{3}{2}\,(e+f\,x)\Big]-104\,B\,c^4\,d\,\mathrm{Cos}\Big[\frac{3}{2}\,(e+f\,x)\Big]+261\,A\,c^3\,d^2\,\mathrm{Cos}\Big[\frac{3}{2}\,(e+f\,x)\Big]-581\,B\,c^3\,d^2\,\mathrm{Cos}\Big[\frac{3}{2}\,(e+f\,x)\Big]+$$

$$781\,A\,c^2\,d^3\,\mathrm{Cos}\Big[\frac{3}{2}\,(e+f\,x)\Big]-665\,B\,c^2\,d^3\,\mathrm{Cos}\Big[\frac{3}{2}\,(e+f\,x)\Big]+579\,A\,c\,d^4\,\mathrm{Cos}\Big[\frac{3}{2}\,(e+f\,x)\Big]-299\,B\,c\,d^4\,\mathrm{Cos}\Big[\frac{3}{2}\,(e+f\,x)\Big]+$$

$$79\,A\,d^5\,\mathrm{Cos}\Big[\frac{3}{2}\,(e+f\,x)\Big]-59\,B\,d^5\,\mathrm{Cos}\Big[\frac{3}{2}\,(e+f\,x)\Big]+12\,A\,c^4\,d\,\mathrm{Cos}\Big[\frac{5}{2}\,(e+f\,x)\Big]+20\,B\,c^4\,d\,\mathrm{Cos}\Big[\frac{5}{2}\,(e+f\,x)\Big]-73\,A\,c^3\,d^2\,\mathrm{Cos}\Big[\frac{5}{2}\,(e+f\,x)\Big]+$$

$$217\,B\,c^3\,d^2\,\mathrm{Cos}\Big[\frac{5}{2}\,(e+f\,x)\Big]-353\,A\,c^2\,d^3\,\mathrm{Cos}\Big[\frac{5}{2}\,(e+f\,x)\Big]+397\,B\,c^2\,d^3\,\mathrm{Cos}\Big[\frac{5}{2}\,(e+f\,x)\Big]-419\,A\,c\,d^4\,\mathrm{Cos}\Big[\frac{5}{2}\,(e+f\,x)\Big]+$$

$$251\,B\,c\,d^4\,\mathrm{Cos}\Big[\frac{5}{2}\,(e+f\,x)\Big]-127\,A\,d^5\,\mathrm{Cos}\Big[\frac{5}{2}\,(e+f\,x)\Big]+75\,B\,d^5\,\mathrm{Cos}\Big[\frac{5}{2}\,(e+f\,x)\Big]+3\,A\,c^3\,d^2\,\mathrm{Cos}\Big[\frac{7}{2}\,(e+f\,x)\Big]+5\,B\,c^3\,d^2\,\mathrm{Cos}\Big[\frac{7}{2}\,(e+f\,x)\Big]-$$

$$21\,A\,c^2\,d^3\,\mathrm{Cos}\Big[\frac{7}{2}\,(e+f\,x)\Big]+73\,B\,c^2\,d^3\,\mathrm{Cos}\Big[\frac{7}{2}\,(e+f\,x)\Big]-111\,A\,c\,d^4\,\mathrm{Cos}\Big[\frac{7}{2}\,(e+f\,x)\Big]+79\,B\,c\,d^4\,\mathrm{Cos}\Big[\frac{7}{2}\,(e+f\,x)\Big]-63\,A\,d^5\,\mathrm{Cos}\Big[\frac{7}{2}\,(e+f\,x)\Big]+$$

$$35\,B\,d^5\,\mathrm{Cos}\Big[\frac{7}{2}\,(e+f\,x)\Big]+44\,A\,c^5\,\mathrm{Sin}\Big[\frac{1}{2}\,(e+f\,x)\Big]-12\,B\,c^5\,\mathrm{Sin}\Big[\frac{1}{2}\,(e+f\,x)\Big]-84\,A\,c^4\,d\,\mathrm{Sin}\Big[\frac{1}{2}\,(e+f\,x)\Big]+116\,B\,c^4\,d\,\mathrm{Sin}\Big[\frac{1}{2}\,(e+f\,x)\Big]-$$

$$249\,A\,c^3\,d^2\,\mathrm{Sin}\Big[\frac{1}{2}\,(e+f\,x)\Big]+433\,B\,c^3\,d^2\,\mathrm{Sin}\Big[\frac{1}{2}\,(e+f\,x)\Big]-385\,A\,c^2\,d^3\,\mathrm{Sin}\Big[\frac{1}{2}\,(e+f\,x)\Big]+277\,B\,c^2\,d^3\,\mathrm{Sin}\Big[\frac{1}{2}\,(e+f\,x)\Big]-$$

$$239\,A\,c\,d^4\,\mathrm{Sin}\Big[\frac{1}{2}\,(e+f\,x)\Big]+95\,B\,c\,d^4\,\mathrm{Sin}\Big[\frac{1}{2}\,(e+f\,x)\Big]-47\,A\,d^5\,\mathrm{Sin}\Big[\frac{1}{2}\,(e+f\,x)\Big]+51\,B\,d^5\,\mathrm{Sin}\Big[\frac{1}{2}\,(e+f\,x)\Big]-12\,A\,c^5\,\mathrm{Sin}\Big[\frac{3}{2}\,(e+f\,x)\Big]-$$

$$20\,B\,c^5\,\mathrm{Sin}\Big[\frac{3}{2}\,(e+f\,x)\Big]+40\,A\,c^4\,d\,\mathrm{Sin}\Big[\frac{3}{2}\,(e+f\,x)\Big]-104\,B\,c^4\,d\,\mathrm{Sin}\Big[\frac{3}{2}\,(e+f\,x)\Big]+261\,A\,c^3\,d^2\,\mathrm{Sin}\Big[\frac{3}{2}\,(e+f\,x)\Big]-581\,B\,c^3\,d^2\,\mathrm{Sin}\Big[\frac{3}{2}\,(e+f\,x)\Big]+$$

$$781\,A\,c^2\,d^3\,\mathrm{Sin}\Big[\frac{3}{2}\,(e+f\,x)\Big]-665\,B\,c^2\,d^3\,\mathrm{Sin}\Big[\frac{3}{2}\,(e+f\,x)\Big]+579\,A\,c\,d^4\,\mathrm{Sin}\Big[\frac{3}{2}\,(e+f\,x)\Big]-299\,B\,c\,d^4\,\mathrm{Sin}\Big[\frac{3}{2}\,(e+f\,x)\Big]+79\,A\,d^5\,\mathrm{Sin}\Big[\frac{3}{2}\,(e+f\,x)\Big]-$$

$$59\,B\,d^5\,\mathrm{Sin}\Big[\frac{3}{2}\,(e+f\,x)\Big]-12\,A\,c^4\,d\,\mathrm{Sin}\Big[\frac{5}{2}\,(e+f\,x)\Big]-20\,B\,c^4\,d\,\mathrm{Sin}\Big[\frac{5}{2}\,(e+f\,x)\Big]+73\,A\,c^3\,d^2\,\mathrm{Sin}\Big[\frac{5}{2}\,(e+f\,x)\Big]-217\,B\,c^3\,d^2\,\mathrm{Sin}\Big[\frac{5}{2}\,(e+f\,x)\Big]+$$

$$353\,A\,c^2\,d^3\,\mathrm{Sin}\Big[\frac{5}{2}\,(e+f\,x)\Big]-397\,B\,c^2\,d^3\,\mathrm{Sin}\Big[\frac{5}{2}\,(e+f\,x)\Big]+419\,A\,c\,d^4\,\mathrm{Sin}\Big[\frac{5}{2}\,(e+f\,x)\Big]-251\,B\,c\,d^4\,\mathrm{Sin}\Big[\frac{5}{2}\,(e+f\,x)\Big]+$$

$$127\,A\,d^5\,\mathrm{Sin}\Big[\frac{5}{2}\,(e+f\,x)\Big]-75\,B\,d^5\,\mathrm{Sin}\Big[\frac{5}{2}\,(e+f\,x)\Big]+3\,A\,c^3\,d^2\,\mathrm{Sin}\Big[\frac{7}{2}\,(e+f\,x)\Big]+5\,B\,c^3\,d^2\,\mathrm{Sin}\Big[\frac{7}{2}\,(e+f\,x)\Big]-21\,A\,c^2\,d^3\,\mathrm{Sin}\Big[\frac{7}{2}\,(e+f\,x)\Big]+$$

$$73\,B\,c^2\,d^3\,\mathrm{Sin}\Big[\frac{7}{2}\,(e+f\,x)\Big]-111\,A\,c\,d^4\,\mathrm{Sin}\Big[\frac{7}{2}\,(e+f\,x)\Big]+79\,B\,c\,d^4\,\mathrm{Sin}\Big[\frac{7}{2}\,(e+f\,x)\Big]-63\,A\,d^5\,\mathrm{Sin}\Big[\frac{7}{2}\,(e+f\,x)\Big]+35\,B\,d^5\,\mathrm{Sin}\Big[\frac{7}{2}\,(e+f\,x)\Big]\Big)\Big)$$

- **Problem 328: Unable to integrate problem.**

$$\int (a+a\,\text{Sin}[e+f\,x])^2\,(A+B\,\text{Sin}[e+f\,x])\,(c+d\,\text{Sin}[e+f\,x])^n\,dx$$

Optimal (type 6, 221 leaves, 7 steps) :

$$-\frac{1}{f\sqrt{1+\text{Sin}[e+f\,x]}}8\sqrt{2}\,a^2\,B\,\text{AppellF1}\left[\frac{1}{2},-\frac{5}{2},-n,\frac{3}{2},\frac{1}{2}(1-\text{Sin}[e+f\,x]),\frac{d\,(1-\text{Sin}[e+f\,x])}{c+d}\right]\text{Cos}[e+f\,x]\,(c+d\,\text{Sin}[e+f\,x])^n\left(\frac{c+d\,\text{Sin}[e+f\,x]}{c+d}\right)^{-n}-\frac{1}{f\sqrt{1+\text{Sin}[e+f\,x]}}4\sqrt{2}\,a^2\,(A-B)\,\text{AppellF1}\left[\frac{1}{2},-\frac{3}{2},-n,\frac{3}{2},\frac{1}{2}(1-\text{Sin}[e+f\,x]),\frac{d\,(1-\text{Sin}[e+f\,x])}{c+d}\right]\text{Cos}[e+f\,x]\,(c+d\,\text{Sin}[e+f\,x])^n\left(\frac{c+d\,\text{Sin}[e+f\,x]}{c+d}\right)^{-n}$$

Result (type 8, 37 leaves) :

$$\int (a+a\,\text{Sin}[e+f\,x])^2\,(A+B\,\text{Sin}[e+f\,x])\,(c+d\,\text{Sin}[e+f\,x])^n\,dx$$

Problem 329: Unable to integrate problem.

$$\int (a+a\,\text{Sin}[e+f\,x])\,(A+B\,\text{Sin}[e+f\,x])\,(c+d\,\text{Sin}[e+f\,x])^n\,dx$$

Optimal (type 6, 217 leaves, 8 steps) :

$$-\frac{1}{f\sqrt{1+\text{Sin}[e+f\,x]}}4\sqrt{2}\,a\,B\,\text{AppellF1}\left[\frac{1}{2},-\frac{3}{2},-n,\frac{3}{2},\frac{1}{2}(1-\text{Sin}[e+f\,x]),\frac{d\,(1-\text{Sin}[e+f\,x])}{c+d}\right]\text{Cos}[e+f\,x]\,(c+d\,\text{Sin}[e+f\,x])^n\left(\frac{c+d\,\text{Sin}[e+f\,x]}{c+d}\right)^{-n}-\frac{1}{f\sqrt{1+\text{Sin}[e+f\,x]}}2\sqrt{2}\,a\,(A-B)\,\text{AppellF1}\left[\frac{1}{2},-\frac{1}{2},-n,\frac{3}{2},\frac{1}{2}(1-\text{Sin}[e+f\,x]),\frac{d\,(1-\text{Sin}[e+f\,x])}{c+d}\right]\text{Cos}[e+f\,x]\,(c+d\,\text{Sin}[e+f\,x])^n\left(\frac{c+d\,\text{Sin}[e+f\,x]}{c+d}\right)^{-n}$$

Result (type 8, 35 leaves) :

$$\int (a+a\,\text{Sin}[e+f\,x])\,(A+B\,\text{Sin}[e+f\,x])\,(c+d\,\text{Sin}[e+f\,x])^n\,dx$$

Problem 330: Unable to integrate problem.

$$\int \frac{(A+B\,\text{Sin}[e+f\,x])\,(c+d\,\text{Sin}[e+f\,x])^n}{a+a\,\text{Sin}[e+f\,x]}\,dx$$

Optimal (type 6, 221 leaves, 7 steps) :

$$-\frac{1}{a f \sqrt{1+\text{Sin}[e+f x]}}\sqrt{2}\ \text{B AppellF1}\left[\frac{1}{2},\frac{1}{2},-n,\frac{3}{2},\frac{1}{2}(1-\text{Sin}[e+f x]),\frac{d(1-\text{Sin}[e+f x])}{c+d}\right]$$
$$\text{Cos}[e+f x](c+d\,\text{Sin}[e+f x])^n\left(\frac{c+d\,\text{Sin}[e+f x]}{c+d}\right)^{-n}-\frac{1}{\sqrt{2}\ a f\sqrt{1+\text{Sin}[e+f x]}}$$
$$(A-B)\ \text{AppellF1}\left[\frac{1}{2},\frac{3}{2},-n,\frac{3}{2},\frac{1}{2}(1-\text{Sin}[e+f x]),\frac{d(1-\text{Sin}[e+f x])}{c+d}\right]\text{Cos}[e+f x](c+d\,\text{Sin}[e+f x])^n\left(\frac{c+d\,\text{Sin}[e+f x]}{c+d}\right)^{-n}$$

Result (type 8, 37 leaves):

$$\int\frac{(A+B\,\text{Sin}[e+f x])(c+d\,\text{Sin}[e+f x])^n}{a+a\,\text{Sin}[e+f x]}\,dx$$

Problem 331: Unable to integrate problem.

$$\int\frac{(A+B\,\text{Sin}[e+f x])(c+d\,\text{Sin}[e+f x])^n}{(a+a\,\text{Sin}[e+f x])^2}\,dx$$

Optimal (type 6, 223 leaves, 7 steps):

$$-\left(\text{B AppellF1}\left[\frac{1}{2},\frac{3}{2},-n,\frac{3}{2},\frac{1}{2}(1-\text{Sin}[e+f x]),\frac{d(1-\text{Sin}[e+f x])}{c+d}\right]\text{Cos}[e+f x](c+d\,\text{Sin}[e+f x])^n\left(\frac{c+d\,\text{Sin}[e+f x]}{c+d}\right)^{-n}\right)\Big/$$
$$\left(\sqrt{2}\ a^2 f\sqrt{1+\text{Sin}[e+f x]}\right)-$$
$$\left((A-B)\ \text{AppellF1}\left[\frac{1}{2},\frac{5}{2},-n,\frac{3}{2},\frac{1}{2}(1-\text{Sin}[e+f x]),\frac{d(1-\text{Sin}[e+f x])}{c+d}\right]\text{Cos}[e+f x](c+d\,\text{Sin}[e+f x])^n\left(\frac{c+d\,\text{Sin}[e+f x]}{c+d}\right)^{-n}\right)\Big/$$
$$\left(2\sqrt{2}\ a^2 f\sqrt{1+\text{Sin}[e+f x]}\right)$$

Result (type 8, 37 leaves):

$$\int\frac{(A+B\,\text{Sin}[e+f x])(c+d\,\text{Sin}[e+f x])^n}{(a+a\,\text{Sin}[e+f x])^2}\,dx$$

Problem 333: Unable to integrate problem.

$$\int\sqrt{a+a\,\text{Sin}[e+f x]}\ (A+B\,\text{Sin}[e+f x])(c+d\,\text{Sin}[e+f x])^n\,dx$$

Optimal (type 5, 167 leaves, 4 steps):

$$-\frac{2 a B\,\text{Cos}[e+f x](c+d\,\text{Sin}[e+f x])^{1+n}}{d f(3+2n)\sqrt{a+a\,\text{Sin}[e+f x]}}-$$
$$\left(2 a(A d(3+2n)-B(c-2d(1+n)))\,\text{Cos}[e+f x]\ \text{Hypergeometric2F1}\left[\frac{1}{2},-n,\frac{3}{2},\frac{d(1-\text{Sin}[e+f x])}{c+d}\right](c+d\,\text{Sin}[e+f x])^n\right.$$
$$\left.\left(\frac{c+d\,\text{Sin}[e+f x]}{c+d}\right)^{-n}\right)\Big/\left(d f(3+2n)\sqrt{a+a\,\text{Sin}[e+f x]}\right)$$

Result (type 8, 39 leaves):

$$\int \sqrt{a+a\,\text{Sin}[e+f\,x]}\;(A+B\,\text{Sin}[e+f\,x])\;(c+d\,\text{Sin}[e+f\,x])^n\,dx$$

Problem 334: Result more than twice size of optimal antiderivative.

$$\int \frac{(A+B\,\text{Sin}[e+f\,x])\;(c+d\,\text{Sin}[e+f\,x])^n}{\sqrt{a+a\,\text{Sin}[e+f\,x]}}\,dx$$

Optimal (type 6, 220 leaves, 7 steps):

$$-\left((A-B)\;\text{AppellF1}\left[1+n,\frac{1}{2},1,2+n,\frac{c+d\,\text{Sin}[e+f\,x]}{c+d},\frac{c+d\,\text{Sin}[e+f\,x]}{c-d}\right]\text{Cos}[e+f\,x]\sqrt{\frac{d\,(1-\text{Sin}[e+f\,x])}{c+d}}\;(c+d\,\text{Sin}[e+f\,x])^{1+n}\right)\Big/\left((c-d)\;f\;(1+n)\;(1-\text{Sin}[e+f\,x])\sqrt{a+a\,\text{Sin}[e+f\,x]}\right)-\frac{2\,B\,\text{Cos}[e+f\,x]\;\text{Hypergeometric2F1}\left[\frac{1}{2},-n,\frac{3}{2},\frac{d\,(1-\text{Sin}[e+f\,x])}{c+d}\right](c+d\,\text{Sin}[e+f\,x])^n\left(\frac{c+d\,\text{Sin}[e+f\,x]}{c+d}\right)^{-n}}{f\sqrt{a+a\,\text{Sin}[e+f\,x]}}$$

Result (type 6, 1282 leaves):

$$\frac{1}{a}\left(\left(a^2\,B\,\text{Cos}[e+f\,x]\;\text{Sin}[e+f\,x]\;(1+\text{Sin}[e+f\,x])^2\;(c+d\,\text{Sin}[e+f\,x])^{2\,n}\left(c+\frac{d\,(-a+a\,(1+\text{Sin}[e+f\,x]))}{a}\right)^{-n}\right.\right.$$
$$\left(\left(4\,a\,(c-d)\;\text{AppellF1}\left[1,\frac{1}{2},-n,2,\frac{1}{2}(1+\text{Sin}[e+f\,x]),-\frac{a\,d\,(1+\text{Sin}[e+f\,x])}{a\,c-a\,d}\right]\right)\Big/\left(8\,a\,(c-d)\right.\right.$$
$$\text{AppellF1}\left[1,\frac{1}{2},-n,2,\frac{1}{2}(1+\text{Sin}[e+f\,x]),-\frac{a\,d\,(1+\text{Sin}[e+f\,x])}{a\,c-a\,d}\right]+a\left(4\,d\,n\;\text{AppellF1}\left[2,\frac{1}{2},1-n,3,\frac{1}{2}(1+\text{Sin}[e+f\,x]),\right.\right.$$
$$\left.\left.\left.-\frac{a\,d\,(1+\text{Sin}[e+f\,x])}{a\,c-a\,d}\right]+(c-d)\;\text{AppellF1}\left[2,\frac{3}{2},-n,3,\frac{1}{2}(1+\text{Sin}[e+f\,x]),-\frac{a\,d\,(1+\text{Sin}[e+f\,x])}{a\,c-a\,d}\right]\right)(1+\text{Sin}[e+f\,x])\right)+$$
$$\left(d\,(-1+2\,n)\;\text{AppellF1}\left[-\frac{1}{2}-n,-\frac{1}{2},-n,\frac{1}{2}-n,\frac{2}{1+\text{Sin}[e+f\,x]},\frac{-c+d}{d\,(1+\text{Sin}[e+f\,x])}\right](-2\,a+a\,(1+\text{Sin}[e+f\,x]))\right)\Big/$$
$$\left((1+2\,n)\left(2\,a\left((-c+d)\;n\;\text{AppellF1}\left[\frac{1}{2}-n,-\frac{1}{2},1-n,\frac{3}{2}-n,\frac{2}{1+\text{Sin}[e+f\,x]},\frac{-c+d}{d\,(1+\text{Sin}[e+f\,x])}\right]+\right.\right.\right.$$
$$\left.d\;\text{AppellF1}\left[\frac{1}{2}-n,\frac{1}{2},-n,\frac{3}{2}-n,\frac{2}{1+\text{Sin}[e+f\,x]},\frac{-c+d}{d\,(1+\text{Sin}[e+f\,x])}\right]\right)+$$
$$\left.\left.\left.\left.a\,d\,(-1+2\,n)\;\text{AppellF1}\left[-\frac{1}{2}-n,-\frac{1}{2},-n,\frac{1}{2}-n,\frac{2}{1+\text{Sin}[e+f\,x]},\frac{-c+d}{d\,(1+\text{Sin}[e+f\,x])}\right](1+\text{Sin}[e+f\,x])\right)\right)\right)\right)\Big/$$
$$\left(f\sqrt{a\,(1+\text{Sin}[e+f\,x])}\;(-a+a\,(1+\text{Sin}[e+f\,x]))\sqrt{\frac{2\,a^2\,(1+\text{Sin}[e+f\,x])-a^2\,(1+\text{Sin}[e+f\,x])^2}{a^2}}\right.$$

$$\sqrt{1-\frac{(-a+a\,(1+\mathrm{Sin}[e+f\,x]))^2}{a^2}}\Bigg)+$$

$$\Bigg(a^2\,A\,\mathrm{Cos}[e+f\,x]\,(1+\mathrm{Sin}[e+f\,x])^2\,(c+d\,\mathrm{Sin}[e+f\,x])^{2\,n}\left(c+\frac{d\,(-a+a\,(1+\mathrm{Sin}[e+f\,x]))}{a}\right)^{-n}$$

$$\left(\left(4\,(c-d)\,\mathrm{AppellF1}\left[1,\frac{1}{2},-n,2,\frac{1}{2}\,(1+\mathrm{Sin}[e+f\,x]),-\frac{a\,d\,(1+\mathrm{Sin}[e+f\,x])}{a\,c-a\,d}\right]\right)\right/$$

$$\Bigg(8\,a\,(c-d)\,\mathrm{AppellF1}\left[1,\frac{1}{2},-n,2,\frac{1}{2}\,(1+\mathrm{Sin}[e+f\,x]),-\frac{a\,d\,(1+\mathrm{Sin}[e+f\,x])}{a\,c-a\,d}\right]+$$

$$a\,\Bigg(4\,d\,n\,\mathrm{AppellF1}\left[2,\frac{1}{2},1-n,3,\frac{1}{2}\,(1+\mathrm{Sin}[e+f\,x]),-\frac{a\,d\,(1+\mathrm{Sin}[e+f\,x])}{a\,c-a\,d}\right]+$$

$$(c-d)\,\mathrm{AppellF1}\left[2,\frac{3}{2},-n,3,\frac{1}{2}\,(1+\mathrm{Sin}[e+f\,x]),-\frac{a\,d\,(1+\mathrm{Sin}[e+f\,x])}{a\,c-a\,d}\right]\Bigg)\,(1+\mathrm{Sin}[e+f\,x])\Bigg)-$$

$$\left(d\,(-1+2\,n)\,\mathrm{AppellF1}\left[-\frac{1}{2}-n,-\frac{1}{2},-n,\frac{1}{2}-n,\frac{2}{1+\mathrm{Sin}[e+f\,x]},\frac{-c+d}{d\,(1+\mathrm{Sin}[e+f\,x])}\right]\,(-2\,a+a\,(1+\mathrm{Sin}[e+f\,x]))\right)\Big/$$

$$\Bigg(a\,(1+2\,n)\,\Bigg(2\,a\,\Bigg((-c+d)\,n\,\mathrm{AppellF1}\left[\frac{1}{2}-n,-\frac{1}{2},1-n,\frac{3}{2}-n,\frac{2}{1+\mathrm{Sin}[e+f\,x]},\frac{-c+d}{d\,(1+\mathrm{Sin}[e+f\,x])}\right]+$$

$$d\,\mathrm{AppellF1}\left[\frac{1}{2}-n,\frac{1}{2},-n,\frac{3}{2}-n,\frac{2}{1+\mathrm{Sin}[e+f\,x]},\frac{-c+d}{d\,(1+\mathrm{Sin}[e+f\,x])}\right]\Bigg)+$$

$$a\,d\,(-1+2\,n)\,\mathrm{AppellF1}\left[-\frac{1}{2}-n,-\frac{1}{2},-n,\frac{1}{2}-n,\frac{2}{1+\mathrm{Sin}[e+f\,x]},\frac{-c+d}{d\,(1+\mathrm{Sin}[e+f\,x])}\right]\,(1+\mathrm{Sin}[e+f\,x])\Bigg)\Bigg)\Bigg)\Bigg)\Bigg/$$

$$\left(f\,\sqrt{a\,(1+\mathrm{Sin}[e+f\,x])}\,\sqrt{\frac{2\,a^2\,(1+\mathrm{Sin}[e+f\,x])-a^2\,(1+\mathrm{Sin}[e+f\,x])^2}{a^2}}\,\sqrt{1-\frac{(-a+a\,(1+\mathrm{Sin}[e+f\,x]))^2}{a^2}}\right)\Bigg)$$

- **Problem 335: Result more than twice size of optimal antiderivative.**

$$\int\frac{(A+B\,\mathrm{Sin}[e+f\,x])\,(c+d\,\mathrm{Sin}[e+f\,x])^n}{(a+a\,\mathrm{Sin}[e+f\,x])^{3/2}}\,dx$$

Optimal (type 6, 269 leaves, 7 steps):

$$-\left(B\,\text{AppellF1}\left[1+n,\frac{1}{2},1,2+n,\frac{c+d\,\text{Sin}[e+f x]}{c+d},\frac{c+d\,\text{Sin}[e+f x]}{c-d}\right]\text{Cos}[e+f x]\sqrt{\frac{d\,(1-\text{Sin}[e+f x])}{c+d}}\,(c+d\,\text{Sin}[e+f x])^{1+n}\right)\Big/$$

$$\left(a\,(c-d)\,f\,(1+n)\,(1-\text{Sin}[e+f x])\sqrt{a+a\,\text{Sin}[e+f x]}\right)+$$

$$\left((A-B)\,d\,\text{AppellF1}\left[1+n,\frac{1}{2},2,2+n,\frac{c+d\,\text{Sin}[e+f x]}{c+d},\frac{c+d\,\text{Sin}[e+f x]}{c-d}\right]\text{Cos}[e+f x]\sqrt{\frac{d\,(1-\text{Sin}[e+f x])}{c+d}}\,(c+d\,\text{Sin}[e+f x])^{1+n}\right)\Big/$$

$$\left((c-d)^2\,f\,(1+n)\,(a-a\,\text{Sin}[e+f x])\sqrt{a+a\,\text{Sin}[e+f x]}\right)$$

Result (type 6, 1854 leaves) :

$$\left(B\,\text{Cos}[e+f x]\,\text{Sin}[e+f x]\,(1+\text{Sin}[e+f x])\,(c+d\,\text{Sin}[e+f x])^{2n}\left(c+\frac{d\,(-a+a\,(1+\text{Sin}[e+f x]))}{a}\right)^{-n}\right.$$

$$\left(\left(4a\,(c-d)\,\text{AppellF1}\left[1,\frac{1}{2},-n,2,\frac{1}{2}(1+\text{Sin}[e+f x]),-\frac{a\,d\,(1+\text{Sin}[e+f x])}{a\,c-a\,d}\right](1+\text{Sin}[e+f x])\right)\Big/\right.$$

$$\left(8a\,(c-d)\,\text{AppellF1}\left[1,\frac{1}{2},-n,2,\frac{1}{2}(1+\text{Sin}[e+f x]),-\frac{a\,d\,(1+\text{Sin}[e+f x])}{a\,c-a\,d}\right]+a\left(4\,d\,n\,\text{AppellF1}\left[2,\frac{1}{2},1-n,3,\frac{1}{2}(1+\text{Sin}[e+f x]),\right.\right.\right.$$

$$\left.\left.\left.-\frac{a\,d\,(1+\text{Sin}[e+f x])}{a\,c-a\,d}\right]+(c-d)\,\text{AppellF1}\left[2,\frac{3}{2},-n,3,\frac{1}{2}(1+\text{Sin}[e+f x]),-\frac{a\,d\,(1+\text{Sin}[e+f x])}{a\,c-a\,d}\right]\right)(1+\text{Sin}[e+f x])\right)-$$

$$\left(d\,(-1+2n)\,\text{AppellF1}\left[-\frac{1}{2}-n,-\frac{1}{2},-n,\frac{1}{2}-n,\frac{2}{1+\text{Sin}[e+f x]},\frac{-c+d}{d\,(1+\text{Sin}[e+f x])}\right](1+\text{Sin}[e+f x])\,(-2a+a\,(1+\text{Sin}[e+f x]))\right)\Big/$$

$$\left((1+2n)\left(2a\left((-c+d)\,n\,\text{AppellF1}\left[\frac{1}{2}-n,-\frac{1}{2},1-n,\frac{3}{2}-n,\frac{2}{1+\text{Sin}[e+f x]},\frac{-c+d}{d\,(1+\text{Sin}[e+f x])}\right]+\right.\right.\right.$$

$$\left.d\,\text{AppellF1}\left[\frac{1}{2}-n,\frac{1}{2},-n,\frac{3}{2}-n,\frac{2}{1+\text{Sin}[e+f x]},\frac{-c+d}{d\,(1+\text{Sin}[e+f x])}\right]\right)+$$

$$\left.\left.a\,d\,(-1+2n)\,\text{AppellF1}\left[-\frac{1}{2}-n,-\frac{1}{2},-n,\frac{1}{2}-n,\frac{2}{1+\text{Sin}[e+f x]},\frac{-c+d}{d\,(1+\text{Sin}[e+f x])}\right](1+\text{Sin}[e+f x])\right)\right)+$$

$$\left(2\,d\,(-3+2n)\,\text{AppellF1}\left[\frac{1}{2}-n,-\frac{1}{2},-n,\frac{3}{2}-n,\frac{2}{1+\text{Sin}[e+f x]},\frac{-c+d}{d\,(1+\text{Sin}[e+f x])}\right](-2a+a\,(1+\text{Sin}[e+f x]))\right)\Big/$$

$$\left((-1+2n)\left(2a\left((-c+d)\,n\,\text{AppellF1}\left[\frac{3}{2}-n,-\frac{1}{2},1-n,\frac{5}{2}-n,\frac{2}{1+\text{Sin}[e+f x]},\frac{-c+d}{d\,(1+\text{Sin}[e+f x])}\right]+\right.\right.\right.$$

$$\left.d\,\text{AppellF1}\left[\frac{3}{2}-n,\frac{1}{2},-n,\frac{5}{2}-n,\frac{2}{1+\text{Sin}[e+f x]},\frac{-c+d}{d\,(1+\text{Sin}[e+f x])}\right]\right)+$$

$$\left.\left.\left.\left.a\,d\,(-3+2n)\,\text{AppellF1}\left[\frac{1}{2}-n,-\frac{1}{2},-n,\frac{3}{2}-n,\frac{2}{1+\text{Sin}[e+f x]},\frac{-c+d}{d\,(1+\text{Sin}[e+f x])}\right](1+\text{Sin}[e+f x])\right)\right)\right)\right)\Big/$$

$$\left(2 f \sqrt{a (1+\text{Sin}[e+f x])} (-a+a (1+\text{Sin}[e+f x])) \sqrt{\frac{2 a^2 (1+\text{Sin}[e+f x])-a^2 (1+\text{Sin}[e+f x])^2}{a^2}} \sqrt{1-\frac{(-a+a (1+\text{Sin}[e+f x]))^2}{a^2}}\right)+\Bigg(A$$

$$\text{Cos}[e+f x] (1+\text{Sin}[e+f x]) (c+d\,\text{Sin}[e+f x])^{2 n} \left(c+\frac{d (-a+a (1+\text{Sin}[e+f x]))}{a}\right)^{-n}$$

$$\Bigg(\Bigg(4 a^2 (c-d)\, \text{AppellF1}\left[1, \frac{1}{2}, -n, 2, \frac{1}{2} (1+\text{Sin}[e+f x]), -\frac{a d (1+\text{Sin}[e+f x])}{a c-a d}\right] (1+\text{Sin}[e+f x])\Bigg)\Bigg/$$

$$\Bigg(8 a (c-d)\, \text{AppellF1}\left[1, \frac{1}{2}, -n, 2, \frac{1}{2} (1+\text{Sin}[e+f x]), -\frac{a d (1+\text{Sin}[e+f x])}{a c-a d}\right]+a \Bigg(4 d n\, \text{AppellF1}\left[2, \frac{1}{2}, 1-n, 3, \frac{1}{2} (1+\text{Sin}[e+f x]),\right.$$

$$\left.-\frac{a d (1+\text{Sin}[e+f x])}{a c-a d}\right]+(c-d)\, \text{AppellF1}\left[2, \frac{3}{2}, -n, 3, \frac{1}{2} (1+\text{Sin}[e+f x]), -\frac{a d (1+\text{Sin}[e+f x])}{a c-a d}\right]\Bigg) (1+\text{Sin}[e+f x])\Bigg)-$$

$$\Bigg(a d (-1+2 n)\, \text{AppellF1}\left[-\frac{1}{2}-n, -\frac{1}{2}, -n, \frac{1}{2}-n, \frac{2}{1+\text{Sin}[e+f x]}, \frac{-c+d}{d (1+\text{Sin}[e+f x])}\right] (1+\text{Sin}[e+f x]) (-2 a+a (1+\text{Sin}[e+f x]))\Bigg)\Bigg/$$

$$\Bigg((1+2 n) \Bigg(2 a \Bigg((-c+d) n\, \text{AppellF1}\left[\frac{1}{2}-n, -\frac{1}{2}, 1-n, \frac{3}{2}-n, \frac{2}{1+\text{Sin}[e+f x]}, \frac{-c+d}{d (1+\text{Sin}[e+f x])}\right]+$$

$$d\, \text{AppellF1}\left[\frac{1}{2}-n, \frac{1}{2}, -n, \frac{3}{2}-n, \frac{2}{1+\text{Sin}[e+f x]}, \frac{-c+d}{d (1+\text{Sin}[e+f x])}\right]\Bigg)+$$

$$a d (-1+2 n)\, \text{AppellF1}\left[-\frac{1}{2}-n, -\frac{1}{2}, -n, \frac{1}{2}-n, \frac{2}{1+\text{Sin}[e+f x]}, \frac{-c+d}{d (1+\text{Sin}[e+f x])}\right] (1+\text{Sin}[e+f x])\Bigg)\Bigg)-$$

$$\Bigg(2 a d (-3+2 n)\, \text{AppellF1}\left[\frac{1}{2}-n, -\frac{1}{2}, -n, \frac{3}{2}-n, \frac{2}{1+\text{Sin}[e+f x]}, \frac{-c+d}{d (1+\text{Sin}[e+f x])}\right] (-2 a+a (1+\text{Sin}[e+f x]))\Bigg)\Bigg/$$

$$\Bigg((-1+2 n) \Bigg(2 a \Bigg((-c+d) n\, \text{AppellF1}\left[\frac{3}{2}-n, -\frac{1}{2}, 1-n, \frac{5}{2}-n, \frac{2}{1+\text{Sin}[e+f x]}, \frac{-c+d}{d (1+\text{Sin}[e+f x])}\right]+$$

$$d\, \text{AppellF1}\left[\frac{3}{2}-n, \frac{1}{2}, -n, \frac{5}{2}-n, \frac{2}{1+\text{Sin}[e+f x]}, \frac{-c+d}{d (1+\text{Sin}[e+f x])}\right]\Bigg)+$$

$$a d (-3+2 n)\, \text{AppellF1}\left[\frac{1}{2}-n, -\frac{1}{2}, -n, \frac{3}{2}-n, \frac{2}{1+\text{Sin}[e+f x]}, \frac{-c+d}{d (1+\text{Sin}[e+f x])}\right] (1+\text{Sin}[e+f x])\Bigg)\Bigg)\Bigg)\Bigg)\Bigg/$$

$$\left(2 a^2 f \sqrt{a (1+\text{Sin}[e+f x])} \sqrt{\frac{2 a^2 (1+\text{Sin}[e+f x])-a^2 (1+\text{Sin}[e+f x])^2}{a^2}} \sqrt{1-\frac{(-a+a (1+\text{Sin}[e+f x]))^2}{a^2}}\right)$$

Problem 336: Result more than twice size of optimal antiderivative.

$$\int (a+a\,\text{Sin}[e+f x])^m\,(A+B\,\text{Sin}[e+f x])\,(c+d\,\text{Sin}[e+f x])^2\,dx$$

Optimal (type 5, 351 leaves, 6 steps):

$$\frac{1}{f(1+m)(2+m)(3+m)}\Big(d\,(A d(3+m)+B(2c+d m))-2(2+m)\left(A c d(3+m)+B\left(c^2+d^2+c d m\right)\right)\Big)\,\text{Cos}[e+f x]\,(a+a\,\text{Sin}[e+f x])^m-\frac{1}{f(1+m)(2+m)(3+m)}$$
$$2^{\frac{1}{2}+m}\left(A(3+m)\left(2 c d m(2+m)+d^2\left(1+m+m^2\right)+c^2\left(2+3m+m^2\right)\right)+B\left(d^2 m\left(5+3m+m^2\right)+c^2 m\left(6+5m+m^2\right)+2 c d\left(3+4m+4m^2+m^3\right)\right)\right)$$
$$\text{Cos}[e+f x]\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{1}{2}-m,\frac{3}{2},\frac{1}{2}(1-\text{Sin}[e+f x])\right](1+\text{Sin}[e+f x])^{-\frac{1}{2}-m}(a+a\,\text{Sin}[e+f x])^m-$$
$$\frac{d\,(A d(3+m)+B(2c+d m))\,\text{Cos}[e+f x]\,(a+a\,\text{Sin}[e+f x])^{1+m}}{a f(2+m)(3+m)}-\frac{B\,\text{Cos}[e+f x]\,(a+a\,\text{Sin}[e+f x])^m\,(c+d\,\text{Sin}[e+f x])^2}{f(3+m)}$$

Result (type 5, 23 845 leaves): Display of huge result suppressed!

- **Problem 338: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int (a+a\,\text{Sin}[e+f x])^m\,(A+B\,\text{Sin}[e+f x])\,dx$$

Optimal (type 5, 117 leaves, 3 steps):

$$-\frac{B\,\text{Cos}[e+f x]\,(a+a\,\text{Sin}[e+f x])^m}{f(1+m)}-\frac{1}{f(1+m)}$$
$$2^{\frac{1}{2}+m}(A+A m+B m)\,\text{Cos}[e+f x]\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{1}{2}-m,\frac{3}{2},\frac{1}{2}(1-\text{Sin}[e+f x])\right](1+\text{Sin}[e+f x])^{-\frac{1}{2}-m}(a+a\,\text{Sin}[e+f x])^m$$

Result (type 5, 295 leaves):

$$-\frac{1}{f}(a(1+\text{Sin}[e+f x]))^m\left(\frac{1}{-1+m^2}2^{-1-2m}B\,e^{-i(e+f x)}\left(1+i\,e^{-i(e+f x)}\right)^{-2m}\left(e^{-\frac{1}{4}i(2e+\pi+2f x)}\left(i+e^{i(e+f x)}\right)\right)^{2m}\right.$$
$$\left(e^{2i(e+f x)}(-1+m)\,\text{Hypergeometric2F1}\left[-1-m,-2m,-m,-i\,e^{-i(e+f x)}\right]-(1+m)\,\text{Hypergeometric2F1}\left[1-m,-2m,2-m,-i\,e^{-i(e+f x)}\right]\right)+$$
$$\left(2\sqrt{2}\,A\,\text{Cos}\left[\frac{1}{4}(2e-\pi+2f x)\right]^{1+2m}\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{1}{2}+m,\frac{3}{2}+m,\text{Sin}\left[\frac{1}{4}(2e+\pi+2f x)\right]^2\right]\text{Sin}\left[\frac{1}{4}(2e-\pi+2f x)\right]\right)\Big/$$
$$\left.\left((1+2m)\sqrt{1-\text{Sin}[e+f x]}\right)\right)\text{Sin}\left[\frac{1}{4}(2e+\pi+2f x)\right]^{-2m}$$

- **Problem 339: Result more than twice size of optimal antiderivative.**

$$\int \frac{(a+a\,\text{Sin}[e+f x])^m\,(A+B\,\text{Sin}[e+f x])}{c+d\,\text{Sin}[e+f x]}\,dx$$

Optimal (type 6, 191 leaves, 6 steps):

$$-\left(\sqrt{2}\ (B\,c-A\,d)\ \text{AppellF1}\left[\frac{1}{2}+m,\frac{1}{2},1,\frac{3}{2}+m,\frac{1}{2}(1+\text{Sin}[e+f\,x]),-\frac{d\,(1+\text{Sin}[e+f\,x])}{c-d}\right]\text{Cos}[e+f\,x]\ (a+a\,\text{Sin}[e+f\,x])^m\right)\Big/$$

$$\left((c-d)\ d\ f\ (1+2\,m)\ \sqrt{1-\text{Sin}[e+f\,x]}\right)-\frac{1}{d\,f}$$

$$2^{\frac{1}{2}+m}\,B\,\text{Cos}[e+f\,x]\ \text{Hypergeometric2F1}\left[\frac{1}{2},\frac{1}{2}-m,\frac{3}{2},\frac{1}{2}(1-\text{Sin}[e+f\,x])\right](1+\text{Sin}[e+f\,x])^{-\frac{1}{2}-m}\ (a+a\,\text{Sin}[e+f\,x])^m$$

Result (type 6, 1022 leaves) :

$$-\frac{1}{f}\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{-2m}$$

$$\Bigg(-\Bigg(\Bigg(6 A (c+d)\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2}-m,1,\frac{3}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\frac{2 d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{-1+2m}$$

$$\left(\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{\frac{1}{2}-m}\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\left(1-\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{-\frac{1}{2}+m}\Bigg)\Bigg/$$

$$\Bigg(\left(c+d-2 d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\Bigg(-3 (c+d)\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2}-m,1,\frac{3}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\frac{2 d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]+$$

$$\Bigg(-4 d\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{2}-m,2,\frac{5}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\frac{2 d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]+(c+d)(-1+2m)$$

$$\text{AppellF1}\left[\frac{3}{2},\frac{3}{2}-m,1,\frac{5}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\frac{2 d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\Bigg)\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)\Bigg)\Bigg)+$$

$$B\Bigg(-\left(2\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{1+2m}\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{1}{2}(1+2m),\frac{1}{2}(3+2m),\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)\Bigg/$$

$$\left(d(1+2m)\sqrt{\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}\right)+\Bigg(6 c (c+d)\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2}-m,1,\frac{3}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\frac{2 d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]$$

$$\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{-1+2m}\left(\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{\frac{1}{2}-m}\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\left(1-\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{-\frac{1}{2}+m}\Bigg)\Bigg/$$

$$\Bigg(d\left(c+d-2 d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\Bigg(-3 (c+d)\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2}-m,1,\frac{3}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\frac{2 d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]+$$

$$\Bigg(-4 d\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{2}-m,2,\frac{5}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\frac{2 d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]+(c+d)(-1+2m)\,\text{AppellF1}\Big[\frac{3}{2},$$

$$\frac{3}{2}-m,1,\frac{5}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\frac{2 d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\Big]\Bigg)\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)\Bigg)\Bigg)\Bigg)(a+a\,\text{Sin}[e+f x])^m$$

Problem 340: Result more than twice size of optimal antiderivative.

$$\int \frac{(a+a\,\text{Sin}[e+f\,x])^m\,(A+B\,\text{Sin}[e+f\,x])}{(c+d\,\text{Sin}[e+f\,x])^2}\,dx$$

Optimal (type 6, 293 leaves, 7 steps):

$$\left(\sqrt{2}\,\left(A\,d\,(c\,(1-m)-d\,m)-B\,\left(d^2-c^2\,m-c\,d\,m\right)\right)\,\text{AppellF1}\left[\frac{1}{2}+m,\frac{1}{2},1,\frac{3}{2}+m,\frac{1}{2}\,(1+\text{Sin}[e+f\,x]),-\frac{d\,(1+\text{Sin}[e+f\,x])}{c-d}\right]\right.$$
$$\left.\text{Cos}[e+f\,x]\,(a+a\,\text{Sin}[e+f\,x])^m\right)\Big/\left((c-d)^2\,d\,(c+d)\,f\,(1+2\,m)\,\sqrt{1-\text{Sin}[e+f\,x]}\right)+\frac{1}{d\,\left(c^2-d^2\right)\,f}$$
$$2^{\frac{1}{2}+m}\,(B\,c-A\,d)\,m\,\text{Cos}[e+f\,x]\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{1}{2}-m,\frac{3}{2},\frac{1}{2}\,(1-\text{Sin}[e+f\,x])\right]\,(1+\text{Sin}[e+f\,x])^{-\frac{1}{2}-m}\,(a+a\,\text{Sin}[e+f\,x])^m-$$
$$\frac{(B\,c-A\,d)\,\text{Cos}[e+f\,x]\,(a+a\,\text{Sin}[e+f\,x])^m}{\left(c^2-d^2\right)\,f\,(c+d\,\text{Sin}[e+f\,x])}$$

Result (type 6, 1332 leaves):

$$-\frac{1}{f}\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{-2\,m}$$
$$\left(-\left(\left(6\,A\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2}-m,2,\frac{3}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{-1+2\,m}\right.\right.\right.$$
$$\left.\left(\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{\frac{1}{2}-m}\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\,\left(1-\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{-\frac{1}{2}+m}\right)\Big/$$
$$\left(\left(c+d-2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^2\,\left(-3\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2}-m,2,\frac{3}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+\right.\right.$$
$$\left(-8\,d\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{2}-m,3,\frac{5}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+(c+d)\,(-1+2\,m)\right.$$
$$\left.\left.\left.\left.\text{AppellF1}\left[\frac{3}{2},\frac{3}{2}-m,2,\frac{5}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right)\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\right)\right)+$$
$$B\left(-\left(\left(6\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2}-m,1,\frac{3}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{-1+2\,m}\right.\right.\right.$$
$$\left.\left(\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{\frac{1}{2}-m}\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\,\left(1-\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{-\frac{1}{2}+m}\right)\Big/$$

$$\left(d\left(c+d-2\,d\,\mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\left(-3\,(c+d)\,\mathrm{AppellF1}\left[\frac{1}{2},\frac{1}{2}-m,1,\frac{3}{2},\mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+\right.\right.$$

$$\left(-4\,d\,\mathrm{AppellF1}\left[\frac{3}{2},\frac{1}{2}-m,2,\frac{5}{2},\mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+(c+d)\,(-1+2\,m)\right.$$

$$\left.\left.\left.\mathrm{AppellF1}\left[\frac{3}{2},\frac{3}{2}-m,1,\frac{5}{2},\mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right)\mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\right)+$$

$$\left(6\,c\,(c+d)\,\mathrm{AppellF1}\left[\frac{1}{2},\frac{1}{2}-m,2,\frac{3}{2},\mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\mathrm{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{-1+2\,m}\right.$$

$$\left.\left(\mathrm{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{\frac{1}{2}-m}\mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\left(1-\mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{-\frac{1}{2}+m}\right)\Big/$$

$$\left(d\left(c+d-2\,d\,\mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^2\left(-3\,(c+d)\,\mathrm{AppellF1}\left[\frac{1}{2},\frac{1}{2}-m,2,\frac{3}{2},\mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+\right.\right.$$

$$\left(-8\,d\,\mathrm{AppellF1}\left[\frac{3}{2},\frac{1}{2}-m,3,\frac{5}{2},\mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+(c+d)\,(-1+2\,m)\,\mathrm{AppellF1}\left[\frac{3}{2},\right.\right.$$

$$\left.\left.\left.\left.\frac{3}{2}-m,2,\frac{5}{2},\mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right)\mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\right)\right)\,(a+a\,\mathrm{Sin}[e+f\,x])^m$$

- **Problem 341: Result more than twice size of optimal antiderivative.**

$$\int\frac{(a+a\,\mathrm{Sin}[e+f\,x])^m\,(A+B\,\mathrm{Sin}[e+f\,x])}{(c+d\,\mathrm{Sin}[e+f\,x])^3}\,dx$$

Optimal (type 6, 467 leaves, 8 steps) :

$$\Big(\big(B\,(2\,d^3\,m+c^3\,(1-m)\,m+2\,c^2\,d\,(1-m)\,m-c\,d^2\,(3-3\,m+m^2))-A\,d\,(2\,c\,d\,(2-m)\,m-c^2\,(2-3\,m+m^2)-d^2\,(1-m+m^2))\big)$$

$$\text{AppellF1}\Big[\frac{1}{2}+m,\frac{1}{2},1,\frac{3}{2}+m,\frac{1}{2}(1+\text{Sin}[e+f\,x]),-\frac{d\,(1+\text{Sin}[e+f\,x])}{c-d}\Big]\,\text{Cos}[e+f\,x]\,(a+a\,\text{Sin}[e+f\,x])^m\Big)\Big/$$

$$\Big(\sqrt{2}\,(c-d)^3\,d\,(c+d)^2\,f\,(1+2\,m)\,\sqrt{1-\text{Sin}[e+f\,x]}\Big)-\frac{1}{d\,(c^2-d^2)^2\,f}2^{-\frac{1}{2}+m}\,m\,(A\,d\,(c\,(3-m)-d\,m)-B\,(2\,d^2+c^2\,(1-m)-c\,d\,m))$$

$$\text{Cos}[e+f\,x]\,\text{Hypergeometric2F1}\Big[\frac{1}{2},\frac{1}{2}-m,\frac{3}{2},\frac{1}{2}(1-\text{Sin}[e+f\,x])\Big]\,(1+\text{Sin}[e+f\,x])^{-\frac{1}{2}-m}\,(a+a\,\text{Sin}[e+f\,x])^m-$$

$$\frac{(B\,c-A\,d)\,\text{Cos}[e+f\,x]\,(a+a\,\text{Sin}[e+f\,x])^m}{2\,(c^2-d^2)\,f\,(c+d\,\text{Sin}[e+f\,x])^2}+\frac{(A\,d\,(c\,(3-m)-d\,m)-B\,(2\,d^2+c^2\,(1-m)-c\,d\,m))\,\text{Cos}[e+f\,x]\,(a+a\,\text{Sin}[e+f\,x])^m}{2\,(c^2-d^2)^2\,f\,(c+d\,\text{Sin}[e+f\,x])}$$

Result (type 6, 1332 leaves) :

$$-\frac{1}{f}\text{Cos}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^{-2\,m}$$

$$\Bigg(-\Bigg(\Bigg(6\,A\,(c+d)\,\text{AppellF1}\Big[\frac{1}{2},\frac{1}{2}-m,3,\frac{3}{2},\text{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\frac{2\,d\,\text{Sin}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f\,x\big)\big]^2}{c+d}\Big]\,\text{Cos}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^{-1+2\,m}$$

$$\Big(\text{Cos}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)^{\frac{1}{2}-m}\,\text{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\,\Big(1-\text{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)^{-\frac{1}{2}+m}\Bigg)\Bigg/$$

$$\Bigg(\Big(c+d-2\,d\,\text{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)^3\,\Bigg(-3\,(c+d)\,\text{AppellF1}\Big[\frac{1}{2},\frac{1}{2}-m,3,\frac{3}{2},\text{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\frac{2\,d\,\text{Sin}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f\,x\big)\big]^2}{c+d}\Big]+$$

$$\Bigg(-12\,d\,\text{AppellF1}\Big[\frac{3}{2},\frac{1}{2}-m,4,\frac{5}{2},\text{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\frac{2\,d\,\text{Sin}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f\,x\big)\big]^2}{c+d}\Big]+(c+d)\,(-1+2\,m)$$

$$\text{AppellF1}\Big[\frac{3}{2},\frac{3}{2}-m,3,\frac{5}{2},\text{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\frac{2\,d\,\text{Sin}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f\,x\big)\big]^2}{c+d}\Big]\Bigg)\,\text{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Bigg)\Bigg)\Bigg)+$$

$$B\,\Bigg(-\Bigg(\Bigg(6\,(c+d)\,\text{AppellF1}\Big[\frac{1}{2},\frac{1}{2}-m,2,\frac{3}{2},\text{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\frac{2\,d\,\text{Sin}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f\,x\big)\big]^2}{c+d}\Big]\,\text{Cos}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^{-1+2\,m}$$

$$\Big(\text{Cos}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)^{\frac{1}{2}-m}\,\text{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\,\Big(1-\text{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)^{-\frac{1}{2}+m}\Bigg)\Bigg/$$

$$\left(d\left(c+d-2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^2\left(-3\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},\,\frac{1}{2}-m,\,2,\,\frac{3}{2},\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+\right.\right.$$

$$\left(-8\,d\,\text{AppellF1}\left[\frac{3}{2},\,\frac{1}{2}-m,\,3,\,\frac{5}{2},\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+(c+d)\,(-1+2\,m)\right.$$

$$\left.\left.\left.\text{AppellF1}\left[\frac{3}{2},\,\frac{3}{2}-m,\,2,\,\frac{5}{2},\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right)\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\right)+$$

$$\left(6\,c\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},\,\frac{1}{2}-m,\,3,\,\frac{3}{2},\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{-1+2\,m}\right.$$

$$\left.\left(\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{\frac{1}{2}-m}\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\left(1-\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{-\frac{1}{2}+m}\right)\Big/$$

$$\left(d\left(c+d-2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^3\left(-3\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},\,\frac{1}{2}-m,\,3,\,\frac{3}{2},\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+\right.\right.$$

$$\left(-12\,d\,\text{AppellF1}\left[\frac{3}{2},\,\frac{1}{2}-m,\,4,\,\frac{5}{2},\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+(c+d)\,(-1+2\,m)\,\text{AppellF1}\left[\frac{3}{2},\right.\right.$$

$$\left.\left.\left.\left.\frac{3}{2}-m,\,3,\,\frac{5}{2},\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right)\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\right)\right)\,(a+a\,\text{Sin}[e+f\,x])^m$$

Problem 342: Result more than twice size of optimal antiderivative.

$$\int(a+a\,\text{Sin}[e+f\,x])^m\,(A+B\,\text{Sin}[e+f\,x])\,(c+d\,\text{Sin}[e+f\,x])^{3/2}\,dx$$

Optimal (type 6, 284 leaves, 9 steps):

$$\left(\sqrt{2}\,(A-B)\,(c-d)\,\text{AppellF1}\left[\frac{1}{2}+m,\frac{1}{2},-\frac{3}{2},\frac{3}{2}+m,\frac{1}{2}\,(1+\text{Sin}[e+f x]),-\frac{d\,(1+\text{Sin}[e+f x])}{c-d}\right]\right.$$

$$\left.\text{Cos}[e+f x]\,(a+a\,\text{Sin}[e+f x])^m\,\sqrt{c+d\,\text{Sin}[e+f x]}\right)\Big/\left(f\,(1+2 m)\,\sqrt{1-\text{Sin}[e+f x]}\,\sqrt{\frac{c+d\,\text{Sin}[e+f x]}{c-d}}\right)+$$

$$\left(\sqrt{2}\,B\,(c-d)\,\text{AppellF1}\left[\frac{3}{2}+m,\frac{1}{2},-\frac{3}{2},\frac{5}{2}+m,\frac{1}{2}\,(1+\text{Sin}[e+f x]),-\frac{d\,(1+\text{Sin}[e+f x])}{c-d}\right]\,\text{Cos}[e+f x]\right.$$

$$\left.(a+a\,\text{Sin}[e+f x])^{1+m}\,\sqrt{c+d\,\text{Sin}[e+f x]}\right)\Big/\left(a\,f\,(3+2 m)\,\sqrt{1-\text{Sin}[e+f x]}\,\sqrt{\frac{c+d\,\text{Sin}[e+f x]}{c-d}}\right)$$

Result (type 6, 4033 leaves):

$$-\frac{1}{f}\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{-2 m}$$

$$\left(-\left(\left(3 B d\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},-\frac{3}{2}-m,-\frac{1}{2},\frac{3}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\frac{2 d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{3+2 m}\right.\right.\right.$$

$$\left(\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{\frac{1}{2}+\frac{1}{2}(-4-2 m)}\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\left(1-\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{\frac{3}{2}+m}\sqrt{c+d-2 d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}\Bigg)\Big/$$

$$\left(-3\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},-\frac{3}{2}-m,-\frac{1}{2},\frac{3}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\frac{2 d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]+\right.$$

$$\left(2 d\,\text{AppellF1}\left[\frac{3}{2},-\frac{3}{2}-m,\frac{1}{2},\frac{5}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\frac{2 d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]+\right.$$

$$\left.\left.(c+d)\,(3+2 m)\,\text{AppellF1}\left[\frac{3}{2},-\frac{1}{2}-m,-\frac{1}{2},\frac{5}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\frac{2 d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\right)\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\Bigg)-$$

$$\left(6 B c\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},-\frac{1}{2}-m,-\frac{1}{2},\frac{3}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\frac{2 d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{1+2 m}\right.$$

$$\left(\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{\frac{1}{2}+\frac{1}{2}(-2-2 m)}\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\left(1-\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{\frac{1}{2}+m}\sqrt{c+d-2 d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}\Bigg)\Big/$$

$$\left(-3\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},\,-\frac{1}{2}-m,\,-\frac{1}{2},\,\frac{3}{2},\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+\right.$$

$$\left(2\,d\,\text{AppellF1}\left[\frac{3}{2},\,-\frac{1}{2}-m,\,\frac{1}{2},\,\frac{5}{2},\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+\right.$$

$$\left.\left.(c+d)\,(1+2\,m)\,\text{AppellF1}\left[\frac{3}{2},\,\frac{1}{2}-m,\,-\frac{1}{2},\,\frac{5}{2},\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right)\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)-$$

$$\left(6\,A\,d\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},\,-\frac{1}{2}-m,\,-\frac{1}{2},\,\frac{3}{2},\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{1+2\,m}\right.$$

$$\left.\left(\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{\frac{1}{2}+\frac{1}{2}\,(-2-2\,m)}\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\left(1-\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{\frac{1}{2}+m}\sqrt{c+d-2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}\right)\Big/$$

$$\left(-3\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},\,-\frac{1}{2}-m,\,-\frac{1}{2},\,\frac{3}{2},\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+\right.$$

$$\left(2\,d\,\text{AppellF1}\left[\frac{3}{2},\,-\frac{1}{2}-m,\,\frac{1}{2},\,\frac{5}{2},\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+\right.$$

$$\left.\left.(c+d)\,(1+2\,m)\,\text{AppellF1}\left[\frac{3}{2},\,\frac{1}{2}-m,\,-\frac{1}{2},\,\frac{5}{2},\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right)\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)+$$

$$\left(6\,A\,c\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},\,\frac{1}{2}-m,\,-\frac{1}{2},\,\frac{3}{2},\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{-1+2\,m}\right.$$

$$\left.\left(\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{\frac{1}{2}-m}\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\left(1-\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{-\frac{1}{2}+m}\sqrt{c+d-2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}\right)\Big/$$

$$\left(3\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},\,\frac{1}{2}-m,\,-\frac{1}{2},\,\frac{3}{2},\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]-\right.$$

$$\left(2\,d\,\text{AppellF1}\left[\frac{3}{2},\,\frac{1}{2}-m,\,\frac{1}{2},\,\frac{5}{2},\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+\right.$$

$$(c+d)\ (-1+2\,m)\ \text{AppellF1}\Big[\frac{3}{2},\ \frac{3}{2}-m,\ -\frac{1}{2},\ \frac{5}{2},\ \text{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\ \frac{2\,d\,\text{Sin}\big[\frac{1}{2}\,\big(-e+\frac{\pi}{2}-f\,x\big)\big]^2}{c+d}\Big]\Bigg)\ \text{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Bigg)+$$

$$\Bigg(3\,B\,d\ (c+d)\ \text{AppellF1}\Big[\frac{1}{2},\ \frac{1}{2}-m,\ -\frac{1}{2},\ \frac{3}{2},\ \text{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\ \frac{2\,d\,\text{Sin}\big[\frac{1}{2}\,\big(-e+\frac{\pi}{2}-f\,x\big)\big]^2}{c+d}\Big]\ \text{Cos}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^{-1+2\,m}$$

$$\Big(\text{Cos}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)^{\frac{1}{2}-m}\ \text{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\ \Big(1-\text{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)^{-\frac{1}{2}+m}\ \sqrt{c+d-2\,d\,\text{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2}\ \Bigg)\Big/$$

$$\Bigg(3\ (c+d)\ \text{AppellF1}\Big[\frac{1}{2},\ \frac{1}{2}-m,\ -\frac{1}{2},\ \frac{3}{2},\ \text{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\ \frac{2\,d\,\text{Sin}\big[\frac{1}{2}\,\big(-e+\frac{\pi}{2}-f\,x\big)\big]^2}{c+d}\Big]-$$

$$\Bigg(2\,d\,\text{AppellF1}\Big[\frac{3}{2},\ \frac{1}{2}-m,\ \frac{1}{2},\ \frac{5}{2},\ \text{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\ \frac{2\,d\,\text{Sin}\big[\frac{1}{2}\,\big(-e+\frac{\pi}{2}-f\,x\big)\big]^2}{c+d}\Big]+$$

$$(c+d)\ (-1+2\,m)\ \text{AppellF1}\Big[\frac{3}{2},\ \frac{3}{2}-m,\ -\frac{1}{2},\ \frac{5}{2},\ \text{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\ \frac{2\,d\,\text{Sin}\big[\frac{1}{2}\,\big(-e+\frac{\pi}{2}-f\,x\big)\big]^2}{c+d}\Big]\Bigg)\ \text{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Bigg)+$$

$$\Bigg(10\,B\,d\ (c+d)\ \text{AppellF1}\Big[\frac{3}{2},\ -\frac{1}{2}-m,\ -\frac{1}{2},\ \frac{5}{2},\ \text{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\ \frac{2\,d\,\text{Sin}\big[\frac{1}{2}\,\big(-e+\frac{\pi}{2}-f\,x\big)\big]^2}{c+d}\Big]\ \text{Cos}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^{1+2\,m}$$

$$\Big(\text{Cos}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)^{\frac{1}{2}\,(-1-2\,m)}\ \text{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^3\ \Big(1-\text{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)^{\frac{1}{2}+m}\ \sqrt{c+d-2\,d\,\text{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2}\ \Bigg)\Big/$$

$$\Bigg(-5\ (c+d)\ \text{AppellF1}\Big[\frac{3}{2},\ -\frac{1}{2}-m,\ -\frac{1}{2},\ \frac{5}{2},\ \text{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\ \frac{2\,d\,\text{Sin}\big[\frac{1}{2}\,\big(-e+\frac{\pi}{2}-f\,x\big)\big]^2}{c+d}\Big]+$$

$$\Bigg(2\,d\,\text{AppellF1}\Big[\frac{5}{2},\ -\frac{1}{2}-m,\ \frac{1}{2},\ \frac{7}{2},\ \text{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\ \frac{2\,d\,\text{Sin}\big[\frac{1}{2}\,\big(-e+\frac{\pi}{2}-f\,x\big)\big]^2}{c+d}\Big]+$$

$$(c+d)\ (1+2\,m)\ \text{AppellF1}\Big[\frac{5}{2},\ \frac{1}{2}-m,\ -\frac{1}{2},\ \frac{7}{2},\ \text{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\ \frac{2\,d\,\text{Sin}\big[\frac{1}{2}\,\big(-e+\frac{\pi}{2}-f\,x\big)\big]^2}{c+d}\Big]\Bigg)\ \text{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Bigg)+$$

$$\Bigg(10\,B\,c\ (c+d)\ \text{AppellF1}\Big[\frac{3}{2},\ \frac{1}{2}-m,\ -\frac{1}{2},\ \frac{5}{2},\ \text{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\ \frac{2\,d\,\text{Sin}\big[\frac{1}{2}\,\big(-e+\frac{\pi}{2}-f\,x\big)\big]^2}{c+d}\Big]\ \text{Cos}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^{-1+2\,m}$$

$$\left(\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{\frac{1}{2}(1-2 m)} \text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^3 \left(1-\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{-\frac{1}{2}+m} \sqrt{c+d-2 d\, \text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}\Bigg/$$

$$\left(3\left(-5 (c+d)\, \text{AppellF1}\left[\frac{3}{2}, \frac{1}{2}-m, -\frac{1}{2}, \frac{5}{2}, \text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, \frac{2 d\, \text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]+\right.\right.$$

$$\left(2 d\, \text{AppellF1}\left[\frac{5}{2}, \frac{1}{2}-m, \frac{1}{2}, \frac{7}{2}, \text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, \frac{2 d\, \text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]+\right.$$

$$\left.\left.\left.(c+d)(-1+2 m)\, \text{AppellF1}\left[\frac{5}{2}, \frac{3}{2}-m, -\frac{1}{2}, \frac{7}{2}, \text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, \frac{2 d\, \text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\right) \text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\right)+$$

$$\left(10 A d (c+d)\, \text{AppellF1}\left[\frac{3}{2}, \frac{1}{2}-m, -\frac{1}{2}, \frac{5}{2}, \text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, \frac{2 d\, \text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right] \text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{-1+2 m}\right.$$

$$\left(\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{\frac{1}{2}(1-2 m)} \text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^3 \left(1-\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{-\frac{1}{2}+m} \sqrt{c+d-2 d\, \text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}\Bigg/$$

$$\left(3\left(-5 (c+d)\, \text{AppellF1}\left[\frac{3}{2}, \frac{1}{2}-m, -\frac{1}{2}, \frac{5}{2}, \text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, \frac{2 d\, \text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]+\right.\right.$$

$$\left(2 d\, \text{AppellF1}\left[\frac{5}{2}, \frac{1}{2}-m, \frac{1}{2}, \frac{7}{2}, \text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, \frac{2 d\, \text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]+\right.$$

$$\left.\left.\left.(c+d)(-1+2 m)\, \text{AppellF1}\left[\frac{5}{2}, \frac{3}{2}-m, -\frac{1}{2}, \frac{7}{2}, \text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, \frac{2 d\, \text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\right) \text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\right)-$$

$$\left(7 B d (c+d)\, \text{AppellF1}\left[\frac{5}{2}, \frac{1}{2}-m, -\frac{1}{2}, \frac{7}{2}, \text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, \frac{2 d\, \text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right] \text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{-1+2 m}\right.$$

$$\left(\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{\frac{1}{2}(1-2 m)} \text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^5 \left(1-\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{-\frac{1}{2}+m} \sqrt{c+d-2 d\, \text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}\Bigg/$$

$$\left(5\left(-7 (c+d)\, \text{AppellF1}\left[\frac{5}{2}, \frac{1}{2}-m, -\frac{1}{2}, \frac{7}{2}, \text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, \frac{2 d\, \text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]+\right.\right.$$

$$\left(2\,d\,\text{AppellF1}\left[\frac{7}{2},\frac{1}{2}-m,\frac{1}{2},\frac{9}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+(c+d)\,(-1+2\,m)\right.$$
$$\left.\left.\left.\text{AppellF1}\left[\frac{7}{2},\frac{3}{2}-m,-\frac{1}{2},\frac{9}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right)\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\right)\right)\,(a+a\,\text{Sin}[e+f\,x])^m$$

Problem 343: Result more than twice size of optimal antiderivative.

$$\int(a+a\,\text{Sin}[e+f\,x])^m\,(A+B\,\text{Sin}[e+f\,x])\,\sqrt{c+d\,\text{Sin}[e+f\,x]}\,dx$$

Optimal (type 6, 274 leaves, 9 steps):

$$\left(\sqrt{2}\,(A-B)\,\text{AppellF1}\left[\frac{1}{2}+m,\frac{1}{2},-\frac{1}{2},\frac{3}{2}+m,\frac{1}{2}(1+\text{Sin}[e+f\,x]),-\frac{d\,(1+\text{Sin}[e+f\,x])}{c-d}\right]\text{Cos}[e+f\,x]\,(a+a\,\text{Sin}[e+f\,x])^m\sqrt{c+d\,\text{Sin}[e+f\,x]}\right)\Big/$$
$$\left(f\,(1+2\,m)\,\sqrt{1-\text{Sin}[e+f\,x]}\,\sqrt{\frac{c+d\,\text{Sin}[e+f\,x]}{c-d}}\right)+$$
$$\left(\sqrt{2}\,B\,\text{AppellF1}\left[\frac{3}{2}+m,\frac{1}{2},-\frac{1}{2},\frac{5}{2}+m,\frac{1}{2}(1+\text{Sin}[e+f\,x]),-\frac{d\,(1+\text{Sin}[e+f\,x])}{c-d}\right]\text{Cos}[e+f\,x]\,(a+a\,\text{Sin}[e+f\,x])^{1+m}\sqrt{c+d\,\text{Sin}[e+f\,x]}\right)\Big/$$
$$\left(a\,f\,(3+2\,m)\,\sqrt{1-\text{Sin}[e+f\,x]}\,\sqrt{\frac{c+d\,\text{Sin}[e+f\,x]}{c-d}}\right)$$

Result (type 6, 1364 leaves):

$$-\frac{1}{f}\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{-2\,m}$$
$$\left(\left(\left(6\,A\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2}-m,-\frac{1}{2},\frac{3}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{-1+2\,m}\right.\right.\right.$$
$$\left(\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{\frac{1}{2}-m}\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\left(1-\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{-\frac{1}{2}+m}\sqrt{c+d-2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}\Bigg)\Big/$$
$$\left(3\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2}-m,-\frac{1}{2},\frac{3}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]-\right.$$
$$\left(2\,d\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{2}-m,\frac{1}{2},\frac{5}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+\right.$$

$$(c+d)(-1+2m)\,\text{AppellF1}\left[\frac{3}{2},\frac{3}{2}-m,-\frac{1}{2},\frac{5}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\frac{2 d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\Bigg)\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)+$$

$$B\Bigg(-\Bigg(\Bigg(6(c+d)\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2}-m,-\frac{3}{2},\frac{3}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\frac{2 d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{-1+2m}$$

$$\left(\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{\frac{1}{2}-m}\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\left(1-\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{-\frac{1}{2}+m}\left(c+d-2 d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{3/2}\Bigg)\Big/$$

$$\Bigg(d\Bigg(-3(c+d)\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2}-m,-\frac{3}{2},\frac{3}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\frac{2 d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]+$$

$$\Bigg(6 d\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{2}-m,-\frac{1}{2},\frac{5}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\frac{2 d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]+(c+d)(-1+2m)$$

$$\text{AppellF1}\left[\frac{3}{2},\frac{3}{2}-m,-\frac{3}{2},\frac{5}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\frac{2 d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\Bigg)\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)\Bigg)\Bigg)-$$

$$\Bigg(6 c(c+d)\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2}-m,-\frac{1}{2},\frac{3}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\frac{2 d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{-1+2m}$$

$$\left(\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{\frac{1}{2}-m}\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\left(1-\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{-\frac{1}{2}+m}\sqrt{c+d-2 d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}\Bigg)\Big/$$

$$\Bigg(d\Bigg(3(c+d)\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2}-m,-\frac{1}{2},\frac{3}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\frac{2 d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]-$$

$$\Bigg(2 d\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{2}-m,\frac{1}{2},\frac{5}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\frac{2 d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]+(c+d)(-1+2m)\,\text{AppellF1}\Bigg[\frac{3}{2},$$

$$\frac{3}{2}-m,-\frac{1}{2},\frac{5}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\frac{2 d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\Bigg]\Bigg)\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)\Bigg)\Bigg)\Bigg)\,(a+a\,\text{Sin}[e+f x])^m$$

- **Problem 344: Result more than twice size of optimal antiderivative.**

$$\int \frac{(a+a\,\mathrm{Sin}[e+f\,x])^m\,(A+B\,\mathrm{Sin}[e+f\,x])}{\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}}\,dx$$

Optimal (type 6, 274 leaves, 9 steps):

$$\left(\sqrt{2}\,(A-B)\,\mathrm{AppellF1}\left[\frac{1}{2}+m,\frac{1}{2},\frac{1}{2},\frac{3}{2}+m,\frac{1}{2}(1+\mathrm{Sin}[e+f\,x]),-\frac{d\,(1+\mathrm{Sin}[e+f\,x])}{c-d}\right]\mathrm{Cos}[e+f\,x]\,(a+a\,\mathrm{Sin}[e+f\,x])^m\sqrt{\frac{c+d\,\mathrm{Sin}[e+f\,x]}{c-d}}\right)\Big/$$
$$\left(f\,(1+2\,m)\,\sqrt{1-\mathrm{Sin}[e+f\,x]}\,\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}\right)+$$
$$\left(\sqrt{2}\,B\,\mathrm{AppellF1}\left[\frac{3}{2}+m,\frac{1}{2},\frac{1}{2},\frac{5}{2}+m,\frac{1}{2}(1+\mathrm{Sin}[e+f\,x]),-\frac{d\,(1+\mathrm{Sin}[e+f\,x])}{c-d}\right]\mathrm{Cos}[e+f\,x]\,(a+a\,\mathrm{Sin}[e+f\,x])^{1+m}\sqrt{\frac{c+d\,\mathrm{Sin}[e+f\,x]}{c-d}}\right)\Big/$$
$$\left(a\,f\,(3+2\,m)\,\sqrt{1-\mathrm{Sin}[e+f\,x]}\,\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}\right)$$

Result (type 6, 1363 leaves):

$$-\frac{1}{f}\mathrm{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{-2\,m}$$
$$\left(-\left(\left(6\,A\,(c+d)\,\mathrm{AppellF1}\left[\frac{1}{2},\frac{1}{2}-m,\frac{1}{2},\frac{3}{2},\mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\mathrm{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{-1+2\,m}\right.\right.\right.$$
$$\left.\left(\mathrm{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{\frac{1}{2}-m}\mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\left(1-\mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{-\frac{1}{2}+m}\right)\Big/$$
$$\left(\sqrt{c+d-2\,d\,\mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}\left(-3\,(c+d)\,\mathrm{AppellF1}\left[\frac{1}{2},\frac{1}{2}-m,\frac{1}{2},\frac{3}{2},\mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+\right.\right.$$
$$\left(-2\,d\,\mathrm{AppellF1}\left[\frac{3}{2},\frac{1}{2}-m,\frac{3}{2},\frac{5}{2},\mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+(c+d)\,(-1+2\,m)\right.$$
$$\left.\left.\left.\left.\mathrm{AppellF1}\left[\frac{3}{2},\frac{3}{2}-m,\frac{1}{2},\frac{5}{2},\mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right)\mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\right)\right)+$$
$$B\left(\left(6\,(c+d)\,\mathrm{AppellF1}\left[\frac{1}{2},\frac{1}{2}-m,-\frac{1}{2},\frac{3}{2},\mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\mathrm{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{-1+2\,m}\right.\right.$$

$$\left(\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{\frac{1}{2}-m} \text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\left(1-\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{-\frac{1}{2}+m} \sqrt{c+d-2 d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}\Bigg)\Bigg/$$

$$\Bigg(d\Bigg(3(c+d)\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2}-m,-\frac{1}{2},\frac{3}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\frac{2 d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]-$$

$$\Bigg(2 d\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{2}-m,\frac{1}{2},\frac{5}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\frac{2 d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]+$$

$$(c+d)(-1+2m)\,\text{AppellF1}\left[\frac{3}{2},\frac{3}{2}-m,-\frac{1}{2},\frac{5}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\frac{2 d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\Bigg)\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)\Bigg)+$$

$$\Bigg(6 c(c+d)\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2}-m,\frac{1}{2},\frac{3}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\frac{2 d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{-1+2m}$$

$$\left(\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{\frac{1}{2}-m} \text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\left(1-\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{-\frac{1}{2}+m}\Bigg)\Bigg/$$

$$\Bigg(d\sqrt{c+d-2 d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}\,\Bigg(-3(c+d)\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2}-m,\frac{1}{2},\frac{3}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\frac{2 d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]+$$

$$\Bigg(-2 d\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{2}-m,\frac{3}{2},\frac{5}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\frac{2 d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]+(c+d)(-1+2m)\,\text{AppellF1}\Big[\frac{3}{2},$$

$$\frac{3}{2}-m,\frac{1}{2},\frac{5}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\frac{2 d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\Big]\Bigg)\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)\Bigg)\Bigg)(a+a\,\text{Sin}[e+f x])^m$$

- **Problem 345: Result more than twice size of optimal antiderivative.**

$$\int \frac{(a+a\,\text{Sin}[e+f x])^m\,(A+B\,\text{Sin}[e+f x])}{(c+d\,\text{Sin}[e+f x])^{3/2}}\,dx$$

Optimal (type 6, 288 leaves, 9 steps):

$$\left(\sqrt{2}\,(A-B)\,\text{AppellF1}\left[\frac{1}{2}+m,\frac{1}{2},\frac{3}{2},\frac{3}{2}+m,\frac{1}{2}\,(1+\text{Sin}[e+f x]),-\frac{d\,(1+\text{Sin}[e+f x])}{c-d}\right]\text{Cos}[e+f x]\,(a+a\,\text{Sin}[e+f x])^{m}\sqrt{\frac{c+d\,\text{Sin}[e+f x]}{c-d}}\right)\Big/$$

$$\left((c-d)\,f\,(1+2\,m)\,\sqrt{1-\text{Sin}[e+f x]}\,\sqrt{c+d\,\text{Sin}[e+f x]}\right)+$$

$$\left(\sqrt{2}\,B\,\text{AppellF1}\left[\frac{3}{2}+m,\frac{1}{2},\frac{3}{2},\frac{5}{2}+m,\frac{1}{2}\,(1+\text{Sin}[e+f x]),-\frac{d\,(1+\text{Sin}[e+f x])}{c-d}\right]\text{Cos}[e+f x]\,(a+a\,\text{Sin}[e+f x])^{1+m}\sqrt{\frac{c+d\,\text{Sin}[e+f x]}{c-d}}\right)\Big/$$

$$\left(a\,(c-d)\,f\,(3+2\,m)\,\sqrt{1-\text{Sin}[e+f x]}\,\sqrt{c+d\,\text{Sin}[e+f x]}\right)$$

Result (type 6, 1362 leaves):

$$-\frac{1}{f}\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{-2\,m}$$

$$\left(-\left(\left(6\,A\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2}-m,\frac{3}{2},\frac{3}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2},\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2}}{c+d}\right]\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{-1+2\,m}\right.\right.\right.$$

$$\left.\left(\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2}\right)^{\frac{1}{2}-m}\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\left(1-\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2}\right)^{-\frac{1}{2}+m}\right)\Big/$$

$$\left(\left(c+d-2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2}\right)^{3/2}\left(-3\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2}-m,\frac{3}{2},\frac{3}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2},\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2}}{c+d}\right]+\right.\right.$$

$$\left(-6\,d\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{2}-m,\frac{5}{2},\frac{5}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2},\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2}}{c+d}\right]+(c+d)\,(-1+2\,m)\right.$$

$$\left.\left.\left.\left.\text{AppellF1}\left[\frac{3}{2},\frac{3}{2}-m,\frac{3}{2},\frac{5}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2},\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2}}{c+d}\right]\right)\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2}\right)\right)\right)+$$

$$B\left(-\left(\left(6\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2}-m,\frac{1}{2},\frac{3}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2},\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2}}{c+d}\right]\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{-1+2\,m}\right.\right.\right.$$

$$\left.\left(\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2}\right)^{\frac{1}{2}-m}\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\left(1-\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2}\right)^{-\frac{1}{2}+m}\right)\Big/$$

$$\left(d\,\sqrt{c+d-2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2}}\left(-3\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2}-m,\frac{1}{2},\frac{3}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2},\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2}}{c+d}\right]+\right.\right.$$

$$\left(-2\,d\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{2}-m,\frac{3}{2},\frac{5}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+(c+d)\,(-1+2\,m)\right.$$
$$\left.\left.\left.\text{AppellF1}\left[\frac{3}{2},\frac{3}{2}-m,\frac{1}{2},\frac{5}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right)\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\right)\right)+$$
$$\left(6\,c\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2}-m,\frac{3}{2},\frac{3}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{-1+2\,m}\right.$$
$$\left.\left(\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{\frac{1}{2}-m}\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\left(1-\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{-\frac{1}{2}+m}\right)\Big/$$
$$\left(d\left(c+d-2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{3/2}\left(-3\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2}-m,\frac{3}{2},\frac{3}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+\right.\right.$$
$$\left(-6\,d\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{2}-m,\frac{5}{2},\frac{5}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+(c+d)\,(-1+2\,m)\,\text{AppellF1}\left[\frac{3}{2},\right.\right.$$
$$\left.\left.\left.\left.\frac{3}{2}-m,\frac{3}{2},\frac{5}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right)\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\right)\right)\,(a+a\,\text{Sin}[e+f\,x])^m$$

Problem 346: Result more than twice size of optimal antiderivative.

$$\int (a+a\,\text{Sin}[e+f\,x])^m\,(A+B\,\text{Sin}[e+f\,x])\,(c+d\,\text{Sin}[e+f\,x])^n\,dx$$

Optimal (type 6, 270 leaves, 9 steps):

$$\left(\sqrt{2}\,(A-B)\,\text{AppellF1}\left[\frac{1}{2}+m,\frac{1}{2},-n,\frac{3}{2}+m,\frac{1}{2}\,(1+\text{Sin}[e+f\,x]),-\frac{d\,(1+\text{Sin}[e+f\,x])}{c-d}\right]\right.$$
$$\left.\text{Cos}[e+f\,x]\,(a+a\,\text{Sin}[e+f\,x])^m\,(c+d\,\text{Sin}[e+f\,x])^n\left(\frac{c+d\,\text{Sin}[e+f\,x]}{c-d}\right)^{-n}\right)\Big/\left(f\,(1+2\,m)\,\sqrt{1-\text{Sin}[e+f\,x]}\right)+$$
$$\left(\sqrt{2}\,B\,\text{AppellF1}\left[\frac{3}{2}+m,\frac{1}{2},-n,\frac{5}{2}+m,\frac{1}{2}\,(1+\text{Sin}[e+f\,x]),-\frac{d\,(1+\text{Sin}[e+f\,x])}{c-d}\right]\text{Cos}[e+f\,x]\,(a+a\,\text{Sin}[e+f\,x])^{1+m}\right.$$
$$\left.(c+d\,\text{Sin}[e+f\,x])^n\left(\frac{c+d\,\text{Sin}[e+f\,x]}{c-d}\right)^{-n}\right)\Big/\left(a\,f\,(3+2\,m)\,\sqrt{1-\text{Sin}[e+f\,x]}\right)$$

Result (type 6, 1375 leaves):

$$-\frac{1}{f}\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{-2\,m}$$

$$\left(\left(6\,A\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},\,\frac{1}{2}-m,\,-n,\,\frac{3}{2},\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{-1+2\,m}\right.\right.$$

$$\left.\left(\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{\frac{1}{2}-m}\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\left(1-\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{-\frac{1}{2}+m}\left(c+d-2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^n\right)\Big/$$

$$\left(3\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},\,\frac{1}{2}-m,\,-n,\,\frac{3}{2},\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]-\right.$$

$$\left(4\,d\,n\,\text{AppellF1}\left[\frac{3}{2},\,\frac{1}{2}-m,\,1-n,\,\frac{5}{2},\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+\right.$$

$$\left.\left.(c+d)\,(-1+2\,m)\,\text{AppellF1}\left[\frac{3}{2},\,\frac{3}{2}-m,\,-n,\,\frac{5}{2},\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right)\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)+$$

$$B\left(-\left(\left(\left(6\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},\,\frac{1}{2}-m,\,-1-n,\,\frac{3}{2},\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{-1+2\,m}\right.\right.\right.\right.$$

$$\left.\left(\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{\frac{1}{2}-m}\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\left(1-\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{-\frac{1}{2}+m}\left(c+d-2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{1+n}\right)\Big/$$

$$\left(d\left(-3\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},\,\frac{1}{2}-m,\,-1-n,\,\frac{3}{2},\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+\right.\right.$$

$$\left(4\,d\,(1+n)\,\text{AppellF1}\left[\frac{3}{2},\,\frac{1}{2}-m,\,-n,\,\frac{5}{2},\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+(c+d)\,(-1+2\,m)\right.$$

$$\left.\left.\left.\left.\text{AppellF1}\left[\frac{3}{2},\,\frac{3}{2}-m,\,-1-n,\,\frac{5}{2},\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right)\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\right)\right)-$$

$$\left(6\,c\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},\,\frac{1}{2}-m,\,-n,\,\frac{3}{2},\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{-1+2\,m}\right.$$

$$\left.\left(\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{\frac{1}{2}-m}\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\left(1-\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{-\frac{1}{2}+m}\left(c+d-2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^n\right)\Big/$$

$$\left(d\left(3\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2}-m,-n,\frac{3}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]-\left(4\,d\,n\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{2}-m,1-n,\frac{5}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+(c+d)\,(-1+2\,m)\,\text{AppellF1}\left[\frac{3}{2},\frac{3}{2}-m,-n,\frac{5}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right)\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\right)\right)\right)\,(a+a\,\text{Sin}[e+f\,x])^m$$

- **Problem 347: Result more than twice size of optimal antiderivative.**

$$\int (a+a\,\text{Sin}[e+f\,x])^m\,(A+B\,\text{Sin}[e+f\,x])\,(c+d\,\text{Sin}[e+f\,x])^{-1-m}\,dx$$

Optimal (type 6, 277 leaves, 7 steps):

$$-\frac{1}{(c+d)\,f}2^{\frac{1}{2}+m}\,a\,(A-B)\,\text{Cos}[e+f\,x]\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{1}{2}-m,\frac{3}{2},\frac{(c-d)\,(1-\text{Sin}[e+f\,x])}{2\,(c+d\,\text{Sin}[e+f\,x])}\right]\,(a+a\,\text{Sin}[e+f\,x])^{-1+m}\left(\frac{(c+d)\,(1+\text{Sin}[e+f\,x])}{c+d\,\text{Sin}[e+f\,x]}\right)^{\frac{1}{2}-m}(c+d\,\text{Sin}[e+f\,x])^{-m}+\left(\sqrt{2}\,B\,\text{AppellF1}\left[\frac{3}{2}+m,\frac{1}{2},1+m,\frac{5}{2}+m,\frac{1}{2}\,(1+\text{Sin}[e+f\,x]),-\frac{d\,(1+\text{Sin}[e+f\,x])}{c-d}\right]\,\text{Cos}[e+f\,x]\,(a+a\,\text{Sin}[e+f\,x])^{1+m}\,(c+d\,\text{Sin}[e+f\,x])^{-m}\left(\frac{c+d\,\text{Sin}[e+f\,x]}{c-d}\right)^m\right)\Big/\left(a\,(c-d)\,f\,(3+2\,m)\,\sqrt{1-\text{Sin}[e+f\,x]}\right)$$

Result (type 6, 1020 leaves):

$$
-\frac{1}{f}\operatorname{Cos}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^{-2 m}
$$

$$
\Bigg(\frac{1}{c+d} 2 A \operatorname{Cos}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^{-1+2 m}\Big(\operatorname{Cos}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^{2}\Big)^{\frac{1}{2}-m} \text{Hypergeometric2F1}\Big[\frac{1}{2},\ \frac{1}{2}-m,\ \frac{3}{2},\ \frac{(c-d)\operatorname{Sin}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f x\big)\big]^{2}}{c+d-2 d \operatorname{Sin}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f x\big)\big]^{2}}\Big]
$$

$$
\operatorname{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]\Big(1-\operatorname{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^{2}\Big)^{-\frac{1}{2}+m}\Bigg(-\frac{(c+d)\big(-1+\operatorname{Sin}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f x\big)\big]^{2}\big)}{c+d-2 d \operatorname{Sin}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f x\big)\big]^{2}}\Bigg)^{\frac{1}{2}-m}\Big(c+d-2 d \operatorname{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^{2}\Big)^{-m}+
$$

$$
B\Bigg(-\frac{1}{d(c+d)} 2 c \operatorname{Cos}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^{-1+2 m}\Big(\operatorname{Cos}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^{2}\Big)^{\frac{1}{2}-m}
$$

$$
\text{Hypergeometric2F1}\Big[\frac{1}{2},\ \frac{1}{2}-m,\ \frac{3}{2},\ \frac{(c-d)\operatorname{Sin}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f x\big)\big]^{2}}{c+d-2 d \operatorname{Sin}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f x\big)\big]^{2}}\Big]\operatorname{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]
$$

$$
\Big(1-\operatorname{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^{2}\Big)^{-\frac{1}{2}+m}\Bigg(-\frac{(c+d)\big(-1+\operatorname{Sin}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f x\big)\big]^{2}\big)}{c+d-2 d \operatorname{Sin}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f x\big)\big]^{2}}\Bigg)^{\frac{1}{2}-m}\Big(c+d-2 d \operatorname{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^{2}\Big)^{-m}+
$$

$$
\Bigg(6(c+d)\text{AppellF1}\Big[\frac{1}{2},\ \frac{1}{2}-m,\ m,\ \frac{3}{2},\ \operatorname{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^{2},\ \frac{2 d \operatorname{Sin}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f x\big)\big]^{2}}{c+d}\Big]\operatorname{Cos}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^{-1+2 m}
$$

$$
\Big(\operatorname{Cos}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^{2}\Big)^{\frac{1}{2}-m}\operatorname{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]\Big(1-\operatorname{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^{2}\Big)^{-\frac{1}{2}+m}\Big(c+d-2 d \operatorname{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^{2}\Big)^{-m}\Bigg)\Big/
$$

$$
\Bigg(d\Bigg(3(c+d)\text{AppellF1}\Big[\frac{1}{2},\ \frac{1}{2}-m,\ m,\ \frac{3}{2},\ \operatorname{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^{2},\ \frac{2 d \operatorname{Sin}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f x\big)\big]^{2}}{c+d}\Big]-
$$

$$
\Bigg(-4 d m \text{AppellF1}\Big[\frac{3}{2},\ \frac{1}{2}-m,\ 1+m,\ \frac{5}{2},\ \operatorname{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^{2},\ \frac{2 d \operatorname{Sin}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f x\big)\big]^{2}}{c+d}\Big]+(c+d)(-1+2 m)\text{AppellF1}\Big[\frac{3}{2},
$$

$$
\frac{3}{2}-m,\ m,\ \frac{5}{2},\ \operatorname{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^{2},\ \frac{2 d \operatorname{Sin}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f x\big)\big]^{2}}{c+d}\Big]\Bigg)\operatorname{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^{2}\Bigg)\Bigg)\Bigg)\Bigg)(a+a \operatorname{Sin}[e+f x])^{m}
$$

- **Problem 348: Unable to integrate problem.**

$$\int (a-a\,\text{Sin}[e+f\,x])\,(a+a\,\text{Sin}[e+f\,x])^m\,(c+d\,\text{Sin}[e+f\,x])^n\,dx$$

Optimal (type 6, 132 leaves, 4 steps):

$$\frac{1}{f\,(1+2\,m)}2\,\sqrt{2}\,\text{AppellF1}\left[\frac{1}{2}+m,\,-\frac{1}{2},\,-n,\,\frac{3}{2}+m,\,\frac{1}{2}\,(1+\text{Sin}[e+f\,x]),\,-\frac{d\,(1+\text{Sin}[e+f\,x])}{c-d}\right]$$
$$\text{Sec}[e+f\,x]\,\sqrt{1-\text{Sin}[e+f\,x]}\,(a+a\,\text{Sin}[e+f\,x])^{1+m}\,(c+d\,\text{Sin}[e+f\,x])^n\left(\frac{c+d\,\text{Sin}[e+f\,x]}{c-d}\right)^{-n}$$

Result (type 8, 38 leaves):

$$\int (a-a\,\text{Sin}[e+f\,x])\,(a+a\,\text{Sin}[e+f\,x])^m\,(c+d\,\text{Sin}[e+f\,x])^n\,dx$$

- **Problem 349: Unable to integrate problem.**

$$\int (a-a\,\text{Sin}[e+f\,x])\,(a+a\,\text{Sin}[e+f\,x])^m\,(c+d\,\text{Sin}[e+f\,x])^{-1-m}\,dx$$

Optimal (type 6, 139 leaves, 4 steps):

$$\frac{1}{(c-d)\,f\,(1+2\,m)}2\,\sqrt{2}\,\text{AppellF1}\left[\frac{1}{2}+m,\,-\frac{1}{2},\,1+m,\,\frac{3}{2}+m,\,\frac{1}{2}\,(1+\text{Sin}[e+f\,x]),\,-\frac{d\,(1+\text{Sin}[e+f\,x])}{c-d}\right]$$
$$\text{Sec}[e+f\,x]\,\sqrt{1-\text{Sin}[e+f\,x]}\,(a+a\,\text{Sin}[e+f\,x])^{1+m}\,(c+d\,\text{Sin}[e+f\,x])^{-m}\left(\frac{c+d\,\text{Sin}[e+f\,x]}{c-d}\right)^{m}$$

Result (type 8, 42 leaves):

$$\int (a-a\,\text{Sin}[e+f\,x])\,(a+a\,\text{Sin}[e+f\,x])^m\,(c+d\,\text{Sin}[e+f\,x])^{-1-m}\,dx$$

- **Problem 353: Result more than twice size of optimal antiderivative.**

$$\int \frac{(A+B\,\text{Sin}[e+f\,x])\,(c+d\,\text{Sin}[e+f\,x])^{3/2}}{(a+b\,\text{Sin}[e+f\,x])^{3/2}}\,dx$$

Optimal (type 4, 840 leaves, 7 steps):

$$\Bigg((c-d)\sqrt{c+d}\,\left(2Ab^2c-2abBc-2aAbd+3a^2Bd-b^2Bd\right)\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b}\,\sqrt{c+d\,\text{Sin}[e+fx]}}{\sqrt{c+d}\,\sqrt{a+b\,\text{Sin}[e+fx]}}\right],\frac{(a-b)(c+d)}{(a+b)(c-d)}\right]\text{Sec}[e+fx]$$

$$\sqrt{-\frac{(bc-ad)(1-\text{Sin}[e+fx])}{(c+d)(a+b\,\text{Sin}[e+fx])}}\,\sqrt{\frac{(bc-ad)(1+\text{Sin}[e+fx])}{(c-d)(a+b\,\text{Sin}[e+fx])}}\,(a+b\,\text{Sin}[e+fx])\Bigg)\Big/\left((a-b)b^2\sqrt{a+b}\,(bc-ad)f\right)+\frac{1}{b^3\sqrt{a+b}\,f}$$

$$\sqrt{c+d}\,(3bBc+2Abd-3aBd)\,\text{EllipticPi}\left[\frac{b(c+d)}{(a+b)d},\text{ArcSin}\left[\frac{\sqrt{a+b}\,\sqrt{c+d\,\text{Sin}[e+fx]}}{\sqrt{c+d}\,\sqrt{a+b\,\text{Sin}[e+fx]}}\right],\frac{(a-b)(c+d)}{(a+b)(c-d)}\right]\text{Sec}[e+fx]$$

$$\sqrt{-\frac{(bc-ad)(1-\text{Sin}[e+fx])}{(c+d)(a+b\,\text{Sin}[e+fx])}}\,\sqrt{\frac{(bc-ad)(1+\text{Sin}[e+fx])}{(c-d)(a+b\,\text{Sin}[e+fx])}}\,(a+b\,\text{Sin}[e+fx])+\frac{2(Ab-aB)(bc-ad)\text{Cos}[e+fx]\sqrt{c+d\,\text{Sin}[e+fx]}}{b\left(a^2-b^2\right)f\sqrt{a+b\,\text{Sin}[e+fx]}}-$$

$$\frac{\left(2Ab(bc-ad)-B\left(2abc-3a^2d+b^2d\right)\right)\text{Cos}[e+fx]\sqrt{c+d\,\text{Sin}[e+fx]}}{b\left(a^2-b^2\right)f\sqrt{a+b\,\text{Sin}[e+fx]}}+\frac{1}{(a-b)b^3\sqrt{c+d}\,f}$$

$$\sqrt{a+b}\,\left(2Ab(b(c-2d)+ad)-B\left(3a^2d-6abd+b^2(2c+d)\right)\right)\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{c+d}\,\sqrt{a+b\,\text{Sin}[e+fx]}}{\sqrt{a+b}\,\sqrt{c+d\,\text{Sin}[e+fx]}}\right],\frac{(a+b)(c-d)}{(a-b)(c+d)}\right]$$

$$\text{Sec}[e+fx]\sqrt{\frac{(bc-ad)(1-\text{Sin}[e+fx])}{(a+b)(c+d\,\text{Sin}[e+fx])}}\,\sqrt{-\frac{(bc-ad)(1+\text{Sin}[e+fx])}{(a-b)(c+d\,\text{Sin}[e+fx])}}\,(c+d\,\text{Sin}[e+fx])$$

Result (type 4, 2012 leaves):

$$-\frac{2\left(Ab^2c\,\text{Cos}[e+fx]-abBc\,\text{Cos}[e+fx]-aAbd\,\text{Cos}[e+fx]+a^2Bd\,\text{Cos}[e+fx]\right)\sqrt{c+d\,\text{Sin}[e+fx]}}{b\left(-a^2+b^2\right)f\sqrt{a+b\,\text{Sin}[e+fx]}}+$$

$$\frac{1}{2(a-b)b(a+b)f}\Bigg(-\Bigg(4(-bc+ad)\left(2aAbc^2-2b^2Bc^2-2Ab^2cd+2abBcd+a^2Bd^2-b^2Bd^2\right)\sqrt{\frac{(c+d)\text{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-fx\right)\right]^2}{-c+d}}$$

$$\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-fx\right)\right]^2(c+d\,\text{Sin}[e+fx])}{-bc+ad}}}{\sqrt{2}}\right],\frac{2(-bc+ad)}{(a+b)(-c+d)}\right]\text{Sec}[e+fx]\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-fx\right)\right]^4$$

$$\sqrt{\frac{(c+d)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 (a+b\,\text{Sin}[e+f x])}{-b c+a d}}\ \sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 (c+d\,\text{Sin}[e+f x])}{-b c+a d}}\Bigg) \Big/$$

$$\left((a+b)\,(c+d)\,\sqrt{a+b\,\text{Sin}[e+f x]}\ \sqrt{c+d\,\text{Sin}[e+f x]}\right) - 4\,(-b c+a d)\,\left(2 A b^2 c^2 - 2 a b B c^2 + 4 a^2 B c d - 4 b^2 B c d - 2 A b^2 d^2 + 2 a b B d^2\right)$$

$$\Bigg(\Bigg(\sqrt{\frac{(c+d)\,\text{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{-c+d}}\ \text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 (c+d\,\text{Sin}[e+f x])}{-b c+a d}}}{\sqrt{2}}\right],\ \frac{2\,(-b c+a d)}{(a+b)\,(-c+d)}\right]$$

$$\text{Sec}[e+f x]\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^4 \sqrt{\frac{(c+d)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 (a+b\,\text{Sin}[e+f x])}{-b c+a d}}$$

$$\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 (c+d\,\text{Sin}[e+f x])}{-b c+a d}}\Bigg) \Big/ \left((a+b)\,(c+d)\,\sqrt{a+b\,\text{Sin}[e+f x]}\ \sqrt{c+d\,\text{Sin}[e+f x]}\right) -$$

$$\Bigg(\sqrt{\frac{(c+d)\,\text{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{-c+d}}\ \text{EllipticPi}\left[\frac{-b c+a d}{(a+b)\,d},\ \text{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 (c+d\,\text{Sin}[e+f x])}{-b c+a d}}}{\sqrt{2}}\right],\ \frac{2\,(-b c+a d)}{(a+b)\,(-c+d)}\right]$$

$$\text{Sec}[e+f x]\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^4 \sqrt{\frac{(c+d)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 (a+b\,\text{Sin}[e+f x])}{-b c+a d}}$$

$$\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 (c+d\,\text{Sin}[e+f x])}{-b c+a d}}\Bigg) \Big/ \left((a+b)\,d\,\sqrt{a+b\,\text{Sin}[e+f x]}\ \sqrt{c+d\,\text{Sin}[e+f x]}\right)\Bigg) +$$

$$2\left(-2 A b^2 c d + 2 a b B c d + 2 a A b d^2 - 3 a^2 B d^2 + b^2 B d^2\right)\left(\frac{\text{Cos}[e+f x]\,\sqrt{c+d\,\text{Sin}[e+f x]}}{d\,\sqrt{a+b\,\text{Sin}[e+f x]}} + \right.$$

$$\left(\sqrt{\frac{a-b}{a+b}}\,(a+b)\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{\frac{a-b}{a+b}}\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]}{\sqrt{\frac{a+b\,\text{Sin}[e+f\,x]}{a+b}}}\right],\,\frac{2\,(-b\,c+a\,d)}{(a-b)\,(c+d)}\right]\sqrt{c+d\,\text{Sin}[e+f\,x]}\right)\Big/$$

$$\left(b\,d\,\sqrt{\frac{(a+b)\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{a+b\,\text{Sin}[e+f\,x]}}\,\sqrt{a+b\,\text{Sin}[e+f\,x]}\,\sqrt{\frac{a+b\,\text{Sin}[e+f\,x]}{a+b}}\,\sqrt{\frac{(a+b)\,(c+d\,\text{Sin}[e+f\,x])}{(c+d)\,(a+b\,\text{Sin}[e+f\,x])}}\right)-$$

$$\frac{1}{b\,d}\,2\,(-b\,c+a\,d)\left(\left(\left((a+b)\,c+a\,d\right)\sqrt{\frac{(c+d)\,\text{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{-c+d}}\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}}{\sqrt{2}}\right],\right.\right.\right.$$

$$\left.\frac{2\,(-b\,c+a\,d)}{(a+b)\,(-c+d)}\right]\,\text{Sec}[e+f\,x]\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\sqrt{\frac{(c+d)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(a+b\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}$$

$$\left.\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}\right)\Big/\left((a+b)\,(c+d)\,\sqrt{a+b\,\text{Sin}[e+f\,x]}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}\right)-$$

$$\left((b\,c+a\,d)\sqrt{\frac{(c+d)\,\text{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{-c+d}}\,\text{EllipticPi}\left[\frac{-b\,c+a\,d}{(a+b)\,d},\,\text{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}}{\sqrt{2}}\right],\right.\right.$$

$$\left.\frac{2\,(-b\,c+a\,d)}{(a+b)\,(-c+d)}\right]\,\text{Sec}[e+f\,x]\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\sqrt{\frac{(c+d)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(a+b\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}$$

$$\left.\left.\left.\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}\right)\Big/\left((a+b)\,d\,\sqrt{a+b\,\text{Sin}[e+f\,x]}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}\right)\right)\right)$$

- **Problem 354: Result more than twice size of optimal antiderivative.**

$$\int \frac{(A+B\,\text{Sin}[e+f\,x])\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}{(a+b\,\text{Sin}[e+f\,x])^{3/2}}\,dx$$

Optimal (type 4, 630 leaves, 5 steps) :

$$\left(2\,(A\,b-a\,B)\,(c-d)\,\sqrt{c+d}\;\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}{\sqrt{c+d}\,\sqrt{a+b\,\text{Sin}[e+f\,x]}}\right],\frac{(a-b)\,(c+d)}{(a+b)\,(c-d)}\right]\,\text{Sec}[e+f\,x]\right.$$

$$\left.\sqrt{-\frac{(b\,c-a\,d)\,(1-\text{Sin}[e+f\,x])}{(c+d)\,(a+b\,\text{Sin}[e+f\,x])}}\,\sqrt{\frac{(b\,c-a\,d)\,(1+\text{Sin}[e+f\,x])}{(c-d)\,(a+b\,\text{Sin}[e+f\,x])}}\,(a+b\,\text{Sin}[e+f\,x])\right)\Big/\left((a-b)\,b\,\sqrt{a+b}\,(b\,c-a\,d)\,f\right)+$$

$$\left(2\,\sqrt{a+b}\,(A\,b-a\,B)\,(c-d)\;\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{c+d}\,\sqrt{a+b\,\text{Sin}[e+f\,x]}}{\sqrt{a+b}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}\right],\frac{(a+b)\,(c-d)}{(a-b)\,(c+d)}\right]\,\text{Sec}[e+f\,x]\right.$$

$$\left.\sqrt{\frac{(b\,c-a\,d)\,(1-\text{Sin}[e+f\,x])}{(a+b)\,(c+d\,\text{Sin}[e+f\,x])}}\,\sqrt{-\frac{(b\,c-a\,d)\,(1+\text{Sin}[e+f\,x])}{(a-b)\,(c+d\,\text{Sin}[e+f\,x])}}\,(c+d\,\text{Sin}[e+f\,x])\right)\Big/\left((a-b)\,b\,\sqrt{c+d}\,(b\,c-a\,d)\,f\right)+$$

$$\frac{1}{b^2\,\sqrt{c+d}\,f}2\,\sqrt{a+b}\,B\,\text{EllipticPi}\left[\frac{(a+b)\,d}{b\,(c+d)},\text{ArcSin}\left[\frac{\sqrt{c+d}\,\sqrt{a+b\,\text{Sin}[e+f\,x]}}{\sqrt{a+b}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}\right],\frac{(a+b)\,(c-d)}{(a-b)\,(c+d)}\right]\,\text{Sec}[e+f\,x]$$

$$\sqrt{\frac{(b\,c-a\,d)\,(1-\text{Sin}[e+f\,x])}{(a+b)\,(c+d\,\text{Sin}[e+f\,x])}}\,\sqrt{-\frac{(b\,c-a\,d)\,(1+\text{Sin}[e+f\,x])}{(a-b)\,(c+d\,\text{Sin}[e+f\,x])}}\,(c+d\,\text{Sin}[e+f\,x])$$

Result (type 4, 1871 leaves) :

$$-\frac{2\,(-A\,b\,\text{Cos}[e+f\,x]+a\,B\,\text{Cos}[e+f\,x])\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}{\left(a^2-b^2\right)\,f\,\sqrt{a+b\,\text{Sin}[e+f\,x]}}+\frac{1}{(a-b)\,(a+b)\,f}$$

$$\left(-\left(4\,(a\,A\,c-b\,B\,c)\,(-b\,c+a\,d)\,\sqrt{\frac{(c+d)\,\text{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{-c+d}}\;\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}}{\sqrt{2}}\right],\frac{2\,(-b\,c+a\,d)}{(a+b)\,(-c+d)}\right]\right.\right.$$

$$\text{Sec}[e+f\,x]\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\,\sqrt{\frac{(c+d)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(a+b\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}$$

$$\left.\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 (c+d\,\text{Sin}[e+f x])}{-b c+a d}}\right)\Big/\left((a+b)\,(c+d)\,\sqrt{a+b\,\text{Sin}[e+f x]}\,\sqrt{c+d\,\text{Sin}[e+f x]}\right)-$$

$$4\,(-b c+a d)\,(A b c-a B c+a A d-b B d)\left(\left(\sqrt{\frac{(c+d)\,\text{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{-c+d}}\;\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 (c+d\,\text{Sin}[e+f x])}{-b c+a d}}}{\sqrt{2}}\right],\right.\right.\right.$$

$$\left.\frac{2\,(-b c+a d)}{(a+b)\,(-c+d)}\right]\text{Sec}[e+f x]\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^4\sqrt{\frac{(c+d)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 (a+b\,\text{Sin}[e+f x])}{-b c+a d}}$$

$$\left.\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 (c+d\,\text{Sin}[e+f x])}{-b c+a d}}\right)\Big/\left((a+b)\,(c+d)\,\sqrt{a+b\,\text{Sin}[e+f x]}\,\sqrt{c+d\,\text{Sin}[e+f x]}\right)-$$

$$\left(\sqrt{\frac{(c+d)\,\text{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{-c+d}}\;\text{EllipticPi}\left[\frac{-b c+a d}{(a+b)\,d},\,\text{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 (c+d\,\text{Sin}[e+f x])}{-b c+a d}}}{\sqrt{2}}\right],\,\frac{2\,(-b c+a d)}{(a+b)\,(-c+d)}\right]\text{Sec}[e+f x]\right.$$

$$\left.\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^4\sqrt{\frac{(c+d)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 (a+b\,\text{Sin}[e+f x])}{-b c+a d}}\;\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 (c+d\,\text{Sin}[e+f x])}{-b c+a d}}\right)\Big/$$

$$\left.\left((a+b)\,d\,\sqrt{a+b\,\text{Sin}[e+f x]}\,\sqrt{c+d\,\text{Sin}[e+f x]}\right)\right)+2\,(-A b d+a B d)\left(\frac{\text{Cos}[e+f x]\,\sqrt{c+d\,\text{Sin}[e+f x]}}{d\,\sqrt{a+b\,\text{Sin}[e+f x]}}+\right.$$

$$\left(\sqrt{\frac{a-b}{a+b}}\;(a+b)\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{\frac{a-b}{a+b}}\;\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]}{\sqrt{\frac{a+b\,\text{Sin}[e+f\,x]}{a+b}}}\right],\;\frac{2\,(-b\,c+a\,d)}{(a-b)\,(c+d)}\right]\,\sqrt{c+d\,\text{Sin}[e+f\,x]}\right)\Big/$$

$$\left(b\,d\,\sqrt{\frac{(a+b)\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{a+b\,\text{Sin}[e+f\,x]}}\;\sqrt{a+b\,\text{Sin}[e+f\,x]}\;\sqrt{\frac{a+b\,\text{Sin}[e+f\,x]}{a+b}}\;\sqrt{\frac{(a+b)\,(c+d\,\text{Sin}[e+f\,x])}{(c+d)\,(a+b\,\text{Sin}[e+f\,x])}}\right)-$$

$$\frac{1}{b\,d}\,2\,(-b\,c+a\,d)\left(\left(\left((a+b)\,c+a\,d\right)\sqrt{\frac{(c+d)\,\text{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{-c+d}}\;\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}}{\sqrt{2}}\right],\right.\right.\right.$$

$$\left.\frac{2\,(-b\,c+a\,d)}{(a+b)\,(-c+d)}\right]\,\text{Sec}[e+f\,x]\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\sqrt{\frac{(c+d)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(a+b\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}$$

$$\left.\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}\right)\Big/\left((a+b)\,(c+d)\,\sqrt{a+b\,\text{Sin}[e+f\,x]}\;\sqrt{c+d\,\text{Sin}[e+f\,x]}\right)-$$

$$\left((b\,c+a\,d)\,\sqrt{\frac{(c+d)\,\text{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{-c+d}}\;\text{EllipticPi}\left[\frac{-b\,c+a\,d}{(a+b)\,d},\,\text{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}}{\sqrt{2}}\right],\right.\right.$$

$$\left.\frac{2\,(-b\,c+a\,d)}{(a+b)\,(-c+d)}\right]\,\text{Sec}[e+f\,x]\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\sqrt{\frac{(c+d)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(a+b\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}$$

$$\left.\left.\left.\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}\right)\Big/\left((a+b)\,d\,\sqrt{a+b\,\text{Sin}[e+f\,x]}\;\sqrt{c+d\,\text{Sin}[e+f\,x]}\right)\right)\right)$$

- **Problem 355: Result more than twice size of optimal antiderivative.**

$$\int \frac{A + B\, \text{Sin}[e + f x]}{(a + b\, \text{Sin}[e + f x])^{3/2} \sqrt{c + d\, \text{Sin}[e + f x]}} \, dx$$

Optimal (type 4, 417 leaves, 3 steps) :

$$\left(2 (A b - a B) (c - d) \sqrt{c + d}\, \text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a + b} \sqrt{c + d\, \text{Sin}[e + f x]}}{\sqrt{c + d} \sqrt{a + b\, \text{Sin}[e + f x]}}\right], \frac{(a - b) (c + d)}{(a + b) (c - d)}\right] \text{Sec}[e + f x] \sqrt{-\frac{(b c - a d) (1 - \text{Sin}[e + f x])}{(c + d) (a + b\, \text{Sin}[e + f x])}} \sqrt{\frac{(b c - a d) (1 + \text{Sin}[e + f x])}{(c - d) (a + b\, \text{Sin}[e + f x])}} (a + b\, \text{Sin}[e + f x])\right) \Big/ \left((a - b) \sqrt{a + b} (b c - a d)^2 f\right) + \left(2 \sqrt{a + b} (A - B)\, \text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{c + d} \sqrt{a + b\, \text{Sin}[e + f x]}}{\sqrt{a + b} \sqrt{c + d\, \text{Sin}[e + f x]}}\right], \frac{(a + b) (c - d)}{(a - b) (c + d)}\right] \text{Sec}[e + f x] \sqrt{\frac{(b c - a d) (1 - \text{Sin}[e + f x])}{(a + b) (c + d\, \text{Sin}[e + f x])}} \sqrt{-\frac{(b c - a d) (1 + \text{Sin}[e + f x])}{(a - b) (c + d\, \text{Sin}[e + f x])}} (c + d\, \text{Sin}[e + f x])\right) \Big/ \left((a - b) \sqrt{c + d} (b c - a d) f\right)$$

Result (type 4, 1919 leaves) :

$$-\frac{2 \left(A b^2 \text{Cos}[e + f x] - a b B\, \text{Cos}[e + f x]\right) \sqrt{c + d\, \text{Sin}[e + f x]}}{\left(a^2 - b^2\right) (-b c + a d) f \sqrt{a + b\, \text{Sin}[e + f x]}} + \frac{1}{(a - b) (a + b) (-b c + a d) f} \left(-\left(4 (-b c + a d) \left(-a A b c + b^2 B c + a^2 A d - A b^2 d\right) \sqrt{\frac{(c + d)\, \text{Cot}\left[\frac{1}{2} \left(-e + \frac{\pi}{2} - f x\right)\right]^2}{-c + d}} \right.\right.$$
$$\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\, \text{Csc}\left[\frac{1}{2} \left(-e+\frac{\pi}{2}-f x\right)\right]^2 (c+d\, \text{Sin}[e+f x])}{-b c+a d}}}{\sqrt{2}}\right], \frac{2 (-b c + a d)}{(a + b) (-c + d)}\right] \text{Sec}[e + f x]\, \text{Sin}\left[\frac{1}{2} \left(-e + \frac{\pi}{2} - f x\right)\right]^4$$
$$\left.\sqrt{\frac{(c + d)\, \text{Csc}\left[\frac{1}{2} \left(-e + \frac{\pi}{2} - f x\right)\right]^2 (a + b\, \text{Sin}[e + f x])}{-b c + a d}} \sqrt{-\frac{(a + b)\, \text{Csc}\left[\frac{1}{2} \left(-e + \frac{\pi}{2} - f x\right)\right]^2 (c + d\, \text{Sin}[e + f x])}{-b c + a d}}\right) \Big/$$
$$\left((a + b) (c + d) \sqrt{a + b\, \text{Sin}[e + f x]} \sqrt{c + d\, \text{Sin}[e + f x]}\right) - 4 (-b c + a d) \left(-A b^2 c + a b B c - a A b d + a^2 B d\right)$$

$$\left(\left(\sqrt{\frac{(c+d)\,\text{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{-c+d}}\ \text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}}{\sqrt{2}}\right],\ \frac{2\,(-b\,c+a\,d)}{(a+b)\,(-c+d)}\right]\right.\right.$$

$$\text{Sec}[e+f\,x]\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\sqrt{\frac{(c+d)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2(a+b\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}$$

$$\left.\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}\right)\Big/\left((a+b)\,(c+d)\,\sqrt{a+b\,\text{Sin}[e+f\,x]}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}\right)-$$

$$\left(\sqrt{\frac{(c+d)\,\text{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{-c+d}}\ \text{EllipticPi}\left[\frac{-b\,c+a\,d}{(a+b)\,d},\ \text{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}}{\sqrt{2}}\right],\ \frac{2\,(-b\,c+a\,d)}{(a+b)\,(-c+d)}\right]\,\text{Sec}[e+f\,x]\right.$$

$$\left.\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\sqrt{\frac{(c+d)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2(a+b\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}\,\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}\right)\Big/$$

$$\left.\left((a+b)\,d\,\sqrt{a+b\,\text{Sin}[e+f\,x]}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}\right)\right)+2\,\left(A\,b^2\,d-a\,b\,B\,d\right)\left(\frac{\text{Cos}[e+f\,x]\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}{d\,\sqrt{a+b\,\text{Sin}[e+f\,x]}}+\right.$$

$$\left(\sqrt{\frac{a-b}{a+b}}\,(a+b)\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{\frac{a-b}{a+b}}\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]}{\sqrt{\frac{a+b\,\text{Sin}[e+f\,x]}{a+b}}}\right],\ \frac{2\,(-b\,c+a\,d)}{(a-b)\,(c+d)}\right]\sqrt{c+d\,\text{Sin}[e+f\,x]}\right)\Big/$$

$$\left(b\,d\,\sqrt{\frac{(a+b)\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{a+b\,\text{Sin}[e+f\,x]}}\,\sqrt{a+b\,\text{Sin}[e+f\,x]}\,\sqrt{\frac{a+b\,\text{Sin}[e+f\,x]}{a+b}}\,\sqrt{\frac{(a+b)\,(c+d\,\text{Sin}[e+f\,x])}{(c+d)\,(a+b\,\text{Sin}[e+f\,x])}}\right)-$$

$$\frac{1}{b\,d}2\,(-b\,c+a\,d)\left(\left(\left((a+b)\,c+a\,d\right)\sqrt{\frac{(c+d)\,\text{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{-c+d}}\;\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}}{\sqrt{2}}\right],\right.\right.\right.$$

$$\left.\frac{2\,(-b\,c+a\,d)}{(a+b)\,(-c+d)}\right]\,\text{Sec}[e+f\,x]\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\sqrt{\frac{(c+d)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(a+b\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}$$

$$\left.\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}\right)\Big/\left((a+b)\,(c+d)\,\sqrt{a+b\,\text{Sin}[e+f\,x]}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}\right)-$$

$$\left((b\,c+a\,d)\sqrt{\frac{(c+d)\,\text{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{-c+d}}\;\text{EllipticPi}\left[\frac{-b\,c+a\,d}{(a+b)\,d},\,\text{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}}{\sqrt{2}}\right],\right.\right.$$

$$\left.\frac{2\,(-b\,c+a\,d)}{(a+b)\,(-c+d)}\right]\,\text{Sec}[e+f\,x]\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\sqrt{\frac{(c+d)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(a+b\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}$$

$$\left.\left.\left.\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}\right)\Big/\left((a+b)\,d\,\sqrt{a+b\,\text{Sin}[e+f\,x]}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}\right)\right)\right)$$

- **Problem 356: Result more than twice size of optimal antiderivative.**

$$\int\frac{A+B\,\text{Sin}[e+f\,x]}{(a+b\,\text{Sin}[e+f\,x])^{3/2}\,(c+d\,\text{Sin}[e+f\,x])^{3/2}}\,dx$$

Optimal (type 4, 544 leaves, 4 steps) :

$$\frac{2\,b\,(A\,b-a\,B)\,\mathrm{Cos}[e+f\,x]}{(a^2-b^2)\,(b\,c-a\,d)\,f\,\sqrt{a+b\,\mathrm{Sin}[e+f\,x]}\,\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}}-$$

$$\left(2\,(A\,(a^2\,d^2+b^2\,(c^2-2\,d^2))-B\,(a^2\,c\,d-b^2\,c\,d+a\,b\,(c^2-d^2)))\,\mathrm{EllipticE}\left[\mathrm{ArcSin}\left[\frac{\sqrt{c+d}\,\sqrt{a+b\,\mathrm{Sin}[e+f\,x]}}{\sqrt{a+b}\,\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}}\right],\frac{(a+b)\,(c-d)}{(a-b)\,(c+d)}\right]\mathrm{Sec}[e+f\,x]\right.$$

$$\left.\sqrt{\frac{(b\,c-a\,d)\,(1-\mathrm{Sin}[e+f\,x])}{(a+b)\,(c+d\,\mathrm{Sin}[e+f\,x])}}\,\sqrt{-\frac{(b\,c-a\,d)\,(1+\mathrm{Sin}[e+f\,x])}{(a-b)\,(c+d\,\mathrm{Sin}[e+f\,x])}}\,(c+d\,\mathrm{Sin}[e+f\,x])\right)\Big/\left(\sqrt{a+b}\,(c-d)\,\sqrt{c+d}\,(b\,c-a\,d)^3\,f\right)+$$

$$\left(2\,(A\,b\,c+b\,B\,c-a\,A\,d-2\,A\,b\,d+a\,B\,d)\,\mathrm{EllipticF}\left[\mathrm{ArcSin}\left[\frac{\sqrt{c+d}\,\sqrt{a+b\,\mathrm{Sin}[e+f\,x]}}{\sqrt{a+b}\,\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}}\right],\frac{(a+b)\,(c-d)}{(a-b)\,(c+d)}\right]\mathrm{Sec}[e+f\,x]\right.$$

$$\left.\sqrt{\frac{(b\,c-a\,d)\,(1-\mathrm{Sin}[e+f\,x])}{(a+b)\,(c+d\,\mathrm{Sin}[e+f\,x])}}\,\sqrt{-\frac{(b\,c-a\,d)\,(1+\mathrm{Sin}[e+f\,x])}{(a-b)\,(c+d\,\mathrm{Sin}[e+f\,x])}}\,(c+d\,\mathrm{Sin}[e+f\,x])\right)\Big/\left(\sqrt{a+b}\,(c-d)\,\sqrt{c+d}\,(b\,c-a\,d)^2\,f\right)$$

Result (type 4, 2236 leaves) :

$$\frac{\sqrt{a+b\,\mathrm{Sin}[e+f\,x]}\,\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}\,\left(\frac{2\,(A\,b^3\,\mathrm{Cos}[e+f\,x]-a\,b^2\,B\,\mathrm{Cos}[e+f\,x])}{(a^2-b^2)\,(-b\,c+a\,d)^2\,(a+b\,\mathrm{Sin}[e+f\,x])}-\frac{2\,(B\,c\,d^2\,\mathrm{Cos}[e+f\,x]-A\,d^3\,\mathrm{Cos}[e+f\,x])}{(b\,c-a\,d)^2\,(c^2-d^2)\,(c+d\,\mathrm{Sin}[e+f\,x])}\right)}{f}+$$

$$\frac{1}{(a-b)\,(a+b)\,(c-d)\,(c+d)\,(-b\,c+a\,d)^2\,f}\left(-\frac{1}{(a+b)\,(c+d)\,\sqrt{a+b\,\mathrm{Sin}[e+f\,x]}\,\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}}\right.$$

$$4\,(-b\,c+a\,d)\,(a\,A\,b^2\,c^3-b^3\,B\,c^3-2\,a^2\,A\,b\,c^2\,d+2\,A\,b^3\,c^2\,d+a^3\,A\,c\,d^2-2\,a\,A\,b^2\,c\,d^2+b^3\,B\,c\,d^2+2\,a^2\,A\,b\,d^3-2\,A\,b^3\,d^3-a^3\,B\,d^3+a\,b^2\,B\,d^3)$$

$$\sqrt{\frac{(c+d)\,\mathrm{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{-c+d}}\,\mathrm{EllipticF}\left[\mathrm{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\mathrm{Sin}[e+f\,x])}{-b\,c+a\,d}}}{\sqrt{2}}\right],\frac{2\,(-b\,c+a\,d)}{(a+b)\,(-c+d)}\right]\mathrm{Sec}[e+f\,x]$$

$$\mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\sqrt{\frac{(c+d)\,\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(a+b\,\mathrm{Sin}[e+f\,x])}{-b\,c+a\,d}}\,\sqrt{-\frac{(a+b)\,\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,(c+d\,\mathrm{Sin}[e+f\,x])}{-b\,c+a\,d}}\,-$$

$$4\,(-b\,c+a\,d)\,(A\,b^3\,c^3-a\,b^2\,B\,c^3+a\,A\,b^2\,c^2\,d-2\,a^2\,b\,B\,c^2\,d+b^3\,B\,c^2\,d+a^2\,A\,b\,c\,d^2-2\,A\,b^3\,c\,d^2-a^3\,B\,c\,d^2+2\,a\,b^2\,B\,c\,d^2+a^3\,A\,d^3-$$

$$2\,a\,A\,b^2\,d^3+a^2\,b\,B\,d^3\Big)\left(\left(\sqrt{\frac{(c+d)\,\mathrm{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{-c+d}}\ \mathrm{EllipticF}\left[\mathrm{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2(c+d\,\mathrm{Sin}[e+f\,x])}{-b\,c+a\,d}}}{\sqrt{2}}\right],\ \frac{2\,(-b\,c+a\,d)}{(a+b)\,(-c+d)}\right]\right.\right.$$

$$\mathrm{Sec}[e+f\,x]\ \mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\sqrt{\frac{(c+d)\,\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2(a+b\,\mathrm{Sin}[e+f\,x])}{-b\,c+a\,d}}$$

$$\left.\sqrt{-\frac{(a+b)\,\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2(c+d\,\mathrm{Sin}[e+f\,x])}{-b\,c+a\,d}}\right)\Big/\left((a+b)\,(c+d)\,\sqrt{a+b\,\mathrm{Sin}[e+f\,x]}\ \sqrt{c+d\,\mathrm{Sin}[e+f\,x]}\right)-$$

$$\left(\sqrt{\frac{(c+d)\,\mathrm{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{-c+d}}\ \mathrm{EllipticPi}\left[\frac{-b\,c+a\,d}{(a+b)\,d},\ \mathrm{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2(c+d\,\mathrm{Sin}[e+f\,x])}{-b\,c+a\,d}}}{\sqrt{2}}\right],\ \frac{2\,(-b\,c+a\,d)}{(a+b)\,(-c+d)}\right]\right.$$

$$\mathrm{Sec}[e+f\,x]\ \mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\sqrt{\frac{(c+d)\,\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2(a+b\,\mathrm{Sin}[e+f\,x])}{-b\,c+a\,d}}$$

$$\left.\left.\sqrt{-\frac{(a+b)\,\mathrm{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2(c+d\,\mathrm{Sin}[e+f\,x])}{-b\,c+a\,d}}\right)\Big/\left((a+b)\,d\,\sqrt{a+b\,\mathrm{Sin}[e+f\,x]}\ \sqrt{c+d\,\mathrm{Sin}[e+f\,x]}\right)\right)+$$

$$2\left(-A\,b^3\,c^2\,d+a\,b^2\,B\,c^2\,d+a^2\,b\,B\,c\,d^2-b^3\,B\,c\,d^2-a^2\,A\,b\,d^3+2\,A\,b^3\,d^3-a\,b^2\,B\,d^3\right)\left(\frac{\mathrm{Cos}[e+f\,x]\,\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}}{d\,\sqrt{a+b\,\mathrm{Sin}[e+f\,x]}}+\right.$$

$$\left(\sqrt{\frac{a-b}{a+b}}\ (a+b)\,\mathrm{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\mathrm{EllipticE}\left[\mathrm{ArcSin}\left[\frac{\sqrt{\frac{a-b}{a+b}}\ \mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]}{\sqrt{\frac{a+b\,\mathrm{Sin}[e+f\,x]}{a+b}}}\right],\ \frac{2\,(-b\,c+a\,d)}{(a-b)\,(c+d)}\right]\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}\right)\Big/$$

$$\left(b\, d\, \sqrt{\frac{(a+b)\, \text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\, x\right)\right]^2}{a+b\, \text{Sin}[e+f\, x]}}\, \sqrt{a+b\, \text{Sin}[e+f\, x]}\, \sqrt{\frac{a+b\, \text{Sin}[e+f\, x]}{a+b}}\, \sqrt{\frac{(a+b)\, (c+d\, \text{Sin}[e+f\, x])}{(c+d)\, (a+b\, \text{Sin}[e+f\, x])}}\right) -$$

$$\frac{1}{b\, d} 2\, (-b\, c+a\, d)\, \Bigg(\Bigg(((a+b)\, c+a\, d)\, \sqrt{\frac{(c+d)\, \text{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\, x\right)\right]^2}{-c+d}}\, \text{EllipticF}\Bigg[\text{ArcSin}\Bigg[\frac{\sqrt{-\frac{(a+b)\, \text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\, x\right)\right]^2\, (c+d\, \text{Sin}[e+f\, x])}{-b\, c+a\, d}}}{\sqrt{2}}\Bigg],$$

$$\frac{2\, (-b\, c+a\, d)}{(a+b)\, (-c+d)}\Bigg]\, \text{Sec}[e+f\, x]\, \text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\, x\right)\right]^4\, \sqrt{\frac{(c+d)\, \text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\, x\right)\right]^2\, (a+b\, \text{Sin}[e+f\, x])}{-b\, c+a\, d}}$$

$$\sqrt{-\frac{(a+b)\, \text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\, x\right)\right]^2\, (c+d\, \text{Sin}[e+f\, x])}{-b\, c+a\, d}}\Bigg) \Big/ \left((a+b)\, (c+d)\, \sqrt{a+b\, \text{Sin}[e+f\, x]}\, \sqrt{c+d\, \text{Sin}[e+f\, x]}\right) -$$

$$\Bigg((b\, c+a\, d)\, \sqrt{\frac{(c+d)\, \text{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\, x\right)\right]^2}{-c+d}}\, \text{EllipticPi}\Bigg[\frac{-b\, c+a\, d}{(a+b)\, d}, \text{ArcSin}\Bigg[\frac{\sqrt{-\frac{(a+b)\, \text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\, x\right)\right]^2\, (c+d\, \text{Sin}[e+f\, x])}{-b\, c+a\, d}}}{\sqrt{2}}\Bigg],$$

$$\frac{2\, (-b\, c+a\, d)}{(a+b)\, (-c+d)}\Bigg]\, \text{Sec}[e+f\, x]\, \text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\, x\right)\right]^4\, \sqrt{\frac{(c+d)\, \text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\, x\right)\right]^2\, (a+b\, \text{Sin}[e+f\, x])}{-b\, c+a\, d}}$$

$$\sqrt{-\frac{(a+b)\, \text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\, x\right)\right]^2\, (c+d\, \text{Sin}[e+f\, x])}{-b\, c+a\, d}}\Bigg) \Big/ \left((a+b)\, d\, \sqrt{a+b\, \text{Sin}[e+f\, x]}\, \sqrt{c+d\, \text{Sin}[e+f\, x]}\right)\Bigg)\Bigg)\Bigg)$$

- **Problem 357: Result more than twice size of optimal antiderivative.**

$$\int \frac{A+B\, \text{Sin}[e+f\, x]}{(a+b\, \text{Sin}[e+f\, x])^{3/2}\, (c+d\, \text{Sin}[e+f\, x])^{5/2}}\, dx$$

Optimal (type 4, 858 leaves, 5 steps):

$$\frac{2 b (A b - a B) \mathrm{Cos}[e + f x]}{(a^2 - b^2) (b c - a d) f \sqrt{a + b \mathrm{Sin}[e + f x]} (c + d \mathrm{Sin}[e + f x])^{3/2}} +$$

$$\frac{2 d \left(A \left(a^2 d^2 + b^2 \left(3 c^2 - 4 d^2\right)\right) - B \left(a^2 c d - b^2 c d + 3 a b \left(c^2 - d^2\right)\right)\right) \mathrm{Cos}[e + f x] \sqrt{a + b \mathrm{Sin}[e + f x]}}{3 (a^2 - b^2) (b c - a d)^2 (c^2 - d^2) f (c + d \mathrm{Sin}[e + f x])^{3/2}} +$$

$$\frac{1}{3 \sqrt{a + b} (c - d)^2 (c + d)^{3/2} (b c - a d)^4 f} 2 \left(B \left(2 a^2 b c d \left(3 c^2 - d^2\right) - 2 b^3 c d \left(3 c^2 - d^2\right) - a^3 d^2 \left(c^2 + 3 d^2\right) + a b^2 \left(3 c^4 - 5 c^2 d^2 + 6 d^4\right)\right) + \right.$$

$$A \left(4 a^3 c d^3 - 4 a b^2 c d^3 - a^2 b d^2 \left(9 c^2 - 5 d^2\right) - b^3 \left(3 c^4 - 15 c^2 d^2 + 8 d^4\right)\right)\Big) \mathrm{EllipticE}\left[\mathrm{ArcSin}\left[\frac{\sqrt{c + d} \sqrt{a + b \mathrm{Sin}[e + f x]}}{\sqrt{a + b} \sqrt{c + d \mathrm{Sin}[e + f x]}}\right], \frac{(a + b) (c - d)}{(a - b) (c + d)}\right]$$

$$\mathrm{Sec}[e + f x] \sqrt{\frac{(b c - a d) (1 - \mathrm{Sin}[e + f x])}{(a + b) (c + d \mathrm{Sin}[e + f x])}} \sqrt{-\frac{(b c - a d) (1 + \mathrm{Sin}[e + f x])}{(a - b) (c + d \mathrm{Sin}[e + f x])}} (c + d \mathrm{Sin}[e + f x]) -$$

$$\left(2 \left(B \left(a^2 d^2 (c + 3 d) - b^2 c \left(3 c^2 + 3 c d - 2 d^2\right) - 6 a b d \left(c^2 - d^2\right)\right) - A \left(a^2 d^2 (3 c + d) - 6 a b d \left(c^2 - d^2\right) + b^2 \left(3 c^3 - 9 c^2 d - 6 c d^2 + 8 d^3\right)\right)\right)\right.$$

$$\mathrm{EllipticF}\left[\mathrm{ArcSin}\left[\frac{\sqrt{c + d} \sqrt{a + b \mathrm{Sin}[e + f x]}}{\sqrt{a + b} \sqrt{c + d \mathrm{Sin}[e + f x]}}\right], \frac{(a + b) (c - d)}{(a - b) (c + d)}\right] \mathrm{Sec}[e + f x] \sqrt{\frac{(b c - a d) (1 - \mathrm{Sin}[e + f x])}{(a + b) (c + d \mathrm{Sin}[e + f x])}}$$

$$\left.\sqrt{-\frac{(b c - a d) (1 + \mathrm{Sin}[e + f x])}{(a - b) (c + d \mathrm{Sin}[e + f x])}} (c + d \mathrm{Sin}[e + f x])\right) \Big/ \left(3 \sqrt{a + b} (c - d)^2 (c + d)^{3/2} (b c - a d)^3 f\right)$$

Result (type 4, 2807 leaves) :

$$\frac{1}{f}\sqrt{a + b \mathrm{Sin}[e + f x]} \sqrt{c + d \mathrm{Sin}[e + f x]}$$

$$\left(-\frac{2 \left(A b^4 \mathrm{Cos}[e + f x] - a b^3 B \mathrm{Cos}[e + f x]\right)}{(a^2 - b^2) (-b c + a d)^3 (a + b \mathrm{Sin}[e + f x])} + \frac{2 \left(-B c d^2 \mathrm{Cos}[e + f x] + A d^3 \mathrm{Cos}[e + f x]\right)}{3 (b c - a d)^2 (c^2 - d^2) (c + d \mathrm{Sin}[e + f x])^2} - \left(2 \left(6 b B c^3 d^2 \mathrm{Cos}[e + f x] - 9 A b c^2 d^3 \mathrm{Cos}[e + f x] - \right.\right.\right.$$

$$\left.\left. a B c^2 d^3 \mathrm{Cos}[e + f x] + 4 a A c d^4 \mathrm{Cos}[e + f x] - 2 b B c d^4 \mathrm{Cos}[e + f x] + 5 A b d^5 \mathrm{Cos}[e + f x] - 3 a B d^5 \mathrm{Cos}[e + f x]\right)\right) \Big/$$

$$\left.\left(3 (b c - a d)^3 \left(c^2 - d^2\right)^2 (c + d \mathrm{Sin}[e + f x])\right)\right) + \frac{1}{3 (a - b) (a + b) (c - d)^2 (c + d)^2 (-b c + a d)^3 f}$$

$$\left(-\frac{1}{(a + b) (c + d) \sqrt{a + b \mathrm{Sin}[e + f x]} \sqrt{c + d \mathrm{Sin}[e + f x]}} 4 (-b c + a d) \left(-3 a A b^3 c^5 + 3 b^4 B c^5 + 9 a^2 A b^2 c^4 d - 9 A b^4 c^4 d - 9 a^3 A b c^3 d^2 + \right.\right.$$

$$15 a A b^3 c^3 d^2 - a^2 b^2 B c^3 d^2 - 5 b^4 B c^3 d^2 + 3 a^4 A c^2 d^3 - 20 a^2 A b^2 c^2 d^3 + 17 A b^4 c^2 d^3 + 10 a^3 b B c^2 d^3 - 10 a b^3 B c^2 d^3 +$$

$$5 a^3 A b c d^4 - 8 a A b^3 c d^4 - 4 a^4 B c d^4 + 5 a^2 b^2 B c d^4 + 2 b^4 B c d^4 + a^4 A d^5 + 7 a^2 A b^2 d^5 - 8 A b^4 d^5 - 6 a^3 b B d^5 + 6 a b^3 B d^5\Big)$$

$$\sqrt{\frac{(c+d)\operatorname{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{-c+d}}\ \text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\operatorname{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 (c+d\operatorname{Sin}[e+f x])}{-b c+a d}}}{\sqrt{2}}\right],\ \frac{2(-b c+a d)}{(a+b)(-c+d)}\right]\operatorname{Sec}[e+f x]$$

$$\operatorname{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^4\sqrt{\frac{(c+d)\operatorname{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2(a+b\operatorname{Sin}[e+f x])}{-b c+a d}}\ \sqrt{-\frac{(a+b)\operatorname{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2(c+d\operatorname{Sin}[e+f x])}{-b c+a d}}\ -$$

$$4(-b c+a d)\Big(-3 A b^4 c^5 + 3 a b^3 B c^5 - 3 a A b^3 c^4 d + 9 a^2 b^2 B c^4 d - 6 b^4 B c^4 d - 9 a^2 A b^2 c^3 d^2 + 15 A b^4 c^3 d^2 + 5 a^3 b B c^3 d^2 -$$
$$11 a b^3 B c^3 d^2 - 5 a^3 A b c^2 d^3 + 11 a A b^3 c^2 d^3 - a^4 B c^2 d^3 - 7 a^2 b^2 B c^2 d^3 + 2 b^4 B c^2 d^3 + 4 a^4 A c d^4 +$$
$$a^2 A b^2 c d^4 - 8 A b^4 c d^4 - 5 a^3 b B c d^4 + 8 a b^3 B c d^4 + 5 a^3 A b d^5 - 8 a A b^3 d^5 - 3 a^4 B d^5 + 6 a^2 b^2 B d^5\Big)$$

$$\Bigg(\Bigg(\sqrt{\frac{(c+d)\operatorname{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{-c+d}}\ \text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\operatorname{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 (c+d\operatorname{Sin}[e+f x])}{-b c+a d}}}{\sqrt{2}}\right],\ \frac{2(-b c+a d)}{(a+b)(-c+d)}\right]$$

$$\operatorname{Sec}[e+f x]\operatorname{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^4\sqrt{\frac{(c+d)\operatorname{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2(a+b\operatorname{Sin}[e+f x])}{-b c+a d}}$$

$$\sqrt{-\frac{(a+b)\operatorname{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2(c+d\operatorname{Sin}[e+f x])}{-b c+a d}}\Bigg)\Bigg/\left((a+b)(c+d)\sqrt{a+b\operatorname{Sin}[e+f x]}\ \sqrt{c+d\operatorname{Sin}[e+f x]}\right)-$$

$$\Bigg(\sqrt{\frac{(c+d)\operatorname{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{-c+d}}\ \text{EllipticPi}\left[\frac{-b c+a d}{(a+b) d},\ \text{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\operatorname{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 (c+d\operatorname{Sin}[e+f x])}{-b c+a d}}}{\sqrt{2}}\right],\ \frac{2(-b c+a d)}{(a+b)(-c+d)}\right]$$

$$\operatorname{Sec}[e+f x]\operatorname{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^4\sqrt{\frac{(c+d)\operatorname{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2(a+b\operatorname{Sin}[e+f x])}{-b c+a d}}$$

$$\sqrt{-\frac{(a+b)\operatorname{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2(c+d\operatorname{Sin}[e+f x])}{-b c+a d}}\Bigg)\Bigg/\left((a+b)\, d\sqrt{a+b\operatorname{Sin}[e+f x]}\ \sqrt{c+d\operatorname{Sin}[e+f x]}\right)\Bigg)+$$

$$2\left(3 A b^4 c^4 d-3 a b^3 B c^4 d-6 a^2 b^2 B c^3 d^2+6 b^4 B c^3 d^2+9 a^2 A b^2 c^2 d^3-15 A b^4 c^2 d^3+a^3 b B c^2 d^3+5 a b^3 B c^2 d^3-4 a^3 A b c d^4+\right.$$

$$\left.4 a A b^3 c d^4+2 a^2 b^2 B c d^4-2 b^4 B c d^4-5 a^2 A b^2 d^5+8 A b^4 d^5+3 a^3 b B d^5-6 a b^3 B d^5\right)\left(\frac{\text{Cos}[e+f x]\sqrt{c+d\,\text{Sin}[e+f x]}}{d\sqrt{a+b\,\text{Sin}[e+f x]}}+\right.$$

$$\left(\sqrt{\frac{a-b}{a+b}}\,(a+b)\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{\frac{a-b}{a+b}}\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}{\sqrt{\frac{a+b\,\text{Sin}[e+f x]}{a+b}}}\right],\frac{2(-b c+a d)}{(a-b)(c+d)}\right]\sqrt{c+d\,\text{Sin}[e+f x]}\right)\Bigg/$$

$$\left(b d\sqrt{\frac{(a+b)\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{a+b\,\text{Sin}[e+f x]}}\sqrt{a+b\,\text{Sin}[e+f x]}\sqrt{\frac{a+b\,\text{Sin}[e+f x]}{a+b}}\sqrt{\frac{(a+b)(c+d\,\text{Sin}[e+f x])}{(c+d)(a+b\,\text{Sin}[e+f x])}}\right)-$$

$$\frac{1}{b d}2(-b c+a d)\left(\left(\left((a+b) c+a d\right)\sqrt{\frac{(c+d)\,\text{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{-c+d}}\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2(c+d\,\text{Sin}[e+f x])}{-b c+a d}}}{\sqrt{2}}\right],\right.\right.\right.$$

$$\left.\frac{2(-b c+a d)}{(a+b)(-c+d)}\right]\text{Sec}[e+f x]\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^4\sqrt{\frac{(c+d)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2(a+b\,\text{Sin}[e+f x])}{-b c+a d}}$$

$$\left.\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2(c+d\,\text{Sin}[e+f x])}{-b c+a d}}\right)\Bigg/\left((a+b)(c+d)\sqrt{a+b\,\text{Sin}[e+f x]}\sqrt{c+d\,\text{Sin}[e+f x]}\right)-$$

$$\left((b c+a d)\sqrt{\frac{(c+d)\,\text{Cot}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{-c+d}}\,\text{EllipticPi}\left[\frac{-b c+a d}{(a+b) d},\text{ArcSin}\left[\frac{\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2(c+d\,\text{Sin}[e+f x])}{-b c+a d}}}{\sqrt{2}}\right],\right.\right.$$

$$\left.\frac{2(-b c+a d)}{(a+b)(-c+d)}\right]\text{Sec}[e+f x]\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^4\sqrt{\frac{(c+d)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2(a+b\,\text{Sin}[e+f x])}{-b c+a d}}$$

$$\sqrt{-\frac{(a+b)\,\text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2 (c+d\,\text{Sin}[e+f\,x])}{-b\,c+a\,d}}\Bigg/\left((a+b)\,d\,\sqrt{a+b\,\text{Sin}[e+f\,x]}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}\right)\Bigg)\Bigg)\Bigg)$$

Test results for the 19 problems in "4.1.4.1 (a+b sin)^m (A+B sin+C sin^2).m"

- **Problem 2: Result more than twice size of optimal antiderivative.**

$$\int \text{Sin}[e+f\,x]^5\left(6-7\,\text{Sin}[e+f\,x]^2\right)\,dx$$

Optimal (type 3, 18 leaves, 1 step) :

$$\frac{\text{Cos}[e+f\,x]\,\text{Sin}[e+f\,x]^6}{f}$$

Result (type 3, 59 leaves) :

$$\frac{5\,\text{Cos}[e+f\,x]}{64\,f}-\frac{9\,\text{Cos}[3\,(e+f\,x)]}{64\,f}+\frac{5\,\text{Cos}[5\,(e+f\,x)]}{64\,f}-\frac{\text{Cos}[7\,(e+f\,x)]}{64\,f}$$

- **Problem 3: Result more than twice size of optimal antiderivative.**

$$\int \text{Sin}[e+f\,x]^4\left(5-6\,\text{Sin}[e+f\,x]^2\right)\,dx$$

Optimal (type 3, 18 leaves, 1 step) :

$$\frac{\text{Cos}[e+f\,x]\,\text{Sin}[e+f\,x]^5}{f}$$

Result (type 3, 39 leaves) :

$$\frac{24\,e+5\,\text{Sin}[2\,(e+f\,x)]-4\,\text{Sin}[4\,(e+f\,x)]+\text{Sin}[6\,(e+f\,x)]}{32\,f}$$

- **Problem 4: Result more than twice size of optimal antiderivative.**

$$\int \text{Sin}[e+f\,x]^3\left(4-5\,\text{Sin}[e+f\,x]^2\right)\,dx$$

Optimal (type 3, 18 leaves, 1 step) :

$$\frac{\text{Cos}[e+f\,x]\,\text{Sin}[e+f\,x]^4}{f}$$

Result (type 3, 44 leaves) :

$$\frac{\text{Cos}[e+f x]}{8 f}-\frac{3 \text{Cos}[3 (e+f x)]}{16 f}+\frac{\text{Cos}[5 (e+f x)]}{16 f}$$

- **Problem 6: Result more than twice size of optimal antiderivative.**

$$\int \text{Sin}[e+f x] \left(2-3 \text{Sin}[e+f x]^2\right) \, dx$$

Optimal (type 3, 18 leaves, 1 step):

$$\frac{\text{Cos}[e+f x] \text{Sin}[e+f x]^2}{f}$$

Result (type 3, 51 leaves):

$$-\frac{2 \text{Cos}[e] \text{Cos}[f x]}{f}+\frac{9 \text{Cos}[e+f x]}{4 f}-\frac{\text{Cos}[3 (e+f x)]}{4 f}+\frac{2 \text{Sin}[e] \text{Sin}[f x]}{f}$$

- **Problem 7: Result more than twice size of optimal antiderivative.**

$$\int \left(1-2 \text{Sin}[e+f x]^2\right) \, dx$$

Optimal (type 3, 16 leaves, 3 steps):

$$\frac{\text{Cos}[e+f x] \text{Sin}[e+f x]}{f}$$

Result (type 3, 33 leaves):

$$\frac{\text{Cos}[2 f x] \text{Sin}[2 e]}{2 f}+\frac{\text{Cos}[2 e] \text{Sin}[2 f x]}{2 f}$$

- **Problem 8: Result more than twice size of optimal antiderivative.**

$$\int -\text{Sin}[e+f x] \, dx$$

Optimal (type 3, 10 leaves, 1 step):

$$\frac{\text{Cos}[e+f x]}{f}$$

Result (type 3, 22 leaves):

$$\frac{\text{Cos}[e] \text{Cos}[f x]}{f}-\frac{\text{Sin}[e] \text{Sin}[f x]}{f}$$

- **Problem 10: Result more than twice size of optimal antiderivative.**

$$\int \text{Csc}[e+f x]^3 \left(-2+\text{Sin}[e+f x]^2\right) \, dx$$

Optimal (type 3, 16 leaves, 1 step):

$$\frac{\text{Cot}[e+f x]\,\text{Csc}[e+f x]}{f}$$

Result (type 3, 107 leaves) :

$$\frac{\text{Csc}\left[\frac{1}{2}(e+f x)\right]^2}{4 f}-\frac{\text{Log}\left[\text{Cos}\left[\frac{e}{2}+\frac{f x}{2}\right]\right]}{f}+\frac{\text{Log}\left[\text{Cos}\left[\frac{1}{2}(e+f x)\right]\right]}{f}+\frac{\text{Log}\left[\text{Sin}\left[\frac{e}{2}+\frac{f x}{2}\right]\right]}{f}-\frac{\text{Log}\left[\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right]}{f}-\frac{\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2}{4 f}$$

- **Problem 12: Result more than twice size of optimal antiderivative.**

$$\int \text{Csc}[e+f x]^5\left(-4+3\,\text{Sin}[e+f x]^2\right)dx$$

Optimal (type 3, 18 leaves, 1 step) :

$$\frac{\text{Cot}[e+f x]\,\text{Csc}[e+f x]^3}{f}$$

Result (type 3, 39 leaves) :

$$\frac{\text{Csc}\left[\frac{1}{2}(e+f x)\right]^4}{16 f}-\frac{\text{Sec}\left[\frac{1}{2}(e+f x)\right]^4}{16 f}$$

- **Problem 13: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int (a+a\,\text{Sin}[e+f x])^m\left(A+C\,\text{Sin}[e+f x]^2\right)dx$$

Optimal (type 5, 171 leaves, 4 steps) :

$$\frac{C\,\text{Cos}[e+f x]\,(a+a\,\text{Sin}[e+f x])^m}{f\left(2+3 m+m^2\right)}-\frac{1}{f(1+m)(2+m)}2^{\frac{1}{2}+m}\left(C\left(1+m+m^2\right)+A\left(2+3 m+m^2\right)\right)\text{Cos}[e+f x]$$
$$\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{1}{2}-m,\frac{3}{2},\frac{1}{2}(1-\text{Sin}[e+f x])\right](1+\text{Sin}[e+f x])^{-\frac{1}{2}-m}(a+a\,\text{Sin}[e+f x])^m-\frac{C\,\text{Cos}[e+f x]\,(a+a\,\text{Sin}[e+f x])^{1+m}}{a f(2+m)}$$

Result (type 5, 398 leaves) :

$$-\frac{1}{2 f}(a(1+\text{Sin}[e+f x]))^m\left(-\frac{1}{-4+m^2}\,\mathrm{i}\,2^{-1-2 m}\,C\,e^{-2\,\mathrm{i}(e+f x)}\left(1+\mathrm{i}\,e^{-\mathrm{i}(e+f x)}\right)^{-2 m}\left(e^{-\frac{1}{4}\mathrm{i}(2 e+\pi+2 f x)}\left(\mathrm{i}+e^{\mathrm{i}(e+f x)}\right)\right)^{2 m}\right.$$
$$\left(e^{4\,\mathrm{i}(e+f x)}(-2+m)\,\text{Hypergeometric2F1}\left[-2-m,-2 m,-1-m,-\mathrm{i}\,e^{-\mathrm{i}(e+f x)}\right]+(2+m)\,\text{Hypergeometric2F1}\left[2-m,-2 m,3-m,-\mathrm{i}\,e^{-\mathrm{i}(e+f x)}\right]\right)+$$
$$\left(4\sqrt{2}\,A\,\text{Cos}\left[\frac{1}{4}(2 e-\pi+2 f x)\right]^{1+2 m}\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{1}{2}+m,\frac{3}{2}+m,\text{Sin}\left[\frac{1}{4}(2 e+\pi+2 f x)\right]^2\right]\text{Sin}\left[\frac{1}{4}(2 e-\pi+2 f x)\right]\right)\Big/$$
$$\left((1+2 m)\sqrt{1-\text{Sin}[e+f x]}\right)+$$
$$\left(2\sqrt{2}\,C\,\text{Cos}\left[\frac{1}{4}(2 e-\pi+2 f x)\right]^{1+2 m}\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{1}{2}+m,\frac{3}{2}+m,\text{Sin}\left[\frac{1}{4}(2 e+\pi+2 f x)\right]^2\right]\text{Sin}\left[\frac{1}{4}(2 e-\pi+2 f x)\right]\right)\Big/$$
$$\left.\left((1+2 m)\sqrt{1-\text{Sin}[e+f x]}\right)\right)\text{Sin}\left[\frac{1}{4}(2 e+\pi+2 f x)\right]^{-2 m}$$

Problem 14: Unable to integrate problem.

$$\int (a+b\,\text{Sin}[e+f\,x])^m \left(A-A\,\text{Sin}[e+f\,x]^2\right) dx$$

Optimal (type 6, 211 leaves, 7 steps):

$$\frac{1}{f\sqrt{1+\text{Sin}[e+f\,x]}} 4\sqrt{2}\,A\,\text{AppellF1}\left[\frac{1}{2},-\frac{3}{2},-m,\frac{3}{2},\frac{1}{2}(1-\text{Sin}[e+f\,x]),\frac{b\,(1-\text{Sin}[e+f\,x])}{a+b}\right] \text{Cos}[e+f\,x]\,(a+b\,\text{Sin}[e+f\,x])^m \left(\frac{a+b\,\text{Sin}[e+f\,x]}{a+b}\right)^{-m} - \frac{1}{f\sqrt{1+\text{Sin}[e+f\,x]}} 4\sqrt{2}\,A\,\text{AppellF1}\left[\frac{1}{2},-\frac{1}{2},-m,\frac{3}{2},\frac{1}{2}(1-\text{Sin}[e+f\,x]),\frac{b\,(1-\text{Sin}[e+f\,x])}{a+b}\right] \text{Cos}[e+f\,x]\,(a+b\,\text{Sin}[e+f\,x])^m \left(\frac{a+b\,\text{Sin}[e+f\,x]}{a+b}\right)^{-m}$$

Result (type 8, 28 leaves):

$$\int (a+b\,\text{Sin}[e+f\,x])^m \left(A-A\,\text{Sin}[e+f\,x]^2\right) dx$$

Problem 15: Unable to integrate problem.

$$\int (a+b\,\text{Sin}[e+f\,x])^m \left(A+C\,\text{Sin}[e+f\,x]^2\right) dx$$

Optimal (type 6, 286 leaves, 8 steps):

$$-\frac{C\,\text{Cos}[e+f\,x]\,(a+b\,\text{Sin}[e+f\,x])^{1+m}}{b\,f\,(2+m)} + \left(\sqrt{2}\,a\,(a+b)\,C\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2},-1-m,\frac{3}{2},\frac{1}{2}(1-\text{Sin}[e+f\,x]),\frac{b\,(1-\text{Sin}[e+f\,x])}{a+b}\right] \text{Cos}[e+f\,x]\,(a+b\,\text{Sin}[e+f\,x])^m \left(\frac{a+b\,\text{Sin}[e+f\,x]}{a+b}\right)^{-m}\right) \Big/ \left(b^2\,f\,(2+m)\,\sqrt{1+\text{Sin}[e+f\,x]}\right) - \left(\sqrt{2}\,\left(a^2\,C+b^2\,(C\,(1+m)+A\,(2+m))\right)\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2},-m,\frac{3}{2},\frac{1}{2}(1-\text{Sin}[e+f\,x]),\frac{b\,(1-\text{Sin}[e+f\,x])}{a+b}\right] \text{Cos}[e+f\,x]\,(a+b\,\text{Sin}[e+f\,x])^m \left(\frac{a+b\,\text{Sin}[e+f\,x]}{a+b}\right)^{-m}\right) \Big/ \left(b^2\,f\,(2+m)\,\sqrt{1+\text{Sin}[e+f\,x]}\right)$$

Result (type 8, 27 leaves):

$$\int (a+b\,\text{Sin}[e+f\,x])^m \left(A+C\,\text{Sin}[e+f\,x]^2\right) dx$$

Problem 17: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int (a+a\,\text{Sin}[e+f\,x])^m \left(A+B\,\text{Sin}[e+f\,x]+C\,\text{Sin}[e+f\,x]^2\right) dx$$

Optimal (type 5, 184 leaves, 4 steps):

$$\frac{(C-B(2+m))\,\mathrm{Cos}[e+f x]\,(a+a\,\mathrm{Sin}[e+f x])^m}{f(1+m)(2+m)}-\frac{1}{f(1+m)(2+m)}2^{\frac{1}{2}+m}\left(B m(2+m)+C\left(1+m+m^2\right)+A\left(2+3m+m^2\right)\right)\mathrm{Cos}[e+f x]$$
$$\mathrm{Hypergeometric2F1}\left[\frac{1}{2},\frac{1}{2}-m,\frac{3}{2},\frac{1}{2}(1-\mathrm{Sin}[e+f x])\right](1+\mathrm{Sin}[e+f x])^{-\frac{1}{2}-m}(a+a\,\mathrm{Sin}[e+f x])^m-\frac{C\,\mathrm{Cos}[e+f x]\,(a+a\,\mathrm{Sin}[e+f x])^{1+m}}{a f(2+m)}$$

Result (type 5, 558 leaves) :

$$-\frac{1}{2f}(a(1+\mathrm{Sin}[e+f x]))^m\left(\frac{1}{-1+m^2}4^{-m}B\,e^{-i(e+f x)}\left(1+i\,e^{-i(e+f x)}\right)^{-2m}\left(e^{-\frac{1}{4}i(2e+\pi+2f x)}\left(i+e^{i(e+f x)}\right)\right)^{2m}\right.$$
$$\left(e^{2i(e+f x)}(-1+m)\,\mathrm{Hypergeometric2F1}\left[-1-m,-2m,-m,-i\,e^{-i(e+f x)}\right]-(1+m)\,\mathrm{Hypergeometric2F1}\left[1-m,-2m,2-m,-i\,e^{-i(e+f x)}\right]\right)-$$
$$\frac{1}{-4+m^2}i\,2^{-1-2m}C\,e^{-2i(e+f x)}\left(1+i\,e^{-i(e+f x)}\right)^{-2m}\left(e^{-\frac{1}{4}i(2e+\pi+2f x)}\left(i+e^{i(e+f x)}\right)\right)^{2m}$$
$$\left(e^{4i(e+f x)}(-2+m)\,\mathrm{Hypergeometric2F1}\left[-2-m,-2m,-1-m,-i\,e^{-i(e+f x)}\right]+(2+m)\,\mathrm{Hypergeometric2F1}\left[2-m,-2m,3-m,-i\,e^{-i(e+f x)}\right]\right)+$$
$$\left(4\sqrt{2}\,A\,\mathrm{Cos}\left[\frac{1}{4}(2e-\pi+2f x)\right]^{1+2m}\mathrm{Hypergeometric2F1}\left[\frac{1}{2},\frac{1}{2}+m,\frac{3}{2}+m,\mathrm{Sin}\left[\frac{1}{4}(2e+\pi+2f x)\right]^2\right]\mathrm{Sin}\left[\frac{1}{4}(2e-\pi+2f x)\right]\right)\Big/$$
$$\left((1+2m)\sqrt{1-\mathrm{Sin}[e+f x]}\right)+$$
$$\left(2\sqrt{2}\,C\,\mathrm{Cos}\left[\frac{1}{4}(2e-\pi+2f x)\right]^{1+2m}\mathrm{Hypergeometric2F1}\left[\frac{1}{2},\frac{1}{2}+m,\frac{3}{2}+m,\mathrm{Sin}\left[\frac{1}{4}(2e+\pi+2f x)\right]^2\right]\mathrm{Sin}\left[\frac{1}{4}(2e-\pi+2f x)\right]\right)\Big/$$
$$\left.\left((1+2m)\sqrt{1-\mathrm{Sin}[e+f x]}\right)\right)\mathrm{Sin}\left[\frac{1}{4}(2e+\pi+2f x)\right]^{-2m}$$

Problem 18: Unable to integrate problem.

$$\int(a+b\,\mathrm{Sin}[e+f x])^m\left(A+(A+C)\,\mathrm{Sin}[e+f x]+C\,\mathrm{Sin}[e+f x]^2\right)dx$$

Optimal (type 6, 215 leaves, 7 steps) :

$$-\frac{1}{f\sqrt{1+\mathrm{Sin}[e+f x]}}4\sqrt{2}\,C\,\mathrm{AppellF1}\left[\frac{1}{2},-\frac{3}{2},-m,\frac{3}{2},\frac{1}{2}(1-\mathrm{Sin}[e+f x]),\frac{b(1-\mathrm{Sin}[e+f x])}{a+b}\right]$$
$$\mathrm{Cos}[e+f x]\,(a+b\,\mathrm{Sin}[e+f x])^m\left(\frac{a+b\,\mathrm{Sin}[e+f x]}{a+b}\right)^{-m}-\frac{1}{f\sqrt{1+\mathrm{Sin}[e+f x]}}$$
$$2\sqrt{2}\,(A-C)\,\mathrm{AppellF1}\left[\frac{1}{2},-\frac{1}{2},-m,\frac{3}{2},\frac{1}{2}(1-\mathrm{Sin}[e+f x]),\frac{b(1-\mathrm{Sin}[e+f x])}{a+b}\right]\mathrm{Cos}[e+f x]\,(a+b\,\mathrm{Sin}[e+f x])^m\left(\frac{a+b\,\mathrm{Sin}[e+f x]}{a+b}\right)^{-m}$$

Result (type 8, 37 leaves) :

$$\int(a+b\,\mathrm{Sin}[e+f x])^m\left(A+(A+C)\,\mathrm{Sin}[e+f x]+C\,\mathrm{Sin}[e+f x]^2\right)dx$$

Problem 19: Unable to integrate problem.

$$\int(a+b\,\mathrm{Sin}[e+f x])^m\left(A+B\,\mathrm{Sin}[e+f x]+C\,\mathrm{Sin}[e+f x]^2\right)dx$$

Optimal (type 6, 304 leaves, 8 steps):

$$-\frac{C\,\mathrm{Cos}[e+f\,x]\,(a+b\,\mathrm{Sin}[e+f\,x])^{1+m}}{b\,f\,(2+m)}+$$
$$\left(\sqrt{2}\,(a+b)\,(a\,C-b\,B\,(2+m))\,\mathrm{AppellF1}\left[\frac{1}{2},\frac{1}{2},-1-m,\frac{3}{2},\frac{1}{2}\,(1-\mathrm{Sin}[e+f\,x]),\frac{b\,(1-\mathrm{Sin}[e+f\,x])}{a+b}\right]\mathrm{Cos}[e+f\,x]\right.$$
$$\left.(a+b\,\mathrm{Sin}[e+f\,x])^{m}\left(\frac{a+b\,\mathrm{Sin}[e+f\,x]}{a+b}\right)^{-m}\right)\Big/\left(b^{2}\,f\,(2+m)\,\sqrt{1+\mathrm{Sin}[e+f\,x]}\right)-$$
$$\left(\sqrt{2}\,\left(a^{2}\,C+b^{2}\,C\,(1+m)+A\,b^{2}\,(2+m)-a\,b\,B\,(2+m)\right)\mathrm{AppellF1}\left[\frac{1}{2},\frac{1}{2},-m,\frac{3}{2},\frac{1}{2}\,(1-\mathrm{Sin}[e+f\,x]),\frac{b\,(1-\mathrm{Sin}[e+f\,x])}{a+b}\right]\right.$$
$$\left.\mathrm{Cos}[e+f\,x]\,(a+b\,\mathrm{Sin}[e+f\,x])^{m}\left(\frac{a+b\,\mathrm{Sin}[e+f\,x]}{a+b}\right)^{-m}\right)\Big/\left(b^{2}\,f\,(2+m)\,\sqrt{1+\mathrm{Sin}[e+f\,x]}\right)$$

Result (type 8, 35 leaves):

$$\int (a+b\,\mathrm{Sin}[e+f\,x])^{m}\left(A+B\,\mathrm{Sin}[e+f\,x]+C\,\mathrm{Sin}[e+f\,x]^{2}\right)dx$$

Test results for the 34 problems in "4.1.4.2 (a+b sin)^m (c+d sin)^n (A+B sin+C sin^2).m"

- **Problem 1: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int (a+a\,\mathrm{Sin}[e+f\,x])^{m}\,(c-c\,\mathrm{Sin}[e+f\,x])^{5/2}\left(A+C\,\mathrm{Sin}[e+f\,x]^{2}\right)dx$$

Optimal (type 3, 384 leaves, 5 steps):

$$\frac{64\,c^{3}\left(C\left(39-16\,m+4\,m^{2}\right)+A\left(63+32\,m+4\,m^{2}\right)\right)\mathrm{Cos}[e+f\,x]\,(a+a\,\mathrm{Sin}[e+f\,x])^{m}}{f\,(5+2\,m)\,(7+2\,m)\,(9+2\,m)\left(3+8\,m+4\,m^{2}\right)\sqrt{c-c\,\mathrm{Sin}[e+f\,x]}}+$$
$$\frac{16\,c^{2}\left(C\left(39-16\,m+4\,m^{2}\right)+A\left(63+32\,m+4\,m^{2}\right)\right)\mathrm{Cos}[e+f\,x]\,(a+a\,\mathrm{Sin}[e+f\,x])^{m}\sqrt{c-c\,\mathrm{Sin}[e+f\,x]}}{f\,(7+2\,m)\,(9+2\,m)\left(15+16\,m+4\,m^{2}\right)}+$$
$$\frac{2\,c\left(C\left(39-16\,m+4\,m^{2}\right)+A\left(63+32\,m+4\,m^{2}\right)\right)\mathrm{Cos}[e+f\,x]\,(a+a\,\mathrm{Sin}[e+f\,x])^{m}\,(c-c\,\mathrm{Sin}[e+f\,x])^{3/2}}{f\,(5+2\,m)\,(7+2\,m)\,(9+2\,m)}-$$
$$\frac{4\,C\,(1+2\,m)\,\mathrm{Cos}[e+f\,x]\,(a+a\,\mathrm{Sin}[e+f\,x])^{m}\,(c-c\,\mathrm{Sin}[e+f\,x])^{5/2}}{f\,(7+2\,m)\,(9+2\,m)}+\frac{2\,C\,\mathrm{Cos}[e+f\,x]\,(a+a\,\mathrm{Sin}[e+f\,x])^{m}\,(c-c\,\mathrm{Sin}[e+f\,x])^{7/2}}{c\,f\,(9+2\,m)}$$

Result (type 3, 899 leaves):

$$\frac{1}{f\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^5}$$

$$(a(1+\text{Sin}[e+f x]))^m (c-c\,\text{Sin}[e+f x])^{5/2} \Bigg(\Big(\big(18900 A+12285 C+15648 A m+648 C m+5280 A m^2+1416 C m^2+896 A m^3+224 C m^3+64 A m^4+16 C m^4\big)$$
$$\left(\left(\frac{1}{8}+\frac{i}{8}\right)\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\left(\frac{1}{8}-\frac{i}{8}\right)\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)\Big)\Big/((1+2m)(3+2m)(5+2m)(7+2m)(9+2m))+$$
$$\Big(\big(18900 A+12285 C+15648 A m+648 C m+5280 A m^2+1416 C m^2+896 A m^3+224 C m^3+64 A m^4+16 C m^4\big)$$
$$\left(\left(\frac{1}{8}-\frac{i}{8}\right)\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\left(\frac{1}{8}+\frac{i}{8}\right)\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)\Big)\Big/((1+2m)(3+2m)(5+2m)(7+2m)(9+2m))+$$
$$\Big(\big(1575 A+1575 C+1178 A m+414 C m+292 A m^2+100 C m^2+24 A m^3+8 C m^3\big)\left(\left(\frac{1}{4}-\frac{i}{4}\right)\text{Cos}\left[\frac{3}{2}(e+f x)\right]-\left(\frac{1}{4}+\frac{i}{4}\right)\text{Sin}\left[\frac{3}{2}(e+f x)\right]\right)\Big)\Big/$$
$$((3+2m)(5+2m)(7+2m)(9+2m))+$$
$$\Big(\big(1575 A+1575 C+1178 A m+414 C m+292 A m^2+100 C m^2+24 A m^3+8 C m^3\big)\left(\left(\frac{1}{4}+\frac{i}{4}\right)\text{Cos}\left[\frac{3}{2}(e+f x)\right]-\left(\frac{1}{4}-\frac{i}{4}\right)\text{Sin}\left[\frac{3}{2}(e+f x)\right]\right)\Big)\Big/$$
$$((3+2m)(5+2m)(7+2m)(9+2m))+\frac{\left(63 A+189 C+32 A m+44 C m+4 A m^2+4 C m^2\right)\left(\left(-\frac{1}{4}+\frac{i}{4}\right)\text{Cos}\left[\frac{5}{2}(e+f x)\right]-\left(\frac{1}{4}+\frac{i}{4}\right)\text{Sin}\left[\frac{5}{2}(e+f x)\right]\right)}{(5+2m)(7+2m)(9+2m)}+$$
$$\frac{\left(63 A+189 C+32 A m+44 C m+4 A m^2+4 C m^2\right)\left(\left(-\frac{1}{4}-\frac{i}{4}\right)\text{Cos}\left[\frac{5}{2}(e+f x)\right]-\left(\frac{1}{4}-\frac{i}{4}\right)\text{Sin}\left[\frac{5}{2}(e+f x)\right]\right)}{(5+2m)(7+2m)(9+2m)}+$$
$$\frac{(15+2m)\left(\left(-\frac{3}{16}-\frac{3i}{16}\right)C\,\text{Cos}\left[\frac{7}{2}(e+f x)\right]+\left(\frac{3}{16}-\frac{3i}{16}\right)C\,\text{Sin}\left[\frac{7}{2}(e+f x)\right]\right)}{(7+2m)(9+2m)}+$$
$$\frac{(15+2m)\left(\left(-\frac{3}{16}+\frac{3i}{16}\right)C\,\text{Cos}\left[\frac{7}{2}(e+f x)\right]+\left(\frac{3}{16}+\frac{3i}{16}\right)C\,\text{Sin}\left[\frac{7}{2}(e+f x)\right]\right)}{(7+2m)(9+2m)}+$$
$$\frac{\left(\frac{1}{16}+\frac{i}{16}\right)C\,\text{Cos}\left[\frac{9}{2}(e+f x)\right]+\left(\frac{1}{16}-\frac{i}{16}\right)C\,\text{Sin}\left[\frac{9}{2}(e+f x)\right]}{9+2m}+\frac{\left(\frac{1}{16}-\frac{i}{16}\right)C\,\text{Cos}\left[\frac{9}{2}(e+f x)\right]+\left(\frac{1}{16}+\frac{i}{16}\right)C\,\text{Sin}\left[\frac{9}{2}(e+f x)\right]}{9+2m}\Bigg)$$

- **Problem 4: Attempted integration timed out after 120 seconds.**

$$\int\frac{(a+a\,\text{Sin}[e+f x])^m\left(A+C\,\text{Sin}[e+f x]^2\right)}{\sqrt{c-c\,\text{Sin}[e+f x]}}\,dx$$

Optimal (type 5, 123 leaves, 4 steps):

$$\frac{(A+C)\,\text{Cos}[e+f x]\,\text{Hypergeometric2F1}\left[1,\frac{1}{2}+m,\frac{3}{2}+m,\frac{1}{2}(1+\text{Sin}[e+f x])\right](a+a\,\text{Sin}[e+f x])^m}{f(1+2m)\sqrt{c-c\,\text{Sin}[e+f x]}}-\frac{2 C\,\text{Cos}[e+f x]\,(a+a\,\text{Sin}[e+f x])^{1+m}}{a f(3+2m)\sqrt{c-c\,\text{Sin}[e+f x]}}$$

Result (type 1, 1 leaves):

???

- **Problem 5: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int \frac{(a+a\,\text{Sin}[e+f\,x])^m\,\left(A+C\,\text{Sin}[e+f\,x]^2\right)}{(c-c\,\text{Sin}[e+f\,x])^{3/2}}\,dx$$

Optimal (type 5, 202 leaves, 5 steps):

$$\frac{(A+C)\,\text{Cos}[e+f\,x]\,(a+a\,\text{Sin}[e+f\,x])^{1+m}}{4\,a\,f\,(c-c\,\text{Sin}[e+f\,x])^{3/2}}+\frac{(A+2\,A\,m+C\,(9+2\,m))\,\text{Cos}[e+f\,x]\,(a+a\,\text{Sin}[e+f\,x])^m}{4\,c\,f\,(1+2\,m)\,\sqrt{c-c\,\text{Sin}[e+f\,x]}}+$$
$$\left((A\,(1-2\,m)-C\,(7+2\,m))\,\text{Cos}[e+f\,x]\,\text{Hypergeometric2F1}\left[1,\frac{1}{2}+m,\frac{3}{2}+m,\frac{1}{2}\,(1+\text{Sin}[e+f\,x])\right]\,(a+a\,\text{Sin}[e+f\,x])^m\right)\Big/$$
$$\left(4\,c\,f\,(1+2\,m)\,\sqrt{c-c\,\text{Sin}[e+f\,x]}\right)$$

Result (type 6, 16 031 leaves):

$$-\left(\left(\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{-2\,m}\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right)^3\,(a+a\,\text{Sin}[e+f\,x])^m\right.\right.$$
$$\left(-\frac{2\,A\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2\,m}}{\left(\text{Cos}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f\,x\right)\right]-\text{Sin}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f\,x\right)\right]\right)^3}-\frac{C\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2\,m}}{\left(\text{Cos}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f\,x\right)\right]-\text{Sin}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f\,x\right)\right]\right)^3}-\right.$$
$$\left.\frac{C\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2\,m}\,\text{Cos}\left[2\left(-e+\frac{\pi}{2}-f\,x\right)\right]}{\left(\text{Cos}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f\,x\right)\right]-\text{Sin}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f\,x\right)\right]\right)^3}\right)\left(\frac{1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}\right)^{2\,m}$$
$$\left(-\left(A\,\text{AppellF1}\left[1,-2\,m,2\,m,2,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\Big/\left(-m\left(\text{AppellF1}\left[2,1-2\,m,2\,m,3,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-\right.\right.\right.\right.\right.$$
$$f\,x\Big)\Big]^2,-\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]+\text{AppellF1}\left[2,-2\,m,1+2\,m,3,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\Big)+$$
$$\text{AppellF1}\left[1,-2\,m,2\,m,2,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big)-$$
$$\left(C\,\text{AppellF1}\left[1,-2\,m,2\,m,2,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\Big/$$

$$\Bigg(-m\,\Bigg(\text{AppellF1}\Big[2,\,1-2m,\,2m,\,3,\,\text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,-\text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]+$$

$$\text{AppellF1}\Big[2,\,-2m,\,1+2m,\,3,\,\text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,-\text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\Bigg)+$$

$$\text{AppellF1}\Big[1,\,-2m,\,2m,\,2,\,\text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,-\text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Bigg)+$$

$$\Bigg(A\,\text{AppellF1}\Big[1,\,-2m,\,2m,\,2,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Bigg)\Big/$$

$$\Bigg(\text{AppellF1}\Big[1,\,-2m,\,2m,\,2,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]-$$

$$m\,\Bigg(\text{AppellF1}\Big[2,\,1-2m,\,2m,\,3,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]+$$

$$\text{AppellF1}\Big[2,\,-2m,\,1+2m,\,3,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\Bigg)\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Bigg)+$$

$$\Bigg(C\,\text{AppellF1}\Big[1,\,-2m,\,2m,\,2,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Bigg)\Big/$$

$$\Bigg(\text{AppellF1}\Big[1,\,-2m,\,2m,\,2,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]-$$

$$m\,\Bigg(\text{AppellF1}\Big[2,\,1-2m,\,2m,\,3,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]+$$

$$\text{AppellF1}\Big[2,\,-2m,\,1+2m,\,3,\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\Bigg)\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Bigg)-$$

$$\Bigg(4\,A\,(1+m)\,\text{AppellF1}\Big[1+2m,\,2m,\,1,\,2+2m,\,\frac{1}{2}-\frac{1}{2}\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]$$

$$\text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\,\Big(-1+\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big)\Bigg)\Big/$$

$$\Bigg((1+2m)\,\Bigg(-2\,(1+m)\,\text{AppellF1}\Big[1+2m,\,2m,\,1,\,2+2m,\,\frac{1}{2}-\frac{1}{2}\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]+$$

$$\Bigg(\text{AppellF1}\Big[2+2m,\,2m,\,2,\,3+2m,\,\frac{1}{2}-\frac{1}{2}\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]+m\,\text{AppellF1}\Big[2+2m,$$

$$1+2m,\,1,\,3+2m,\,\frac{1}{2}-\frac{1}{2}\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\Bigg)\,\Big(-1+\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big)\Bigg)\Bigg)+$$

$$\Bigg(28\,C\,(1+m)\,\text{AppellF1}\Big[1+2m,\,2m,\,1,\,2+2m,\,\frac{1}{2}-\frac{1}{2}\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]$$

$$\text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\,\Big(-1+\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big)\Bigg)\Big/$$

$$\left((1+2m)\left(-2(1+m)\,\text{AppellF1}\left[1+2m,2m,1,2+2m,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+\left(\text{AppellF1}\left[2+2m,2m,2,3+2m,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+m\,\text{AppellF1}\left[2+2m,1+2m,1,3+2m,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right)\left(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)\right)\right)-$$

$$\left.\left.\frac{32\,C\left(1-\left(\frac{1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2}\right)^{-2m}+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\left(-1-\left(\frac{1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2}\right)^{-2m}\right)\right)}{(1+2m)\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)}\right)\right)\Big/\left(8\sqrt{2}\,f\,(c-c\,\text{Sin}[e+fx])^{3/2}\right.$$

$$\left(-\frac{1}{2\sqrt{2}}m\left(\frac{1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2}\right)^{-1+2m}\left(-\frac{\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)}{2\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)^2}-\right.\right.$$

$$\left.\frac{\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]}{2\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)}\right)\left(-\left(A\,\text{AppellF1}\left[1,-2m,2m,2,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right)\Big/\right.$$

$$\left(-m\left(\text{AppellF1}\left[2,1-2m,2m,3,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+\text{AppellF1}\left[2,-2m,1+2m,3,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right)+\text{AppellF1}\left[1,-2m,2m,2,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)-\left(C\,\text{AppellF1}\left[1,-2m,2m,2,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right)\Big/\left(-m\left(\text{AppellF1}\left[2,1-2m,2m,3,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+\text{AppellF1}\left[2,-2m,1+2m,3,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right)+\text{AppellF1}\left[1,-2m,2m,2,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)+$$

$$\left(A\,\text{AppellF1}\left[1,-2m,2m,2,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)\Big/$$

$$\Big(\text{AppellF1}\Big[1,\ -2\,m,\ 2\,m,\ 2,\ \text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]-m$$

$$\Big(\text{AppellF1}\Big[2,\ 1-2\,m,\ 2\,m,\ 3,\ \text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]+$$

$$\text{AppellF1}\Big[2,\ -2\,m,\ 1+2\,m,\ 3,\ \text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]\Big)\ \text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big)+$$

$$\Big(C\ \text{AppellF1}\Big[1,\ -2\,m,\ 2\,m,\ 2,\ \text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]\ \text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big)\Big/$$

$$\Big(\text{AppellF1}\Big[1,\ -2\,m,\ 2\,m,\ 2,\ \text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]-m$$

$$\Big(\text{AppellF1}\Big[2,\ 1-2\,m,\ 2\,m,\ 3,\ \text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]+\text{AppellF1}\Big[2,\ -2\,m,\ 1+2\,m,\ 3,$$

$$\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\ -\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]\Big)\ \text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big)-\Big(4\,A\,(1+m)\ \text{AppellF1}\Big[1+2\,m,\ 2\,m,\ 1,\ 2+2\,m,$$

$$\frac{1}{2}-\frac{1}{2}\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\ 1-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]\ \text{Cot}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\ \Big(-1+\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big)\Big)\Big/$$

$$\Big((1+2\,m)\ \Big(-2\,(1+m)\ \text{AppellF1}\Big[1+2\,m,\ 2\,m,\ 1,\ 2+2\,m,\ \frac{1}{2}-\frac{1}{2}\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\ 1-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]+$$

$$\Big(\text{AppellF1}\Big[2+2\,m,\ 2\,m,\ 2,\ 3+2\,m,\ \frac{1}{2}-\frac{1}{2}\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\ 1-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]+m\ \text{AppellF1}\Big[2+2\,m,$$

$$1+2\,m,\ 1,\ 3+2\,m,\ \frac{1}{2}-\frac{1}{2}\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\ 1-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]\Big)\ \Big(-1+\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big)\Big)\Big)+$$

$$\Big(28\,C\,(1+m)\ \text{AppellF1}\Big[1+2\,m,\ 2\,m,\ 1,\ 2+2\,m,\ \frac{1}{2}-\frac{1}{2}\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\ 1-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]$$

$$\text{Cot}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\ \Big(-1+\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big)\Big)\Big/$$

$$\Big((1+2\,m)\ \Big(-2\,(1+m)\ \text{AppellF1}\Big[1+2\,m,\ 2\,m,\ 1,\ 2+2\,m,\ \frac{1}{2}-\frac{1}{2}\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\ 1-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]+$$

$$\Big(\text{AppellF1}\Big[2+2\,m,\ 2\,m,\ 2,\ 3+2\,m,\ \frac{1}{2}-\frac{1}{2}\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\ 1-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]+m\ \text{AppellF1}\Big[2+2\,m,$$

$$1+2\,m,\ 1,\ 3+2\,m,\ \frac{1}{2}-\frac{1}{2}\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\ 1-\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big]\Big)\ \Big(-1+\text{Tan}\Big[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Big)\Big)\Big)-$$

$$\frac{32\,C\left(1-\left(\frac{1-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{1+\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}\right)^{-2m}+\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\left(-1-\left(\frac{1-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{1+\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}\right)^{-2m}\right)\right)}{(1+2m)\left(1+\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)}\Bigg)-\frac{1}{4\sqrt{2}}\left(\frac{1-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{1+\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}\right)^{2m}$$

$$\Bigg(-\Big(A\Big(\frac{1}{2}m\,\mathrm{AppellF1}\left[2,1-2m,2m,3,\mathrm{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\mathrm{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\mathrm{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\mathrm{Csc}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2+$$

$$\frac{1}{2}m\,\mathrm{AppellF1}\left[2,-2m,1+2m,3,\mathrm{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\mathrm{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\mathrm{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]$$

$$\mathrm{Csc}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big)\Big)\Big/\Big(-m\Big(\mathrm{AppellF1}\left[2,1-2m,2m,3,\mathrm{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\mathrm{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$\mathrm{AppellF1}\left[2,-2m,1+2m,3,\mathrm{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\mathrm{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\Big)+$$

$$\mathrm{AppellF1}\left[1,-2m,2m,2,\mathrm{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\mathrm{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big)-$$

$$\Big(C\Big(\frac{1}{2}m\,\mathrm{AppellF1}\left[2,1-2m,2m,3,\mathrm{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\mathrm{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\mathrm{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\mathrm{Csc}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2+$$

$$\frac{1}{2}m\,\mathrm{AppellF1}\left[2,-2m,1+2m,3,\mathrm{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\mathrm{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\mathrm{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]$$

$$\mathrm{Csc}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big)\Big)\Big/\Big(-m\Big(\mathrm{AppellF1}\left[2,1-2m,2m,3,\mathrm{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\mathrm{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$\mathrm{AppellF1}\left[2,-2m,1+2m,3,\mathrm{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\mathrm{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\Big)+$$

$$\mathrm{AppellF1}\left[1,-2m,2m,2,\mathrm{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\mathrm{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big)+$$

$$\Big(A\,\mathrm{AppellF1}\left[1,-2m,2m,2,\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\mathrm{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\Big)\Big/$$

$$\Big(2\Big(\mathrm{AppellF1}\left[1,-2m,2m,2,\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]-$$

$$m\Big(\mathrm{AppellF1}\left[2,1-2m,2m,3,\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$\mathrm{AppellF1}\left[2,-2m,1+2m,3,\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\Big)\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big)\Big)+$$

$$\Big(C\,\mathrm{AppellF1}\left[1,-2m,2m,2,\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\mathrm{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\Big)\Big/$$

$$\left(2\left(\text{AppellF1}\left[1,-2m,2m,2,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]-\right.\right.$$

$$m\left(\text{AppellF1}\left[2,1-2m,2m,3,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+\right.$$

$$\left.\left.\text{AppellF1}\left[2,-2m,1+2m,3,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)\right)+$$

$$\left(A\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\left(-\frac{1}{2}m\,\text{AppellF1}\left[2,1-2m,2m,3,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right.\right.$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]-\frac{1}{2}m\,\text{AppellF1}\left[2,-2m,1+2m,3,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,\right.$$

$$\left.\left.\left.-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]\right)\right)\Big/\left(\text{AppellF1}\left[1,-2m,2m,2,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-\right.\right.\right.\right.$$

$$\left.\left.fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]-m\left(\text{AppellF1}\left[2,1-2m,2m,3,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+\right.$$

$$\left.\left.\text{AppellF1}\left[2,-2m,1+2m,3,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)+$$

$$\left(C\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\left(-\frac{1}{2}m\,\text{AppellF1}\left[2,1-2m,2m,3,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right.\right.$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]-\frac{1}{2}m\,\text{AppellF1}\left[2,-2m,1+2m,3,\right.$$

$$\left.\left.\left.\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]\right)\right)\Big/$$

$$\left(\text{AppellF1}\left[1,-2m,2m,2,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]-m\left(\text{AppellF1}\left[2,1-2m,2m,3,\right.\right.\right.$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+\text{AppellF1}\left[2,-2m,1+2m,3,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,$$

$$\left.\left.\left.-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)+\left(A\,\text{AppellF1}\left[1,-2m,2m,2,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,\right.\right.$$

$$\left.-\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\left(-m\left(\frac{4}{3}m\,\text{AppellF1}\left[3,1-2m,1+2m,4,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right.\right.$$

$$\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]\text{Csc}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2-\frac{1}{3}(1-2m)\,\text{AppellF1}\left[3,2-2m,2m,4,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,\right.$$

$$\left.-\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]\text{Csc}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2+\frac{1}{3}(1+2m)\,\text{AppellF1}\left[3,-2m,\right.$$

$$\left.\left.2+2m,4,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]\text{Csc}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)+$$

$$\frac{1}{2}\text{AppellF1}\left[1,-2m,2m,2,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2$$
$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]+\left(\frac{1}{2}m\,\text{AppellF1}\left[2,1-2m,2m,3,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right.$$
$$\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]\text{Csc}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2+\frac{1}{2}m\,\text{AppellF1}\left[2,-2m,1+2m,3,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,\right.$$
$$\left.\left.-\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]\text{Csc}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\Bigg)\Bigg/$$
$$\left(-m\left(\text{AppellF1}\left[2,1-2m,2m,3,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+\text{AppellF1}\left[2,-2m,\right.\right.\right.$$
$$\left.\left.1+2m,3,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right)+$$
$$\left.\text{AppellF1}\left[1,-2m,2m,2,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)^2+$$
$$\left(C\,\text{AppellF1}\left[1,-2m,2m,2,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right.$$
$$\left(-m\left(\frac{4}{3}m\,\text{AppellF1}\left[3,1-2m,1+2m,4,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]\right.\right.$$
$$\text{Csc}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2-\frac{1}{3}(1-2m)\,\text{AppellF1}\left[3,2-2m,2m,4,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]$$
$$\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]\text{Csc}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2+\frac{1}{3}(1+2m)\,\text{AppellF1}\left[3,-2m,2+2m,4,\right.$$
$$\left.\left.\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]\text{Csc}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)+$$
$$\frac{1}{2}\text{AppellF1}\left[1,-2m,2m,2,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2$$
$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]+\left(\frac{1}{2}m\,\text{AppellF1}\left[2,1-2m,2m,3,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right.$$
$$\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]\text{Csc}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2+\frac{1}{2}m\,\text{AppellF1}\left[2,-2m,1+2m,3,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,\right.$$
$$\left.\left.-\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]\text{Csc}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\Bigg)\Bigg/$$
$$\left(-m\left(\text{AppellF1}\left[2,1-2m,2m,3,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+\text{AppellF1}\left[2,-2m,\right.\right.\right.$$
$$\left.\left.1+2m,3,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\right)+$$

$$\text{AppellF1}\Big[1,-2m,2m,2,\text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big)^2-$$

$$\Big(A\,\text{AppellF1}\Big[1,-2m,2m,2,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big(-\frac{1}{2}m$$

$$\text{AppellF1}\Big[2,1-2m,2m,3,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]-$$

$$\frac{1}{2}m\,\text{AppellF1}\Big[2,-2m,1+2m,3,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2$$

$$\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]-\frac{1}{2}m\Big(\text{AppellF1}\Big[2,1-2m,2m,3,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]+\text{AppellF1}\Big[2,$$

$$-2m,1+2m,3,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\Big)\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]-$$

$$m\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big(-\frac{4}{3}m\,\text{AppellF1}\Big[3,1-2m,1+2m,4,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]$$

$$\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]+\frac{1}{3}(1-2m)\,\text{AppellF1}\Big[3,2-2m,2m,4,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,$$

$$-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]-\frac{1}{3}(1+2m)\,\text{AppellF1}\Big[3,-2m,2+2m,$$

$$4,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]\Big]\Big)\Big)\Big)\Big/$$

$$\Big(\text{AppellF1}\Big[1,-2m,2m,2,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]-m\Big(\text{AppellF1}\Big[2,1-2m,2m,$$

$$3,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]+\text{AppellF1}\Big[2,-2m,1+2m,$$

$$3,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big)^2-$$

$$\Big(C\,\text{AppellF1}\Big[1,-2m,2m,2,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big(-\frac{1}{2}m$$

$$\text{AppellF1}\Big[2,1-2m,2m,3,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]-$$

$$\frac{1}{2}m\,\text{AppellF1}\Big[2,-2m,1+2m,3,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2$$

$$\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]-\frac{1}{2}m\Big(\text{AppellF1}\Big[2,1-2m,2m,3,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]+\text{AppellF1}\Big[2,$$

$$-2m,1+2m,3,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\Big)\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]-$$

$$m\,\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \left(-\frac{4}{3} m\,\mathrm{AppellF1}\left[3,1-2m,1+2m,4,\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right.$$

$$\mathrm{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]+\frac{1}{3}(1-2m)\,\mathrm{AppellF1}\left[3,2-2m,2m,4,\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\right.$$

$$\left.-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\mathrm{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{1}{3}(1+2m)\,\mathrm{AppellF1}\left[3,-2m,2+2m,\right.$$

$$\left.\left.\left.\left.4,\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\mathrm{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)\right)\right)\Big/$$

$$\left(\mathrm{AppellF1}\left[1,-2m,2m,2,\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]-m\left(\mathrm{AppellF1}\left[2,1-2m,2m,\right.\right.\right.$$

$$\left.3,\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\mathrm{AppellF1}\left[2,-2m,1+2m,\right.$$

$$\left.\left.\left.3,\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^2-$$

$$\left(2A(1+m)\,\mathrm{AppellF1}\left[1+2m,2m,1,2+2m,\frac{1}{2}-\frac{1}{2}\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,1-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right.$$

$$\left.\mathrm{Csc}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\mathrm{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)\Big/$$

$$\left((1+2m)\left(-2(1+m)\,\mathrm{AppellF1}\left[1+2m,2m,1,2+2m,\frac{1}{2}-\frac{1}{2}\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,1-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.\right.$$

$$\left(\mathrm{AppellF1}\left[2+2m,2m,2,3+2m,\frac{1}{2}-\frac{1}{2}\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,1-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+m\,\mathrm{AppellF1}\left[2+2m,\right.\right.$$

$$\left.\left.\left.\left.1+2m,1,3+2m,\frac{1}{2}-\frac{1}{2}\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,1-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\left(-1+\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\right)\right)+$$

$$\left(14C(1+m)\,\mathrm{AppellF1}\left[1+2m,2m,1,2+2m,\frac{1}{2}-\frac{1}{2}\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,1-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right.$$

$$\left.\mathrm{Csc}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\mathrm{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)\Big/$$

$$\left((1+2m)\left(-2(1+m)\,\mathrm{AppellF1}\left[1+2m,2m,1,2+2m,\frac{1}{2}-\frac{1}{2}\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,1-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+\right.\right.$$

$$\left(\mathrm{AppellF1}\left[2+2m,2m,2,3+2m,\frac{1}{2}-\frac{1}{2}\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,1-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+m\,\mathrm{AppellF1}\left[2+2m,\right.\right.$$

$$\left.\left.\left.\left.1+2m,1,3+2m,\frac{1}{2}-\frac{1}{2}\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,1-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\left(-1+\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\right)\right)+$$

$$\left(2A(1+m)\,\mathrm{AppellF1}\left[1+2m,2m,1,2+2m,\frac{1}{2}-\frac{1}{2}\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,1-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right.$$

$$\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\,\text{Csc}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\left(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\Bigg)\Bigg/$$

$$\Bigg((1+2\,m)\Bigg(-2\,(1+m)\,\text{AppellF1}\left[1+2\,m,\,2\,m,\,1,\,2+2\,m,\,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+$$

$$\Bigg(\text{AppellF1}\left[2+2\,m,\,2\,m,\,2,\,3+2\,m,\,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+m\,\text{AppellF1}\Big[2+2\,m,$$

$$1+2\,m,\,1,\,3+2\,m,\,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]\Bigg)\left(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\Bigg)\Bigg)-$$

$$\Bigg(14\,C\,(1+m)\,\text{AppellF1}\left[1+2\,m,\,2\,m,\,1,\,2+2\,m,\,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]$$

$$\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\,\text{Csc}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\left(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\Bigg)\Bigg/$$

$$\Bigg((1+2\,m)\Bigg(-2\,(1+m)\,\text{AppellF1}\left[1+2\,m,\,2\,m,\,1,\,2+2\,m,\,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+$$

$$\Bigg(\text{AppellF1}\left[2+2\,m,\,2\,m,\,2,\,3+2\,m,\,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+m\,\text{AppellF1}\Big[2+2\,m,$$

$$1+2\,m,\,1,\,3+2\,m,\,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]\Bigg)\left(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\Bigg)\Bigg)-$$

$$\Bigg(4\,A\,(1+m)\,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Bigg(-\frac{1}{2\,(2+2\,m)}(1+2\,m)\,\text{AppellF1}\Big[2+2\,m,\,2\,m,\,2,\,3+2\,m,\,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,$$

$$1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-\frac{1}{2\,(2+2\,m)}$$

$$m\,(1+2\,m)\,\text{AppellF1}\left[2+2\,m,\,1+2\,m,\,1,\,3+2\,m,\,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\Bigg)\left(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\Bigg)\Bigg/$$

$$\Bigg((1+2\,m)\Bigg(-2\,(1+m)\,\text{AppellF1}\left[1+2\,m,\,2\,m,\,1,\,2+2\,m,\,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+$$

$$\Bigg(\text{AppellF1}\left[2+2\,m,\,2\,m,\,2,\,3+2\,m,\,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+m\,\text{AppellF1}\Big[2+2\,m,$$

$$1+2\,m,\,1,\,3+2\,m,\,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]\Bigg)\left(-1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\Bigg)\Bigg)+$$

$$\Bigg(28\,C\,(1+m)\,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Bigg(-\frac{1}{2\,(2+2\,m)}(1+2\,m)\,\text{AppellF1}\Big[2+2\,m,\,2\,m,\,2,\,3+2\,m,\,\frac{1}{2}-\frac{1}{2}\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,$$

$$1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-\frac{1}{2\,(2+2\,m)}$$

$$m\,(1+2m)\,\text{AppellF1}\Big[2+2m,\,1+2m,\,1,\,3+2m,\,\frac{1}{2}-\frac{1}{2}\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]$$

$$\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]\Big]\Big)\,\Big(-1+\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big)\Big)\Big/$$

$$\Big((1+2m)\,\Big(-2\,(1+m)\,\text{AppellF1}\Big[1+2m,\,2m,\,1,\,2+2m,\,\frac{1}{2}-\frac{1}{2}\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]+$$

$$\Big(\text{AppellF1}\Big[2+2m,\,2m,\,2,\,3+2m,\,\frac{1}{2}-\frac{1}{2}\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]+m\,\text{AppellF1}\Big[2+2m,$$

$$1+2m,\,1,\,3+2m,\,\frac{1}{2}-\frac{1}{2}\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\Big)\,\Big(-1+\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big)\Big)\Big)+$$

$$\Big(4\,A\,(1+m)\,\text{AppellF1}\Big[1+2m,\,2m,\,1,\,2+2m,\,\frac{1}{2}-\frac{1}{2}\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\,\text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2$$

$$\Big(-1+\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big)\,\Big(\frac{1}{2}\Big(\text{AppellF1}\Big[2+2m,\,2m,\,2,\,3+2m,\,\frac{1}{2}-\frac{1}{2}\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]+$$

$$m\,\text{AppellF1}\Big[2+2m,\,1+2m,\,1,\,3+2m,\,\frac{1}{2}-\frac{1}{2}\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\Big)\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2$$

$$\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]-2\,(1+m)\,\Big(-\frac{1}{2\,(2+2m)}(1+2m)\,\text{AppellF1}\Big[2+2m,\,2m,\,2,\,3+2m,\,\frac{1}{2}-\frac{1}{2}\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,1-$$

$$\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]-\frac{1}{2\,(2+2m)}m\,(1+2m)\,\text{AppellF1}\Big[2+2m,\,1+2m,$$

$$1,\,3+2m,\,\frac{1}{2}-\frac{1}{2}\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]\Big)+$$

$$\Big(-1+\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big)\,\Big(-\frac{1}{3+2m}(2+2m)\,\text{AppellF1}\Big[3+2m,\,2m,\,3,\,4+2m,\,\frac{1}{2}-\frac{1}{2}\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,1-$$

$$\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]-\frac{1}{2\,(3+2m)}m\,(2+2m)\,\text{AppellF1}\Big[3+2m,\,1+2m,$$

$$2,\,4+2m,\,\frac{1}{2}-\frac{1}{2}\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]+$$

$$m\,\Big(-\frac{1}{2\,(3+2m)}(2+2m)\,\text{AppellF1}\Big[3+2m,\,1+2m,\,2,\,4+2m,\,\frac{1}{2}-\frac{1}{2}\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]$$

$$\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]-\frac{1}{4\,(3+2m)}(1+2m)\,(2+2m)\,\text{AppellF1}\Big[3+2m,\,2+2m,\,1,\,4+2m,$$

$$\frac{1}{2}-\frac{1}{2}\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]\Big]\Big)\Big)\Big)\Big)\Big)\Big/$$

$$\Big((1+2m)\,\Big(-2\,(1+m)\,\text{AppellF1}\Big[1+2m,\,2m,\,1,\,2+2m,\,\frac{1}{2}-\frac{1}{2}\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]+$$

$$\Big(\text{AppellF1}\Big[2+2m,\,2m,\,2,\,3+2m,\,\frac{1}{2}-\frac{1}{2}\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]+m\,\text{AppellF1}\Big[2+2m,$$

$$1+2m,\,1,\,3+2m,\,\frac{1}{2}-\frac{1}{2}\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\Big)\Big(-1+\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big)\Big)^2\Big)-$$

$$\Big(28\,C\,(1+m)\,\text{AppellF1}\Big[1+2m,\,2m,\,1,\,2+2m,\,\frac{1}{2}-\frac{1}{2}\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\,\text{Cot}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2$$

$$\Big(-1+\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big)\Big(\frac{1}{2}\Big(\text{AppellF1}\Big[2+2m,\,2m,\,2,\,3+2m,\,\frac{1}{2}-\frac{1}{2}\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]+$$

$$m\,\text{AppellF1}\Big[2+2m,\,1+2m,\,1,\,3+2m,\,\frac{1}{2}-\frac{1}{2}\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\Big)\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2$$

$$\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]-2\,(1+m)\Big(-\frac{1}{2\,(2+2m)}(1+2m)\,\text{AppellF1}\Big[2+2m,\,2m,\,2,\,3+2m,\,\frac{1}{2}-\frac{1}{2}\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,1-$$

$$\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]-\frac{1}{2\,(2+2m)}m\,(1+2m)\,\text{AppellF1}\Big[2+2m,\,1+2m,$$

$$1,\,3+2m,\,\frac{1}{2}-\frac{1}{2}\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]\Big)+$$

$$\Big(-1+\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big)\Big(-\frac{1}{3+2m}(2+2m)\,\text{AppellF1}\Big[3+2m,\,2m,\,3,\,4+2m,\,\frac{1}{2}-\frac{1}{2}\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,1-$$

$$\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]-\frac{1}{2\,(3+2m)}m\,(2+2m)\,\text{AppellF1}\Big[3+2m,\,1+2m,$$

$$2,\,4+2m,\,\frac{1}{2}-\frac{1}{2}\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]+$$

$$m\Big(-\frac{1}{2\,(3+2m)}(2+2m)\,\text{AppellF1}\Big[3+2m,\,1+2m,\,2,\,4+2m,\,\frac{1}{2}-\frac{1}{2}\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]$$

$$\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]-\frac{1}{4\,(3+2m)}(1+2m)\,(2+2m)\,\text{AppellF1}\Big[3+2m,\,2+2m,\,1,\,4+2m,$$

$$\frac{1}{2}-\frac{1}{2}\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]\Big)\Big)\Big)\Big)\Big)\Big/$$

$$\Big((1+2m)\Big(-2\,(1+m)\,\text{AppellF1}\Big[1+2m,\,2m,\,1,\,2+2m,\,\frac{1}{2}-\frac{1}{2}\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]+$$

$$\Big(\text{AppellF1}\Big[2+2m,\,2m,\,2,\,3+2m,\,\frac{1}{2}-\frac{1}{2}\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]+m\,\text{AppellF1}\Big[2+2m,$$

$$1+2m,\,1,\,3+2m,\,\frac{1}{2}-\frac{1}{2}\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2,\,1-\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big]\Big)\Big(-1+\text{Tan}\Big[\frac{1}{4}\Big(-e+\frac{\pi}{2}-f x\Big)\Big]^2\Big)\Big)^2\Big)+$$

$$\left(16\,C\,\mathrm{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2 \mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\left(1-\left(\frac{1-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{1+\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}\right)^{-2m}+\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right.\right.$$

$$\left.\left.\left(-1-\left(\frac{1-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{1+\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}\right)^{-2m}\right)\right)\right)\Big/\left((1+2m)\left(1+\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^2\right)-$$

$$\frac{1}{(1+2m)\left(1+\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)}\,32\,C\left(\frac{1}{2}\mathrm{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\left(-1-\left(\frac{1-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{1+\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}\right)^{-2m}\right)+\right.$$

$$2m\left(\frac{1-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{1+\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}\right)^{-1-2m}\left(-\frac{\mathrm{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\left(1-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)}{2\left(1+\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^2}-\right.$$

$$\left.\frac{\mathrm{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]}{2\left(1+\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)}\right)+2\,m\,\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2$$

$$\left(\frac{1-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{1+\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}\right)^{-1-2m}\left(-\frac{\mathrm{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\left(1-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)}{2\left(1+\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^2}-\right.$$

$$\left.\left.\left.\frac{\mathrm{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]}{2\left(1+\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)}\right)\right)\right)$$

- **Problem 6: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int \frac{(a+a\,\mathrm{Sin}[e+f\,x])^m\left(A+C\,\mathrm{Sin}[e+f\,x]^2\right)}{(c-c\,\mathrm{Sin}[e+f\,x])^{5/2}}\,dx$$

Optimal (type 5, 207 leaves, 5 steps):

$$\frac{(A+C)\,\mathrm{Cos}[e+f\,x]\,(a+a\,\mathrm{Sin}[e+f\,x])^{1+m}}{8\,a\,f\,(c-c\,\mathrm{Sin}[e+f\,x])^{5/2}}+\frac{(A\,(5-2m)-C\,(11+2m))\,\mathrm{Cos}[e+f\,x]\,(a+a\,\mathrm{Sin}[e+f\,x])^m}{16\,c\,f\,(c-c\,\mathrm{Sin}[e+f\,x])^{3/2}}+$$

$$\left(\left(A\left(3-8m+4m^2\right)+C\left(19+24m+4m^2\right)\right)\mathrm{Cos}[e+f\,x]\,\mathrm{Hypergeometric2F1}\left[1,\frac{1}{2}+m,\frac{3}{2}+m,\frac{1}{2}(1+\mathrm{Sin}[e+f\,x])\right](a+a\,\mathrm{Sin}[e+f\,x])^m\right)\Big/$$

$$\left(32\,c^2\,f\,(1+2m)\sqrt{c-c\,\mathrm{Sin}[e+f\,x]}\right)$$

Result (type 6, 27 269 leaves): Display of huge result suppressed!

- **Problem 8: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int (a+a\,\text{Sin}[e+f\,x])^m\,(c-c\,\text{Sin}[e+f\,x])^n\,\left(A+C\,\text{Sin}[e+f\,x]^2\right)\,dx$$

Optimal (type 5, 257 leaves, 6 steps):

$$\left(2^{\frac{1}{2}+n}\,c\,(C\,(1+2\,m)\,(m-n)+(1+m+n)\,(C\,(1-m+n)+A\,(2+m+n)))\,\text{Cos}[e+f\,x]\,\text{Hypergeometric2F1}\left[\frac{1}{2}\,(1+2\,m),\,\frac{1}{2}\,(1-2\,n),\,\frac{1}{2}\,(3+2\,m),\,\frac{1}{2}\,(1+\text{Sin}[e+f\,x])\right]\,(1-\text{Sin}[e+f\,x])^{\frac{1}{2}-n}\,(a+a\,\text{Sin}[e+f\,x])^m\,(c-c\,\text{Sin}[e+f\,x])^{-1+n}\right)\Big/\,(f\,(1+2\,m)\,(1+m+n)\,(2+m+n))-\frac{C\,(1+2\,m)\,\text{Cos}[e+f\,x]\,(a+a\,\text{Sin}[e+f\,x])^m\,(c-c\,\text{Sin}[e+f\,x])^n}{f\,(1+m+n)\,(2+m+n)}+\frac{C\,\text{Cos}[e+f\,x]\,(a+a\,\text{Sin}[e+f\,x])^m\,(c-c\,\text{Sin}[e+f\,x])^{1+n}}{c\,f\,(2+m+n)}$$

Result (type 6, 25 546 leaves): Display of huge result suppressed!

- **Problem 9: Result more than twice size of optimal antiderivative.**

$$\int (a+a\,\text{Sin}[e+f\,x])^m\,(c+d\,\text{Sin}[e+f\,x])^n\,\left(A+C\,\text{Sin}[e+f\,x]^2\right)\,dx$$

Optimal (type 6, 366 leaves, 10 steps):

$$-\frac{C\,\text{Cos}[e+f\,x]\,(a+a\,\text{Sin}[e+f\,x])^m\,(c+d\,\text{Sin}[e+f\,x])^{1+n}}{d\,f\,(2+m+n)}+\left(\sqrt{2}\,(c\,(C+2\,C\,m)+d\,(C\,(1-m+n)+A\,(2+m+n)))\,\text{AppellF1}\left[\frac{1}{2}+m,\,\frac{1}{2},\,-n,\,\frac{3}{2}+m,\,\frac{1}{2}\,(1+\text{Sin}[e+f\,x]),\,-\frac{d\,(1+\text{Sin}[e+f\,x])}{c-d}\right]\,\text{Cos}[e+f\,x]\,(a+a\,\text{Sin}[e+f\,x])^m\,(c+d\,\text{Sin}[e+f\,x])^n\,\left(\frac{c+d\,\text{Sin}[e+f\,x]}{c-d}\right)^{-n}\right)\Big/\left(d\,f\,(1+2\,m)\,(2+m+n)\,\sqrt{1-\text{Sin}[e+f\,x]}\right)+\left(\sqrt{2}\,C\,(d\,m-c\,(1+m))\,\text{AppellF1}\left[\frac{3}{2}+m,\,\frac{1}{2},\,-n,\,\frac{5}{2}+m,\,\frac{1}{2}\,(1+\text{Sin}[e+f\,x]),\,-\frac{d\,(1+\text{Sin}[e+f\,x])}{c-d}\right]\,\text{Cos}[e+f\,x]\,(a+a\,\text{Sin}[e+f\,x])^{1+m}\,(c+d\,\text{Sin}[e+f\,x])^n\,\left(\frac{c+d\,\text{Sin}[e+f\,x]}{c-d}\right)^{-n}\right)\Big/\left(a\,d\,f\,(3+2\,m)\,(2+m+n)\,\sqrt{1-\text{Sin}[e+f\,x]}\right)$$

Result (type 6, 2255 leaves):

$$-\frac{1}{2\,f}\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{-2\,m}$$

$$\left(-\left(\left(6\,C\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},\,-\frac{3}{2}-m,\,-n,\,\frac{3}{2},\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{3+2\,m}\right.\right.\right.$$

$$\left(\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{\frac{1}{2}+\frac{1}{2}\,(-4-2\,m)}\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\,\left(1-\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{\frac{3}{2}+m}\,\left(c+d-2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^n\right)\Big/$$

$$\left(-3\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},-\frac{3}{2}-m,-n,\frac{3}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+\right.$$

$$\left(4\,d\,n\,\text{AppellF1}\left[\frac{3}{2},-\frac{3}{2}-m,1-n,\frac{5}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+\right.$$

$$\left.\left.(c+d)\,(3+2\,m)\,\text{AppellF1}\left[\frac{3}{2},-\frac{1}{2}-m,-n,\frac{5}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right)\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\right)+$$

$$\left(12\,A\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2}-m,-n,\frac{3}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{-1+2\,m}\right.$$

$$\left.\left(\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{\frac{1}{2}-m}\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\left(1-\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{-\frac{1}{2}+m}\left(c+d-2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^n\right)\Big/$$

$$\left(3\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2}-m,-n,\frac{3}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]-\right.$$

$$\left(4\,d\,n\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{2}-m,1-n,\frac{5}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+\right.$$

$$\left.\left.(c+d)\,(-1+2\,m)\,\text{AppellF1}\left[\frac{3}{2},\frac{3}{2}-m,-n,\frac{5}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right)\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)+$$

$$\left(6\,C\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2}-m,-n,\frac{3}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{-1+2\,m}\right.$$

$$\left.\left(\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{\frac{1}{2}-m}\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\left(1-\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{-\frac{1}{2}+m}\left(c+d-2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^n\right)\Big/$$

$$\left(3\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2}-m,-n,\frac{3}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]-\right.$$

$$\left(4\,d\,n\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{2}-m,1-n,\frac{5}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+\right.$$

$$(c+d)\,(-1+2\,m)\,\text{AppellF1}\left[\frac{3}{2},\,\frac{3}{2}-m,\,-n,\,\frac{5}{2},\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right)\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Bigg)+$$

$$\Bigg(20\,C\,(c+d)\,\text{AppellF1}\left[\frac{3}{2},\,-\frac{1}{2}-m,\,-n,\,\frac{5}{2},\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{1+2\,m}$$

$$\left(\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{\frac{1}{2}(-1-2\,m)}\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^3\,\left(1-\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{\frac{1}{2}+m}\,\left(c+d-2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^n\Bigg)\Bigg/$$

$$\Bigg(-5\,(c+d)\,\text{AppellF1}\left[\frac{3}{2},\,-\frac{1}{2}-m,\,-n,\,\frac{5}{2},\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+$$

$$\Bigg(4\,d\,n\,\text{AppellF1}\left[\frac{5}{2},\,-\frac{1}{2}-m,\,1-n,\,\frac{7}{2},\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+$$

$$(c+d)\,(1+2\,m)\,\text{AppellF1}\left[\frac{5}{2},\,\frac{1}{2}-m,\,-n,\,\frac{7}{2},\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\Bigg)\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Bigg)-$$

$$\Bigg(14\,C\,(c+d)\,\text{AppellF1}\left[\frac{5}{2},\,\frac{1}{2}-m,\,-n,\,\frac{7}{2},\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{-1+2\,m}$$

$$\left(\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{\frac{1}{2}(1-2\,m)}\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^5\,\left(1-\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{-\frac{1}{2}+m}\,\left(c+d-2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^n\Bigg)\Bigg/$$

$$\Bigg(5\,\Bigg(-7\,(c+d)\,\text{AppellF1}\left[\frac{5}{2},\,\frac{1}{2}-m,\,-n,\,\frac{7}{2},\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+$$

$$\Bigg(4\,d\,n\,\text{AppellF1}\left[\frac{7}{2},\,\frac{1}{2}-m,\,1-n,\,\frac{9}{2},\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+(c+d)\,(-1+2\,m)$$

$$\text{AppellF1}\left[\frac{7}{2},\,\frac{3}{2}-m,\,-n,\,\frac{9}{2},\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\Bigg)\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Bigg)\Bigg)\Bigg)\,(a+a\,\text{Sin}[e+f\,x])^m$$

- **Problem 10: Result more than twice size of optimal antiderivative.**

$$\int (a+a\,\text{Sin}[e+f\,x])^m\,(c+d\,\text{Sin}[e+f\,x])^{-2-m}\,\left(A+C\,\text{Sin}[e+f\,x]^2\right)\,dx$$

Optimal (type 6, 392 leaves, 8 steps):

$$\frac{\left(c^2 C+A d^2\right) \text{Cos}[e+f x] \,(a+a \,\text{Sin}[e+f x])^m \,(c+d \,\text{Sin}[e+f x])^{-1-m}}{d \left(c^2-d^2\right) f \,(1+m)}-$$

$$\frac{1}{(c-d)\, d\, (c+d)^2 f\, (1+m)} 2^{\frac{1}{2}+m} a \left(c\, (A+C)\, d\, (1+m)+d^2 \,(C-A m+C m)-c^2 \,(C+2 C m)\right) \text{Cos}[e+f x]$$

$$\text{Hypergeometric2F1}\left[\frac{1}{2}, \frac{1}{2}-m, \frac{3}{2}, \frac{(c-d)\, (1-\text{Sin}[e+f x])}{2\, (c+d \,\text{Sin}[e+f x])}\right] (a+a \,\text{Sin}[e+f x])^{-1+m} \left(\frac{(c+d)\, (1+\text{Sin}[e+f x])}{c+d \,\text{Sin}[e+f x]}\right)^{\frac{1}{2}-m} (c+d \,\text{Sin}[e+f x])^{-m}+$$

$$\left(\sqrt{2}\, C \,\text{AppellF1}\left[\frac{3}{2}+m, \frac{1}{2}, 1+m, \frac{5}{2}+m, \frac{1}{2} (1+\text{Sin}[e+f x]), -\frac{d\, (1+\text{Sin}[e+f x])}{c-d}\right] \text{Cos}[e+f x]\right.$$

$$\left.(a+a \,\text{Sin}[e+f x])^{1+m} (c+d \,\text{Sin}[e+f x])^{-m} \left(\frac{c+d \,\text{Sin}[e+f x]}{c-d}\right)^m\right) \Big/ \left(a\, (c-d)\, d\, f\, (3+2 m) \sqrt{1-\text{Sin}[e+f x]}\right)$$

Result (type 6, 7642 leaves) :

$$-\Bigg(\Bigg(2 \,\text{Cos}\left[\frac{1}{2} \left(-e+\frac{\pi}{2}-f x\right)\right]^{-1-2 m} \text{Sin}\left[\frac{1}{2} \left(-e+\frac{\pi}{2}-f x\right)\right] (a+a \,\text{Sin}[e+f x])^m$$

$$\left(2 A \,\text{Cos}\left[\frac{1}{2} \left(-e+\frac{\pi}{2}-f x\right)\right]^{2 m} (c+d \,\text{Sin}[e+f x])^{-2-m}+C \,\text{Cos}\left[\frac{1}{2} \left(-e+\frac{\pi}{2}-f x\right)\right]^{2 m} (c+d \,\text{Sin}[e+f x])^{-2-m}+\right.$$

$$\left.C \,\text{Cos}\left[\frac{1}{2} \left(-e+\frac{\pi}{2}-f x\right)\right]^{2 m} \text{Cos}\left[2 \left(-e+\frac{\pi}{2}-f x\right)\right] (c+d \,\text{Sin}[e+f x])^{-2-m}\right) \left(1+\text{Tan}\left[\frac{1}{2} \left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{-m}$$

$$\left(c+\frac{d-d \,\text{Tan}\left[\frac{1}{2} \left(-e+\frac{\pi}{2}-f x\right)\right]^2}{1+\text{Tan}\left[\frac{1}{2} \left(-e+\frac{\pi}{2}-f x\right)\right]^2}\right)^{-m} \left(\frac{A\, (c+d) \,\text{Hypergeometric2F1}\left[\frac{1}{2}, 1+m, \frac{3}{2}, -\frac{(c-d) \,\text{Tan}\left[\frac{1}{2} \left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right] \left(1+\frac{(c-d) \,\text{Tan}\left[\frac{1}{2} \left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right)^m}{c-d}-\right.$$

$$\frac{c^2 C\, (c+d) \,\text{Hypergeometric2F1}\left[\frac{1}{2}, 1+m, \frac{3}{2}, -\frac{(c-d) \,\text{Tan}\left[\frac{1}{2} \left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right] \left(1+\frac{(c-d) \,\text{Tan}\left[\frac{1}{2} \left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right)^m}{(c-d)\, d^2}+$$

$$\frac{2 c\, C\, (c+d) \,\text{Hypergeometric2F1}\left[\frac{1}{2}, 1+m, \frac{3}{2}, -\frac{(c-d) \,\text{Tan}\left[\frac{1}{2} \left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right] \left(1+\frac{(c-d) \,\text{Tan}\left[\frac{1}{2} \left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right)^m}{(c-d)\, d}-$$

$$\frac{2 c^2 C \,\text{Hypergeometric2F1}\left[\frac{1}{2}, 2+m, \frac{3}{2}, -\frac{(c-d) \,\text{Tan}\left[\frac{1}{2} \left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right] \left(1+\frac{(c-d) \,\text{Tan}\left[\frac{1}{2} \left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right)^m}{(c-d)\, d}-$$

$$\frac{2\,A\,d\,\text{Hypergeometric2F1}\left[\frac{1}{2},\,2+m,\,\frac{3}{2},\,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\left(1+\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right)^m}{c-d}-$$

$$\left(3\,C\,(c+d)^3\,\text{AppellF1}\left[\frac{1}{2},\,m,\,1,\,\frac{3}{2},\,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d},\,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\Big/$$

$$\left(d^2\left(1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\left(-3\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},\,m,\,1,\,\frac{3}{2},\,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d},\,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.\right.$$

$$2\left((c+d)\,\text{AppellF1}\left[\frac{3}{2},\,m,\,2,\,\frac{5}{2},\,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d},\,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+(c-d)\,m\right.$$

$$\left.\left.\left.\text{AppellF1}\left[\frac{3}{2},\,1+m,\,1,\,\frac{5}{2},\,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d},\,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\right)\Big/$$

$$\left((c+d)^2\,f\left(-\frac{1}{(c+d)^2}\,4\,m\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\left(1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{-m}\left(-\frac{d\,\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]}{1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}-\right.\right.\right.$$

$$\left.\frac{\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\left(d-d\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)}{\left(1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^2}\right)\left(c+\frac{d-d\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}\right)^{-1-m}$$

$$\left(\frac{1}{c-d}A\,(c+d)\,\text{Hypergeometric2F1}\left[\frac{1}{2},\,1+m,\,\frac{3}{2},\,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\left(1+\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right)^m-\right.$$

$$\frac{1}{(c-d)\,d^2}c^2\,C\,(c+d)\,\text{Hypergeometric2F1}\left[\frac{1}{2},\,1+m,\,\frac{3}{2},\,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\left(1+\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right)^m+$$

$$\frac{1}{(c-d)\,d}2\,c\,C\,(c+d)\,\text{Hypergeometric2F1}\left[\frac{1}{2},\,1+m,\,\frac{3}{2},\,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\left(1+\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right)^m-$$

$$\frac{2\,c^2\,C\,\text{Hypergeometric2F1}\left[\frac{1}{2},2+m,\frac{3}{2},-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\left(1+\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right)^m}{(c-d)\,d}-$$

$$\frac{2\,A\,d\,\text{Hypergeometric2F1}\left[\frac{1}{2},2+m,\frac{3}{2},-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\left(1+\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right)^m}{c-d}-$$

$$\left(3\,C\,(c+d)^3\,\text{AppellF1}\left[\frac{1}{2},m,1,\frac{3}{2},-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\Big/$$

$$\left(d^2\left(1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\left(-3\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},m,1,\frac{3}{2},-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.\right.$$

$$2\left((c+d)\,\text{AppellF1}\left[\frac{3}{2},m,2,\frac{5}{2},-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+(c-d)\,m\right.$$

$$\left.\left.\left.\text{AppellF1}\left[\frac{3}{2},1+m,1,\frac{5}{2},-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\right)-$$

$$\frac{1}{(c+d)^2}\,4\,m\,\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\left(1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{-1-m}\left(c+\frac{d-d\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}\right)^{-m}$$

$$\left(\frac{A\,(c+d)\,\text{Hypergeometric2F1}\left[\frac{1}{2},1+m,\frac{3}{2},-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\left(1+\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right)^m}{c-d}-\frac{1}{(c-d)\,d^2}\right.$$

$$c^2\,C\,(c+d)\,\text{Hypergeometric2F1}\left[\frac{1}{2},1+m,\frac{3}{2},-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\left(1+\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right)^m+\frac{1}{(c-d)\,d}$$

$$2\,c\,C\,(c+d)\,\text{Hypergeometric2F1}\left[\frac{1}{2},1+m,\frac{3}{2},-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\left(1+\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right)^m-$$

$$\frac{2 c^2 C\,\text{Hypergeometric2F1}\left[\frac{1}{2}, 2+m, \frac{3}{2}, -\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\left(1+\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right)^m}{(c-d)\,d} -$$

$$\frac{2 A d\,\text{Hypergeometric2F1}\left[\frac{1}{2}, 2+m, \frac{3}{2}, -\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\left(1+\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right)^m}{c-d} -$$

$$\left(3 C (c+d)^3\,\text{AppellF1}\left[\frac{1}{2}, m, 1, \frac{3}{2}, -\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}, -\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\Big/$$

$$\left(d^2\left(1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\left(-3 (c+d)\,\text{AppellF1}\left[\frac{1}{2}, m, 1, \frac{3}{2}, -\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}, -\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right] +\right.\right.$$

$$2\left((c+d)\,\text{AppellF1}\left[\frac{3}{2}, m, 2, \frac{5}{2}, -\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}, -\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right] +\right.$$

$$\left.\left.\left.(c-d)\,m\,\text{AppellF1}\left[\frac{3}{2}, 1+m, 1, \frac{5}{2}, -\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}, -\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\right) +$$

$$\frac{1}{(c+d)^2}\,2\,\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\left(1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{-m}\left(c+\frac{d-d\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}\right)^{-m}$$

$$\left(\frac{A (c+d)\,\text{Hypergeometric2F1}\left[\frac{1}{2}, 1+m, \frac{3}{2}, -\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\left(1+\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right)^m}{c-d} - \frac{1}{(c-d)\,d^2}\right.$$

$$c^2 C (c+d)\,\text{Hypergeometric2F1}\left[\frac{1}{2}, 1+m, \frac{3}{2}, -\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\left(1+\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right)^m + \frac{1}{(c-d)\,d}$$

$$2 c C (c+d)\,\text{Hypergeometric2F1}\left[\frac{1}{2}, 1+m, \frac{3}{2}, -\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\left(1+\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right)^m -$$

$$\frac{2\,c^2\,C\,\text{Hypergeometric2F1}\left[\frac{1}{2},\,2+m,\,\frac{3}{2},\,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\left(1+\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right)^m}{(c-d)\,d}-$$

$$\frac{2\,A\,d\,\text{Hypergeometric2F1}\left[\frac{1}{2},\,2+m,\,\frac{3}{2},\,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\left(1+\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right)^m}{c-d}-$$

$$\left(3\,C\,(c+d)^3\,\text{AppellF1}\left[\frac{1}{2},\,m,\,1,\,\frac{3}{2},\,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d},\,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\Big/$$

$$\left(d^2\left(1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\left(-3\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},\,m,\,1,\,\frac{3}{2},\,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d},\,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.\right.$$

$$2\left((c+d)\,\text{AppellF1}\left[\frac{3}{2},\,m,\,2,\,\frac{5}{2},\,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d},\,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.$$

$$\left.\left.\left.(c-d)\,m\,\text{AppellF1}\left[\frac{3}{2},\,1+m,\,1,\,\frac{5}{2},\,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d},\,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\right)+$$

$$\frac{1}{(c+d)^2}\,4\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\left(1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{-m}\left(c+\frac{d-d\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}\right)^{-m}$$

$$\left(A\,m\,\text{Hypergeometric2F1}\left[\frac{1}{2},\,1+m,\,\frac{3}{2},\,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\right.$$

$$\left(1+\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right)^{-1+m}-\frac{1}{d^2}c^2\,C\,m\,\text{Hypergeometric2F1}\left[\frac{1}{2},\,1+m,\,\frac{3}{2},\,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]$$

$$\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\left(1+\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right)^{-1+m}+\frac{1}{d}$$

$$2\,c\,C\,m\,\text{Hypergeometric2F1}\left[\frac{1}{2},\,1+m,\,\frac{3}{2},\,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]$$

$$\left(1+\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right)^{-1+m}-\frac{1}{d\,(c+d)}2\,c^2\,C\,m\,\text{Hypergeometric2F1}\left[\frac{1}{2},\,2+m,\,\frac{3}{2},\,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]$$

$$\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\left(1+\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right)^{-1+m}-\frac{1}{c+d}2\,A\,d\,m\,\text{Hypergeometric2F1}\left[\frac{1}{2},\,2+m,\right.$$

$$\left.\frac{3}{2},\,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\left(1+\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right)^{-1+m}+$$

$$\left(3\,C\,(c+d)^3\,\text{AppellF1}\left[\frac{1}{2},\,m,\,1,\,\frac{3}{2},\,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d},\,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right.$$

$$\left.\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\right)\Big/\left(d^2\left(1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^2\left(-3\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},\,m,\,1,\,\frac{3}{2},\,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d},\right.\right.\right.$$

$$\left.-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+2\left((c+d)\,\text{AppellF1}\left[\frac{3}{2},\,m,\,2,\,\frac{5}{2},\,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d},\,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.$$

$$\left.\left.\left.(c-d)\,m\,\text{AppellF1}\left[\frac{3}{2},\,1+m,\,1,\,\frac{5}{2},\,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d},\,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\right)-$$

$$\left(3\,C\,(c+d)^3\left(-\frac{1}{3}\,\text{AppellF1}\left[\frac{3}{2},\,m,\,2,\,\frac{5}{2},\,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d},\,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right.\right.$$

$$\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-\frac{1}{3\,(c+d)}(c-d)\,m\,\text{AppellF1}\left[\frac{3}{2},\,1+m,\,1,\,\frac{5}{2},\right.$$

$$\left.\left.\left.-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d},\,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\right)\right)\Big/$$

$$\left(d^2\left(1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\left(-3\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},\,m,\,1,\,\frac{3}{2},\,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d},\,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.\right.$$

$$2\left((c+d)\,\text{AppellF1}\left[\frac{3}{2},\,m,\,2,\,\frac{5}{2},\,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d},\,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.$$

$$(c-d)\, m\, \text{AppellF1}\left[\frac{3}{2}, 1+m, 1, \frac{5}{2}, -\frac{(c-d)\, \text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}, -\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\, \text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)\Bigg) -$$

$$\frac{1}{(c-d)\, d} c^2\, C\, \text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right] \text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right] \left(1+\frac{(c-d)\, \text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right)^m$$

$$\left(-\text{Hypergeometric2F1}\left[\frac{1}{2}, 2+m, \frac{3}{2}, -\frac{(c-d)\, \text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right] + \left(1+\frac{(c-d)\, \text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right)^{-2-m}\right) -$$

$$\frac{1}{c-d} A\, d\, \text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right] \text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right] \left(1+\frac{(c-d)\, \text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right)^m$$

$$\left(-\text{Hypergeometric2F1}\left[\frac{1}{2}, 2+m, \frac{3}{2}, -\frac{(c-d)\, \text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right] + \left(1+\frac{(c-d)\, \text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right)^{-2-m}\right) +$$

$$\frac{1}{2\,(c-d)} A\, (c+d)\, \text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right] \text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right] \left(1+\frac{(c-d)\, \text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right)^m$$

$$\left(-\text{Hypergeometric2F1}\left[\frac{1}{2}, 1+m, \frac{3}{2}, -\frac{(c-d)\, \text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right] + \left(1+\frac{(c-d)\, \text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right)^{-1-m}\right) -$$

$$\frac{1}{2\,(c-d)\, d^2} c^2\, C\, (c+d)\, \text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right] \text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right] \left(1+\frac{(c-d)\, \text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right)^m$$

$$\left(-\text{Hypergeometric2F1}\left[\frac{1}{2}, 1+m, \frac{3}{2}, -\frac{(c-d)\, \text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right] + \left(1+\frac{(c-d)\, \text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right)^{-1-m}\right) +$$

$$\frac{1}{(c-d)\, d} c\, C\, (c+d)\, \text{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right] \text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right] \left(1+\frac{(c-d)\, \text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right)^m$$

$$\left(-\text{Hypergeometric2F1}\left[\frac{1}{2}, 1+m, \frac{3}{2}, -\frac{(c-d)\, \text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right] + \left(1+\frac{(c-d)\, \text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right)^{-1-m}\right) +$$

$$\Bigg(3\, C\, (c+d)^3\, \text{AppellF1}\left[\frac{1}{2}, m, 1, \frac{3}{2}, -\frac{(c-d)\, \text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}, -\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]$$

$$\left(2\left((c+d)\,\text{AppellF1}\left[\frac{3}{2},m,2,\frac{5}{2},-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.\right.$$

$$\left.(c-d)\,m\,\text{AppellF1}\left[\frac{3}{2},1+m,1,\frac{5}{2},-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2$$

$$\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-3\,(c+d)\left(-\frac{1}{3}\text{AppellF1}\left[\frac{3}{2},m,2,\frac{5}{2},-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right.$$

$$\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-\frac{1}{3\,(c+d)}(c-d)\,m\,\text{AppellF1}\left[\frac{3}{2},1+m,1,\frac{5}{2},\right.$$

$$\left.\left.-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\right)+$$

$$2\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\left((c+d)\left(-\frac{6}{5}\text{AppellF1}\left[\frac{5}{2},m,3,\frac{7}{2},-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right.\right.$$

$$\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-\frac{1}{5\,(c+d)}3\,(c-d)\,m\,\text{AppellF1}\left[\frac{5}{2},1+m,2,\frac{7}{2},\right.$$

$$\left.\left.-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\right)+$$

$$(c-d)\,m\left(-\frac{3}{5}\text{AppellF1}\left[\frac{5}{2},1+m,2,\frac{7}{2},-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right.$$

$$\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-\frac{1}{5\,(c+d)}3\,(c-d)\,(1+m)\,\text{AppellF1}\left[\frac{5}{2},2+m,1,\frac{7}{2},\right.$$

$$\left.\left.\left.\left.\left.-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\right)\right)\right)\right)\Big/$$

$$\left(d^2\left(1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\left(-3\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},m,1,\frac{3}{2},-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.\right.$$

$$2\left((c+d)\,\text{AppellF1}\left[\frac{3}{2},m,2,\frac{5}{2},-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+(c-d)\,m\right.$$

$$\text{AppellF1}\left[\frac{3}{2},1+m,1,\frac{5}{2},-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)\Bigg)\Bigg)\Bigg)\Bigg)\Bigg)$$

Problem 11: Result more than twice size of optimal antiderivative.

$$\int (a+a\,\text{Sin}[e+f x])^m\,(c+d\,\text{Sin}[e+f x])^{3/2}\left(A+C\,\text{Sin}[e+f x]^2\right)dx$$

Optimal (type 6, 385 leaves, 10 steps):

$$-\frac{2\,C\,\text{Cos}[e+f x]\,(a+a\,\text{Sin}[e+f x])^m\,(c+d\,\text{Sin}[e+f x])^{5/2}}{d\,f\,(7+2 m)}+$$
$$\left(\sqrt{2}\,(c-d)\,(2 c\,(C+2 C m)+d\,(C\,(5-2 m)+A\,(7+2 m)))\,\text{AppellF1}\left[\frac{1}{2}+m,\frac{1}{2},-\frac{3}{2},\frac{3}{2}+m,\frac{1}{2}(1+\text{Sin}[e+f x]),-\frac{d\,(1+\text{Sin}[e+f x])}{c-d}\right]\right.$$
$$\left.\text{Cos}[e+f x]\,(a+a\,\text{Sin}[e+f x])^m\sqrt{c+d\,\text{Sin}[e+f x]}\right)\Bigg/\left(d\,f\,(1+2 m)\,(7+2 m)\sqrt{1-\text{Sin}[e+f x]}\sqrt{\frac{c+d\,\text{Sin}[e+f x]}{c-d}}\right)+$$
$$\left(2\sqrt{2}\,C\,(c-d)\,(d\,m-c\,(1+m))\,\text{AppellF1}\left[\frac{3}{2}+m,\frac{1}{2},-\frac{3}{2},\frac{5}{2}+m,\frac{1}{2}(1+\text{Sin}[e+f x]),-\frac{d\,(1+\text{Sin}[e+f x])}{c-d}\right]\text{Cos}[e+f x]\right.$$
$$\left.(a+a\,\text{Sin}[e+f x])^{1+m}\sqrt{c+d\,\text{Sin}[e+f x]}\right)\Bigg/\left(a\,d\,f\,(3+2 m)\,(7+2 m)\sqrt{1-\text{Sin}[e+f x]}\sqrt{\frac{c+d\,\text{Sin}[e+f x]}{c-d}}\right)$$

Result (type 6, 5809 leaves):

$$\frac{1}{2 f}\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{-2 m}$$
$$\left(\left(3\,C\,d\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},-\frac{5}{2}-m,-\frac{1}{2},\frac{3}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\frac{2 d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{5+2 m}\right.\right.$$
$$\left(\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{\frac{1}{2}+\frac{1}{2}(-6-2 m)}\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\left(1-\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{\frac{5}{2}+m}\sqrt{c+d-2 d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}\Bigg)\Bigg/$$
$$\left(-3\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},-\frac{5}{2}-m,-\frac{1}{2},\frac{3}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\frac{2 d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]+\right.$$

$$\left(2\,d\,\text{AppellF1}\left[\frac{3}{2},-\frac{5}{2}-m,\frac{1}{2},\frac{5}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+\right.$$

$$\left.(c+d)\,(5+2\,m)\,\text{AppellF1}\left[\frac{3}{2},-\frac{3}{2}-m,-\frac{1}{2},\frac{5}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right)\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Bigg)+$$

$$\left(6\,c\,C\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},-\frac{3}{2}-m,-\frac{1}{2},\frac{3}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{3+2\,m}\right.$$

$$\left.\left(\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{\frac{1}{2}+\frac{1}{2}(-4-2\,m)}\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\left(1-\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{\frac{3}{2}+m}\sqrt{c+d-2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}\right)\Big/$$

$$\left(-3\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},-\frac{3}{2}-m,-\frac{1}{2},\frac{3}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+\right.$$

$$\left(2\,d\,\text{AppellF1}\left[\frac{3}{2},-\frac{3}{2}-m,\frac{1}{2},\frac{5}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+\right.$$

$$\left.(c+d)\,(3+2\,m)\,\text{AppellF1}\left[\frac{3}{2},-\frac{1}{2}-m,-\frac{1}{2},\frac{5}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right)\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Bigg)+$$

$$\left(12\,A\,d\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},-\frac{1}{2}-m,-\frac{1}{2},\frac{3}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{1+2\,m}\right.$$

$$\left.\left(\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{\frac{1}{2}+\frac{1}{2}(-2-2\,m)}\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\left(1-\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{\frac{1}{2}+m}\sqrt{c+d-2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}\right)\Big/$$

$$\left(-3\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},-\frac{1}{2}-m,-\frac{1}{2},\frac{3}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+\right.$$

$$\left(2\,d\,\text{AppellF1}\left[\frac{3}{2},-\frac{1}{2}-m,\frac{1}{2},\frac{5}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+\right.$$

$$\left.(c+d)\,(1+2\,m)\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{2}-m,-\frac{1}{2},\frac{5}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right)\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Bigg)+$$

$$\left(9\,C\,d\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},-\frac{1}{2}-m,-\frac{1}{2},\frac{3}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{1+2\,m}\right.$$

$$\left.\left(\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{\frac{1}{2}+\frac{1}{2}(-2-2\,m)}\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\left(1-\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{\frac{1}{2}+m}\sqrt{c+d-2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}\right)\Big/$$

$$\left(-3\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},-\frac{1}{2}-m,-\frac{1}{2},\frac{3}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+\right.$$

$$\left(2\,d\,\text{AppellF1}\left[\frac{3}{2},-\frac{1}{2}-m,\frac{1}{2},\frac{5}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+\right.$$

$$\left.\left.(c+d)\,(1+2\,m)\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{2}-m,-\frac{1}{2},\frac{5}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right)\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)-$$

$$\left(12\,A\,c\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2}-m,-\frac{1}{2},\frac{3}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{-1+2\,m}\right.$$

$$\left.\left(\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{\frac{1}{2}-m}\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\left(1-\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{-\frac{1}{2}+m}\sqrt{c+d-2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}\right)\Big/$$

$$\left(3\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2}-m,-\frac{1}{2},\frac{3}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]-\right.$$

$$\left(2\,d\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{2}-m,\frac{1}{2},\frac{5}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+\right.$$

$$\left.\left.(c+d)\,(-1+2\,m)\,\text{AppellF1}\left[\frac{3}{2},\frac{3}{2}-m,-\frac{1}{2},\frac{5}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right)\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)-$$

$$\left(6\,c\,C\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2}-m,-\frac{1}{2},\frac{3}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{-1+2\,m}\right.$$

$$\Big(\text{Cos}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)^{\frac{1}{2}-m}\,\text{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\,\Big(1-\text{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)^{-\frac{1}{2}+m}\,\sqrt{c+d-2\,d\,\text{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2}\Big)\Big/$$

$$\Big(3\,(c+d)\,\text{AppellF1}\Big[\frac{1}{2},\,\frac{1}{2}-m,\,-\frac{1}{2},\,\frac{3}{2},\,\text{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,\frac{2\,d\,\text{Sin}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f\,x\big)\big]^2}{c+d}\Big]-$$

$$\Big(2\,d\,\text{AppellF1}\Big[\frac{3}{2},\,\frac{1}{2}-m,\,\frac{1}{2},\,\frac{5}{2},\,\text{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,\frac{2\,d\,\text{Sin}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f\,x\big)\big]^2}{c+d}\Big]+$$

$$(c+d)\,(-1+2\,m)\,\text{AppellF1}\Big[\frac{3}{2},\,\frac{3}{2}-m,\,-\frac{1}{2},\,\frac{5}{2},\,\text{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,\frac{2\,d\,\text{Sin}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f\,x\big)\big]^2}{c+d}\Big]\Big)\,\text{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)-$$

$$\Big(25\,C\,d\,(c+d)\,\text{AppellF1}\Big[\frac{3}{2},\,-\frac{3}{2}-m,\,-\frac{1}{2},\,\frac{5}{2},\,\text{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,\frac{2\,d\,\text{Sin}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f\,x\big)\big]^2}{c+d}\Big]\,\text{Cos}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^{3+2\,m}$$

$$\Big(\text{Cos}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)^{\frac{1}{2}(-3-2\,m)}\,\text{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^3\,\Big(1-\text{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)^{\frac{3}{2}+m}\,\sqrt{c+d-2\,d\,\text{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2}\Big)\Big/$$

$$\Big(-5\,(c+d)\,\text{AppellF1}\Big[\frac{3}{2},\,-\frac{3}{2}-m,\,-\frac{1}{2},\,\frac{5}{2},\,\text{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,\frac{2\,d\,\text{Sin}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f\,x\big)\big]^2}{c+d}\Big]+$$

$$\Big(2\,d\,\text{AppellF1}\Big[\frac{5}{2},\,-\frac{3}{2}-m,\,\frac{1}{2},\,\frac{7}{2},\,\text{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,\frac{2\,d\,\text{Sin}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f\,x\big)\big]^2}{c+d}\Big]+$$

$$(c+d)\,(3+2\,m)\,\text{AppellF1}\Big[\frac{5}{2},\,-\frac{1}{2}-m,\,-\frac{1}{2},\,\frac{7}{2},\,\text{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,\frac{2\,d\,\text{Sin}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f\,x\big)\big]^2}{c+d}\Big]\Big)\,\text{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)-$$

$$\Big(20\,c\,C\,(c+d)\,\text{AppellF1}\Big[\frac{3}{2},\,-\frac{1}{2}-m,\,-\frac{1}{2},\,\frac{5}{2},\,\text{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,\frac{2\,d\,\text{Sin}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f\,x\big)\big]^2}{c+d}\Big]\,\text{Cos}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^{1+2\,m}$$

$$\Big(\text{Cos}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)^{\frac{1}{2}(-1-2\,m)}\,\text{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^3\,\Big(1-\text{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)^{\frac{1}{2}+m}\,\sqrt{c+d-2\,d\,\text{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2}\Big)\Big/$$

$$\Big(-5\,(c+d)\,\text{AppellF1}\Big[\frac{3}{2},\,-\frac{1}{2}-m,\,-\frac{1}{2},\,\frac{5}{2},\,\text{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,\frac{2\,d\,\text{Sin}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f\,x\big)\big]^2}{c+d}\Big]+$$

$$\Big(2\,d\,\text{AppellF1}\Big[\frac{5}{2},\,-\frac{1}{2}-m,\,\frac{1}{2},\,\frac{7}{2},\,\text{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,\frac{2\,d\,\text{Sin}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f\,x\big)\big]^2}{c+d}\Big]+$$

$$(c+d)\,(1+2\,m)\,\text{AppellF1}\Big[\frac{5}{2},\,\frac{1}{2}-m,\,-\frac{1}{2},\,\frac{7}{2},\,\text{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,\frac{2\,d\,\text{Sin}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f\,x\big)\big]^2}{c+d}\Big]\Big)\,\text{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)-$$

$$\Big(20\,A\,d\,(c+d)\,\text{AppellF1}\Big[\frac{3}{2},\,\frac{1}{2}-m,\,-\frac{1}{2},\,\frac{5}{2},\,\text{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,\frac{2\,d\,\text{Sin}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f\,x\big)\big]^2}{c+d}\Big]\,\text{Cos}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^{-1+2\,m}$$

$$\Big(\text{Cos}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)^{\frac{1}{2}(1-2\,m)}\,\text{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^3\,\Big(1-\text{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)^{-\frac{1}{2}+m}\,\sqrt{c+d-2\,d\,\text{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2}\,\Big)\Big/$$

$$\Big(3\,\Big(-5\,(c+d)\,\text{AppellF1}\Big[\frac{3}{2},\,\frac{1}{2}-m,\,-\frac{1}{2},\,\frac{5}{2},\,\text{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,\frac{2\,d\,\text{Sin}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f\,x\big)\big]^2}{c+d}\Big]+$$

$$\Big(2\,d\,\text{AppellF1}\Big[\frac{5}{2},\,\frac{1}{2}-m,\,\frac{1}{2},\,\frac{7}{2},\,\text{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,\frac{2\,d\,\text{Sin}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f\,x\big)\big]^2}{c+d}\Big]+$$

$$(c+d)\,(-1+2\,m)\,\text{AppellF1}\Big[\frac{5}{2},\,\frac{3}{2}-m,\,-\frac{1}{2},\,\frac{7}{2},\,\text{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,\frac{2\,d\,\text{Sin}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f\,x\big)\big]^2}{c+d}\Big]\Big)\,\text{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)\Big)-$$

$$\Big(5\,C\,d\,(c+d)\,\text{AppellF1}\Big[\frac{3}{2},\,\frac{1}{2}-m,\,-\frac{1}{2},\,\frac{5}{2},\,\text{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,\frac{2\,d\,\text{Sin}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f\,x\big)\big]^2}{c+d}\Big]\,\text{Cos}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^{-1+2\,m}$$

$$\Big(\text{Cos}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)^{\frac{1}{2}(1-2\,m)}\,\text{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^3\,\Big(1-\text{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)^{-\frac{1}{2}+m}\,\sqrt{c+d-2\,d\,\text{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2}\,\Big)\Big/$$

$$\Big(-5\,(c+d)\,\text{AppellF1}\Big[\frac{3}{2},\,\frac{1}{2}-m,\,-\frac{1}{2},\,\frac{5}{2},\,\text{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,\frac{2\,d\,\text{Sin}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f\,x\big)\big]^2}{c+d}\Big]+$$

$$\Big(2\,d\,\text{AppellF1}\Big[\frac{5}{2},\,\frac{1}{2}-m,\,\frac{1}{2},\,\frac{7}{2},\,\text{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,\frac{2\,d\,\text{Sin}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f\,x\big)\big]^2}{c+d}\Big]+$$

$$(c+d)\,(-1+2\,m)\,\text{AppellF1}\Big[\frac{5}{2},\,\frac{3}{2}-m,\,-\frac{1}{2},\,\frac{7}{2},\,\text{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,\frac{2\,d\,\text{Sin}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f\,x\big)\big]^2}{c+d}\Big]\Big)\,\text{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)+$$

$$\Big(21\,C\,d\,(c+d)\,\text{AppellF1}\Big[\frac{5}{2},-\frac{1}{2}-m,-\frac{1}{2},\frac{7}{2},\text{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\frac{2\,d\,\text{Sin}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f\,x\big)\big]^2}{c+d}\Big]\,\text{Cos}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^{1+2\,m}$$

$$\Big(\text{Cos}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)^{\frac{1}{2}(-1-2\,m)}\,\text{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^5\,\Big(1-\text{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)^{\frac{1}{2}+m}\,\sqrt{c+d-2\,d\,\text{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2}\Big)\Big/$$

$$\Big(-7\,(c+d)\,\text{AppellF1}\Big[\frac{5}{2},-\frac{1}{2}-m,-\frac{1}{2},\frac{7}{2},\text{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\frac{2\,d\,\text{Sin}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f\,x\big)\big]^2}{c+d}\Big]+$$

$$\Big(2\,d\,\text{AppellF1}\Big[\frac{7}{2},-\frac{1}{2}-m,\frac{1}{2},\frac{9}{2},\text{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\frac{2\,d\,\text{Sin}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f\,x\big)\big]^2}{c+d}\Big]+$$

$$(c+d)\,(1+2\,m)\,\text{AppellF1}\Big[\frac{7}{2},\frac{1}{2}-m,-\frac{1}{2},\frac{9}{2},\text{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\frac{2\,d\,\text{Sin}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f\,x\big)\big]^2}{c+d}\Big]\Big)\,\text{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)+$$

$$\Big(14\,c\,C\,(c+d)\,\text{AppellF1}\Big[\frac{5}{2},\frac{1}{2}-m,-\frac{1}{2},\frac{7}{2},\text{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\frac{2\,d\,\text{Sin}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f\,x\big)\big]^2}{c+d}\Big]\,\text{Cos}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^{-1+2\,m}$$

$$\Big(\text{Cos}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)^{\frac{1}{2}(1-2\,m)}\,\text{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^5\,\Big(1-\text{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)^{-\frac{1}{2}+m}\,\sqrt{c+d-2\,d\,\text{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2}\Big)\Big/$$

$$\Big(5\,\Big(-7\,(c+d)\,\text{AppellF1}\Big[\frac{5}{2},\frac{1}{2}-m,-\frac{1}{2},\frac{7}{2},\text{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\frac{2\,d\,\text{Sin}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f\,x\big)\big]^2}{c+d}\Big]+$$

$$\Big(2\,d\,\text{AppellF1}\Big[\frac{7}{2},\frac{1}{2}-m,\frac{1}{2},\frac{9}{2},\text{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\frac{2\,d\,\text{Sin}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f\,x\big)\big]^2}{c+d}\Big]+$$

$$(c+d)\,(-1+2\,m)\,\text{AppellF1}\Big[\frac{7}{2},\frac{3}{2}-m,-\frac{1}{2},\frac{9}{2},\text{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\frac{2\,d\,\text{Sin}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f\,x\big)\big]^2}{c+d}\Big]\Big)\,\text{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)\Big)-$$

$$\Big(9\,C\,d\,(c+d)\,\text{AppellF1}\Big[\frac{7}{2},\frac{1}{2}-m,-\frac{1}{2},\frac{9}{2},\text{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\frac{2\,d\,\text{Sin}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f\,x\big)\big]^2}{c+d}\Big]\,\text{Cos}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^{-1+2\,m}$$

$$\left(\mathrm{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{\frac{1}{2}(1-2m)}\mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^7\left(1-\mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{-\frac{1}{2}+m}\sqrt{c+d-2\,d\,\mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}\Bigg/$$

$$\Bigg(7\Bigg(-9\,(c+d)\,\mathrm{AppellF1}\Big[\frac{7}{2},\frac{1}{2}-m,-\frac{1}{2},\frac{9}{2},\mathrm{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\frac{2\,d\,\mathrm{Sin}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f\,x\big)\big]^2}{c+d}\Big]+$$

$$\Bigg(2\,d\,\mathrm{AppellF1}\Big[\frac{9}{2},\frac{1}{2}-m,\frac{1}{2},\frac{11}{2},\mathrm{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\frac{2\,d\,\mathrm{Sin}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f\,x\big)\big]^2}{c+d}\Big]+(c+d)\,(-1+2\,m)$$

$$\mathrm{AppellF1}\Big[\frac{9}{2},\frac{3}{2}-m,-\frac{1}{2},\frac{11}{2},\mathrm{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\frac{2\,d\,\mathrm{Sin}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f\,x\big)\big]^2}{c+d}\Big]\Bigg)\,\mathrm{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Bigg)\Bigg)\,(a+a\,\mathrm{Sin}[e+f\,x])^m$$

- **Problem 12: Result more than twice size of optimal antiderivative.**

$$\int(a+a\,\mathrm{Sin}[e+f\,x])^m\,\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}\,\left(A+C\,\mathrm{Sin}[e+f\,x]^2\right)\,dx$$

Optimal (type 6, 375 leaves, 10 steps):

$$-\frac{2\,C\,\mathrm{Cos}[e+f\,x]\,(a+a\,\mathrm{Sin}[e+f\,x])^m\,(c+d\,\mathrm{Sin}[e+f\,x])^{3/2}}{d\,f\,(5+2\,m)}+$$

$$\Bigg(\sqrt{2}\,(2\,c\,(C+2\,C\,m)+d\,(C\,(3-2\,m)+A\,(5+2\,m)))\,\mathrm{AppellF1}\Big[\frac{1}{2}+m,\frac{1}{2},-\frac{1}{2},\frac{3}{2}+m,\frac{1}{2}\,(1+\mathrm{Sin}[e+f\,x]),-\frac{d\,(1+\mathrm{Sin}[e+f\,x])}{c-d}\Big]$$

$$\mathrm{Cos}[e+f\,x]\,(a+a\,\mathrm{Sin}[e+f\,x])^m\,\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}\Bigg)\Bigg/\left(d\,f\,(1+2\,m)\,(5+2\,m)\,\sqrt{1-\mathrm{Sin}[e+f\,x]}\,\sqrt{\frac{c+d\,\mathrm{Sin}[e+f\,x]}{c-d}}\right)+$$

$$\Bigg(2\,\sqrt{2}\,C\,(d\,m-c\,(1+m))\,\mathrm{AppellF1}\Big[\frac{3}{2}+m,\frac{1}{2},-\frac{1}{2},\frac{5}{2}+m,\frac{1}{2}\,(1+\mathrm{Sin}[e+f\,x]),-\frac{d\,(1+\mathrm{Sin}[e+f\,x])}{c-d}\Big]\,\mathrm{Cos}[e+f\,x]$$

$$(a+a\,\mathrm{Sin}[e+f\,x])^{1+m}\,\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}\Bigg)\Bigg/\left(a\,d\,f\,(3+2\,m)\,(5+2\,m)\,\sqrt{1-\mathrm{Sin}[e+f\,x]}\,\sqrt{\frac{c+d\,\mathrm{Sin}[e+f\,x]}{c-d}}\right)$$

Result (type 6, 2250 leaves):

$$\frac{1}{2\,f}\,\mathrm{Cos}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^{-2\,m}$$

$$\Bigg(\Bigg(6\,C\,(c+d)\,\mathrm{AppellF1}\Big[\frac{1}{2},-\frac{3}{2}-m,-\frac{1}{2},\frac{3}{2},\mathrm{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\frac{2\,d\,\mathrm{Sin}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f\,x\big)\big]^2}{c+d}\Big]\,\mathrm{Cos}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^{3+2\,m}$$

$$\left(\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{\frac{1}{2}+\frac{1}{2}(-4-2m)} \text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\left(1-\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{\frac{3}{2}+m} \sqrt{c+d-2 d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}\Bigg)\Big/$$

$$\Bigg(-3(c+d)\,\text{AppellF1}\left[\frac{1}{2},-\frac{3}{2}-m,-\frac{1}{2},\frac{3}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\frac{2 d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]+$$

$$\Bigg(2 d\,\text{AppellF1}\left[\frac{3}{2},-\frac{3}{2}-m,\frac{1}{2},\frac{5}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\frac{2 d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]+$$

$$(c+d)(3+2m)\,\text{AppellF1}\left[\frac{3}{2},-\frac{1}{2}-m,-\frac{1}{2},\frac{5}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\frac{2 d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\Bigg)\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)-$$

$$\Bigg(12 A (c+d)\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2}-m,-\frac{1}{2},\frac{3}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\frac{2 d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{-1+2m}$$

$$\left(\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{\frac{1}{2}-m} \text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\left(1-\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{-\frac{1}{2}+m} \sqrt{c+d-2 d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}\Bigg)\Big/$$

$$\Bigg(3(c+d)\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2}-m,-\frac{1}{2},\frac{3}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\frac{2 d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]-$$

$$\Bigg(2 d\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{2}-m,\frac{1}{2},\frac{5}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\frac{2 d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]+$$

$$(c+d)(-1+2m)\,\text{AppellF1}\left[\frac{3}{2},\frac{3}{2}-m,-\frac{1}{2},\frac{5}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\frac{2 d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\Bigg)\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)-$$

$$\Bigg(6 C (c+d)\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2}-m,-\frac{1}{2},\frac{3}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\frac{2 d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{-1+2m}$$

$$\left(\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{\frac{1}{2}-m} \text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\left(1-\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{-\frac{1}{2}+m} \sqrt{c+d-2 d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}\Bigg)\Big/$$

$$\Bigg(3(c+d)\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2}-m,-\frac{1}{2},\frac{3}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\frac{2 d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]-$$

$$\left(2\,d\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{2}-m,\frac{1}{2},\frac{5}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+\right.$$

$$\left.(c+d)\,(-1+2\,m)\,\text{AppellF1}\left[\frac{3}{2},\frac{3}{2}-m,-\frac{1}{2},\frac{5}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right)\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Bigg)-$$

$$\left(20\,C\,(c+d)\,\text{AppellF1}\left[\frac{3}{2},-\frac{1}{2}-m,-\frac{1}{2},\frac{5}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{1+2\,m}\right.$$

$$\left.\left(\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{\frac{1}{2}(-1-2\,m)}\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^3\left(1-\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{\frac{1}{2}+m}\sqrt{c+d-2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}\right)\Big/$$

$$\left(-5\,(c+d)\,\text{AppellF1}\left[\frac{3}{2},-\frac{1}{2}-m,-\frac{1}{2},\frac{5}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+\right.$$

$$\left(2\,d\,\text{AppellF1}\left[\frac{5}{2},-\frac{1}{2}-m,\frac{1}{2},\frac{7}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+\right.$$

$$\left.\left.(c+d)\,(1+2\,m)\,\text{AppellF1}\left[\frac{5}{2},\frac{1}{2}-m,-\frac{1}{2},\frac{7}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right)\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)+$$

$$\left(14\,C\,(c+d)\,\text{AppellF1}\left[\frac{5}{2},\frac{1}{2}-m,-\frac{1}{2},\frac{7}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{-1+2\,m}\right.$$

$$\left.\left(\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{\frac{1}{2}(1-2\,m)}\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^5\left(1-\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{-\frac{1}{2}+m}\sqrt{c+d-2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}\right)\Big/$$

$$\left(5\left(-7\,(c+d)\,\text{AppellF1}\left[\frac{5}{2},\frac{1}{2}-m,-\frac{1}{2},\frac{7}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+\right.\right.$$

$$\left(2\,d\,\text{AppellF1}\left[\frac{7}{2},\frac{1}{2}-m,\frac{1}{2},\frac{9}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+(c+d)\,(-1+2\,m)\right.$$

$$\left.\left.\left.\text{AppellF1}\left[\frac{7}{2},\frac{3}{2}-m,-\frac{1}{2},\frac{9}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right)\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\right)(a+a\,\text{Sin}[e+f\,x])^m$$

Problem 13: Result more than twice size of optimal antiderivative.

$$\int \frac{(a+a\,\text{Sin}[e+f\,x])^m\,\left(A+C\,\text{Sin}[e+f\,x]^2\right)}{\sqrt{c+d\,\text{Sin}[e+f\,x]}}\,dx$$

Optimal (type 6, 365 leaves, 10 steps):

$$-\frac{2\,C\,\text{Cos}[e+f\,x]\,(a+a\,\text{Sin}[e+f\,x])^m\,\sqrt{c+d\,\text{Sin}[e+f\,x]}}{d\,f\,(3+2\,m)}+$$
$$\left(\sqrt{2}\,(2\,c\,(C+2\,C\,m)+d\,(C-2\,C\,m+A\,(3+2\,m)))\,\text{AppellF1}\left[\frac{1}{2}+m,\frac{1}{2},\frac{1}{2},\frac{3}{2}+m,\frac{1}{2}\,(1+\text{Sin}[e+f\,x]),-\frac{d\,(1+\text{Sin}[e+f\,x])}{c-d}\right]\right.$$
$$\left.\text{Cos}[e+f\,x]\,(a+a\,\text{Sin}[e+f\,x])^m\,\sqrt{\frac{c+d\,\text{Sin}[e+f\,x]}{c-d}}\right)\Bigg/\left(d\,f\,(1+2\,m)\,(3+2\,m)\,\sqrt{1-\text{Sin}[e+f\,x]}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}\right)-$$
$$\left(2\,\sqrt{2}\,C\,(c+c\,m-d\,m)\,\text{AppellF1}\left[\frac{3}{2}+m,\frac{1}{2},\frac{1}{2},\frac{5}{2}+m,\frac{1}{2}\,(1+\text{Sin}[e+f\,x]),-\frac{d\,(1+\text{Sin}[e+f\,x])}{c-d}\right]\,\text{Cos}[e+f\,x]\right.$$
$$\left.(a+a\,\text{Sin}[e+f\,x])^{1+m}\,\sqrt{\frac{c+d\,\text{Sin}[e+f\,x]}{c-d}}\right)\Bigg/\left(a\,d\,f\,(3+2\,m)^2\,\sqrt{1-\text{Sin}[e+f\,x]}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}\right)$$

Result (type 6, 11 762 leaves):

$$-\left(\left(2\,(c+d)\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{-1-2\,m}\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\,(a+a\,\text{Sin}[e+f\,x])^m\right.\right.$$
$$\left(-\frac{2\,A\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2\,m}}{\sqrt{c+d\,\text{Sin}[e+f\,x]}}-\frac{C\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2\,m}}{\sqrt{c+d\,\text{Sin}[e+f\,x]}}-\frac{C\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2\,m}\,\text{Cos}\left[2\left(-e+\frac{\pi}{2}-f\,x\right)\right]}{\sqrt{c+d\,\text{Sin}[e+f\,x]}}\right)$$
$$\left(1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{-2-m}\sqrt{\frac{c+d+c\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2-d\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}}$$
$$\left(\left(9\,(A\,(c-3\,d)+C\,(-3\,c+d))\,\text{AppellF1}\left[\frac{1}{2},\frac{5}{2}+m,-\frac{1}{2},\frac{3}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right)\right/$$

$$\Bigg(3\,(c+d)\,\text{AppellF1}\Big[\frac{1}{2},\,\frac{5}{2}+m,\,-\frac{1}{2},\,\frac{3}{2},\,-\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\frac{(c-d)\,\text{Tan}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f\,x\big)\big]^2}{c+d}\Big]+$$

$$\Bigg((c-d)\,\text{AppellF1}\Big[\frac{3}{2},\,\frac{5}{2}+m,\,\frac{1}{2},\,\frac{5}{2},\,-\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\frac{(c-d)\,\text{Tan}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f\,x\big)\big]^2}{c+d}\Big]-$$

$$(c+d)\,(5+2\,m)\,\text{AppellF1}\Big[\frac{3}{2},\,\frac{7}{2}+m,\,-\frac{1}{2},\,\frac{5}{2},\,-\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\frac{(c-d)\,\text{Tan}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f\,x\big)\big]^2}{c+d}\Big]\Bigg)\,\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Bigg)-$$

$$\Bigg(36\,(c^2\,C+A\,d^2)\,\text{AppellF1}\Big[\frac{1}{2},\,\frac{5}{2}+m,\,\frac{1}{2},\,\frac{3}{2},\,-\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\frac{(c-d)\,\text{Tan}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f\,x\big)\big]^2}{c+d}\Big]\Bigg)\Big/$$

$$\Bigg(\Big(c+d+c\,\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2-d\,\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)$$

$$\Bigg(-3\,(c+d)\,\text{AppellF1}\Big[\frac{1}{2},\,\frac{5}{2}+m,\,\frac{1}{2},\,\frac{3}{2},\,-\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\frac{(c-d)\,\text{Tan}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f\,x\big)\big]^2}{c+d}\Big]+$$

$$\Bigg((c-d)\,\text{AppellF1}\Big[\frac{3}{2},\,\frac{5}{2}+m,\,\frac{3}{2},\,\frac{5}{2},\,-\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\frac{(c-d)\,\text{Tan}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f\,x\big)\big]^2}{c+d}\Big]+(c+d)\,(5+2\,m)$$

$$\text{AppellF1}\Big[\frac{3}{2},\,\frac{7}{2}+m,\,\frac{1}{2},\,\frac{5}{2},\,-\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\frac{(c-d)\,\text{Tan}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f\,x\big)\big]^2}{c+d}\Big]\Bigg)\,\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Bigg)\Bigg)+$$

$$\Bigg(5\,(A+C)\,(c-d)\,\text{AppellF1}\Big[\frac{3}{2},\,\frac{5}{2}+m,\,-\frac{1}{2},\,\frac{5}{2},\,-\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\frac{(c-d)\,\text{Tan}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f\,x\big)\big]^2}{c+d}\Big]\,\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Bigg)\Big/$$

$$\Bigg(5\,(c+d)\,\text{AppellF1}\Big[\frac{3}{2},\,\frac{5}{2}+m,\,-\frac{1}{2},\,\frac{5}{2},\,-\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\frac{(c-d)\,\text{Tan}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f\,x\big)\big]^2}{c+d}\Big]+$$

$$\Bigg((c-d)\,\text{AppellF1}\Big[\frac{5}{2},\,\frac{5}{2}+m,\,\frac{1}{2},\,\frac{7}{2},\,-\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\frac{(c-d)\,\text{Tan}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f\,x\big)\big]^2}{c+d}\Big]-(c+d)\,(5+2\,m)$$

$$\text{AppellF1}\Big[\frac{5}{2},\,\frac{7}{2}+m,\,-\frac{1}{2},\,\frac{7}{2},\,-\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\frac{(c-d)\,\text{Tan}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f\,x\big)\big]^2}{c+d}\Big]\Bigg)\,\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Bigg)\Bigg)\Big/$$

$$\left(3\,(c-d)^2 f \left(-\frac{1}{3\,(c-d)^2}\, 4\,(c+d)\,(-2-m)\,\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \left(1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{-3-m}\right.\right.$$

$$\sqrt{\frac{c+d+c\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2-d\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}}$$

$$\left(\left(9\,(A\,(c-3\,d)+C\,(-3\,c+d))\,\text{AppellF1}\left[\frac{1}{2},\frac{5}{2}+m,-\frac{1}{2},\frac{3}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\right)\Big/\right.$$

$$\left(3\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},\frac{5}{2}+m,-\frac{1}{2},\frac{3}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]+\right.$$

$$\left((c-d)\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{2}+m,\frac{1}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]-(c+d)\,(5+2\,m)\,\text{AppellF1}\left[\frac{3}{2},\right.\right.$$

$$\left.\left.\left.\frac{7}{2}+m,-\frac{1}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\right)\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)-\left(36\,\left(c^2 C+A\,d^2\right)\right.$$

$$\left.\text{AppellF1}\left[\frac{1}{2},\frac{5}{2}+m,\frac{1}{2},\frac{3}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\right)\Big/\left(\left(c+d+c\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2-\right.\right.$$

$$\left.d\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\left(-3\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},\frac{5}{2}+m,\frac{1}{2},\frac{3}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]+\right.$$

$$\left((c-d)\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{2}+m,\frac{3}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]+(c+d)\,(5+2\,m)\right.$$

$$\left.\left.\left.\text{AppellF1}\left[\frac{3}{2},\frac{7}{2}+m,\frac{1}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\right)\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\right)+$$

$$\left(5\,(A+C)\,(c-d)\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{2}+m,-\frac{1}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\Big/$$

$$\left(5\,(c+d)\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{2}+m,-\frac{1}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+\right.$$

$$\left((c-d)\,\text{AppellF1}\left[\frac{5}{2},\frac{5}{2}+m,\frac{1}{2},\frac{7}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]-(c+d)\,(5+2\,m)\right.$$

$$\left.\left.\text{AppellF1}\left[\frac{5}{2},\frac{7}{2}+m,-\frac{1}{2},\frac{7}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right)\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\right)-$$

$$\frac{1}{3\,(c-d)^2}\,2\,(c+d)\,\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\left(1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{-2-m}\sqrt{\frac{c+d+c\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2-d\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}}$$

$$\left(\left(9\,(A\,(c-3\,d)+C\,(-3\,c+d))\,\text{AppellF1}\left[\frac{1}{2},\frac{5}{2}+m,-\frac{1}{2},\frac{3}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right)\right/$$

$$\left(3\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},\frac{5}{2}+m,-\frac{1}{2},\frac{3}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+\right.$$

$$\left((c-d)\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{2}+m,\frac{1}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]-(c+d)\,(5+2\,m)\right.$$

$$\left.\left.\text{AppellF1}\left[\frac{3}{2},\frac{7}{2}+m,-\frac{1}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right)\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)-$$

$$\left(36\left(c^2\,C+A\,d^2\right)\text{AppellF1}\left[\frac{1}{2},\frac{5}{2}+m,\frac{1}{2},\frac{3}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right)\Bigg/$$

$$\left(\left(c+d+c\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2-d\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\right.$$

$$\left(-3\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},\frac{5}{2}+m,\frac{1}{2},\frac{3}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+\right.$$

$$\left((c-d)\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{2}+m,\frac{3}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+(c+d)\,(5+2\,m)\right.$$

$$\text{AppellF1}\left[\frac{3}{2},\frac{7}{2}+m,\frac{1}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\Bigg)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)\Bigg)+$$

$$\Bigg(5\,(A+C)\,(c-d)\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{2}+m,-\frac{1}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)\Bigg/$$

$$\Bigg(5\,(c+d)\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{2}+m,-\frac{1}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]+$$

$$\Bigg((c-d)\,\text{AppellF1}\left[\frac{5}{2},\frac{5}{2}+m,\frac{1}{2},\frac{7}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]-(c+d)\,(5+2m)$$

$$\text{AppellF1}\left[\frac{5}{2},\frac{7}{2}+m,-\frac{1}{2},\frac{7}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\Bigg)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)\Bigg)-$$

$$\frac{1}{3\,(c-d)^2\sqrt{\frac{c+d+c\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2-d\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}}}\,2\,(c+d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\left(1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{-2-m}$$

$$\Bigg(\frac{c\,\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]-d\,\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]}{1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}-\Bigg(\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2$$

$$\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\left(c+d+c\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2-d\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\Bigg)\Bigg/\left(1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^2\Bigg)$$

$$\Bigg(\Bigg(9\,(A\,(c-3d)+C\,(-3c+d))\,\text{AppellF1}\left[\frac{1}{2},\frac{5}{2}+m,-\frac{1}{2},\frac{3}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\Bigg)\Bigg/$$

$$\Bigg(3\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},\frac{5}{2}+m,-\frac{1}{2},\frac{3}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]+$$

$$\Bigg((c-d)\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{2}+m,\frac{1}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]-(c+d)\,(5+2m)$$

$$\text{AppellF1}\left[\frac{3}{2},\frac{7}{2}+m,-\frac{1}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\Bigg)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)-$$

$$\left(36\left(c^2 C+A d^2\right) \text{AppellF1}\left[\frac{1}{2},\frac{5}{2}+m,\frac{1}{2},\frac{3}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\right)\Big/$$

$$\left(\left(c+d+c\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2-d\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\right.$$

$$\left(-3(c+d)\,\text{AppellF1}\left[\frac{1}{2},\frac{5}{2}+m,\frac{1}{2},\frac{3}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]+\right.$$

$$\left((c-d)\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{2}+m,\frac{3}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]+(c+d)(5+2m)\right.$$

$$\left.\left.\left.\text{AppellF1}\left[\frac{3}{2},\frac{7}{2}+m,\frac{1}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\right)\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\right)+$$

$$\left(5(A+C)(c-d)\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{2}+m,-\frac{1}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\Big/$$

$$\left(5(c+d)\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{2}+m,-\frac{1}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]+\right.$$

$$\left((c-d)\,\text{AppellF1}\left[\frac{5}{2},\frac{5}{2}+m,\frac{1}{2},\frac{7}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]-(c+d)(5+2m)\right.$$

$$\left.\left.\text{AppellF1}\left[\frac{5}{2},\frac{7}{2}+m,-\frac{1}{2},\frac{7}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\right)\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\right)-$$

$$\frac{1}{3(c-d)^2}4(c+d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\left(1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{-2-m}\sqrt{\frac{c+d+c\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2-d\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}}$$

$$\left(\left(9(A(c-3d)+C(-3c+d))\left(\frac{1}{6(c+d)}(c-d)\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{2}+m,\frac{1}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\right.\right.\right.$$

$$\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{1}{3}\left(\frac{5}{2}+m\right)\text{AppellF1}\left[\frac{3}{2},\frac{7}{2}+m,-\frac{1}{2},\frac{5}{2},\right.$$

$$-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\Bigg)\Bigg)\Bigg/$$

$$\Bigg(3\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},\frac{5}{2}+m,-\frac{1}{2},\frac{3}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]+$$

$$\Bigg((c-d)\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{2}+m,\frac{1}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]-(c+d)\,(5+2\,m)$$

$$\text{AppellF1}\left[\frac{3}{2},\frac{7}{2}+m,-\frac{1}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\Bigg)\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)+$$

$$\Bigg(36\left(c^2\,C+A\,d^2\right)\text{AppellF1}\left[\frac{1}{2},\frac{5}{2}+m,\frac{1}{2},\frac{3}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]$$

$$\left(c\,\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]-d\,\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)\Bigg)\Bigg/$$

$$\Bigg(\left(c+d+c\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2-d\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^2\Bigg(-3\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},\frac{5}{2}+m,\frac{1}{2},\right.$$

$$\left.\frac{3}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]+$$

$$\Bigg((c-d)\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{2}+m,\frac{3}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]+(c+d)\,(5+2\,m)$$

$$\text{AppellF1}\left[\frac{3}{2},\frac{7}{2}+m,\frac{1}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\Bigg)\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)\Bigg)-$$

$$\Bigg(36\left(c^2\,C+A\,d^2\right)\Bigg(-\frac{1}{6\,(c+d)}(c-d)\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{2}+m,\frac{3}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]$$

$$\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{1}{3}\left(\frac{5}{2}+m\right)\text{AppellF1}\left[\frac{3}{2},\frac{7}{2}+m,\frac{1}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\right.$$

$$\left.-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\Bigg)\Bigg)\Bigg/\Bigg(\Bigg(c+d+c\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2-$$

$$d\,\mathrm{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)\;\Big(-3\,(c+d)\,\mathrm{AppellF1}\Big[\frac{1}{2},\,\frac{5}{2}+m,\,\frac{1}{2},\,\frac{3}{2},\,-\mathrm{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\frac{(c-d)\,\mathrm{Tan}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f\,x\big)\big]^2}{c+d}\Big]+$$

$$\Big((c-d)\,\mathrm{AppellF1}\Big[\frac{3}{2},\,\frac{5}{2}+m,\,\frac{3}{2},\,\frac{5}{2},\,-\mathrm{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\frac{(c-d)\,\mathrm{Tan}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f\,x\big)\big]^2}{c+d}\Big]+(c+d)\,(5+2\,m)$$

$$\mathrm{AppellF1}\Big[\frac{3}{2},\,\frac{7}{2}+m,\,\frac{1}{2},\,\frac{5}{2},\,-\mathrm{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\frac{(c-d)\,\mathrm{Tan}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f\,x\big)\big]^2}{c+d}\Big]\Big)\,\mathrm{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)\Big)+$$

$$\Big(5\,(A+C)\,(c-d)\,\mathrm{AppellF1}\Big[\frac{3}{2},\,\frac{5}{2}+m,\,-\frac{1}{2},\,\frac{5}{2},\,-\mathrm{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\frac{(c-d)\,\mathrm{Tan}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f\,x\big)\big]^2}{c+d}\Big]\,\mathrm{Sec}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2$$

$$\mathrm{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\Big)\Big/\Big(5\,(c+d)\,\mathrm{AppellF1}\Big[\frac{3}{2},\,\frac{5}{2}+m,\,-\frac{1}{2},\,\frac{5}{2},\,-\mathrm{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\frac{(c-d)\,\mathrm{Tan}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f\,x\big)\big]^2}{c+d}\Big]+$$

$$\Big((c-d)\,\mathrm{AppellF1}\Big[\frac{5}{2},\,\frac{5}{2}+m,\,\frac{1}{2},\,\frac{7}{2},\,-\mathrm{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\frac{(c-d)\,\mathrm{Tan}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f\,x\big)\big]^2}{c+d}\Big]-(c+d)\,(5+2\,m)$$

$$\mathrm{AppellF1}\Big[\frac{5}{2},\,\frac{7}{2}+m,\,-\frac{1}{2},\,\frac{7}{2},\,-\mathrm{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\frac{(c-d)\,\mathrm{Tan}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f\,x\big)\big]^2}{c+d}\Big]\Big)\,\mathrm{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)+$$

$$\Big(5\,(A+C)\,(c-d)\,\mathrm{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\,\Big(\frac{1}{10\,(c+d)}3\,(c-d)\,\mathrm{AppellF1}\Big[\frac{5}{2},\,\frac{5}{2}+m,\,\frac{1}{2},\,\frac{7}{2},\,-\mathrm{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,$$

$$-\frac{(c-d)\,\mathrm{Tan}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f\,x\big)\big]^2}{c+d}\Big]\,\mathrm{Sec}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\,\mathrm{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]-\frac{3}{5}\Big(\frac{5}{2}+m\Big)\,\mathrm{AppellF1}\Big[\frac{5}{2},\,\frac{7}{2}+m,\,-\frac{1}{2},$$

$$\frac{7}{2},\,-\mathrm{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\frac{(c-d)\,\mathrm{Tan}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f\,x\big)\big]^2}{c+d}\Big]\,\mathrm{Sec}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\,\mathrm{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\Big)\Big)\Big/$$

$$\Big(5\,(c+d)\,\mathrm{AppellF1}\Big[\frac{3}{2},\,\frac{5}{2}+m,\,-\frac{1}{2},\,\frac{5}{2},\,-\mathrm{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\frac{(c-d)\,\mathrm{Tan}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f\,x\big)\big]^2}{c+d}\Big]+$$

$$\Big((c-d)\,\mathrm{AppellF1}\Big[\frac{5}{2},\,\frac{5}{2}+m,\,\frac{1}{2},\,\frac{7}{2},\,-\mathrm{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\,-\frac{(c-d)\,\mathrm{Tan}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f\,x\big)\big]^2}{c+d}\Big]-(c+d)\,(5+2\,m)$$

$$\text{AppellF1}\Big[\frac{5}{2},\ \frac{7}{2}+m,\ -\frac{1}{2},\ \frac{7}{2},\ -\text{Tan}\Big[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\ -\frac{(c-d)\ \text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\Big]\Bigg)\ \text{Tan}\Big[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\Bigg)\ -$$

$$\Bigg(9\ (A\ (c-3\,d)+C\ (-3\,c+d))\ \text{AppellF1}\Big[\frac{1}{2},\ \frac{5}{2}+m,\ -\frac{1}{2},\ \frac{3}{2},\ -\text{Tan}\Big[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\ -\frac{(c-d)\ \text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\Big]$$

$$\Bigg(\Bigg((c-d)\ \text{AppellF1}\Big[\frac{3}{2},\ \frac{5}{2}+m,\ \frac{1}{2},\ \frac{5}{2},\ -\text{Tan}\Big[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\ -\frac{(c-d)\ \text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\Big]-(c+d)\ (5+2\,m)$$

$$\text{AppellF1}\Big[\frac{3}{2},\ \frac{7}{2}+m,\ -\frac{1}{2},\ \frac{5}{2},\ -\text{Tan}\Big[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\ -\frac{(c-d)\ \text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\Big]\Bigg)\ \text{Sec}\Big[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2$$

$$\text{Tan}\Big[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]+3\ (c+d)\ \Bigg(\frac{1}{6\ (c+d)}(c-d)\ \text{AppellF1}\Big[\frac{3}{2},\ \frac{5}{2}+m,\ \frac{1}{2},\ \frac{5}{2},\ -\text{Tan}\Big[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,$$

$$-\frac{(c-d)\ \text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\Big]\ \text{Sec}\Big[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\ \text{Tan}\Big[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]-\frac{1}{3}\left(\frac{5}{2}+m\right)\ \text{AppellF1}\Big[\frac{3}{2},\ \frac{7}{2}+m,$$

$$-\frac{1}{2},\ \frac{5}{2},\ -\text{Tan}\Big[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\ -\frac{(c-d)\ \text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\Big]\ \text{Sec}\Big[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\ \text{Tan}\Big[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]\Bigg)+$$

$$\text{Tan}\Big[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\ \Bigg((c-d)\ \Bigg(-\frac{1}{10\ (c+d)}3\ (c-d)\ \text{AppellF1}\Big[\frac{5}{2},\ \frac{5}{2}+m,\ \frac{3}{2},\ \frac{7}{2},\ -\text{Tan}\Big[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,$$

$$-\frac{(c-d)\ \text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\Big]\ \text{Sec}\Big[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\ \text{Tan}\Big[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]-\frac{3}{5}\left(\frac{5}{2}+m\right)\ \text{AppellF1}\Big[\frac{5}{2},\ \frac{7}{2}+m,\ \frac{1}{2},$$

$$\frac{7}{2},\ -\text{Tan}\Big[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\ -\frac{(c-d)\ \text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\Big]\ \text{Sec}\Big[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\ \text{Tan}\Big[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]\Bigg)-$$

$$(c+d)\ (5+2\,m)\ \Bigg(\frac{1}{10\ (c+d)}3\ (c-d)\ \text{AppellF1}\Big[\frac{5}{2},\ \frac{7}{2}+m,\ \frac{1}{2},\ \frac{7}{2},\ -\text{Tan}\Big[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,$$

$$-\frac{(c-d)\ \text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\Big]\ \text{Sec}\Big[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\ \text{Tan}\Big[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]-\frac{3}{5}\left(\frac{7}{2}+m\right)\ \text{AppellF1}\Big[\frac{5}{2},\ \frac{9}{2}+m,\ -\frac{1}{2},$$

$$\frac{7}{2},\ -\text{Tan}\Big[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2,\ -\frac{(c-d)\ \text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\Big]\ \text{Sec}\Big[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]^2\ \text{Tan}\Big[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]\Bigg)\Bigg)\Bigg)\Bigg)\Bigg)\Bigg/$$

$$\left(3\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},\frac{5}{2}+m,-\frac{1}{2},\frac{3}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+\right.$$

$$\left((c-d)\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{2}+m,\frac{1}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]-(c+d)\,(5+2\,m)\right.$$

$$\left.\left.\text{AppellF1}\left[\frac{3}{2},\frac{7}{2}+m,-\frac{1}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right)\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^2+$$

$$\left(36\left(c^2\,C+A\,d^2\right)\text{AppellF1}\left[\frac{1}{2},\frac{5}{2}+m,\frac{1}{2},\frac{3}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right.$$

$$\left(\left((c-d)\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{2}+m,\frac{3}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+(c+d)\,(5+2\,m)\,\text{AppellF1}\left[\frac{3}{2},\right.\right.\right.$$

$$\left.\left.\frac{7}{2}+m,\frac{1}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right)\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-$$

$$3\,(c+d)\left(-\frac{1}{6\,(c+d)}(c-d)\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{2}+m,\frac{3}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right.$$

$$\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-\frac{1}{3}\left(\frac{5}{2}+m\right)\text{AppellF1}\left[\frac{3}{2},\frac{7}{2}+m,\frac{1}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\right.$$

$$\left.\left.-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\right)+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2$$

$$\left((c-d)\left(-\frac{1}{10\,(c+d)}9\,(c-d)\,\text{AppellF1}\left[\frac{5}{2},\frac{5}{2}+m,\frac{5}{2},\frac{7}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right.\right.$$

$$\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-\frac{3}{5}\left(\frac{5}{2}+m\right)\text{AppellF1}\left[\frac{5}{2},\frac{7}{2}+m,\frac{3}{2},\frac{7}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\right.$$

$$\left.\left.-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\right)+(c+d)\,(5+2\,m)$$

$$\left(-\frac{1}{10\,(c+d)}3\,(c-d)\,\text{AppellF1}\left[\frac{5}{2},\frac{7}{2}+m,\frac{3}{2},\frac{7}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right.$$

$$\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{3}{5}\left(\frac{7}{2}+m\right) \text{AppellF1}\left[\frac{5}{2},\ \frac{9}{2}+m,\ \frac{1}{2},\ \frac{7}{2},\right.$$

$$\left.-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\ -\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right] \text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\Bigg)\Bigg)\Bigg)\Bigg)\Bigg/$$

$$\Bigg(\left(c+d+c\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2-d\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\Bigg(-3\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},\ \frac{5}{2}+m,\ \frac{1}{2},\ \frac{3}{2},\right.$$

$$\left.-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\ -\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]+$$

$$\Bigg((c-d)\,\text{AppellF1}\left[\frac{3}{2},\ \frac{5}{2}+m,\ \frac{3}{2},\ \frac{5}{2},\ -\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\ -\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]+(c+d)\,(5+2\,m)$$

$$\text{AppellF1}\left[\frac{3}{2},\ \frac{7}{2}+m,\ \frac{1}{2},\ \frac{5}{2},\ -\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\ -\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\Bigg)\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)^2\Bigg)-$$

$$\Bigg(5\,(A+C)\,(c-d)\,\text{AppellF1}\left[\frac{3}{2},\ \frac{5}{2}+m,\ -\frac{1}{2},\ \frac{5}{2},\ -\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\ -\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]$$

$$\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg(\Bigg((c-d)\,\text{AppellF1}\left[\frac{5}{2},\ \frac{5}{2}+m,\ \frac{1}{2},\ \frac{7}{2},\ -\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\ -\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]-(c+d)$$

$$(5+2\,m)\,\text{AppellF1}\left[\frac{5}{2},\ \frac{7}{2}+m,\ -\frac{1}{2},\ \frac{7}{2},\ -\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\ -\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\Bigg)\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2$$

$$\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]+5\,(c+d)\,\Bigg(\frac{1}{10\,(c+d)}3\,(c-d)\,\text{AppellF1}\left[\frac{5}{2},\ \frac{5}{2}+m,\ \frac{1}{2},\ \frac{7}{2},\ -\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\right.$$

$$\left.-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{3}{5}\left(\frac{5}{2}+m\right)\text{AppellF1}\left[\frac{5}{2},\ \frac{7}{2}+m,\right.$$

$$\left.-\frac{1}{2},\ \frac{7}{2},\ -\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\ -\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\Bigg)+$$

$$\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg((c-d)\,\Bigg(-\frac{1}{14\,(c+d)}5\,(c-d)\,\text{AppellF1}\left[\frac{7}{2},\ \frac{5}{2}+m,\ \frac{3}{2},\ \frac{9}{2},\ -\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\right.$$

$$-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\Bigg]\ \text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{5}{7}\left(\frac{5}{2}+m\right)\text{AppellF1}\left[\frac{7}{2},\frac{7}{2}+m,\frac{1}{2},\right.$$

$$\left.\frac{9}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\Bigg)-$$

$$(c+d)\,(5+2m)\left(\frac{1}{14\,(c+d)}5\,(c-d)\,\text{AppellF1}\left[\frac{7}{2},\frac{7}{2}+m,\frac{1}{2},\frac{9}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\right.\right.$$

$$-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\Bigg]\ \text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{5}{7}\left(\frac{7}{2}+m\right)\text{AppellF1}\left[\frac{7}{2},\frac{9}{2}+m,-\frac{1}{2},\right.$$

$$\left.\left.\left.\left.\left.\frac{9}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)\right)\right)\right)\Big/$$

$$\left(5\,(c+d)\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{2}+m,-\frac{1}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]+\right.$$

$$\left((c-d)\,\text{AppellF1}\left[\frac{5}{2},\frac{5}{2}+m,\frac{1}{2},\frac{7}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]-(c+d)\,(5+2m)\right.$$

$$\left.\left.\left.\text{AppellF1}\left[\frac{5}{2},\frac{7}{2}+m,-\frac{1}{2},\frac{7}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\right)\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^2\right)\right)\right)$$

- **Problem 14: Result more than twice size of optimal antiderivative.**

$$\int\frac{(a+a\,\text{Sin}[e+f x])^m\left(A+C\,\text{Sin}[e+f x]^2\right)}{(c+d\,\text{Sin}[e+f x])^{3/2}}\,dx$$

Optimal (type 6, 413 leaves, 10 steps):

$$\frac{2\left(c^2 C+A d^2\right) \text{Cos}[e+f x] (a+a \text{Sin}[e+f x])^m}{d \left(c^2-d^2\right) f \sqrt{c+d \text{Sin}[e+f x]}}+$$

$$\left(\sqrt{2} \left(c (A+C) d-d^2 (A-C+4 A m)-2 c^2 (C+2 C m)\right) \text{AppellF1}\left[\frac{1}{2}+m,\frac{1}{2},\frac{1}{2},\frac{3}{2}+m,\frac{1}{2} (1+\text{Sin}[e+f x]),-\frac{d (1+\text{Sin}[e+f x])}{c-d}\right]\right.$$

$$\left.\text{Cos}[e+f x] (a+a \text{Sin}[e+f x])^m \sqrt{\frac{c+d \text{Sin}[e+f x]}{c-d}}\right)\bigg/\left(d \left(c^2-d^2\right) f (1+2 m) \sqrt{1-\text{Sin}[e+f x]} \sqrt{c+d \text{Sin}[e+f x]}\right)+$$

$$\left(\sqrt{2} \left(2 c^2 C (1+m)+d^2 (A-C+2 A m)\right) \text{AppellF1}\left[\frac{3}{2}+m,\frac{1}{2},\frac{1}{2},\frac{5}{2}+m,\frac{1}{2} (1+\text{Sin}[e+f x]),-\frac{d (1+\text{Sin}[e+f x])}{c-d}\right] \text{Cos}[e+f x]\right.$$

$$\left.(a+a \text{Sin}[e+f x])^{1+m} \sqrt{\frac{c+d \text{Sin}[e+f x]}{c-d}}\right)\bigg/\left(a d \left(c^2-d^2\right) f (3+2 m) \sqrt{1-\text{Sin}[e+f x]} \sqrt{c+d \text{Sin}[e+f x]}\right)$$

Result (type 6, 19675 leaves):

$$-\left(\left(6 (c+d) \text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{-1-2 m} \text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right] (a+a \text{Sin}[e+f x])^m\right.\right.$$

$$\left(-\frac{2 A \text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2 m}}{(c+d \text{Sin}[e+f x])^{3/2}}-\frac{C \text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2 m}}{(c+d \text{Sin}[e+f x])^{3/2}}-\frac{C \text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2 m} \text{Cos}\left[2\left(-e+\frac{\pi}{2}-f x\right)\right]}{(c+d \text{Sin}[e+f x])^{3/2}}\right)$$

$$\left(1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{-1-m} \sqrt{\frac{c+d+c \text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2-d \text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}}$$

$$\left(\left((A+C) \text{AppellF1}\left[\frac{1}{2},\frac{3}{2}+m,-\frac{1}{2},\frac{3}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d) \text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\right)\right/$$

$$\left(3 (c+d) \text{AppellF1}\left[\frac{1}{2},\frac{3}{2}+m,-\frac{1}{2},\frac{3}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d) \text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]+\right.$$

$$\left((c-d)\,\text{AppellF1}\left[\frac{3}{2},\frac{3}{2}+m,\frac{1}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]-\right.$$

$$\left.\left.(c+d)\,(3+2m)\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{2}+m,-\frac{1}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\right)\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)+$$

$$\frac{1}{\left(c+d+c\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2-d\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^2}\,4\left(\left(c\,C\,\text{AppellF1}\left[\frac{1}{2},\frac{3}{2}+m,\frac{1}{2},\frac{3}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\right.\right.\right.$$

$$\left.\left.-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\left(c+d+c\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2-d\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\right)\Big/$$

$$\left(-3\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},\frac{3}{2}+m,\frac{1}{2},\frac{3}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]+\right.$$

$$\left((c-d)\,\text{AppellF1}\left[\frac{3}{2},\frac{3}{2}+m,\frac{3}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]+(c+d)\,(3+2m)\right.$$

$$\left.\left.\text{AppellF1}\left[\frac{3}{2},\frac{5}{2}+m,\frac{1}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\right)\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)+$$

$$\left(A\,d\,\text{AppellF1}\left[\frac{1}{2},\frac{3}{2}+m,\frac{1}{2},\frac{3}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\left(c+d+c\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2-d\,\text{Tan}\left[\right.\right.\right.$$

$$\left.\left.\left.\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\right)\Big/\left(-3\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},\frac{3}{2}+m,\frac{1}{2},\frac{3}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]+\right.$$

$$\left((c-d)\,\text{AppellF1}\left[\frac{3}{2},\frac{3}{2}+m,\frac{3}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]+(c+d)\,(3+2m)\right.$$

$$\left.\left.\text{AppellF1}\left[\frac{3}{2},\frac{5}{2}+m,\frac{1}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\right)\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)-$$

$$\left(c^2\,C\,\text{AppellF1}\left[\frac{1}{2},\frac{3}{2}+m,\frac{3}{2},\frac{3}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\right)\Big/$$

$$\left(-3\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},\frac{3}{2}+m,\frac{3}{2},\frac{3}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+\right.$$

$$\left(3\,(c-d)\,\text{AppellF1}\left[\frac{3}{2},\frac{3}{2}+m,\frac{5}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+(c+d)\,(3+2\,m)\right.$$

$$\left.\left.\text{AppellF1}\left[\frac{3}{2},\frac{5}{2}+m,\frac{3}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right)\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)-$$

$$\left(A\,d^2\,\text{AppellF1}\left[\frac{1}{2},\frac{3}{2}+m,\frac{3}{2},\frac{3}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right)\Big/$$

$$\left(-3\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},\frac{3}{2}+m,\frac{3}{2},\frac{3}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+\right.$$

$$\left(3\,(c-d)\,\text{AppellF1}\left[\frac{3}{2},\frac{3}{2}+m,\frac{5}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+(c+d)\,(3+2\,m)\right.$$

$$\left.\left.\left.\left.\left.\text{AppellF1}\left[\frac{3}{2},\frac{5}{2}+m,\frac{3}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right)\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\right)\right)\right)\Big/$$

$$\left((c-d)^2\,f\left(-\frac{1}{(c-d)^2}\,12\,(c+d)\,(-1-m)\,\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\left(1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{-2-m}\right.\right.$$

$$\sqrt{\frac{c+d+c\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2-d\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}}$$

$$\left(\left((A+C)\,\text{AppellF1}\left[\frac{1}{2},\frac{3}{2}+m,-\frac{1}{2},\frac{3}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right)\Big/\right.$$

$$\left(3\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},\frac{3}{2}+m,-\frac{1}{2},\frac{3}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+\right.$$

$$\left(\left(c-d\right)\text{AppellF1}\left[\frac{3}{2},\frac{3}{2}+m,\frac{1}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]-(c+d)\,(3+2\,m)\right.$$

$$\left.\left.\text{AppellF1}\left[\frac{3}{2},\frac{5}{2}+m,-\frac{1}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right)\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)+$$

$$\frac{1}{\left(c+d+c\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2-d\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^2}\,4\left(\left(c\,C\,\text{AppellF1}\left[\frac{1}{2},\frac{3}{2}+m,\frac{1}{2},\frac{3}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\right.\right.\right.$$

$$\left.\left.-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\left(c+d+c\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2-d\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\right)\Big/$$

$$\left(-3\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},\frac{3}{2}+m,\frac{1}{2},\frac{3}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+\right.$$

$$\left(\left(c-d\right)\text{AppellF1}\left[\frac{3}{2},\frac{3}{2}+m,\frac{3}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+(c+d)\,(3+2\,m)\right.$$

$$\left.\left.\text{AppellF1}\left[\frac{3}{2},\frac{5}{2}+m,\frac{1}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right)\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)+$$

$$\left(A\,d\,\text{AppellF1}\left[\frac{1}{2},\frac{3}{2}+m,\frac{1}{2},\frac{3}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right.$$

$$\left.\left(c+d+c\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2-d\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\right)\Big/$$

$$\left(-3\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},\frac{3}{2}+m,\frac{1}{2},\frac{3}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+\right.$$

$$\left(\left(c-d\right)\text{AppellF1}\left[\frac{3}{2},\frac{3}{2}+m,\frac{3}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+(c+d)\,(3+2\,m)\right.$$

$$\text{AppellF1}\left[\frac{3}{2},\frac{5}{2}+m,\frac{1}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\Bigg)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)-$$

$$\left(c^2\,C\,\text{AppellF1}\left[\frac{1}{2},\frac{3}{2}+m,\frac{3}{2},\frac{3}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\right)\Bigg/$$

$$\Bigg(-3\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},\frac{3}{2}+m,\frac{3}{2},\frac{3}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]+$$

$$\Bigg(3\,(c-d)\,\text{AppellF1}\left[\frac{3}{2},\frac{3}{2}+m,\frac{5}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]+(c+d)\,(3+2\,m)$$

$$\text{AppellF1}\left[\frac{3}{2},\frac{5}{2}+m,\frac{3}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\Bigg)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)-$$

$$\left(A\,d^2\,\text{AppellF1}\left[\frac{1}{2},\frac{3}{2}+m,\frac{3}{2},\frac{3}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\right)\Bigg/$$

$$\Bigg(-3\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},\frac{3}{2}+m,\frac{3}{2},\frac{3}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]+$$

$$\Bigg(3\,(c-d)\,\text{AppellF1}\left[\frac{3}{2},\frac{3}{2}+m,\frac{5}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]+(c+d)\,(3+2\,m)$$

$$\text{AppellF1}\left[\frac{3}{2},\frac{5}{2}+m,\frac{3}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\Bigg)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)\Bigg)\Bigg)-$$

$$\frac{1}{(c-d)^2}\,6\,(c+d)\,\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\left(1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{-1-m}\sqrt{\frac{c+d+c\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2-d\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}}$$

$$\left(\left((A+C)\,\text{AppellF1}\left[\frac{1}{2},\frac{3}{2}+m,-\frac{1}{2},\frac{3}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\right)\Bigg/\right.$$

$$\Bigg(3\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},\frac{3}{2}+m,-\frac{1}{2},\frac{3}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]+$$

$$\Bigl((c-d)\,\text{AppellF1}\left[\frac{3}{2},\frac{3}{2}+m,\frac{1}{2},\frac{5}{2},-\tan\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\tan\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]-(c+d)\,(3+2m)$$

$$\text{AppellF1}\left[\frac{3}{2},\frac{5}{2}+m,-\frac{1}{2},\frac{5}{2},-\tan\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\tan\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\Bigr)\tan\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigr)+$$

$$\frac{1}{\left(c+d+c\tan\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2-d\tan\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^2}\,4\,\Bigl(\Bigl(c\,C\,\text{AppellF1}\left[\frac{1}{2},\frac{3}{2}+m,\frac{1}{2},\frac{3}{2},-\tan\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\right.$$

$$\left.-\frac{(c-d)\tan\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\left(c+d+c\tan\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2-d\tan\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\Bigr)\Big/$$

$$\Bigl(-3\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},\frac{3}{2}+m,\frac{1}{2},\frac{3}{2},-\tan\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\tan\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]+$$

$$\Bigl((c-d)\,\text{AppellF1}\left[\frac{3}{2},\frac{3}{2}+m,\frac{3}{2},\frac{5}{2},-\tan\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\tan\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]+(c+d)\,(3+2m)$$

$$\text{AppellF1}\left[\frac{3}{2},\frac{5}{2}+m,\frac{1}{2},\frac{5}{2},-\tan\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\tan\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\Bigr)\tan\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigr)+$$

$$\Bigl(A\,d\,\text{AppellF1}\left[\frac{1}{2},\frac{3}{2}+m,\frac{1}{2},\frac{3}{2},-\tan\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\tan\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]$$

$$\left(c+d+c\tan\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2-d\tan\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\Bigr)\Big/$$

$$\Bigl(-3\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},\frac{3}{2}+m,\frac{1}{2},\frac{3}{2},-\tan\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\tan\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]+$$

$$\Bigl((c-d)\,\text{AppellF1}\left[\frac{3}{2},\frac{3}{2}+m,\frac{3}{2},\frac{5}{2},-\tan\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\tan\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]+(c+d)\,(3+2m)$$

$$\text{AppellF1}\left[\frac{3}{2},\frac{5}{2}+m,\frac{1}{2},\frac{5}{2},-\tan\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\tan\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\Bigr)\tan\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigr)-$$

$$\left(c^2\,C\,\text{AppellF1}\left[\frac{1}{2},\frac{3}{2}+m,\frac{3}{2},\frac{3}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right)\Big/$$

$$\left(-3\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},\frac{3}{2}+m,\frac{3}{2},\frac{3}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+\right.$$

$$\left(3\,(c-d)\,\text{AppellF1}\left[\frac{3}{2},\frac{3}{2}+m,\frac{5}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+(c+d)\,(3+2\,m)\right.$$

$$\left.\left.\text{AppellF1}\left[\frac{3}{2},\frac{5}{2}+m,\frac{3}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right)\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)-$$

$$\left(A\,d^2\,\text{AppellF1}\left[\frac{1}{2},\frac{3}{2}+m,\frac{3}{2},\frac{3}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right)\Big/$$

$$\left(-3\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},\frac{3}{2}+m,\frac{3}{2},\frac{3}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+\right.$$

$$\left(3\,(c-d)\,\text{AppellF1}\left[\frac{3}{2},\frac{3}{2}+m,\frac{5}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+(c+d)\,(3+2\,m)\right.$$

$$\left.\left.\left.\text{AppellF1}\left[\frac{3}{2},\frac{5}{2}+m,\frac{3}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right)\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\right)\right)-$$

$$\frac{1}{(c-d)^2\sqrt{\frac{c+d+c\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2-d\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}}}\,6\,(c+d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\left(1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{-1-m}$$

$$\left(\frac{c\,\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-d\,\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]}{1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}-\right.$$

$$\left.\left(\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\left(c+d+c\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2-d\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\right)\Big/\right.$$

$$\left.\left(1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^2\right)$$

$$\left(\left(\left((A+C)\,\text{AppellF1}\left[\frac{1}{2},\frac{3}{2}+m,-\frac{1}{2},\frac{3}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right)\right/$$

$$\left(3\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},\frac{3}{2}+m,-\frac{1}{2},\frac{3}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+\right.$$

$$\left((c-d)\,\text{AppellF1}\left[\frac{3}{2},\frac{3}{2}+m,\frac{1}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]-(c+d)\,(3+2\,m)\right.$$

$$\left.\left.\text{AppellF1}\left[\frac{3}{2},\frac{5}{2}+m,-\frac{1}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right)\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)+$$

$$\frac{1}{\left(c+d+c\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2-d\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^2}\,4\left(\left(\left(c\,C\,\text{AppellF1}\left[\frac{1}{2},\frac{3}{2}+m,\frac{1}{2},\frac{3}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\right.\right.\right.\right.$$

$$\left.\left.-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\left(c+d+c\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2-d\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\right)\right/$$

$$\left(-3\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},\frac{3}{2}+m,\frac{1}{2},\frac{3}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+\right.$$

$$\left((c-d)\,\text{AppellF1}\left[\frac{3}{2},\frac{3}{2}+m,\frac{3}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+(c+d)\,(3+2\,m)\right.$$

$$\left.\left.\text{AppellF1}\left[\frac{3}{2},\frac{5}{2}+m,\frac{1}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right)\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)+$$

$$\left(A\,d\,\text{AppellF1}\left[\frac{1}{2},\frac{3}{2}+m,\frac{1}{2},\frac{3}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right.$$

$$\left.\left(c+d+c\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2-d\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\right)\right/$$

$$\left(-3\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},\frac{3}{2}+m,\frac{1}{2},\frac{3}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+\right.$$

$$\left((c-d)\,\text{AppellF1}\left[\frac{3}{2},\frac{3}{2}+m,\frac{3}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]+(c+d)\,(3+2m)\right.$$

$$\left.\text{AppellF1}\left[\frac{3}{2},\frac{5}{2}+m,\frac{1}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\right)\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)-$$

$$\left(c^2\,C\,\text{AppellF1}\left[\frac{1}{2},\frac{3}{2}+m,\frac{3}{2},\frac{3}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\right)\Big/$$

$$\left(-3\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},\frac{3}{2}+m,\frac{3}{2},\frac{3}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]+\right.$$

$$\left(3\,(c-d)\,\text{AppellF1}\left[\frac{3}{2},\frac{3}{2}+m,\frac{5}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]+(c+d)\,(3+2m)\right.$$

$$\left.\left.\text{AppellF1}\left[\frac{3}{2},\frac{5}{2}+m,\frac{3}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\right)\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)-$$

$$\left(A\,d^2\,\text{AppellF1}\left[\frac{1}{2},\frac{3}{2}+m,\frac{3}{2},\frac{3}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\right)\Big/$$

$$\left(-3\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},\frac{3}{2}+m,\frac{3}{2},\frac{3}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]+\right.$$

$$\left(3\,(c-d)\,\text{AppellF1}\left[\frac{3}{2},\frac{3}{2}+m,\frac{5}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]+(c+d)\,(3+2m)\right.$$

$$\left.\left.\text{AppellF1}\left[\frac{3}{2},\frac{5}{2}+m,\frac{3}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\right)\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\Bigg)\Bigg)-$$

$$\frac{1}{(c-d)^2}\,12\,(c+d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\left(1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{-1-m}\sqrt{\frac{c+d+c\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2-d\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}}$$

$$\left(\left((A+C)\left(\frac{1}{6\,(c+d)}(c-d)\,\text{AppellF1}\left[\frac{3}{2},\frac{3}{2}+m,\frac{1}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\right.\right.\right.$$

$$\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-\frac{1}{3}\left(\frac{3}{2}+m\right)\text{AppellF1}\left[\frac{3}{2},\frac{5}{2}+m,-\frac{1}{2},\frac{5}{2},\right.$$

$$\left.-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\Bigg)\Bigg)\Bigg/$$

$$\left(3\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},\frac{3}{2}+m,-\frac{1}{2},\frac{3}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+\right.$$

$$\left((c-d)\,\text{AppellF1}\left[\frac{3}{2},\frac{3}{2}+m,\frac{1}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]-(c+d)\,(3+2\,m)\right.$$

$$\left.\left.\text{AppellF1}\left[\frac{3}{2},\frac{5}{2}+m,-\frac{1}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right)\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)-$$

$$\frac{1}{\left(c+d+c\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2-d\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^3}\,8\left(c\,\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-d\right.$$

$$\left.\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\right)\left(\left(c\,C\,\text{AppellF1}\left[\frac{1}{2},\frac{3}{2}+m,\frac{1}{2},\frac{3}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\right.\right.\right.$$

$$\left.\left.-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\left(c+d+c\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2-d\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\right)\Bigg/$$

$$\left(-3\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},\frac{3}{2}+m,\frac{1}{2},\frac{3}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+\right.$$

$$\left((c-d)\,\text{AppellF1}\left[\frac{3}{2},\frac{3}{2}+m,\frac{3}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+(c+d)\,(3+2\,m)\right.$$

$$\left.\left.\text{AppellF1}\left[\frac{3}{2},\frac{5}{2}+m,\frac{1}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right)\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)+$$

$$\left(A\,d\,\text{AppellF1}\left[\frac{1}{2},\frac{3}{2}+m,\frac{1}{2},\frac{3}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right.$$

$$\left.\left(c+d+c\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2-d\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\right)\Bigg/$$

$$\left(-3\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},\,\frac{3}{2}+m,\,\frac{1}{2},\,\frac{3}{2},\,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+\right.$$

$$\left((c-d)\,\text{AppellF1}\left[\frac{3}{2},\,\frac{3}{2}+m,\,\frac{3}{2},\,\frac{5}{2},\,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+(c+d)\,(3+2\,m)\right.$$

$$\left.\left.\text{AppellF1}\left[\frac{3}{2},\,\frac{5}{2}+m,\,\frac{1}{2},\,\frac{5}{2},\,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right)\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)-$$

$$\left(c^2\,C\,\text{AppellF1}\left[\frac{1}{2},\,\frac{3}{2}+m,\,\frac{3}{2},\,\frac{3}{2},\,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right)\Big/$$

$$\left(-3\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},\,\frac{3}{2}+m,\,\frac{3}{2},\,\frac{3}{2},\,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+\right.$$

$$\left(3\,(c-d)\,\text{AppellF1}\left[\frac{3}{2},\,\frac{3}{2}+m,\,\frac{5}{2},\,\frac{5}{2},\,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+(c+d)\,(3+2\,m)\right.$$

$$\left.\left.\text{AppellF1}\left[\frac{3}{2},\,\frac{5}{2}+m,\,\frac{3}{2},\,\frac{5}{2},\,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right)\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)-$$

$$\left(A\,d^2\,\text{AppellF1}\left[\frac{1}{2},\,\frac{3}{2}+m,\,\frac{3}{2},\,\frac{3}{2},\,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right)\Big/$$

$$\left(-3\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},\,\frac{3}{2}+m,\,\frac{3}{2},\,\frac{3}{2},\,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+\right.$$

$$\left(3\,(c-d)\,\text{AppellF1}\left[\frac{3}{2},\,\frac{3}{2}+m,\,\frac{5}{2},\,\frac{5}{2},\,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+(c+d)\,(3+2\,m)\right.$$

$$\left.\left.\left.\text{AppellF1}\left[\frac{3}{2},\,\frac{5}{2}+m,\,\frac{3}{2},\,\frac{5}{2},\,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right)\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\right)-$$

$$\left((A+C)\,\text{AppellF1}\left[\frac{1}{2},\,\frac{3}{2}+m,\,-\frac{1}{2},\,\frac{3}{2},\,-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right.$$

$$\Bigg(\Bigg((c-d)\,\text{AppellF1}\left[\frac{3}{2},\ \frac{3}{2}+m,\ \frac{1}{2},\ \frac{5}{2},\ -\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]-(c+d)\,(3+2\,m)$$

$$\text{AppellF1}\left[\frac{3}{2},\ \frac{5}{2}+m,\ -\frac{1}{2},\ \frac{5}{2},\ -\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\Bigg)\,\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2$$

$$\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]+3\,(c+d)\,\Bigg(\frac{1}{6\,(c+d)}(c-d)\,\text{AppellF1}\left[\frac{3}{2},\ \frac{3}{2}+m,\ \frac{1}{2},\ \frac{5}{2},\ -\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\right.$$

$$\left.-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\,\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-\frac{1}{3}\left(\frac{3}{2}+m\right)\,\text{AppellF1}\left[\frac{3}{2},\ \frac{5}{2}+m,\right.$$

$$\left.-\frac{1}{2},\ \frac{5}{2},\ -\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\,\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\Bigg)+$$

$$\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,\Bigg((c-d)\,\Bigg(-\frac{1}{10\,(c+d)}3\,(c-d)\,\text{AppellF1}\left[\frac{5}{2},\ \frac{3}{2}+m,\ \frac{3}{2},\ \frac{7}{2},\ -\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\right.$$

$$\left.-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\,\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-\frac{3}{5}\left(\frac{3}{2}+m\right)\,\text{AppellF1}\left[\frac{5}{2},\ \frac{5}{2}+m,\ \frac{1}{2},\right.$$

$$\left.\frac{7}{2},\ -\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\,\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\Bigg)-$$

$$(c+d)\,(3+2\,m)\,\Bigg(\frac{1}{10\,(c+d)}3\,(c-d)\,\text{AppellF1}\left[\frac{5}{2},\ \frac{5}{2}+m,\ \frac{1}{2},\ \frac{7}{2},\ -\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\right.$$

$$\left.-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\,\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-\frac{3}{5}\left(\frac{5}{2}+m\right)\,\text{AppellF1}\left[\frac{5}{2},\ \frac{7}{2}+m,\ -\frac{1}{2},\right.$$

$$\left.\frac{7}{2},\ -\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\,\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\Bigg)\Bigg)\Bigg)\Bigg)\Bigg)\Bigg/$$

$$\Bigg(3\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},\ \frac{3}{2}+m,\ -\frac{1}{2},\ \frac{3}{2},\ -\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+$$

$$\Bigg((c-d)\,\text{AppellF1}\left[\frac{3}{2},\ \frac{3}{2}+m,\ \frac{1}{2},\ \frac{5}{2},\ -\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]-$$

$$(c+d)\,(3+2m)\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{2}+m,-\frac{1}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\Bigg)$$

$$\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)^2+\frac{1}{\left(c+d+c\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2-d\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^2}$$

$$4\Bigg(\Bigg(c\,C\,\text{AppellF1}\left[\frac{1}{2},\frac{3}{2}+m,\frac{1}{2},\frac{3}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]$$

$$\left(c\,\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]-d\,\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)\Bigg)\Bigg/$$

$$\Bigg(-3\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},\frac{3}{2}+m,\frac{1}{2},\frac{3}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]+$$

$$\Bigg((c-d)\,\text{AppellF1}\left[\frac{3}{2},\frac{3}{2}+m,\frac{3}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]+(c+d)\,(3+2m)$$

$$\text{AppellF1}\left[\frac{3}{2},\frac{5}{2}+m,\frac{1}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\Bigg)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)+$$

$$\Bigg(A\,d\,\text{AppellF1}\left[\frac{1}{2},\frac{3}{2}+m,\frac{1}{2},\frac{3}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]$$

$$\left(c\,\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]-d\,\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)\Bigg)\Bigg/$$

$$\Bigg(-3\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},\frac{3}{2}+m,\frac{1}{2},\frac{3}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]+$$

$$\Bigg((c-d)\,\text{AppellF1}\left[\frac{3}{2},\frac{3}{2}+m,\frac{3}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]+(c+d)\,(3+2m)$$

$$\text{AppellF1}\left[\frac{3}{2},\frac{5}{2}+m,\frac{1}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\Bigg)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)+$$

$$\Bigg(c\,C\,\Bigg(-\frac{1}{6\,(c+d)}(c-d)\,\text{AppellF1}\Big[\frac{3}{2},\frac{3}{2}+m,\frac{3}{2},\frac{5}{2},-\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,-\frac{(c-d)\,\text{Tan}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f\,x\big)\big]^2}{c+d}\Big]$$

$$\text{Sec}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]-\frac{1}{3}\Big(\frac{3}{2}+m\Big)\,\text{AppellF1}\Big[\frac{3}{2},\frac{5}{2}+m,\frac{1}{2},\frac{5}{2},$$

$$-\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,-\frac{(c-d)\,\text{Tan}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f\,x\big)\big]^2}{c+d}\Big]\,\text{Sec}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2$$

$$\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\Bigg)\Bigg(c+d+c\,\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2-d\,\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Bigg)\Bigg)\Big/$$

$$\Bigg(-3\,(c+d)\,\text{AppellF1}\Big[\frac{1}{2},\frac{3}{2}+m,\frac{1}{2},\frac{3}{2},-\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,-\frac{(c-d)\,\text{Tan}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f\,x\big)\big]^2}{c+d}\Big]+$$

$$\Bigg((c-d)\,\text{AppellF1}\Big[\frac{3}{2},\frac{3}{2}+m,\frac{3}{2},\frac{5}{2},-\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,-\frac{(c-d)\,\text{Tan}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f\,x\big)\big]^2}{c+d}\Big]+(c+d)\,(3+2\,m)$$

$$\text{AppellF1}\Big[\frac{3}{2},\frac{5}{2}+m,\frac{1}{2},\frac{5}{2},-\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,-\frac{(c-d)\,\text{Tan}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f\,x\big)\big]^2}{c+d}\Big]\Bigg)\,\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Bigg)+$$

$$\Bigg(A\,d\,\Bigg(-\frac{1}{6\,(c+d)}(c-d)\,\text{AppellF1}\Big[\frac{3}{2},\frac{3}{2}+m,\frac{3}{2},\frac{5}{2},-\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,-\frac{(c-d)\,\text{Tan}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f\,x\big)\big]^2}{c+d}\Big]$$

$$\text{Sec}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\,\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]-\frac{1}{3}\Big(\frac{3}{2}+m\Big)\,\text{AppellF1}\Big[\frac{3}{2},\frac{5}{2}+m,\frac{1}{2},\frac{5}{2},$$

$$-\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,-\frac{(c-d)\,\text{Tan}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f\,x\big)\big]^2}{c+d}\Big]\,\text{Sec}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2$$

$$\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\Bigg)\Bigg(c+d+c\,\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2-d\,\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Bigg)\Bigg)\Big/$$

$$\Bigg(-3\,(c+d)\,\text{AppellF1}\Big[\frac{1}{2},\frac{3}{2}+m,\frac{1}{2},\frac{3}{2},-\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,-\frac{(c-d)\,\text{Tan}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f\,x\big)\big]^2}{c+d}\Big]+$$

$$\Bigg((c-d)\,\text{AppellF1}\Big[\frac{3}{2},\frac{3}{2}+m,\frac{3}{2},\frac{5}{2},-\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,-\frac{(c-d)\,\text{Tan}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f\,x\big)\big]^2}{c+d}\Big]+(c+d)\,(3+2\,m)$$

$$\text{AppellF1}\left[\frac{3}{2},\ \frac{5}{2}+m,\ \frac{1}{2},\ \frac{5}{2},\ -\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\Bigg)\ \text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Bigg)\ -$$

$$\Bigg(c^2\,C\,\Bigg(-\frac{1}{2\,(c+d)}(c-d)\ \text{AppellF1}\left[\frac{3}{2},\ \frac{3}{2}+m,\ \frac{5}{2},\ \frac{5}{2},\ -\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]$$

$$\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-\frac{1}{3}\left(\frac{3}{2}+m\right)\text{AppellF1}\Big[\frac{3}{2},\ \frac{5}{2}+m,\ \frac{3}{2},\ \frac{5}{2},$$

$$-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\Big]\ \text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\Bigg)\Bigg)\Big/$$

$$\Bigg(-3\,(c+d)\ \text{AppellF1}\left[\frac{1}{2},\ \frac{3}{2}+m,\ \frac{3}{2},\ \frac{3}{2},\ -\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+$$

$$\Bigg(3\,(c-d)\ \text{AppellF1}\left[\frac{3}{2},\ \frac{3}{2}+m,\ \frac{5}{2},\ \frac{5}{2},\ -\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+(c+d)\ (3+2\,m)$$

$$\text{AppellF1}\left[\frac{3}{2},\ \frac{5}{2}+m,\ \frac{3}{2},\ \frac{5}{2},\ -\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\Bigg)\ \text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Bigg)\ -$$

$$\Bigg(A\,d^2\,\Bigg(-\frac{1}{2\,(c+d)}(c-d)\ \text{AppellF1}\left[\frac{3}{2},\ \frac{3}{2}+m,\ \frac{5}{2},\ \frac{5}{2},\ -\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]$$

$$\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-\frac{1}{3}\left(\frac{3}{2}+m\right)\text{AppellF1}\Big[\frac{3}{2},\ \frac{5}{2}+m,\ \frac{3}{2},\ \frac{5}{2},$$

$$-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\Big]\ \text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\Bigg)\Bigg)\Big/$$

$$\Bigg(-3\,(c+d)\ \text{AppellF1}\left[\frac{1}{2},\ \frac{3}{2}+m,\ \frac{3}{2},\ \frac{3}{2},\ -\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+$$

$$\Bigg(3\,(c-d)\ \text{AppellF1}\left[\frac{3}{2},\ \frac{3}{2}+m,\ \frac{5}{2},\ \frac{5}{2},\ -\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+(c+d)\ (3+2\,m)$$

$$\text{AppellF1}\left[\frac{3}{2},\ \frac{5}{2}+m,\ \frac{3}{2},\ \frac{5}{2},\ -\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\Bigg)\ \text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Bigg)\ -$$

$$\left(c\,C\,\text{AppellF1}\left[\frac{1}{2},\frac{3}{2}+m,\frac{1}{2},\frac{3}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right.$$

$$\left(c+d+c\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2-d\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\Bigg/\left(\left((c-d)\,\text{AppellF1}\left[\frac{3}{2},\frac{3}{2}+m,\frac{3}{2},\frac{5}{2},\right.\right.\right.$$

$$-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+(c+d)\,(3+2\,m)\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{2}+m,\frac{1}{2},\frac{5}{2},\right.$$

$$\left.\left.-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right)\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-$$

$$3\,(c+d)\left(-\frac{1}{6\,(c+d)}(c-d)\,\text{AppellF1}\left[\frac{3}{2},\frac{3}{2}+m,\frac{3}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right.$$

$$\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-\frac{1}{3}\left(\frac{3}{2}+m\right)\text{AppellF1}\left[\frac{3}{2},\frac{5}{2}+m,\frac{1}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\right.$$

$$\left.\left.-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\right)+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2$$

$$\left((c-d)\left(-\frac{1}{10\,(c+d)}9\,(c-d)\,\text{AppellF1}\left[\frac{5}{2},\frac{3}{2}+m,\frac{5}{2},\frac{7}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right.\right.$$

$$\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-\frac{3}{5}\left(\frac{3}{2}+m\right)\text{AppellF1}\left[\frac{5}{2},\frac{5}{2}+m,\frac{3}{2},\frac{7}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\right.$$

$$\left.\left.-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\right)+(c+d)\,(3+2\,m)$$

$$\left(-\frac{1}{10\,(c+d)}3\,(c-d)\,\text{AppellF1}\left[\frac{5}{2},\frac{5}{2}+m,\frac{3}{2},\frac{7}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right.$$

$$\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-\frac{3}{5}\left(\frac{5}{2}+m\right)\text{AppellF1}\left[\frac{5}{2},\frac{7}{2}+m,\frac{1}{2},\frac{7}{2},\right.$$

$$\left.\left.\left.\left.\left.-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\right)\right)\right)\right)\right)\Bigg/$$

$$\left(-3\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},\frac{3}{2}+m,\frac{1}{2},\frac{3}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+\right.$$

$$\left((c-d)\,\text{AppellF1}\left[\frac{3}{2},\frac{3}{2}+m,\frac{3}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+(c+d)\,(3+2\,m)\right.$$

$$\left.\left.\text{AppellF1}\left[\frac{3}{2},\frac{5}{2}+m,\frac{1}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right)\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^2-$$

$$\left(A\,d\,\text{AppellF1}\left[\frac{1}{2},\frac{3}{2}+m,\frac{1}{2},\frac{3}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right.$$

$$\left(c+d+c\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2-d\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\left(\left((c-d)\,\text{AppellF1}\left[\frac{3}{2},\frac{3}{2}+m,\frac{3}{2},\frac{5}{2},\right.\right.\right.$$

$$-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+(c+d)\,(3+2\,m)\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{2}+m,\frac{1}{2},\frac{5}{2},$$

$$\left.\left.-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right)\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-$$

$$3\,(c+d)\left(-\frac{1}{6\,(c+d)}(c-d)\,\text{AppellF1}\left[\frac{3}{2},\frac{3}{2}+m,\frac{3}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right.$$

$$\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-\frac{1}{3}\left(\frac{3}{2}+m\right)\text{AppellF1}\left[\frac{3}{2},\frac{5}{2}+m,\frac{1}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\right.$$

$$\left.\left.-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\right)+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2$$

$$\left((c-d)\left(-\frac{1}{10\,(c+d)}9\,(c-d)\,\text{AppellF1}\left[\frac{5}{2},\frac{3}{2}+m,\frac{5}{2},\frac{7}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right.\right.$$

$$\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-\frac{3}{5}\left(\frac{3}{2}+m\right)\text{AppellF1}\left[\frac{5}{2},\frac{5}{2}+m,\frac{3}{2},\frac{7}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\right.$$

$$\left.-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\right)+(c+d)\,(3+2\,m)$$

$$\left(-\frac{1}{10\,(c+d)}3\,(c-d)\,\text{AppellF1}\left[\frac{5}{2},\frac{5}{2}+m,\frac{3}{2},\frac{7}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right.$$

$$\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-\frac{3}{5}\left(\frac{5}{2}+m\right)\text{AppellF1}\left[\frac{5}{2},\frac{7}{2}+m,\frac{1}{2},\frac{7}{2},\right.$$

$$\left.\left.-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\right)\Bigg)\Bigg)\Bigg)\Bigg/$$

$$\left(-3\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},\frac{3}{2}+m,\frac{1}{2},\frac{3}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+\right.$$

$$\left((c-d)\,\text{AppellF1}\left[\frac{3}{2},\frac{3}{2}+m,\frac{3}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+(c+d)\,(3+2\,m)\right.$$

$$\left.\left.\text{AppellF1}\left[\frac{3}{2},\frac{5}{2}+m,\frac{1}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right)\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^2+$$

$$\left(c^2\,C\,\text{AppellF1}\left[\frac{1}{2},\frac{3}{2}+m,\frac{3}{2},\frac{3}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\left(\left(3\,(c-d)\,\text{AppellF1}\left[\right.\right.\right.\right.$$

$$\frac{3}{2},\frac{3}{2}+m,\frac{5}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\Big]+(c+d)\,(3+2\,m)\,\text{AppellF1}\Big[\frac{3}{2},\frac{5}{2}+m,$$

$$\left.\frac{3}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\Bigg)\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-$$

$$3\,(c+d)\left(-\frac{1}{2\,(c+d)}(c-d)\,\text{AppellF1}\left[\frac{3}{2},\frac{3}{2}+m,\frac{5}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right.$$

$$\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-\frac{1}{3}\left(\frac{3}{2}+m\right)\text{AppellF1}\left[\frac{3}{2},\frac{5}{2}+m,\frac{3}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\right.$$

$$\left.\left.-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\right)+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2$$

$$\left(3\,(c-d)\left(-\frac{1}{2\,(c+d)}3\,(c-d)\,\text{AppellF1}\left[\frac{5}{2},\frac{3}{2}+m,\frac{7}{2},\frac{7}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right.\right.$$

$$\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{3}{5}\left(\frac{3}{2}+m\right) \text{AppellF1}\left[\frac{5}{2},\frac{5}{2}+m,\frac{5}{2},\frac{7}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\right.$$

$$\left.\left.-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)+(c+d)\,(3+2 m)$$

$$\left(-\frac{1}{10\,(c+d)}9\,(c-d)\,\text{AppellF1}\left[\frac{5}{2},\frac{5}{2}+m,\frac{5}{2},\frac{7}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\right.$$

$$\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{3}{5}\left(\frac{5}{2}+m\right) \text{AppellF1}\left[\frac{5}{2},\frac{7}{2}+m,\frac{3}{2},\frac{7}{2},\right.$$

$$\left.\left.\left.\left.\left.-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)\right)\right)\right)\Big/$$

$$\left(-3\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},\frac{3}{2}+m,\frac{3}{2},\frac{3}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]+\right.$$

$$\left(3\,(c-d)\,\text{AppellF1}\left[\frac{3}{2},\frac{3}{2}+m,\frac{5}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]+(c+d)\,(3+2 m)\right.$$

$$\left.\left.\text{AppellF1}\left[\frac{3}{2},\frac{5}{2}+m,\frac{3}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\right)\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^2+$$

$$\left(A\,d^2\,\text{AppellF1}\left[\frac{1}{2},\frac{3}{2}+m,\frac{3}{2},\frac{3}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\left(\left(3\,(c-d)\,\text{AppellF1}\left[\right.\right.\right.\right.$$

$$\frac{3}{2},\frac{3}{2}+m,\frac{5}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]+(c+d)\,(3+2 m)\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{2}+m,$$

$$\left.\frac{3}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\right)\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]-$$

$$3\,(c+d)\left(-\frac{1}{2\,(c+d)}(c-d)\,\text{AppellF1}\left[\frac{3}{2},\frac{3}{2}+m,\frac{5}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\right.$$

$$\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{1}{3}\left(\frac{3}{2}+m\right) \text{AppellF1}\left[\frac{3}{2},\frac{5}{2}+m,\frac{3}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\right.$$

$$-\frac{(c-d)\,\text{Tan}[\frac{1}{2}(-e+\frac{\pi}{2}-f\,x)]^2}{c+d}]\,\text{Sec}[\frac{1}{2}(-e+\frac{\pi}{2}-f\,x)]^2\,\text{Tan}[\frac{1}{2}(-e+\frac{\pi}{2}-f\,x)]\Big)+\text{Tan}[\frac{1}{2}(-e+\frac{\pi}{2}-f\,x)]^2$$

$$\Big(3\,(c-d)\,\Big(-\frac{1}{2\,(c+d)}3\,(c-d)\,\text{AppellF1}[\frac{5}{2},\,\frac{3}{2}+m,\,\frac{7}{2},\,\frac{7}{2},\,-\text{Tan}[\frac{1}{2}(-e+\frac{\pi}{2}-f\,x)]^2,\,-\frac{(c-d)\,\text{Tan}[\frac{1}{2}(-e+\frac{\pi}{2}-f\,x)]^2}{c+d}]$$

$$\text{Sec}[\frac{1}{2}(-e+\frac{\pi}{2}-f\,x)]^2\,\text{Tan}[\frac{1}{2}(-e+\frac{\pi}{2}-f\,x)]-\frac{3}{5}\,(\frac{3}{2}+m)\,\text{AppellF1}[\frac{5}{2},\,\frac{5}{2}+m,\,\frac{5}{2},\,\frac{7}{2},\,-\text{Tan}[\frac{1}{2}(-e+\frac{\pi}{2}-f\,x)]^2,$$

$$-\frac{(c-d)\,\text{Tan}[\frac{1}{2}(-e+\frac{\pi}{2}-f\,x)]^2}{c+d}]\,\text{Sec}[\frac{1}{2}(-e+\frac{\pi}{2}-f\,x)]^2\,\text{Tan}[\frac{1}{2}(-e+\frac{\pi}{2}-f\,x)]\Big)+(c+d)\,(3+2\,m)$$

$$\Big(-\frac{1}{10\,(c+d)}9\,(c-d)\,\text{AppellF1}[\frac{5}{2},\,\frac{5}{2}+m,\,\frac{5}{2},\,\frac{7}{2},\,-\text{Tan}[\frac{1}{2}(-e+\frac{\pi}{2}-f\,x)]^2,\,-\frac{(c-d)\,\text{Tan}[\frac{1}{2}(-e+\frac{\pi}{2}-f\,x)]^2}{c+d}]$$

$$\text{Sec}[\frac{1}{2}(-e+\frac{\pi}{2}-f\,x)]^2\,\text{Tan}[\frac{1}{2}(-e+\frac{\pi}{2}-f\,x)]-\frac{3}{5}\,(\frac{5}{2}+m)\,\text{AppellF1}[\frac{5}{2},\,\frac{7}{2}+m,\,\frac{3}{2},\,\frac{7}{2},$$

$$-\text{Tan}[\frac{1}{2}(-e+\frac{\pi}{2}-f\,x)]^2,\,-\frac{(c-d)\,\text{Tan}[\frac{1}{2}(-e+\frac{\pi}{2}-f\,x)]^2}{c+d}]\,\text{Sec}[\frac{1}{2}(-e+\frac{\pi}{2}-f\,x)]^2\,\text{Tan}[\frac{1}{2}(-e+\frac{\pi}{2}-f\,x)]\Big)\Big)\Big)\Big)\Big)\Big/$$

$$\Big(-3\,(c+d)\,\text{AppellF1}[\frac{1}{2},\,\frac{3}{2}+m,\,\frac{3}{2},\,\frac{3}{2},\,-\text{Tan}[\frac{1}{2}(-e+\frac{\pi}{2}-f\,x)]^2,\,-\frac{(c-d)\,\text{Tan}[\frac{1}{2}(-e+\frac{\pi}{2}-f\,x)]^2}{c+d}]+\Big(3\,(c-d)$$

$$\text{AppellF1}[\frac{3}{2},\,\frac{3}{2}+m,\,\frac{5}{2},\,\frac{5}{2},\,-\text{Tan}[\frac{1}{2}(-e+\frac{\pi}{2}-f\,x)]^2,\,-\frac{(c-d)\,\text{Tan}[\frac{1}{2}(-e+\frac{\pi}{2}-f\,x)]^2}{c+d}]+(c+d)\,(3+2\,m)\,\text{AppellF1}[$$

$$\frac{3}{2},\,\frac{5}{2}+m,\,\frac{3}{2},\,\frac{5}{2},\,-\text{Tan}[\frac{1}{2}(-e+\frac{\pi}{2}-f\,x)]^2,\,-\frac{(c-d)\,\text{Tan}[\frac{1}{2}(-e+\frac{\pi}{2}-f\,x)]^2}{c+d}]\Big)\,\text{Tan}[\frac{1}{2}(-e+\frac{\pi}{2}-f\,x)]^2\Big)^2\Big)\Big)\Big)\Big)\Big)$$

- **Problem 15: Result more than twice size of optimal antiderivative.**

$$\int\frac{(a+a\,\text{Sin}[e+f\,x])^m\,(A+C\,\text{Sin}[e+f\,x]^2)}{(c+d\,\text{Sin}[e+f\,x])^{5/2}}\,dx$$

Optimal (type 6, 424 leaves, 10 steps):

$$\frac{2\left(c^2 C+A d^2\right) \operatorname{Cos}[e+f x]\,(a+a \operatorname{Sin}[e+f x])^m}{3 d\left(c^2-d^2\right) f\,(c+d \operatorname{Sin}[e+f x])^{3/2}}+$$

$$\left(\sqrt{2}\left(3 c (A+C) d+d^2 (A+3 C-4 A m)-2 c^2 (C+2 C m)\right) \operatorname{AppellF1}\left[\frac{1}{2}+m,\frac{1}{2},\frac{3}{2},\frac{3}{2}+m,\frac{1}{2}(1+\operatorname{Sin}[e+f x]),-\frac{d(1+\operatorname{Sin}[e+f x])}{c-d}\right]\right.$$

$$\left.\operatorname{Cos}[e+f x]\,(a+a \operatorname{Sin}[e+f x])^m \sqrt{\frac{c+d \operatorname{Sin}[e+f x]}{c-d}}\right) \Big/ \left(3 (c-d)^2 d (c+d) f (1+2 m) \sqrt{1-\operatorname{Sin}[e+f x]}\,\sqrt{c+d \operatorname{Sin}[e+f x]}\right)+$$

$$\left(\sqrt{2}\left(2 c^2 C (1+m)-d^2 (A+3 C-2 A m)\right) \operatorname{AppellF1}\left[\frac{3}{2}+m,\frac{1}{2},\frac{3}{2},\frac{5}{2}+m,\frac{1}{2}(1+\operatorname{Sin}[e+f x]),-\frac{d(1+\operatorname{Sin}[e+f x])}{c-d}\right] \operatorname{Cos}[e+f x]\right.$$

$$\left.(a+a \operatorname{Sin}[e+f x])^{1+m} \sqrt{\frac{c+d \operatorname{Sin}[e+f x]}{c-d}}\right) \Big/ \left(3 a (c-d)^2 d (c+d) f (3+2 m) \sqrt{1-\operatorname{Sin}[e+f x]}\,\sqrt{c+d \operatorname{Sin}[e+f x]}\right)$$

Result (type 6, 25 117 leaves) : Display of huge result suppressed!

- **Problem 17: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int (a+a \operatorname{Sin}[e+f x])^m (c-c \operatorname{Sin}[e+f x])^n \left(A+B \operatorname{Sin}[e+f x]+C \operatorname{Sin}[e+f x]^2\right) dx$$

Optimal (type 5, 269 leaves, 6 steps) :

$$\left(2^{\frac{1}{2}+n} c\,((1+m+n) (C (1-m+n)+A (2+m+n))+(m-n) (C+2 C m+B (2+m+n))) \operatorname{Cos}[e+f x] \operatorname{Hypergeometric2F1}\left[\frac{1}{2}(1+2 m),\frac{1}{2}(1-2 n),\right.\right.$$

$$\left.\left.\frac{1}{2}(3+2 m),\frac{1}{2}(1+\operatorname{Sin}[e+f x])\right] (1-\operatorname{Sin}[e+f x])^{\frac{1}{2}-n} (a+a \operatorname{Sin}[e+f x])^m (c-c \operatorname{Sin}[e+f x])^{-1+n}\right) \Big/ (f (1+2 m) (1+m+n) (2+m+n))-$$

$$\frac{(C+2 C m+B (2+m+n)) \operatorname{Cos}[e+f x]\,(a+a \operatorname{Sin}[e+f x])^m (c-c \operatorname{Sin}[e+f x])^n}{f (1+m+n) (2+m+n)}+\frac{C \operatorname{Cos}[e+f x]\,(a+a \operatorname{Sin}[e+f x])^m (c-c \operatorname{Sin}[e+f x])^{1+n}}{c f (2+m+n)}$$

Result (type 6, 38 254 leaves) : Display of huge result suppressed!

- **Problem 18: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int (a+a \operatorname{Sin}[e+f x])^m (c-c \operatorname{Sin}[e+f x])^{5/2} \left(A+B \operatorname{Sin}[e+f x]+C \operatorname{Sin}[e+f x]^2\right) dx$$

Optimal (type 3, 435 leaves, 5 steps) :

$$-\frac{64\,c^3\left(B\left(45-8\,m-4\,m^2\right)-C\left(39-16\,m+4\,m^2\right)-A\left(63+32\,m+4\,m^2\right)\right)\,\mathrm{Cos}[e+f\,x]\,(a+a\,\mathrm{Sin}[e+f\,x])^m}{f\,(5+2\,m)\,(7+2\,m)\,(9+2\,m)\,\left(3+8\,m+4\,m^2\right)\sqrt{c-c\,\mathrm{Sin}[e+f\,x]}}-$$

$$\left(16\,c^2\left(B\left(45-8\,m-4\,m^2\right)-C\left(39-16\,m+4\,m^2\right)-A\left(63+32\,m+4\,m^2\right)\right)\,\mathrm{Cos}[e+f\,x]\,(a+a\,\mathrm{Sin}[e+f\,x])^m\sqrt{c-c\,\mathrm{Sin}[e+f\,x]}\right)\Big/$$
$$\left(f\,(7+2\,m)\,(9+2\,m)\,\left(15+16\,m+4\,m^2\right)\right)-$$
$$\left(2\,c\left(B\left(45-8\,m-4\,m^2\right)-C\left(39-16\,m+4\,m^2\right)-A\left(63+32\,m+4\,m^2\right)\right)\,\mathrm{Cos}[e+f\,x]\,(a+a\,\mathrm{Sin}[e+f\,x])^m\,(c-c\,\mathrm{Sin}[e+f\,x])^{3/2}\right)\Big/$$
$$(f\,(5+2\,m)\,(7+2\,m)\,(9+2\,m))-\frac{2\,(9\,B+2\,C+2\,B\,m+4\,C\,m)\,\mathrm{Cos}[e+f\,x]\,(a+a\,\mathrm{Sin}[e+f\,x])^m\,(c-c\,\mathrm{Sin}[e+f\,x])^{5/2}}{f\,(7+2\,m)\,(9+2\,m)}+$$
$$\frac{2\,C\,\mathrm{Cos}[e+f\,x]\,(a+a\,\mathrm{Sin}[e+f\,x])^m\,(c-c\,\mathrm{Sin}[e+f\,x])^{7/2}}{c\,f\,(9+2\,m)}$$

Result (type 3, 1029 leaves) :

$$\frac{1}{f\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^5}(a(1+\text{Sin}[e+f x]))^m(c-c\,\text{Sin}[e+f x])^{5/2}$$

$$\Bigg(\Bigg(\Big(18900 A-14175 B+12285 C+15648 A m-4140 B m+648 C m+5280 A m^2-832 B m^2+1416 C m^2+896 A m^3-208 B m^3+224 C m^3+64 A m^4-16 B m^4+16 C m^4\Big)\left(\left(\frac{1}{8}+\frac{i}{8}\right)\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\left(\frac{1}{8}-\frac{i}{8}\right)\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)\Bigg)\Big/((1+2 m)(3+2 m)(5+2 m)(7+2 m)(9+2 m))+$$

$$\Big(\Big(18900 A-14175 B+12285 C+15648 A m-4140 B m+648 C m+5280 A m^2-832 B m^2+1416 C m^2+896 A m^3-208 B m^3+224 C m^3+64 A m^4-16 B m^4+16 C m^4\Big)\left(\left(\frac{1}{8}-\frac{i}{8}\right)\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\left(\frac{1}{8}+\frac{i}{8}\right)\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)\Big)\Big/((1+2 m)(3+2 m)(5+2 m)(7+2 m)(9+2 m))+$$

$$\Big(\Big(3150 A-3465 B+3150 C+2356 A m-1706 B m+828 C m+584 A m^2-316 B m^2+200 C m^2+48 A m^3-24 B m^3+16 C m^3\Big)\left(\left(\frac{1}{8}-\frac{i}{8}\right)\text{Cos}\left[\frac{3}{2}(e+f x)\right]-\left(\frac{1}{8}+\frac{i}{8}\right)\text{Sin}\left[\frac{3}{2}(e+f x)\right]\right)\Big)\Big/((3+2 m)(5+2 m)(7+2 m)(9+2 m))+$$

$$\Big(\Big(3150 A-3465 B+3150 C+2356 A m-1706 B m+828 C m+584 A m^2-316 B m^2+200 C m^2+48 A m^3-24 B m^3+16 C m^3\Big)\left(\left(\frac{1}{8}+\frac{i}{8}\right)\text{Cos}\left[\frac{3}{2}(e+f x)\right]-\left(\frac{1}{8}-\frac{i}{8}\right)\text{Sin}\left[\frac{3}{2}(e+f x)\right]\right)\Big)\Big/((3+2 m)(5+2 m)(7+2 m)(9+2 m))+$$

$$\Big(\Big(126 A-315 B+378 C+64 A m-124 B m+88 C m+8 A m^2-12 B m^2+8 C m^2\Big)\left(\left(-\frac{1}{8}+\frac{i}{8}\right)\text{Cos}\left[\frac{5}{2}(e+f x)\right]-\left(\frac{1}{8}+\frac{i}{8}\right)\text{Sin}\left[\frac{5}{2}(e+f x)\right]\right)\Big)\Big/((5+2 m)(7+2 m)(9+2 m))+$$

$$\Big(\Big(126 A-315 B+378 C+64 A m-124 B m+88 C m+8 A m^2-12 B m^2+8 C m^2\Big)\left(\left(-\frac{1}{8}-\frac{i}{8}\right)\text{Cos}\left[\frac{5}{2}(e+f x)\right]-\left(\frac{1}{8}-\frac{i}{8}\right)\text{Sin}\left[\frac{5}{2}(e+f x)\right]\right)\Big)\Big/((5+2 m)(7+2 m)(9+2 m))+$$

$$\frac{(18 B-45 C+4 B m-6 C m)\left(\left(\frac{1}{16}-\frac{i}{16}\right)\text{Cos}\left[\frac{7}{2}(e+f x)\right]-\left(\frac{1}{16}+\frac{i}{16}\right)\text{Sin}\left[\frac{7}{2}(e+f x)\right]\right)}{(7+2 m)(9+2 m)}+$$

$$\frac{(18 B-45 C+4 B m-6 C m)\left(\left(\frac{1}{16}+\frac{i}{16}\right)\text{Cos}\left[\frac{7}{2}(e+f x)\right]-\left(\frac{1}{16}-\frac{i}{16}\right)\text{Sin}\left[\frac{7}{2}(e+f x)\right]\right)}{(7+2 m)(9+2 m)}+$$

$$\frac{\left(\frac{1}{16}+\frac{i}{16}\right)C\,\text{Cos}\left[\frac{9}{2}(e+f x)\right]+\left(\frac{1}{16}-\frac{i}{16}\right)C\,\text{Sin}\left[\frac{9}{2}(e+f x)\right]}{9+2 m}+\frac{\left(\frac{1}{16}-\frac{i}{16}\right)C\,\text{Cos}\left[\frac{9}{2}(e+f x)\right]+\left(\frac{1}{16}+\frac{i}{16}\right)C\,\text{Sin}\left[\frac{9}{2}(e+f x)\right]}{9+2 m}\Bigg)$$

- **Problem 19: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int(a+a\,\text{Sin}[e+f x])^m(c-c\,\text{Sin}[e+f x])^{3/2}\left(A+B\,\text{Sin}[e+f x]+C\,\text{Sin}[e+f x]^2\right)dx$$

Optimal (type 3, 322 leaves, 4 steps):

$$-\frac{8 c^2 \left(B \left(21-8 m-4 m^2\right)-C \left(19-8 m+4 m^2\right)-A \left(35+24 m+4 m^2\right)\right) \text{Cos}[e+f x] (a+a \text{Sin}[e+f x])^m}{f (5+2 m) (7+2 m) \left(3+8 m+4 m^2\right) \sqrt{c-c \text{Sin}[e+f x]}}-$$
$$\left(2 c \left(B \left(21-8 m-4 m^2\right)-C \left(19-8 m+4 m^2\right)-A \left(35+24 m+4 m^2\right)\right) \text{Cos}[e+f x] (a+a \text{Sin}[e+f x])^m \sqrt{c-c \text{Sin}[e+f x]}\right)\Big/$$
$$(f (3+2 m) (5+2 m) (7+2 m))-\frac{2 (7 B+2 C+2 B m+4 C m) \text{Cos}[e+f x] (a+a \text{Sin}[e+f x])^m (c-c \text{Sin}[e+f x])^{3/2}}{f (5+2 m) (7+2 m)}+$$
$$\frac{2 C \text{Cos}[e+f x] (a+a \text{Sin}[e+f x])^m (c-c \text{Sin}[e+f x])^{5/2}}{c f (7+2 m)}$$

Result (type 3, 719 leaves) :

$$\frac{1}{f \left(\text{Cos}\left[\frac{1}{2} (e+f x)\right]-\text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)^3}$$
$$(a (1+\text{Sin}[e+f x]))^m (c-c \text{Sin}[e+f x])^{3/2} \Bigg(\Bigg(\left(1260 A-840 B+735 C+1144 A m-128 B m-18 C m+336 A m^2+32 B m^2+100 C m^2+32 A m^3+8 C m^3\right)$$
$$\left(\left(\frac{1}{8}+\frac{i}{8}\right) \text{Cos}\left[\frac{1}{2} (e+f x)\right]+\left(\frac{1}{8}-\frac{i}{8}\right) \text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)\Bigg)\Big/ ((1+2 m) (3+2 m) (5+2 m) (7+2 m))+$$
$$\Bigg(\left(1260 A-840 B+735 C+1144 A m-128 B m-18 C m+336 A m^2+32 B m^2+100 C m^2+32 A m^3+8 C m^3\right)$$
$$\left(\left(\frac{1}{8}-\frac{i}{8}\right) \text{Cos}\left[\frac{1}{2} (e+f x)\right]+\left(\frac{1}{8}+\frac{i}{8}\right) \text{Sin}\left[\frac{1}{2} (e+f x)\right]\right)\Bigg)\Big/ ((1+2 m) (3+2 m) (5+2 m) (7+2 m))+$$
$$\Bigg(\left(140 A-210 B+175 C+96 A m-88 B m+16 C m+16 A m^2-8 B m^2+4 C m^2\right) \left(\left(\frac{1}{8}-\frac{i}{8}\right) \text{Cos}\left[\frac{3}{2} (e+f x)\right]-\left(\frac{1}{8}+\frac{i}{8}\right) \text{Sin}\left[\frac{3}{2} (e+f x)\right]\right)\Bigg)\Big/$$
$$((3+2 m) (5+2 m) (7+2 m))+$$
$$\Bigg(\left(140 A-210 B+175 C+96 A m-88 B m+16 C m+16 A m^2-8 B m^2+4 C m^2\right) \left(\left(\frac{1}{8}+\frac{i}{8}\right) \text{Cos}\left[\frac{3}{2} (e+f x)\right]-\left(\frac{1}{8}-\frac{i}{8}\right) \text{Sin}\left[\frac{3}{2} (e+f x)\right]\right)\Bigg)\Big/$$
$$((3+2 m) (5+2 m) (7+2 m))+\frac{(14 B-21 C+4 B m-2 C m) \left(\left(\frac{1}{8}+\frac{i}{8}\right) \text{Cos}\left[\frac{5}{2} (e+f x)\right]+\left(\frac{1}{8}-\frac{i}{8}\right) \text{Sin}\left[\frac{5}{2} (e+f x)\right]\right)}{(5+2 m) (7+2 m)}+$$
$$\frac{(14 B-21 C+4 B m-2 C m) \left(\left(\frac{1}{8}-\frac{i}{8}\right) \text{Cos}\left[\frac{5}{2} (e+f x)\right]+\left(\frac{1}{8}+\frac{i}{8}\right) \text{Sin}\left[\frac{5}{2} (e+f x)\right]\right)}{(5+2 m) (7+2 m)}+$$
$$\frac{\left(-\frac{1}{8}-\frac{i}{8}\right) C \text{Cos}\left[\frac{7}{2} (e+f x)\right]+\left(\frac{1}{8}-\frac{i}{8}\right) C \text{Sin}\left[\frac{7}{2} (e+f x)\right]}{7+2 m}+\frac{\left(-\frac{1}{8}+\frac{i}{8}\right) C \text{Cos}\left[\frac{7}{2} (e+f x)\right]+\left(\frac{1}{8}+\frac{i}{8}\right) C \text{Sin}\left[\frac{7}{2} (e+f x)\right]}{7+2 m}\Bigg)$$

- **Problem 21: Attempted integration timed out after 120 seconds.**

$$\int \frac{(a+a \text{Sin}[e+f x])^m \left(A+B \text{Sin}[e+f x]+C \text{Sin}[e+f x]^2\right)}{\sqrt{c-c \text{Sin}[e+f x]}} \, dx$$

Optimal (type 5, 170 leaves, 5 steps):

$$-\frac{2\,B\,\mathrm{Cos}[e+f\,x]\,(a+a\,\mathrm{Sin}[e+f\,x])^m}{f\,(1+2\,m)\,\sqrt{c-c\,\mathrm{Sin}[e+f\,x]}}+\frac{(A+B+C)\,\mathrm{Cos}[e+f\,x]\,\mathrm{Hypergeometric2F1}\left[1,\frac{1}{2}+m,\frac{3}{2}+m,\frac{1}{2}(1+\mathrm{Sin}[e+f\,x])\right](a+a\,\mathrm{Sin}[e+f\,x])^m}{f\,(1+2\,m)\,\sqrt{c-c\,\mathrm{Sin}[e+f\,x]}}-\frac{2\,C\,\mathrm{Cos}[e+f\,x]\,(a+a\,\mathrm{Sin}[e+f\,x])^{1+m}}{a\,f\,(3+2\,m)\,\sqrt{c-c\,\mathrm{Sin}[e+f\,x]}}$$

Result (type 1, 1 leaves):

???

Problem 22: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{(a+a\,\mathrm{Sin}[e+f\,x])^m\,\left(A+B\,\mathrm{Sin}[e+f\,x]+C\,\mathrm{Sin}[e+f\,x]^2\right)}{(c-c\,\mathrm{Sin}[e+f\,x])^{3/2}}\,dx$$

Optimal (type 5, 216 leaves, 5 steps):

$$\frac{(A+B+C)\,\mathrm{Cos}[e+f\,x]\,(a+a\,\mathrm{Sin}[e+f\,x])^{1+m}}{4\,a\,f\,(c-c\,\mathrm{Sin}[e+f\,x])^{3/2}}+\frac{(A+B+2\,A\,m+2\,B\,m+C\,(9+2\,m))\,\mathrm{Cos}[e+f\,x]\,(a+a\,\mathrm{Sin}[e+f\,x])^m}{4\,c\,f\,(1+2\,m)\,\sqrt{c-c\,\mathrm{Sin}[e+f\,x]}}+$$
$$\left((A\,(1-2\,m)-B\,(3+2\,m)-C\,(7+2\,m))\,\mathrm{Cos}[e+f\,x]\,\mathrm{Hypergeometric2F1}\left[1,\frac{1}{2}+m,\frac{3}{2}+m,\frac{1}{2}(1+\mathrm{Sin}[e+f\,x])\right](a+a\,\mathrm{Sin}[e+f\,x])^m\right)\Big/$$
$$\left(4\,c\,f\,(1+2\,m)\,\sqrt{c-c\,\mathrm{Sin}[e+f\,x]}\right)$$

Result (type 6, 23 229 leaves): Display of huge result suppressed!

Problem 23: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{(a+a\,\mathrm{Sin}[e+f\,x])^m\,\left(A+B\,\mathrm{Sin}[e+f\,x]+C\,\mathrm{Sin}[e+f\,x]^2\right)}{(c-c\,\mathrm{Sin}[e+f\,x])^{5/2}}\,dx$$

Optimal (type 5, 230 leaves, 5 steps):

$$\frac{(A+B+C)\,\mathrm{Cos}[e+f\,x]\,(a+a\,\mathrm{Sin}[e+f\,x])^{1+m}}{8\,a\,f\,(c-c\,\mathrm{Sin}[e+f\,x])^{5/2}}+\frac{(A\,(5-2\,m)-B\,(3+2\,m)-C\,(11+2\,m))\,\mathrm{Cos}[e+f\,x]\,(a+a\,\mathrm{Sin}[e+f\,x])^m}{16\,c\,f\,(c-c\,\mathrm{Sin}[e+f\,x])^{3/2}}-$$
$$\left(\left(B\,(5-8\,m-4\,m^2)-A\,(3-8\,m+4\,m^2)-C\,(19+24\,m+4\,m^2)\right)\mathrm{Cos}[e+f\,x]\right.$$
$$\left.\mathrm{Hypergeometric2F1}\left[1,\frac{1}{2}+m,\frac{3}{2}+m,\frac{1}{2}(1+\mathrm{Sin}[e+f\,x])\right](a+a\,\mathrm{Sin}[e+f\,x])^m\right)\Big/\left(32\,c^2\,f\,(1+2\,m)\,\sqrt{c-c\,\mathrm{Sin}[e+f\,x]}\right)$$

Result (type 6, 40 823 leaves): Display of huge result suppressed!

Problem 24: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int(a+a\,\mathrm{Sin}[e+f\,x])^m\,(c-c\,\mathrm{Sin}[e+f\,x])^{-2-m}\,\left(A+B\,\mathrm{Sin}[e+f\,x]+C\,\mathrm{Sin}[e+f\,x]^2\right)\,dx$$

Optimal (type 5, 232 leaves, 6 steps):

$$-\frac{1}{f\,(3+2m)}2^{-\frac{1}{2}-m}\,C\,\mathrm{Cos}[e+f\,x]^3\,\mathrm{Hypergeometric2F1}\left[\frac{1}{2}(3+2m),\frac{1}{2}(3+2m),\frac{1}{2}(5+2m),\frac{1}{2}(1+\mathrm{Sin}[e+f\,x])\right](1-\mathrm{Sin}[e+f\,x])^{\frac{1}{2}+m}(a+a\,\mathrm{Sin}[e+f\,x])^m(c-c\,\mathrm{Sin}[e+f\,x])^{-2-m}+\frac{(A+B+C)\,\mathrm{Cos}[e+f\,x]\,(a+a\,\mathrm{Sin}[e+f\,x])^{1+m}(c-c\,\mathrm{Sin}[e+f\,x])^{-2-m}}{2\,a\,f\,(3+2m)}+\frac{(A-B+C)\,\mathrm{Cos}[e+f\,x]\,(a+a\,\mathrm{Sin}[e+f\,x])^m(c-c\,\mathrm{Sin}[e+f\,x])^{-1-m}}{2\,c\,f\,(1+2m)}$$

Result (type 6, 7618 leaves):

$$-\Bigg(\Bigg(2^{-4-3m}\,\mathrm{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{-2m}\mathrm{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^3\left(\mathrm{Cos}\left[\frac{1}{2}(e+f\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}(e+f\,x)\right]\right)^{-2(-2-m)}(a+a\,\mathrm{Sin}[e+f\,x])^m$$

$$(c-c\,\mathrm{Sin}[e+f\,x])^{-2-m}\Bigg(-2\,A\,\mathrm{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2m}\left(\mathrm{Cos}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f\,x\right)\right]-\mathrm{Sin}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f\,x\right)\right]\right)^{-4-2m}-$$

$$C\,\mathrm{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2m}\left(\mathrm{Cos}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f\,x\right)\right]-\mathrm{Sin}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f\,x\right)\right]\right)^{-4-2m}-$$

$$C\,\mathrm{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2m}\mathrm{Cos}\left[2\left(-e+\frac{\pi}{2}-f\,x\right)\right]\left(\mathrm{Cos}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f\,x\right)\right]-\mathrm{Sin}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f\,x\right)\right]\right)^{-4-2m}-$$

$$2\,B\,\mathrm{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2m}\mathrm{Sin}[e+f\,x]\left(\mathrm{Cos}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f\,x\right)\right]-\mathrm{Sin}\left[\frac{\pi}{4}+\frac{1}{2}\left(e-\frac{\pi}{2}+f\,x\right)\right]\right)^{-4-2m}\Bigg)\left(\frac{1}{1+\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}\right)^{2m}$$

$$\left(\frac{\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]}{1+\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}\right)^{-2m}\Bigg(-\frac{(A+B+C)\,\mathrm{Hypergeometric2F1}\left[-\frac{3}{2}-m,-2m,-\frac{1}{2}-m,\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]}{3+2m}-\frac{1}{1+2m}$$

$$(3A-5B-13C)\,\mathrm{Hypergeometric2F1}\left[-\frac{1}{2}-m,-2m,\frac{1}{2}-m,\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2-\Bigg(64\,C\,(-3+2m)\,\mathrm{AppellF1}\Bigg[$$

$$\frac{1}{2}-m,-2m,1,\frac{3}{2}-m,\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Bigg]\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\left(1-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{2m}\Bigg)\Big/$$

$$\Bigg((-1+2m)\left(1+\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\Bigg((-3+2m)\,\mathrm{AppellF1}\left[\frac{1}{2}-m,-2m,1,\frac{3}{2}-m,\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+$$

$$2\Bigg(2\,m\,\mathrm{AppellF1}\left[\frac{3}{2}-m,1-2m,1,\frac{5}{2}-m,\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\mathrm{AppellF1}\Bigg[\frac{3}{2}-m,$$

$$-2m,2,\frac{5}{2}-m,\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Bigg]\Bigg)\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Bigg)\Bigg)-\frac{1}{3-8m+4m^2}$$

$$\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\Bigg((3A-5B-13C)\,(-3+2m)\,\mathrm{Hypergeometric2F1}\left[\frac{1}{2}-m,-2m,\frac{3}{2}-m,\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+$$

$$(A+B+C)\,(-1+2m)\,\text{Hypergeometric2F1}\Big[\tfrac{3}{2}-m,\,-2m,\,\tfrac{5}{2}-m,\,\text{Tan}\Big[\tfrac{1}{4}\Big(-e+\tfrac{\pi}{2}-f x\Big)\Big]^2\Big]\,\text{Tan}\Big[\tfrac{1}{4}\Big(-e+\tfrac{\pi}{2}-f x\Big)\Big]^2\Big)\Big)\Big)\Big/$$

$$\Bigg(f\Bigg(3\times 2^{-5-3m}\,\text{Cot}\Big[\tfrac{1}{4}\Big(-e+\tfrac{\pi}{2}-f x\Big)\Big]^2\,\text{Csc}\Big[\tfrac{1}{4}\Big(-e+\tfrac{\pi}{2}-f x\Big)\Big]^2\left(\frac{1}{1+\text{Tan}\big[\frac{1}{4}\big(-e+\frac{\pi}{2}-f x\big)\big]^2}\right)^{2m}\left(\frac{\text{Tan}\big[\frac{1}{4}\big(-e+\frac{\pi}{2}-f x\big)\big]}{1+\text{Tan}\big[\frac{1}{4}\big(-e+\frac{\pi}{2}-f x\big)\big]^2}\right)^{-2m}$$

$$\Bigg(-\frac{(A+B+C)\,\text{Hypergeometric2F1}\big[-\frac{3}{2}-m,\,-2m,\,-\frac{1}{2}-m,\,\text{Tan}\big[\frac{1}{4}\big(-e+\frac{\pi}{2}-f x\big)\big]^2\big]}{3+2m}-\frac{1}{1+2m}$$

$$(3A-5B-13C)\,\text{Hypergeometric2F1}\Big[-\tfrac{1}{2}-m,\,-2m,\,\tfrac{1}{2}-m,\,\text{Tan}\Big[\tfrac{1}{4}\Big(-e+\tfrac{\pi}{2}-f x\Big)\Big]^2\Big]\,\text{Tan}\Big[\tfrac{1}{4}\Big(-e+\tfrac{\pi}{2}-f x\Big)\Big]^2-\Big(64\,C\,(-3+2m)\,\text{AppellF1}\Big[$$

$$\tfrac{1}{2}-m,\,-2m,\,1,\,\tfrac{3}{2}-m,\,\text{Tan}\Big[\tfrac{1}{4}\Big(-e+\tfrac{\pi}{2}-f x\Big)\Big]^2,\,-\text{Tan}\Big[\tfrac{1}{4}\Big(-e+\tfrac{\pi}{2}-f x\Big)\Big]^2\Big]\,\text{Tan}\Big[\tfrac{1}{4}\Big(-e+\tfrac{\pi}{2}-f x\Big)\Big]^4\Big(1-\text{Tan}\Big[\tfrac{1}{4}\Big(-e+\tfrac{\pi}{2}-f x\Big)\Big]^2\Big)^{2m}\Big)\Big/$$

$$\Big((-1+2m)\Big(1+\text{Tan}\Big[\tfrac{1}{4}\Big(-e+\tfrac{\pi}{2}-f x\Big)\Big]^2\Big)\Big((-3+2m)\,\text{AppellF1}\Big[\tfrac{1}{2}-m,\,-2m,\,1,\,\tfrac{3}{2}-m,\,\text{Tan}\Big[\tfrac{1}{4}\Big(-e+\tfrac{\pi}{2}-f x\Big)\Big]^2,$$

$$-\text{Tan}\Big[\tfrac{1}{4}\Big(-e+\tfrac{\pi}{2}-f x\Big)\Big]^2\Big]+2\Big(2m\,\text{AppellF1}\Big[\tfrac{3}{2}-m,\,1-2m,\,1,\,\tfrac{5}{2}-m,\,\text{Tan}\Big[\tfrac{1}{4}\Big(-e+\tfrac{\pi}{2}-f x\Big)\Big]^2,\,-\text{Tan}\Big[\tfrac{1}{4}\Big(-e+\tfrac{\pi}{2}-f x\Big)\Big]^2\Big]+$$

$$\text{AppellF1}\Big[\tfrac{3}{2}-m,\,-2m,\,2,\,\tfrac{5}{2}-m,\,\text{Tan}\Big[\tfrac{1}{4}\Big(-e+\tfrac{\pi}{2}-f x\Big)\Big]^2,\,-\text{Tan}\Big[\tfrac{1}{4}\Big(-e+\tfrac{\pi}{2}-f x\Big)\Big]^2\Big]\Big)\,\text{Tan}\Big[\tfrac{1}{4}\Big(-e+\tfrac{\pi}{2}-f x\Big)\Big]^2\Big)\Big)-\frac{1}{3-8m+4m^2}$$

$$\text{Tan}\Big[\tfrac{1}{4}\Big(-e+\tfrac{\pi}{2}-f x\Big)\Big]^4\Big((3A-5B-13C)\,(-3+2m)\,\text{Hypergeometric2F1}\Big[\tfrac{1}{2}-m,\,-2m,\,\tfrac{3}{2}-m,\,\text{Tan}\Big[\tfrac{1}{4}\Big(-e+\tfrac{\pi}{2}-f x\Big)\Big]^2\Big]+$$

$$(A+B+C)\,(-1+2m)\,\text{Hypergeometric2F1}\Big[\tfrac{3}{2}-m,\,-2m,\,\tfrac{5}{2}-m,\,\text{Tan}\Big[\tfrac{1}{4}\Big(-e+\tfrac{\pi}{2}-f x\Big)\Big]^2\Big]\,\text{Tan}\Big[\tfrac{1}{4}\Big(-e+\tfrac{\pi}{2}-f x\Big)\Big]^2\Big)\Bigg)+$$

$$8^{-1-m}\,m\,\text{Csc}\Big[\tfrac{1}{4}\Big(-e+\tfrac{\pi}{2}-f x\Big)\Big]^2\left(\frac{1}{1+\text{Tan}\big[\frac{1}{4}\big(-e+\frac{\pi}{2}-f x\big)\big]^2}\right)^{1+2m}\left(\frac{\text{Tan}\big[\frac{1}{4}\big(-e+\frac{\pi}{2}-f x\big)\big]}{1+\text{Tan}\big[\frac{1}{4}\big(-e+\frac{\pi}{2}-f x\big)\big]^2}\right)^{-2m}$$

$$\Bigg(-\frac{(A+B+C)\,\text{Hypergeometric2F1}\big[-\frac{3}{2}-m,\,-2m,\,-\frac{1}{2}-m,\,\text{Tan}\big[\frac{1}{4}\big(-e+\frac{\pi}{2}-f x\big)\big]^2\big]}{3+2m}-\frac{1}{1+2m}$$

$$(3A-5B-13C)\,\text{Hypergeometric2F1}\Big[-\tfrac{1}{2}-m,\,-2m,\,\tfrac{1}{2}-m,\,\text{Tan}\Big[\tfrac{1}{4}\Big(-e+\tfrac{\pi}{2}-f x\Big)\Big]^2\Big]\,\text{Tan}\Big[\tfrac{1}{4}\Big(-e+\tfrac{\pi}{2}-f x\Big)\Big]^2-\Big(64\,C\,(-3+2m)\,\text{AppellF1}\Big[$$

$$\tfrac{1}{2}-m,\,-2m,\,1,\,\tfrac{3}{2}-m,\,\text{Tan}\Big[\tfrac{1}{4}\Big(-e+\tfrac{\pi}{2}-f x\Big)\Big]^2,\,-\text{Tan}\Big[\tfrac{1}{4}\Big(-e+\tfrac{\pi}{2}-f x\Big)\Big]^2\Big]\,\text{Tan}\Big[\tfrac{1}{4}\Big(-e+\tfrac{\pi}{2}-f x\Big)\Big]^4\Big(1-\text{Tan}\Big[\tfrac{1}{4}\Big(-e+\tfrac{\pi}{2}-f x\Big)\Big]^2\Big)^{2m}\Big)\Big/$$

$$\Big((-1+2m)\Big(1+\text{Tan}\Big[\tfrac{1}{4}\Big(-e+\tfrac{\pi}{2}-f x\Big)\Big]^2\Big)\Big((-3+2m)\,\text{AppellF1}\Big[\tfrac{1}{2}-m,\,-2m,\,1,\,\tfrac{3}{2}-m,\,\text{Tan}\Big[\tfrac{1}{4}\Big(-e+\tfrac{\pi}{2}-f x\Big)\Big]^2,$$

$$-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]+2\Big(2\,m\,\text{AppellF1}\left[\frac{3}{2}-m,1-2m,1,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$\text{AppellF1}\left[\frac{3}{2}-m,-2m,2,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\Big)\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big)\Big)-\frac{1}{3-8m+4m^2}$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^4\Big((3A-5B-13C)(-3+2m)\,\text{Hypergeometric2F1}\left[\frac{1}{2}-m,-2m,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$(A+B+C)(-1+2m)\,\text{Hypergeometric2F1}\left[\frac{3}{2}-m,-2m,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big)+$$

$$2^{-2-3m}\,m\,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^3\left(\frac{1}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}\right)^{2m}\left(\frac{\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}\right)^{-1-2m}$$

$$\left(-\frac{\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{2\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^2}+\frac{\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{4\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)}\right)$$

$$\Big(-\frac{(A+B+C)\,\text{Hypergeometric2F1}\left[-\frac{3}{2}-m,-2m,-\frac{1}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]}{3+2m}-\frac{1}{1+2m}$$

$$(3A-5B-13C)\,\text{Hypergeometric2F1}\left[-\frac{1}{2}-m,-2m,\frac{1}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2-\Big(64\,C\,(-3+2m)\,\text{AppellF1}\Big[$$

$$\frac{1}{2}-m,-2m,1,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^4\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{2m}\Big)\Big/$$

$$\Big((-1+2m)\left(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\Big((-3+2m)\,\text{AppellF1}\Big[\frac{1}{2}-m,-2m,1,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,$$

$$-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big]+2\Big(2\,m\,\text{AppellF1}\left[\frac{3}{2}-m,1-2m,1,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$\text{AppellF1}\left[\frac{3}{2}-m,-2m,2,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\Big)\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big)\Big)-\frac{1}{3-8m+4m^2}$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^4\Big((3A-5B-13C)(-3+2m)\,\text{Hypergeometric2F1}\left[\frac{1}{2}-m,-2m,\frac{3}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]+$$

$$(A+B+C)(-1+2m)\,\text{Hypergeometric2F1}\left[\frac{3}{2}-m,-2m,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right]\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Big)-$$

$$8^{-1-m}\,\text{Cot}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^3\left(\frac{1}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}\right)^{2m}\left(\frac{\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]}{1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}\right)^{-2m}$$

$$\Bigg(-\frac{1}{2\,(1+2\,m)}\,(3\,A-5\,B-13\,C)\;\text{Hypergeometric2F1}\Big[-\frac{1}{2}-m,\,-2\,m,\,\frac{1}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]\;\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]+\Bigg(32\,C\,(-3+2\,m)\;\text{AppellF1}\Big[\frac{1}{2}-m,\,-2\,m,\,1,\,\frac{3}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^5\,\Big(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big)^{2\,m}\Bigg)\Big/$$

$$\Bigg((-1+2\,m)\,\Big(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big)^2\,\Bigg((-3+2\,m)\;\text{AppellF1}\Big[\frac{1}{2}-m,\,-2\,m,\,1,\,\frac{3}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,$$

$$-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]+2\,\Bigg(2\,m\,\text{AppellF1}\Big[\frac{3}{2}-m,\,1-2\,m,\,1,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]+$$

$$\text{AppellF1}\Big[\frac{3}{2}-m,\,-2\,m,\,2,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]\Bigg)\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Bigg)\Bigg)-$$

$$\Bigg(64\,C\,(-3+2\,m)\;\text{AppellF1}\Big[\frac{1}{2}-m,\,-2\,m,\,1,\,\frac{3}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^3\,\Big(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big)^{2\,m}\Bigg)\Big/\Bigg((-1+2\,m)\,\Big(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big)$$

$$\Bigg((-3+2\,m)\;\text{AppellF1}\Big[\frac{1}{2}-m,\,-2\,m,\,1,\,\frac{3}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]+2$$

$$\Bigg(2\,m\,\text{AppellF1}\Big[\frac{3}{2}-m,\,1-2\,m,\,1,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]+\text{AppellF1}\Big[\frac{3}{2}-m,\,-2\,m,\,2,\,\frac{5}{2}-m,$$

$$\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]\Bigg)\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Bigg)\Bigg)-\Bigg(64\,C\,(-3+2\,m)\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4$$

$$\Bigg(-\frac{1}{\frac{3}{2}-m}\left(\frac{1}{2}-m\right)m\,\text{AppellF1}\Big[\frac{3}{2}-m,\,1-2\,m,\,1,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]$$

$$\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-\frac{1}{2\left(\frac{3}{2}-m\right)}\left(\frac{1}{2}-m\right)\text{AppellF1}\Big[\frac{3}{2}-m,\,-2\,m,\,2,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,$$

$$-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]\,\text{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\Bigg)\,\Big(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big)^{2\,m}\Bigg)\Big/$$

$$\Bigg((-1+2\,m)\,\Big(1+\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big)\,\Bigg((-3+2\,m)\;\text{AppellF1}\Big[\frac{1}{2}-m,\,-2\,m,\,1,\,\frac{3}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,$$

$$-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]+2\,\Bigg(2\,m\,\text{AppellF1}\Big[\frac{3}{2}-m,\,1-2\,m,\,1,\,\frac{5}{2}-m,\,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]+$$

$$\text{AppellF1}\left[\frac{3}{2}-m,-2m,2,\frac{5}{2}-m,\tan\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\tan\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\tan\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\Bigg)\Bigg)+$$

$$\Bigg(64\,C\,m\,(-3+2m)\,\text{AppellF1}\left[\frac{1}{2}-m,-2m,1,\frac{3}{2}-m,\tan\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\tan\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\sec\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2$$

$$\tan\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^5\left(1-\tan\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)^{-1+2m}\Bigg)\Big/\left((-1+2m)\left(1+\tan\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)\right.$$

$$\Bigg((-3+2m)\,\text{AppellF1}\left[\frac{1}{2}-m,-2m,1,\frac{3}{2}-m,\tan\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\tan\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+2$$

$$\Bigg(2\,m\,\text{AppellF1}\left[\frac{3}{2}-m,1-2m,1,\frac{5}{2}-m,\tan\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\tan\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+\text{AppellF1}\Big[\frac{3}{2}-m,-2m,2,\frac{5}{2}-m,$$

$$\tan\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\tan\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\Big]\tan\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\Bigg)\Bigg)-\frac{1}{3-8m+4m^2}\sec\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2$$

$$\tan\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^3\Bigg((3A-5B-13C)\,(-3+2m)\,\text{Hypergeometric2F1}\left[\frac{1}{2}-m,-2m,\frac{3}{2}-m,\tan\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+$$

$$(A+B+C)\,(-1+2m)\,\text{Hypergeometric2F1}\left[\frac{3}{2}-m,-2m,\frac{5}{2}-m,\tan\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\tan\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\Bigg)-$$

$$\frac{1}{2\,(3+2m)}(A+B+C)\left(-\frac{3}{2}-m\right)\csc\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]\sec\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]$$

$$\left(-\text{Hypergeometric2F1}\left[-\frac{3}{2}-m,-2m,-\frac{1}{2}-m,\tan\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+\left(1-\tan\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)^{2m}\right)-$$

$$\frac{1}{2\,(1+2m)}(3A-5B-13C)\left(-\frac{1}{2}-m\right)\sec\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\tan\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]$$

$$\left(-\text{Hypergeometric2F1}\left[-\frac{1}{2}-m,-2m,\frac{1}{2}-m,\tan\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+\left(1-\tan\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)^{2m}\right)+$$

$$\Bigg(64\,C\,(-3+2m)\,\text{AppellF1}\left[\frac{1}{2}-m,-2m,1,\frac{3}{2}-m,\tan\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\tan\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\tan\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^4$$

$$\left(1-\tan\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)^{2m}\Bigg(\Bigg(2\,m\,\text{AppellF1}\left[\frac{3}{2}-m,1-2m,1,\frac{5}{2}-m,\tan\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\tan\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+$$

$$\text{AppellF1}\left[\frac{3}{2}-m,-2m,2,\frac{5}{2}-m,\tan\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,-\tan\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]\Bigg)\sec\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2$$

$$\tan\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]+(-3+2m)\left(-\frac{1}{\frac{3}{2}-m}\left(\frac{1}{2}-m\right)m\,\text{AppellF1}\left[\frac{3}{2}-m,1-2m,1,\frac{5}{2}-m,\tan\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,\right.\right.$$

$$-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]\,\mathrm{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-\frac{1}{2\left(\frac{3}{2}-m\right)}\left(\frac{1}{2}-m\right)\mathrm{AppellF1}\Big[\frac{3}{2}-m,\,-2\,m,\,2,$$

$$\frac{5}{2}-m,\,\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]\,\mathrm{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\Bigg)+2$$

$$\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Bigg(-\frac{1}{\frac{5}{2}-m}\left(\frac{3}{2}-m\right)m\,\mathrm{AppellF1}\Big[\frac{5}{2}-m,\,1-2\,m,\,2,\,\frac{7}{2}-m,\,\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,$$

$$-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]\,\mathrm{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-\frac{1}{\frac{5}{2}-m}\left(\frac{3}{2}-m\right)\mathrm{AppellF1}\Big[\frac{5}{2}-m,\,-2\,m,$$

$$3,\,\frac{7}{2}-m,\,\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]\,\mathrm{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]+$$

$$2\,m\Bigg(-\frac{1}{2\left(\frac{5}{2}-m\right)}\left(\frac{3}{2}-m\right)\mathrm{AppellF1}\Big[\frac{5}{2}-m,\,1-2\,m,\,2,\,\frac{7}{2}-m,\,\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]$$

$$\mathrm{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]+\frac{1}{2\left(\frac{5}{2}-m\right)}(1-2\,m)\left(\frac{3}{2}-m\right)\mathrm{AppellF1}\Big[\frac{5}{2}-m,\,2-2\,m,\,1,\,\frac{7}{2}-m,$$

$$\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]\,\mathrm{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\Bigg)\Bigg)\Bigg)\Bigg)\Bigg)\Big/$$

$$\Bigg((-1+2\,m)\left(1+\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\Bigg((-3+2\,m)\,\mathrm{AppellF1}\Big[\frac{1}{2}-m,\,-2\,m,\,1,\,\frac{3}{2}-m,\,\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,$$

$$-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]+2\Bigg(2\,m\,\mathrm{AppellF1}\Big[\frac{3}{2}-m,\,1-2\,m,\,1,\,\frac{5}{2}-m,\,\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]+$$

$$\mathrm{AppellF1}\Big[\frac{3}{2}-m,\,-2\,m,\,2,\,\frac{5}{2}-m,\,\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]\Bigg)\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Bigg)^2\Bigg)-$$

$$\frac{1}{3-8\,m+4\,m^2}\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\Bigg(\frac{1}{2}(A+B+C)(-1+2\,m)\,\mathrm{Hypergeometric2F1}\Big[\frac{3}{2}-m,\,-2\,m,\,\frac{5}{2}-m,\,\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]$$

$$\mathrm{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]+\frac{1}{2}(3\,A-5\,B-13\,C)\left(\frac{1}{2}-m\right)(-3+2\,m)\,\mathrm{Csc}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\mathrm{Sec}\Big[$$

$$\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\Big]\left(-\mathrm{Hypergeometric2F1}\Big[\frac{1}{2}-m,\,-2\,m,\,\frac{3}{2}-m,\,\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]+\left(1-\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{2\,m}\right)+$$

$$\frac{1}{2}(A+B+C)\left(\frac{3}{2}-m\right)(-1+2\,m)\,\mathrm{Sec}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\mathrm{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\Bigg]$$

$$\left(-\text{Hypergeometric2F1}\left[\frac{3}{2}-m,-2m,\frac{5}{2}-m,\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right]+\left(1-\text{Tan}\left[\frac{1}{4}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)^{2m}\right)\Bigg)\Bigg)\Bigg)\Bigg)\Bigg)$$

- **Problem 25: Result more than twice size of optimal antiderivative.**

$$\int (a+a\,\text{Sin}[e+fx])^m\,(c+d\,\text{Sin}[e+fx])^n\,\left(A+B\,\text{Sin}[e+fx]+C\,\text{Sin}[e+fx]^2\right)\,dx$$

Optimal (type 6, 383 leaves, 10 steps):

$$-\frac{C\,\text{Cos}[e+fx]\,(a+a\,\text{Sin}[e+fx])^m\,(c+d\,\text{Sin}[e+fx])^{1+n}}{d\,f\,(2+m+n)}+$$
$$\left(\sqrt{2}\,(c\,(C+2\,C\,m)+d\,(C\,(1-m+n)+A\,(2+m+n)-B\,(2+m+n)))\,\text{AppellF1}\left[\frac{1}{2}+m,\frac{1}{2},-n,\frac{3}{2}+m,\frac{1}{2}\,(1+\text{Sin}[e+fx]),-\frac{d\,(1+\text{Sin}[e+fx])}{c-d}\right]\right.$$
$$\left.\text{Cos}[e+fx]\,(a+a\,\text{Sin}[e+fx])^m\,(c+d\,\text{Sin}[e+fx])^n\left(\frac{c+d\,\text{Sin}[e+fx]}{c-d}\right)^{-n}\right)\Big/\left(d\,f\,(1+2\,m)\,(2+m+n)\,\sqrt{1-\text{Sin}[e+fx]}\right)-$$
$$\left(\sqrt{2}\,(c\,C\,(1+m)-d\,(C\,m+B\,(2+m+n)))\,\text{AppellF1}\left[\frac{3}{2}+m,\frac{1}{2},-n,\frac{5}{2}+m,\frac{1}{2}\,(1+\text{Sin}[e+fx]),-\frac{d\,(1+\text{Sin}[e+fx])}{c-d}\right]\right.$$
$$\left.\text{Cos}[e+fx]\,(a+a\,\text{Sin}[e+fx])^{1+m}\,(c+d\,\text{Sin}[e+fx])^n\left(\frac{c+d\,\text{Sin}[e+fx]}{c-d}\right)^{-n}\right)\Big/\left(a\,d\,f\,(3+2\,m)\,(2+m+n)\,\sqrt{1-\text{Sin}[e+fx]}\right)$$

Result (type 6, 3145 leaves):

$$-\frac{1}{2\,f}\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-fx\right)\right]^{-2m}$$
$$\left(-\left(\left(6\,C\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},-\frac{3}{2}-m,-n,\frac{3}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-fx\right)\right]^2}{c+d}\right]\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-fx\right)\right]^{3+2m}\right.\right.\right.$$
$$\left(\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)^{\frac{1}{2}+\frac{1}{2}(-4-2m)}\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-fx\right)\right]\left(1-\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)^{\frac{3}{2}+m}\left(c+d-2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)^n\Bigg)\Bigg/$$
$$\left(-3\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},-\frac{3}{2}-m,-n,\frac{3}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-fx\right)\right]^2}{c+d}\right]+\right.$$
$$\left(4\,d\,n\,\text{AppellF1}\left[\frac{3}{2},-\frac{3}{2}-m,1-n,\frac{5}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-fx\right)\right]^2}{c+d}\right]+\right.$$
$$\left.\left.(c+d)\,(3+2\,m)\,\text{AppellF1}\left[\frac{3}{2},-\frac{1}{2}-m,-n,\frac{5}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-fx\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-fx\right)\right]^2}{c+d}\right]\right)\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-fx\right)\right]^2\right)\right)-$$

$$\left(12\,B\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},-\frac{1}{2}-m,-n,\frac{3}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{1+2\,m}\right.$$

$$\left.\left(\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{\frac{1}{2}+\frac{1}{2}(-2-2\,m)}\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\left(1-\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{\frac{1}{2}+m}\left(c+d-2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^n\right)\Big/$$

$$\left(-3\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},-\frac{1}{2}-m,-n,\frac{3}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+\right.$$

$$\left(4\,d\,n\,\text{AppellF1}\left[\frac{3}{2},-\frac{1}{2}-m,1-n,\frac{5}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+\right.$$

$$\left.\left.(c+d)\,(1+2\,m)\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{2}-m,-n,\frac{5}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right)\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)+$$

$$\left(12\,A\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2}-m,-n,\frac{3}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{-1+2\,m}\right.$$

$$\left.\left(\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{\frac{1}{2}-m}\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\left(1-\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{-\frac{1}{2}+m}\left(c+d-2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^n\right)\Big/$$

$$\left(3\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2}-m,-n,\frac{3}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]-\right.$$

$$\left(4\,d\,n\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{2}-m,1-n,\frac{5}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+\right.$$

$$\left.\left.(c+d)\,(-1+2\,m)\,\text{AppellF1}\left[\frac{3}{2},\frac{3}{2}-m,-n,\frac{5}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right)\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)+$$

$$\left(6\,C\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2}-m,-n,\frac{3}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{-1+2\,m}\right.$$

$$\left.\left(\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{\frac{1}{2}-m}\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\left(1-\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{-\frac{1}{2}+m}\left(c+d-2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^n\right)\Big/$$

$$\left(3\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2}-m,-n,\frac{3}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]-\right.$$

$$\left(4\,d\,n\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{2}-m,1-n,\frac{5}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+\right.$$

$$\left.\left.(c+d)\,(-1+2\,m)\,\text{AppellF1}\left[\frac{3}{2},\frac{3}{2}-m,-n,\frac{5}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right)\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)+$$

$$\left(20\,C\,(c+d)\,\text{AppellF1}\left[\frac{3}{2},-\frac{1}{2}-m,-n,\frac{5}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{1+2\,m}\right.$$

$$\left.\left(\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{\frac{1}{2}(-1-2\,m)}\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^3\left(1-\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{\frac{1}{2}+m}\left(c+d-2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^n\right)\Big/$$

$$\left(-5\,(c+d)\,\text{AppellF1}\left[\frac{3}{2},-\frac{1}{2}-m,-n,\frac{5}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+\right.$$

$$\left(4\,d\,n\,\text{AppellF1}\left[\frac{5}{2},-\frac{1}{2}-m,1-n,\frac{7}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+\right.$$

$$\left.\left.(c+d)\,(1+2\,m)\,\text{AppellF1}\left[\frac{5}{2},\frac{1}{2}-m,-n,\frac{7}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right)\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)+$$

$$\left(20\,B\,(c+d)\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{2}-m,-n,\frac{5}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{-1+2\,m}\right.$$

$$\left.\left(\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{\frac{1}{2}(1-2\,m)}\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^3\left(1-\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{-\frac{1}{2}+m}\left(c+d-2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^n\right)\Big/$$

$$\left(3\left(-5\,(c+d)\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{2}-m,-n,\frac{5}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+\right.\right.$$

$$\left(4\,d\,n\,\text{AppellF1}\left[\frac{5}{2},\frac{1}{2}-m,1-n,\frac{7}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+\right.$$

$$(c+d)\,(-1+2m)\,\text{AppellF1}\left[\frac{5}{2},\frac{3}{2}-m,-n,\frac{7}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\frac{2 d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)\Bigg)-$$

$$\Bigg(14\,C\,(c+d)\,\text{AppellF1}\left[\frac{5}{2},\frac{1}{2}-m,-n,\frac{7}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\frac{2 d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{-1+2m}$$

$$\left(\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{\frac{1}{2}(1-2m)}\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^5\left(1-\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{-\frac{1}{2}+m}\left(c+d-2 d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^n\Bigg)\Bigg/$$

$$\Bigg(5\,\Bigg(-7\,(c+d)\,\text{AppellF1}\left[\frac{5}{2},\frac{1}{2}-m,-n,\frac{7}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\frac{2 d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]+$$

$$\Bigg(4\,d\,n\,\text{AppellF1}\left[\frac{7}{2},\frac{1}{2}-m,1-n,\frac{9}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\frac{2 d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]+(c+d)\,(-1+2m)$$

$$\text{AppellF1}\left[\frac{7}{2},\frac{3}{2}-m,-n,\frac{9}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\frac{2 d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\Bigg)\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)\Bigg)\Bigg)\,(a+a\,\text{Sin}[e+f x])^m$$

- **Problem 26: Result more than twice size of optimal antiderivative.**

$$\int(a+a\,\text{Sin}[e+f x])^m\,(c+d\,\text{Sin}[e+f x])^{-2-m}\left(A+B\,\text{Sin}[e+f x]+C\,\text{Sin}[e+f x]^2\right)\,dx$$

Optimal (type 6, 410 leaves, 8 steps):

$$\frac{\left(c^2 C-B c d+A d^2\right)\text{Cos}[e+f x]\,(a+a\,\text{Sin}[e+f x])^m\,(c+d\,\text{Sin}[e+f x])^{-1-m}}{d\left(c^2-d^2\right)f\,(1+m)}-$$

$$\frac{1}{(c-d)\,d\,(c+d)^2 f\,(1+m)}2^{\frac{1}{2}+m}a\left(c d\,(A+C+A m+B m+C m)-c^2\,(C+2 C m)-d^2\,(A m+B\,(1+m)-C\,(1+m))\right)\text{Cos}[e+f x]$$

$$\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{1}{2}-m,\frac{3}{2},\frac{(c-d)\,(1-\text{Sin}[e+f x])}{2\,(c+d\,\text{Sin}[e+f x])}\right](a+a\,\text{Sin}[e+f x])^{-1+m}\left(\frac{(c+d)\,(1+\text{Sin}[e+f x])}{c+d\,\text{Sin}[e+f x]}\right)^{\frac{1}{2}-m}(c+d\,\text{Sin}[e+f x])^{-m}+$$

$$\Bigg(\sqrt{2}\,C\,\text{AppellF1}\left[\frac{3}{2}+m,\frac{1}{2},1+m,\frac{5}{2}+m,\frac{1}{2}(1+\text{Sin}[e+f x]),-\frac{d\,(1+\text{Sin}[e+f x])}{c-d}\right]\text{Cos}[e+f x]$$

$$(a+a\,\text{Sin}[e+f x])^{1+m}\,(c+d\,\text{Sin}[e+f x])^{-m}\left(\frac{c+d\,\text{Sin}[e+f x]}{c-d}\right)^m\Bigg)\Bigg/\left(a\,(c-d)\,d\,f\,(3+2m)\,\sqrt{1-\text{Sin}[e+f x]}\right)$$

Result (type 6, 5581 leaves):

$$\Bigg(2\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{-1-2m}\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\,(a+a\,\text{Sin}[e+f x])^m$$

$$\left(2\,A\,\mathrm{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2\,m}(c+d\,\mathrm{Sin}[e+f\,x])^{-2-m}+C\,\mathrm{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2\,m}(c+d\,\mathrm{Sin}[e+f\,x])^{-2-m}+\right.$$

$$\left.C\,\mathrm{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2\,m}\mathrm{Cos}\left[2\left(-e+\frac{\pi}{2}-f\,x\right)\right](c+d\,\mathrm{Sin}[e+f\,x])^{-2-m}+2\,B\,\mathrm{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2\,m}\mathrm{Sin}[e+f\,x]\,(c+d\,\mathrm{Sin}[e+f\,x])^{-2-m}\right)$$

$$\left(1+\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}\right)^{-m}\left(c+\frac{d-d\,\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}}{1+\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}}\right)^{-m}$$

$$\left(\frac{1}{c-d}\left((c+d)\left(c^{2}\,C-2\,c\,C\,d+(-A+B)\,d^{2}\right)\mathrm{Hypergeometric2F1}\left[\frac{1}{2},1+m,\frac{3}{2},-\frac{(c-d)\,\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}}{c+d}\right]+\right.\right.$$

$$\left.2\,d\left(c^{2}\,C-B\,c\,d+A\,d^{2}\right)\mathrm{Hypergeometric2F1}\left[\frac{1}{2},2+m,\frac{3}{2},-\frac{(c-d)\,\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}}{c+d}\right]\right)\left(1+\frac{(c-d)\,\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}}{c+d}\right)^{m}+$$

$$\left(3\,C\,(c+d)^{3}\,\mathrm{AppellF1}\left[\frac{1}{2},m,1,\frac{3}{2},-\frac{(c-d)\,\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}}{c+d},-\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}\right]\right)\Big/$$

$$\left(\left(1+\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}\right)\left(-3\,(c+d)\,\mathrm{AppellF1}\left[\frac{1}{2},m,1,\frac{3}{2},-\frac{(c-d)\,\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}}{c+d},-\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}\right]+\right.\right.$$

$$2\left((c+d)\,\mathrm{AppellF1}\left[\frac{3}{2},m,2,\frac{5}{2},-\frac{(c-d)\,\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}}{c+d},-\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}\right]+\right.$$

$$\left.\left.\left.\left.(c-d)\,m\,\mathrm{AppellF1}\left[\frac{3}{2},1+m,1,\frac{5}{2},-\frac{(c-d)\,\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}}{c+d},-\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}\right]\right)\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}\right)\right)\right)\Big/$$

$$\left(d^{2}\,(c+d)^{2}\,f\left(\frac{1}{d^{2}\,(c+d)^{2}}4\,m\,\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\left(1+\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}\right)^{-m}\left(-\frac{d\,\mathrm{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]}{1+\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}}-\right.\right.\right.$$

$$\left.\frac{\mathrm{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\left(d-d\,\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}\right)}{\left(1+\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}\right)^{2}}\right)\left(c+\frac{d-d\,\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}}{1+\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}}\right)^{-1-m}$$

$$\left(\frac{1}{c-d}\left((c+d)\left(c^{2}\,C-2\,c\,C\,d+(-A+B)\,d^{2}\right)\mathrm{Hypergeometric2F1}\left[\frac{1}{2},1+m,\frac{3}{2},-\frac{(c-d)\,\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}}{c+d}\right]+\right.\right.$$

$$2\,d\,\left(c^2\,C-B\,c\,d+A\,d^2\right)\,\text{Hypergeometric2F1}\left[\frac{1}{2},2+m,\frac{3}{2},-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right)\left(1+\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right)^m+$$

$$\left(3\,C\,(c+d)^3\,\text{AppellF1}\left[\frac{1}{2},m,1,\frac{3}{2},-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\Big/$$

$$\left(\left(1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\left(-3\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},m,1,\frac{3}{2},-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.\right.$$

$$2\left((c+d)\,\text{AppellF1}\left[\frac{3}{2},m,2,\frac{5}{2},-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.$$

$$\left.\left.\left.(c-d)\,m\,\text{AppellF1}\left[\frac{3}{2},1+m,1,\frac{5}{2},-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\right)\right)+$$

$$\frac{1}{d^2\,(c+d)^2}\,4\,m\,\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\left(1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{-1-m}\left(c+\frac{d-d\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}\right)^{-m}$$

$$\left(\frac{1}{c-d}\left((c+d)\left(c^2\,C-2\,c\,C\,d+(-A+B)\,d^2\right)\,\text{Hypergeometric2F1}\left[\frac{1}{2},1+m,\frac{3}{2},-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+\right.\right.$$

$$2\,d\,\left(c^2\,C-B\,c\,d+A\,d^2\right)\,\text{Hypergeometric2F1}\left[\frac{1}{2},2+m,\frac{3}{2},-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right)\left(1+\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right)^m+$$

$$\left(3\,C\,(c+d)^3\,\text{AppellF1}\left[\frac{1}{2},m,1,\frac{3}{2},-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\Big/$$

$$\left(\left(1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\left(-3\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},m,1,\frac{3}{2},-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.\right.$$

$$2\left((c+d)\,\text{AppellF1}\left[\frac{3}{2},m,2,\frac{5}{2},-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.$$

$$\left.\left.\left.(c-d)\,m\,\text{AppellF1}\left[\frac{3}{2},1+m,1,\frac{5}{2},-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\right)\right)-$$

$$\frac{1}{d^2\,(c+d)^2}\,2\,\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\left(1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{-m}\left(c+\frac{d-d\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}\right)^{-m}$$

$$\left(\frac{1}{c-d}\left((c+d)\left(c^2\,C-2\,c\,C\,d+(-A+B)\,d^2\right)\text{Hypergeometric2F1}\left[\frac{1}{2},1+m,\frac{3}{2},-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+\right.\right.$$

$$\left.\left.2\,d\left(c^2\,C-B\,c\,d+A\,d^2\right)\text{Hypergeometric2F1}\left[\frac{1}{2},2+m,\frac{3}{2},-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right)\left(1+\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right)^m+\right.$$

$$\left(3\,C\,(c+d)^3\,\text{AppellF1}\left[\frac{1}{2},m,1,\frac{3}{2},-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\Big/$$

$$\left(\left(1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\left(-3\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},m,1,\frac{3}{2},-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.\right.$$

$$2\left((c+d)\,\text{AppellF1}\left[\frac{3}{2},m,2,\frac{5}{2},-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.$$

$$\left.\left.\left.\left.(c-d)\,m\,\text{AppellF1}\left[\frac{3}{2},1+m,1,\frac{5}{2},-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\right)\right)-$$

$$\frac{1}{d^2\,(c+d)^2}\,4\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\left(1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{-m}\left(c+\frac{d-d\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}\right)^{-m}$$

$$\left(\frac{1}{c+d}m\left((c+d)\left(c^2\,C-2\,c\,C\,d+(-A+B)\,d^2\right)\text{Hypergeometric2F1}\left[\frac{1}{2},1+m,\frac{3}{2},-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+\right.\right.$$

$$\left.2\,d\left(c^2\,C-B\,c\,d+A\,d^2\right)\text{Hypergeometric2F1}\left[\frac{1}{2},2+m,\frac{3}{2},-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right)$$

$$\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\left(1+\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right)^{-1+m}-$$

$$\left(3\,C\,(c+d)^3\,\text{AppellF1}\left[\frac{1}{2},m,1,\frac{3}{2},-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right.$$

$$\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\Big)\Big/\left(\left(1+\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^2\left(-3\,(c+d)\,\mathrm{AppellF1}\left[\frac{1}{2},m,1,\frac{3}{2},-\frac{(c-d)\,\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d},\right.\right.\right.$$

$$-\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big]+2\left((c+d)\,\mathrm{AppellF1}\left[\frac{3}{2},m,2,\frac{5}{2},-\frac{(c-d)\,\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d},-\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.$$

$$(c-d)\,m\,\mathrm{AppellF1}\left[\frac{3}{2},1+m,1,\frac{5}{2},-\frac{(c-d)\,\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d},-\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\Big)\,\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big)\Big)+$$

$$\Big(3\,C\,(c+d)^3\left(-\frac{1}{3}\,\mathrm{AppellF1}\left[\frac{3}{2},m,2,\frac{5}{2},-\frac{(c-d)\,\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d},-\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\mathrm{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right.$$

$$\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-\frac{1}{3\,(c+d)}\,(c-d)\,m\,\mathrm{AppellF1}\left[\frac{3}{2},1+m,1,\frac{5}{2},-\frac{(c-d)\,\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d},\right.$$

$$\left.\left.-\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\mathrm{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\right)\Big)\Big/$$

$$\left(\left(1+\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\left(-3\,(c+d)\,\mathrm{AppellF1}\left[\frac{1}{2},m,1,\frac{3}{2},-\frac{(c-d)\,\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d},-\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.\right.$$

$$2\left((c+d)\,\mathrm{AppellF1}\left[\frac{3}{2},m,2,\frac{5}{2},-\frac{(c-d)\,\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d},-\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.$$

$$(c-d)\,m\,\mathrm{AppellF1}\left[\frac{3}{2},1+m,1,\frac{5}{2},-\frac{(c-d)\,\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d},-\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\Big)\,\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Big)\Big)-$$

$$\Big(3\,C\,(c+d)^3\,\mathrm{AppellF1}\left[\frac{1}{2},m,1,\frac{3}{2},-\frac{(c-d)\,\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d},-\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]$$

$$\left(2\left((c+d)\,\mathrm{AppellF1}\left[\frac{3}{2},m,2,\frac{5}{2},-\frac{(c-d)\,\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d},-\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]+\right.\right.$$

$$(c-d)\,m\,\mathrm{AppellF1}\left[\frac{3}{2},1+m,1,\frac{5}{2},-\frac{(c-d)\,\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d},-\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right]\Big)\,\mathrm{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\mathrm{Tan}\Big[$$

$$\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\Big]-3\,(c+d)\,\Bigg(-\frac{1}{3}\,\text{AppellF1}\Big[\frac{3}{2},\,m,\,2,\,\frac{5}{2},\,-\frac{(c-d)\,\text{Tan}\big[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\big]^2}{c+d},\,-\text{Tan}\Big[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big]$$

$$\text{Sec}\Big[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\,\text{Tan}\Big[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\Big]-\frac{1}{3\,(c+d)}\,(c-d)\,m\,\text{AppellF1}\Big[\frac{3}{2},\,1+m,\,1,\,\frac{5}{2},\,-\frac{(c-d)\,\text{Tan}\big[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\big]^2}{c+d},$$

$$-\text{Tan}\Big[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\,\text{Tan}\Big[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\Big]\Bigg)+2\,\text{Tan}\Big[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\,\Bigg((c+d)\,\Bigg(-\frac{6}{5}\,\text{AppellF1}\Big[$$

$$\frac{5}{2},\,m,\,3,\,\frac{7}{2},\,-\frac{(c-d)\,\text{Tan}\big[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\big]^2}{c+d},\,-\text{Tan}\Big[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\,\text{Tan}\Big[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\Big]-$$

$$\frac{1}{5\,(c+d)}3\,(c-d)\,m\,\text{AppellF1}\Big[\frac{5}{2},\,1+m,\,2,\,\frac{7}{2},\,-\frac{(c-d)\,\text{Tan}\big[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\big]^2}{c+d},\,-\text{Tan}\Big[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big]$$

$$\text{Sec}\Big[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\,\text{Tan}\Big[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\Big]\Bigg)+(c-d)\,m\,\Bigg(-\frac{3}{5}\,\text{AppellF1}\Big[\frac{5}{2},\,1+m,\,2,\,\frac{7}{2},\,-\frac{(c-d)\,\text{Tan}\big[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\big]^2}{c+d},$$

$$-\text{Tan}\Big[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\,\text{Tan}\Big[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\Big]-\frac{1}{5\,(c+d)}3\,(c-d)\,(1+m)\,\text{AppellF1}\Big[\frac{5}{2},\,2+m,$$

$$1,\,\frac{7}{2},\,-\frac{(c-d)\,\text{Tan}\big[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\big]^2}{c+d},\,-\text{Tan}\Big[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\,\text{Tan}\Big[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\Big]\Bigg)\Bigg)\Bigg)\Bigg)\Bigg/$$

$$\Bigg(\Big(1+\text{Tan}\Big[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big)\,\Bigg(-3\,(c+d)\,\text{AppellF1}\Big[\frac{1}{2},\,m,\,1,\,\frac{3}{2},\,-\frac{(c-d)\,\text{Tan}\big[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\big]^2}{c+d},\,-\text{Tan}\Big[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big]+$$

$$2\,\Bigg((c+d)\,\text{AppellF1}\Big[\frac{3}{2},\,m,\,2,\,\frac{5}{2},\,-\frac{(c-d)\,\text{Tan}\big[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\big]^2}{c+d},\,-\text{Tan}\Big[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big]+$$

$$(c-d)\,m\,\text{AppellF1}\Big[\frac{3}{2},\,1+m,\,1,\,\frac{5}{2},\,-\frac{(c-d)\,\text{Tan}\big[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\big]^2}{c+d},\,-\text{Tan}\Big[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Big]\Bigg)\,\text{Tan}\Big[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\Big]^2\Bigg)^2\Bigg)+$$

$$\frac{1}{c-d}\left(1+\frac{(c-d)\,\text{Tan}\big[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\big]^2}{c+d}\right)^m\,\Bigg(d\,\left(c^2\,C-B\,c\,d+A\,d^2\right)\,\text{Csc}\Big[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\Big]\,\text{Sec}\Big[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\Big]$$

$$\Bigg(-\text{Hypergeometric2F1}\Big[\frac{1}{2},\,2+m,\,\frac{3}{2},\,-\frac{(c-d)\,\text{Tan}\big[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\big]^2}{c+d}\Big]+\left(1+\frac{(c-d)\,\text{Tan}\big[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\big]^2}{c+d}\right)^{-2-m}\Bigg)+$$

$$\frac{1}{2}(c+d)\left(c^2 C-2 c C d+(-A+B) d^2\right) \operatorname{Csc}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right] \operatorname{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]$$
$$\left(-\text{Hypergeometric2F1}\left[\frac{1}{2}, 1+m, \frac{3}{2}, -\frac{(c-d) \operatorname{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]+\left(1+\frac{(c-d) \operatorname{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right)^{-1-m}\right)\Bigg)\Bigg)\Bigg)\Bigg)$$

Problem 27: Result more than twice size of optimal antiderivative.

$$\int (a+a \operatorname{Sin}[e+f x])^m (c+d \operatorname{Sin}[e+f x])^{3/2} \left(A+B \operatorname{Sin}[e+f x]+C \operatorname{Sin}[e+f x]^2\right) dx$$

Optimal (type 6, 406 leaves, 10 steps):

$$-\frac{2 C \operatorname{Cos}[e+f x] (a+a \operatorname{Sin}[e+f x])^m (c+d \operatorname{Sin}[e+f x])^{5/2}}{d f (7+2 m)}+$$
$$\left(\sqrt{2} (c-d) (2 c (C+2 C m)-d (7 B-5 C+2 B m+2 C m-A (7+2 m))) \operatorname{AppellF1}\left[\frac{1}{2}+m, \frac{1}{2}, -\frac{3}{2}, \frac{3}{2}+m, \frac{1}{2}(1+\operatorname{Sin}[e+f x]), -\frac{d (1+\operatorname{Sin}[e+f x])}{c-d}\right]\right.$$
$$\left.\operatorname{Cos}[e+f x] (a+a \operatorname{Sin}[e+f x])^m \sqrt{c+d \operatorname{Sin}[e+f x]}\right) \Bigg/ \left(d f (1+2 m) (7+2 m) \sqrt{1-\operatorname{Sin}[e+f x]} \sqrt{\frac{c+d \operatorname{Sin}[e+f x]}{c-d}}\right)-$$
$$\left(\sqrt{2} (c-d) (2 c C (1+m)-d (2 C m+B (7+2 m))) \operatorname{AppellF1}\left[\frac{3}{2}+m, \frac{1}{2}, -\frac{3}{2}, \frac{5}{2}+m, \frac{1}{2}(1+\operatorname{Sin}[e+f x]), -\frac{d (1+\operatorname{Sin}[e+f x])}{c-d}\right]\right.$$
$$\left.\operatorname{Cos}[e+f x] (a+a \operatorname{Sin}[e+f x])^{1+m} \sqrt{c+d \operatorname{Sin}[e+f x]}\right) \Bigg/ \left(a d f (3+2 m) (7+2 m) \sqrt{1-\operatorname{Sin}[e+f x]} \sqrt{\frac{c+d \operatorname{Sin}[e+f x]}{c-d}}\right)$$

Result (type 6, 8472 leaves):

$$\frac{1}{2 f} \operatorname{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{-2 m}$$
$$\Bigg(\Bigg(3 C d (c+d) \operatorname{AppellF1}\left[\frac{1}{2}, -\frac{5}{2}-m, -\frac{1}{2}, \frac{3}{2}, \operatorname{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, \frac{2 d \operatorname{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right] \operatorname{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{5+2 m}$$
$$\left(\operatorname{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{\frac{1}{2}+\frac{1}{2}(-6-2 m)} \operatorname{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right] \left(1-\operatorname{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{\frac{5}{2}+m} \sqrt{c+d-2 d \operatorname{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}\Bigg) \Bigg/$$
$$\left(-3 (c+d) \operatorname{AppellF1}\left[\frac{1}{2}, -\frac{5}{2}-m, -\frac{1}{2}, \frac{3}{2}, \operatorname{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, \frac{2 d \operatorname{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]+\right.$$

$$\left(2\,d\,\text{AppellF1}\left[\frac{3}{2},\,-\frac{5}{2}-m,\,\frac{1}{2},\,\frac{5}{2},\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+\right.$$

$$\left.(c+d)\,(5+2\,m)\,\text{AppellF1}\left[\frac{3}{2},\,-\frac{3}{2}-m,\,-\frac{1}{2},\,\frac{5}{2},\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right)\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Bigg)+$$

$$\left(6\,c\,C\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},\,-\frac{3}{2}-m,\,-\frac{1}{2},\,\frac{3}{2},\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{3+2\,m}\right.$$

$$\left.\left(\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{\frac{1}{2}+\frac{1}{2}(-4-2\,m)}\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\left(1-\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{\frac{3}{2}+m}\sqrt{c+d-2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}\right)\Big/$$

$$\left(-3\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},\,-\frac{3}{2}-m,\,-\frac{1}{2},\,\frac{3}{2},\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+\right.$$

$$\left(2\,d\,\text{AppellF1}\left[\frac{3}{2},\,-\frac{3}{2}-m,\,\frac{1}{2},\,\frac{5}{2},\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+\right.$$

$$\left.(c+d)\,(3+2\,m)\,\text{AppellF1}\left[\frac{3}{2},\,-\frac{1}{2}-m,\,-\frac{1}{2},\,\frac{5}{2},\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right)\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Bigg)+$$

$$\left(6\,B\,d\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},\,-\frac{3}{2}-m,\,-\frac{1}{2},\,\frac{3}{2},\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{3+2\,m}\right.$$

$$\left.\left(\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{\frac{1}{2}+\frac{1}{2}(-4-2\,m)}\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\left(1-\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{\frac{3}{2}+m}\sqrt{c+d-2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}\right)\Big/$$

$$\left(-3\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},\,-\frac{3}{2}-m,\,-\frac{1}{2},\,\frac{3}{2},\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+\right.$$

$$\left(2\,d\,\text{AppellF1}\left[\frac{3}{2},\,-\frac{3}{2}-m,\,\frac{1}{2},\,\frac{5}{2},\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+\right.$$

$$\left.(c+d)\,(3+2\,m)\,\text{AppellF1}\left[\frac{3}{2},\,-\frac{1}{2}-m,\,-\frac{1}{2},\,\frac{5}{2},\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right)\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Bigg)+$$

$$\left(12\,B\,c\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},-\frac{1}{2}-m,-\frac{1}{2},\frac{3}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{1+2\,m}\right.$$

$$\left.\left(\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{\frac{1}{2}+\frac{1}{2}(-2-2\,m)}\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\left(1-\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{\frac{1}{2}+m}\sqrt{c+d-2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}\right)\Big/$$

$$\left(-3\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},-\frac{1}{2}-m,-\frac{1}{2},\frac{3}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+\right.$$

$$\left(2\,d\,\text{AppellF1}\left[\frac{3}{2},-\frac{1}{2}-m,\frac{1}{2},\frac{5}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+\right.$$

$$\left.\left.(c+d)\,(1+2\,m)\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{2}-m,-\frac{1}{2},\frac{5}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right)\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)+$$

$$\left(12\,A\,d\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},-\frac{1}{2}-m,-\frac{1}{2},\frac{3}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{1+2\,m}\right.$$

$$\left.\left(\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{\frac{1}{2}+\frac{1}{2}(-2-2\,m)}\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\left(1-\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{\frac{1}{2}+m}\sqrt{c+d-2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}\right)\Big/$$

$$\left(-3\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},-\frac{1}{2}-m,-\frac{1}{2},\frac{3}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+\right.$$

$$\left(2\,d\,\text{AppellF1}\left[\frac{3}{2},-\frac{1}{2}-m,\frac{1}{2},\frac{5}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+\right.$$

$$\left.\left.(c+d)\,(1+2\,m)\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{2}-m,-\frac{1}{2},\frac{5}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right)\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)+$$

$$\left(9\,C\,d\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},-\frac{1}{2}-m,-\frac{1}{2},\frac{3}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{1+2\,m}\right.$$

$$\left(\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{\frac{1}{2}+\frac{1}{2}(-2-2\,m)}\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\left(1-\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{\frac{1}{2}+m}\sqrt{c+d-2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}\Bigg)\Big/$$

$$\Bigg(-3\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},-\frac{1}{2}-m,-\frac{1}{2},\frac{3}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+$$

$$\Bigg(2\,d\,\text{AppellF1}\left[\frac{3}{2},-\frac{1}{2}-m,\frac{1}{2},\frac{5}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+$$

$$(c+d)\,(1+2\,m)\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{2}-m,-\frac{1}{2},\frac{5}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\Bigg)\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Bigg)-$$

$$\Bigg(12\,A\,c\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2}-m,-\frac{1}{2},\frac{3}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{-1+2\,m}$$

$$\left(\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{\frac{1}{2}-m}\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\left(1-\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{-\frac{1}{2}+m}\sqrt{c+d-2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}\Bigg)\Big/$$

$$\Bigg(3\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2}-m,-\frac{1}{2},\frac{3}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]-$$

$$\Bigg(2\,d\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{2}-m,\frac{1}{2},\frac{5}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+$$

$$(c+d)\,(-1+2\,m)\,\text{AppellF1}\left[\frac{3}{2},\frac{3}{2}-m,-\frac{1}{2},\frac{5}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\Bigg)\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Bigg)-$$

$$\Bigg(6\,c\,C\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2}-m,-\frac{1}{2},\frac{3}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{-1+2\,m}$$

$$\left(\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{\frac{1}{2}-m}\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\left(1-\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{-\frac{1}{2}+m}\sqrt{c+d-2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}\Bigg)\Big/$$

$$\Bigg(3\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2}-m,-\frac{1}{2},\frac{3}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]-$$

$$\left(2\,d\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{2}-m,\frac{1}{2},\frac{5}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+\right.$$

$$\left.(c+d)\,(-1+2\,m)\,\text{AppellF1}\left[\frac{3}{2},\frac{3}{2}-m,-\frac{1}{2},\frac{5}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right)\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Bigg)-$$

$$\left(6\,B\,d\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2}-m,-\frac{1}{2},\frac{3}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{-1+2\,m}\right.$$

$$\left.\left(\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{\frac{1}{2}-m}\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\left(1-\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{-\frac{1}{2}+m}\sqrt{c+d-2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}\right)\Big/$$

$$\left(3\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2}-m,-\frac{1}{2},\frac{3}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]-\right.$$

$$\left(2\,d\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{2}-m,\frac{1}{2},\frac{5}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+\right.$$

$$\left.(c+d)\,(-1+2\,m)\,\text{AppellF1}\left[\frac{3}{2},\frac{3}{2}-m,-\frac{1}{2},\frac{5}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right)\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Bigg)-$$

$$\left(25\,C\,d\,(c+d)\,\text{AppellF1}\left[\frac{3}{2},-\frac{3}{2}-m,-\frac{1}{2},\frac{5}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{3+2\,m}\right.$$

$$\left.\left(\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{\frac{1}{2}(-3-2\,m)}\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^3\left(1-\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{\frac{3}{2}+m}\sqrt{c+d-2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}\right)\Big/$$

$$\left(-5\,(c+d)\,\text{AppellF1}\left[\frac{3}{2},-\frac{3}{2}-m,-\frac{1}{2},\frac{5}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+\right.$$

$$\left(2\,d\,\text{AppellF1}\left[\frac{5}{2},-\frac{3}{2}-m,\frac{1}{2},\frac{7}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+\right.$$

$$\left.(c+d)\,(3+2\,m)\,\text{AppellF1}\left[\frac{5}{2},-\frac{1}{2}-m,-\frac{1}{2},\frac{7}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right)\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Bigg)-$$

$$\left(20\,c\,C\,(c+d)\,\text{AppellF1}\left[\frac{3}{2},-\frac{1}{2}-m,-\frac{1}{2},\frac{5}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{1+2\,m}\right.$$

$$\left.\left(\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{\frac{1}{2}(-1-2\,m)}\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^3\left(1-\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{\frac{1}{2}+m}\sqrt{c+d-2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}\right)\Big/$$

$$\left(-5\,(c+d)\,\text{AppellF1}\left[\frac{3}{2},-\frac{1}{2}-m,-\frac{1}{2},\frac{5}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+\right.$$

$$\left(2\,d\,\text{AppellF1}\left[\frac{5}{2},-\frac{1}{2}-m,\frac{1}{2},\frac{7}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+\right.$$

$$\left.\left.(c+d)\,(1+2\,m)\,\text{AppellF1}\left[\frac{5}{2},\frac{1}{2}-m,-\frac{1}{2},\frac{7}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right)\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)-$$

$$\left(20\,B\,d\,(c+d)\,\text{AppellF1}\left[\frac{3}{2},-\frac{1}{2}-m,-\frac{1}{2},\frac{5}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{1+2\,m}\right.$$

$$\left.\left(\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{\frac{1}{2}(-1-2\,m)}\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^3\left(1-\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{\frac{1}{2}+m}\sqrt{c+d-2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}\right)\Big/$$

$$\left(-5\,(c+d)\,\text{AppellF1}\left[\frac{3}{2},-\frac{1}{2}-m,-\frac{1}{2},\frac{5}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+\right.$$

$$\left(2\,d\,\text{AppellF1}\left[\frac{5}{2},-\frac{1}{2}-m,\frac{1}{2},\frac{7}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+\right.$$

$$\left.\left.(c+d)\,(1+2\,m)\,\text{AppellF1}\left[\frac{5}{2},\frac{1}{2}-m,-\frac{1}{2},\frac{7}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right)\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)-$$

$$\left(20\,B\,c\,(c+d)\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{2}-m,-\frac{1}{2},\frac{5}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{-1+2\,m}\right.$$

$$\left(\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{\frac{1}{2}(1-2m)} \text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^3 \left(1-\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{-\frac{1}{2}+m} \sqrt{c+d-2 d \text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}\Bigg) \Big/$$

$$\Bigg(3\Bigg(-5(c+d)\text{AppellF1}\left[\frac{3}{2},\frac{1}{2}-m,-\frac{1}{2},\frac{5}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\frac{2 d \text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]+$$

$$\Bigg(2 d \text{AppellF1}\left[\frac{5}{2},\frac{1}{2}-m,\frac{1}{2},\frac{7}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\frac{2 d \text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]+$$

$$(c+d)(-1+2m)\text{AppellF1}\left[\frac{5}{2},\frac{3}{2}-m,-\frac{1}{2},\frac{7}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\frac{2 d \text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\Bigg) \text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)\Bigg) -$$

$$\Bigg(20 A d (c+d)\text{AppellF1}\left[\frac{3}{2},\frac{1}{2}-m,-\frac{1}{2},\frac{5}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\frac{2 d \text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right] \text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{-1+2m}$$

$$\left(\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{\frac{1}{2}(1-2m)} \text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^3 \left(1-\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{-\frac{1}{2}+m} \sqrt{c+d-2 d \text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}\Bigg) \Big/$$

$$\Bigg(3\Bigg(-5(c+d)\text{AppellF1}\left[\frac{3}{2},\frac{1}{2}-m,-\frac{1}{2},\frac{5}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\frac{2 d \text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]+$$

$$\Bigg(2 d \text{AppellF1}\left[\frac{5}{2},\frac{1}{2}-m,\frac{1}{2},\frac{7}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\frac{2 d \text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]+$$

$$(c+d)(-1+2m)\text{AppellF1}\left[\frac{5}{2},\frac{3}{2}-m,-\frac{1}{2},\frac{7}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\frac{2 d \text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\Bigg) \text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)\Bigg) -$$

$$\Bigg(5 C d (c+d)\text{AppellF1}\left[\frac{3}{2},\frac{1}{2}-m,-\frac{1}{2},\frac{5}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\frac{2 d \text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right] \text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{-1+2m}$$

$$\left(\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{\frac{1}{2}(1-2m)} \text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^3 \left(1-\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{-\frac{1}{2}+m} \sqrt{c+d-2 d \text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}\Bigg) \Big/$$

$$\Bigg(-5(c+d)\text{AppellF1}\left[\frac{3}{2},\frac{1}{2}-m,-\frac{1}{2},\frac{5}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\frac{2 d \text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]+$$

$$\left(2\,d\,\text{AppellF1}\left[\frac{5}{2},\frac{1}{2}-m,\frac{1}{2},\frac{7}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+\right.$$

$$\left.(c+d)\,(-1+2\,m)\,\text{AppellF1}\left[\frac{5}{2},\frac{3}{2}-m,-\frac{1}{2},\frac{7}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right)\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)+$$

$$\left(21\,C\,d\,(c+d)\,\text{AppellF1}\left[\frac{5}{2},-\frac{1}{2}-m,-\frac{1}{2},\frac{7}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{1+2\,m}\right.$$

$$\left.\left(\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{\frac{1}{2}(-1-2\,m)}\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^5\left(1-\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{\frac{1}{2}+m}\sqrt{c+d-2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}\right)\Big/$$

$$\left(-7\,(c+d)\,\text{AppellF1}\left[\frac{5}{2},-\frac{1}{2}-m,-\frac{1}{2},\frac{7}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+\right.$$

$$\left(2\,d\,\text{AppellF1}\left[\frac{7}{2},-\frac{1}{2}-m,\frac{1}{2},\frac{9}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+\right.$$

$$\left.\left.(c+d)\,(1+2\,m)\,\text{AppellF1}\left[\frac{7}{2},\frac{1}{2}-m,-\frac{1}{2},\frac{9}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right)\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)+$$

$$\left(14\,c\,C\,(c+d)\,\text{AppellF1}\left[\frac{5}{2},\frac{1}{2}-m,-\frac{1}{2},\frac{7}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{-1+2\,m}\right.$$

$$\left.\left(\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{\frac{1}{2}(1-2\,m)}\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^5\left(1-\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{-\frac{1}{2}+m}\sqrt{c+d-2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}\right)\Big/$$

$$\left(5\left(-7\,(c+d)\,\text{AppellF1}\left[\frac{5}{2},\frac{1}{2}-m,-\frac{1}{2},\frac{7}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+\right.\right.$$

$$\left(2\,d\,\text{AppellF1}\left[\frac{7}{2},\frac{1}{2}-m,\frac{1}{2},\frac{9}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+\right.$$

$$\left.\left.(c+d)\,(-1+2\,m)\,\text{AppellF1}\left[\frac{7}{2},\frac{3}{2}-m,-\frac{1}{2},\frac{9}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right)\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\right)+$$

$$\left(14\,B\,d\,(c+d)\,\text{AppellF1}\left[\frac{5}{2},\frac{1}{2}-m,-\frac{1}{2},\frac{7}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{-1+2\,m}\right.$$

$$\left.\left(\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{\frac{1}{2}(1-2\,m)}\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^5\left(1-\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{-\frac{1}{2}+m}\sqrt{c+d-2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}\right)\Big/$$

$$\left(5\left(-7\,(c+d)\,\text{AppellF1}\left[\frac{5}{2},\frac{1}{2}-m,-\frac{1}{2},\frac{7}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+\right.\right.$$

$$\left(2\,d\,\text{AppellF1}\left[\frac{7}{2},\frac{1}{2}-m,\frac{1}{2},\frac{9}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+\right.$$

$$\left.\left.\left.(c+d)\,(-1+2\,m)\,\text{AppellF1}\left[\frac{7}{2},\frac{3}{2}-m,-\frac{1}{2},\frac{9}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right)\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\right)-$$

$$\left(9\,C\,d\,(c+d)\,\text{AppellF1}\left[\frac{7}{2},\frac{1}{2}-m,-\frac{1}{2},\frac{9}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{-1+2\,m}\right.$$

$$\left.\left(\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{\frac{1}{2}(1-2\,m)}\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^7\left(1-\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{-\frac{1}{2}+m}\sqrt{c+d-2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}\right)\Big/$$

$$\left(7\left(-9\,(c+d)\,\text{AppellF1}\left[\frac{7}{2},\frac{1}{2}-m,-\frac{1}{2},\frac{9}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+\right.\right.$$

$$\left(2\,d\,\text{AppellF1}\left[\frac{9}{2},\frac{1}{2}-m,\frac{1}{2},\frac{11}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+(c+d)\,(-1+2\,m)\right.$$

$$\left.\left.\left.\text{AppellF1}\left[\frac{9}{2},\frac{3}{2}-m,-\frac{1}{2},\frac{11}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right)\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\right)\right)(a+a\,\text{Sin}[e+f\,x])^m$$

■ Problem 28: Result more than twice size of optimal antiderivative.

$$\int(a+a\,\text{Sin}[e+f\,x])^m\sqrt{c+d\,\text{Sin}[e+f\,x]}\,\left(A+B\,\text{Sin}[e+f\,x]+C\,\text{Sin}[e+f\,x]^2\right)\,dx$$

Optimal (type 6, 396 leaves, 10 steps):

$$-\frac{2\,C\,\mathrm{Cos}[e+f\,x]\,(a+a\,\mathrm{Sin}[e+f\,x])^m\,(c+d\,\mathrm{Sin}[e+f\,x])^{3/2}}{d\,f\,(5+2\,m)}+$$

$$\left(\sqrt{2}\,(2\,c\,(C+2\,C\,m)-d\,(5\,B-3\,C+2\,B\,m+2\,C\,m-A\,(5+2\,m)))\,\mathrm{AppellF1}\left[\frac{1}{2}+m,\frac{1}{2},-\frac{1}{2},\frac{3}{2}+m,\frac{1}{2}\,(1+\mathrm{Sin}[e+f\,x]),-\frac{d\,(1+\mathrm{Sin}[e+f\,x])}{c-d}\right]\right.$$

$$\left.\mathrm{Cos}[e+f\,x]\,(a+a\,\mathrm{Sin}[e+f\,x])^m\,\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}\right)\Big/\left(d\,f\,(1+2\,m)\,(5+2\,m)\,\sqrt{1-\mathrm{Sin}[e+f\,x]}\,\sqrt{\frac{c+d\,\mathrm{Sin}[e+f\,x]}{c-d}}\right)-$$

$$\left(\sqrt{2}\,(2\,c\,C\,(1+m)-d\,(2\,C\,m+B\,(5+2\,m)))\,\mathrm{AppellF1}\left[\frac{3}{2}+m,\frac{1}{2},-\frac{1}{2},\frac{5}{2}+m,\frac{1}{2}\,(1+\mathrm{Sin}[e+f\,x]),-\frac{d\,(1+\mathrm{Sin}[e+f\,x])}{c-d}\right]\right.$$

$$\left.\mathrm{Cos}[e+f\,x]\,(a+a\,\mathrm{Sin}[e+f\,x])^{1+m}\,\sqrt{c+d\,\mathrm{Sin}[e+f\,x]}\right)\Big/\left(a\,d\,f\,(3+2\,m)\,(5+2\,m)\,\sqrt{1-\mathrm{Sin}[e+f\,x]}\,\sqrt{\frac{c+d\,\mathrm{Sin}[e+f\,x]}{c-d}}\right)$$

Result (type 6, 3138 leaves):

$$\frac{1}{2\,f}\,\mathrm{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{-2\,m}$$

$$\left(\left(6\,C\,(c+d)\,\mathrm{AppellF1}\left[\frac{1}{2},-\frac{3}{2}-m,-\frac{1}{2},\frac{3}{2},\mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\mathrm{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{3+2\,m}\right.\right.$$

$$\left.\left(\mathrm{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{\frac{1}{2}+\frac{1}{2}(-4-2\,m)}\mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\left(1-\mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{\frac{3}{2}+m}\sqrt{c+d-2\,d\,\mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}\right)\Big/$$

$$\left(-3\,(c+d)\,\mathrm{AppellF1}\left[\frac{1}{2},-\frac{3}{2}-m,-\frac{1}{2},\frac{3}{2},\mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+\right.$$

$$\left(2\,d\,\mathrm{AppellF1}\left[\frac{3}{2},-\frac{3}{2}-m,\frac{1}{2},\frac{5}{2},\mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+\right.$$

$$\left.\left.(c+d)\,(3+2\,m)\,\mathrm{AppellF1}\left[\frac{3}{2},-\frac{1}{2}-m,-\frac{1}{2},\frac{5}{2},\mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right)\mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)+$$

$$\left(12\,B\,(c+d)\,\mathrm{AppellF1}\left[\frac{1}{2},-\frac{1}{2}-m,-\frac{1}{2},\frac{3}{2},\mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\mathrm{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{1+2\,m}\right.$$

$$\left(\mathrm{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{\frac{1}{2}+\frac{1}{2}(-2-2m)} \mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right] \left(1-\mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{\frac{1}{2}+m} \sqrt{c+d-2 d\,\mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}\Bigg) \Big/$$

$$\Bigg(-3 (c+d)\,\mathrm{AppellF1}\left[\frac{1}{2}, -\frac{1}{2}-m, -\frac{1}{2}, \frac{3}{2}, \mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, \frac{2 d\,\mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right] +$$

$$\Bigg(2 d\,\mathrm{AppellF1}\left[\frac{3}{2}, -\frac{1}{2}-m, \frac{1}{2}, \frac{5}{2}, \mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, \frac{2 d\,\mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right] +$$

$$(c+d)(1+2m)\,\mathrm{AppellF1}\left[\frac{3}{2}, \frac{1}{2}-m, -\frac{1}{2}, \frac{5}{2}, \mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, \frac{2 d\,\mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\Bigg) \mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg) -$$

$$\Bigg(12 A (c+d)\,\mathrm{AppellF1}\left[\frac{1}{2}, \frac{1}{2}-m, -\frac{1}{2}, \frac{3}{2}, \mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, \frac{2 d\,\mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right] \mathrm{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{-1+2m}$$

$$\left(\mathrm{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{\frac{1}{2}-m} \mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right] \left(1-\mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{-\frac{1}{2}+m} \sqrt{c+d-2 d\,\mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}\Bigg) \Big/$$

$$\Bigg(3 (c+d)\,\mathrm{AppellF1}\left[\frac{1}{2}, \frac{1}{2}-m, -\frac{1}{2}, \frac{3}{2}, \mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, \frac{2 d\,\mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right] -$$

$$\Bigg(2 d\,\mathrm{AppellF1}\left[\frac{3}{2}, \frac{1}{2}-m, \frac{1}{2}, \frac{5}{2}, \mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, \frac{2 d\,\mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right] +$$

$$(c+d)(-1+2m)\,\mathrm{AppellF1}\left[\frac{3}{2}, \frac{3}{2}-m, -\frac{1}{2}, \frac{5}{2}, \mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, \frac{2 d\,\mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\Bigg) \mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg) -$$

$$\Bigg(6 C (c+d)\,\mathrm{AppellF1}\left[\frac{1}{2}, \frac{1}{2}-m, -\frac{1}{2}, \frac{3}{2}, \mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, \frac{2 d\,\mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right] \mathrm{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{-1+2m}$$

$$\left(\mathrm{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{\frac{1}{2}-m} \mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right] \left(1-\mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{-\frac{1}{2}+m} \sqrt{c+d-2 d\,\mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}\Bigg) \Big/$$

$$\Bigg(3 (c+d)\,\mathrm{AppellF1}\left[\frac{1}{2}, \frac{1}{2}-m, -\frac{1}{2}, \frac{3}{2}, \mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, \frac{2 d\,\mathrm{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right] -$$

$$\left(2\,d\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{2}-m,\frac{1}{2},\frac{5}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+\right.$$

$$\left.(c+d)\,(-1+2\,m)\,\text{AppellF1}\left[\frac{3}{2},\frac{3}{2}-m,-\frac{1}{2},\frac{5}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right)\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Bigg)-$$

$$\left(20\,C\,(c+d)\,\text{AppellF1}\left[\frac{3}{2},-\frac{1}{2}-m,-\frac{1}{2},\frac{5}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{1+2\,m}\right.$$

$$\left.\left(\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{\frac{1}{2}(-1-2\,m)}\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^3\left(1-\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{\frac{1}{2}+m}\sqrt{c+d-2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}\right)\Big/$$

$$\left(-5\,(c+d)\,\text{AppellF1}\left[\frac{3}{2},-\frac{1}{2}-m,-\frac{1}{2},\frac{5}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+\right.$$

$$\left(2\,d\,\text{AppellF1}\left[\frac{5}{2},-\frac{1}{2}-m,\frac{1}{2},\frac{7}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+\right.$$

$$\left.\left.(c+d)\,(1+2\,m)\,\text{AppellF1}\left[\frac{5}{2},\frac{1}{2}-m,-\frac{1}{2},\frac{7}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right)\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)-$$

$$\left(20\,B\,(c+d)\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{2}-m,-\frac{1}{2},\frac{5}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{-1+2\,m}\right.$$

$$\left.\left(\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{\frac{1}{2}(1-2\,m)}\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^3\left(1-\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{-\frac{1}{2}+m}\sqrt{c+d-2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}\right)\Big/$$

$$\left(3\left(-5\,(c+d)\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{2}-m,-\frac{1}{2},\frac{5}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+\right.\right.$$

$$\left(2\,d\,\text{AppellF1}\left[\frac{5}{2},\frac{1}{2}-m,\frac{1}{2},\frac{7}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+\right.$$

$$\left.\left.(c+d)\,(-1+2\,m)\,\text{AppellF1}\left[\frac{5}{2},\frac{3}{2}-m,-\frac{1}{2},\frac{7}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right)\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\Bigg)+$$

$$\left(14\,C\,(c+d)\,\text{AppellF1}\left[\frac{5}{2},\frac{1}{2}-m,-\frac{1}{2},\frac{7}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{-1+2\,m}\right.$$

$$\left.\left(\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{\frac{1}{2}(1-2\,m)}\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^5\left(1-\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{-\frac{1}{2}+m}\sqrt{c+d-2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}\right)\Big/$$

$$\left(5\left(-7\,(c+d)\,\text{AppellF1}\left[\frac{5}{2},\frac{1}{2}-m,-\frac{1}{2},\frac{7}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+\right.\right.$$

$$\left(2\,d\,\text{AppellF1}\left[\frac{7}{2},\frac{1}{2}-m,\frac{1}{2},\frac{9}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+(c+d)\,(-1+2\,m)\right.$$

$$\left.\left.\left.\text{AppellF1}\left[\frac{7}{2},\frac{3}{2}-m,-\frac{1}{2},\frac{9}{2},\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\frac{2\,d\,\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right)\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\right)\,(a+a\,\text{Sin}[e+f\,x])^m$$

- **Problem 29: Result more than twice size of optimal antiderivative.**

$$\int\frac{(a+a\,\text{Sin}[e+f\,x])^m\left(A+B\,\text{Sin}[e+f\,x]+C\,\text{Sin}[e+f\,x]^2\right)}{\sqrt{c+d\,\text{Sin}[e+f\,x]}}\,dx$$

Optimal (type 6, 389 leaves, 10 steps):

$$-\frac{2\,C\,\text{Cos}[e+f\,x]\,(a+a\,\text{Sin}[e+f\,x])^m\sqrt{c+d\,\text{Sin}[e+f\,x]}}{d\,f\,(3+2\,m)}+$$

$$\left(\sqrt{2}\,(2\,c\,(C+2\,C\,m)-d\,(3\,B-C+2\,B\,m+2\,C\,m-A\,(3+2\,m)))\,\text{AppellF1}\left[\frac{1}{2}+m,\frac{1}{2},\frac{1}{2},\frac{3}{2}+m,\frac{1}{2}\,(1+\text{Sin}[e+f\,x]),-\frac{d\,(1+\text{Sin}[e+f\,x])}{c-d}\right]\right.$$

$$\left.\text{Cos}[e+f\,x]\,(a+a\,\text{Sin}[e+f\,x])^m\sqrt{\frac{c+d\,\text{Sin}[e+f\,x]}{c-d}}\right)\Big/\left(d\,f\,(1+2\,m)\,(3+2\,m)\sqrt{1-\text{Sin}[e+f\,x]}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}\right)-$$

$$\left(\sqrt{2}\,(2\,c\,C\,(1+m)-d\,(2\,C\,m+B\,(3+2\,m)))\,\text{AppellF1}\left[\frac{3}{2}+m,\frac{1}{2},\frac{1}{2},\frac{5}{2}+m,\frac{1}{2}\,(1+\text{Sin}[e+f\,x]),-\frac{d\,(1+\text{Sin}[e+f\,x])}{c-d}\right]\right.$$

$$\left.\text{Cos}[e+f\,x]\,(a+a\,\text{Sin}[e+f\,x])^{1+m}\sqrt{\frac{c+d\,\text{Sin}[e+f\,x]}{c-d}}\right)\Big/\left(a\,d\,f\,(3+2\,m)^2\sqrt{1-\text{Sin}[e+f\,x]}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}\right)$$

Result (type 6, 11893 leaves):

$$-\Bigg(\Bigg(2\,(c+d)\,\text{Cos}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^{-1-2\,m}\,\text{Sin}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\,(a+a\,\text{Sin}[e+f\,x])^{m}$$

$$\Bigg(-\frac{2\,A\,\text{Cos}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f\,x\big)\big]^{2\,m}}{\sqrt{c+d\,\text{Sin}[e+f\,x]}}-\frac{C\,\text{Cos}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f\,x\big)\big]^{2\,m}}{\sqrt{c+d\,\text{Sin}[e+f\,x]}}-\frac{C\,\text{Cos}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f\,x\big)\big]^{2\,m}\,\text{Cos}\big[2\big(-e+\frac{\pi}{2}-f\,x\big)\big]}{\sqrt{c+d\,\text{Sin}[e+f\,x]}}-$$

$$\frac{2\,B\,\text{Cos}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f\,x\big)\big]^{2\,m}\,\text{Sin}[e+f\,x]}{\sqrt{c+d\,\text{Sin}[e+f\,x]}}\Bigg)\,\Big(1+\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^{2}\Big)^{-2-m}\,\sqrt{\frac{c+d+c\,\text{Tan}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f\,x\big)\big]^{2}-d\,\text{Tan}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f\,x\big)\big]^{2}}{1+\text{Tan}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f\,x\big)\big]^{2}}}$$

$$\Bigg(\Bigg(9\,(A\,(c-3\,d)+C\,(-3\,c+d)+B\,(c+d))\,\text{AppellF1}\Big[\frac{1}{2},\frac{5}{2}+m,-\frac{1}{2},\frac{3}{2},-\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^{2},-\frac{(c-d)\,\text{Tan}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f\,x\big)\big]^{2}}{c+d}\Big]\Bigg)\Big/$$

$$\Bigg(3\,(c+d)\,\text{AppellF1}\Big[\frac{1}{2},\frac{5}{2}+m,-\frac{1}{2},\frac{3}{2},-\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^{2},-\frac{(c-d)\,\text{Tan}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f\,x\big)\big]^{2}}{c+d}\Big]+$$

$$\Bigg((c-d)\,\text{AppellF1}\Big[\frac{3}{2},\frac{5}{2}+m,\frac{1}{2},\frac{5}{2},-\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^{2},-\frac{(c-d)\,\text{Tan}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f\,x\big)\big]^{2}}{c+d}\Big]-$$

$$(c+d)\,(5+2\,m)\,\text{AppellF1}\Big[\frac{3}{2},\frac{7}{2}+m,-\frac{1}{2},\frac{5}{2},-\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^{2},-\frac{(c-d)\,\text{Tan}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f\,x\big)\big]^{2}}{c+d}\Big]\Bigg)\,\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^{2}\Bigg)-$$

$$\Bigg(36\,(c^{2}\,C-B\,c\,d+A\,d^{2})\,\text{AppellF1}\Big[\frac{1}{2},\frac{5}{2}+m,\frac{1}{2},\frac{3}{2},-\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^{2},-\frac{(c-d)\,\text{Tan}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f\,x\big)\big]^{2}}{c+d}\Big]\Bigg)\Big/$$

$$\Bigg(\Big(c+d+c\,\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^{2}-d\,\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^{2}\Big)$$

$$\Bigg(-3\,(c+d)\,\text{AppellF1}\Big[\frac{1}{2},\frac{5}{2}+m,\frac{1}{2},\frac{3}{2},-\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^{2},-\frac{(c-d)\,\text{Tan}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f\,x\big)\big]^{2}}{c+d}\Big]+$$

$$\Bigg((c-d)\,\text{AppellF1}\Big[\frac{3}{2},\frac{5}{2}+m,\frac{3}{2},\frac{5}{2},-\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^{2},-\frac{(c-d)\,\text{Tan}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f\,x\big)\big]^{2}}{c+d}\Big]+(c+d)\,(5+2\,m)$$

$$\text{AppellF1}\left[\frac{3}{2}, \frac{7}{2}+m, \frac{1}{2}, \frac{5}{2}, -\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\right)\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)\Bigg)+$$

$$\Bigg(5\,(A-B+C)\,(c-d)\,\text{AppellF1}\left[\frac{3}{2}, \frac{5}{2}+m, -\frac{1}{2}, \frac{5}{2}, -\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)\Big/$$

$$\Bigg(5\,(c+d)\,\text{AppellF1}\left[\frac{3}{2}, \frac{5}{2}+m, -\frac{1}{2}, \frac{5}{2}, -\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]+$$

$$\Bigg((c-d)\,\text{AppellF1}\left[\frac{5}{2}, \frac{5}{2}+m, \frac{1}{2}, \frac{7}{2}, -\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]-(c+d)\,(5+2\,m)$$

$$\text{AppellF1}\left[\frac{5}{2}, \frac{7}{2}+m, -\frac{1}{2}, \frac{7}{2}, -\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\Bigg)\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)\Bigg)\Big/$$

$$\Bigg(3\,(c-d)^2 f\Bigg(-\frac{1}{3\,(c-d)^2}4\,(c+d)\,(-2-m)\,\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\left(1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{-3-m}$$

$$\sqrt{\frac{c+d+c\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2-d\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}}$$

$$\Bigg(\Bigg(9\,(A\,(c-3\,d)+C\,(-3\,c+d)+B\,(c+d))\,\text{AppellF1}\left[\frac{1}{2}, \frac{5}{2}+m, -\frac{1}{2}, \frac{3}{2}, -\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\Bigg)\Big/$$

$$\Bigg(3\,(c+d)\,\text{AppellF1}\left[\frac{1}{2}, \frac{5}{2}+m, -\frac{1}{2}, \frac{3}{2}, -\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]+$$

$$\Bigg((c-d)\,\text{AppellF1}\left[\frac{3}{2}, \frac{5}{2}+m, \frac{1}{2}, \frac{5}{2}, -\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]-(c+d)\,(5+2\,m)$$

$$\text{AppellF1}\left[\frac{3}{2},\frac{7}{2}+m,-\frac{1}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\right)\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)-$$

$$\left(36\left(c^2 C-B c d+A d^2\right)\text{AppellF1}\left[\frac{1}{2},\frac{5}{2}+m,\frac{1}{2},\frac{3}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\right)\Big/$$

$$\left(\left(c+d+c\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2-d\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\right.$$

$$\left(-3(c+d)\,\text{AppellF1}\left[\frac{1}{2},\frac{5}{2}+m,\frac{1}{2},\frac{3}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]+\right.$$

$$\left((c-d)\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{2}+m,\frac{3}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]+(c+d)(5+2m)\right.$$

$$\left.\left.\text{AppellF1}\left[\frac{3}{2},\frac{7}{2}+m,\frac{1}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\right)\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\right)+$$

$$\left(5(A-B+C)(c-d)\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{2}+m,-\frac{1}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\right.$$

$$\left.\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\Big/\left(5(c+d)\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{2}+m,-\frac{1}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]+\right.$$

$$\left((c-d)\,\text{AppellF1}\left[\frac{5}{2},\frac{5}{2}+m,\frac{1}{2},\frac{7}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]-(c+d)(5+2m)\right.$$

$$\left.\left.\text{AppellF1}\left[\frac{5}{2},\frac{7}{2}+m,-\frac{1}{2},\frac{7}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\right)\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\right)-$$

$$\frac{1}{3(c-d)^2}2(c+d)\,\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\left(1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{-2-m}\sqrt{\frac{c+d+c\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2-d\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}}$$

$$\left(\left(\left(9(A(c-3d)+C(-3c+d)+B(c+d))\,\text{AppellF1}\left[\frac{1}{2},\frac{5}{2}+m,-\frac{1}{2},\frac{3}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\right)\Big/\right.\right.$$

$$\left(3\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},\frac{5}{2}+m,-\frac{1}{2},\frac{3}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+\right.$$

$$\left((c-d)\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{2}+m,\frac{1}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]-(c+d)\,(5+2\,m)\right.$$

$$\left.\left.\text{AppellF1}\left[\frac{3}{2},\frac{7}{2}+m,-\frac{1}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right)\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)-$$

$$\left(36\,\left(c^2\,C-B\,c\,d+A\,d^2\right)\,\text{AppellF1}\left[\frac{1}{2},\frac{5}{2}+m,\frac{1}{2},\frac{3}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right)\Big/$$

$$\left(\left(c+d+c\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2-d\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\right.$$

$$\left(-3\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},\frac{5}{2}+m,\frac{1}{2},\frac{3}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+\right.$$

$$\left((c-d)\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{2}+m,\frac{3}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+(c+d)\,(5+2\,m)\right.$$

$$\left.\left.\left.\text{AppellF1}\left[\frac{3}{2},\frac{7}{2}+m,\frac{1}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right)\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\right)+$$

$$\left(5\,(A-B+C)\,(c-d)\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{2}+m,-\frac{1}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right.$$

$$\left.\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\Big/\left(5\,(c+d)\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{2}+m,-\frac{1}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+\right.$$

$$\left((c-d)\,\text{AppellF1}\left[\frac{5}{2},\frac{5}{2}+m,\frac{1}{2},\frac{7}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]-(c+d)\,(5+2\,m)\right.$$

$$\left.\left.\text{AppellF1}\left[\frac{5}{2},\frac{7}{2}+m,-\frac{1}{2},\frac{7}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right)\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)-$$

$$\frac{1}{3\,(c-d)^{2}\sqrt{\frac{c+d+c\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}-d\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}}{1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}}}}\;2\,(c+d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\left(1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}\right)^{-2-m}$$

$$\Bigg(\frac{c\,\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-d\,\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]}{1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}}-\Bigg(\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}$$

$$\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\left(c+d+c\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}-d\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}\right)\Bigg)\Big/\left(1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}\right)^{2}\Bigg)$$

$$\Bigg(\Bigg(9\,(A\,(c-3\,d)+C\,(-3\,c+d)+B\,(c+d))\,\text{AppellF1}\left[\frac{1}{2},\frac{5}{2}+m,-\frac{1}{2},\frac{3}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2},-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}}{c+d}\right]\Bigg)\Big/$$

$$\Bigg(3\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},\frac{5}{2}+m,-\frac{1}{2},\frac{3}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2},-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}}{c+d}\right]+$$

$$\Bigg((c-d)\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{2}+m,\frac{1}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2},-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}}{c+d}\right]-(c+d)\,(5+2\,m)$$

$$\text{AppellF1}\left[\frac{3}{2},\frac{7}{2}+m,-\frac{1}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2},-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}}{c+d}\right]\Bigg)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}\Bigg)-$$

$$\Bigg(36\,(c^{2}\,C-B\,c\,d+A\,d^{2})\,\text{AppellF1}\left[\frac{1}{2},\frac{5}{2}+m,\frac{1}{2},\frac{3}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2},-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}}{c+d}\right]\Bigg)\Big/$$

$$\Bigg(\left(c+d+c\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}-d\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}\right)$$

$$\Bigg(-3\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},\frac{5}{2}+m,\frac{1}{2},\frac{3}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2},-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}}{c+d}\right]+$$

$$\Bigg((c-d)\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{2}+m,\frac{3}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2},-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}}{c+d}\right]+(c+d)\,(5+2\,m)$$

$$\text{AppellF1}\left[\frac{3}{2},\frac{7}{2}+m,\frac{1}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2},-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}}{c+d}\right]\Bigg)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^{2}\Bigg)\Bigg)+$$

$$\left(5\,(A-B+C)\,(c-d)\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{2}+m,-\frac{1}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right.$$

$$\left.\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\Big/\left(5\,(c+d)\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{2}+m,-\frac{1}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+\right.$$

$$\left((c-d)\,\text{AppellF1}\left[\frac{5}{2},\frac{5}{2}+m,\frac{1}{2},\frac{7}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]-(c+d)\,(5+2\,m)\right.$$

$$\left.\left.\text{AppellF1}\left[\frac{5}{2},\frac{7}{2}+m,-\frac{1}{2},\frac{7}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right)\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\right)-$$

$$\frac{1}{3\,(c-d)^2}\,4\,(c+d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\left(1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{-2-m}\sqrt{\frac{c+d+c\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2-d\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}}$$

$$\left(\left(9\,(A\,(c-3\,d)+C\,(-3\,c+d)+B\,(c+d))\left(\frac{1}{6\,(c+d)}(c-d)\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{2}+m,\frac{1}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\right.\right.\right.\right.$$

$$-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\Bigg]\,\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-\frac{1}{3}\left(\frac{5}{2}+m\right)\text{AppellF1}\left[\frac{3}{2},\frac{7}{2}+m,-\frac{1}{2},\right.$$

$$\left.\left.\left.\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\right)\right)\Big/$$

$$\left(3\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},\frac{5}{2}+m,-\frac{1}{2},\frac{3}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+\right.$$

$$\left((c-d)\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{2}+m,\frac{1}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]-(c+d)\,(5+2\,m)\right.$$

$$\left.\left.\text{AppellF1}\left[\frac{3}{2},\frac{7}{2}+m,-\frac{1}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right)\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)+$$

$$\left(36\,\left(c^2\,C-B\,c\,d+A\,d^2\right)\text{AppellF1}\left[\frac{1}{2},\frac{5}{2}+m,\frac{1}{2},\frac{3}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right.$$

$$\left(c\,\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-d\,\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\right)\right)\Big/$$

$$\left(\left(c+d+c\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2-d\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^2\left(-3\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},\frac{5}{2}+m,\frac{1}{2},\right.\right.\right.$$

$$\left.\frac{3}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+$$

$$\left((c-d)\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{2}+m,\frac{3}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+(c+d)\,(5+2\,m)\right.$$

$$\left.\left.\left.\text{AppellF1}\left[\frac{3}{2},\frac{7}{2}+m,\frac{1}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right)\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\right)-$$

$$\left(36\left(c^2\,C-B\,c\,d+A\,d^2\right)\left(-\frac{1}{6\,(c+d)}(c-d)\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{2}+m,\frac{3}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right.\right.$$

$$\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-\frac{1}{3}\left(\frac{5}{2}+m\right)\text{AppellF1}\left[\frac{3}{2},\frac{7}{2}+m,\frac{1}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\right.$$

$$\left.\left.\left.-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\right)\right)\Big/\left(\left(c+d+c\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2-\right.\right.$$

$$\left.d\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\left(-3\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},\frac{5}{2}+m,\frac{1}{2},\frac{3}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+\right.$$

$$\left((c-d)\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{2}+m,\frac{3}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+(c+d)\,(5+2\,m)\right.$$

$$\left.\left.\left.\text{AppellF1}\left[\frac{3}{2},\frac{7}{2}+m,\frac{1}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right)\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\right)+$$

$$\left(5\,(A-B+C)\,(c-d)\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{2}+m,-\frac{1}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right.$$

$$\left.\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\right)\Big/\left(5\,(c+d)\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{2}+m,-\frac{1}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+\right.$$

$$\left((c-d)\,\text{AppellF1}\left[\frac{5}{2},\frac{5}{2}+m,\frac{1}{2},\frac{7}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]-(c+d)\,(5+2\,m)\right.$$

$$\left.\text{AppellF1}\left[\frac{5}{2},\frac{7}{2}+m,-\frac{1}{2},\frac{7}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right)\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Bigg)+$$

$$\left(5\,(A-B+C)\,(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\left(\frac{1}{10\,(c+d)}3\,(c-d)\,\text{AppellF1}\left[\frac{5}{2},\frac{5}{2}+m,\frac{1}{2},\frac{7}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\right.\right.\right.$$

$$-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\Bigg]\,\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-\frac{3}{5}\left(\frac{5}{2}+m\right)\text{AppellF1}\left[\frac{5}{2},\frac{7}{2}+m,-\frac{1}{2},\right.$$

$$\left.\left.\left.\frac{7}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\right)\right)\Big/$$

$$\left(5\,(c+d)\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{2}+m,-\frac{1}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+\right.$$

$$\left((c-d)\,\text{AppellF1}\left[\frac{5}{2},\frac{5}{2}+m,\frac{1}{2},\frac{7}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]-(c+d)\,(5+2\,m)\right.$$

$$\left.\left.\text{AppellF1}\left[\frac{5}{2},\frac{7}{2}+m,-\frac{1}{2},\frac{7}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right)\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)-$$

$$\left(9\,(A\,(c-3\,d)+C\,(-3\,c+d)+B\,(c+d))\,\text{AppellF1}\left[\frac{1}{2},\frac{5}{2}+m,-\frac{1}{2},\frac{3}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right.$$

$$\left(\left((c-d)\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{2}+m,\frac{1}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]-(c+d)\,(5+2\,m)\right.\right.$$

$$\left.\text{AppellF1}\left[\frac{3}{2},\frac{7}{2}+m,-\frac{1}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right)\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2$$

$$\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]+3\,(c+d)\left(\frac{1}{6\,(c+d)}(c-d)\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{2}+m,\frac{1}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\right.\right.$$

$$-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\Bigg]\,\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-\frac{1}{3}\left(\frac{5}{2}+m\right)\text{AppellF1}\left[\frac{3}{2},\frac{7}{2}+m,\right.$$

$$-\frac{1}{2}, \frac{5}{2}, -\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\Big]\,\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\Bigg) +$$

$$\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \Bigg((c-d)\Bigg(-\frac{1}{10\,(c+d)}3\,(c-d)\,\text{AppellF1}\Big[\frac{5}{2}, \frac{5}{2}+m, \frac{3}{2}, \frac{7}{2}, -\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,$$

$$-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\Big]\,\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right] - \frac{3}{5}\left(\frac{5}{2}+m\right)\text{AppellF1}\Big[\frac{5}{2}, \frac{7}{2}+m, \frac{1}{2},$$

$$\frac{7}{2}, -\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\Big]\,\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\Bigg) -$$

$$(c+d)\,(5+2\,m)\Bigg(\frac{1}{10\,(c+d)}3\,(c-d)\,\text{AppellF1}\Big[\frac{5}{2}, \frac{7}{2}+m, \frac{1}{2}, \frac{7}{2}, -\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,$$

$$-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\Big]\,\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right] - \frac{3}{5}\left(\frac{7}{2}+m\right)\text{AppellF1}\Big[\frac{5}{2}, \frac{9}{2}+m, -\frac{1}{2},$$

$$\frac{7}{2}, -\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\Big]\,\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\Bigg)\Bigg)\Bigg)\Bigg)\Bigg) \Big/$$

$$\Bigg(3\,(c+d)\,\text{AppellF1}\Big[\frac{1}{2}, \frac{5}{2}+m, -\frac{1}{2}, \frac{3}{2}, -\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\Big] +$$

$$\Bigg((c-d)\,\text{AppellF1}\Big[\frac{3}{2}, \frac{5}{2}+m, \frac{1}{2}, \frac{5}{2}, -\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\Big] - (c+d)\,(5+2\,m)$$

$$\text{AppellF1}\Big[\frac{3}{2}, \frac{7}{2}+m, -\frac{1}{2}, \frac{5}{2}, -\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\Big]\Bigg)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)^2 +$$

$$\Bigg(36\,\left(c^2\,C - B\,c\,d + A\,d^2\right)\text{AppellF1}\Big[\frac{1}{2}, \frac{5}{2}+m, \frac{1}{2}, \frac{3}{2}, -\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\Big]$$

$$\Bigg(\Bigg((c-d)\,\text{AppellF1}\Big[\frac{3}{2}, \frac{5}{2}+m, \frac{3}{2}, \frac{5}{2}, -\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\Big] + (c+d)\,(5+2\,m)\,\text{AppellF1}\Big[\frac{3}{2},$$

$$\frac{7}{2}+m,\ \frac{1}{2},\ \frac{5}{2},\ -\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\Bigg]\Bigg)\ \text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-$$

$$3\,(c+d)\,\Bigg(-\frac{1}{6\,(c+d)}(c-d)\,\text{AppellF1}\Bigg[\frac{3}{2},\ \frac{5}{2}+m,\ \frac{3}{2},\ \frac{5}{2},\ -\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\Bigg]$$

$$\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-\frac{1}{3}\left(\frac{5}{2}+m\right)\text{AppellF1}\Bigg[\frac{3}{2},\ \frac{7}{2}+m,\ \frac{1}{2},\ \frac{5}{2},\ -\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,$$

$$-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\Bigg]\ \text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\Bigg)+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2$$

$$\Bigg((c-d)\,\Bigg(-\frac{1}{10\,(c+d)}9\,(c-d)\,\text{AppellF1}\Bigg[\frac{5}{2},\ \frac{5}{2}+m,\ \frac{5}{2},\ \frac{7}{2},\ -\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\Bigg]$$

$$\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-\frac{3}{5}\left(\frac{5}{2}+m\right)\text{AppellF1}\Bigg[\frac{5}{2},\ \frac{7}{2}+m,\ \frac{3}{2},\ \frac{7}{2},\ -\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,$$

$$-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\Bigg]\ \text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\Bigg)+(c+d)\,(5+2\,m)$$

$$\Bigg(-\frac{1}{10\,(c+d)}3\,(c-d)\,\text{AppellF1}\Bigg[\frac{5}{2},\ \frac{7}{2}+m,\ \frac{3}{2},\ \frac{7}{2},\ -\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\Bigg]$$

$$\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-\frac{3}{5}\left(\frac{7}{2}+m\right)\text{AppellF1}\Bigg[\frac{5}{2},\ \frac{9}{2}+m,\ \frac{1}{2},\ \frac{7}{2},$$

$$-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\Bigg]\ \text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\Bigg)\Bigg)\Bigg)\Bigg)\Bigg)\Bigg/$$

$$\Bigg(\left(c+d+c\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2-d\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\Bigg(-3\,(c+d)\,\text{AppellF1}\Bigg[\frac{1}{2},\ \frac{5}{2}+m,\ \frac{1}{2},\ \frac{3}{2},$$

$$-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\Bigg]+$$

$$\Bigg((c-d)\,\text{AppellF1}\Bigg[\frac{3}{2},\ \frac{5}{2}+m,\ \frac{3}{2},\ \frac{5}{2},\ -\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\Bigg]+(c+d)\,(5+2\,m)$$

$$\text{AppellF1}\left[\frac{3}{2},\frac{7}{2}+m,\frac{1}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)^2\Bigg)-$$

$$\Bigg(5\,(A-B+C)\,(c-d)\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{2}+m,-\frac{1}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]$$

$$\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg(\Bigg((c-d)\,\text{AppellF1}\left[\frac{5}{2},\frac{5}{2}+m,\frac{1}{2},\frac{7}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]-(c+d)$$

$$(5+2m)\,\text{AppellF1}\left[\frac{5}{2},\frac{7}{2}+m,-\frac{1}{2},\frac{7}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\Bigg)\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2$$

$$\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]+5\,(c+d)\,\Bigg(\frac{1}{10\,(c+d)}3\,(c-d)\,\text{AppellF1}\left[\frac{5}{2},\frac{5}{2}+m,\frac{1}{2},\frac{7}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\right.$$

$$\left.-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{3}{5}\left(\frac{5}{2}+m\right)\text{AppellF1}\left[\frac{5}{2},\frac{7}{2}+m,\right.$$

$$\left.-\frac{1}{2},\frac{7}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\Bigg)+$$

$$\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg((c-d)\,\Bigg(-\frac{1}{14\,(c+d)}5\,(c-d)\,\text{AppellF1}\left[\frac{7}{2},\frac{5}{2}+m,\frac{3}{2},\frac{9}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\right.$$

$$\left.-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{5}{7}\left(\frac{5}{2}+m\right)\text{AppellF1}\left[\frac{7}{2},\frac{7}{2}+m,\frac{1}{2},\right.$$

$$\left.\frac{9}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\Bigg)-$$

$$(c+d)\,(5+2m)\,\Bigg(\frac{1}{14\,(c+d)}5\,(c-d)\,\text{AppellF1}\left[\frac{7}{2},\frac{7}{2}+m,\frac{1}{2},\frac{9}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\right.$$

$$\left.-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{5}{7}\left(\frac{7}{2}+m\right)\text{AppellF1}\left[\frac{7}{2},\frac{9}{2}+m,-\frac{1}{2},\right.$$

$$\left.\frac{9}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\Bigg)\Bigg)\Bigg)\Bigg)\Bigg)\Big/$$

$$\left(5\,(c+d)\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{2}+m,-\frac{1}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+\right.$$

$$\left((c-d)\,\text{AppellF1}\left[\frac{5}{2},\frac{5}{2}+m,\frac{1}{2},\frac{7}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]-(c+d)\,(5+2\,m)\right.$$

$$\left.\left.\left.\left.\text{AppellF1}\left[\frac{5}{2},\frac{7}{2}+m,-\frac{1}{2},\frac{7}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right)\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\right)\right)\right)$$

- **Problem 30: Result more than twice size of optimal antiderivative.**

$$\int\frac{(a+a\,\text{Sin}[e+f\,x])^m\left(A+B\,\text{Sin}[e+f\,x]+C\,\text{Sin}[e+f\,x]^2\right)}{(c+d\,\text{Sin}[e+f\,x])^{3/2}}\,dx$$

Optimal (type 6, 433 leaves, 10 steps):

$$\frac{2\left(c^2\,C-B\,c\,d+A\,d^2\right)\text{Cos}[e+f\,x]\,(a+a\,\text{Sin}[e+f\,x])^m}{d\left(c^2-d^2\right)f\sqrt{c+d\,\text{Sin}[e+f\,x]}}-$$

$$\left(\sqrt{2}\left(d^2\,(A+B-C+4\,A\,m)-c\,d\,(A+B+C+4\,B\,m)+2\,c^2\,(C+2\,C\,m)\right)\text{AppellF1}\left[\frac{1}{2}+m,\frac{1}{2},\frac{1}{2},\frac{3}{2}+m,\frac{1}{2}\,(1+\text{Sin}[e+f\,x]),-\frac{d\,(1+\text{Sin}[e+f\,x])}{c-d}\right]\right.$$

$$\left.\text{Cos}[e+f\,x]\,(a+a\,\text{Sin}[e+f\,x])^m\sqrt{\frac{c+d\,\text{Sin}[e+f\,x]}{c-d}}\right)\Big/\left(d\left(c^2-d^2\right)f\,(1+2\,m)\sqrt{1-\text{Sin}[e+f\,x]}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}\right)-$$

$$\left(\sqrt{2}\left(d\,(B\,c-A\,d)\,(1+2\,m)+C\left(d^2-2\,c^2\,(1+m)\right)\right)\text{AppellF1}\left[\frac{3}{2}+m,\frac{1}{2},\frac{1}{2},\frac{5}{2}+m,\frac{1}{2}\,(1+\text{Sin}[e+f\,x]),-\frac{d\,(1+\text{Sin}[e+f\,x])}{c-d}\right]\right.$$

$$\left.\text{Cos}[e+f\,x]\,(a+a\,\text{Sin}[e+f\,x])^{1+m}\sqrt{\frac{c+d\,\text{Sin}[e+f\,x]}{c-d}}\right)\Big/\left(a\,d\left(c^2-d^2\right)f\,(3+2\,m)\sqrt{1-\text{Sin}[e+f\,x]}\,\sqrt{c+d\,\text{Sin}[e+f\,x]}\right)$$

Result (type 6, 31 436 leaves): Display of huge result suppressed!

- **Problem 31: Result more than twice size of optimal antiderivative.**

$$\int \frac{(a+a\,\text{Sin}[e+f\,x])^m\,\left(A+B\,\text{Sin}[e+f\,x]+C\,\text{Sin}[e+f\,x]^2\right)}{(c+d\,\text{Sin}[e+f\,x])^{5/2}}\,dx$$

Optimal (type 6, 451 leaves, 10 steps):

$$\frac{2\left(c^2 C-B c d+A d^2\right)\text{Cos}[e+f x]\,(a+a\,\text{Sin}[e+f x])^m}{3 d\left(c^2-d^2\right) f\,(c+d\,\text{Sin}[e+f x])^{3/2}}+\left(\sqrt{2}\,\left(d^2\,(A-3 B+3 C-4 A m)+c d\,(3 A-B+3 C+4 B m)-2 c^2\,(C+2 C m)\right)\right.$$
$$\left.\text{AppellF1}\left[\frac{1}{2}+m,\frac{1}{2},\frac{3}{2},\frac{3}{2}+m,\frac{1}{2}\,(1+\text{Sin}[e+f x]),-\frac{d\,(1+\text{Sin}[e+f x])}{c-d}\right]\text{Cos}[e+f x]\,(a+a\,\text{Sin}[e+f x])^m\sqrt{\frac{c+d\,\text{Sin}[e+f x]}{c-d}}\right)\Big/$$
$$\left(3\,(c-d)^2\,d\,(c+d)\,f\,(1+2 m)\sqrt{1-\text{Sin}[e+f x]}\,\sqrt{c+d\,\text{Sin}[e+f x]}\right)+$$
$$\left(\sqrt{2}\,\left(B c d\,(1-2 m)+2 c^2 C\,(1+m)-d^2\,(A+3 C-2 A m)\right)\text{AppellF1}\left[\frac{3}{2}+m,\frac{1}{2},\frac{3}{2},\frac{5}{2}+m,\frac{1}{2}\,(1+\text{Sin}[e+f x]),-\frac{d\,(1+\text{Sin}[e+f x])}{c-d}\right]\right.$$
$$\left.\text{Cos}[e+f x]\,(a+a\,\text{Sin}[e+f x])^{1+m}\sqrt{\frac{c+d\,\text{Sin}[e+f x]}{c-d}}\right)\Big/\left(3 a\,(c-d)^2\,d\,(c+d)\,f\,(3+2 m)\sqrt{1-\text{Sin}[e+f x]}\,\sqrt{c+d\,\text{Sin}[e+f x]}\right)$$

Result (type 6, 12 922 leaves):

$$-\left(\left(2\,(c+d)\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{-1-2 m}\text{Sin}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right](a+a\,\text{Sin}[e+f x])^m\right.\right.$$
$$\left(-\frac{2 A\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2 m}}{(c+d\,\text{Sin}[e+f x])^{5/2}}-\frac{C\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2 m}}{(c+d\,\text{Sin}[e+f x])^{5/2}}-\frac{C\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2 m}\text{Cos}\left[2\left(-e+\frac{\pi}{2}-f x\right)\right]}{(c+d\,\text{Sin}[e+f x])^{5/2}}-\right.$$
$$\left.\frac{2 B\,\text{Cos}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^{2 m}\text{Sin}[e+f x]}{(c+d\,\text{Sin}[e+f x])^{5/2}}\right)\left(1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{-m}\sqrt{\frac{c+d+c\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2-d\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}}$$
$$\left(\left(45\,(A+B+C)\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2}+m,\frac{5}{2},\frac{3}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\right)\Big/\right.$$
$$\left(3\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2}+m,\frac{5}{2},\frac{3}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]-\right.$$

$$\left(5\,(c-d)\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{2}+m,\frac{7}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+\right.$$

$$\left.(c+d)\,(1+2\,m)\,\text{AppellF1}\left[\frac{3}{2},\frac{3}{2}+m,\frac{5}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right)\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Bigg)+$$

$$\left(50\,(-A+C)\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{2}+m,\frac{5}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\Big/$$

$$\left(-5\,(c+d)\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{2}+m,\frac{5}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+\right.$$

$$\left(5\,(c-d)\,\text{AppellF1}\left[\frac{5}{2},\frac{1}{2}+m,\frac{7}{2},\frac{7}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+\right.$$

$$\left.(c+d)\,(1+2\,m)\,\text{AppellF1}\left[\frac{5}{2},\frac{3}{2}+m,\frac{5}{2},\frac{7}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right)\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Bigg)-$$

$$\left(21\,(A-B+C)\,\text{AppellF1}\left[\frac{5}{2},\frac{1}{2}+m,\frac{5}{2},\frac{7}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\right)\Big/$$

$$\left(-7\,(c+d)\,\text{AppellF1}\left[\frac{5}{2},\frac{1}{2}+m,\frac{5}{2},\frac{7}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+\right.$$

$$\left(5\,(c-d)\,\text{AppellF1}\left[\frac{7}{2},\frac{1}{2}+m,\frac{7}{2},\frac{9}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+(c+d)\,(1+2\,m)\right.$$

$$\left.\left.\text{AppellF1}\left[\frac{7}{2},\frac{3}{2}+m,\frac{5}{2},\frac{9}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right)\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\right)\Big/$$

$$\left(15\,f\left(c+d+c\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2-d\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^3\left(\frac{1}{5\left(c+d+c\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2-d\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^4}\right.\right.$$

$$4\,(c+d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\left(c\,\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-d\,\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\right)$$

$$\left(1+\operatorname{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{-m}\sqrt{\frac{c+d+c\operatorname{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2-d\operatorname{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{1+\operatorname{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}}$$

$$\left(\left(45\,(A+B+C)\operatorname{AppellF1}\left[\frac{1}{2},\frac{1}{2}+m,\frac{5}{2},\frac{3}{2},-\operatorname{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\operatorname{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\right)\Big/\right.$$

$$\left(3\,(c+d)\operatorname{AppellF1}\left[\frac{1}{2},\frac{1}{2}+m,\frac{5}{2},\frac{3}{2},-\operatorname{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\operatorname{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]-\right.$$

$$\left(5\,(c-d)\operatorname{AppellF1}\left[\frac{3}{2},\frac{1}{2}+m,\frac{7}{2},\frac{5}{2},-\operatorname{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\operatorname{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]+(c+d)\,(1+2\,m)\right.$$

$$\left.\left.\operatorname{AppellF1}\left[\frac{3}{2},\frac{3}{2}+m,\frac{5}{2},\frac{5}{2},-\operatorname{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\operatorname{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\right)\operatorname{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)+$$

$$\left(50\,(-A+C)\operatorname{AppellF1}\left[\frac{3}{2},\frac{1}{2}+m,\frac{5}{2},\frac{5}{2},-\operatorname{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\operatorname{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\operatorname{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\Big/$$

$$\left(-5\,(c+d)\operatorname{AppellF1}\left[\frac{3}{2},\frac{1}{2}+m,\frac{5}{2},\frac{5}{2},-\operatorname{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\operatorname{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]+\right.$$

$$\left(5\,(c-d)\operatorname{AppellF1}\left[\frac{5}{2},\frac{1}{2}+m,\frac{7}{2},\frac{7}{2},-\operatorname{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\operatorname{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]+(c+d)\,(1+2\,m)\right.$$

$$\left.\left.\operatorname{AppellF1}\left[\frac{5}{2},\frac{3}{2}+m,\frac{5}{2},\frac{7}{2},-\operatorname{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\operatorname{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\right)\operatorname{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)-$$

$$\left(21\,(A-B+C)\operatorname{AppellF1}\left[\frac{5}{2},\frac{1}{2}+m,\frac{5}{2},\frac{7}{2},-\operatorname{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\operatorname{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\operatorname{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^4\right)\Big/$$

$$\left(-7\,(c+d)\operatorname{AppellF1}\left[\frac{5}{2},\frac{1}{2}+m,\frac{5}{2},\frac{7}{2},-\operatorname{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\operatorname{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]+\right.$$

$$\left(5\,(c-d)\operatorname{AppellF1}\left[\frac{7}{2},\frac{1}{2}+m,\frac{7}{2},\frac{9}{2},-\operatorname{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\operatorname{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]+(c+d)\,(1+2\,m)\right.$$

$$\text{AppellF1}\left[\frac{7}{2},\frac{3}{2}+m,\frac{5}{2},\frac{9}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\right)\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)\Bigg)+$$

$$\frac{1}{15\left(c+d+c\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2-d\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^3}\,4\,(c+d)\,m\,\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2$$

$$\left(1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^{-1-m}\sqrt{\frac{c+d+c\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2-d\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}}$$

$$\Bigg(\Bigg(45\,(A+B+C)\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2}+m,\frac{5}{2},\frac{3}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\Bigg)\Big/$$

$$\left(3\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2}+m,\frac{5}{2},\frac{3}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]-\right.$$

$$\left(5\,(c-d)\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{2}+m,\frac{7}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]+(c+d)\,(1+2m)\right.$$

$$\left.\left.\text{AppellF1}\left[\frac{3}{2},\frac{3}{2}+m,\frac{5}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\right)\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)+$$

$$\left(50\,(-A+C)\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{2}+m,\frac{5}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)\Big/$$

$$\left(-5\,(c+d)\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{2}+m,\frac{5}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]+\right.$$

$$\left(5\,(c-d)\,\text{AppellF1}\left[\frac{5}{2},\frac{1}{2}+m,\frac{7}{2},\frac{7}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]+(c+d)\,(1+2m)\right.$$

$$\left.\left.\text{AppellF1}\left[\frac{5}{2},\frac{3}{2}+m,\frac{5}{2},\frac{7}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\right)\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)-$$

$$\left(21\,(A-B+C)\,\text{AppellF1}\left[\frac{5}{2},\frac{1}{2}+m,\frac{5}{2},\frac{7}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^4\right)\Big/$$

$$\left(-7\,(c+d)\,\text{AppellF1}\left[\frac{5}{2},\frac{1}{2}+m,\frac{5}{2},\frac{7}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+\right.$$

$$\left(5\,(c-d)\,\text{AppellF1}\left[\frac{7}{2},\frac{1}{2}+m,\frac{7}{2},\frac{9}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+(c+d)\,(1+2\,m)\right.$$

$$\left.\left.\text{AppellF1}\left[\frac{7}{2},\frac{3}{2}+m,\frac{5}{2},\frac{9}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right)\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\right)-$$

$$\frac{1}{15\left(c+d+c\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2-d\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^3}\,2\,(c+d)\,\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\left(1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{-m}$$

$$\sqrt{\frac{c+d+c\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2-d\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}}$$

$$\left(\left(45\,(A+B+C)\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2}+m,\frac{5}{2},\frac{3}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right)\right/$$

$$\left(3\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2}+m,\frac{5}{2},\frac{3}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]-\right.$$

$$\left(5\,(c-d)\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{2}+m,\frac{7}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+(c+d)\,(1+2\,m)\right.$$

$$\left.\left.\text{AppellF1}\left[\frac{3}{2},\frac{3}{2}+m,\frac{5}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right)\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)+$$

$$\left(50\,(-A+C)\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{2}+m,\frac{5}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\Big/$$

$$\left(-5\,(c+d)\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{2}+m,\frac{5}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+\right.$$

$$\left(5\,(c-d)\,\text{AppellF1}\left[\frac{5}{2},\frac{1}{2}+m,\frac{7}{2},\frac{7}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+(c+d)\,(1+2\,m)\right.$$

$$\text{AppellF1}\Big[\frac{5}{2},\ \frac{3}{2}+m,\ \frac{5}{2},\ \frac{7}{2},\ -\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\ -\frac{(c-d)\ \text{Tan}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f\,x\big)\big]^2}{c+d}\Big]\Big)\ \text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)\ -$$

$$\Big(21\ (A-B+C)\ \text{AppellF1}\Big[\frac{5}{2},\ \frac{1}{2}+m,\ \frac{5}{2},\ \frac{7}{2},\ -\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\ -\frac{(c-d)\ \text{Tan}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f\,x\big)\big]^2}{c+d}\Big]\ \text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^4\Big)\Big/$$

$$\Big(-7\ (c+d)\ \text{AppellF1}\Big[\frac{5}{2},\ \frac{1}{2}+m,\ \frac{5}{2},\ \frac{7}{2},\ -\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\ -\frac{(c-d)\ \text{Tan}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f\,x\big)\big]^2}{c+d}\Big]\ +$$

$$\Big(5\ (c-d)\ \text{AppellF1}\Big[\frac{7}{2},\ \frac{1}{2}+m,\ \frac{7}{2},\ \frac{9}{2},\ -\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\ -\frac{(c-d)\ \text{Tan}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f\,x\big)\big]^2}{c+d}\Big]\ +\ (c+d)\ (1+2\,m)$$

$$\text{AppellF1}\Big[\frac{7}{2},\ \frac{3}{2}+m,\ \frac{5}{2},\ \frac{9}{2},\ -\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\ -\frac{(c-d)\ \text{Tan}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f\,x\big)\big]^2}{c+d}\Big]\Big)\ \text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)\Big)\ -$$

$$\Big(2\ (c+d)\ \text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\ \Big(1+\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)^{-m}\ \Big(\Big(c\,\text{Sec}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\ \text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]-d$$

$$\text{Sec}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\ \text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\Big)\Big/\ \Big(1+\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)-\Big(\text{Sec}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\ \text{Tan}\Big[$$

$$\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]\ \Big(c+d+c\,\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2-d\,\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)\Big)\Big/\ \Big(1+\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)^2\Big)$$

$$\Big(\Big(45\ (A+B+C)\ \text{AppellF1}\Big[\frac{1}{2},\ \frac{1}{2}+m,\ \frac{5}{2},\ \frac{3}{2},\ -\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\ -\frac{(c-d)\ \text{Tan}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f\,x\big)\big]^2}{c+d}\Big]\Big)\Big/$$

$$\Big(3\ (c+d)\ \text{AppellF1}\Big[\frac{1}{2},\ \frac{1}{2}+m,\ \frac{5}{2},\ \frac{3}{2},\ -\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\ -\frac{(c-d)\ \text{Tan}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f\,x\big)\big]^2}{c+d}\Big]\ -$$

$$\Big(5\ (c-d)\ \text{AppellF1}\Big[\frac{3}{2},\ \frac{1}{2}+m,\ \frac{7}{2},\ \frac{5}{2},\ -\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\ -\frac{(c-d)\ \text{Tan}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f\,x\big)\big]^2}{c+d}\Big]\ +\ (c+d)\ (1+2\,m)$$

$$\text{AppellF1}\Big[\frac{3}{2},\ \frac{3}{2}+m,\ \frac{5}{2},\ \frac{5}{2},\ -\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\ -\frac{(c-d)\ \text{Tan}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f\,x\big)\big]^2}{c+d}\Big]\Big)\ \text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)\ +$$

$$\Big(50\ (-A+C)\ \text{AppellF1}\Big[\frac{3}{2},\ \frac{1}{2}+m,\ \frac{5}{2},\ \frac{5}{2},\ -\text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2,\ -\frac{(c-d)\ \text{Tan}\big[\frac{1}{2}\big(-e+\frac{\pi}{2}-f\,x\big)\big]^2}{c+d}\Big]\ \text{Tan}\Big[\frac{1}{2}\Big(-e+\frac{\pi}{2}-f\,x\Big)\Big]^2\Big)\Big/$$

$$\left(-5\,(c+d)\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{2}+m,\frac{5}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+\right.$$

$$\left(5\,(c-d)\,\text{AppellF1}\left[\frac{5}{2},\frac{1}{2}+m,\frac{7}{2},\frac{7}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+(c+d)\,(1+2\,m)\right.$$

$$\left.\left.\text{AppellF1}\left[\frac{5}{2},\frac{3}{2}+m,\frac{5}{2},\frac{7}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right)\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)-$$

$$\left(21\,(A-B+C)\,\text{AppellF1}\left[\frac{5}{2},\frac{1}{2}+m,\frac{5}{2},\frac{7}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\right)\Big/$$

$$\left(-7\,(c+d)\,\text{AppellF1}\left[\frac{5}{2},\frac{1}{2}+m,\frac{5}{2},\frac{7}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+\right.$$

$$\left(5\,(c-d)\,\text{AppellF1}\left[\frac{7}{2},\frac{1}{2}+m,\frac{7}{2},\frac{9}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+(c+d)\,(1+2\,m)\right.$$

$$\left.\left.\left.\left.\text{AppellF1}\left[\frac{7}{2},\frac{3}{2}+m,\frac{5}{2},\frac{9}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right)\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)\right)\right)\Big/$$

$$\left(15\left(c+d+c\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2-d\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^3\sqrt{\frac{c+d+c\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2-d\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}}\right)-$$

$$\frac{1}{15\left(c+d+c\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2-d\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^3}$$

$$4\,(c+d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\left(1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^{-m}$$

$$\sqrt{\frac{c+d+c\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2-d\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{1+\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}}$$

$$\left(\left(45\,(A+B+C)\left(-\frac{1}{6\,(c+d)}5\,(c-d)\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{2}+m,\frac{7}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right.\right.\right.$$

$$\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{1}{3}\left(\frac{1}{2}+m\right) \text{AppellF1}\left[\frac{3}{2},\frac{3}{2}+m,\frac{5}{2},\frac{5}{2},\right.$$

$$\left.-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right] \text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\Bigg)\Bigg)\Bigg/$$

$$\Bigg(3\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2}+m,\frac{5}{2},\frac{3}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]-$$

$$\Bigg(5\,(c-d)\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{2}+m,\frac{7}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]+(c+d)\,(1+2\,m)$$

$$\text{AppellF1}\left[\frac{3}{2},\frac{3}{2}+m,\frac{5}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\Bigg)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)+$$

$$\Bigg(50\,(-A+C)\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{2}+m,\frac{5}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right] \text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2$$

$$\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\Bigg)\Bigg/\Bigg(-5\,(c+d)\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{2}+m,\frac{5}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]+$$

$$\Bigg(5\,(c-d)\,\text{AppellF1}\left[\frac{5}{2},\frac{1}{2}+m,\frac{7}{2},\frac{7}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]+(c+d)\,(1+2\,m)$$

$$\text{AppellF1}\left[\frac{5}{2},\frac{3}{2}+m,\frac{5}{2},\frac{7}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\Bigg)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg)+$$

$$\Bigg(50\,(-A+C)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\Bigg(-\frac{1}{2\,(c+d)}3\,(c-d)\,\text{AppellF1}\left[\frac{5}{2},\frac{1}{2}+m,\frac{7}{2},\frac{7}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\right.$$

$$\left.-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right] \text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{3}{5}\left(\frac{1}{2}+m\right) \text{AppellF1}\left[\frac{5}{2},\frac{3}{2}+m,\frac{5}{2},\right.$$

$$\left.\frac{7}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right] \text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2 \text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\Bigg)\Bigg)\Bigg/$$

$$\Bigg(-5\,(c+d)\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{2}+m,\frac{5}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]+$$

$$\left(5\,(c-d)\,\text{AppellF1}\left[\frac{5}{2},\frac{1}{2}+m,\frac{7}{2},\frac{7}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+(c+d)\,(1+2\,m)\right.$$

$$\left.\text{AppellF1}\left[\frac{5}{2},\frac{3}{2}+m,\frac{5}{2},\frac{7}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right)\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Bigg)-$$

$$\left(42\,(A-B+C)\,\text{AppellF1}\left[\frac{5}{2},\frac{1}{2}+m,\frac{5}{2},\frac{7}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right.$$

$$\left.\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^3\right)\Big/\left(-7\,(c+d)\,\text{AppellF1}\left[\frac{5}{2},\frac{1}{2}+m,\frac{5}{2},\frac{7}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+\right.$$

$$\left(5\,(c-d)\,\text{AppellF1}\left[\frac{7}{2},\frac{1}{2}+m,\frac{7}{2},\frac{9}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+(c+d)\,(1+2\,m)\right.$$

$$\left.\left.\text{AppellF1}\left[\frac{7}{2},\frac{3}{2}+m,\frac{5}{2},\frac{9}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right)\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)-$$

$$\left(21\,(A-B+C)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4\left(-\frac{1}{14\,(c+d)}25\,(c-d)\,\text{AppellF1}\left[\frac{7}{2},\frac{1}{2}+m,\frac{7}{2},\frac{9}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\right.\right.\right.$$

$$\left.-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-\frac{5}{7}\left(\frac{1}{2}+m\right)\text{AppellF1}\left[\frac{7}{2},\frac{3}{2}+m,\frac{5}{2},\right.$$

$$\left.\left.\left.\frac{9}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\right)\right)\Big/$$

$$\left(-7\,(c+d)\,\text{AppellF1}\left[\frac{5}{2},\frac{1}{2}+m,\frac{5}{2},\frac{7}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+\right.$$

$$\left(5\,(c-d)\,\text{AppellF1}\left[\frac{7}{2},\frac{1}{2}+m,\frac{7}{2},\frac{9}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+(c+d)\,(1+2\,m)\right.$$

$$\left.\left.\text{AppellF1}\left[\frac{7}{2},\frac{3}{2}+m,\frac{5}{2},\frac{9}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right)\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)-$$

$$\left(45\,(A+B+C)\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2}+m,\frac{5}{2},\frac{3}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right.$$

$$\left(-\left(5\,(c-d)\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{2}+m,\frac{7}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+(c+d)\,(1+2\,m)\right.\right.$$

$$\left.\text{AppellF1}\left[\frac{3}{2},\frac{3}{2}+m,\frac{5}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right)\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2$$

$$\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]+3\,(c+d)\left(-\frac{1}{6\,(c+d)}5\,(c-d)\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{2}+m,\frac{7}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\right.\right.$$

$$\left.-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-\frac{1}{3}\left(\frac{1}{2}+m\right)\text{AppellF1}\left[\frac{3}{2},\frac{3}{2}+m,\frac{5}{2},\right.$$

$$\left.\left.\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\right)-$$

$$\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\left(5\,(c-d)\left(-\frac{1}{10\,(c+d)}21\,(c-d)\,\text{AppellF1}\left[\frac{5}{2},\frac{1}{2}+m,\frac{9}{2},\frac{7}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\right.\right.$$

$$-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-\frac{3}{5}\left(\frac{1}{2}+m\right)\text{AppellF1}\left[\frac{5}{2},\frac{3}{2}+m,\frac{7}{2},$$

$$\left.\frac{7}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\right)+$$

$$(c+d)\,(1+2\,m)\left(-\frac{1}{2\,(c+d)}3\,(c-d)\,\text{AppellF1}\left[\frac{5}{2},\frac{3}{2}+m,\frac{7}{2},\frac{7}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\right.$$

$$-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-\frac{3}{5}\left(\frac{3}{2}+m\right)\text{AppellF1}\left[\frac{5}{2},\frac{5}{2}+m,\frac{5}{2},$$

$$\left.\left.\left.\left.\frac{7}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\right)\right)\right)\right)\Big/$$

$$\left(3\,(c+d)\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2}+m,\frac{5}{2},\frac{3}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]-\right.$$

$$\left(5\,(c-d)\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{2}+m,\frac{7}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+(c+d)\,(1+2\,m)\right.$$

$$\left.\text{AppellF1}\left[\frac{3}{2},\frac{3}{2}+m,\frac{5}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right)^2-$$

$$\left(50\,(-A+C)\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{2}+m,\frac{5}{2},\frac{5}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\right.$$

$$\left(\left(5\,(c-d)\,\text{AppellF1}\left[\frac{5}{2},\frac{1}{2}+m,\frac{7}{2},\frac{7}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]+(c+d)\,(1+2\,m)\,\text{AppellF1}\left[\frac{5}{2},\right.\right.\right.$$

$$\left.\left.\frac{3}{2}+m,\frac{5}{2},\frac{7}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right)\,\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-$$

$$5\,(c+d)\left(-\frac{1}{2\,(c+d)}3\,(c-d)\,\text{AppellF1}\left[\frac{5}{2},\frac{1}{2}+m,\frac{7}{2},\frac{7}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\right.$$

$$\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-\frac{3}{5}\left(\frac{1}{2}+m\right)\,\text{AppellF1}\left[\frac{5}{2},\frac{3}{2}+m,\frac{5}{2},\frac{7}{2},\right.$$

$$\left.\left.-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\,\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\right)+$$

$$\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\left(5\,(c-d)\left(-\frac{1}{2\,(c+d)}5\,(c-d)\,\text{AppellF1}\left[\frac{7}{2},\frac{1}{2}+m,\frac{9}{2},\frac{9}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\right.\right.\right.$$

$$\left.-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\,\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-\frac{5}{7}\left(\frac{1}{2}+m\right)\,\text{AppellF1}\left[\frac{7}{2},\frac{3}{2}+m,\frac{7}{2},\right.$$

$$\left.\left.\frac{9}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\,\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\right)+$$

$$(c+d)\,(1+2\,m)\left(-\frac{1}{14\,(c+d)}25\,(c-d)\,\text{AppellF1}\left[\frac{7}{2},\frac{3}{2}+m,\frac{7}{2},\frac{9}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\right.\right.$$

$$-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\right]\,\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-\frac{5}{7}\left(\frac{3}{2}+m\right)\,\text{AppellF1}\left[\frac{7}{2},\frac{5}{2}+m,\frac{5}{2},\right.$$

$$\frac{9}{2},\ -\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\frac{(c-d)\,\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\Bigg]\ \mathrm{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\ \mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\Bigg)\Bigg)\Bigg)\Bigg)\Bigg/$$

$$\Bigg(-5\,(c+d)\ \mathrm{AppellF1}\Big[\frac{3}{2},\ \frac{1}{2}+m,\ \frac{5}{2},\ \frac{5}{2},\ -\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\frac{(c-d)\,\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\Big]+$$

$$\Bigg(5\,(c-d)\ \mathrm{AppellF1}\Big[\frac{5}{2},\ \frac{1}{2}+m,\ \frac{7}{2},\ \frac{7}{2},\ -\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\frac{(c-d)\,\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\Big]+(c+d)\,(1+2\,m)$$

$$\mathrm{AppellF1}\Big[\frac{5}{2},\ \frac{3}{2}+m,\ \frac{5}{2},\ \frac{7}{2},\ -\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\frac{(c-d)\,\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\Big]\Bigg)\ \mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\Bigg)^2+$$

$$\Bigg(21\,(A-B+C)\ \mathrm{AppellF1}\Big[\frac{5}{2},\ \frac{1}{2}+m,\ \frac{5}{2},\ \frac{7}{2},\ -\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\frac{(c-d)\,\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\Big]\ \mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^4$$

$$\Bigg(\Bigg(5\,(c-d)\ \mathrm{AppellF1}\Big[\frac{7}{2},\ \frac{1}{2}+m,\ \frac{7}{2},\ \frac{9}{2},\ -\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\frac{(c-d)\,\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\Big]+(c+d)\,(1+2\,m)$$

$$\mathrm{AppellF1}\Big[\frac{7}{2},\ \frac{3}{2}+m,\ \frac{5}{2},\ \frac{9}{2},\ -\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\frac{(c-d)\,\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\Big]\Bigg)\ \mathrm{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2$$

$$\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-7\,(c+d)\ \Bigg(-\frac{1}{14\,(c+d)}25\,(c-d)\ \mathrm{AppellF1}\Big[\frac{7}{2},\ \frac{1}{2}+m,\ \frac{7}{2},\ \frac{9}{2},\ -\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,$$

$$-\frac{(c-d)\,\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\Big]\ \mathrm{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\ \mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-\frac{5}{7}\left(\frac{1}{2}+m\right)\ \mathrm{AppellF1}\Big[\frac{7}{2},\ \frac{3}{2}+m,\ \frac{5}{2},$$

$$\frac{9}{2},\ -\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,\ -\frac{(c-d)\,\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\Big]\ \mathrm{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\ \mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]\Bigg)+$$

$$\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\ \Bigg(5\,(c-d)\ \Bigg(-\frac{1}{18\,(c+d)}49\,(c-d)\ \mathrm{AppellF1}\Big[\frac{9}{2},\ \frac{1}{2}+m,\ \frac{9}{2},\ \frac{11}{2},\ -\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2,$$

$$-\frac{(c-d)\,\mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2}{c+d}\Big]\ \mathrm{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]^2\ \mathrm{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f\,x\right)\right]-\frac{7}{9}\left(\frac{1}{2}+m\right)\ \mathrm{AppellF1}\Big[\frac{9}{2},\ \frac{3}{2}+m,\ \frac{7}{2},$$

$$\frac{11}{2}, -\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\Bigg)+$$

$$(c+d)\,(1+2m)\left(-\frac{1}{18\,(c+d)}35\,(c-d)\,\text{AppellF1}\left[\frac{9}{2},\frac{3}{2}+m,\frac{7}{2},\frac{11}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,\right.\right.$$

$$-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]-\frac{7}{9}\left(\frac{3}{2}+m\right)\text{AppellF1}\left[\frac{9}{2},\frac{5}{2}+m,\frac{5}{2},\right.$$

$$\left.\left.\frac{11}{2}, -\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2, -\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\text{Sec}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\right)\Bigg)\Bigg)\Bigg)\Bigg/$$

$$\left(-7\,(c+d)\,\text{AppellF1}\left[\frac{5}{2},\frac{1}{2}+m,\frac{5}{2},\frac{7}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]+\right.$$

$$\left(5\,(c-d)\,\text{AppellF1}\left[\frac{7}{2},\frac{1}{2}+m,\frac{7}{2},\frac{9}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]+(c+d)\,(1+2m)\right.$$

$$\left.\left.\text{AppellF1}\left[\frac{7}{2},\frac{3}{2}+m,\frac{5}{2},\frac{9}{2},-\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2,-\frac{(c-d)\,\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2}{c+d}\right]\right)\text{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]^2\right)^2\Bigg)\Bigg)\Bigg)\Bigg)$$

Test results for the 594 problems in "4.1.7 (d trig)^m (a+b (c sin)^n)^p.m"

- **Problem 40: Result more than twice size of optimal antiderivative.**

$$\int \frac{\text{Csc}[c+d x]^3}{a-a\,\text{Sin}[c+d x]^2}\,dx$$

Optimal (type 3, 58 leaves, 5 steps):

$$-\frac{3\,\text{ArcTanh}[\text{Cos}[c+d x]]}{2\,a\,d}+\frac{3\,\text{Sec}[c+d x]}{2\,a\,d}-\frac{\text{Csc}[c+d x]^2\,\text{Sec}[c+d x]}{2\,a\,d}$$

Result (type 3, 146 leaves):

$$\left(\text{Csc}[c+d x]^4\left(2-6\,\text{Cos}[2\,(c+d x)]+2\,\text{Cos}[3\,(c+d x)]+3\,\text{Cos}[3\,(c+d x)]\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d x)\right]\right]-3\,\text{Cos}[3\,(c+d x)]\,\text{Log}\left[\text{Sin}\left[\frac{1}{2}\,(c+d x)\right]\right]+\right.\right.$$

$$\left.\left.\text{Cos}[c+d x]\left(-2-3\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d x)\right]\right]+3\,\text{Log}\left[\text{Sin}\left[\frac{1}{2}\,(c+d x)\right]\right]\right)\right)\right)\Bigg/\left(2\,a\,d\left(\text{Csc}\left[\frac{1}{2}\,(c+d x)\right]^2-\text{Sec}\left[\frac{1}{2}\,(c+d x)\right]^2\right)\right)$$

Problem 41: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Csc}[c+d x]^5}{a-a \text{Sin}[c+d x]^2} \, dx$$

Optimal (type 3, 82 leaves, 6 steps):

$$-\frac{15 \text{ArcTanh}[\text{Cos}[c+d x]]}{8 a d}+\frac{15 \text{Sec}[c+d x]}{8 a d}-\frac{5 \text{Csc}[c+d x]^2 \text{Sec}[c+d x]}{8 a d}-\frac{\text{Csc}[c+d x]^4 \text{Sec}[c+d x]}{4 a d}$$

Result (type 3, 194 leaves):

$$\frac{1}{a}\left(-\frac{7 \text{Csc}\left[\frac{1}{2} (c+d x)\right]^2}{32 d}-\frac{\text{Csc}\left[\frac{1}{2} (c+d x)\right]^4}{64 d}-\frac{15 \text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]\right]}{8 d}+\frac{15 \text{Log}\left[\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right]}{8 d}+\right.$$
$$\left.\frac{7 \text{Sec}\left[\frac{1}{2} (c+d x)\right]^2}{32 d}+\frac{\text{Sec}\left[\frac{1}{2} (c+d x)\right]^4}{64 d}+\frac{\text{Sin}\left[\frac{1}{2} (c+d x)\right]}{d \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]-\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)}-\frac{\text{Sin}\left[\frac{1}{2} (c+d x)\right]}{d \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)}\right)$$

Problem 54: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Csc}[c+d x]^3}{\left(a-a \text{Sin}[c+d x]^2\right)^2} \, dx$$

Optimal (type 3, 78 leaves, 6 steps):

$$-\frac{5 \text{ArcTanh}[\text{Cos}[c+d x]]}{2 a^2 d}+\frac{5 \text{Sec}[c+d x]}{2 a^2 d}+\frac{5 \text{Sec}[c+d x]^3}{6 a^2 d}-\frac{\text{Csc}[c+d x]^2 \text{Sec}[c+d x]^3}{2 a^2 d}$$

Result (type 3, 208 leaves):

$$\frac{1}{3 a^2 d \left(\text{Csc}\left[\frac{1}{2} (c+d x)\right]^2-\text{Sec}\left[\frac{1}{2} (c+d x)\right]^2\right)^3}$$
$$2 \text{Csc}[c+d x]^8 \left(22-40 \text{Cos}[2 (c+d x)]+13 \text{Cos}[3 (c+d x)]-30 \text{Cos}[4 (c+d x)]+13 \text{Cos}[5 (c+d x)]+\right.$$
$$15 \text{Cos}[3 (c+d x)] \text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]\right]+15 \text{Cos}[5 (c+d x)] \text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]\right]-15 \text{Cos}[3 (c+d x)] \text{Log}\left[\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right]-$$
$$\left.15 \text{Cos}[5 (c+d x)] \text{Log}\left[\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right]+\text{Cos}[c+d x] \left(-26-30 \text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]\right]+30 \text{Log}\left[\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right]\right)\right)$$

Problem 66: Result more than twice size of optimal antiderivative.

$$\int \text{Csc}[c+d x] \left(a+b \text{Sin}[c+d x]^2\right) \, dx$$

Optimal (type 3, 26 leaves, 2 steps):

$$-\frac{a\,\text{ArcTanh}[\text{Cos}[c+d\,x]]}{d}-\frac{b\,\text{Cos}[c+d\,x]}{d}$$

Result (type 3, 63 leaves):

$$-\frac{b\,\text{Cos}[c]\,\text{Cos}[d\,x]}{d}-\frac{a\,\text{Log}\left[\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right]}{d}+\frac{a\,\text{Log}\left[\text{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right]}{d}+\frac{b\,\text{Sin}[c]\,\text{Sin}[d\,x]}{d}$$

Problem 67: Result more than twice size of optimal antiderivative.

$$\int \text{Csc}[c+d\,x]^3\,\left(a+b\,\text{Sin}[c+d\,x]^2\right)\,dx$$

Optimal (type 3, 40 leaves, 2 steps):

$$-\frac{(a+2\,b)\,\text{ArcTanh}[\text{Cos}[c+d\,x]]}{2\,d}-\frac{a\,\text{Cot}[c+d\,x]\,\text{Csc}[c+d\,x]}{2\,d}$$

Result (type 3, 118 leaves):

$$-\frac{a\,\text{Csc}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{8\,d}-\frac{b\,\text{Log}\left[\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right]}{d}-\frac{a\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]\right]}{2\,d}+\frac{b\,\text{Log}\left[\text{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right]}{d}+\frac{a\,\text{Log}\left[\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]}{2\,d}+\frac{a\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{8\,d}$$

Problem 76: Result unnecessarily involves imaginary or complex numbers.

$$\int \left(a+b\,\text{Sin}[x]^2\right)^3\,dx$$

Optimal (type 3, 87 leaves, 2 steps):

$$\frac{1}{16}\,(2\,a+b)\,\left(8\,a^2+8\,a\,b+5\,b^2\right)\,x-\frac{1}{48}\,b\,\left(64\,a^2+54\,a\,b+15\,b^2\right)\,\text{Cos}[x]\,\text{Sin}[x]-\frac{5}{24}\,b^2\,(2\,a+b)\,\text{Cos}[x]\,\text{Sin}[x]^3-\frac{1}{6}\,b\,\text{Cos}[x]\,\text{Sin}[x]\,\left(a+b\,\text{Sin}[x]^2\right)^2$$

Result (type 3, 80 leaves):

$$\frac{1}{192}\,\left(12\,(2\,a+b)\,\left(8\,a^2+8\,a\,b+5\,b^2\right)\,x+9\,i\,b\,(4\,i\,a+(1+2\,i)\,b)\,(4\,a+(2+i)\,b)\,\text{Sin}[2\,x]+9\,b^2\,(2\,a+b)\,\text{Sin}[4\,x]-b^3\,\text{Sin}[6\,x]\right)$$

Problem 78: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{\text{Sin}[c+d\,x]^7}{a+b\,\text{Sin}[c+d\,x]^2}\,dx$$

Optimal (type 3, 106 leaves, 4 steps):

$$\frac{a^3\,\text{ArcTanh}\left[\frac{\sqrt{b}\,\text{Cos}[c+d\,x]}{\sqrt{a+b}}\right]}{b^{7/2}\,\sqrt{a+b}\,d}-\frac{\left(a^2-a\,b+b^2\right)\,\text{Cos}[c+d\,x]}{b^3\,d}-\frac{(a-2\,b)\,\text{Cos}[c+d\,x]^3}{3\,b^2\,d}-\frac{\text{Cos}[c+d\,x]^5}{5\,b\,d}$$

Result (type 3, 180 leaves):

$$\frac{1}{240\sqrt{-a-b}\ b^{7/2}\ d}\left(-240\ a^3\ \text{ArcTan}\left[\frac{\sqrt{b}-i\sqrt{a}\ \text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{\sqrt{-a-b}}\right]-240\ a^3\ \text{ArcTan}\left[\frac{\sqrt{b}+i\sqrt{a}\ \text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{\sqrt{-a-b}}\right]-2\sqrt{-a-b}\ \sqrt{b}\ \text{Cos}[c+d\,x]\left(120\,a^2-100\,a\,b+89\,b^2+4\,(5\,a-7\,b)\,b\,\text{Cos}[2\,(c+d\,x)]+3\,b^2\,\text{Cos}[4\,(c+d\,x)]\right)\right)$$

- **Problem 79: Result unnecessarily involves imaginary or complex numbers.**

$$\int\frac{\text{Sin}[c+d\,x]^5}{a+b\,\text{Sin}[c+d\,x]^2}\,dx$$

Optimal (type 3, 77 leaves, 4 steps):

$$-\frac{a^2\,\text{ArcTanh}\left[\frac{\sqrt{b}\ \text{Cos}[c+d\,x]}{\sqrt{a+b}}\right]}{b^{5/2}\sqrt{a+b}\ d}+\frac{(a-b)\,\text{Cos}[c+d\,x]}{b^2\,d}+\frac{\text{Cos}[c+d\,x]^3}{3\,b\,d}$$

Result (type 3, 150 leaves):

$$\frac{1}{6\sqrt{-a-b}\ b^{5/2}\ d}\left(6\,a^2\,\text{ArcTan}\left[\frac{\sqrt{b}-i\sqrt{a}\ \text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{\sqrt{-a-b}}\right]+6\,a^2\,\text{ArcTan}\left[\frac{\sqrt{b}+i\sqrt{a}\ \text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{\sqrt{-a-b}}\right]+\sqrt{-a-b}\ \sqrt{b}\ \text{Cos}[c+d\,x]\,(6\,a-5\,b+b\,\text{Cos}[2\,(c+d\,x)])\right)$$

- **Problem 80: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int\frac{\text{Sin}[c+d\,x]^3}{a+b\,\text{Sin}[c+d\,x]^2}\,dx$$

Optimal (type 3, 52 leaves, 3 steps):

$$\frac{a\,\text{ArcTanh}\left[\frac{\sqrt{b}\ \text{Cos}[c+d\,x]}{\sqrt{a+b}}\right]}{b^{3/2}\sqrt{a+b}\ d}-\frac{\text{Cos}[c+d\,x]}{b\,d}$$

Result (type 3, 125 leaves):

$$-\frac{a\,\text{ArcTan}\left[\frac{\sqrt{b}-i\sqrt{a}\ \text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{\sqrt{-a-b}}\right]+a\,\text{ArcTan}\left[\frac{\sqrt{b}+i\sqrt{a}\ \text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{\sqrt{-a-b}}\right]+\sqrt{-a-b}\ \sqrt{b}\ \text{Cos}[c+d\,x]}{\sqrt{-a-b}\ b^{3/2}\ d}$$

- **Problem 81: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int\frac{\text{Sin}[c+d\,x]}{a+b\,\text{Sin}[c+d\,x]^2}\,dx$$

Optimal (type 3, 37 leaves, 2 steps):

$$-\frac{\text{ArcTanh}\left[\frac{\sqrt{b}\,\text{Cos}[c+d\,x]}{\sqrt{a+b}}\right]}{\sqrt{b}\,\sqrt{a+b}\,d}$$

Result (type 3, 97 leaves) :

$$\frac{\text{ArcTan}\left[\frac{\sqrt{b}-i\,\sqrt{a}\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{\sqrt{-a-b}}\right]+\text{ArcTan}\left[\frac{\sqrt{b}+i\,\sqrt{a}\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{\sqrt{-a-b}}\right]}{\sqrt{-a-b}\,\sqrt{b}\,d}$$

- **Problem 82: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int \frac{\text{Csc}[c+d\,x]}{a+b\,\text{Sin}[c+d\,x]^2}\,dx$$

Optimal (type 3, 55 leaves, 4 steps) :

$$-\frac{\text{ArcTanh}[\text{Cos}[c+d\,x]]}{a\,d}+\frac{\sqrt{b}\,\text{ArcTanh}\left[\frac{\sqrt{b}\,\text{Cos}[c+d\,x]}{\sqrt{a+b}}\right]}{a\,\sqrt{a+b}\,d}$$

Result (type 3, 143 leaves) :

$$-\frac{1}{a\,d}\left(\frac{\sqrt{b}\,\text{ArcTan}\left[\frac{\sqrt{b}-i\,\sqrt{a}\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{\sqrt{-a-b}}\right]}{\sqrt{-a-b}}+\frac{\sqrt{b}\,\text{ArcTan}\left[\frac{\sqrt{b}+i\,\sqrt{a}\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{\sqrt{-a-b}}\right]}{\sqrt{-a-b}}+\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]\right]-\text{Log}\left[\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]\right)$$

- **Problem 83: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int \frac{\text{Csc}[c+d\,x]^3}{a+b\,\text{Sin}[c+d\,x]^2}\,dx$$

Optimal (type 3, 85 leaves, 5 steps) :

$$-\frac{(a-2\,b)\,\text{ArcTanh}[\text{Cos}[c+d\,x]]}{2\,a^2\,d}-\frac{b^{3/2}\,\text{ArcTanh}\left[\frac{\sqrt{b}\,\text{Cos}[c+d\,x]}{\sqrt{a+b}}\right]}{a^2\,\sqrt{a+b}\,d}-\frac{\text{Cot}[c+d\,x]\,\text{Csc}[c+d\,x]}{2\,a\,d}$$

Result (type 3, 224 leaves) :

$$-\left((2a+b-b\,\text{Cos}[2(c+dx)])\,\text{Csc}[c+dx]^2\left(-8b^{3/2}\,\text{ArcTan}\left[\frac{\sqrt{b}-i\sqrt{a}\,\text{Tan}\left[\frac{1}{2}(c+dx)\right]}{\sqrt{-a-b}}\right]-8b^{3/2}\,\text{ArcTan}\left[\frac{\sqrt{b}+i\sqrt{a}\,\text{Tan}\left[\frac{1}{2}(c+dx)\right]}{\sqrt{-a-b}}\right]+\sqrt{-a-b}\left(a\,\text{Csc}\left[\frac{1}{2}(c+dx)\right]^2+4(a-2b)\left(\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+dx)\right]\right]-\text{Log}\left[\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right]\right)-a\,\text{Sec}\left[\frac{1}{2}(c+dx)\right]^2\right)\right)\right)\Big/\left(16a^2\sqrt{-a-b}\,d\,(b+a\,\text{Csc}[c+dx]^2)\right)$$

- **Problem 84: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int \frac{\text{Csc}[c+dx]^5}{a+b\,\text{Sin}[c+dx]^2}\,dx$$

Optimal (type 3, 125 leaves, 6 steps):

$$-\frac{(3a^2-4ab+8b^2)\,\text{ArcTanh}[\text{Cos}[c+dx]]}{8a^3d}+\frac{b^{5/2}\,\text{ArcTanh}\left[\frac{\sqrt{b}\,\text{Cos}[c+dx]}{\sqrt{a+b}}\right]}{a^3\sqrt{a+b}\,d}-\frac{(3a-4b)\,\text{Cot}[c+dx]\,\text{Csc}[c+dx]}{8a^2d}-\frac{\text{Cot}[c+dx]\,\text{Csc}[c+dx]^3}{4ad}$$

Result (type 3, 657 leaves):

$$\frac{b^{5/2}\,\text{ArcTan}\left[\frac{\text{Sec}\left[\frac{1}{2}(c+dx)\right]\left(\sqrt{b}\,\text{Cos}\left[\frac{1}{2}(c+dx)\right]-i\sqrt{a}\,\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right)}{\sqrt{-a-b}}\right](-2a-b+b\,\text{Cos}[2(c+dx)])\,\text{Csc}[c+dx]^2}{2a^3\sqrt{-a-b}\,d\,(b+a\,\text{Csc}[c+dx]^2)}+$$

$$\frac{b^{5/2}\,\text{ArcTan}\left[\frac{\text{Sec}\left[\frac{1}{2}(c+dx)\right]\left(\sqrt{b}\,\text{Cos}\left[\frac{1}{2}(c+dx)\right]+i\sqrt{a}\,\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right)}{\sqrt{-a-b}}\right](-2a-b+b\,\text{Cos}[2(c+dx)])\,\text{Csc}[c+dx]^2}{2a^3\sqrt{-a-b}\,d\,(b+a\,\text{Csc}[c+dx]^2)}+$$

$$\frac{(3a-4b)(-2a-b+b\,\text{Cos}[2(c+dx)])\,\text{Csc}\left[\frac{1}{2}(c+dx)\right]^2\text{Csc}[c+dx]^2}{64a^2d\,(b+a\,\text{Csc}[c+dx]^2)}+\frac{(-2a-b+b\,\text{Cos}[2(c+dx)])\,\text{Csc}\left[\frac{1}{2}(c+dx)\right]^4\text{Csc}[c+dx]^2}{128ad\,(b+a\,\text{Csc}[c+dx]^2)}+$$

$$\frac{(3a^2-4ab+8b^2)(-2a-b+b\,\text{Cos}[2(c+dx)])\,\text{Csc}[c+dx]^2\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+dx)\right]\right]}{16a^3d\,(b+a\,\text{Csc}[c+dx]^2)}+$$

$$\frac{(-3a^2+4ab-8b^2)(-2a-b+b\,\text{Cos}[2(c+dx)])\,\text{Csc}[c+dx]^2\,\text{Log}\left[\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right]}{16a^3d\,(b+a\,\text{Csc}[c+dx]^2)}+$$

$$\frac{(-3a+4b)(-2a-b+b\,\text{Cos}[2(c+dx)])\,\text{Csc}[c+dx]^2\,\text{Sec}\left[\frac{1}{2}(c+dx)\right]^2}{64a^2d\,(b+a\,\text{Csc}[c+dx]^2)}-\frac{(-2a-b+b\,\text{Cos}[2(c+dx)])\,\text{Csc}[c+dx]^2\,\text{Sec}\left[\frac{1}{2}(c+dx)\right]^4}{128ad\,(b+a\,\text{Csc}[c+dx]^2)}$$

Problem 94: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{\text{Sin}[c+d x]^7}{\left(a+b\,\text{Sin}[c+d x]^2\right)^2}\,dx$$

Optimal (type 3, 128 leaves, 5 steps):

$$-\frac{a^2\,(5 a+6 b)\,\text{ArcTanh}\left[\frac{\sqrt{b}\,\text{Cos}[c+d x]}{\sqrt{a+b}}\right]}{2 b^{7/2}\,(a+b)^{3/2}\,d}+\frac{(2 a-b)\,\text{Cos}[c+d x]}{b^3\,d}+\frac{\text{Cos}[c+d x]^3}{3 b^2\,d}+\frac{a^3\,\text{Cos}[c+d x]}{2 b^3\,(a+b)\,d\,\left(a+b-b\,\text{Cos}[c+d x]^2\right)}$$

Result (type 3, 194 leaves):

$$\frac{1}{12 b^{7/2}\,d}\left(-\frac{6 a^2\,(5 a+6 b)\,\text{ArcTan}\left[\frac{\sqrt{b}-i\sqrt{a}\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]}{\sqrt{-a-b}}\right]}{(-a-b)^{3/2}}-\frac{6 a^2\,(5 a+6 b)\,\text{ArcTan}\left[\frac{\sqrt{b}+i\sqrt{a}\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]}{\sqrt{-a-b}}\right]}{(-a-b)^{3/2}}+\sqrt{b}\left(\text{Cos}[c+d x]\left(24 a-9 b+\frac{12 a^3}{(a+b)\,(2 a+b-b\,\text{Cos}[2 (c+d x)])}\right)+b\,\text{Cos}[3 (c+d x)]\right)\right)$$

Problem 95: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{\text{Sin}[c+d x]^5}{\left(a+b\,\text{Sin}[c+d x]^2\right)^2}\,dx$$

Optimal (type 3, 102 leaves, 5 steps):

$$\frac{a\,(3 a+4 b)\,\text{ArcTanh}\left[\frac{\sqrt{b}\,\text{Cos}[c+d x]}{\sqrt{a+b}}\right]}{2 b^{5/2}\,(a+b)^{3/2}\,d}-\frac{\text{Cos}[c+d x]}{b^2\,d}-\frac{a^2\,\text{Cos}[c+d x]}{2 b^2\,(a+b)\,d\,\left(a+b-b\,\text{Cos}[c+d x]^2\right)}$$

Result (type 3, 172 leaves):

$$\frac{1}{2 b^{5/2}\,d}\left(\frac{a\,(3 a+4 b)\,\text{ArcTan}\left[\frac{\sqrt{b}-i\sqrt{a}\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]}{\sqrt{-a-b}}\right]}{(-a-b)^{3/2}}+\frac{a\,(3 a+4 b)\,\text{ArcTan}\left[\frac{\sqrt{b}+i\sqrt{a}\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]}{\sqrt{-a-b}}\right]}{(-a-b)^{3/2}}+2\sqrt{b}\,\text{Cos}[c+d x]\left(-1-\frac{a^2}{(a+b)\,(2 a+b-b\,\text{Cos}[2 (c+d x)])}\right)\right)$$

Problem 96: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{\text{Sin}[c+d x]^3}{\left(a+b\,\text{Sin}[c+d x]^2\right)^2}\,dx$$

Optimal (type 3, 83 leaves, 3 steps):

$$-\frac{(a+2 b)\,\text{ArcTanh}\left[\frac{\sqrt{b}\,\text{Cos}[c+d x]}{\sqrt{a+b}}\right]}{2 b^{3/2}\,(a+b)^{3/2}\,d}+\frac{a\,\text{Cos}[c+d x]}{2 b\,(a+b)\,d\,\left(a+b-b\,\text{Cos}[c+d x]^2\right)}$$

Result (type 3, 160 leaves):

$$\frac{\frac{(a+2 b)\,\text{ArcTan}\left[\frac{\sqrt{b}-i\sqrt{a}\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]}{\sqrt{-a-b}}\right]}{\sqrt{-a-b}}+\frac{(a+2 b)\,\text{ArcTan}\left[\frac{\sqrt{b}+i\sqrt{a}\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]}{\sqrt{-a-b}}\right]}{\sqrt{-a-b}}+\frac{2 a\sqrt{b}\,\text{Cos}[c+d x]}{2 a+b-b\,\text{Cos}[2 (c+d x)]}}{2 b^{3/2}\,(a+b)\,d}$$

Problem 97: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{\text{Sin}[c+d x]}{\left(a+b\,\text{Sin}[c+d x]^2\right)^2}\,dx$$

Optimal (type 3, 74 leaves, 3 steps):

$$-\frac{\text{ArcTanh}\left[\frac{\sqrt{b}\,\text{Cos}[c+d x]}{\sqrt{a+b}}\right]}{2\sqrt{b}\,(a+b)^{3/2}\,d}-\frac{\text{Cos}[c+d x]}{2\,(a+b)\,d\,\left(a+b-b\,\text{Cos}[c+d x]^2\right)}$$

Result (type 3, 149 leaves):

$$\frac{\frac{\text{ArcTan}\left[\frac{\sqrt{b}-i\sqrt{a}\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]}{\sqrt{-a-b}}\right]}{\sqrt{-a-b}\,\sqrt{b}}+\frac{\text{ArcTan}\left[\frac{\sqrt{b}+i\sqrt{a}\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]}{\sqrt{-a-b}}\right]}{\sqrt{-a-b}\,\sqrt{b}}-\frac{2\,\text{Cos}[c+d x]}{2 a+b-b\,\text{Cos}[2 (c+d x)]}}{2\,(a+b)\,d}$$

Problem 98: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{\text{Csc}[c+d x]}{\left(a+b\,\text{Sin}[c+d x]^2\right)^2}\,dx$$

Optimal (type 3, 103 leaves, 5 steps):

$$-\frac{\text{ArcTanh}[\text{Cos}[c+d x]]}{a^2 d}+\frac{\sqrt{b}\,(3 a+2 b)\,\text{ArcTanh}\left[\frac{\sqrt{b}\,\text{Cos}[c+d x]}{\sqrt{a+b}}\right]}{2 a^2\,(a+b)^{3/2}\,d}+\frac{b\,\text{Cos}[c+d x]}{2 a\,(a+b)\,d\,\left(a+b-b\,\text{Cos}[c+d x]^2\right)}$$

Result (type 3, 194 leaves):

$$\frac{1}{2 a^2 d}\left(\frac{\sqrt{b}\,(3 a+2 b)\,\text{ArcTan}\left[\frac{\sqrt{b}-i \sqrt{a}\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]}{\sqrt{-a-b}}\right]}{(-a-b)^{3/2}}+\frac{\sqrt{b}\,(3 a+2 b)\,\text{ArcTan}\left[\frac{\sqrt{b}+i \sqrt{a}\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]}{\sqrt{-a-b}}\right]}{(-a-b)^{3/2}}+\right.$$

$$\left.2\left(\frac{a b\,\text{Cos}[c+d x]}{(a+b)\,(2 a+b-b\,\text{Cos}[2\,(c+d x)])}-\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right]+\text{Log}\left[\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]\right)\right)$$

- **Problem 99: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int \frac{\text{Csc}[c+d x]^3}{\left(a+b\,\text{Sin}[c+d x]^2\right)^2}\,dx$$

Optimal (type 3, 153 leaves, 6 steps):

$$-\frac{(a-4 b)\,\text{ArcTanh}[\text{Cos}[c+d x]]}{2 a^3 d}-\frac{b^{3/2}\,(5 a+4 b)\,\text{ArcTanh}\left[\frac{\sqrt{b}\,\text{Cos}[c+d x]}{\sqrt{a+b}}\right]}{2 a^3\,(a+b)^{3/2}\,d}-\frac{b\,(a+2 b)\,\text{Cos}[c+d x]}{2 a^2\,(a+b)\,d\,\left(a+b-b\,\text{Cos}[c+d x]^2\right)}-\frac{\text{Cot}[c+d x]\,\text{Csc}[c+d x]}{2 a d\,\left(a+b-b\,\text{Cos}[c+d x]^2\right)}$$

Result (type 3, 390 leaves):

$$\frac{1}{32 a^3 d\,\left(b+a\,\text{Csc}[c+d x]^2\right)^2}\,(-2 a-b+b\,\text{Cos}[2\,(c+d x)])\,\text{Csc}[c+d x]^3$$

$$\left(\frac{8 a b^2\,\text{Cot}[c+d x]}{a+b}+\frac{4 b^{3/2}\,(5 a+4 b)\,\text{ArcTan}\left[\frac{\sqrt{b}-i \sqrt{a}\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]}{\sqrt{-a-b}}\right]\,(2 a+b-b\,\text{Cos}[2\,(c+d x)])\,\text{Csc}[c+d x]}{(-a-b)^{3/2}}+\right.$$

$$\frac{4 b^{3/2}\,(5 a+4 b)\,\text{ArcTan}\left[\frac{\sqrt{b}+i \sqrt{a}\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]}{\sqrt{-a-b}}\right]\,(2 a+b-b\,\text{Cos}[2\,(c+d x)])\,\text{Csc}[c+d x]}{(-a-b)^{3/2}}+$$

$$a\,(2 a+b-b\,\text{Cos}[2\,(c+d x)])\,\text{Csc}\left[\frac{1}{2}(c+d x)\right]^2\,\text{Csc}[c+d x]+4\,(a-4 b)\,(2 a+b-b\,\text{Cos}[2\,(c+d x)])\,\text{Csc}[c+d x]\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right]-$$

$$\left.4\,(a-4 b)\,(2 a+b-b\,\text{Cos}[2\,(c+d x)])\,\text{Csc}[c+d x]\,\text{Log}\left[\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]-a\,(2 a+b-b\,\text{Cos}[2\,(c+d x)])\,\text{Csc}[c+d x]\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\right)$$

- **Problem 113: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int \frac{\text{Sin}[x]}{\sqrt{1+\text{Sin}[x]^2}}\,dx$$

Optimal (type 3, 11 leaves, 2 steps):

$$-\text{ArcSin}\left[\frac{\text{Cos}[x]}{\sqrt{2}}\right]$$

Result (type 3, 29 leaves):

$$i\,\text{Log}\left[i\sqrt{2}\,\text{Cos}[x]+\sqrt{3-\text{Cos}[2x]}\right]$$

Problem 114: Result unnecessarily involves imaginary or complex numbers.

$$\int \text{Sin}[x]\sqrt{1+\text{Sin}[x]^2}\,dx$$

Optimal (type 3, 30 leaves, 3 steps):

$$-\text{ArcSin}\left[\frac{\text{Cos}[x]}{\sqrt{2}}\right]-\frac{1}{2}\text{Cos}[x]\sqrt{2-\text{Cos}[x]^2}$$

Result (type 3, 53 leaves):

$$-\frac{\text{Cos}[x]\sqrt{3-\text{Cos}[2x]}}{2\sqrt{2}}+i\,\text{Log}\left[i\sqrt{2}\,\text{Cos}[x]+\sqrt{3-\text{Cos}[2x]}\right]$$

Problem 115: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{\text{Sin}[7+3x]}{\sqrt{3+\text{Sin}[7+3x]^2}}\,dx$$

Optimal (type 3, 15 leaves, 2 steps):

$$-\frac{1}{3}\text{ArcSin}\left[\frac{1}{2}\text{Cos}[7+3x]\right]$$

Result (type 3, 39 leaves):

$$\frac{1}{3}i\,\text{Log}\left[i\sqrt{2}\,\text{Cos}[7+3x]+\sqrt{7-\text{Cos}[2(7+3x)]}\right]$$

Problem 119: Result more than twice size of optimal antiderivative.

$$\int \frac{1}{\sqrt{a-a\,\text{Sin}[x]^2}}\,dx$$

Optimal (type 3, 16 leaves, 3 steps):

$$\frac{\text{ArcTanh}[\text{Sin}[x]]\,\text{Cos}[x]}{\sqrt{a\,\text{Cos}[x]^2}}$$

Result (type 3, 46 leaves):

$$\frac{\text{Cos}[x]\left(-\text{Log}\left[\text{Cos}\left[\frac{x}{2}\right]-\text{Sin}\left[\frac{x}{2}\right]\right]+\text{Log}\left[\text{Cos}\left[\frac{x}{2}\right]+\text{Sin}\left[\frac{x}{2}\right]\right]\right)}{\sqrt{a\,\text{Cos}[x]^2}}$$

Problem 120: Result more than twice size of optimal antiderivative.

$$\int \frac{1}{\left(a-a\,\text{Sin}[x]^2\right)^{3/2}}\,dx$$

Optimal (type 3, 42 leaves, 4 steps):

$$\frac{\text{ArcTanh}[\text{Sin}[x]]\,\text{Cos}[x]}{2\,a\,\sqrt{a\,\text{Cos}[x]^2}}+\frac{\text{Tan}[x]}{2\,a\,\sqrt{a\,\text{Cos}[x]^2}}$$

Result (type 3, 91 leaves):

$$-\frac{1}{4\left(a\,\text{Cos}[x]^2\right)^{3/2}}$$
$$\text{Cos}[x]\left(\text{Log}\left[\text{Cos}\left[\frac{x}{2}\right]-\text{Sin}\left[\frac{x}{2}\right]\right]+\text{Cos}[2\,x]\left(\text{Log}\left[\text{Cos}\left[\frac{x}{2}\right]-\text{Sin}\left[\frac{x}{2}\right]\right]-\text{Log}\left[\text{Cos}\left[\frac{x}{2}\right]+\text{Sin}\left[\frac{x}{2}\right]\right]\right)-\text{Log}\left[\text{Cos}\left[\frac{x}{2}\right]+\text{Sin}\left[\frac{x}{2}\right]\right]-2\,\text{Sin}[x]\right)$$

Problem 172: Result unnecessarily involves higher level functions.

$$\int \text{Sin}[e+f\,x]^5\left(a+b\,\text{Sin}[e+f\,x]^2\right)^p\,dx$$

Optimal (type 5, 220 leaves, 5 steps):

$$\frac{(3\,a-2\,b\,(2+p))\,\text{Cos}[e+f\,x]\left(a+b-b\,\text{Cos}[e+f\,x]^2\right)^{1+p}}{b^2\,f\,(3+2\,p)\,(5+2\,p)}-\frac{1}{b^2\,f\,(3+2\,p)\,(5+2\,p)}$$
$$\left(3\,a^2-4\,a\,b\,(1+p)+4\,b^2\left(2+3\,p+p^2\right)\right)\text{Cos}[e+f\,x]\left(a+b-b\,\text{Cos}[e+f\,x]^2\right)^p\left(1-\frac{b\,\text{Cos}[e+f\,x]^2}{a+b}\right)^{-p}$$
$$\text{Hypergeometric2F1}\left[\frac{1}{2},-p,\frac{3}{2},\frac{b\,\text{Cos}[e+f\,x]^2}{a+b}\right]-\frac{\text{Cos}[e+f\,x]\left(a+b-b\,\text{Cos}[e+f\,x]^2\right)^{1+p}\text{Sin}[e+f\,x]^2}{b\,f\,(5+2\,p)}$$

Result (type 6, 184 leaves):

$$\left(4\,a\,\text{AppellF1}\left[3,\frac{1}{2},-p,4,\text{Sin}[e+f\,x]^2,-\frac{b\,\text{Sin}[e+f\,x]^2}{a}\right]\text{Sin}[e+f\,x]^5\left(a+b\,\text{Sin}[e+f\,x]^2\right)^p\,\text{Tan}[e+f\,x]\right)\Big/$$
$$\left(3\,f\left(8\,a\,\text{AppellF1}\left[3,\frac{1}{2},-p,4,\text{Sin}[e+f\,x]^2,-\frac{b\,\text{Sin}[e+f\,x]^2}{a}\right]+\right.\right.$$
$$\left.\left.\left(2\,b\,p\,\text{AppellF1}\left[4,\frac{1}{2},1-p,5,\text{Sin}[e+f\,x]^2,-\frac{b\,\text{Sin}[e+f\,x]^2}{a}\right]+a\,\text{AppellF1}\left[4,\frac{3}{2},-p,5,\text{Sin}[e+f\,x]^2,-\frac{b\,\text{Sin}[e+f\,x]^2}{a}\right]\right)\text{Sin}[e+f\,x]^2\right)\right)$$

Problem 173: Result unnecessarily involves higher level functions.

$$\int \text{Sin}[e+f x]^3 \left(a+b\,\text{Sin}[e+f x]^2\right)^p \, dx$$

Optimal (type 5, 131 leaves, 4 steps):

$$-\frac{\text{Cos}[e+f x]\left(a+b-b\,\text{Cos}[e+f x]^2\right)^{1+p}}{b f (3+2 p)}+\frac{1}{b f (3+2 p)}$$
$$(a-2 b (1+p))\,\text{Cos}[e+f x]\left(a+b-b\,\text{Cos}[e+f x]^2\right)^p \left(1-\frac{b\,\text{Cos}[e+f x]^2}{a+b}\right)^{-p} \text{Hypergeometric2F1}\left[\frac{1}{2},-p,\frac{3}{2},\frac{b\,\text{Cos}[e+f x]^2}{a+b}\right]$$

Result (type 6, 184 leaves):

$$\left(3 a\,\text{AppellF1}\left[2,\frac{1}{2},-p,3,\text{Sin}[e+f x]^2,-\frac{b\,\text{Sin}[e+f x]^2}{a}\right] \text{Sin}[e+f x]^3 \left(a+b\,\text{Sin}[e+f x]^2\right)^p \text{Tan}[e+f x]\right) \Big/$$
$$\left(2 f \left(6 a\,\text{AppellF1}\left[2,\frac{1}{2},-p,3,\text{Sin}[e+f x]^2,-\frac{b\,\text{Sin}[e+f x]^2}{a}\right]+\right.\right.$$
$$\left.\left.\left(2 b p\,\text{AppellF1}\left[3,\frac{1}{2},1-p,4,\text{Sin}[e+f x]^2,-\frac{b\,\text{Sin}[e+f x]^2}{a}\right]+a\,\text{AppellF1}\left[3,\frac{3}{2},-p,4,\text{Sin}[e+f x]^2,-\frac{b\,\text{Sin}[e+f x]^2}{a}\right]\right) \text{Sin}[e+f x]^2\right)\right)$$

Problem 175: Unable to integrate problem.

$$\int \text{Csc}[e+f x] \left(a+b\,\text{Sin}[e+f x]^2\right)^p \, dx$$

Optimal (type 6, 83 leaves, 3 steps):

$$-\frac{1}{f}\text{AppellF1}\left[\frac{1}{2},1,-p,\frac{3}{2},\text{Cos}[e+f x]^2,\frac{b\,\text{Cos}[e+f x]^2}{a+b}\right] \text{Cos}[e+f x]\left(a+b-b\,\text{Cos}[e+f x]^2\right)^p \left(1-\frac{b\,\text{Cos}[e+f x]^2}{a+b}\right)^{-p}$$

Result (type 8, 23 leaves):

$$\int \text{Csc}[e+f x] \left(a+b\,\text{Sin}[e+f x]^2\right)^p \, dx$$

Problem 176: Unable to integrate problem.

$$\int \text{Csc}[e+f x]^3 \left(a+b\,\text{Sin}[e+f x]^2\right)^p \, dx$$

Optimal (type 6, 83 leaves, 3 steps):

$$-\frac{1}{f}\text{AppellF1}\left[\frac{1}{2},2,-p,\frac{3}{2},\text{Cos}[e+f x]^2,\frac{b\,\text{Cos}[e+f x]^2}{a+b}\right] \text{Cos}[e+f x]\left(a+b-b\,\text{Cos}[e+f x]^2\right)^p \left(1-\frac{b\,\text{Cos}[e+f x]^2}{a+b}\right)^{-p}$$

Result (type 8, 25 leaves):

$$\int \text{Csc}[e+f x]^3 \left(a+b\,\text{Sin}[e+f x]^2\right)^p \, dx$$

Problem 177: Unable to integrate problem.

$$\int \mathrm{Csc}[e+f x]^5 \left(a+b \mathrm{Sin}[e+f x]^2\right)^p \, dx$$

Optimal (type 6, 83 leaves, 3 steps):

$$-\frac{1}{f}\mathrm{AppellF1}\left[\frac{1}{2}, 3, -p, \frac{3}{2}, \mathrm{Cos}[e+f x]^2, \frac{b \mathrm{Cos}[e+f x]^2}{a+b}\right] \mathrm{Cos}[e+f x] \left(a+b-b \mathrm{Cos}[e+f x]^2\right)^p \left(1-\frac{b \mathrm{Cos}[e+f x]^2}{a+b}\right)^{-p}$$

Result (type 8, 25 leaves):

$$\int \mathrm{Csc}[e+f x]^5 \left(a+b \mathrm{Sin}[e+f x]^2\right)^p \, dx$$

Problem 179: Result more than twice size of optimal antiderivative.

$$\int \mathrm{Sin}[e+f x]^2 \left(a+b \mathrm{Sin}[e+f x]^2\right)^p \, dx$$

Optimal (type 6, 99 leaves, 3 steps):

$$\frac{1}{3 f}\mathrm{AppellF1}\left[\frac{3}{2}, 2+p, -p, \frac{5}{2}, -\mathrm{Tan}[e+f x]^2, -\frac{(a+b) \mathrm{Tan}[e+f x]^2}{a}\right]$$
$$\left(\mathrm{Sec}[e+f x]^2\right)^p \left(a+b \mathrm{Sin}[e+f x]^2\right)^p \mathrm{Tan}[e+f x]^3 \left(1+\frac{(a+b) \mathrm{Tan}[e+f x]^2}{a}\right)^{-p}$$

Result (type 6, 240 leaves):

$$-\frac{1}{b^2 f (1+p) (2+p)} 2^{-2-p} \sqrt{\frac{b \mathrm{Cos}[e+f x]^2}{a+b}} \left(2 a+b-b \mathrm{Cos}[2 (e+f x)]\right)^{1+p}$$
$$\left(2 a (2+p) \mathrm{AppellF1}\left[1+p, \frac{1}{2}, \frac{1}{2}, 2+p, \frac{2 a+b-b \mathrm{Cos}[2 (e+f x)]}{2 (a+b)}, \frac{2 a+b-b \mathrm{Cos}[2 (e+f x)]}{2 a}\right] - (1+p) \mathrm{AppellF1}\left[2+p, \frac{1}{2}, \frac{1}{2}, 3+p,\right.\right.$$
$$\left.\left.\frac{2 a+b-b \mathrm{Cos}[2 (e+f x)]}{2 (a+b)}, \frac{2 a+b-b \mathrm{Cos}[2 (e+f x)]}{2 a}\right] \left(2 a+b-b \mathrm{Cos}[2 (e+f x)]\right)\right) \mathrm{Csc}[2 (e+f x)] \sqrt{-\frac{b \mathrm{Sin}[e+f x]^2}{a}}$$

Problem 180: Unable to integrate problem.

$$\int \mathrm{Csc}[e+f x]^2 \left(a+b \mathrm{Sin}[e+f x]^2\right)^p \, dx$$

Optimal (type 6, 97 leaves, 3 steps):

$$-\frac{1}{f}\mathrm{AppellF1}\left[-\frac{1}{2}, \frac{1}{2}, -p, \frac{1}{2}, \mathrm{Sin}[e+f x]^2, -\frac{b \mathrm{Sin}[e+f x]^2}{a}\right] \sqrt{\mathrm{Cos}[e+f x]^2} \mathrm{Csc}[e+f x] \mathrm{Sec}[e+f x] \left(a+b \mathrm{Sin}[e+f x]^2\right)^p \left(1+\frac{b \mathrm{Sin}[e+f x]^2}{a}\right)^{-p}$$

Result (type 8, 25 leaves):

$$\int \mathrm{Csc}[e+f x]^2 \left(a+b \mathrm{Sin}[e+f x]^2\right)^p \, dx$$

Problem 181: Unable to integrate problem.

$$\int \text{Csc}[e+f x]^4 \left(a+b \text{Sin}[e+f x]^2\right)^p \, dx$$

Optimal (type 6, 101 leaves, 3 steps):

$$-\frac{1}{3 f}\text{AppellF1}\left[-\frac{3}{2},\frac{1}{2},-p,-\frac{1}{2},\text{Sin}[e+f x]^2,-\frac{b \text{Sin}[e+f x]^2}{a}\right] \sqrt{\text{Cos}[e+f x]^2}\, \text{Csc}[e+f x]^3 \text{Sec}[e+f x] \left(a+b \text{Sin}[e+f x]^2\right)^p \left(1+\frac{b \text{Sin}[e+f x]^2}{a}\right)^{-p}$$

Result (type 8, 25 leaves):

$$\int \text{Csc}[e+f x]^4 \left(a+b \text{Sin}[e+f x]^2\right)^p \, dx$$

Problem 182: Result is not expressed in closed-form.

$$\int \frac{\text{Sin}[c+d x]^7}{a+b \text{Sin}[c+d x]^3} \, dx$$

Optimal (type 3, 335 leaves, 17 steps):

$$\frac{3 x}{8 b}+\frac{2 (-1)^{2/3} a^{5/3} \text{ArcTan}\left[\frac{(-1)^{1/3} b^{1/3}-a^{1/3} \text{Tan}\left[\frac{1}{2} (c+d x)\right]}{\sqrt{a^{2/3}-(-1)^{2/3} b^{2/3}}}\right]}{3 \sqrt{a^{2/3}-(-1)^{2/3} b^{2/3}}\, b^{7/3} d}-\frac{2 a^{5/3} \text{ArcTan}\left[\frac{b^{1/3}+a^{1/3} \text{Tan}\left[\frac{1}{2} (c+d x)\right]}{\sqrt{a^{2/3}-b^{2/3}}}\right]}{3 \sqrt{a^{2/3}-b^{2/3}}\, b^{7/3} d}+$$

$$\frac{2 (-1)^{1/3} a^{5/3} \text{ArcTan}\left[\frac{(-1)^{2/3} b^{1/3}+a^{1/3} \text{Tan}\left[\frac{1}{2} (c+d x)\right]}{\sqrt{a^{2/3}+(-1)^{1/3} b^{2/3}}}\right]}{3 \sqrt{a^{2/3}+(-1)^{1/3} b^{2/3}}\, b^{7/3} d}+\frac{a \text{Cos}[c+d x]}{b^2 d}-\frac{3 \text{Cos}[c+d x] \text{Sin}[c+d x]}{8 b d}-\frac{\text{Cos}[c+d x] \text{Sin}[c+d x]^3}{4 b d}$$

Result (type 7, 219 leaves):

$$\frac{1}{96 b^2 d}\left(96 a \text{Cos}[c+d x]-32 a^2 \text{RootSum}\left[-i b+3 i b \#1^2+8 a \#1^3-3 i b \#1^4+i b \#1^6 \&,\right.\right.$$

$$\left(-2 \text{ArcTan}\left[\frac{\text{Sin}[c+d x]}{\text{Cos}[c+d x]-\#1}\right]+i \text{Log}\left[1-2 \text{Cos}[c+d x] \#1+\#1^2\right]+2 \text{ArcTan}\left[\frac{\text{Sin}[c+d x]}{\text{Cos}[c+d x]-\#1}\right] \#1^2-i \text{Log}\left[1-2 \text{Cos}[c+d x] \#1+\#1^2\right] \#1^2\right)\Big/$$

$$\left.\left.\left(b-4 i a \#1-2 b \#1^2+b \#1^4\right) \&\right]+3 b (12 (c+d x)-8 \text{Sin}[2 (c+d x)]+\text{Sin}[4 (c+d x)])\right)$$

Problem 183: Result is not expressed in closed-form.

$$\int \frac{\text{Sin}[c+d x]^5}{a+b \text{Sin}[c+d x]^3} \, dx$$

Optimal (type 3, 273 leaves, 15 steps):

$$\frac{x}{2 b}-\frac{2 a \operatorname{ArcTan}\left[\frac{b^{1/3}+a^{1/3} \operatorname{Tan}\left[\frac{1}{2} (c+d x)\right]}{\sqrt{a^{2/3}-b^{2/3}}}\right]}{3 \sqrt{a^{2/3}-b^{2/3}}\, b^{5/3} d}+\frac{2 a \operatorname{ArcTanh}\left[\frac{b^{1/3}-(-1)^{1/3} a^{1/3} \operatorname{Tan}\left[\frac{1}{2} (c+d x)\right]}{\sqrt{-(-1)^{2/3} a^{2/3}+b^{2/3}}}\right]}{3 \sqrt{-(-1)^{2/3} a^{2/3}+b^{2/3}}\, b^{5/3} d}+\frac{2 a \operatorname{ArcTanh}\left[\frac{b^{1/3}+(-1)^{2/3} a^{1/3} \operatorname{Tan}\left[\frac{1}{2} (c+d x)\right]}{\sqrt{(-1)^{1/3} a^{2/3}+b^{2/3}}}\right]}{3 \sqrt{(-1)^{1/3} a^{2/3}+b^{2/3}}\, b^{5/3} d}-\frac{\operatorname{Cos}[c+d x] \operatorname{Sin}[c+d x]}{2 b d}$$

Result (type 7, 255 leaves):

$$\frac{1}{12 b d}\Bigg(6 (c+d x)-2 i a \operatorname{RootSum}\Big[-i b+3 i b \#1^2+8 a \#1^3-3 i b \#1^4+i b \#1^6 \&, \Big(2 \operatorname{ArcTan}\Big[\frac{\operatorname{Sin}[c+d x]}{\operatorname{Cos}[c+d x]-\#1}\Big]-i \operatorname{Log}\big[1-2 \operatorname{Cos}[c+d x] \#1+\#1^2\big]-4 \operatorname{ArcTan}\Big[\frac{\operatorname{Sin}[c+d x]}{\operatorname{Cos}[c+d x]-\#1}\Big] \#1^2+2 i \operatorname{Log}\big[1-2 \operatorname{Cos}[c+d x] \#1+\#1^2\big] \#1^2+2 \operatorname{ArcTan}\Big[\frac{\operatorname{Sin}[c+d x]}{\operatorname{Cos}[c+d x]-\#1}\Big] \#1^4-i \operatorname{Log}\big[1-2 \operatorname{Cos}[c+d x] \#1+\#1^2\big] \#1^4\Big) \Big/ \left(b \#1-4 i a \#1^2-2 b \#1^3+b \#1^5\right) \&\Big]-3 \operatorname{Sin}[2 (c+d x)]\Bigg)$$

- **Problem 184: Result is not expressed in closed-form.**

$$\int \frac{\operatorname{Sin}[c+d x]^3}{a+b \operatorname{Sin}[c+d x]^3} \, dx$$

Optimal (type 3, 259 leaves, 13 steps):

$$\frac{x}{b}-\frac{2 a^{1/3} \operatorname{ArcTan}\left[\frac{b^{1/3}+a^{1/3} \operatorname{Tan}\left[\frac{1}{2} (c+d x)\right]}{\sqrt{a^{2/3}-b^{2/3}}}\right]}{3 \sqrt{a^{2/3}-b^{2/3}}\, b d}-\frac{2 a^{1/3} \operatorname{ArcTan}\left[\frac{(-1)^{2/3} b^{1/3}+a^{1/3} \operatorname{Tan}\left[\frac{1}{2} (c+d x)\right]}{\sqrt{a^{2/3}+(-1)^{1/3} b^{2/3}}}\right]}{3 \sqrt{a^{2/3}+(-1)^{1/3} b^{2/3}}\, b d}+\frac{2 a^{1/3} \operatorname{ArcTan}\left[\frac{(-1)^{1/3} \left(b^{1/3}+(-1)^{2/3} a^{1/3} \operatorname{Tan}\left[\frac{1}{2} (c+d x)\right]\right)}{\sqrt{a^{2/3}-(-1)^{2/3} b^{2/3}}}\right]}{3 \sqrt{a^{2/3}-(-1)^{2/3} b^{2/3}}\, b d}$$

Result (type 7, 140 leaves):

$$\frac{1}{3 b d}\left(3 c+3 d x+2 i a \operatorname{RootSum}\left[-i b+3 i b \#1^2+8 a \#1^3-3 i b \#1^4+i b \#1^6 \&, \frac{2 \operatorname{ArcTan}\left[\frac{\operatorname{Sin}[c+d x]}{\operatorname{Cos}[c+d x]-\#1}\right] \#1-i \operatorname{Log}\left[1-2 \operatorname{Cos}[c+d x] \#1+\#1^2\right] \#1}{b-4 i a \#1-2 b \#1^2+b \#1^4} \&\right]\right)$$

- **Problem 185: Result is not expressed in closed-form.**

$$\int \frac{\operatorname{Sin}[c+d x]}{a+b \operatorname{Sin}[c+d x]^3} \, dx$$

Optimal (type 3, 267 leaves, 11 steps):

$$\frac{2 (-1)^{2/3} \operatorname{ArcTan}\left[\frac{(-1)^{1/3} b^{1/3}-a^{1/3} \operatorname{Tan}\left[\frac{1}{2} (c+d x)\right]}{\sqrt{a^{2/3}-(-1)^{2/3} b^{2/3}}}\right]}{3 a^{1/3} \sqrt{a^{2/3}-(-1)^{2/3} b^{2/3}}\, b^{1/3} d}-\frac{2 \operatorname{ArcTan}\left[\frac{b^{1/3}+a^{1/3} \operatorname{Tan}\left[\frac{1}{2} (c+d x)\right]}{\sqrt{a^{2/3}-b^{2/3}}}\right]}{3 a^{1/3} \sqrt{a^{2/3}-b^{2/3}}\, b^{1/3} d}+\frac{2 (-1)^{1/3} \operatorname{ArcTan}\left[\frac{(-1)^{2/3} b^{1/3}+a^{1/3} \operatorname{Tan}\left[\frac{1}{2} (c+d x)\right]}{\sqrt{a^{2/3}+(-1)^{1/3} b^{2/3}}}\right]}{3 a^{1/3} \sqrt{a^{2/3}+(-1)^{1/3} b^{2/3}}\, b^{1/3} d}$$

Result (type 7, 172 leaves):

$$-\frac{1}{3d}\text{RootSum}\Big[-i\,b+3\,i\,b\,\#1^2+8\,a\,\#1^3-3\,i\,b\,\#1^4+i\,b\,\#1^6\,\&,\ \Big(-2\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]+i\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]+2\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]\,\#1^2-i\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]\,\#1^2\Big)\Big/\left(b-4\,i\,a\,\#1-2\,b\,\#1^2+b\,\#1^4\right)\,\&\Big]$$

- **Problem 186: Result is not expressed in closed-form.**

$$\int\frac{\text{Csc}[c+d\,x]}{a+b\,\text{Sin}[c+d\,x]^3}\,dx$$

Optimal (type 3, 264 leaves, 14 steps):

$$-\frac{2\,b^{1/3}\,\text{ArcTan}\Big[\frac{b^{1/3}+a^{1/3}\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{\sqrt{a^{2/3}-b^{2/3}}}\Big]}{3\,a\,\sqrt{a^{2/3}-b^{2/3}}\,d}-\frac{\text{ArcTanh}[\text{Cos}[c+d\,x]]}{a\,d}+\frac{2\,b^{1/3}\,\text{ArcTanh}\Big[\frac{b^{1/3}-(-1)^{1/3}\,a^{1/3}\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{\sqrt{-(-1)^{2/3}\,a^{2/3}+b^{2/3}}}\Big]}{3\,a\,\sqrt{-(-1)^{2/3}\,a^{2/3}+b^{2/3}}\,d}+\frac{2\,b^{1/3}\,\text{ArcTanh}\Big[\frac{b^{1/3}+(-1)^{2/3}\,a^{1/3}\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{\sqrt{(-1)^{1/3}\,a^{2/3}+b^{2/3}}}\Big]}{3\,a\,\sqrt{(-1)^{1/3}\,a^{2/3}+b^{2/3}}\,d}$$

Result (type 7, 264 leaves):

$$-\frac{1}{6\,a\,d}\Big(6\,\text{Log}\Big[\text{Cos}\Big[\frac{1}{2}(c+d\,x)\Big]\Big]-6\,\text{Log}\Big[\text{Sin}\Big[\frac{1}{2}(c+d\,x)\Big]\Big]+i\,b\,\text{RootSum}\Big[-i\,b+3\,i\,b\,\#1^2+8\,a\,\#1^3-3\,i\,b\,\#1^4+i\,b\,\#1^6\,\&,\ \Big(2\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]-i\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]-4\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]\,\#1^2+2\,i\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]\,\#1^2+2\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]\,\#1^4-i\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]\,\#1^4\Big)\Big/\left(b\,\#1-4\,i\,a\,\#1^2-2\,b\,\#1^3+b\,\#1^5\right)\,\&\Big]\Big)$$

- **Problem 187: Result is not expressed in closed-form.**

$$\int\frac{\text{Csc}[c+d\,x]^3}{a+b\,\text{Sin}[c+d\,x]^3}\,dx$$

Optimal (type 3, 287 leaves, 15 steps):

$$-\frac{2\,b\,\text{ArcTan}\Big[\frac{b^{1/3}+a^{1/3}\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{\sqrt{a^{2/3}-b^{2/3}}}\Big]}{3\,a^{5/3}\,\sqrt{a^{2/3}-b^{2/3}}\,d}-\frac{2\,b\,\text{ArcTan}\Big[\frac{(-1)^{2/3}\,b^{1/3}+a^{1/3}\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{\sqrt{a^{2/3}+(-1)^{1/3}\,b^{2/3}}}\Big]}{3\,a^{5/3}\,\sqrt{a^{2/3}+(-1)^{1/3}\,b^{2/3}}\,d}+\frac{2\,b\,\text{ArcTan}\Big[\frac{(-1)^{1/3}\left(b^{1/3}+(-1)^{2/3}\,a^{1/3}\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)}{\sqrt{a^{2/3}-(-1)^{2/3}\,b^{2/3}}}\Big]}{3\,a^{5/3}\,\sqrt{a^{2/3}-(-1)^{2/3}\,b^{2/3}}\,d}-\frac{\text{ArcTanh}[\text{Cos}[c+d\,x]]}{2\,a\,d}-\frac{\text{Cot}[c+d\,x]\,\text{Csc}[c+d\,x]}{2\,a\,d}$$

Result (type 7, 181 leaves):

$$\frac{1}{24\,a\,d}\left(16\,i\,b\,\text{RootSum}\left[-b+3\,b\,\#1^2-8\,i\,a\,\#1^3-3\,b\,\#1^4+b\,\#1^6\,\&,\ \frac{2\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\right]\#1-i\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\right]\#1}{b-4\,i\,a\,\#1-2\,b\,\#1^2+b\,\#1^4}\,\&\right]-\right.$$
$$\left.3\left(\text{Csc}\left[\frac{1}{2}(c+d\,x)\right]^2+4\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]\right]-4\,\text{Log}\left[\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]-\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)$$

- **Problem 188: Result is not expressed in closed-form.**

$$\int\frac{\text{Csc}[c+d\,x]^5}{a+b\,\text{Sin}[c+d\,x]^3}\,dx$$

Optimal (type 3, 344 leaves, 18 steps):

$$\frac{2\,(-1)^{2/3}\,b^{5/3}\,\text{ArcTan}\left[\frac{(-1)^{1/3}\,b^{1/3}-a^{1/3}\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{\sqrt{a^{2/3}-(-1)^{2/3}\,b^{2/3}}}\right]}{3\,a^{7/3}\,\sqrt{a^{2/3}-(-1)^{2/3}\,b^{2/3}}\,d}-\frac{2\,b^{5/3}\,\text{ArcTan}\left[\frac{b^{1/3}+a^{1/3}\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{\sqrt{a^{2/3}-b^{2/3}}}\right]}{3\,a^{7/3}\,\sqrt{a^{2/3}-b^{2/3}}\,d}+\frac{2\,(-1)^{1/3}\,b^{5/3}\,\text{ArcTan}\left[\frac{(-1)^{2/3}\,b^{1/3}+a^{1/3}\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{\sqrt{a^{2/3}+(-1)^{1/3}\,b^{2/3}}}\right]}{3\,a^{7/3}\,\sqrt{a^{2/3}+(-1)^{1/3}\,b^{2/3}}\,d}-$$
$$\frac{3\,\text{ArcTanh}[\text{Cos}[c+d\,x]]}{8\,a\,d}+\frac{b\,\text{Cot}[c+d\,x]}{a^2\,d}-\frac{3\,\text{Cot}[c+d\,x]\,\text{Csc}[c+d\,x]}{8\,a\,d}-\frac{\text{Cot}[c+d\,x]\,\text{Csc}[c+d\,x]^3}{4\,a\,d}$$

Result (type 7, 290 leaves):

$$\frac{1}{192\,a^2\,d}\left(-64\,b^2\,\text{RootSum}\left[-b+3\,b\,\#1^2-8\,i\,a\,\#1^3-3\,b\,\#1^4+b\,\#1^6\,\&,\right.\right.$$
$$\left(-2\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\right]+i\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\right]+2\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\right]\#1^2-i\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\right]\#1^2\right)\Big/$$
$$\left.\left(b-4\,i\,a\,\#1-2\,b\,\#1^2+b\,\#1^4\right)\,\&\right]+3\left(32\,b\,\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]-6\,a\,\text{Csc}\left[\frac{1}{2}(c+d\,x)\right]^2-a\,\text{Csc}\left[\frac{1}{2}(c+d\,x)\right]^4-\right.$$
$$\left.\left.24\,a\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]\right]+24\,a\,\text{Log}\left[\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]+6\,a\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2+a\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^4-32\,b\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)\right)$$

- **Problem 189: Result is not expressed in closed-form.**

$$\int\frac{\text{Sin}[c+d\,x]^6}{a+b\,\text{Sin}[c+d\,x]^3}\,dx$$

Optimal (type 3, 293 leaves, 15 steps):

$$-\frac{a x}{b^2}+\frac{2 a^{4/3} \text{ArcTan}\left[\frac{b^{1/3}+a^{1/3} \text{Tan}\left[\frac{1}{2}(c+d x)\right]}{\sqrt{a^{2/3}-b^{2/3}}}\right]}{3 \sqrt{a^{2/3}-b^{2/3}}\, b^2 d}+\frac{2 a^{4/3} \text{ArcTan}\left[\frac{(-1)^{2/3} b^{1/3}+a^{1/3} \text{Tan}\left[\frac{1}{2}(c+d x)\right]}{\sqrt{a^{2/3}+(-1)^{1/3} b^{2/3}}}\right]}{3 \sqrt{a^{2/3}+(-1)^{1/3} b^{2/3}}\, b^2 d}-\frac{2 a^{4/3} \text{ArcTan}\left[\frac{(-1)^{1/3}\left(b^{1/3}+(-1)^{2/3} a^{1/3} \text{Tan}\left[\frac{1}{2}(c+d x)\right]\right)}{\sqrt{a^{2/3}-(-1)^{2/3} b^{2/3}}}\right]}{3 \sqrt{a^{2/3}-(-1)^{2/3} b^{2/3}}\, b^2 d}-\frac{\text{Cos}[c+d x]}{b d}+\frac{\text{Cos}[c+d x]^3}{3 b d}$$

Result (type 7, 164 leaves):

$$-\frac{1}{12 b^2 d}\left(12 a c+12 a d x+9 b \text{Cos}[c+d x]-b \text{Cos}[3(c+d x)]+8 i a^2 \text{RootSum}\left[-i b+3 i b \#1^2+8 a \#1^3-3 i b \#1^4+i b \#1^6 \&, \frac{2 \text{ArcTan}\left[\frac{\text{Sin}[c+d x]}{\text{Cos}[c+d x]-\#1}\right] \#1-i \text{Log}\left[1-2 \text{Cos}[c+d x] \#1+\#1^2\right] \#1}{b-4 i a \#1-2 b \#1^2+b \#1^4} \&\right]\right)$$

Problem 190: Result is not expressed in closed-form.

$$\int \frac{\text{Sin}[c+d x]^4}{a+b \text{Sin}[c+d x]^3} \, dx$$

Optimal (type 3, 281 leaves, 14 steps):

$$-\frac{2 (-1)^{2/3} a^{2/3} \text{ArcTan}\left[\frac{(-1)^{1/3} b^{1/3}-a^{1/3} \text{Tan}\left[\frac{1}{2}(c+d x)\right]}{\sqrt{a^{2/3}-(-1)^{2/3} b^{2/3}}}\right]}{3 \sqrt{a^{2/3}-(-1)^{2/3} b^{2/3}}\, b^{4/3} d}+\frac{2 a^{2/3} \text{ArcTan}\left[\frac{b^{1/3}+a^{1/3} \text{Tan}\left[\frac{1}{2}(c+d x)\right]}{\sqrt{a^{2/3}-b^{2/3}}}\right]}{3 \sqrt{a^{2/3}-b^{2/3}}\, b^{4/3} d}-\frac{2 (-1)^{1/3} a^{2/3} \text{ArcTan}\left[\frac{(-1)^{2/3} b^{1/3}+a^{1/3} \text{Tan}\left[\frac{1}{2}(c+d x)\right]}{\sqrt{a^{2/3}+(-1)^{1/3} b^{2/3}}}\right]}{3 \sqrt{a^{2/3}+(-1)^{1/3} b^{2/3}}\, b^{4/3} d}-\frac{\text{Cos}[c+d x]}{b d}$$

Result (type 7, 186 leaves):

$$\frac{1}{3 b d}\left(-3 \text{Cos}[c+d x]+a \text{RootSum}\left[-i b+3 i b \#1^2+8 a \#1^3-3 i b \#1^4+i b \#1^6 \&, \left(-2 \text{ArcTan}\left[\frac{\text{Sin}[c+d x]}{\text{Cos}[c+d x]-\#1}\right]+i \text{Log}\left[1-2 \text{Cos}[c+d x] \#1+\#1^2\right]+2 \text{ArcTan}\left[\frac{\text{Sin}[c+d x]}{\text{Cos}[c+d x]-\#1}\right] \#1^2-i \text{Log}\left[1-2 \text{Cos}[c+d x] \#1+\#1^2\right] \#1^2\right) \Big/ \left(b-4 i a \#1-2 b \#1^2+b \#1^4\right) \&\right]\right)$$

Problem 191: Result is not expressed in closed-form.

$$\int \frac{\text{Sin}[c+d x]^2}{a+b \text{Sin}[c+d x]^3} \, dx$$

Optimal (type 3, 240 leaves, 11 steps):

$$\frac{2 \text{ArcTan}\left[\frac{b^{1/3}+a^{1/3} \text{Tan}\left[\frac{1}{2} (c+d x)\right]}{\sqrt{a^{2/3}-b^{2/3}}}\right]}{3 \sqrt{a^{2/3}-b^{2/3}} \, b^{2/3} d}-\frac{2 \text{ArcTanh}\left[\frac{b^{1/3}-(-1)^{1/3} a^{1/3} \text{Tan}\left[\frac{1}{2} (c+d x)\right]}{\sqrt{-(-1)^{2/3} a^{2/3}+b^{2/3}}}\right]}{3 \sqrt{-(-1)^{2/3} a^{2/3}+b^{2/3}} \, b^{2/3} d}-\frac{2 \text{ArcTanh}\left[\frac{b^{1/3}+(-1)^{2/3} a^{1/3} \text{Tan}\left[\frac{1}{2} (c+d x)\right]}{\sqrt{(-1)^{1/3} a^{2/3}+b^{2/3}}}\right]}{3 \sqrt{(-1)^{1/3} a^{2/3}+b^{2/3}} \, b^{2/3} d}$$

Result (type 7, 231 leaves):

$$\frac{1}{6 d} i \, \text{RootSum}\Big[-i b+3 i b \#1^2+8 a \#1^3-3 i b \#1^4+i b \#1^6 \&, \left(2 \text{ArcTan}\left[\frac{\text{Sin}[c+d x]}{\text{Cos}[c+d x]-\#1}\right]-i \text{Log}\left[1-2 \text{Cos}[c+d x] \#1+\#1^2\right]-4 \text{ArcTan}\left[\frac{\text{Sin}[c+d x]}{\text{Cos}[c+d x]-\#1}\right] \#1^2+2 i \text{Log}\left[1-2 \text{Cos}[c+d x] \#1+\#1^2\right] \#1^2+2 \text{ArcTan}\left[\frac{\text{Sin}[c+d x]}{\text{Cos}[c+d x]-\#1}\right] \#1^4-i \text{Log}\left[1-2 \text{Cos}[c+d x] \#1+\#1^2\right] \#1^4\right) \Big/ \left(b \#1-4 i a \#1^2-2 b \#1^3+b \#1^5\right) \&\Big]$$

Problem 192: Result is not expressed in closed-form.

$$\int \frac{1}{a+b \text{Sin}[c+d x]^3} \, dx$$

Optimal (type 3, 245 leaves, 11 steps):

$$\frac{2 \text{ArcTan}\left[\frac{b^{1/3}+a^{1/3} \text{Tan}\left[\frac{1}{2} (c+d x)\right]}{\sqrt{a^{2/3}-b^{2/3}}}\right]}{3 a^{2/3} \sqrt{a^{2/3}-b^{2/3}} \, d}+\frac{2 \text{ArcTan}\left[\frac{(-1)^{2/3} b^{1/3}+a^{1/3} \text{Tan}\left[\frac{1}{2} (c+d x)\right]}{\sqrt{a^{2/3}+(-1)^{1/3} b^{2/3}}}\right]}{3 a^{2/3} \sqrt{a^{2/3}+(-1)^{1/3} b^{2/3}} \, d}-\frac{2 \text{ArcTan}\left[\frac{(-1)^{1/3} \left(b^{1/3}+(-1)^{2/3} a^{1/3} \text{Tan}\left[\frac{1}{2} (c+d x)\right]\right)}{\sqrt{a^{2/3}-(-1)^{2/3} b^{2/3}}}\right]}{3 a^{2/3} \sqrt{a^{2/3}-(-1)^{2/3} b^{2/3}} \, d}$$

Result (type 7, 126 leaves):

$$-\frac{1}{3 d} 2 i \, \text{RootSum}\left[-i b+3 i b \#1^2+8 a \#1^3-3 i b \#1^4+i b \#1^6 \&, \frac{2 \text{ArcTan}\left[\frac{\text{Sin}[c+d x]}{\text{Cos}[c+d x]-\#1}\right] \#1-i \text{Log}\left[1-2 \text{Cos}[c+d x] \#1+\#1^2\right] \#1}{b-4 i a \#1-2 b \#1^2+b \#1^4} \&\right]$$

Problem 193: Result is not expressed in closed-form.

$$\int \frac{\text{Csc}[c+d x]^2}{a+b \text{Sin}[c+d x]^3} \, dx$$

Optimal (type 3, 281 leaves, 15 steps):

$$-\frac{2\,(-1)^{2/3}\,b^{2/3}\,\text{ArcTan}\left[\frac{(-1)^{1/3}\,b^{1/3}-a^{1/3}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]}{\sqrt{a^{2/3}-(-1)^{2/3}\,b^{2/3}}}\right]}{3\,a^{4/3}\,\sqrt{a^{2/3}-(-1)^{2/3}\,b^{2/3}}\,d}+$$

$$\frac{2\,b^{2/3}\,\text{ArcTan}\left[\frac{b^{1/3}+a^{1/3}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]}{\sqrt{a^{2/3}-b^{2/3}}}\right]}{3\,a^{4/3}\,\sqrt{a^{2/3}-b^{2/3}}\,d}-\frac{2\,(-1)^{1/3}\,b^{2/3}\,\text{ArcTan}\left[\frac{(-1)^{2/3}\,b^{1/3}+a^{1/3}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]}{\sqrt{a^{2/3}+(-1)^{1/3}\,b^{2/3}}}\right]}{3\,a^{4/3}\,\sqrt{a^{2/3}+(-1)^{1/3}\,b^{2/3}}\,d}-\frac{\text{Cot}[c+d\,x]}{a\,d}$$

Result (type 7, 196 leaves) :

$$\frac{1}{6\,a\,d}\left(-3\,\text{Cot}\left[\frac{1}{2}\,(c+d\,x)\right]+2\,b\,\text{RootSum}\left[-b+3\,b\,\#1^2-8\,i\,a\,\#1^3-3\,b\,\#1^4+b\,\#1^6\,\&,\right.\right.$$
$$\left(-2\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\right]+i\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\right]+2\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\right]\#1^2-i\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\right]\#1^2\right)\Big/$$
$$\left.\left.\left(b-4\,i\,a\,\#1-2\,b\,\#1^2+b\,\#1^4\right)\,\&\right]+3\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right)$$

- **Problem 194: Result is not expressed in closed-form.**

$$\int\frac{\text{Csc}[c+d\,x]^4}{a+b\,\text{Sin}[c+d\,x]^3}\,dx$$

Optimal (type 3, 296 leaves, 16 steps) :

$$\frac{2\,b^{4/3}\,\text{ArcTan}\left[\frac{b^{1/3}+a^{1/3}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]}{\sqrt{a^{2/3}-b^{2/3}}}\right]}{3\,a^2\,\sqrt{a^{2/3}-b^{2/3}}\,d}+\frac{b\,\text{ArcTanh}[\text{Cos}[c+d\,x]]}{a^2\,d}-$$

$$\frac{2\,b^{4/3}\,\text{ArcTanh}\left[\frac{b^{1/3}-(-1)^{1/3}\,a^{1/3}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]}{\sqrt{-(-1)^{2/3}\,a^{2/3}+b^{2/3}}}\right]}{3\,a^2\,\sqrt{-(-1)^{2/3}\,a^{2/3}+b^{2/3}}\,d}-\frac{2\,b^{4/3}\,\text{ArcTanh}\left[\frac{b^{1/3}+(-1)^{2/3}\,a^{1/3}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]}{\sqrt{(-1)^{1/3}\,a^{2/3}+b^{2/3}}}\right]}{3\,a^2\,\sqrt{(-1)^{1/3}\,a^{2/3}+b^{2/3}}\,d}-\frac{\text{Cot}[c+d\,x]}{a\,d}-\frac{\text{Cot}[c+d\,x]^3}{3\,a\,d}$$

Result (type 7, 333 leaves) :

$$\frac{1}{24 a^2 d}\left(-8 a \operatorname{Cot}\left[\frac{1}{2}(c+d x)\right]+24 b \operatorname{Log}\left[\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]\right]-24 b \operatorname{Log}\left[\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right]+4 i b^2 \operatorname{RootSum}\left[-b+3 b \#1^2-8 i a \#1^3-3 b \#1^4+b \#1^6 \&,\right.\right.$$
$$\left(2 \operatorname{ArcTan}\left[\frac{\operatorname{Sin}[c+d x]}{\operatorname{Cos}[c+d x]-\#1}\right]-i \operatorname{Log}\left[1-2 \operatorname{Cos}[c+d x] \#1+\#1^2\right]-4 \operatorname{ArcTan}\left[\frac{\operatorname{Sin}[c+d x]}{\operatorname{Cos}[c+d x]-\#1}\right] \#1^2+2 i \operatorname{Log}\left[1-2 \operatorname{Cos}[c+d x] \#1+\#1^2\right] \#1^2+\right.$$
$$\left.\left.2 \operatorname{ArcTan}\left[\frac{\operatorname{Sin}[c+d x]}{\operatorname{Cos}[c+d x]-\#1}\right] \#1^4-i \operatorname{Log}\left[1-2 \operatorname{Cos}[c+d x] \#1+\#1^2\right] \#1^4\right) \Big/ \left(b \#1-4 i a \#1^2-2 b \#1^3+b \#1^5\right) \&\right]+$$
$$\left.8 a \operatorname{Csc}[c+d x]^3 \operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]^4-\frac{1}{2} a \operatorname{Csc}\left[\frac{1}{2}(c+d x)\right]^4 \operatorname{Sin}[c+d x]+8 a \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]\right)$$

- **Problem 195: Result is not expressed in closed-form.**

$$\int \frac{\operatorname{Sin}[c+d x]^9}{a-b \operatorname{Sin}[c+d x]^4} \, dx$$

Optimal (type 3, 177 leaves, 6 steps):

$$-\frac{a^{3/2} \operatorname{ArcTan}\left[\frac{b^{1/4} \operatorname{Cos}[c+d x]}{\sqrt{\sqrt{a}-\sqrt{b}}}\right]}{2 \sqrt{\sqrt{a}-\sqrt{b}}\, b^{9/4} d}-\frac{a^{3/2} \operatorname{ArcTanh}\left[\frac{b^{1/4} \operatorname{Cos}[c+d x]}{\sqrt{\sqrt{a}+\sqrt{b}}}\right]}{2 \sqrt{\sqrt{a}+\sqrt{b}}\, b^{9/4} d}+\frac{(a+b) \operatorname{Cos}[c+d x]}{b^2 d}-\frac{2 \operatorname{Cos}[c+d x]^3}{3 b d}+\frac{\operatorname{Cos}[c+d x]^5}{5 b d}$$

Result (type 7, 228 leaves):

$$\frac{1}{120 b^2 d}\left(\operatorname{Cos}[c+d x]\,(120 a+89 b-28 b \operatorname{Cos}[2 (c+d x)]+3 b \operatorname{Cos}[4 (c+d x)])+\right.$$
$$60 i a^2 \operatorname{RootSum}\left[b-4 b \#1^2-16 a \#1^4+6 b \#1^4-4 b \#1^6+b \#1^8 \&,\left(-2 \operatorname{ArcTan}\left[\frac{\operatorname{Sin}[c+d x]}{\operatorname{Cos}[c+d x]-\#1}\right] \#1+i \operatorname{Log}\left[1-2 \operatorname{Cos}[c+d x] \#1+\#1^2\right] \#1+\right.\right.$$
$$\left.\left.\left.2 \operatorname{ArcTan}\left[\frac{\operatorname{Sin}[c+d x]}{\operatorname{Cos}[c+d x]-\#1}\right] \#1^3-i \operatorname{Log}\left[1-2 \operatorname{Cos}[c+d x] \#1+\#1^2\right] \#1^3\right) \Big/ \left(-b-8 a \#1^2+3 b \#1^2-3 b \#1^4+b \#1^6\right) \&\right]\right)$$

- **Problem 196: Result is not expressed in closed-form.**

$$\int \frac{\operatorname{Sin}[c+d x]^7}{a-b \operatorname{Sin}[c+d x]^4} \, dx$$

Optimal (type 3, 148 leaves, 6 steps):

$$-\frac{a \operatorname{ArcTan}\left[\frac{b^{1/4} \operatorname{Cos}[c+d x]}{\sqrt{\sqrt{a}-\sqrt{b}}}\right]}{2 \sqrt{\sqrt{a}-\sqrt{b}}\, b^{7/4} d}+\frac{a \operatorname{ArcTanh}\left[\frac{b^{1/4} \operatorname{Cos}[c+d x]}{\sqrt{\sqrt{a}+\sqrt{b}}}\right]}{2 \sqrt{\sqrt{a}+\sqrt{b}}\, b^{7/4} d}+\frac{\operatorname{Cos}[c+d x]}{b d}-\frac{\operatorname{Cos}[c+d x]^3}{3 b d}$$

Result (type 7, 310 leaves):

$$\frac{1}{24\,b\,d}\Big(18\,\mathrm{Cos}[c+d\,x]-2\,\mathrm{Cos}[3\,(c+d\,x)]-3\,i\,a\,\mathrm{RootSum}\Big[b-4\,b\,\#1^2-16\,a\,\#1^4+6\,b\,\#1^4-4\,b\,\#1^6+b\,\#1^8\,\&,$$
$$\Big(-2\,\mathrm{ArcTan}\Big[\frac{\mathrm{Sin}[c+d\,x]}{\mathrm{Cos}[c+d\,x]-\#1}\Big]+i\,\mathrm{Log}\big[1-2\,\mathrm{Cos}[c+d\,x]\,\#1+\#1^2\big]+6\,\mathrm{ArcTan}\Big[\frac{\mathrm{Sin}[c+d\,x]}{\mathrm{Cos}[c+d\,x]-\#1}\Big]\,\#1^2-$$
$$3\,i\,\mathrm{Log}\big[1-2\,\mathrm{Cos}[c+d\,x]\,\#1+\#1^2\big]\,\#1^2-6\,\mathrm{ArcTan}\Big[\frac{\mathrm{Sin}[c+d\,x]}{\mathrm{Cos}[c+d\,x]-\#1}\Big]\,\#1^4+3\,i\,\mathrm{Log}\big[1-2\,\mathrm{Cos}[c+d\,x]\,\#1+\#1^2\big]\,\#1^4+$$
$$2\,\mathrm{ArcTan}\Big[\frac{\mathrm{Sin}[c+d\,x]}{\mathrm{Cos}[c+d\,x]-\#1}\Big]\,\#1^6-i\,\mathrm{Log}\big[1-2\,\mathrm{Cos}[c+d\,x]\,\#1+\#1^2\big]\,\#1^6\Big)\Big/\left(-b\,\#1-8\,a\,\#1^3+3\,b\,\#1^3-3\,b\,\#1^5+b\,\#1^7\right)\,\&\Big]\Big)$$

- **Problem 197: Result is not expressed in closed-form.**

$$\int\frac{\mathrm{Sin}[c+d\,x]^5}{a-b\,\mathrm{Sin}[c+d\,x]^4}\,dx$$

Optimal (type 3, 138 leaves, 6 steps):

$$-\frac{\sqrt{a}\,\mathrm{ArcTan}\Big[\frac{b^{1/4}\,\mathrm{Cos}[c+d\,x]}{\sqrt{\sqrt{a}-\sqrt{b}}}\Big]}{2\,\sqrt{\sqrt{a}-\sqrt{b}}\,b^{5/4}\,d}-\frac{\sqrt{a}\,\mathrm{ArcTanh}\Big[\frac{b^{1/4}\,\mathrm{Cos}[c+d\,x]}{\sqrt{\sqrt{a}+\sqrt{b}}}\Big]}{2\,\sqrt{\sqrt{a}+\sqrt{b}}\,b^{5/4}\,d}+\frac{\mathrm{Cos}[c+d\,x]}{b\,d}$$

Result (type 7, 198 leaves):

$$\frac{1}{2\,b\,d}\Big(2\,\mathrm{Cos}[c+d\,x]+$$
$$i\,a\,\mathrm{RootSum}\Big[b-4\,b\,\#1^2-16\,a\,\#1^4+6\,b\,\#1^4-4\,b\,\#1^6+b\,\#1^8\,\&,\ \Big(-2\,\mathrm{ArcTan}\Big[\frac{\mathrm{Sin}[c+d\,x]}{\mathrm{Cos}[c+d\,x]-\#1}\Big]\,\#1+i\,\mathrm{Log}\big[1-2\,\mathrm{Cos}[c+d\,x]\,\#1+\#1^2\big]\,\#1+$$
$$2\,\mathrm{ArcTan}\Big[\frac{\mathrm{Sin}[c+d\,x]}{\mathrm{Cos}[c+d\,x]-\#1}\Big]\,\#1^3-i\,\mathrm{Log}\big[1-2\,\mathrm{Cos}[c+d\,x]\,\#1+\#1^2\big]\,\#1^3\Big)\Big/\left(-b-8\,a\,\#1^2+3\,b\,\#1^2-3\,b\,\#1^4+b\,\#1^6\right)\,\&\Big]\Big)$$

- **Problem 198: Result is not expressed in closed-form.**

$$\int\frac{\mathrm{Sin}[c+d\,x]^3}{a-b\,\mathrm{Sin}[c+d\,x]^4}\,dx$$

Optimal (type 3, 115 leaves, 4 steps):

$$-\frac{\mathrm{ArcTan}\Big[\frac{b^{1/4}\,\mathrm{Cos}[c+d\,x]}{\sqrt{\sqrt{a}-\sqrt{b}}}\Big]}{2\,\sqrt{\sqrt{a}-\sqrt{b}}\,b^{3/4}\,d}+\frac{\mathrm{ArcTanh}\Big[\frac{b^{1/4}\,\mathrm{Cos}[c+d\,x]}{\sqrt{\sqrt{a}+\sqrt{b}}}\Big]}{2\,\sqrt{\sqrt{a}+\sqrt{b}}\,b^{3/4}\,d}$$

Result (type 7, 285 leaves):

$$-\frac{1}{8d}\,i\,\text{RootSum}\Big[b-4b\,\#1^2-16a\,\#1^4+6b\,\#1^4-4b\,\#1^6+b\,\#1^8\,\&,\ \Big(-2\,\text{ArcTan}\Big[\frac{\text{Sin}[c+dx]}{\text{Cos}[c+dx]-\#1}\Big]+i\,\text{Log}\big[1-2\,\text{Cos}[c+dx]\,\#1+\#1^2\big]+6\,\text{ArcTan}\Big[\frac{\text{Sin}[c+dx]}{\text{Cos}[c+dx]-\#1}\Big]\#1^2-3\,i\,\text{Log}\big[1-2\,\text{Cos}[c+dx]\,\#1+\#1^2\big]\#1^2-6\,\text{ArcTan}\Big[\frac{\text{Sin}[c+dx]}{\text{Cos}[c+dx]-\#1}\Big]\#1^4+3\,i\,\text{Log}\big[1-2\,\text{Cos}[c+dx]\,\#1+\#1^2\big]\#1^4+2\,\text{ArcTan}\Big[\frac{\text{Sin}[c+dx]}{\text{Cos}[c+dx]-\#1}\Big]\#1^6-i\,\text{Log}\big[1-2\,\text{Cos}[c+dx]\,\#1+\#1^2\big]\#1^6\Big)\Big/\big(-b\,\#1-8a\,\#1^3+3b\,\#1^3-3b\,\#1^5+b\,\#1^7\big)\,\&\Big]$$

- **Problem 199: Result is not expressed in closed-form.**

$$\int\frac{\text{Sin}[c+dx]}{a-b\,\text{Sin}[c+dx]^4}\,dx$$

Optimal (type 3, 125 leaves, 4 steps):

$$-\frac{\text{ArcTan}\Big[\frac{b^{1/4}\,\text{Cos}[c+dx]}{\sqrt{\sqrt{a}-\sqrt{b}}}\Big]}{2\sqrt{a}\,\sqrt{\sqrt{a}-\sqrt{b}}\,b^{1/4}\,d}-\frac{\text{ArcTanh}\Big[\frac{b^{1/4}\,\text{Cos}[c+dx]}{\sqrt{\sqrt{a}+\sqrt{b}}}\Big]}{2\sqrt{a}\,\sqrt{\sqrt{a}+\sqrt{b}}\,b^{1/4}\,d}$$

Result (type 7, 183 leaves):

$$\frac{1}{2d}\,i\,\text{RootSum}\Big[b-4b\,\#1^2-16a\,\#1^4+6b\,\#1^4-4b\,\#1^6+b\,\#1^8\,\&,\ \Big(-2\,\text{ArcTan}\Big[\frac{\text{Sin}[c+dx]}{\text{Cos}[c+dx]-\#1}\Big]\#1+i\,\text{Log}\big[1-2\,\text{Cos}[c+dx]\,\#1+\#1^2\big]\#1+2\,\text{ArcTan}\Big[\frac{\text{Sin}[c+dx]}{\text{Cos}[c+dx]-\#1}\Big]\#1^3-i\,\text{Log}\big[1-2\,\text{Cos}[c+dx]\,\#1+\#1^2\big]\#1^3\Big)\Big/\big(-b-8a\,\#1^2+3b\,\#1^2-3b\,\#1^4+b\,\#1^6\big)\,\&\Big]$$

- **Problem 200: Result is not expressed in closed-form.**

$$\int\frac{\text{Csc}[c+dx]}{a-b\,\text{Sin}[c+dx]^4}\,dx$$

Optimal (type 3, 136 leaves, 7 steps):

$$-\frac{b^{1/4}\,\text{ArcTan}\Big[\frac{b^{1/4}\,\text{Cos}[c+dx]}{\sqrt{\sqrt{a}-\sqrt{b}}}\Big]}{2a\sqrt{\sqrt{a}-\sqrt{b}}\,d}-\frac{\text{ArcTanh}[\text{Cos}[c+dx]]}{a\,d}+\frac{b^{1/4}\,\text{ArcTanh}\Big[\frac{b^{1/4}\,\text{Cos}[c+dx]}{\sqrt{\sqrt{a}+\sqrt{b}}}\Big]}{2a\sqrt{\sqrt{a}+\sqrt{b}}\,d}$$

Result (type 7, 318 leaves):

$$-\frac{1}{8\,a\,d}\left(8\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]\right]-8\,\text{Log}\left[\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]+i\,b\,\text{RootSum}\left[b-4\,b\,\#1^2-16\,a\,\#1^4+6\,b\,\#1^4-4\,b\,\#1^6+b\,\#1^8\,\&,\right.\right.$$
$$\left(-2\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\right]+i\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\right]+6\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\right]\#1^2-\right.$$
$$3\,i\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\right]\#1^2-6\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\right]\#1^4+3\,i\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\right]\#1^4+$$
$$\left.\left.\left.2\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\right]\#1^6-i\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\right]\#1^6\right)\Big/\left(-b\,\#1-8\,a\,\#1^3+3\,b\,\#1^3-3\,b\,\#1^5+b\,\#1^7\right)\,\&\right]\right)$$

- **Problem 201: Result is not expressed in closed-form.**

$$\int\frac{\text{Csc}[c+d\,x]^3}{a-b\,\text{Sin}[c+d\,x]^4}\,dx$$

Optimal (type 3, 184 leaves, 7 steps):

$$-\frac{b^{3/4}\,\text{ArcTan}\left[\frac{b^{1/4}\,\text{Cos}[c+d\,x]}{\sqrt{\sqrt{a}-\sqrt{b}}}\right]}{2\,a^{3/2}\,\sqrt{\sqrt{a}-\sqrt{b}}\,d}-\frac{\text{ArcTanh}[\text{Cos}[c+d\,x]]}{2\,a\,d}-\frac{b^{3/4}\,\text{ArcTanh}\left[\frac{b^{1/4}\,\text{Cos}[c+d\,x]}{\sqrt{\sqrt{a}+\sqrt{b}}}\right]}{2\,a^{3/2}\,\sqrt{\sqrt{a}+\sqrt{b}}\,d}-\frac{1}{4\,a\,d\,(1-\text{Cos}[c+d\,x])}+\frac{1}{4\,a\,d\,(1+\text{Cos}[c+d\,x])}$$

Result (type 7, 242 leaves):

$$\frac{1}{8\,a\,d}\left(-\text{Csc}\left[\frac{1}{2}\,(c+d\,x)\right]^2-4\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]\right]+4\,\text{Log}\left[\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]+\right.$$
$$4\,i\,b\,\text{RootSum}\left[b-4\,b\,\#1^2-16\,a\,\#1^4+6\,b\,\#1^4-4\,b\,\#1^6+b\,\#1^8\,\&,\left(-2\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\right]\#1+i\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\right]\#1+\right.\right.$$
$$\left.\left.\left.2\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\right]\#1^3-i\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\right]\#1^3\right)\Big/\left(-b-8\,a\,\#1^2+3\,b\,\#1^2-3\,b\,\#1^4+b\,\#1^6\right)\,\&\right]+\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)$$

- **Problem 202: Result is not expressed in closed-form.**

$$\int\frac{\text{Csc}[c+d\,x]^5}{a-b\,\text{Sin}[c+d\,x]^4}\,dx$$

Optimal (type 3, 229 leaves, 7 steps):

$$-\frac{b^{5/4}\,\text{ArcTan}\left[\frac{b^{1/4}\,\text{Cos}[c+d\,x]}{\sqrt{\sqrt{a}-\sqrt{b}}}\right]}{2\,a^2\,\sqrt{\sqrt{a}-\sqrt{b}}\,d}-\frac{(3\,a+8\,b)\,\text{ArcTanh}[\text{Cos}[c+d\,x]]}{8\,a^2\,d}+\frac{b^{5/4}\,\text{ArcTanh}\left[\frac{b^{1/4}\,\text{Cos}[c+d\,x]}{\sqrt{\sqrt{a}+\sqrt{b}}}\right]}{2\,a^2\,\sqrt{\sqrt{a}+\sqrt{b}}\,d}-$$
$$\frac{1}{16\,a\,d\,(1-\text{Cos}[c+d\,x])^2}-\frac{3}{16\,a\,d\,(1-\text{Cos}[c+d\,x])}+\frac{1}{16\,a\,d\,(1+\text{Cos}[c+d\,x])^2}+\frac{3}{16\,a\,d\,(1+\text{Cos}[c+d\,x])}$$

Result (type 7, 409 leaves):

$$\frac{1}{64 a^2 d}\left(-6 a \operatorname{Csc}\left[\frac{1}{2}(c+d x)\right]^2-a \operatorname{Csc}\left[\frac{1}{2}(c+d x)\right]^4-24 a \operatorname{Log}\left[\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]\right]-64 b \operatorname{Log}\left[\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]\right]+24 a \operatorname{Log}\left[\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right]+64 b \operatorname{Log}\left[\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right]-8 i b^2 \operatorname{RootSum}\left[b-4 b \#1^2-16 a \#1^4+6 b \#1^4-4 b \#1^6+b \#1^8 \&, \left(-2 \operatorname{ArcTan}\left[\frac{\operatorname{Sin}[c+d x]}{\operatorname{Cos}[c+d x]-\#1}\right]+i \operatorname{Log}\left[1-2 \operatorname{Cos}[c+d x] \#1+\#1^2\right]+6 \operatorname{ArcTan}\left[\frac{\operatorname{Sin}[c+d x]}{\operatorname{Cos}[c+d x]-\#1}\right] \#1^2-3 i \operatorname{Log}\left[1-2 \operatorname{Cos}[c+d x] \#1+\#1^2\right] \#1^2-6 \operatorname{ArcTan}\left[\frac{\operatorname{Sin}[c+d x]}{\operatorname{Cos}[c+d x]-\#1}\right] \#1^4+3 i \operatorname{Log}\left[1-2 \operatorname{Cos}[c+d x] \#1+\#1^2\right] \#1^4+2 \operatorname{ArcTan}\left[\frac{\operatorname{Sin}[c+d x]}{\operatorname{Cos}[c+d x]-\#1}\right] \#1^6-i \operatorname{Log}\left[1-2 \operatorname{Cos}[c+d x] \#1+\#1^2\right] \#1^6\right) \Big/ \left(-b \#1-8 a \#1^3+3 b \#1^3-3 b \#1^5+b \#1^7\right) \&\right]+6 a \operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^2+a \operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^4\right)$$

Problem 212: Result is not expressed in closed-form.

$$\int \frac{\operatorname{Sin}[c+d x]^9}{\left(a-b \operatorname{Sin}[c+d x]^4\right)^2} \, dx$$

Optimal (type 3, 236 leaves, 7 steps):

$$\frac{\sqrt{a}\left(5 \sqrt{a}-6 \sqrt{b}\right) \operatorname{ArcTan}\left[\frac{b^{1/4} \operatorname{Cos}[c+d x]}{\sqrt{\sqrt{a}-\sqrt{b}}}\right]}{8\left(\sqrt{a}-\sqrt{b}\right)^{3/2} b^{9/4} d}+\frac{\sqrt{a}\left(5 \sqrt{a}+6 \sqrt{b}\right) \operatorname{ArcTanh}\left[\frac{b^{1/4} \operatorname{Cos}[c+d x]}{\sqrt{\sqrt{a}+\sqrt{b}}}\right]}{8\left(\sqrt{a}+\sqrt{b}\right)^{3/2} b^{9/4} d}-\frac{\operatorname{Cos}[c+d x]}{b^2 d}-\frac{a \operatorname{Cos}[c+d x]\left(a+b-b \operatorname{Cos}[c+d x]^2\right)}{4(a-b) b^2 d\left(a-b+2 b \operatorname{Cos}[c+d x]^2-b \operatorname{Cos}[c+d x]^4\right)}$$

Result (type 7, 486 leaves):

$$-\frac{1}{32 b^2 d}\left(32 \operatorname{Cos}[c+d x]+\frac{32 a \operatorname{Cos}[c+d x](2 a+b-b \operatorname{Cos}[2(c+d x)])}{(a-b)(8 a-3 b+4 b \operatorname{Cos}[2(c+d x)]-b \operatorname{Cos}[4(c+d x)])}+\frac{1}{a-b} i a \operatorname{RootSum}\left[b-4 b \#1^2-16 a \#1^4+6 b \#1^4-4 b \#1^6+b \#1^8 \&, \frac{1}{-b \#1-8 a \#1^3+3 b \#1^3-3 b \#1^5+b \#1^7}\left(-2 b \operatorname{ArcTan}\left[\frac{\operatorname{Sin}[c+d x]}{\operatorname{Cos}[c+d x]-\#1}\right]+i b \operatorname{Log}\left[1-2 \operatorname{Cos}[c+d x] \#1+\#1^2\right]-40 a \operatorname{ArcTan}\left[\frac{\operatorname{Sin}[c+d x]}{\operatorname{Cos}[c+d x]-\#1}\right] \#1^2+54 b \operatorname{ArcTan}\left[\frac{\operatorname{Sin}[c+d x]}{\operatorname{Cos}[c+d x]-\#1}\right] \#1^2+20 i a \operatorname{Log}\left[1-2 \operatorname{Cos}[c+d x] \#1+\#1^2\right] \#1^2-27 i b \operatorname{Log}\left[1-2 \operatorname{Cos}[c+d x] \#1+\#1^2\right] \#1^2+40 a \operatorname{ArcTan}\left[\frac{\operatorname{Sin}[c+d x]}{\operatorname{Cos}[c+d x]-\#1}\right] \#1^4-54 b \operatorname{ArcTan}\left[\frac{\operatorname{Sin}[c+d x]}{\operatorname{Cos}[c+d x]-\#1}\right] \#1^4-20 i a \operatorname{Log}\left[1-2 \operatorname{Cos}[c+d x] \#1+\#1^2\right] \#1^4+27 i b \operatorname{Log}\left[1-2 \operatorname{Cos}[c+d x] \#1+\#1^2\right] \#1^4+2 b \operatorname{ArcTan}\left[\frac{\operatorname{Sin}[c+d x]}{\operatorname{Cos}[c+d x]-\#1}\right] \#1^6-i b \operatorname{Log}\left[1-2 \operatorname{Cos}[c+d x] \#1+\#1^2\right] \#1^6\right) \&\right]\right)$$

Problem 213: Result is not expressed in closed-form.

$$\int \frac{\text{Sin}[c+d x]^7}{\left(a-b\,\text{Sin}[c+d x]^4\right)^2}\,dx$$

Optimal (type 3, 210 leaves, 5 steps):

$$\frac{\left(3\sqrt{a}-4\sqrt{b}\right)\text{ArcTan}\left[\frac{b^{1/4}\text{Cos}[c+d x]}{\sqrt{\sqrt{a}-\sqrt{b}}}\right]}{8\left(\sqrt{a}-\sqrt{b}\right)^{3/2}b^{7/4}d}-\frac{\left(3\sqrt{a}+4\sqrt{b}\right)\text{ArcTanh}\left[\frac{b^{1/4}\text{Cos}[c+d x]}{\sqrt{\sqrt{a}+\sqrt{b}}}\right]}{8\left(\sqrt{a}+\sqrt{b}\right)^{3/2}b^{7/4}d}-\frac{a\,\text{Cos}[c+d x]\left(2-\text{Cos}[c+d x]^2\right)}{4(a-b)\,b\,d\left(a-b+2b\,\text{Cos}[c+d x]^2-b\,\text{Cos}[c+d x]^4\right)}$$

Result (type 7, 565 leaves):

$$\frac{1}{32(a-b)\,b\,d}\left(\frac{16a\left(-5\,\text{Cos}[c+d x]+\text{Cos}[3(c+d x)]\right)}{8a-3b+4b\,\text{Cos}[2(c+d x)]-b\,\text{Cos}[4(c+d x)]}-\right.$$
$$i\,\text{RootSum}\Big[b-4b\,\#1^2-16a\,\#1^4+6b\,\#1^4-4b\,\#1^6+b\,\#1^8\,\&,\ \frac{1}{-b\,\#1-8a\,\#1^3+3b\,\#1^3-3b\,\#1^5+b\,\#1^7}$$
$$\Big(6a\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d x]}{\text{Cos}[c+d x]-\#1}\Big]-8b\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d x]}{\text{Cos}[c+d x]-\#1}\Big]-3\,i\,a\,\text{Log}\big[1-2\,\text{Cos}[c+d x]\,\#1+\#1^2\big]+4\,i\,b\,\text{Log}\big[1-2\,\text{Cos}[c+d x]\,\#1+\#1^2\big]-$$
$$10a\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d x]}{\text{Cos}[c+d x]-\#1}\Big]\#1^2+24b\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d x]}{\text{Cos}[c+d x]-\#1}\Big]\#1^2+5\,i\,a\,\text{Log}\big[1-2\,\text{Cos}[c+d x]\,\#1+\#1^2\big]\#1^2-$$
$$12\,i\,b\,\text{Log}\big[1-2\,\text{Cos}[c+d x]\,\#1+\#1^2\big]\#1^2+10a\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d x]}{\text{Cos}[c+d x]-\#1}\Big]\#1^4-24b\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d x]}{\text{Cos}[c+d x]-\#1}\Big]\#1^4-$$
$$5\,i\,a\,\text{Log}\big[1-2\,\text{Cos}[c+d x]\,\#1+\#1^2\big]\#1^4+12\,i\,b\,\text{Log}\big[1-2\,\text{Cos}[c+d x]\,\#1+\#1^2\big]\#1^4-6a\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d x]}{\text{Cos}[c+d x]-\#1}\Big]\#1^6+$$
$$\left.8b\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d x]}{\text{Cos}[c+d x]-\#1}\Big]\#1^6+3\,i\,a\,\text{Log}\big[1-2\,\text{Cos}[c+d x]\,\#1+\#1^2\big]\#1^6-4\,i\,b\,\text{Log}\big[1-2\,\text{Cos}[c+d x]\,\#1+\#1^2\big]\#1^6\Big)\,\&\Big]\right)$$

Problem 214: Result is not expressed in closed-form.

$$\int \frac{\text{Sin}[c+d x]^5}{\left(a-b\,\text{Sin}[c+d x]^4\right)^2}\,dx$$

Optimal (type 3, 217 leaves, 5 steps):

$$\frac{\left(\sqrt{a}-2\sqrt{b}\right)\text{ArcTan}\left[\frac{b^{1/4}\text{Cos}[c+d x]}{\sqrt{\sqrt{a}-\sqrt{b}}}\right]}{8\sqrt{a}\left(\sqrt{a}-\sqrt{b}\right)^{3/2}b^{5/4}d}+\frac{\left(\sqrt{a}+2\sqrt{b}\right)\text{ArcTanh}\left[\frac{b^{1/4}\text{Cos}[c+d x]}{\sqrt{\sqrt{a}+\sqrt{b}}}\right]}{8\sqrt{a}\left(\sqrt{a}+\sqrt{b}\right)^{3/2}b^{5/4}d}-\frac{\text{Cos}[c+d x]\left(a+b-b\,\text{Cos}[c+d x]^2\right)}{4(a-b)\,b\,d\left(a-b+2b\,\text{Cos}[c+d x]^2-b\,\text{Cos}[c+d x]^4\right)}$$

Result (type 7, 469 leaves):

$$\begin{aligned}
&-\frac{1}{32\,(a-b)\,b\,d}\Bigg(\frac{32\,\text{Cos}[c+d\,x]\,(2\,a+b-b\,\text{Cos}[2\,(c+d\,x)])}{8\,a-3\,b+4\,b\,\text{Cos}[2\,(c+d\,x)]-b\,\text{Cos}[4\,(c+d\,x)]}+\\
&\quad i\,\text{RootSum}\Big[b-4\,b\,\#1^2-16\,a\,\#1^4+6\,b\,\#1^4-4\,b\,\#1^6+b\,\#1^8\,\&,\ \frac{1}{-b\,\#1-8\,a\,\#1^3+3\,b\,\#1^3-3\,b\,\#1^5+b\,\#1^7}\\
&\qquad\Big(-2\,b\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]+i\,b\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]-8\,a\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]\,\#1^2+\\
&\qquad 22\,b\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]\,\#1^2+4\,i\,a\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]\,\#1^2-11\,i\,b\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]\,\#1^2+\\
&\qquad 8\,a\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]\,\#1^4-22\,b\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]\,\#1^4-4\,i\,a\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]\,\#1^4+\\
&\qquad 11\,i\,b\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]\,\#1^4+2\,b\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]\,\#1^6-i\,b\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]\,\#1^6\Big)\,\&\Big]\Bigg)
\end{aligned}$$

- **Problem 215: Result is not expressed in closed-form.**

$$\int\frac{\text{Sin}[c+d\,x]^3}{\left(a-b\,\text{Sin}[c+d\,x]^4\right)^2}\,dx$$

Optimal (type 3, 186 leaves, 5 steps):

$$-\frac{\text{ArcTan}\left[\frac{b^{1/4}\,\text{Cos}[c+d\,x]}{\sqrt{\sqrt{a}-\sqrt{b}}}\right]}{8\,\sqrt{a}\,\left(\sqrt{a}-\sqrt{b}\right)^{3/2}\,b^{3/4}\,d}+\frac{\text{ArcTanh}\left[\frac{b^{1/4}\,\text{Cos}[c+d\,x]}{\sqrt{\sqrt{a}+\sqrt{b}}}\right]}{8\,\sqrt{a}\,\left(\sqrt{a}+\sqrt{b}\right)^{3/2}\,b^{3/4}\,d}-\frac{\text{Cos}[c+d\,x]\,\left(2-\text{Cos}[c+d\,x]^2\right)}{4\,(a-b)\,d\,\left(a-b+2\,b\,\text{Cos}[c+d\,x]^2-b\,\text{Cos}[c+d\,x]^4\right)}$$

Result (type 7, 345 leaves):

$$\begin{aligned}
&\frac{1}{32\,(a-b)\,d}\Bigg(\frac{16\,(-5\,\text{Cos}[c+d\,x]+\text{Cos}[3\,(c+d\,x)])}{8\,a-3\,b+4\,b\,\text{Cos}[2\,(c+d\,x)]-b\,\text{Cos}[4\,(c+d\,x)]}-i\,\text{RootSum}\Big[b-4\,b\,\#1^2-16\,a\,\#1^4+6\,b\,\#1^4-4\,b\,\#1^6+b\,\#1^8\,\&,\\
&\quad\Big(-2\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]+i\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]+14\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]\,\#1^2-\\
&\qquad 7\,i\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]\,\#1^2-14\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]\,\#1^4+7\,i\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]\,\#1^4+\\
&\qquad 2\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]\,\#1^6-i\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]\,\#1^6\Big)\Big/\left(-b\,\#1-8\,a\,\#1^3+3\,b\,\#1^3-3\,b\,\#1^5+b\,\#1^7\right)\,\&\Big]\Bigg)
\end{aligned}$$

- **Problem 216: Result is not expressed in closed-form.**

$$\int\frac{\text{Sin}[c+d\,x]}{\left(a-b\,\text{Sin}[c+d\,x]^4\right)^2}\,dx$$

Optimal (type 3, 221 leaves, 5 steps):

$$-\frac{\left(3\sqrt{a}-2\sqrt{b}\right)\text{ArcTan}\left[\frac{b^{1/4}\text{Cos}[c+d x]}{\sqrt{\sqrt{a}-\sqrt{b}}}\right]}{8 a^{3/2}\left(\sqrt{a}-\sqrt{b}\right)^{3/2} b^{1/4} d}-\frac{\left(3\sqrt{a}+2\sqrt{b}\right)\text{ArcTanh}\left[\frac{b^{1/4}\text{Cos}[c+d x]}{\sqrt{\sqrt{a}+\sqrt{b}}}\right]}{8 a^{3/2}\left(\sqrt{a}+\sqrt{b}\right)^{3/2} b^{1/4} d}-\frac{\text{Cos}[c+d x]\left(a+b-b\,\text{Cos}[c+d x]^2\right)}{4 a (a-b) d\left(a-b+2 b\,\text{Cos}[c+d x]^2-b\,\text{Cos}[c+d x]^4\right)}$$

Result (type 7, 469 leaves):

$$-\frac{1}{32 a (a-b) d}\left(\frac{32\,\text{Cos}[c+d x]\,(2 a+b-b\,\text{Cos}[2 (c+d x)])}{8 a-3 b+4 b\,\text{Cos}[2 (c+d x)]-b\,\text{Cos}[4 (c+d x)]}+\right.$$
$$\text{i}\,\text{RootSum}\Big[b-4 b \#1^2-16 a \#1^4+6 b \#1^4-4 b \#1^6+b \#1^8\&,\frac{1}{-b \#1-8 a \#1^3+3 b \#1^3-3 b \#1^5+b \#1^7}$$
$$\left(-2 b\,\text{ArcTan}\left[\frac{\text{Sin}[c+d x]}{\text{Cos}[c+d x]-\#1}\right]+\text{i}\, b\,\text{Log}\left[1-2\,\text{Cos}[c+d x]\#1+\#1^2\right]+24 a\,\text{ArcTan}\left[\frac{\text{Sin}[c+d x]}{\text{Cos}[c+d x]-\#1}\right]\#1^2-\right.$$
$$10 b\,\text{ArcTan}\left[\frac{\text{Sin}[c+d x]}{\text{Cos}[c+d x]-\#1}\right]\#1^2-12\,\text{i}\, a\,\text{Log}\left[1-2\,\text{Cos}[c+d x]\#1+\#1^2\right]\#1^2+5\,\text{i}\, b\,\text{Log}\left[1-2\,\text{Cos}[c+d x]\#1+\#1^2\right]\#1^2-$$
$$24 a\,\text{ArcTan}\left[\frac{\text{Sin}[c+d x]}{\text{Cos}[c+d x]-\#1}\right]\#1^4+10 b\,\text{ArcTan}\left[\frac{\text{Sin}[c+d x]}{\text{Cos}[c+d x]-\#1}\right]\#1^4+12\,\text{i}\, a\,\text{Log}\left[1-2\,\text{Cos}[c+d x]\#1+\#1^2\right]\#1^4-$$
$$\left.\left.5\,\text{i}\, b\,\text{Log}\left[1-2\,\text{Cos}[c+d x]\#1+\#1^2\right]\#1^4+2 b\,\text{ArcTan}\left[\frac{\text{Sin}[c+d x]}{\text{Cos}[c+d x]-\#1}\right]\#1^6-\text{i}\, b\,\text{Log}\left[1-2\,\text{Cos}[c+d x]\#1+\#1^2\right]\#1^6\right)\&\Big]\right)$$

- **Problem 217: Result is not expressed in closed-form.**

$$\int\frac{\text{Csc}[c+d x]}{\left(a-b\,\text{Sin}[c+d x]^4\right)^2}\,dx$$

Optimal (type 3, 325 leaves, 11 steps):

$$-\frac{b^{1/4}\text{ArcTan}\left[\frac{b^{1/4}\text{Cos}[c+d x]}{\sqrt{\sqrt{a}-\sqrt{b}}}\right]}{8 a^{3/2}\left(\sqrt{a}-\sqrt{b}\right)^{3/2} d}-\frac{b^{1/4}\text{ArcTan}\left[\frac{b^{1/4}\text{Cos}[c+d x]}{\sqrt{\sqrt{a}-\sqrt{b}}}\right]}{2 a^2\sqrt{\sqrt{a}-\sqrt{b}}\, d}-\frac{\text{ArcTanh}[\text{Cos}[c+d x]]}{a^2 d}+$$
$$\frac{b^{1/4}\text{ArcTanh}\left[\frac{b^{1/4}\text{Cos}[c+d x]}{\sqrt{\sqrt{a}+\sqrt{b}}}\right]}{8 a^{3/2}\left(\sqrt{a}+\sqrt{b}\right)^{3/2} d}+\frac{b^{1/4}\text{ArcTanh}\left[\frac{b^{1/4}\text{Cos}[c+d x]}{\sqrt{\sqrt{a}+\sqrt{b}}}\right]}{2 a^2\sqrt{\sqrt{a}+\sqrt{b}}\, d}-\frac{b\,\text{Cos}[c+d x]\left(2-\text{Cos}[c+d x]^2\right)}{4 a (a-b) d\left(a-b+2 b\,\text{Cos}[c+d x]^2-b\,\text{Cos}[c+d x]^4\right)}$$

Result (type 7, 600 leaves):

$$\frac{1}{32\, a^2\, d}\left(\frac{16\, a\, b\, (-5\, \text{Cos}[c+d\, x]+\text{Cos}[3\, (c+d\, x)])}{(a-b)\, (8\, a-3\, b+4\, b\, \text{Cos}[2\, (c+d\, x)]-b\, \text{Cos}[4\, (c+d\, x)])}-\right.$$

$$32\, \text{Log}\left[\text{Cos}\left[\frac{1}{2}\, (c+d\, x)\right]\right]+32\, \text{Log}\left[\text{Sin}\left[\frac{1}{2}\, (c+d\, x)\right]\right]-\frac{1}{a-b}\, i\, b\, \text{RootSum}\Big[b-4\, b\, \#1^2-16\, a\, \#1^4+6\, b\, \#1^4-4\, b\, \#1^6+b\, \#1^8\, \&,$$

$$\frac{1}{-b\, \#1-8\, a\, \#1^3+3\, b\, \#1^3-3\, b\, \#1^5+b\, \#1^7}\left(-10\, a\, \text{ArcTan}\left[\frac{\text{Sin}[c+d\, x]}{\text{Cos}[c+d\, x]-\#1}\right]+8\, b\, \text{ArcTan}\left[\frac{\text{Sin}[c+d\, x]}{\text{Cos}[c+d\, x]-\#1}\right]+\right.$$

$$5\, i\, a\, \text{Log}\left[1-2\, \text{Cos}[c+d\, x]\, \#1+\#1^2\right]-4\, i\, b\, \text{Log}\left[1-2\, \text{Cos}[c+d\, x]\, \#1+\#1^2\right]+38\, a\, \text{ArcTan}\left[\frac{\text{Sin}[c+d\, x]}{\text{Cos}[c+d\, x]-\#1}\right]\#1^2-$$

$$24\, b\, \text{ArcTan}\left[\frac{\text{Sin}[c+d\, x]}{\text{Cos}[c+d\, x]-\#1}\right]\#1^2-19\, i\, a\, \text{Log}\left[1-2\, \text{Cos}[c+d\, x]\, \#1+\#1^2\right]\#1^2+12\, i\, b\, \text{Log}\left[1-2\, \text{Cos}[c+d\, x]\, \#1+\#1^2\right]\#1^2-$$

$$38\, a\, \text{ArcTan}\left[\frac{\text{Sin}[c+d\, x]}{\text{Cos}[c+d\, x]-\#1}\right]\#1^4+24\, b\, \text{ArcTan}\left[\frac{\text{Sin}[c+d\, x]}{\text{Cos}[c+d\, x]-\#1}\right]\#1^4+19\, i\, a\, \text{Log}\left[1-2\, \text{Cos}[c+d\, x]\, \#1+\#1^2\right]\#1^4-$$

$$12\, i\, b\, \text{Log}\left[1-2\, \text{Cos}[c+d\, x]\, \#1+\#1^2\right]\#1^4+10\, a\, \text{ArcTan}\left[\frac{\text{Sin}[c+d\, x]}{\text{Cos}[c+d\, x]-\#1}\right]\#1^6-8\, b\, \text{ArcTan}\left[\frac{\text{Sin}[c+d\, x]}{\text{Cos}[c+d\, x]-\#1}\right]\#1^6-$$

$$\left.\left.5\, i\, a\, \text{Log}\left[1-2\, \text{Cos}[c+d\, x]\, \#1+\#1^2\right]\#1^6+4\, i\, b\, \text{Log}\left[1-2\, \text{Cos}[c+d\, x]\, \#1+\#1^2\right]\#1^6\right)\, \&\Big]\right)$$

- **Problem 224: Result is not expressed in closed-form.**

$$\int \frac{\text{Sin}[c+d\, x]^9}{\left(a-b\, \text{Sin}[c+d\, x]^4\right)^3}\, dx$$

Optimal (type 3, 315 leaves, 6 steps):

$$-\frac{\left(5\, a-14\, \sqrt{a}\, \sqrt{b}+12\, b\right)\, \text{ArcTan}\left[\frac{b^{1/4}\, \text{Cos}[c+d\, x]}{\sqrt{\sqrt{a}-\sqrt{b}}}\right]}{64\, \sqrt{a}\, \left(\sqrt{a}-\sqrt{b}\right)^{5/2}\, b^{9/4}\, d}-\frac{\left(5\, a+14\, \sqrt{a}\, \sqrt{b}+12\, b\right)\, \text{ArcTanh}\left[\frac{b^{1/4}\, \text{Cos}[c+d\, x]}{\sqrt{\sqrt{a}+\sqrt{b}}}\right]}{64\, \sqrt{a}\, \left(\sqrt{a}+\sqrt{b}\right)^{5/2}\, b^{9/4}\, d}-$$

$$\frac{a\, \text{Cos}[c+d\, x]\, \left(a+b-b\, \text{Cos}[c+d\, x]^2\right)}{8\, (a-b)\, b^2\, d\, \left(a-b+2\, b\, \text{Cos}[c+d\, x]^2-b\, \text{Cos}[c+d\, x]^4\right)^2}+\frac{\text{Cos}[c+d\, x]\, \left(9\, a^2-11\, a\, b-10\, b^2-2\, (2\, a-5\, b)\, b\, \text{Cos}[c+d\, x]^2\right)}{32\, (a-b)^2\, b^2\, d\, \left(a-b+2\, b\, \text{Cos}[c+d\, x]^2-b\, \text{Cos}[c+d\, x]^4\right)}$$

Result (type 7, 785 leaves):

$$\frac{1}{128\,(a-b)^2\,b^2\,d}\left(-\frac{32\,\text{Cos}[c+d\,x]\,\left(-9\,a^2+13\,a\,b+5\,b^2+(2\,a-5\,b)\,b\,\text{Cos}[2\,(c+d\,x)]\right)}{8\,a-3\,b+4\,b\,\text{Cos}[2\,(c+d\,x)]-b\,\text{Cos}[4\,(c+d\,x)]}-\frac{512\,a\,(a-b)\,\text{Cos}[c+d\,x]\,(2\,a+b-b\,\text{Cos}[2\,(c+d\,x)])}{(-8\,a+3\,b-4\,b\,\text{Cos}[2\,(c+d\,x)]+b\,\text{Cos}[4\,(c+d\,x)])^2}+i\,\text{RootSum}\Big[b-4\,b\,\#1^2-16\,a\,\#1^4+6\,b\,\#1^4-4\,b\,\#1^6+b\,\#1^8\,\&,$$

$$\frac{1}{-b\,\#1-8\,a\,\#1^3+3\,b\,\#1^3-3\,b\,\#1^5+b\,\#1^7}\Big(-4\,a\,b\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]+10\,b^2\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]+$$

$$2\,i\,a\,b\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]-5\,i\,b^2\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]-20\,a^2\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]\,\#1^2+$$

$$56\,a\,b\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]\,\#1^2-78\,b^2\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]\,\#1^2+10\,i\,a^2\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]\,\#1^2-$$

$$28\,i\,a\,b\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]\,\#1^2+39\,i\,b^2\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]\,\#1^2+20\,a^2\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]\,\#1^4-$$

$$56\,a\,b\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]\,\#1^4+78\,b^2\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]\,\#1^4-10\,i\,a^2\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]\,\#1^4+$$

$$28\,i\,a\,b\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]\,\#1^4-39\,i\,b^2\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]\,\#1^4+4\,a\,b\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]\,\#1^6-$$

$$10\,b^2\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]\,\#1^6-2\,i\,a\,b\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]\,\#1^6+5\,i\,b^2\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]\,\#1^6\Big)\,\&\Big]\right)$$

- **Problem 225: Result is not expressed in closed-form.**

$$\int\frac{\text{Sin}[c+d\,x]^7}{\left(a-b\,\text{Sin}[c+d\,x]^4\right)^3}\,dx$$

Optimal (type 3, 290 leaves, 6 steps):

$$\frac{3\left(\sqrt{a}-2\sqrt{b}\right)\text{ArcTan}\Big[\frac{b^{1/4}\,\text{Cos}[c+d\,x]}{\sqrt{\sqrt{a}-\sqrt{b}}}\Big]}{64\,\sqrt{a}\,\left(\sqrt{a}-\sqrt{b}\right)^{5/2}\,b^{7/4}\,d}-\frac{3\left(\sqrt{a}+2\sqrt{b}\right)\text{ArcTanh}\Big[\frac{b^{1/4}\,\text{Cos}[c+d\,x]}{\sqrt{\sqrt{a}+\sqrt{b}}}\Big]}{64\,\sqrt{a}\,\left(\sqrt{a}+\sqrt{b}\right)^{5/2}\,b^{7/4}\,d}-$$

$$\frac{a\,\text{Cos}[c+d\,x]\,\left(2-\text{Cos}[c+d\,x]^2\right)}{8\,(a-b)\,b\,d\,\left(a-b+2\,b\,\text{Cos}[c+d\,x]^2-b\,\text{Cos}[c+d\,x]^4\right)^2}+\frac{\text{Cos}[c+d\,x]\,\left(5\,a-17\,b-3\,(a-3\,b)\,\text{Cos}[c+d\,x]^2\right)}{32\,(a-b)^2\,b\,d\,\left(a-b+2\,b\,\text{Cos}[c+d\,x]^2-b\,\text{Cos}[c+d\,x]^4\right)}$$

Result (type 7, 630 leaves):

$$\frac{1}{256\,(a-b)^2\,b\,d}\left(-\frac{32\,\text{Cos}[c+d\,x]\,(-7\,a+25\,b+3\,(a-3\,b)\,\text{Cos}[2\,(c+d\,x)])}{8\,a-3\,b+4\,b\,\text{Cos}[2\,(c+d\,x)]-b\,\text{Cos}[4\,(c+d\,x)]}+\frac{512\,a\,(a-b)\,(-5\,\text{Cos}[c+d\,x]+\text{Cos}[3\,(c+d\,x)])}{(-8\,a+3\,b-4\,b\,\text{Cos}[2\,(c+d\,x)]+b\,\text{Cos}[4\,(c+d\,x)])^2}-\right.$$

$$3\,i\,\text{RootSum}\Big[b-4\,b\,\#1^2-16\,a\,\#1^4+6\,b\,\#1^4-4\,b\,\#1^6+b\,\#1^8\,\&,\ \frac{1}{-b\,\#1-8\,a\,\#1^3+3\,b\,\#1^3-3\,b\,\#1^5+b\,\#1^7}$$

$$\left(2\,a\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\right]-6\,b\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\right]-i\,a\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\right]+3\,i\,b\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\right]-\right.$$

$$6\,a\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\right]\#1^2+34\,b\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\right]\#1^2+3\,i\,a\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\right]\#1^2-$$

$$17\,i\,b\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\right]\#1^2+6\,a\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\right]\#1^4-34\,b\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\right]\#1^4-$$

$$3\,i\,a\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\right]\#1^4+17\,i\,b\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\right]\#1^4-2\,a\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\right]\#1^6+$$

$$\left.\left.6\,b\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\right]\#1^6+i\,a\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\right]\#1^6-3\,i\,b\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\right]\#1^6\right)\&\Big]\right)$$

- **Problem 226: Result is not expressed in closed-form.**

$$\int \frac{\text{Sin}[c+d\,x]^5}{\left(a-b\,\text{Sin}[c+d\,x]^4\right)^3}\,dx$$

Optimal (type 3, 313 leaves, 6 steps):

$$\frac{\left(3\,a-10\,\sqrt{a}\,\sqrt{b}+4\,b\right)\text{ArcTan}\left[\frac{b^{1/4}\,\text{Cos}[c+d\,x]}{\sqrt{\sqrt{a}-\sqrt{b}}}\right]}{64\,a^{3/2}\left(\sqrt{a}-\sqrt{b}\right)^{5/2}b^{5/4}\,d}+\frac{\left(3\,a+10\,\sqrt{a}\,\sqrt{b}+4\,b\right)\text{ArcTanh}\left[\frac{b^{1/4}\,\text{Cos}[c+d\,x]}{\sqrt{\sqrt{a}+\sqrt{b}}}\right]}{64\,a^{3/2}\left(\sqrt{a}+\sqrt{b}\right)^{5/2}b^{5/4}\,d}-$$

$$\frac{\text{Cos}[c+d\,x]\left(a+b-b\,\text{Cos}[c+d\,x]^2\right)}{8\,(a-b)\,b\,d\left(a-b+2\,b\,\text{Cos}[c+d\,x]^2-b\,\text{Cos}[c+d\,x]^4\right)^2}+\frac{\text{Cos}[c+d\,x]\left(a^2-11\,a\,b-2\,b^2+2\,b\,(2\,a+b)\,\text{Cos}[c+d\,x]^2\right)}{32\,a\,(a-b)^2\,b\,d\left(a-b+2\,b\,\text{Cos}[c+d\,x]^2-b\,\text{Cos}[c+d\,x]^4\right)}$$

Result (type 7, 786 leaves):

$$\frac{1}{128\,(a-b)^2\,b\,d}\left(\frac{32\,\text{Cos}[c+d\,x]\,\left(a^2-9\,a\,b-b^2+b\,(2\,a+b)\,\text{Cos}[2\,(c+d\,x)]\right)}{a\,(8\,a-3\,b+4\,b\,\text{Cos}[2\,(c+d\,x)]-b\,\text{Cos}[4\,(c+d\,x)])}-\frac{512\,(a-b)\,\text{Cos}[c+d\,x]\,(2\,a+b-b\,\text{Cos}[2\,(c+d\,x)])}{(-8\,a+3\,b-4\,b\,\text{Cos}[2\,(c+d\,x)]+b\,\text{Cos}[4\,(c+d\,x)])^2}+\frac{1}{a}\,i\,\text{RootSum}\Big[b-4\,b\,\#1^2-16\,a\,\#1^4+6\,b\,\#1^4-4\,b\,\#1^6+b\,\#1^8\,\&,\right.$$

$$\frac{1}{-b\,\#1-8\,a\,\#1^3+3\,b\,\#1^3-3\,b\,\#1^5+b\,\#1^7}\left(4\,a\,b\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\right]+2\,b^2\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\right]-\right.$$

$$2\,i\,a\,b\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\right]-i\,b^2\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\right]+12\,a^2\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\right]\#1^2-$$

$$64\,a\,b\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\right]\#1^2+10\,b^2\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\right]\#1^2-6\,i\,a^2\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\right]\#1^2+$$

$$32\,i\,a\,b\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\right]\#1^2-5\,i\,b^2\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\right]\#1^2-12\,a^2\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\right]\#1^4+$$

$$64\,a\,b\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\right]\#1^4-10\,b^2\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\right]\#1^4+6\,i\,a^2\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\right]\#1^4-$$

$$32\,i\,a\,b\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\right]\#1^4+5\,i\,b^2\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\right]\#1^4-4\,a\,b\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\right]\#1^6-$$

$$\left.\left.2\,b^2\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\right]\#1^6+2\,i\,a\,b\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\right]\#1^6+i\,b^2\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\right]\#1^6\right)\&\Big]\right)$$

- **Problem 227: Result is not expressed in closed-form.**

$$\int\frac{\text{Sin}[c+d\,x]^3}{\left(a-b\,\text{Sin}[c+d\,x]^4\right)^3}\,dx$$

Optimal (type 3, 288 leaves, 6 steps) :

$$-\frac{\left(5\,\sqrt{a}-2\,\sqrt{b}\right)\text{ArcTan}\left[\frac{b^{1/4}\,\text{Cos}[c+d\,x]}{\sqrt{\sqrt{a}-\sqrt{b}}}\right]}{64\,a^{3/2}\,\left(\sqrt{a}-\sqrt{b}\right)^{5/2}\,b^{3/4}\,d}+\frac{\left(5\,\sqrt{a}+2\,\sqrt{b}\right)\text{ArcTanh}\left[\frac{b^{1/4}\,\text{Cos}[c+d\,x]}{\sqrt{\sqrt{a}+\sqrt{b}}}\right]}{64\,a^{3/2}\,\left(\sqrt{a}+\sqrt{b}\right)^{5/2}\,b^{3/4}\,d}-$$

$$\frac{\text{Cos}[c+d\,x]\,\left(2-\text{Cos}[c+d\,x]^2\right)}{8\,(a-b)\,d\,\left(a-b+2\,b\,\text{Cos}[c+d\,x]^2-b\,\text{Cos}[c+d\,x]^4\right)^2}-\frac{\text{Cos}[c+d\,x]\,\left(11\,a+b-(5\,a+b)\,\text{Cos}[c+d\,x]^2\right)}{32\,a\,(a-b)^2\,d\,\left(a-b+2\,b\,\text{Cos}[c+d\,x]^2-b\,\text{Cos}[c+d\,x]^4\right)}$$

Result (type 7, 631 leaves) :

$$\frac{1}{256\,(a-b)^2\,d}\left(\frac{32\,\text{Cos}[c+d\,x]\,(-17\,a-b+(5\,a+b)\,\text{Cos}[2\,(c+d\,x)])}{a\,(8\,a-3\,b+4\,b\,\text{Cos}[2\,(c+d\,x)]-b\,\text{Cos}[4\,(c+d\,x)])}+\frac{512\,(a-b)\,(-5\,\text{Cos}[c+d\,x]+\text{Cos}[3\,(c+d\,x)])}{(-8\,a+3\,b-4\,b\,\text{Cos}[2\,(c+d\,x)]+b\,\text{Cos}[4\,(c+d\,x)])^2}+\frac{1}{a}\,i\,\text{RootSum}\Big[b-4\,b\,\#1^2-16\,a\,\#1^4+6\,b\,\#1^4-4\,b\,\#1^6+b\,\#1^8\,\&,\right.$$

$$\frac{1}{-b\,\#1-8\,a\,\#1^3+3\,b\,\#1^3-3\,b\,\#1^5+b\,\#1^7}\left(10\,a\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]+2\,b\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]-\right.$$

$$5\,i\,a\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]-i\,b\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]-94\,a\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]\,\#1^2+$$

$$10\,b\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]\,\#1^2+47\,i\,a\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]\,\#1^2-5\,i\,b\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]\,\#1^2+$$

$$94\,a\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]\,\#1^4-10\,b\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]\,\#1^4-47\,i\,a\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]\,\#1^4+$$

$$5\,i\,b\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]\,\#1^4-10\,a\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]\,\#1^6-2\,b\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]\,\#1^6+$$

$$\left.\left.5\,i\,a\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]\,\#1^6+i\,b\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]\,\#1^6\right)\,\&\Big]\right)$$

- **Problem 228: Result is not expressed in closed-form.**

$$\int \frac{\text{Sin}[c+d\,x]}{\left(a-b\,\text{Sin}[c+d\,x]^4\right)^3}\,dx$$

Optimal (type 3, 313 leaves, 6 steps) :

$$-\frac{3\left(7\,a-10\,\sqrt{a}\,\sqrt{b}+4\,b\right)\text{ArcTan}\Big[\frac{b^{1/4}\,\text{Cos}[c+d\,x]}{\sqrt{\sqrt{a}-\sqrt{b}}}\Big]}{64\,a^{5/2}\left(\sqrt{a}-\sqrt{b}\right)^{5/2}b^{1/4}\,d}-\frac{3\left(7\,a+10\,\sqrt{a}\,\sqrt{b}+4\,b\right)\text{ArcTanh}\Big[\frac{b^{1/4}\,\text{Cos}[c+d\,x]}{\sqrt{\sqrt{a}+\sqrt{b}}}\Big]}{64\,a^{5/2}\left(\sqrt{a}+\sqrt{b}\right)^{5/2}b^{1/4}\,d}-$$

$$\frac{\text{Cos}[c+d\,x]\,\left(a+b-b\,\text{Cos}[c+d\,x]^2\right)}{8\,a\,(a-b)\,d\,\left(a-b+2\,b\,\text{Cos}[c+d\,x]^2-b\,\text{Cos}[c+d\,x]^4\right)^2}-\frac{\text{Cos}[c+d\,x]\,\left((7\,a-3\,b)\,(a+2\,b)-6\,(2\,a-b)\,b\,\text{Cos}[c+d\,x]^2\right)}{32\,a^2\,(a-b)^2\,d\,\left(a-b+2\,b\,\text{Cos}[c+d\,x]^2-b\,\text{Cos}[c+d\,x]^4\right)}$$

Result (type 7, 784 leaves) :

$$\frac{1}{128\,a^2\,(a-b)^2\,d}\left(-\frac{32\,\text{Cos}[c+d\,x]\,\left(7\,a^2+5\,a\,b-3\,b^2+3\,b\,(-2\,a+b)\,\text{Cos}[2\,(c+d\,x)]\right)}{8\,a-3\,b+4\,b\,\text{Cos}[2\,(c+d\,x)]-b\,\text{Cos}[4\,(c+d\,x)]}-\frac{512\,a\,(a-b)\,\text{Cos}[c+d\,x]\,(2\,a+b-b\,\text{Cos}[2\,(c+d\,x)])}{(-8\,a+3\,b-4\,b\,\text{Cos}[2\,(c+d\,x)]+b\,\text{Cos}[4\,(c+d\,x)])^2}+3\,i\,\text{RootSum}\Big[b-4\,b\,\#1^2-16\,a\,\#1^4+6\,b\,\#1^4-4\,b\,\#1^6+b\,\#1^8\,\&,\ \frac{1}{-b\,\#1-8\,a\,\#1^3+3\,b\,\#1^3-3\,b\,\#1^5+b\,\#1^7}\Big(4\,a\,b\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]-2\,b^2\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]-2\,i\,a\,b\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]+i\,b^2\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]-28\,a^2\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]\,\#1^2+24\,a\,b\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]\,\#1^2-10\,b^2\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]\,\#1^2+14\,i\,a^2\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]\,\#1^2-12\,i\,a\,b\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]\,\#1^2+5\,i\,b^2\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]\,\#1^2+28\,a^2\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]\,\#1^4-24\,a\,b\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]\,\#1^4+10\,b^2\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]\,\#1^4-14\,i\,a^2\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]\,\#1^4+12\,i\,a\,b\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]\,\#1^4-5\,i\,b^2\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]\,\#1^4-4\,a\,b\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]\,\#1^6+2\,b^2\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]\,\#1^6+2\,i\,a\,b\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]\,\#1^6-i\,b^2\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]\,\#1^6\Big)\,\&\Big]\right)$$

- **Problem 229: Result is not expressed in closed-form.**

$$\int\frac{\text{Csc}[c+d\,x]}{\left(a-b\,\text{Sin}[c+d\,x]^4\right)^3}\,dx$$

Optimal (type 3, 617 leaves, 16 steps) :

$$-\frac{\left(5\sqrt{a}-2\sqrt{b}\right) b^{1/4}\,\text{ArcTan}\left[\frac{b^{1/4}\,\text{Cos}[c+d x]}{\sqrt{\sqrt{a}-\sqrt{b}}}\right]}{64\,a^{5/2}\left(\sqrt{a}-\sqrt{b}\right)^{5/2} d}-\frac{b^{1/4}\,\text{ArcTan}\left[\frac{b^{1/4}\,\text{Cos}[c+d x]}{\sqrt{\sqrt{a}-\sqrt{b}}}\right]}{8\,a^{5/2}\left(\sqrt{a}-\sqrt{b}\right)^{3/2} d}-$$

$$\frac{b^{1/4}\,\text{ArcTan}\left[\frac{b^{1/4}\,\text{Cos}[c+d x]}{\sqrt{\sqrt{a}-\sqrt{b}}}\right]}{2\,a^3\sqrt{\sqrt{a}-\sqrt{b}}\;d}-\frac{\text{ArcTanh}[\text{Cos}[c+d x]]}{a^3\,d}+\frac{b^{1/4}\,\text{ArcTanh}\left[\frac{b^{1/4}\,\text{Cos}[c+d x]}{\sqrt{\sqrt{a}+\sqrt{b}}}\right]}{8\,a^{5/2}\left(\sqrt{a}+\sqrt{b}\right)^{3/2} d}+\frac{b^{1/4}\,\text{ArcTanh}\left[\frac{b^{1/4}\,\text{Cos}[c+d x]}{\sqrt{\sqrt{a}+\sqrt{b}}}\right]}{2\,a^3\sqrt{\sqrt{a}+\sqrt{b}}\;d}+$$

$$\frac{\left(5\sqrt{a}+2\sqrt{b}\right) b^{1/4}\,\text{ArcTanh}\left[\frac{b^{1/4}\,\text{Cos}[c+d x]}{\sqrt{\sqrt{a}+\sqrt{b}}}\right]}{64\,a^{5/2}\left(\sqrt{a}+\sqrt{b}\right)^{5/2} d}-\frac{b\,\text{Cos}[c+d x]\left(2-\text{Cos}[c+d x]^2\right)}{8\,a\,(a-b)\,d\left(a-b+2\,b\,\text{Cos}[c+d x]^2-b\,\text{Cos}[c+d x]^4\right)^2}-$$

$$\frac{b\,\text{Cos}[c+d x]\left(2-\text{Cos}[c+d x]^2\right)}{4\,a^2\,(a-b)\,d\left(a-b+2\,b\,\text{Cos}[c+d x]^2-b\,\text{Cos}[c+d x]^4\right)}-\frac{b\,\text{Cos}[c+d x]\left(11\,a+b-(5\,a+b)\,\text{Cos}[c+d x]^2\right)}{32\,a^2\,(a-b)^2\,d\left(a-b+2\,b\,\text{Cos}[c+d x]^2-b\,\text{Cos}[c+d x]^4\right)}$$

Result (type 7, 920 leaves):

$$\frac{1}{256\,a^3\,d}\left(\frac{32\,a\,b\,\text{Cos}[c+d x]\,(-41\,a+23\,b+(13\,a-7\,b)\,\text{Cos}[2\,(c+d x)])}{(a-b)^2\,(8\,a-3\,b+4\,b\,\text{Cos}[2\,(c+d x)]-b\,\text{Cos}[4\,(c+d x)])}+\right.$$

$$\frac{512\,a^2\,b\,(-5\,\text{Cos}[c+d x]+\text{Cos}[3\,(c+d x)])}{(a-b)\,(-8\,a+3\,b-4\,b\,\text{Cos}[2\,(c+d x)]+b\,\text{Cos}[4\,(c+d x)])^2}-256\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d x)\right]\right]+256\,\text{Log}\left[\text{Sin}\left[\frac{1}{2}\,(c+d x)\right]\right]-$$

$$\frac{1}{(a-b)^2}\,i\,b\,\text{RootSum}\left[b-4\,b\,\#1^2-16\,a\,\#1^4+6\,b\,\#1^4-4\,b\,\#1^6+b\,\#1^8\,\&,\ \frac{1}{-b\,\#1-8\,a\,\#1^3+3\,b\,\#1^3-3\,b\,\#1^5+b\,\#1^7}\right.$$

$$\left(-90\,a^2\,\text{ArcTan}\left[\frac{\text{Sin}[c+d x]}{\text{Cos}[c+d x]-\#1}\right]+142\,a\,b\,\text{ArcTan}\left[\frac{\text{Sin}[c+d x]}{\text{Cos}[c+d x]-\#1}\right]-64\,b^2\,\text{ArcTan}\left[\frac{\text{Sin}[c+d x]}{\text{Cos}[c+d x]-\#1}\right]+\right.$$

$$45\,i\,a^2\,\text{Log}\left[1-2\,\text{Cos}[c+d x]\,\#1+\#1^2\right]-71\,i\,a\,b\,\text{Log}\left[1-2\,\text{Cos}[c+d x]\,\#1+\#1^2\right]+32\,i\,b^2\,\text{Log}\left[1-2\,\text{Cos}[c+d x]\,\#1+\#1^2\right]+$$

$$398\,a^2\,\text{ArcTan}\left[\frac{\text{Sin}[c+d x]}{\text{Cos}[c+d x]-\#1}\right]\#1^2-506\,a\,b\,\text{ArcTan}\left[\frac{\text{Sin}[c+d x]}{\text{Cos}[c+d x]-\#1}\right]\#1^2+192\,b^2\,\text{ArcTan}\left[\frac{\text{Sin}[c+d x]}{\text{Cos}[c+d x]-\#1}\right]\#1^2-$$

$$199\,i\,a^2\,\text{Log}\left[1-2\,\text{Cos}[c+d x]\,\#1+\#1^2\right]\#1^2+253\,i\,a\,b\,\text{Log}\left[1-2\,\text{Cos}[c+d x]\,\#1+\#1^2\right]\#1^2-96\,i\,b^2\,\text{Log}\left[1-2\,\text{Cos}[c+d x]\,\#1+\#1^2\right]\#1^2-$$

$$398\,a^2\,\text{ArcTan}\left[\frac{\text{Sin}[c+d x]}{\text{Cos}[c+d x]-\#1}\right]\#1^4+506\,a\,b\,\text{ArcTan}\left[\frac{\text{Sin}[c+d x]}{\text{Cos}[c+d x]-\#1}\right]\#1^4-192\,b^2\,\text{ArcTan}\left[\frac{\text{Sin}[c+d x]}{\text{Cos}[c+d x]-\#1}\right]\#1^4+$$

$$199\,i\,a^2\,\text{Log}\left[1-2\,\text{Cos}[c+d x]\,\#1+\#1^2\right]\#1^4-253\,i\,a\,b\,\text{Log}\left[1-2\,\text{Cos}[c+d x]\,\#1+\#1^2\right]\#1^4+96\,i\,b^2\,\text{Log}\left[1-2\,\text{Cos}[c+d x]\,\#1+\#1^2\right]\#1^4+$$

$$90\,a^2\,\text{ArcTan}\left[\frac{\text{Sin}[c+d x]}{\text{Cos}[c+d x]-\#1}\right]\#1^6-142\,a\,b\,\text{ArcTan}\left[\frac{\text{Sin}[c+d x]}{\text{Cos}[c+d x]-\#1}\right]\#1^6+64\,b^2\,\text{ArcTan}\left[\frac{\text{Sin}[c+d x]}{\text{Cos}[c+d x]-\#1}\right]\#1^6-$$

$$\left.\left.\left.45\,i\,a^2\,\text{Log}\left[1-2\,\text{Cos}[c+d x]\,\#1+\#1^2\right]\#1^6+71\,i\,a\,b\,\text{Log}\left[1-2\,\text{Cos}[c+d x]\,\#1+\#1^2\right]\#1^6-32\,i\,b^2\,\text{Log}\left[1-2\,\text{Cos}[c+d x]\,\#1+\#1^2\right]\#1^6\right)\&\right]\right)$$

Problem 237: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{1}{a+b\,\text{Sin}[x]^4}\,dx$$

Optimal (type 3, 487 leaves, 10 steps):

$$-\frac{\left(\sqrt{a}+\sqrt{a+b}\right)\text{ArcTan}\left[\frac{a^{1/4}\sqrt{a+b-\sqrt{a}\,\sqrt{a+b}}-\sqrt{2}\,(a+b)^{3/4}\,\text{Tan}[x]}{a^{1/4}\sqrt{a+b+\sqrt{a}\,\sqrt{a+b}}}\right]}{2\sqrt{2}\,a^{3/4}\,(a+b)^{1/4}\sqrt{a+b+\sqrt{a}\,\sqrt{a+b}}}+\frac{\left(\sqrt{a}+\sqrt{a+b}\right)\text{ArcTan}\left[\frac{a^{1/4}\sqrt{a+b-\sqrt{a}\,\sqrt{a+b}}+\sqrt{2}\,(a+b)^{3/4}\,\text{Tan}[x]}{a^{1/4}\sqrt{a+b+\sqrt{a}\,\sqrt{a+b}}}\right]}{2\sqrt{2}\,a^{3/4}\,(a+b)^{1/4}\sqrt{a+b+\sqrt{a}\,\sqrt{a+b}}}+$$

$$\frac{\left(\sqrt{a}-\sqrt{a+b}\right)\text{Log}\left[\sqrt{a}\,(a+b)^{1/4}-\sqrt{2}\,a^{1/4}\sqrt{a+b-\sqrt{a}\,\sqrt{a+b}}\,\text{Tan}[x]+(a+b)^{3/4}\,\text{Tan}[x]^2\right]}{4\sqrt{2}\,a^{3/4}\,(a+b)^{1/4}\sqrt{a+b-\sqrt{a}\,\sqrt{a+b}}}-$$

$$\frac{\left(\sqrt{a}-\sqrt{a+b}\right)\text{Log}\left[\sqrt{a}\,(a+b)^{1/4}+\sqrt{2}\,a^{1/4}\sqrt{a+b-\sqrt{a}\,\sqrt{a+b}}\,\text{Tan}[x]+(a+b)^{3/4}\,\text{Tan}[x]^2\right]}{4\sqrt{2}\,a^{3/4}\,(a+b)^{1/4}\sqrt{a+b-\sqrt{a}\,\sqrt{a+b}}}$$

Result (type 3, 148 leaves):

$$\frac{1}{2a\,(a+b)}\left(\left(\sqrt{a}-i\sqrt{b}\right)\sqrt{a+i\sqrt{a}\,\sqrt{b}}\,\text{ArcTan}\left[\frac{\sqrt{a+i\sqrt{a}\,\sqrt{b}}\,\text{Tan}[x]}{\sqrt{a}}\right]-\left(\sqrt{a}+i\sqrt{b}\right)\sqrt{-a+i\sqrt{a}\,\sqrt{b}}\,\text{ArcTanh}\left[\frac{\sqrt{-a+i\sqrt{a}\,\sqrt{b}}\,\text{Tan}[x]}{\sqrt{a}}\right]\right)$$

Problem 238: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{1}{1+\text{Sin}[x]^4}\,dx$$

Optimal (type 3, 309 leaves, 10 steps):

$$\frac{x}{2\sqrt{-1+\sqrt{2}}}+\frac{\text{ArcTan}\left[\frac{\sqrt{-1+\sqrt{2}}-2\sqrt{-1+\sqrt{2}}\,\text{Cos}[x]^2-\left(-2+\sqrt{2}\right)\text{Cos}[x]\,\text{Sin}[x]}{2+\sqrt{1+\sqrt{2}}+\left(-2+\sqrt{2}\right)\text{Cos}[x]^2-2\sqrt{-1+\sqrt{2}}\,\text{Cos}[x]\,\text{Sin}[x]}\right]}{4\sqrt{-1+\sqrt{2}}}-\frac{\text{ArcTan}\left[\frac{\sqrt{-1+\sqrt{2}}-2\sqrt{-1+\sqrt{2}}\,\text{Cos}[x]^2+\left(-2+\sqrt{2}\right)\text{Cos}[x]\,\text{Sin}[x]}{2+\sqrt{1+\sqrt{2}}+\left(-2+\sqrt{2}\right)\text{Cos}[x]^2+2\sqrt{-1+\sqrt{2}}\,\text{Cos}[x]\,\text{Sin}[x]}\right]}{4\sqrt{-1+\sqrt{2}}}-$$

$$\frac{1}{8}\sqrt{-1+\sqrt{2}}\,\text{Log}\left[\sqrt{2}-2\sqrt{-1+\sqrt{2}}\,\text{Tan}[x]+2\,\text{Tan}[x]^2\right]+\frac{1}{8}\sqrt{-1+\sqrt{2}}\,\text{Log}\left[1+\sqrt{2\left(-1+\sqrt{2}\right)}\,\text{Tan}[x]+\sqrt{2}\,\text{Tan}[x]^2\right]$$

Result (type 3, 45 leaves):

$$\frac{\text{ArcTan}\left[\sqrt{1-i}\,\text{Tan}[x]\right]}{2\sqrt{1-i}}+\frac{\text{ArcTan}\left[\sqrt{1+i}\,\text{Tan}[x]\right]}{2\sqrt{1+i}}$$

Problem 239: Result unnecessarily involves imaginary or complex numbers.

$$\int \mathrm{Sin}[c+d\,x]\,\sqrt{a+b\,\mathrm{Sin}[c+d\,x]^4}\,dx$$

Optimal (type 4, 477 leaves, 5 steps):

$$-\frac{\mathrm{Cos}[c+d\,x]\,\sqrt{a+b-2\,b\,\mathrm{Cos}[c+d\,x]^2+b\,\mathrm{Cos}[c+d\,x]^4}}{3\,d}+\frac{2\,\sqrt{b}\,\mathrm{Cos}[c+d\,x]\,\sqrt{a+b-2\,b\,\mathrm{Cos}[c+d\,x]^2+b\,\mathrm{Cos}[c+d\,x]^4}}{3\,\sqrt{a+b}\,d\,\left(1+\frac{\sqrt{b}\,\mathrm{Cos}[c+d\,x]^2}{\sqrt{a+b}}\right)}-$$

$$\left(2\,b^{1/4}\,(a+b)^{3/4}\,\left(1+\frac{\sqrt{b}\,\mathrm{Cos}[c+d\,x]^2}{\sqrt{a+b}}\right)\sqrt{\frac{a+b-2\,b\,\mathrm{Cos}[c+d\,x]^2+b\,\mathrm{Cos}[c+d\,x]^4}{(a+b)\,\left(1+\frac{\sqrt{b}\,\mathrm{Cos}[c+d\,x]^2}{\sqrt{a+b}}\right)^2}}\,\mathrm{EllipticE}\left[2\,\mathrm{ArcTan}\left[\frac{b^{1/4}\,\mathrm{Cos}[c+d\,x]}{(a+b)^{1/4}}\right],\,\frac{1}{2}\left(1+\frac{\sqrt{b}}{\sqrt{a+b}}\right)\right]\right)\Big/$$

$$\left(3\,d\,\sqrt{a+b-2\,b\,\mathrm{Cos}[c+d\,x]^2+b\,\mathrm{Cos}[c+d\,x]^4}\right)+\left((a+b)^{3/4}\,\left(\sqrt{b}-\sqrt{a+b}\right)\,\left(1+\frac{\sqrt{b}\,\mathrm{Cos}[c+d\,x]^2}{\sqrt{a+b}}\right)\sqrt{\frac{a+b-2\,b\,\mathrm{Cos}[c+d\,x]^2+b\,\mathrm{Cos}[c+d\,x]^4}{(a+b)\,\left(1+\frac{\sqrt{b}\,\mathrm{Cos}[c+d\,x]^2}{\sqrt{a+b}}\right)^2}}\right.$$

$$\left.\mathrm{EllipticF}\left[2\,\mathrm{ArcTan}\left[\frac{b^{1/4}\,\mathrm{Cos}[c+d\,x]}{(a+b)^{1/4}}\right],\,\frac{1}{2}\left(1+\frac{\sqrt{b}}{\sqrt{a+b}}\right)\right]\right)\Big/\left(3\,b^{1/4}\,d\,\sqrt{a+b-2\,b\,\mathrm{Cos}[c+d\,x]^2+b\,\mathrm{Cos}[c+d\,x]^4}\right)$$

Result (type 4, 542 leaves):

$$-\frac{\text{Cos}[c+d x] \sqrt{8 a+3 b-4 b \text{Cos}[2 (c+d x)]+b \text{Cos}[4 (c+d x)]}}{6 \sqrt{2} d}+$$

$$\frac{1}{3 d \sqrt{\text{Sec}[c+d x]^2} \left(1+\text{Tan}[c+d x]^2\right)^{3/2} \sqrt{\frac{b \text{Tan}[c+d x]^4+a \left(1+\text{Tan}[c+d x]^2\right)^2}{\left(1+\text{Tan}[c+d x]^2\right)^2}}} 2 \text{Sec}[c+d x]$$

$$\left(a+2 a \text{Tan}[c+d x]^2+a \text{Tan}[c+d x]^4+b \text{Tan}[c+d x]^4-\left(\left(-i \sqrt{b} \text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{\frac{i \left(a-i \sqrt{a} \sqrt{b}+a \text{Tan}[c+d x]^2+b \text{Tan}[c+d x]^2\right)}{\sqrt{a} \sqrt{b}}}}{\sqrt{2}}\right], \frac{2 \sqrt{a}}{\sqrt{a}-i \sqrt{b}}\right]+\right.\right.\right.$$

$$\left.\left(\sqrt{a}+i \sqrt{b}\right) \text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{\frac{i \left(a-i \sqrt{a} \sqrt{b}+a \text{Tan}[c+d x]^2+b \text{Tan}[c+d x]^2\right)}{\sqrt{a} \sqrt{b}}}}{\sqrt{2}}\right], \frac{2 \sqrt{a}}{\sqrt{a}-i \sqrt{b}}\right]\right) \sqrt{\frac{\left(-i \sqrt{a}+\sqrt{b}\right) \left(1+\text{Tan}[c+d x]^2\right)}{\sqrt{b}}}$$

$$\left.\sqrt{\frac{i \left(a-i \sqrt{a} \sqrt{b}+a \text{Tan}[c+d x]^2+b \text{Tan}[c+d x]^2\right)}{\sqrt{a} \sqrt{b}}} \left(-i \sqrt{b} \text{Tan}[c+d x]^2+\sqrt{a} \left(1+\text{Tan}[c+d x]^2\right)\right)\right) \Big/$$

$$\left.\left(\sqrt{-\frac{i \left(a+i \sqrt{a} \sqrt{b}+a \text{Tan}[c+d x]^2+b \text{Tan}[c+d x]^2\right)}{\sqrt{a} \sqrt{b}}}\right)\right)$$

Problem 240: Unable to integrate problem.

$$\int \text{Csc}[c+d x] \sqrt{a+b \text{Sin}[c+d x]^4} \, dx$$

Optimal (type 4, 521 leaves, 8 steps) :

$$\frac{\sqrt{-a}\ \text{ArcTan}\left[\frac{\sqrt{-a}\ \text{Cos}[c+d\,x]}{\sqrt{a+b-2\,b\,\text{Cos}[c+d\,x]^2+b\,\text{Cos}[c+d\,x]^4}}\right]}{2\,d}+\frac{\sqrt{b}\ \text{Cos}[c+d\,x]\,\sqrt{a+b-2\,b\,\text{Cos}[c+d\,x]^2+b\,\text{Cos}[c+d\,x]^4}}{\sqrt{a+b}\ d\left(1+\frac{\sqrt{b}\ \text{Cos}[c+d\,x]^2}{\sqrt{a+b}}\right)}-$$

$$\left(b^{1/4}\,(a+b)^{3/4}\left(1+\frac{\sqrt{b}\ \text{Cos}[c+d\,x]^2}{\sqrt{a+b}}\right)\sqrt{\frac{a+b-2\,b\,\text{Cos}[c+d\,x]^2+b\,\text{Cos}[c+d\,x]^4}{(a+b)\left(1+\frac{\sqrt{b}\ \text{Cos}[c+d\,x]^2}{\sqrt{a+b}}\right)^2}}\ \text{EllipticE}\left[2\,\text{ArcTan}\left[\frac{b^{1/4}\,\text{Cos}[c+d\,x]}{(a+b)^{1/4}}\right],\ \frac{1}{2}\left(1+\frac{\sqrt{b}}{\sqrt{a+b}}\right)\right]\right)\Big/$$

$$\left(d\,\sqrt{a+b-2\,b\,\text{Cos}[c+d\,x]^2+b\,\text{Cos}[c+d\,x]^4}\right)-\left((a+b)^{1/4}\left(\sqrt{b}-\sqrt{a+b}\right)^2\left(1+\frac{\sqrt{b}\ \text{Cos}[c+d\,x]^2}{\sqrt{a+b}}\right)\sqrt{\frac{a+b-2\,b\,\text{Cos}[c+d\,x]^2+b\,\text{Cos}[c+d\,x]^4}{(a+b)\left(1+\frac{\sqrt{b}\ \text{Cos}[c+d\,x]^2}{\sqrt{a+b}}\right)^2}}\right.$$

$$\left.\text{EllipticPi}\left[\frac{\left(\sqrt{b}+\sqrt{a+b}\right)^2}{4\,\sqrt{b}\ \sqrt{a+b}},\ 2\,\text{ArcTan}\left[\frac{b^{1/4}\,\text{Cos}[c+d\,x]}{(a+b)^{1/4}}\right],\ \frac{1}{2}\left(1+\frac{\sqrt{b}}{\sqrt{a+b}}\right)\right]\right)\Big/\left(4\,b^{1/4}\,d\,\sqrt{a+b-2\,b\,\text{Cos}[c+d\,x]^2+b\,\text{Cos}[c+d\,x]^4}\right)$$

Result (type 8, 25 leaves) :

$$\int \text{Csc}[c+d\,x]\,\sqrt{a+b\,\text{Sin}[c+d\,x]^4}\ dx$$

- **Problem 241: Attempted integration timed out after 120 seconds.**

$$\int \frac{\text{Sin}[c+d\,x]^5}{\sqrt{a+b\,\text{Sin}[c+d\,x]^4}}\,dx$$

Optimal (type 4, 484 leaves, 5 steps) :

$$-\frac{\operatorname{Cos}[c+d x] \sqrt{a+b-2 b \operatorname{Cos}[c+d x]^2+b \operatorname{Cos}[c+d x]^4}}{3 b d}+\frac{2 \operatorname{Cos}[c+d x] \sqrt{a+b-2 b \operatorname{Cos}[c+d x]^2+b \operatorname{Cos}[c+d x]^4}}{3 \sqrt{b} \sqrt{a+b}\, d \left(1+\frac{\sqrt{b} \operatorname{Cos}[c+d x]^2}{\sqrt{a+b}}\right)}-$$

$$\left(2 (a+b)^{3/4} \left(1+\frac{\sqrt{b} \operatorname{Cos}[c+d x]^2}{\sqrt{a+b}}\right) \sqrt{\frac{a+b-2 b \operatorname{Cos}[c+d x]^2+b \operatorname{Cos}[c+d x]^4}{(a+b) \left(1+\frac{\sqrt{b} \operatorname{Cos}[c+d x]^2}{\sqrt{a+b}}\right)^2}} \operatorname{EllipticE}\left[2 \operatorname{ArcTan}\left[\frac{b^{1/4} \operatorname{Cos}[c+d x]}{(a+b)^{1/4}}\right], \frac{1}{2} \left(1+\frac{\sqrt{b}}{\sqrt{a+b}}\right)\right]\right) \Big/$$

$$\left(3 b^{3/4} d \sqrt{a+b-2 b \operatorname{Cos}[c+d x]^2+b \operatorname{Cos}[c+d x]^4}\right)+$$

$$\left((a+b)^{1/4} \left(a-2 b+2 \sqrt{b} \sqrt{a+b}\right) \left(1+\frac{\sqrt{b} \operatorname{Cos}[c+d x]^2}{\sqrt{a+b}}\right) \sqrt{\frac{a+b-2 b \operatorname{Cos}[c+d x]^2+b \operatorname{Cos}[c+d x]^4}{(a+b) \left(1+\frac{\sqrt{b} \operatorname{Cos}[c+d x]^2}{\sqrt{a+b}}\right)^2}}\right.$$

$$\left.\operatorname{EllipticF}\left[2 \operatorname{ArcTan}\left[\frac{b^{1/4} \operatorname{Cos}[c+d x]}{(a+b)^{1/4}}\right], \frac{1}{2} \left(1+\frac{\sqrt{b}}{\sqrt{a+b}}\right)\right]\right) \Big/ \left(6 b^{5/4} d \sqrt{a+b-2 b \operatorname{Cos}[c+d x]^2+b \operatorname{Cos}[c+d x]^4}\right)$$

Result (type 1, 1 leaves) :

???

■ Problem 242: Result more than twice size of optimal antiderivative.

$$\int \frac{\operatorname{Sin}[c+d x]^3}{\sqrt{a+b \operatorname{Sin}[c+d x]^4}} \, dx$$

Optimal (type 4, 431 leaves, 4 steps) :

$$\frac{\text{Cos}[c+d\,x]\sqrt{a+b-2\,b\,\text{Cos}[c+d\,x]^2+b\,\text{Cos}[c+d\,x]^4}}{\sqrt{b}\,\sqrt{a+b}\,d\left(1+\frac{\sqrt{b}\,\text{Cos}[c+d\,x]^2}{\sqrt{a+b}}\right)}-$$

$$\left((a+b)^{3/4}\left(1+\frac{\sqrt{b}\,\text{Cos}[c+d\,x]^2}{\sqrt{a+b}}\right)\sqrt{\frac{a+b-2\,b\,\text{Cos}[c+d\,x]^2+b\,\text{Cos}[c+d\,x]^4}{(a+b)\left(1+\frac{\sqrt{b}\,\text{Cos}[c+d\,x]^2}{\sqrt{a+b}}\right)^2}}\,\text{EllipticE}\left[2\,\text{ArcTan}\left[\frac{b^{1/4}\,\text{Cos}[c+d\,x]}{(a+b)^{1/4}}\right],\frac{1}{2}\left(1+\frac{\sqrt{b}}{\sqrt{a+b}}\right)\right]\right)\Big/$$

$$\left(b^{3/4}\,d\sqrt{a+b-2\,b\,\text{Cos}[c+d\,x]^2+b\,\text{Cos}[c+d\,x]^4}\right)-\left((a+b)^{1/4}\left(\sqrt{b}-\sqrt{a+b}\right)\left(1+\frac{\sqrt{b}\,\text{Cos}[c+d\,x]^2}{\sqrt{a+b}}\right)\sqrt{\frac{a+b-2\,b\,\text{Cos}[c+d\,x]^2+b\,\text{Cos}[c+d\,x]^4}{(a+b)\left(1+\frac{\sqrt{b}\,\text{Cos}[c+d\,x]^2}{\sqrt{a+b}}\right)^2}}\right.$$

$$\left.\text{EllipticF}\left[2\,\text{ArcTan}\left[\frac{b^{1/4}\,\text{Cos}[c+d\,x]}{(a+b)^{1/4}}\right],\frac{1}{2}\left(1+\frac{\sqrt{b}}{\sqrt{a+b}}\right)\right]\right)\Big/\left(2\,b^{3/4}\,d\sqrt{a+b-2\,b\,\text{Cos}[c+d\,x]^2+b\,\text{Cos}[c+d\,x]^4}\right)$$

Result (type 4, 35 489 leaves) : Display of huge result suppressed!

Problem 243: Result more than twice size of optimal antiderivative.

$$\int\frac{\text{Sin}[c+d\,x]}{\sqrt{a+b\,\text{Sin}[c+d\,x]^4}}\,dx$$

Optimal (type 4, 171 leaves, 2 steps) :

$$-\left((a+b)^{1/4}\left(1+\frac{\sqrt{b}\,\text{Cos}[c+d\,x]^2}{\sqrt{a+b}}\right)\sqrt{\frac{a+b-2\,b\,\text{Cos}[c+d\,x]^2+b\,\text{Cos}[c+d\,x]^4}{(a+b)\left(1+\frac{\sqrt{b}\,\text{Cos}[c+d\,x]^2}{\sqrt{a+b}}\right)^2}}\,\text{EllipticF}\left[2\,\text{ArcTan}\left[\frac{b^{1/4}\,\text{Cos}[c+d\,x]}{(a+b)^{1/4}}\right],\frac{1}{2}\left(1+\frac{\sqrt{b}}{\sqrt{a+b}}\right)\right]\right)\Big/$$

$$\left(2\,b^{1/4}\,d\sqrt{a+b-2\,b\,\text{Cos}[c+d\,x]^2+b\,\text{Cos}[c+d\,x]^4}\right)$$

Result (type 4, 13 300 leaves) :

$$-\left(\left(8\sqrt{2}\,\text{EllipticF}\left[\text{ArcSin}\left[\sqrt{\left(\left(\left(\text{Root}\left[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,2\right]-\text{Root}\left[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,4\right]\right)\right.\right.}\right.\right.\right.\right.$$

$$\left.\left(-\text{Root}\left[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,1\right]+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)\Big/$$

$$\left(\left(\text{Root}\left[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,1\right]-\text{Root}\left[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,4\right]\right)\right.$$

$$\left.\left(-\text{Root}\left[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,2\right]+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)\right)\Bigg)\Bigg)\Bigg],$$

$$\Big(\left(\text{Root}\left[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,2\right]-\text{Root}\left[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,3\right]\right)$$

$$\left(\text{Root}\left[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,1\right]-\text{Root}\left[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,4\right]\right)\Big)\Big/$$

$$\Big(\left(\text{Root}\left[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,1\right]-\text{Root}\left[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,3\right]\right)$$

$$\left(\text{Root}\left[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,2\right]-\text{Root}\left[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,4\right]\right)\Big)\Big]$$

$$\left(\text{Root}\left[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,1\right]-\text{Root}\left[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,4\right]\right)$$

$$\text{Sin}[c+d\,x]$$

$$\left(-\text{Root}\left[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,2\right]+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)^2$$

$$\sqrt{\Big(\Big(\left(\text{Root}\left[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,1\right]-\text{Root}\left[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,2\right]\right)}$$

$$\left(-\text{Root}\left[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,3\right]+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)\Big)\Big/$$

$$\Big(\left(\text{Root}\left[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,1\right]-\text{Root}\left[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,3\right]\right)$$

$$\left(-\text{Root}\left[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,2\right]+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)\Big)\Big)$$

$$\sqrt{\Big(\Big(\left(\text{Root}\left[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,1\right]-\text{Root}\left[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,2\right]\right)}$$

$$\left(\text{Root}\left[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,2\right]-\text{Root}\left[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,4\right]\right)$$

$$\left(-\text{Root}\left[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,1\right]+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)$$

$$\left(-\text{Root}\left[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,4\right]+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)\Big)\Big/$$

$$\Big(\left(\text{Root}\left[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,1\right]-\text{Root}\left[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,4\right]\right)^2$$

$$\left(-\text{Root}\left[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,2\right]+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)^2\Big)\Big)\Big)\Big/$$

$$\Big(d\,\sqrt{8\,a+3\,b-4\,b\,\text{Cos}[2\,(c+d\,x)]+b\,\text{Cos}[4\,(c+d\,x)]}\,\left(-\text{Root}\left[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,1\right]+\right.$$

$$\left.\text{Root}\left[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,2\right]\right)$$

$$\left(\text{Root}\left[a+4a\,\#1+(6a+16b)\,\#1^2+4a\,\#1^3+a\,\#1^4\,\&,2\right]-\text{Root}\left[a+4a\,\#1+(6a+16b)\,\#1^2+4a\,\#1^3+a\,\#1^4\,\&,4\right]\right)$$

$$\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)^2$$

$$\sqrt{\frac{16\,b\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^4+a\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)^4}{\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)^4}}$$

$$\Bigg(-\Bigg(\Bigg(8\,\text{EllipticF}\Big[\text{ArcSin}\Big[\sqrt{\Big(\Big(\Big(\text{Root}\left[a+4a\,\#1+(6a+16b)\,\#1^2+4a\,\#1^3+a\,\#1^4\,\&,2\right]-\text{Root}\left[a+4a\,\#1+(6a+16b)\,\#1^2+4a\,\#1^3+a\,\#1^4\,\&,4\right]\Big)$$

$$\left(-\text{Root}\left[a+4a\,\#1+(6a+16b)\,\#1^2+4a\,\#1^3+a\,\#1^4\,\&,1\right]+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\Big)\Big/$$

$$\Big(\Big(\text{Root}\left[a+4a\,\#1+(6a+16b)\,\#1^2+4a\,\#1^3+a\,\#1^4\,\&,1\right]-\text{Root}\left[a+4a\,\#1+(6a+16b)\,\#1^2+4a\,\#1^3+a\,\#1^4\,\&,4\right]\Big)$$

$$\left(-\text{Root}\left[a+4a\,\#1+(6a+16b)\,\#1^2+4a\,\#1^3+a\,\#1^4\,\&,2\right]+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\Big)\Big)}\Big],$$

$$\Big(\Big(\text{Root}\left[a+4a\,\#1+(6a+16b)\,\#1^2+4a\,\#1^3+a\,\#1^4\,\&,2\right]-\text{Root}\left[a+4a\,\#1+(6a+16b)\,\#1^2+4a\,\#1^3+a\,\#1^4\,\&,3\right]\Big)$$

$$\Big(\text{Root}\left[a+4a\,\#1+(6a+16b)\,\#1^2+4a\,\#1^3+a\,\#1^4\,\&,1\right]-\text{Root}\left[a+4a\,\#1+(6a+16b)\,\#1^2+4a\,\#1^3+a\,\#1^4\,\&,4\right]\Big)\Big)\Big/$$

$$\Big(\Big(\text{Root}\left[a+4a\,\#1+(6a+16b)\,\#1^2+4a\,\#1^3+a\,\#1^4\,\&,1\right]-\text{Root}\left[a+4a\,\#1+(6a+16b)\,\#1^2+4a\,\#1^3+a\,\#1^4\,\&,3\right]\Big)$$

$$\Big(\text{Root}\left[a+4a\,\#1+(6a+16b)\,\#1^2+4a\,\#1^3+a\,\#1^4\,\&,2\right]-\text{Root}\left[a+4a\,\#1+(6a+16b)\,\#1^2+4a\,\#1^3+a\,\#1^4\,\&,4\right]\Big)\Big)\Big]$$

$$\Big(\text{Root}\left[a+4a\,\#1+(6a+16b)\,\#1^2+4a\,\#1^3+a\,\#1^4\,\&,1\right]-\text{Root}\left[a+4a\,\#1+(6a+16b)\,\#1^2+4a\,\#1^3+a\,\#1^4\,\&,4\right]\Big)$$

$$\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\left(-\text{Root}\left[a+4a\,\#1+(6a+16b)\,\#1^2+4a\,\#1^3+a\,\#1^4\,\&,2\right]+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)$$

$$\sqrt{\Big(\Big(\Big(\text{Root}\left[a+4a\,\#1+(6a+16b)\,\#1^2+4a\,\#1^3+a\,\#1^4\,\&,1\right]-\text{Root}\left[a+4a\,\#1+(6a+16b)\,\#1^2+4a\,\#1^3+a\,\#1^4\,\&,2\right]\Big)}$$

$$\left(-\text{Root}\left[a+4a\,\#1+(6a+16b)\,\#1^2+4a\,\#1^3+a\,\#1^4\,\&,3\right]+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\Big)\Big/$$

$$\Big(\Big(\text{Root}\left[a+4a\,\#1+(6a+16b)\,\#1^2+4a\,\#1^3+a\,\#1^4\,\&,1\right]-\text{Root}\left[a+4a\,\#1+(6a+16b)\,\#1^2+4a\,\#1^3+a\,\#1^4\,\&,3\right]\Big)$$

$$\left(-\text{Root}\left[a+4a\,\#1+(6a+16b)\,\#1^2+4a\,\#1^3+a\,\#1^4\,\&,2\right]+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\Big)\Big)$$

$$\sqrt{\Big(\Big(\Big(\text{Root}\left[a+4a\,\#1+(6a+16b)\,\#1^2+4a\,\#1^3+a\,\#1^4\,\&,1\right]-\text{Root}\left[a+4a\,\#1+(6a+16b)\,\#1^2+4a\,\#1^3+a\,\#1^4\,\&,2\right]\Big)}$$

$$\Big(\text{Root}\left[a+4a\,\#1+(6a+16b)\,\#1^2+4a\,\#1^3+a\,\#1^4\,\&,2\right]-\text{Root}\left[a+4a\,\#1+(6a+16b)\,\#1^2+4a\,\#1^3+a\,\#1^4\,\&,4\right]\Big)$$

$$\left(-\text{Root}\left[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,1\right]+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)$$

$$\left(-\text{Root}\left[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,4\right]+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)\Big)\Big/$$

$$\Big(\left(\text{Root}\left[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,1\right]-\text{Root}\left[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,4\right]\right)^2$$

$$\left(-\text{Root}\left[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,2\right]+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)^2\Big)\Big)\Big)\Big/$$

$$\Big(\left(-\text{Root}\left[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,1\right]+\text{Root}\left[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,2\right]\right)$$

$$\left(\text{Root}\left[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,2\right]-\text{Root}\left[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,4\right]\right)$$

$$\left(1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)^2\sqrt{\frac{16\,b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^4+a\left(1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)^4}{\left(1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)^4}}\Bigg)\Bigg)+$$

$$\Big(8\,\text{EllipticF}\Big[\text{ArcSin}\Big[\sqrt{\Big(\Big(\Big(\left(\text{Root}\left[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,2\right]-\text{Root}\left[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,4\right]\right)}$$

$$\left(-\text{Root}\left[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,1\right]+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)\Big)\Big/$$

$$\Big(\left(\text{Root}\left[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,1\right]-\text{Root}\left[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,4\right]\right)$$

$$\left(-\text{Root}\left[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,2\right]+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)\Big)\Big)\Big]\Big],$$

$$\Big(\left(\text{Root}\left[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,2\right]-\text{Root}\left[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,3\right]\right)$$

$$\left(\text{Root}\left[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,1\right]-\text{Root}\left[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,4\right]\right)\Big)\Big/$$

$$\Big(\left(\text{Root}\left[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,1\right]-\text{Root}\left[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,3\right]\right)$$

$$\left(\text{Root}\left[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,2\right]-\text{Root}\left[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,4\right]\right)\Big)\Big]$$

$$\left(\text{Root}\left[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,1\right]-\text{Root}\left[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,4\right]\right)$$

$$\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\,\left(-\text{Root}\left[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,2\right]+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)^2$$

$$\sqrt{\Big(\Big(\left(\text{Root}\left[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,1\right]-\text{Root}\left[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,2\right]\right)}$$

$$\left(-\text{Root}\left[a+4 a \#1+(6 a+16 b) \#1^2+4 a \#1^3+a \#1^4 \&,3\right]+\text{Tan}\left[\frac{1}{2} (c+d x)\right]^2\right)\Big)\Big/$$

$$\Big(\left(\text{Root}\left[a+4 a \#1+(6 a+16 b) \#1^2+4 a \#1^3+a \#1^4 \&,1\right]-\text{Root}\left[a+4 a \#1+(6 a+16 b) \#1^2+4 a \#1^3+a \#1^4 \&,3\right]\right)$$

$$\left(-\text{Root}\left[a+4 a \#1+(6 a+16 b) \#1^2+4 a \#1^3+a \#1^4 \&,2\right]+\text{Tan}\left[\frac{1}{2} (c+d x)\right]^2\right)\Big)\Big)$$

$$\sqrt{}\Big(\Big(\Big(\left(\text{Root}\left[a+4 a \#1+(6 a+16 b) \#1^2+4 a \#1^3+a \#1^4 \&,1\right]-\text{Root}\left[a+4 a \#1+(6 a+16 b) \#1^2+4 a \#1^3+a \#1^4 \&,2\right]\right)$$

$$\left(\text{Root}\left[a+4 a \#1+(6 a+16 b) \#1^2+4 a \#1^3+a \#1^4 \&,2\right]-\text{Root}\left[a+4 a \#1+(6 a+16 b) \#1^2+4 a \#1^3+a \#1^4 \&,4\right]\right)$$

$$\left(-\text{Root}\left[a+4 a \#1+(6 a+16 b) \#1^2+4 a \#1^3+a \#1^4 \&,1\right]+\text{Tan}\left[\frac{1}{2} (c+d x)\right]^2\right)$$

$$\left(-\text{Root}\left[a+4 a \#1+(6 a+16 b) \#1^2+4 a \#1^3+a \#1^4 \&,4\right]+\text{Tan}\left[\frac{1}{2} (c+d x)\right]^2\right)\Big)\Big/$$

$$\Big(\left(\text{Root}\left[a+4 a \#1+(6 a+16 b) \#1^2+4 a \#1^3+a \#1^4 \&,1\right]-\text{Root}\left[a+4 a \#1+(6 a+16 b) \#1^2+4 a \#1^3+a \#1^4 \&,4\right]\right)^2$$

$$\left(-\text{Root}\left[a+4 a \#1+(6 a+16 b) \#1^2+4 a \#1^3+a \#1^4 \&,2\right]+\text{Tan}\left[\frac{1}{2} (c+d x)\right]^2\right)^2\Big)\Big)\Big)\Big/$$

$$\Big(\left(-\text{Root}\left[a+4 a \#1+(6 a+16 b) \#1^2+4 a \#1^3+a \#1^4 \&,1\right]+\text{Root}\left[a+4 a \#1+(6 a+16 b) \#1^2+4 a \#1^3+a \#1^4 \&,2\right]\right)$$

$$\left(\text{Root}\left[a+4 a \#1+(6 a+16 b) \#1^2+4 a \#1^3+a \#1^4 \&,2\right]-\text{Root}\left[a+4 a \#1+(6 a+16 b) \#1^2+4 a \#1^3+a \#1^4 \&,4\right]\right)$$

$$\left(1+\text{Tan}\left[\frac{1}{2} (c+d x)\right]^2\right)^3 \sqrt{\frac{16 b\, \text{Tan}\left[\frac{1}{2} (c+d x)\right]^4+a \left(1+\text{Tan}\left[\frac{1}{2} (c+d x)\right]^2\right)^4}{\left(1+\text{Tan}\left[\frac{1}{2} (c+d x)\right]^2\right)^4}}\ \Big)-$$

$$\Big(2 \left(\text{Root}\left[a+4 a \#1+(6 a+16 b) \#1^2+4 a \#1^3+a \#1^4 \&,1\right]-\text{Root}\left[a+4 a \#1+(6 a+16 b) \#1^2+4 a \#1^3+a \#1^4 \&,4\right]\right)$$

$$\left(-\text{Root}\left[a+4 a \#1+(6 a+16 b) \#1^2+4 a \#1^3+a \#1^4 \&,2\right]+\text{Tan}\left[\frac{1}{2} (c+d x)\right]^2\right)^2$$

$$\sqrt{}\Big(\Big(\Big(\left(\text{Root}\left[a+4 a \#1+(6 a+16 b) \#1^2+4 a \#1^3+a \#1^4 \&,1\right]-\text{Root}\left[a+4 a \#1+(6 a+16 b) \#1^2+4 a \#1^3+a \#1^4 \&,2\right]\right)$$

$$\left(-\text{Root}\left[a+4 a \#1+(6 a+16 b) \#1^2+4 a \#1^3+a \#1^4 \&,3\right]+\text{Tan}\left[\frac{1}{2} (c+d x)\right]^2\right)\Big)\Big/$$

$$\Big(\big(\text{Root}\big[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,1\big]-\text{Root}\big[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,3\big]\big)$$

$$\Big(-\text{Root}\big[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,2\big]+\text{Tan}\Big[\frac{1}{2}(c+dx)\Big]^2\Big)\Big)\Big)$$

$$\sqrt{\Big(\Big(\Big(\text{Root}\big[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,1\big]-\text{Root}\big[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,2\big]\Big)}$$

$$\big(\text{Root}\big[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,2\big]-\text{Root}\big[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,4\big]\big)$$

$$\Big(-\text{Root}\big[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,1\big]+\text{Tan}\Big[\frac{1}{2}(c+dx)\Big]^2\Big)$$

$$\Big(-\text{Root}\big[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,4\big]+\text{Tan}\Big[\frac{1}{2}(c+dx)\Big]^2\Big)\Big)\Big/$$

$$\Big(\big(\text{Root}\big[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,1\big]-\text{Root}\big[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,4\big]\big)^2$$

$$\Big(-\text{Root}\big[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,2\big]+\text{Tan}\Big[\frac{1}{2}(c+dx)\Big]^2\Big)^2\Big)\Big)$$

$$\Big(-\Big(\big(\text{Root}\big[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,2\big]-\text{Root}\big[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,4\big]\big)$$

$$\text{Sec}\Big[\frac{1}{2}(c+dx)\Big]^2\,\text{Tan}\Big[\frac{1}{2}(c+dx)\Big]\,\Big(-\text{Root}\big[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,1\big]+\text{Tan}\Big[\frac{1}{2}(c+dx)\Big]^2\Big)\Big)\Big/$$

$$\Big(\big(\text{Root}\big[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,1\big]-\text{Root}\big[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,4\big]\big)$$

$$\Big(-\text{Root}\big[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,2\big]+\text{Tan}\Big[\frac{1}{2}(c+dx)\Big]^2\Big)^2\Big)+$$

$$\Big(\big(\text{Root}\big[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,2\big]-\text{Root}\big[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,4\big]\big)\,\text{Sec}\Big[\frac{1}{2}(c+dx)\Big]^2$$

$$\text{Tan}\Big[\frac{1}{2}(c+dx)\Big]\Big)\Big/\Big(\big(\text{Root}\big[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,1\big]-\text{Root}\big[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,$$

$$4\big]\big)\Big(-\text{Root}\big[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,2\big]+\text{Tan}\Big[\frac{1}{2}(c+dx)\Big]^2\Big)\Big)\Big)\Big)\Big/$$

$$\Big(\big(-\text{Root}\big[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,1\big]+\text{Root}\big[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,2\big]\big)$$

$$\big(\text{Root}\big[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,2\big]-\text{Root}\big[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,4\big]\big)\,\Big(1+\text{Tan}\Big[\frac{1}{2}(c+dx)\Big]^2\Big)^2$$

$$\sqrt{}\Big(\Big(\big(\text{Root}[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,2]-\text{Root}[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,4]\big)$$

$$\left(-\text{Root}[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,1]+\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)\Big)\Big/$$

$$\Big(\big(\text{Root}[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,1]-\text{Root}[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,4]\big)\ \Big(-\text{Root}[$$

$$a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,2]+\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\Big)\Big)\Big)\ \sqrt{\frac{16\,b\,\text{Tan}\left[\frac{1}{2}(c+dx)\right]^4+a\left(1+\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)^4}{\left(1+\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)^4}}$$

$$\sqrt{}\Big(1-\Big(\big(\text{Root}[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,2]-\text{Root}[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,3]\big)$$

$$\left(-\text{Root}[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,1]+\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)\Big)\Big/$$

$$\Big(\big(\text{Root}[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,1]-\text{Root}[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,3]\big)$$

$$\left(-\text{Root}[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,2]+\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)\Big)\Big)$$

$$\sqrt{}\Big(1-\Big(\big(\text{Root}[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,2]-\text{Root}[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,4]\big)$$

$$\left(-\text{Root}[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,1]+\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)\Big)\Big/$$

$$\Big(\big(\text{Root}[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,1]-\text{Root}[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,4]\big)$$

$$\left(-\text{Root}[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,2]+\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)\Big)\Big)\Bigg)-$$

$$\Big(2\,\text{EllipticF}\Big[\text{ArcSin}\Big[\sqrt{}\Big(\Big(\big(\text{Root}[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,2]-\text{Root}[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,4]\big)$$

$$\left(-\text{Root}[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,1]+\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)\Big)\Big/$$

$$\Big(\big(\text{Root}[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,1]-\text{Root}[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,4]\big)$$

$$\left(-\text{Root}[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,2]+\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)\Big)\Big)\Big],$$

$$\Big(\Big(\text{Root}\big[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,2\big]-\text{Root}\big[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,3\big]\Big)$$

$$\Big(\text{Root}\big[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,1\big]-\text{Root}\big[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,4\big]\Big)\Big)\Big)\Big/$$

$$\Big(\Big(\text{Root}\big[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,1\big]-\text{Root}\big[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,3\big]\Big)$$

$$\Big(\text{Root}\big[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,2\big]-\text{Root}\big[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,4\big]\Big)\Big)\Big)\Big]$$

$$\Big(\text{Root}\big[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,1\big]-\text{Root}\big[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,4\big]\Big)$$

$$\Big(-\text{Root}\big[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,2\big]+\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big)^2$$

$$\sqrt{}\Big(\Big(\Big(\text{Root}\big[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,1\big]-\text{Root}\big[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,2\big]\Big)$$

$$\Big(\text{Root}\big[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,2\big]-\text{Root}\big[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,4\big]\Big)$$

$$\Big(-\text{Root}\big[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,1\big]+\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big)$$

$$\Big(-\text{Root}\big[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,4\big]+\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big)\Big)\Big/$$

$$\Big(\Big(\text{Root}\big[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,1\big]-\text{Root}\big[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,4\big]\Big)^2$$

$$\Big(-\text{Root}\big[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,2\big]+\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big)^2\Big)\Big)$$

$$\Big(\Big(\Big(\text{Root}\big[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,1\big]-\text{Root}\big[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,2\big]\Big)$$

$$\text{Sec}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]\Big)\Big/\Big(\Big(\text{Root}\big[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,1\big]-\text{Root}\big[a+4\,a\,\#1+$$

$$(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,3\big]\Big)\Big(-\text{Root}\big[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,2\big]+\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big)\Big)-$$

$$\Big(\Big(\text{Root}\big[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,1\big]-\text{Root}\big[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,2\big]\Big)$$

$$\text{Sec}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]\,\Big(-\text{Root}\big[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,3\big]+\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big)\Big)\Big/$$

$$\Big(\Big(\text{Root}\big[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,1\big]-\text{Root}\big[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,3\big]\Big)$$

$$\Big(-\text{Root}\big[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,2\big]+\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big)^2\Big)\Big)\Big)\Big)\Big/$$

$$\Big(\Big(-\text{Root}\big[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,1\big]+\text{Root}\big[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,2\big]\Big)$$

$$\left(\text{Root}\left[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,2\right]-\text{Root}\left[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,4\right]\right)\left(1+\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)^2$$

$$\sqrt{\left(\left(\left(\text{Root}\left[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,1\right]-\text{Root}\left[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,2\right]\right)\right.\right.}$$

$$\left.\left(-\text{Root}\left[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,3\right]+\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)\right)\Big/$$

$$\left(\left(\text{Root}\left[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,1\right]-\text{Root}\left[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,3\right]\right)\left(-\text{Root}\left[a+4a\#1+\right.\right.\right.$$

$$\left.\left.\left.(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,2\right]+\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)\right)\right)\sqrt{\frac{16\,b\,\text{Tan}\left[\frac{1}{2}(c+dx)\right]^4+a\left(1+\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)^4}{\left(1+\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)^4}}\;\right)-$$

$$\left(2\,\text{EllipticF}\left[\text{ArcSin}\left[\sqrt{\left(\left(\left(\text{Root}\left[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,2\right]-\text{Root}\left[a+4a\#1+(6a+16b)\#1^2+\right.\right.\right.\right.}\right.\right.\right.$$

$$\left.\left.4a\#1^3+a\#1^4\&,4\right]\right)\left(-\text{Root}\left[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,1\right]+\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)\right)\Big/$$

$$\left(\left(\text{Root}\left[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,1\right]-\text{Root}\left[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,4\right]\right)\right.$$

$$\left.\left.\left.\left(-\text{Root}\left[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,2\right]+\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)\right)\right)\right],$$

$$\left(\left(\text{Root}\left[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,2\right]-\text{Root}\left[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,3\right]\right)\right.$$

$$\left.\left(\text{Root}\left[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,1\right]-\text{Root}\left[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,4\right]\right)\right)\Big/$$

$$\left(\left(\text{Root}\left[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,1\right]-\text{Root}\left[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,3\right]\right)\right.$$

$$\left.\left.\left(\text{Root}\left[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,2\right]-\text{Root}\left[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,4\right]\right)\right)\right]$$

$$\left(\text{Root}\left[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,1\right]-\text{Root}\left[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,4\right]\right)$$

$$\left(-\text{Root}\left[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,2\right]+\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)^2$$

$$\sqrt{\left(\left(\left(\text{Root}\left[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,1\right]-\text{Root}\left[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,2\right]\right)\right.\right.}$$

$$\left.\left(-\text{Root}\left[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,3\right]+\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)\right)\Big/$$

$$\left(\left(\text{Root}\left[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,1\right]-\text{Root}\left[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,3\right]\right)\right.$$

$$\left.\left.\left(-\text{Root}\left[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,2\right]+\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)\right)\right)$$

$$\Bigg(\Bigg(\Big(\text{Root}\left[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,1\right]-\text{Root}\left[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,2\right]\Big)$$

$$\Big(\text{Root}\left[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,2\right]-\text{Root}\left[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,4\right]\Big)$$

$$\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\left(-\text{Root}\left[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,1\right]+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\Bigg)\Bigg/$$

$$\Big(\Big(\text{Root}\left[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,1\right]-\text{Root}\left[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,4\right]\Big)^2$$

$$\left(-\text{Root}\left[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,2\right]+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)^2\Big)-$$

$$\Big(2\,\Big(\text{Root}\left[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,1\right]-\text{Root}\left[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,2\right]\Big)$$

$$\Big(\text{Root}\left[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,2\right]-\text{Root}\left[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,4\right]\Big)$$

$$\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\left(-\text{Root}\left[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,1\right]+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)$$

$$\left(-\text{Root}\left[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,4\right]+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\Big)\Big/$$

$$\Big(\Big(\text{Root}\left[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,1\right]-\text{Root}\left[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,4\right]\Big)^2$$

$$\left(-\text{Root}\left[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,2\right]+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)^3\Big)+$$

$$\Big(\Big(\text{Root}\left[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,1\right]-\text{Root}\left[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,2\right]\Big)$$

$$\Big(\text{Root}\left[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,2\right]-\text{Root}\left[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,4\right]\Big)$$

$$\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\left(-\text{Root}\left[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,4\right]+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\Big)\Big/$$

$$\Big(\Big(\text{Root}\left[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,1\right]-\text{Root}\left[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,4\right]\Big)^2$$

$$\left(-\text{Root}\left[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,2\right]+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)^2\Big)\Bigg)\Bigg)\Bigg/$$

$$\Bigg(\Big(-\text{Root}\left[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,1\right]+\text{Root}\left[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,2\right]\Big)$$

$$\Big(\text{Root}\left[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,2\right]-\text{Root}\left[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,4\right]\Big)\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)^2$$

$$\sqrt{}\Big(\Big(\big(\text{Root}[a + 4 a \#1 + (6 a + 16 b) \#1^2 + 4 a \#1^3 + a \#1^4 \&, 1] - \text{Root}[a + 4 a \#1 + (6 a + 16 b) \#1^2 + 4 a \#1^3 + a \#1^4 \&, 2]\big)$$

$$\big(\text{Root}[a + 4 a \#1 + (6 a + 16 b) \#1^2 + 4 a \#1^3 + a \#1^4 \&, 2] - \text{Root}[a + 4 a \#1 + (6 a + 16 b) \#1^2 + 4 a \#1^3 + a \#1^4 \&, 4]\big)$$

$$\Big(-\text{Root}[a + 4 a \#1 + (6 a + 16 b) \#1^2 + 4 a \#1^3 + a \#1^4 \&, 1] + \text{Tan}\Big[\frac{1}{2} (c + d x)\Big]^2\Big)$$

$$\Big(-\text{Root}[a + 4 a \#1 + (6 a + 16 b) \#1^2 + 4 a \#1^3 + a \#1^4 \&, 4] + \text{Tan}\Big[\frac{1}{2} (c + d x)\Big]^2\Big)\Big) \Big/$$

$$\big(\text{Root}[a + 4 a \#1 + (6 a + 16 b) \#1^2 + 4 a \#1^3 + a \#1^4 \&, 1] - \text{Root}[a + 4 a \#1 + (6 a + 16 b) \#1^2 + 4 a \#1^3 + a \#1^4 \&, 4]\big)^2$$

$$\Big(-\text{Root}[a + 4 a \#1 + (6 a + 16 b) \#1^2 + 4 a \#1^3 + a \#1^4 \&, 2] + \text{Tan}\Big[\frac{1}{2} (c + d x)\Big]^2\Big)^2\Big)\Big)$$

$$\sqrt{\frac{16 b \,\text{Tan}\big[\frac{1}{2} (c + d x)\big]^4 + a \big(1 + \text{Tan}\big[\frac{1}{2} (c + d x)\big]^2\big)^4}{\big(1 + \text{Tan}\big[\frac{1}{2} (c + d x)\big]^2\big)^4}} + \Big(2\, \text{EllipticF}\Big[\text{ArcSin}\Big[$$

$$\sqrt{}\Big(\Big(\big(\text{Root}[a + 4 a \#1 + (6 a + 16 b) \#1^2 + 4 a \#1^3 + a \#1^4 \&, 2] - \text{Root}[a + 4 a \#1 + (6 a + 16 b) \#1^2 + 4 a \#1^3 + a \#1^4 \&, 4]\big)$$

$$\Big(-\text{Root}[a + 4 a \#1 + (6 a + 16 b) \#1^2 + 4 a \#1^3 + a \#1^4 \&, 1] + \text{Tan}\Big[\frac{1}{2} (c + d x)\Big]^2\Big)\Big) \Big/$$

$$\Big(\big(\text{Root}[a + 4 a \#1 + (6 a + 16 b) \#1^2 + 4 a \#1^3 + a \#1^4 \&, 1] - \text{Root}[a + 4 a \#1 + (6 a + 16 b) \#1^2 + 4 a \#1^3 + a \#1^4 \&, 4]\big)$$

$$\Big(-\text{Root}[a + 4 a \#1 + (6 a + 16 b) \#1^2 + 4 a \#1^3 + a \#1^4 \&, 2] + \text{Tan}\Big[\frac{1}{2} (c + d x)\Big]^2\Big)\Big)\Big)\Big],$$

$$\big(\big(\text{Root}[a + 4 a \#1 + (6 a + 16 b) \#1^2 + 4 a \#1^3 + a \#1^4 \&, 2] - \text{Root}[a + 4 a \#1 + (6 a + 16 b) \#1^2 + 4 a \#1^3 + a \#1^4 \&, 3]\big)$$

$$\big(\text{Root}[a + 4 a \#1 + (6 a + 16 b) \#1^2 + 4 a \#1^3 + a \#1^4 \&, 1] - \text{Root}[a + 4 a \#1 + (6 a + 16 b) \#1^2 + 4 a \#1^3 + a \#1^4 \&, 4]\big)\big) \big/$$

$$\big(\big(\text{Root}[a + 4 a \#1 + (6 a + 16 b) \#1^2 + 4 a \#1^3 + a \#1^4 \&, 1] - \text{Root}[a + 4 a \#1 + (6 a + 16 b) \#1^2 + 4 a \#1^3 + a \#1^4 \&, 3]\big)$$

$$\big(\text{Root}[a + 4 a \#1 + (6 a + 16 b) \#1^2 + 4 a \#1^3 + a \#1^4 \&, 2] - \text{Root}[a + 4 a \#1 + (6 a + 16 b) \#1^2 + 4 a \#1^3 + a \#1^4 \&, 4]\big)\big)\Big]$$

$$\big(\text{Root}[a + 4 a \#1 + (6 a + 16 b) \#1^2 + 4 a \#1^3 + a \#1^4 \&, 1] - \text{Root}[a + 4 a \#1 + (6 a + 16 b) \#1^2 + 4 a \#1^3 + a \#1^4 \&, 4]\big)$$

$$\Big(-\text{Root}[a + 4 a \#1 + (6 a + 16 b) \#1^2 + 4 a \#1^3 + a \#1^4 \&, 2] + \text{Tan}\Big[\frac{1}{2} (c + d x)\Big]^2\Big)^2$$

$$\sqrt{}\Big(\Big(\big(\text{Root}[a + 4 a \#1 + (6 a + 16 b) \#1^2 + 4 a \#1^3 + a \#1^4 \&, 1] - \text{Root}[a + 4 a \#1 + (6 a + 16 b) \#1^2 + 4 a \#1^3 + a \#1^4 \&, 2]\big)$$

$$\Big(-\text{Root}[a + 4 a \#1 + (6 a + 16 b) \#1^2 + 4 a \#1^3 + a \#1^4 \&, 3] + \text{Tan}\Big[\frac{1}{2} (c + d x)\Big]^2\Big)\Big) \Big/$$

$$\Big(\big(\text{Root}[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,1]-\text{Root}[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,3]\big)$$

$$\left(-\text{Root}[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,2]+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\Big)\Big)\Big)$$

$$\sqrt{\Big(\Big(\big(\text{Root}[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,1]-\text{Root}[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,2]\big)}$$

$$\big(\text{Root}[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,2]-\text{Root}[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,4]\big)$$

$$\left(-\text{Root}[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,1]+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)$$

$$\left(-\text{Root}[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,4]+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\Big)\Big/$$

$$\Big(\big(\text{Root}[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,1]-\text{Root}[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,4]\big)^2$$

$$\left(-\text{Root}[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,2]+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^2\Big)\Big)$$

$$\left(\left(32\,b\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]^3+4\,a\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^3\right)\Big/\right.$$

$$\left.\left(\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^4-\frac{4\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]\left(16\,b\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^4+a\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^4\right)}{\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^5}\right)\right)\Big/$$

$$\Big(\big(-\text{Root}[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,1]+\text{Root}[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,2]\big)$$

$$\big(\text{Root}[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,2]-\text{Root}[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,4]\big)$$

$$\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^2\left(\frac{16\,b\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^4+a\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^4}{\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^4}\right)^{3/2}\Big)\Big)\Big)\Big)\Big)$$

Problem 244: Unable to integrate problem.

$$\int\frac{\text{Csc}[c+d x]}{\sqrt{a+b\,\text{Sin}[c+d x]^4}}\,dx$$

Optimal (type 4, 469 leaves, 4 steps):

$$-\frac{\text{ArcTan}\left[\frac{\sqrt{-a}\,\text{Cos}[c+d x]}{\sqrt{a+b-2 b \text{Cos}[c+d x]^2+b \text{Cos}[c+d x]^4}}\right]}{2 \sqrt{-a}\, d}+\left(b^{1/4} (a+b)^{1/4} \left(\sqrt{b}-\sqrt{a+b}\right) \left(1+\frac{\sqrt{b}\,\text{Cos}[c+d x]^2}{\sqrt{a+b}}\right) \sqrt{\frac{a+b-2 b \text{Cos}[c+d x]^2+b \text{Cos}[c+d x]^4}{(a+b) \left(1+\frac{\sqrt{b}\,\text{Cos}[c+d x]^2}{\sqrt{a+b}}\right)^2}}\right.$$

$$\left.\text{EllipticF}\left[2 \text{ArcTan}\left[\frac{b^{1/4} \text{Cos}[c+d x]}{(a+b)^{1/4}}\right], \frac{1}{2} \left(1+\frac{\sqrt{b}}{\sqrt{a+b}}\right)\right]\right) \Big/ \left(2 a d \sqrt{a+b-2 b \text{Cos}[c+d x]^2+b \text{Cos}[c+d x]^4}\right)-$$

$$\left((a+b)^{1/4} \left(\sqrt{b}-\sqrt{a+b}\right)^2 \left(1+\frac{\sqrt{b}\,\text{Cos}[c+d x]^2}{\sqrt{a+b}}\right) \sqrt{\frac{a+b-2 b \text{Cos}[c+d x]^2+b \text{Cos}[c+d x]^4}{(a+b) \left(1+\frac{\sqrt{b}\,\text{Cos}[c+d x]^2}{\sqrt{a+b}}\right)^2}}\right.$$

$$\left.\text{EllipticPi}\left[\frac{\left(\sqrt{b}+\sqrt{a+b}\right)^2}{4 \sqrt{b} \sqrt{a+b}}, 2 \text{ArcTan}\left[\frac{b^{1/4} \text{Cos}[c+d x]}{(a+b)^{1/4}}\right], \frac{1}{2} \left(1+\frac{\sqrt{b}}{\sqrt{a+b}}\right)\right]\right) \Big/ \left(4 a b^{1/4} d \sqrt{a+b-2 b \text{Cos}[c+d x]^2+b \text{Cos}[c+d x]^4}\right)$$

Result (type 8, 25 leaves) :

$$\int \frac{\text{Csc}[c+d x]}{\sqrt{a+b \text{Sin}[c+d x]^4}}\, dx$$

- **Problem 245: Attempted integration timed out after 120 seconds.**

$$\int \frac{\text{Csc}[c+d x]^3}{\sqrt{a+b \text{Sin}[c+d x]^4}}\, dx$$

Optimal (type 4, 776 leaves, 7 steps) :

$$-\frac{\text{ArcTan}\left[\frac{\sqrt{-a}\,\text{Cos}[c+d x]}{\sqrt{a+b-2 b \text{Cos}[c+d x]^2+b \text{Cos}[c+d x]^4}}\right]}{4 \sqrt{-a}\, d}-\frac{\sqrt{b}\,\text{Cos}[c+d x] \sqrt{a+b-2 b \text{Cos}[c+d x]^2+b \text{Cos}[c+d x]^4}}{2 a \sqrt{a+b}\, d \left(1+\frac{\sqrt{b}\,\text{Cos}[c+d x]^2}{\sqrt{a+b}}\right)}-$$

$$\frac{\sqrt{a+b-2 b \text{Cos}[c+d x]^2+b \text{Cos}[c+d x]^4}\,\text{Cot}[c+d x] \,\text{Csc}[c+d x]}{2 a d}+$$

$$\left(b^{1/4} (a+b)^{3/4} \left(1+\frac{\sqrt{b}\,\text{Cos}[c+d x]^2}{\sqrt{a+b}}\right) \sqrt{\frac{a+b-2 b \text{Cos}[c+d x]^2+b \text{Cos}[c+d x]^4}{(a+b) \left(1+\frac{\sqrt{b}\,\text{Cos}[c+d x]^2}{\sqrt{a+b}}\right)^2}}\,\text{EllipticE}\left[2 \text{ArcTan}\left[\frac{b^{1/4} \text{Cos}[c+d x]}{(a+b)^{1/4}}\right],\frac{1}{2} \left(1+\frac{\sqrt{b}}{\sqrt{a+b}}\right)\right]\right)\Big/$$

$$\left(2 a d \sqrt{a+b-2 b \text{Cos}[c+d x]^2+b \text{Cos}[c+d x]^4}\right)-\left(b^{1/4} \left(a+b-\sqrt{b} \sqrt{a+b}\right) \left(1+\frac{\sqrt{b}\,\text{Cos}[c+d x]^2}{\sqrt{a+b}}\right) \sqrt{\frac{a+b-2 b \text{Cos}[c+d x]^2+b \text{Cos}[c+d x]^4}{(a+b) \left(1+\frac{\sqrt{b}\,\text{Cos}[c+d x]^2}{\sqrt{a+b}}\right)^2}}\right.$$

$$\left.\text{EllipticF}\left[2 \text{ArcTan}\left[\frac{b^{1/4} \text{Cos}[c+d x]}{(a+b)^{1/4}}\right],\frac{1}{2} \left(1+\frac{\sqrt{b}}{\sqrt{a+b}}\right)\right]\right)\Big/\left(2 a (a+b)^{1/4} d \sqrt{a+b-2 b \text{Cos}[c+d x]^2+b \text{Cos}[c+d x]^4}\right)-$$

$$\left((a+b)^{1/4} \left(\sqrt{b}-\sqrt{a+b}\right)^2 \left(1+\frac{\sqrt{b}\,\text{Cos}[c+d x]^2}{\sqrt{a+b}}\right) \sqrt{\frac{a+b-2 b \text{Cos}[c+d x]^2+b \text{Cos}[c+d x]^4}{(a+b) \left(1+\frac{\sqrt{b}\,\text{Cos}[c+d x]^2}{\sqrt{a+b}}\right)^2}}\right.$$

$$\left.\text{EllipticPi}\left[\frac{\left(\sqrt{b}+\sqrt{a+b}\right)^2}{4 \sqrt{b} \sqrt{a+b}},2 \text{ArcTan}\left[\frac{b^{1/4} \text{Cos}[c+d x]}{(a+b)^{1/4}}\right],\frac{1}{2} \left(1+\frac{\sqrt{b}}{\sqrt{a+b}}\right)\right]\right)\Big/\left(8 a b^{1/4} d \sqrt{a+b-2 b \text{Cos}[c+d x]^2+b \text{Cos}[c+d x]^4}\right)$$

Result (type 1, 1 leaves) :

???

- **Problem 246: Result unnecessarily involves imaginary or complex numbers.**

$$\int \frac{\text{Sin}[c+d x]^2}{\sqrt{a+b \text{Sin}[c+d x]^4}}\,dx$$

Optimal (type 4, 499 leaves, 4 steps) :

$$-\frac{\text{ArcTan}\left[\frac{\sqrt{b}\,\text{Tan}[c+d x]}{\sqrt{a+2 a\,\text{Tan}[c+d x]^2+(a+b)\,\text{Tan}[c+d x]^4}}\right]\text{Cos}[c+d x]^2\sqrt{a+2 a\,\text{Tan}[c+d x]^2+(a+b)\,\text{Tan}[c+d x]^4}}{2\sqrt{b}\,d\sqrt{a+b\,\text{Sin}[c+d x]^4}}-$$

$$\left(a^{1/4}\left(\sqrt{a}+\sqrt{a+b}\right)\text{Cos}[c+d x]^2\,\text{EllipticF}\left[2\,\text{ArcTan}\left[\frac{(a+b)^{1/4}\,\text{Tan}[c+d x]}{a^{1/4}}\right],\frac{1}{2}\left(1-\frac{\sqrt{a}}{\sqrt{a+b}}\right)\right]\right.$$

$$\left.\left(\sqrt{a}+\sqrt{a+b}\,\text{Tan}[c+d x]^2\right)\sqrt{\frac{a+2 a\,\text{Tan}[c+d x]^2+(a+b)\,\text{Tan}[c+d x]^4}{\left(\sqrt{a}+\sqrt{a+b}\,\text{Tan}[c+d x]^2\right)^2}}\right)\Big/\left(2 b\,(a+b)^{1/4}\,d\sqrt{a+b\,\text{Sin}[c+d x]^4}\right)+$$

$$\left(\left(\sqrt{a}+\sqrt{a+b}\right)^2\text{Cos}[c+d x]^2\,\text{EllipticPi}\left[-\frac{\left(\sqrt{a}-\sqrt{a+b}\right)^2}{4\sqrt{a}\,\sqrt{a+b}},2\,\text{ArcTan}\left[\frac{(a+b)^{1/4}\,\text{Tan}[c+d x]}{a^{1/4}}\right],\frac{1}{2}\left(1-\frac{\sqrt{a}}{\sqrt{a+b}}\right)\right]\right.$$

$$\left.\left(\sqrt{a}+\sqrt{a+b}\,\text{Tan}[c+d x]^2\right)\sqrt{\frac{a+2 a\,\text{Tan}[c+d x]^2+(a+b)\,\text{Tan}[c+d x]^4}{\left(\sqrt{a}+\sqrt{a+b}\,\text{Tan}[c+d x]^2\right)^2}}\right)\Big/\left(4\,a^{1/4}\,b\,(a+b)^{1/4}\,d\sqrt{a+b\,\text{Sin}[c+d x]^4}\right)$$

Result (type 4, 287 leaves) :

$$-\left(2\,i\,\text{Cos}[c+d x]^2\left(\text{EllipticF}\left[i\,\text{ArcSinh}\left[\sqrt{1-\frac{i\sqrt{b}}{\sqrt{a}}}\,\text{Tan}[c+d x]\right],\frac{\sqrt{a}+i\sqrt{b}}{\sqrt{a}-i\sqrt{b}}\right]-\right.\right.$$

$$\left.\text{EllipticPi}\left[\frac{\sqrt{a}}{\sqrt{a}-i\sqrt{b}},i\,\text{ArcSinh}\left[\sqrt{1-\frac{i\sqrt{b}}{\sqrt{a}}}\,\text{Tan}[c+d x]\right],\frac{\sqrt{a}+i\sqrt{b}}{\sqrt{a}-i\sqrt{b}}\right]\right)\sqrt{1+\left(1+\frac{i\sqrt{b}}{\sqrt{a}}\right)\text{Tan}[c+d x]^2}$$

$$\left.\sqrt{2+\left(2-\frac{2\,i\sqrt{b}}{\sqrt{a}}\right)\text{Tan}[c+d x]^2}\right)\Big/\left(\sqrt{1-\frac{i\sqrt{b}}{\sqrt{a}}}\,d\sqrt{8 a+3 b-4 b\,\text{Cos}[2\,(c+d x)]+b\,\text{Cos}[4\,(c+d x)]}\right)$$

- **Problem 247: Result unnecessarily involves imaginary or complex numbers.**

$$\int\frac{1}{\sqrt{a+b\,\text{Sin}[c+d x]^4}}\,dx$$

Optimal (type 4, 162 leaves, 2 steps) :

$$\left(\text{Cos}[c+d\,x]^2\,\text{EllipticF}\left[2\,\text{ArcTan}\left[\frac{(a+b)^{1/4}\,\text{Tan}[c+d\,x]}{a^{1/4}}\right],\ \frac{1}{2}\left(1-\frac{\sqrt{a}}{\sqrt{a+b}}\right)\right]\right.$$

$$\left.\left(\sqrt{a}+\sqrt{a+b}\,\text{Tan}[c+d\,x]^2\right)\sqrt{\frac{a+2\,a\,\text{Tan}[c+d\,x]^2+(a+b)\,\text{Tan}[c+d\,x]^4}{\left(\sqrt{a}+\sqrt{a+b}\,\text{Tan}[c+d\,x]^2\right)^2}}\right)\Big/\left(2\,a^{1/4}\,(a+b)^{1/4}\,d\,\sqrt{a+b\,\text{Sin}[c+d\,x]^4}\right)$$

Result (type 4, 195 leaves) :

$$-\left(2\,i\,\text{Cos}[c+d\,x]^2\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[\sqrt{1-\frac{i\sqrt{b}}{\sqrt{a}}}\,\text{Tan}[c+d\,x]\right],\ \frac{\sqrt{a}+i\sqrt{b}}{\sqrt{a}-i\sqrt{b}}\right]\sqrt{1+\left(1+\frac{i\sqrt{b}}{\sqrt{a}}\right)\text{Tan}[c+d\,x]^2}\right.$$

$$\left.\sqrt{2+\left(2-\frac{2\,i\sqrt{b}}{\sqrt{a}}\right)\text{Tan}[c+d\,x]^2}\right)\Big/\left(\sqrt{1-\frac{i\sqrt{b}}{\sqrt{a}}}\,d\,\sqrt{8\,a+3\,b-4\,b\,\text{Cos}[2\,(c+d\,x)]+b\,\text{Cos}[4\,(c+d\,x)]}\right)$$

- **Problem 248: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int\frac{\text{Csc}[c+d\,x]^2}{\sqrt{a+b\,\text{Sin}[c+d\,x]^4}}\,dx$$

Optimal (type 4, 493 leaves, 5 steps) :

$$-\frac{\text{Cos}[c+d\,x]^2\,\text{Cot}[c+d\,x]\,\left(a+2\,a\,\text{Tan}[c+d\,x]^2+(a+b)\,\text{Tan}[c+d\,x]^4\right)}{a\,d\,\sqrt{a+b\,\text{Sin}[c+d\,x]^4}}+$$

$$\frac{\sqrt{a+b}\,\text{Cos}[c+d\,x]\,\text{Sin}[c+d\,x]\,\left(a+2\,a\,\text{Tan}[c+d\,x]^2+(a+b)\,\text{Tan}[c+d\,x]^4\right)}{a\,d\,\sqrt{a+b\,\text{Sin}[c+d\,x]^4}\,\left(\sqrt{a}+\sqrt{a+b}\,\text{Tan}[c+d\,x]^2\right)}-$$

$$\left((a+b)^{1/4}\,\text{Cos}[c+d\,x]^2\,\text{EllipticE}\left[2\,\text{ArcTan}\left[\frac{(a+b)^{1/4}\,\text{Tan}[c+d\,x]}{a^{1/4}}\right],\,\frac{1}{2}\left(1-\frac{\sqrt{a}}{\sqrt{a+b}}\right)\right]\right.$$

$$\left.\left(\sqrt{a}+\sqrt{a+b}\,\text{Tan}[c+d\,x]^2\right)\sqrt{\frac{a+2\,a\,\text{Tan}[c+d\,x]^2+(a+b)\,\text{Tan}[c+d\,x]^4}{\left(\sqrt{a}+\sqrt{a+b}\,\text{Tan}[c+d\,x]^2\right)^2}}\,\right)\Big/\left(a^{3/4}\,d\,\sqrt{a+b\,\text{Sin}[c+d\,x]^4}\right)+$$

$$\left(\left(a+b+\sqrt{a}\,\sqrt{a+b}\right)\text{Cos}[c+d\,x]^2\,\text{EllipticF}\left[2\,\text{ArcTan}\left[\frac{(a+b)^{1/4}\,\text{Tan}[c+d\,x]}{a^{1/4}}\right],\,\frac{1}{2}\left(1-\frac{\sqrt{a}}{\sqrt{a+b}}\right)\right]\left(\sqrt{a}+\sqrt{a+b}\,\text{Tan}[c+d\,x]^2\right)\right.$$

$$\left.\sqrt{\frac{a+2\,a\,\text{Tan}[c+d\,x]^2+(a+b)\,\text{Tan}[c+d\,x]^4}{\left(\sqrt{a}+\sqrt{a+b}\,\text{Tan}[c+d\,x]^2\right)^2}}\,\right)\Big/\left(2\,a^{3/4}\,(a+b)^{3/4}\,d\,\sqrt{a+b\,\text{Sin}[c+d\,x]^4}\right)$$

Result (type 4, 1403 leaves):

$$-\frac{\sqrt{8\,a+3\,b-4\,b\,\text{Cos}[2\,(c+d\,x)]+b\,\text{Cos}[4\,(c+d\,x)]}\,\text{Cot}[c+d\,x]}{2\,\sqrt{2}\,a\,d}+$$

$$\left(\mathrm{i}\,b\,\text{Cos}[c+d\,x]^2\,\text{EllipticF}\left[\mathrm{i}\,\text{ArcSinh}\left[\sqrt{1-\frac{\mathrm{i}\,\sqrt{b}}{\sqrt{a}}}\,\text{Tan}[c+d\,x]\right],\,\frac{\sqrt{a}+\mathrm{i}\,\sqrt{b}}{\sqrt{a}-\mathrm{i}\,\sqrt{b}}\right]\sqrt{1+\left(1-\frac{\mathrm{i}\,\sqrt{b}}{\sqrt{a}}\right)\text{Tan}[c+d\,x]^2}\right.$$

$$\left.\sqrt{1+\left(1+\frac{\mathrm{i}\,\sqrt{b}}{\sqrt{a}}\right)\text{Tan}[c+d\,x]^2}\,\right)\Big/\left(\sqrt{2}\,a\,\sqrt{1-\frac{\mathrm{i}\,\sqrt{b}}{\sqrt{a}}}\,d\,\sqrt{8\,a+3\,b-4\,b\,\text{Cos}[2\,(c+d\,x)]+b\,\text{Cos}[4\,(c+d\,x)]}\right)+$$

$$\left(\mathrm{i}\,\sqrt{2}\,b\,\text{Cos}[c+d\,x]^2\left(\text{EllipticF}\left[\mathrm{i}\,\text{ArcSinh}\left[\sqrt{1-\frac{\mathrm{i}\,\sqrt{b}}{\sqrt{a}}}\,\text{Tan}[c+d\,x]\right],\,\frac{\sqrt{a}+\mathrm{i}\,\sqrt{b}}{\sqrt{a}-\mathrm{i}\,\sqrt{b}}\right]-\right.\right.$$

$$2\,\text{EllipticPi}\left[\frac{\sqrt{a}}{\sqrt{a}-i\sqrt{b}},\ i\,\text{ArcSinh}\left[\sqrt{1-\frac{i\sqrt{b}}{\sqrt{a}}}\ \text{Tan}[c+d\,x]\right],\ \frac{\sqrt{a}+i\sqrt{b}}{\sqrt{a}-i\sqrt{b}}\right]\right)\sqrt{1+\left(1-\frac{i\sqrt{b}}{\sqrt{a}}\right)\text{Tan}[c+d\,x]^2}$$

$$\sqrt{1+\left(1+\frac{i\sqrt{b}}{\sqrt{a}}\right)\text{Tan}[c+d\,x]^2}\Bigg)\Bigg/\left(a\sqrt{1-\frac{i\sqrt{b}}{\sqrt{a}}}\ d\sqrt{8\,a+3\,b-4\,b\,\text{Cos}[2\,(c+d\,x)]+b\,\text{Cos}[4\,(c+d\,x)]}\right)-$$

$$\frac{1}{4\,a\sqrt{1-\frac{i\sqrt{b}}{\sqrt{a}}}\ d\,\left(1+\text{Tan}[c+d\,x]^2\right)^2\sqrt{\frac{b\,\text{Tan}[c+d\,x]^4+a\,\left(1+\text{Tan}[c+d\,x]^2\right)^2}{\left(1+\text{Tan}[c+d\,x]^2\right)^2}}}$$

$$\Bigg(4\,a\sqrt{1-\frac{i\sqrt{b}}{\sqrt{a}}}\ \text{Tan}[c+d\,x]+8\,a\sqrt{1-\frac{i\sqrt{b}}{\sqrt{a}}}\ \text{Tan}[c+d\,x]^3+4\,a\sqrt{1-\frac{i\sqrt{b}}{\sqrt{a}}}\ \text{Tan}[c+d\,x]^5+4\sqrt{1-\frac{i\sqrt{b}}{\sqrt{a}}}\ b\,\text{Tan}[c+d\,x]^5-$$

$$4\,i\,b\,\text{EllipticPi}\left[\frac{\sqrt{a}}{\sqrt{a}-i\sqrt{b}},\ i\,\text{ArcSinh}\left[\sqrt{1-\frac{i\sqrt{b}}{\sqrt{a}}}\ \text{Tan}[c+d\,x]\right],\ \frac{\sqrt{a}+i\sqrt{b}}{\sqrt{a}-i\sqrt{b}}\right]\sqrt{1+\left(1-\frac{i\sqrt{b}}{\sqrt{a}}\right)\text{Tan}[c+d\,x]^2}$$

$$\sqrt{1+\left(1+\frac{i\sqrt{b}}{\sqrt{a}}\right)\text{Tan}[c+d\,x]^2}\ -4\,i\,b\,\text{EllipticPi}\left[\frac{\sqrt{a}}{\sqrt{a}-i\sqrt{b}},\ i\,\text{ArcSinh}\left[\sqrt{1-\frac{i\sqrt{b}}{\sqrt{a}}}\ \text{Tan}[c+d\,x]\right],\ \frac{\sqrt{a}+i\sqrt{b}}{\sqrt{a}-i\sqrt{b}}\right]$$

$$\text{Tan}[c+d\,x]^2\sqrt{1+\left(1-\frac{i\sqrt{b}}{\sqrt{a}}\right)\text{Tan}[c+d\,x]^2}\ \sqrt{1+\left(1+\frac{i\sqrt{b}}{\sqrt{a}}\right)\text{Tan}[c+d\,x]^2}\ +$$

$$4\sqrt{a}\,\left(i\sqrt{a}+\sqrt{b}\right)\text{EllipticE}\left[i\,\text{ArcSinh}\left[\sqrt{1-\frac{i\sqrt{b}}{\sqrt{a}}}\ \text{Tan}[c+d\,x]\right],\ \frac{\sqrt{a}+i\sqrt{b}}{\sqrt{a}-i\sqrt{b}}\right]\left(1+\text{Tan}[c+d\,x]^2\right)\sqrt{1+\left(1-\frac{i\sqrt{b}}{\sqrt{a}}\right)\text{Tan}[c+d\,x]^2}$$

$$\sqrt{1+\left(1+\frac{i\sqrt{b}}{\sqrt{a}}\right)\text{Tan}[c+d\,x]^2}\ -\left(4\sqrt{a}-3\,i\sqrt{b}\right)\sqrt{b}\ \text{EllipticF}\left[i\,\text{ArcSinh}\left[\sqrt{1-\frac{i\sqrt{b}}{\sqrt{a}}}\ \text{Tan}[c+d\,x]\right],\ \frac{\sqrt{a}+i\sqrt{b}}{\sqrt{a}-i\sqrt{b}}\right]$$

$$\left(1+\text{Tan}[c+d\,x]^2\right)\sqrt{1+\left(1-\frac{i\sqrt{b}}{\sqrt{a}}\right)\text{Tan}[c+d\,x]^2}\ \sqrt{1+\left(1+\frac{i\sqrt{b}}{\sqrt{a}}\right)\text{Tan}[c+d\,x]^2}\Bigg)$$

- **Problem 249: Result is not expressed in closed-form.**

$$\int \frac{1}{a + b \sin[x]^5} \, dx$$

Optimal (type 3, 384 leaves, 17 steps):

$$\frac{2 \text{ArcTan}\left[\frac{b^{1/5}+a^{1/5}\text{Tan}\left[\frac{x}{2}\right]}{\sqrt{a^{2/5}-b^{2/5}}}\right]}{5 a^{4/5}\sqrt{a^{2/5}-b^{2/5}}} + \frac{2 \text{ArcTan}\left[\frac{(-1)^{2/5} b^{1/5}+a^{1/5}\text{Tan}\left[\frac{x}{2}\right]}{\sqrt{a^{2/5}-(-1)^{4/5} b^{2/5}}}\right]}{5 a^{4/5}\sqrt{a^{2/5}-(-1)^{4/5} b^{2/5}}} + \frac{2 \text{ArcTan}\left[\frac{(-1)^{4/5} b^{1/5}+a^{1/5}\text{Tan}\left[\frac{x}{2}\right]}{\sqrt{a^{2/5}+(-1)^{3/5} b^{2/5}}}\right]}{5 a^{4/5}\sqrt{a^{2/5}+(-1)^{3/5} b^{2/5}}} - \frac{2 \text{ArcTan}\left[\frac{(-1)^{3/5}\left(b^{1/5}+(-1)^{2/5} a^{1/5}\text{Tan}\left[\frac{x}{2}\right]\right)}{\sqrt{a^{2/5}+(-1)^{1/5} b^{2/5}}}\right]}{5 a^{4/5}\sqrt{a^{2/5}+(-1)^{1/5} b^{2/5}}} - \frac{2 \text{ArcTan}\left[\frac{(-1)^{1/5}\left(b^{1/5}+(-1)^{4/5} a^{1/5}\text{Tan}\left[\frac{x}{2}\right]\right)}{\sqrt{a^{2/5}-(-1)^{2/5} b^{2/5}}}\right]}{5 a^{4/5}\sqrt{a^{2/5}-(-1)^{2/5} b^{2/5}}}$$

Result (type 7, 149 leaves):

$$\frac{8}{5} i \,\text{RootSum}\left[i b - 5 i b \#1^2 + 10 i b \#1^4 + 32 a \#1^5 - 10 i b \#1^6 + 5 i b \#1^8 - i b \#1^{10} \&, \frac{2 \text{ArcTan}\left[\frac{\text{Sin}[x]}{\text{Cos}[x]-\#1}\right] \#1^3 - i \text{Log}\left[1 - 2 \text{Cos}[x] \#1 + \#1^2\right] \#1^3}{b - 4 b \#1^2 + 16 i a \#1^3 + 6 b \#1^4 - 4 b \#1^6 + b \#1^8} \&\right]$$

- **Problem 250: Result is not expressed in closed-form.**

$$\int \frac{1}{a + b \sin[x]^6} \, dx$$

Optimal (type 3, 171 leaves, 7 steps):

$$\frac{\text{ArcTan}\left[\frac{\sqrt{a^{1/3}+b^{1/3}}\,\text{Tan}[x]}{a^{1/6}}\right]}{3 a^{5/6}\sqrt{a^{1/3}+b^{1/3}}} + \frac{\text{ArcTan}\left[\frac{\sqrt{a^{1/3}-(-1)^{1/3} b^{1/3}}\,\text{Tan}[x]}{a^{1/6}}\right]}{3 a^{5/6}\sqrt{a^{1/3}-(-1)^{1/3} b^{1/3}}} + \frac{\text{ArcTan}\left[\frac{\sqrt{a^{1/3}+(-1)^{2/3} b^{1/3}}\,\text{Tan}[x]}{a^{1/6}}\right]}{3 a^{5/6}\sqrt{a^{1/3}+(-1)^{2/3} b^{1/3}}}$$

Result (type 7, 148 leaves):

$$-\frac{8}{3} \text{RootSum}\left[b - 6 b \#1 + 15 b \#1^2 - 64 a \#1^3 - 20 b \#1^3 + 15 b \#1^4 - 6 b \#1^5 + b \#1^6 \&, \frac{2 \text{ArcTan}\left[\frac{\text{Sin}[2 x]}{\text{Cos}[2 x]-\#1}\right] \#1^2 - i \text{Log}\left[1 - 2 \text{Cos}[2 x] \#1 + \#1^2\right] \#1^2}{-b + 5 b \#1 - 32 a \#1^2 - 10 b \#1^2 + 10 b \#1^3 - 5 b \#1^4 + b \#1^5} \&\right]$$

- **Problem 251: Result is not expressed in closed-form.**

$$\int \frac{1}{a + b \sin[x]^8} \, dx$$

Optimal (type 3, 245 leaves, 9 steps):

$$-\frac{\text{ArcTan}\left[\frac{\sqrt{(-a)^{1/4}-b^{1/4}}\,\text{Tan}[x]}{(-a)^{1/8}}\right]}{4 (-a)^{7/8}\sqrt{(-a)^{1/4}-b^{1/4}}} - \frac{\text{ArcTan}\left[\frac{\sqrt{(-a)^{1/4}-i b^{1/4}}\,\text{Tan}[x]}{(-a)^{1/8}}\right]}{4 (-a)^{7/8}\sqrt{(-a)^{1/4}-i b^{1/4}}} - \frac{\text{ArcTan}\left[\frac{\sqrt{(-a)^{1/4}+i b^{1/4}}\,\text{Tan}[x]}{(-a)^{1/8}}\right]}{4 (-a)^{7/8}\sqrt{(-a)^{1/4}+i b^{1/4}}} - \frac{\text{ArcTan}\left[\frac{\sqrt{(-a)^{1/4}+b^{1/4}}\,\text{Tan}[x]}{(-a)^{1/8}}\right]}{4 (-a)^{7/8}\sqrt{(-a)^{1/4}+b^{1/4}}}$$

Result (type 7, 174 leaves):

$$8\,\text{RootSum}\Big[b-8\,b\,\#1+28\,b\,\#1^2-56\,b\,\#1^3+256\,a\,\#1^4+70\,b\,\#1^4-56\,b\,\#1^5+28\,b\,\#1^6-8\,b\,\#1^7+b\,\#1^8\,\&,\ \frac{2\,\text{ArcTan}\Big[\frac{\text{Sin}[2\,x]}{\text{Cos}[2\,x]-\#1}\Big]\,\#1^3-\mathrm{i}\,\text{Log}\big[1-2\,\text{Cos}[2\,x]\,\#1+\#1^2\big]\,\#1^3}{-b+7\,b\,\#1-21\,b\,\#1^2+128\,a\,\#1^3+35\,b\,\#1^3-35\,b\,\#1^4+21\,b\,\#1^5-7\,b\,\#1^6+b\,\#1^7}\,\&\Big]$$

- **Problem 252: Result is not expressed in closed-form.**

$$\int\frac{1}{a-b\,\text{Sin}[x]^5}\,dx$$

Optimal (type 3, 379 leaves, 17 steps):

$$-\frac{2\,\text{ArcTan}\Big[\frac{b^{1/5}-a^{1/5}\,\text{Tan}[\frac{x}{2}]}{\sqrt{a^{2/5}-b^{2/5}}}\Big]}{5\,a^{4/5}\,\sqrt{a^{2/5}-b^{2/5}}}-\frac{2\,\text{ArcTan}\Big[\frac{(-1)^{2/5}\,b^{1/5}-a^{1/5}\,\text{Tan}[\frac{x}{2}]}{\sqrt{a^{2/5}-(-1)^{4/5}\,b^{2/5}}}\Big]}{5\,a^{4/5}\,\sqrt{a^{2/5}-(-1)^{4/5}\,b^{2/5}}}-$$

$$\frac{2\,\text{ArcTan}\Big[\frac{(-1)^{4/5}\,b^{1/5}-a^{1/5}\,\text{Tan}[\frac{x}{2}]}{\sqrt{a^{2/5}+(-1)^{3/5}\,b^{2/5}}}\Big]}{5\,a^{4/5}\,\sqrt{a^{2/5}+(-1)^{3/5}\,b^{2/5}}}+\frac{2\,\text{ArcTan}\Big[\frac{(-1)^{1/5}\,b^{1/5}+a^{1/5}\,\text{Tan}[\frac{x}{2}]}{\sqrt{a^{2/5}-(-1)^{2/5}\,b^{2/5}}}\Big]}{5\,a^{4/5}\,\sqrt{a^{2/5}-(-1)^{2/5}\,b^{2/5}}}+\frac{2\,\text{ArcTan}\Big[\frac{(-1)^{3/5}\,b^{1/5}+a^{1/5}\,\text{Tan}[\frac{x}{2}]}{\sqrt{a^{2/5}+(-1)^{1/5}\,b^{2/5}}}\Big]}{5\,a^{4/5}\,\sqrt{a^{2/5}+(-1)^{1/5}\,b^{2/5}}}$$

Result (type 7, 149 leaves):

$$-\frac{8}{5}\,\mathrm{i}\,\text{RootSum}\Big[-\mathrm{i}\,b+5\,\mathrm{i}\,b\,\#1^2-10\,\mathrm{i}\,b\,\#1^4+32\,a\,\#1^5+10\,\mathrm{i}\,b\,\#1^6-5\,\mathrm{i}\,b\,\#1^8+\mathrm{i}\,b\,\#1^{10}\,\&,\ \frac{2\,\text{ArcTan}\Big[\frac{\text{Sin}[x]}{\text{Cos}[x]-\#1}\Big]\,\#1^3-\mathrm{i}\,\text{Log}\big[1-2\,\text{Cos}[x]\,\#1+\#1^2\big]\,\#1^3}{b-4\,b\,\#1^2-16\,\mathrm{i}\,a\,\#1^3+6\,b\,\#1^4-4\,b\,\#1^6+b\,\#1^8}\,\&\Big]$$

- **Problem 253: Result is not expressed in closed-form.**

$$\int\frac{1}{a-b\,\text{Sin}[x]^6}\,dx$$

Optimal (type 3, 175 leaves, 7 steps):

$$\frac{\text{ArcTan}\Big[\frac{\sqrt{a^{1/3}-b^{1/3}}\,\text{Tan}[x]}{a^{1/6}}\Big]}{3\,a^{5/6}\,\sqrt{a^{1/3}-b^{1/3}}}+\frac{\text{ArcTan}\Big[\frac{\sqrt{a^{1/3}+(-1)^{1/3}\,b^{1/3}}\,\text{Tan}[x]}{a^{1/6}}\Big]}{3\,a^{5/6}\,\sqrt{a^{1/3}+(-1)^{1/3}\,b^{1/3}}}+\frac{\text{ArcTan}\Big[\frac{\sqrt{a^{1/3}-(-1)^{2/3}\,b^{1/3}}\,\text{Tan}[x]}{a^{1/6}}\Big]}{3\,a^{5/6}\,\sqrt{a^{1/3}-(-1)^{2/3}\,b^{1/3}}}$$

Result (type 7, 148 leaves):

$$\frac{8}{3}\,\text{RootSum}\Big[b-6\,b\,\#1+15\,b\,\#1^2+64\,a\,\#1^3-20\,b\,\#1^3+15\,b\,\#1^4-6\,b\,\#1^5+b\,\#1^6\,\&,\ \frac{2\,\text{ArcTan}\Big[\frac{\text{Sin}[2\,x]}{\text{Cos}[2\,x]-\#1}\Big]\,\#1^2-\mathrm{i}\,\text{Log}\big[1-2\,\text{Cos}[2\,x]\,\#1+\#1^2\big]\,\#1^2}{-b+5\,b\,\#1+32\,a\,\#1^2-10\,b\,\#1^2+10\,b\,\#1^3-5\,b\,\#1^4+b\,\#1^5}\,\&\Big]$$

- **Problem 254: Result is not expressed in closed-form.**

$$\int\frac{1}{a-b\,\text{Sin}[x]^8}\,dx$$

Optimal (type 3, 213 leaves, 9 steps):

$$\frac{\text{ArcTan}\left[\frac{\sqrt{a^{1/4}-b^{1/4}}\ \text{Tan}[x]}{a^{1/8}}\right]}{4\ a^{7/8}\sqrt{a^{1/4}-b^{1/4}}}+\frac{\text{ArcTan}\left[\frac{\sqrt{a^{1/4}-i\ b^{1/4}}\ \text{Tan}[x]}{a^{1/8}}\right]}{4\ a^{7/8}\sqrt{a^{1/4}-i\ b^{1/4}}}+\frac{\text{ArcTan}\left[\frac{\sqrt{a^{1/4}+i\ b^{1/4}}\ \text{Tan}[x]}{a^{1/8}}\right]}{4\ a^{7/8}\sqrt{a^{1/4}+i\ b^{1/4}}}+\frac{\text{ArcTan}\left[\frac{\sqrt{a^{1/4}+b^{1/4}}\ \text{Tan}[x]}{a^{1/8}}\right]}{4\ a^{7/8}\sqrt{a^{1/4}+b^{1/4}}}$$

Result (type 7, 174 leaves):

$$-8\ \text{RootSum}\Big[b-8\ b\ \#1+28\ b\ \#1^2-56\ b\ \#1^3-256\ a\ \#1^4+70\ b\ \#1^4-56\ b\ \#1^5+28\ b\ \#1^6-8\ b\ \#1^7+b\ \#1^8\ \&,$$
$$\frac{2\ \text{ArcTan}\left[\frac{\text{Sin}[2\ x]}{\text{Cos}[2\ x]-\#1}\right]\#1^3-i\ \text{Log}\left[1-2\ \text{Cos}[2\ x]\ \#1+\#1^2\right]\#1^3}{-b+7\ b\ \#1-21\ b\ \#1^2-128\ a\ \#1^3+35\ b\ \#1^3-35\ b\ \#1^4+21\ b\ \#1^5-7\ b\ \#1^6+b\ \#1^7}\ \&\Big]$$

- **Problem 255: Result is not expressed in closed-form.**

$$\int \frac{1}{1+\text{Sin}[x]^5}\, dx$$

Optimal (type 3, 195 leaves, 15 steps):

$$\frac{2\ \text{ArcTan}\left[\frac{(-1)^{2/5}+\text{Tan}\left[\frac{x}{2}\right]}{\sqrt{1-(-1)^{4/5}}}\right]}{5\sqrt{1-(-1)^{4/5}}}+\frac{2\ \text{ArcTan}\left[\frac{(-1)^{4/5}+\text{Tan}\left[\frac{x}{2}\right]}{\sqrt{1+(-1)^{3/5}}}\right]}{5\sqrt{1+(-1)^{3/5}}}-\frac{2\ \text{ArcTan}\left[\frac{(-1)^{3/5}\left(1+(-1)^{2/5}\ \text{Tan}\left[\frac{x}{2}\right]\right)}{\sqrt{1+(-1)^{1/5}}}\right]}{5\sqrt{1+(-1)^{1/5}}}-\frac{2\ \text{ArcTan}\left[\frac{(-1)^{1/5}\left(1+(-1)^{4/5}\ \text{Tan}\left[\frac{x}{2}\right]\right)}{\sqrt{1-(-1)^{2/5}}}\right]}{5\sqrt{1-(-1)^{2/5}}}-\frac{\text{Cos}[x]}{5\ (1+\text{Sin}[x])}$$

Result (type 7, 411 leaves):

$$-\frac{1}{10}\ i\ \text{RootSum}\Big[1+2\ i\ \#1-8\ \#1^2-14\ i\ \#1^3+30\ \#1^4+14\ i\ \#1^5-8\ \#1^6-2\ i\ \#1^7+\#1^8\ \&,$$
$$\frac{1}{i-8\ \#1-21\ i\ \#1^2+60\ \#1^3+35\ i\ \#1^4-24\ \#1^5-7\ i\ \#1^6+4\ \#1^7}\left(-2\ \text{ArcTan}\left[\frac{\text{Sin}[x]}{\text{Cos}[x]-\#1}\right]+i\ \text{Log}\left[1-2\ \text{Cos}[x]\ \#1+\#1^2\right]-8\ i\ \text{ArcTan}\left[\frac{\text{Sin}[x]}{\text{Cos}[x]-\#1}\right]\right.$$
$$\#1-4\ \text{Log}\left[1-2\ \text{Cos}[x]\ \#1+\#1^2\right]\#1+30\ \text{ArcTan}\left[\frac{\text{Sin}[x]}{\text{Cos}[x]-\#1}\right]\#1^2-15\ i\ \text{Log}\left[1-2\ \text{Cos}[x]\ \#1+\#1^2\right]\#1^2+80\ i\ \text{ArcTan}\left[\frac{\text{Sin}[x]}{\text{Cos}[x]-\#1}\right]\#1^3+$$
$$40\ \text{Log}\left[1-2\ \text{Cos}[x]\ \#1+\#1^2\right]\#1^3-30\ \text{ArcTan}\left[\frac{\text{Sin}[x]}{\text{Cos}[x]-\#1}\right]\#1^4+15\ i\ \text{Log}\left[1-2\ \text{Cos}[x]\ \#1+\#1^2\right]\#1^4-8\ i\ \text{ArcTan}\left[\frac{\text{Sin}[x]}{\text{Cos}[x]-\#1}\right]\#1^5-$$
$$\left.4\ \text{Log}\left[1-2\ \text{Cos}[x]\ \#1+\#1^2\right]\#1^5+2\ \text{ArcTan}\left[\frac{\text{Sin}[x]}{\text{Cos}[x]-\#1}\right]\#1^6-i\ \text{Log}\left[1-2\ \text{Cos}[x]\ \#1+\#1^2\right]\#1^6\right)\&\Big]+\frac{2\ \text{Sin}\left[\frac{x}{2}\right]}{5\left(\text{Cos}\left[\frac{x}{2}\right]+\text{Sin}\left[\frac{x}{2}\right]\right)}$$

- **Problem 257: Result is not expressed in closed-form.**

$$\int \frac{1}{1+\text{Sin}[x]^8}\, dx$$

Optimal (type 3, 218 leaves, 9 steps):

$$\frac{1}{8}\left(\sqrt{1+\sqrt{4-2\sqrt{2}}}+\sqrt{2+2\times 2^{1/4}+2\sqrt{1+\sqrt{2}}+2\sqrt{2+\sqrt{2}}}+\sqrt{1+\sqrt{4+2\sqrt{2}}}\right)(x-\text{ArcTan}[\text{Tan}[x]])+$$
$$\frac{\text{ArcTan}\left[\sqrt{1-(-1)^{1/4}}\,\text{Tan}[x]\right]}{4\sqrt{1-(-1)^{1/4}}}+\frac{\text{ArcTan}\left[\sqrt{1+(-1)^{1/4}}\,\text{Tan}[x]\right]}{4\sqrt{1+(-1)^{1/4}}}+\frac{\text{ArcTan}\left[\sqrt{1-(-1)^{3/4}}\,\text{Tan}[x]\right]}{4\sqrt{1-(-1)^{3/4}}}+\frac{\text{ArcTan}\left[\sqrt{1+(-1)^{3/4}}\,\text{Tan}[x]\right]}{4\sqrt{1+(-1)^{3/4}}}$$

Result (type 7, 141 leaves) :

$$8\,\text{RootSum}\left[1-8\,\#1+28\,\#1^2-56\,\#1^3+326\,\#1^4-56\,\#1^5+28\,\#1^6-8\,\#1^7+\#1^8\,\&,\ \frac{2\,\text{ArcTan}\left[\frac{\text{Sin}[2x]}{\text{Cos}[2x]-\#1}\right]\#1^3-i\,\text{Log}\left[1-2\,\text{Cos}[2x]\,\#1+\#1^2\right]\#1^3}{-1+7\,\#1-21\,\#1^2+163\,\#1^3-35\,\#1^4+21\,\#1^5-7\,\#1^6+\#1^7}\,\&\right]$$

Problem 258: Result is not expressed in closed-form.

$$\int\frac{1}{1-\text{Sin}[x]^5}\,dx$$

Optimal (type 3, 187 leaves, 15 steps) :

$$-\frac{2\,\text{ArcTan}\left[\frac{(-1)^{2/5}-\text{Tan}\left[\frac{x}{2}\right]}{\sqrt{1-(-1)^{4/5}}}\right]}{5\sqrt{1-(-1)^{4/5}}}-\frac{2\,\text{ArcTan}\left[\frac{(-1)^{4/5}-\text{Tan}\left[\frac{x}{2}\right]}{\sqrt{1+(-1)^{3/5}}}\right]}{5\sqrt{1+(-1)^{3/5}}}+\frac{2\,\text{ArcTan}\left[\frac{(-1)^{1/5}+\text{Tan}\left[\frac{x}{2}\right]}{\sqrt{1-(-1)^{2/5}}}\right]}{5\sqrt{1-(-1)^{2/5}}}+\frac{2\,\text{ArcTan}\left[\frac{(-1)^{3/5}+\text{Tan}\left[\frac{x}{2}\right]}{\sqrt{1+(-1)^{1/5}}}\right]}{5\sqrt{1+(-1)^{1/5}}}+\frac{\text{Cos}[x]}{5\,(1-\text{Sin}[x])}$$

Result (type 7, 413 leaves) :

$$\frac{1}{10}\,i\,\text{RootSum}\Big[1-2\,i\,\#1-8\,\#1^2+14\,i\,\#1^3+30\,\#1^4-14\,i\,\#1^5-8\,\#1^6+2\,i\,\#1^7+\#1^8\,\&,$$
$$\frac{1}{-i-8\,\#1+21\,i\,\#1^2+60\,\#1^3-35\,i\,\#1^4-24\,\#1^5+7\,i\,\#1^6+4\,\#1^7}\Big(-2\,\text{ArcTan}\left[\frac{\text{Sin}[x]}{\text{Cos}[x]-\#1}\right]+i\,\text{Log}\left[1-2\,\text{Cos}[x]\,\#1+\#1^2\right]+8\,i\,\text{ArcTan}\left[\frac{\text{Sin}[x]}{\text{Cos}[x]-\#1}\right]$$
$$\#1+4\,\text{Log}\left[1-2\,\text{Cos}[x]\,\#1+\#1^2\right]\#1+30\,\text{ArcTan}\left[\frac{\text{Sin}[x]}{\text{Cos}[x]-\#1}\right]\#1^2-15\,i\,\text{Log}\left[1-2\,\text{Cos}[x]\,\#1+\#1^2\right]\#1^2-80\,i\,\text{ArcTan}\left[\frac{\text{Sin}[x]}{\text{Cos}[x]-\#1}\right]\#1^3-$$
$$40\,\text{Log}\left[1-2\,\text{Cos}[x]\,\#1+\#1^2\right]\#1^3-30\,\text{ArcTan}\left[\frac{\text{Sin}[x]}{\text{Cos}[x]-\#1}\right]\#1^4+15\,i\,\text{Log}\left[1-2\,\text{Cos}[x]\,\#1+\#1^2\right]\#1^4+8\,i\,\text{ArcTan}\left[\frac{\text{Sin}[x]}{\text{Cos}[x]-\#1}\right]\#1^5+$$
$$4\,\text{Log}\left[1-2\,\text{Cos}[x]\,\#1+\#1^2\right]\#1^5+2\,\text{ArcTan}\left[\frac{\text{Sin}[x]}{\text{Cos}[x]-\#1}\right]\#1^6-i\,\text{Log}\left[1-2\,\text{Cos}[x]\,\#1+\#1^2\right]\#1^6\Big)\,\&\Big]+\frac{2\,\text{Sin}\left[\frac{x}{2}\right]}{5\left(\text{Cos}\left[\frac{x}{2}\right]-\text{Sin}\left[\frac{x}{2}\right]\right)}$$

Problem 265: Result more than twice size of optimal antiderivative.

$$\int\frac{\text{Cos}[x]}{a-a\,\text{Sin}[x]^2}\,dx$$

Optimal (type 3, 7 leaves, 2 steps) :

$$\frac{\text{ArcTanh}[\text{Sin}[x]]}{a}$$

Result (type 3, 37 leaves) :

$$\frac{-\text{Log}\left[\text{Cos}\left[\frac{x}{2}\right]-\text{Sin}\left[\frac{x}{2}\right]\right]+\text{Log}\left[\text{Cos}\left[\frac{x}{2}\right]+\text{Sin}\left[\frac{x}{2}\right]\right]}{a}$$

Problem 270: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Sec}[x]}{a-a\,\text{Sin}[x]^2}\,dx$$

Optimal (type 3, 22 leaves, 3 steps) :

$$\frac{\text{ArcTanh}[\text{Sin}[x]]}{2\,a}+\frac{\text{Sec}[x]\,\text{Tan}[x]}{2\,a}$$

Result (type 3, 45 leaves) :

$$\frac{-\text{Log}\left[\text{Cos}\left[\frac{x}{2}\right]-\text{Sin}\left[\frac{x}{2}\right]\right]+\text{Log}\left[\text{Cos}\left[\frac{x}{2}\right]+\text{Sin}\left[\frac{x}{2}\right]\right]+\text{Sec}[x]\,\text{Tan}[x]}{2\,a}$$

Problem 276: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Cos}[x]^3}{\left(a-a\,\text{Sin}[x]^2\right)^2}\,dx$$

Optimal (type 3, 7 leaves, 2 steps) :

$$\frac{\text{ArcTanh}[\text{Sin}[x]]}{a^2}$$

Result (type 3, 37 leaves) :

$$\frac{-\text{Log}\left[\text{Cos}\left[\frac{x}{2}\right]-\text{Sin}\left[\frac{x}{2}\right]\right]+\text{Log}\left[\text{Cos}\left[\frac{x}{2}\right]+\text{Sin}\left[\frac{x}{2}\right]\right]}{a^2}$$

Problem 277: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Cos}[x]}{\left(a-a\,\text{Sin}[x]^2\right)^2}\,dx$$

Optimal (type 3, 22 leaves, 3 steps) :

$$\frac{\text{ArcTanh}[\text{Sin}[x]]}{2\,a^2}+\frac{\text{Sec}[x]\,\text{Tan}[x]}{2\,a^2}$$

Result (type 3, 45 leaves) :

$$\frac{-\text{Log}\left[\text{Cos}\left[\frac{x}{2}\right]-\text{Sin}\left[\frac{x}{2}\right]\right]+\text{Log}\left[\text{Cos}\left[\frac{x}{2}\right]+\text{Sin}\left[\frac{x}{2}\right]\right]+\text{Sec}[x]\,\text{Tan}[x]}{2\,a^2}$$

- **Problem 291: Result more than twice size of optimal antiderivative.**

$$\int \text{Sec}[e+f\,x]^6\,\left(a+b\,\text{Sin}[e+f\,x]^2\right)\,dx$$

Optimal (type 3, 50 leaves, 3 steps):

$$\frac{a\,\text{Tan}[e+f\,x]}{f}+\frac{(2\,a+b)\,\text{Tan}[e+f\,x]^3}{3\,f}+\frac{(a+b)\,\text{Tan}[e+f\,x]^5}{5\,f}$$

Result (type 3, 117 leaves):

$$\frac{8\,a\,\text{Tan}[e+f\,x]}{15\,f}-\frac{2\,b\,\text{Tan}[e+f\,x]}{15\,f}+\frac{4\,a\,\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]}{15\,f}-\frac{b\,\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]}{15\,f}+\frac{a\,\text{Sec}[e+f\,x]^4\,\text{Tan}[e+f\,x]}{5\,f}+\frac{b\,\text{Sec}[e+f\,x]^4\,\text{Tan}[e+f\,x]}{5\,f}$$

- **Problem 292: Result more than twice size of optimal antiderivative.**

$$\int \text{Sec}[e+f\,x]^8\,\left(a+b\,\text{Sin}[e+f\,x]^2\right)\,dx$$

Optimal (type 3, 72 leaves, 3 steps):

$$\frac{a\,\text{Tan}[e+f\,x]}{f}+\frac{(3\,a+b)\,\text{Tan}[e+f\,x]^3}{3\,f}+\frac{(3\,a+2\,b)\,\text{Tan}[e+f\,x]^5}{5\,f}+\frac{(a+b)\,\text{Tan}[e+f\,x]^7}{7\,f}$$

Result (type 3, 161 leaves):

$$\frac{16\,a\,\text{Tan}[e+f\,x]}{35\,f}-\frac{8\,b\,\text{Tan}[e+f\,x]}{105\,f}+\frac{8\,a\,\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]}{35\,f}-\frac{4\,b\,\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]}{105\,f}+\frac{6\,a\,\text{Sec}[e+f\,x]^4\,\text{Tan}[e+f\,x]}{35\,f}-\frac{b\,\text{Sec}[e+f\,x]^4\,\text{Tan}[e+f\,x]}{35\,f}+\frac{a\,\text{Sec}[e+f\,x]^6\,\text{Tan}[e+f\,x]}{7\,f}+\frac{b\,\text{Sec}[e+f\,x]^6\,\text{Tan}[e+f\,x]}{7\,f}$$

- **Problem 294: Result unnecessarily involves imaginary or complex numbers.**

$$\int \text{Cos}[e+f\,x]^2\,\left(a+b\,\text{Sin}[e+f\,x]^2\right)^2\,dx$$

Optimal (type 3, 116 leaves, 5 steps):

$$\frac{1}{16}\left(8\,a^2+4\,a\,b+b^2\right)\,x+\frac{\left(8\,a^2+4\,a\,b+b^2\right)\,\text{Cos}[e+f\,x]\,\text{Sin}[e+f\,x]}{16\,f}-\frac{b\,(8\,a+3\,b)\,\text{Cos}[e+f\,x]^3\,\text{Sin}[e+f\,x]}{24\,f}-\frac{b\,\text{Cos}[e+f\,x]^5\,\text{Sin}[e+f\,x]\,\left(a+(a+b)\,\text{Tan}[e+f\,x]^2\right)}{6\,f}$$

Result (type 3, 79 leaves):

$$\frac{1}{192\,f}\Big(12\,((2-2\,i)\,a+b)\,((2+2\,i)\,a+b)\,(e+f\,x)+3\,(4\,a-b)\,(4\,a+b)\,\text{Sin}[2\,(e+f\,x)]-3\,b\,(4\,a+b)\,\text{Sin}[4\,(e+f\,x)]+b^2\,\text{Sin}[6\,(e+f\,x)]\Big)$$

Problem 308: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Sec}[x]}{a+b\,\text{Sin}[x]^2}\,dx$$

Optimal (type 3, 40 leaves, 4 steps):

$$\frac{\sqrt{b}\,\text{ArcTan}\left[\frac{\sqrt{b}\,\text{Sin}[x]}{\sqrt{a}}\right]}{\sqrt{a}\,(a+b)}+\frac{\text{ArcTanh}[\text{Sin}[x]]}{a+b}$$

Result (type 3, 96 leaves):

$$\frac{1}{2\,\sqrt{a}\,(a+b)}\left(-\sqrt{b}\,\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Csc}[x]}{\sqrt{b}}\right]+\sqrt{b}\,\text{ArcTan}\left[\frac{\sqrt{b}\,\text{Sin}[x]}{\sqrt{a}}\right]+2\,\sqrt{a}\,\left(-\text{Log}\left[\text{Cos}\left[\frac{x}{2}\right]-\text{Sin}\left[\frac{x}{2}\right]\right]+\text{Log}\left[\text{Cos}\left[\frac{x}{2}\right]+\text{Sin}\left[\frac{x}{2}\right]\right]\right)\right)$$

Problem 310: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Sec}[x]^3}{a+b\,\text{Sin}[x]^2}\,dx$$

Optimal (type 3, 61 leaves, 5 steps):

$$\frac{b^{3/2}\,\text{ArcTan}\left[\frac{\sqrt{b}\,\text{Sin}[x]}{\sqrt{a}}\right]}{\sqrt{a}\,(a+b)^2}+\frac{(a+3\,b)\,\text{ArcTanh}[\text{Sin}[x]]}{2\,(a+b)^2}+\frac{\text{Sec}[x]\,\text{Tan}[x]}{2\,(a+b)}$$

Result (type 3, 147 leaves):

$$\frac{1}{4\,(a+b)^2}\left(-\frac{2\,b^{3/2}\,\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Csc}[x]}{\sqrt{b}}\right]}{\sqrt{a}}+\frac{2\,b^{3/2}\,\text{ArcTan}\left[\frac{\sqrt{b}\,\text{Sin}[x]}{\sqrt{a}}\right]}{\sqrt{a}}-\right.$$
$$\left.2\,(a+3\,b)\,\text{Log}\left[\text{Cos}\left[\frac{x}{2}\right]-\text{Sin}\left[\frac{x}{2}\right]\right]+2\,(a+3\,b)\,\text{Log}\left[\text{Cos}\left[\frac{x}{2}\right]+\text{Sin}\left[\frac{x}{2}\right]\right]+\frac{a+b}{\left(\text{Cos}\left[\frac{x}{2}\right]-\text{Sin}\left[\frac{x}{2}\right]\right)^2}-\frac{a+b}{\left(\text{Cos}\left[\frac{x}{2}\right]+\text{Sin}\left[\frac{x}{2}\right]\right)^2}\right)$$

Problem 312: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Sec}[x]^5}{a+b\,\text{Sin}[x]^2}\,dx$$

Optimal (type 3, 93 leaves, 6 steps):

$$\frac{b^{5/2}\,\text{ArcTan}\left[\frac{\sqrt{b}\,\text{Sin}[x]}{\sqrt{a}}\right]}{\sqrt{a}\,(a+b)^3}+\frac{(3a^2+10ab+15b^2)\,\text{ArcTanh}[\text{Sin}[x]]}{8\,(a+b)^3}+\frac{(3a+7b)\,\text{Sec}[x]\,\text{Tan}[x]}{8\,(a+b)^2}+\frac{\text{Sec}[x]^3\,\text{Tan}[x]}{4\,(a+b)}$$

Result (type 3, 214 leaves) :

$$-\frac{1}{16\,(a+b)^3}\left(\frac{8\,b^{5/2}\,\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Csc}[x]}{\sqrt{b}}\right]}{\sqrt{a}}-\frac{8\,b^{5/2}\,\text{ArcTan}\left[\frac{\sqrt{b}\,\text{Sin}[x]}{\sqrt{a}}\right]}{\sqrt{a}}+2\,(3a^2+10ab+15b^2)\,\text{Log}\left[\text{Cos}\left[\frac{x}{2}\right]-\text{Sin}\left[\frac{x}{2}\right]\right]-\right.$$
$$\left.2\,(3a^2+10ab+15b^2)\,\text{Log}\left[\text{Cos}\left[\frac{x}{2}\right]+\text{Sin}\left[\frac{x}{2}\right]\right]-\frac{(a+b)^2}{\left(\text{Cos}\left[\frac{x}{2}\right]-\text{Sin}\left[\frac{x}{2}\right]\right)^4}+\frac{(a+b)^2}{\left(\text{Cos}\left[\frac{x}{2}\right]+\text{Sin}\left[\frac{x}{2}\right]\right)^4}+\frac{(a+b)\,(3a+7b)}{\left(\text{Cos}\left[\frac{x}{2}\right]+\text{Sin}\left[\frac{x}{2}\right]\right)^2}+\frac{(a+b)\,(3a+7b)}{-1+\text{Sin}[x]}\right)$$

- **Problem 373: Result unnecessarily involves higher level functions.**

$$\int \text{Cos}[e+f\,x]^5\,\left(a+b\,\text{Sin}[e+f\,x]^2\right)^p\,dx$$

Optimal (type 5, 214 leaves, 5 steps) :

$$-\frac{(3a+b\,(7+2p))\,\text{Sin}[e+f\,x]\,\left(a+b\,\text{Sin}[e+f\,x]^2\right)^{1+p}}{b^2\,f\,(3+2p)\,(5+2p)}-$$
$$\frac{\text{Cos}[e+f\,x]^2\,\text{Sin}[e+f\,x]\,\left(a+b\,\text{Sin}[e+f\,x]^2\right)^{1+p}}{b\,f\,(5+2p)}+\frac{1}{b^2\,f\,(3+2p)\,(5+2p)}\left(3a^2+2ab\,(5+2p)+b^2\,(15+16p+4p^2)\right)$$
$$\text{Hypergeometric2F1}\left[\frac{1}{2},-p,\frac{3}{2},-\frac{b\,\text{Sin}[e+f\,x]^2}{a}\right]\,\text{Sin}[e+f\,x]\,\left(a+b\,\text{Sin}[e+f\,x]^2\right)^p\,\left(1+\frac{b\,\text{Sin}[e+f\,x]^2}{a}\right)^{-p}$$

Result (type 6, 191 leaves) :

$$\left(3\,a\,\text{AppellF1}\left[\frac{1}{2},-2,-p,\frac{3}{2},\text{Sin}[e+f\,x]^2,-\frac{b\,\text{Sin}[e+f\,x]^2}{a}\right]\,\text{Cos}[e+f\,x]^4\,\text{Sin}[e+f\,x]\,\left(a+b\,\text{Sin}[e+f\,x]^2\right)^p\right)\Big/$$
$$\left(f\left(3\,a\,\text{AppellF1}\left[\frac{1}{2},-2,-p,\frac{3}{2},\text{Sin}[e+f\,x]^2,-\frac{b\,\text{Sin}[e+f\,x]^2}{a}\right]+2\left(b\,p\,\text{AppellF1}\left[\frac{3}{2},-2,1-p,\frac{5}{2},\text{Sin}[e+f\,x]^2,-\frac{b\,\text{Sin}[e+f\,x]^2}{a}\right]-\right.\right.\right.$$
$$\left.\left.\left.2\,a\,\text{AppellF1}\left[\frac{3}{2},-1,-p,\frac{5}{2},\text{Sin}[e+f\,x]^2,-\frac{b\,\text{Sin}[e+f\,x]^2}{a}\right]\right)\,\text{Sin}[e+f\,x]^2\right)\right)$$

- **Problem 374: Unable to integrate problem.**

$$\int \text{Cos}[e+f\,x]^3\,\left(a+b\,\text{Sin}[e+f\,x]^2\right)^p\,dx$$

Optimal (type 5, 124 leaves, 4 steps) :

$$-\frac{\text{Sin}[e+f x]\,\left(a+b\,\text{Sin}[e+f x]^2\right)^{1+p}}{b\,f\,(3+2\,p)}+\frac{1}{b\,f\,(3+2\,p)}\left(a+b\,(3+2\,p)\right)\,\text{Hypergeometric2F1}\left[\frac{1}{2},-p,\frac{3}{2},-\frac{b\,\text{Sin}[e+f x]^2}{a}\right]\,\text{Sin}[e+f x]\,\left(a+b\,\text{Sin}[e+f x]^2\right)^p\,\left(1+\frac{b\,\text{Sin}[e+f x]^2}{a}\right)^{-p}$$

Result (type 8, 25 leaves) :

$$\int \text{Cos}[e+f x]^3\,\left(a+b\,\text{Sin}[e+f x]^2\right)^p\,dx$$

Problem 376: Unable to integrate problem.

$$\int \text{Sec}[e+f x]\,\left(a+b\,\text{Sin}[e+f x]^2\right)^p\,dx$$

Optimal (type 6, 76 leaves, 3 steps) :

$$\frac{\text{AppellF1}\left[\frac{1}{2},1,-p,\frac{3}{2},\text{Sin}[e+f x]^2,-\frac{b\,\text{Sin}[e+f x]^2}{a}\right]\,\text{Sin}[e+f x]\,\left(a+b\,\text{Sin}[e+f x]^2\right)^p\,\left(1+\frac{b\,\text{Sin}[e+f x]^2}{a}\right)^{-p}}{f}$$

Result (type 8, 23 leaves) :

$$\int \text{Sec}[e+f x]\,\left(a+b\,\text{Sin}[e+f x]^2\right)^p\,dx$$

Problem 377: Unable to integrate problem.

$$\int \text{Sec}[e+f x]^3\,\left(a+b\,\text{Sin}[e+f x]^2\right)^p\,dx$$

Optimal (type 6, 76 leaves, 3 steps) :

$$\frac{\text{AppellF1}\left[\frac{1}{2},2,-p,\frac{3}{2},\text{Sin}[e+f x]^2,-\frac{b\,\text{Sin}[e+f x]^2}{a}\right]\,\text{Sin}[e+f x]\,\left(a+b\,\text{Sin}[e+f x]^2\right)^p\,\left(1+\frac{b\,\text{Sin}[e+f x]^2}{a}\right)^{-p}}{f}$$

Result (type 8, 25 leaves) :

$$\int \text{Sec}[e+f x]^3\,\left(a+b\,\text{Sin}[e+f x]^2\right)^p\,dx$$

Problem 378: Result more than twice size of optimal antiderivative.

$$\int \text{Cos}[e+f x]^4\,\left(a+b\,\text{Sin}[e+f x]^2\right)^p\,dx$$

Optimal (type 6, 90 leaves, 3 steps) :

$$\frac{1}{f}\text{AppellF1}\left[\frac{1}{2},-\frac{3}{2},-p,\frac{3}{2},\text{Sin}[e+f x]^2,-\frac{b\,\text{Sin}[e+f x]^2}{a}\right]\,\sqrt{\text{Cos}[e+f x]^2}\,\left(a+b\,\text{Sin}[e+f x]^2\right)^p\,\left(1+\frac{b\,\text{Sin}[e+f x]^2}{a}\right)^{-p}\,\text{Tan}[e+f x]$$

Result (type 6, 199 leaves) :

$$\left(3\,a\,\text{AppellF1}\left[\frac{1}{2},-\frac{3}{2},-p,\frac{3}{2},\text{Sin}[e+f\,x]^2,-\frac{b\,\text{Sin}[e+f\,x]^2}{a}\right]\text{Cos}[e+f\,x]^3\,\text{Sin}[e+f\,x]\,\left(a+b\,\text{Sin}[e+f\,x]^2\right)^p\right)\Big/\left(f\left(3\,a\,\text{AppellF1}\left[\frac{1}{2},-\frac{3}{2},-p,\frac{3}{2},\text{Sin}[e+f\,x]^2,-\frac{b\,\text{Sin}[e+f\,x]^2}{a}\right]+\left(2\,b\,p\,\text{AppellF1}\left[\frac{3}{2},-\frac{3}{2},1-p,\frac{5}{2},\text{Sin}[e+f\,x]^2,-\frac{b\,\text{Sin}[e+f\,x]^2}{a}\right]-3\,a\,\text{AppellF1}\left[\frac{3}{2},-\frac{1}{2},-p,\frac{5}{2},\text{Sin}[e+f\,x]^2,-\frac{b\,\text{Sin}[e+f\,x]^2}{a}\right]\right)\text{Sin}[e+f\,x]^2\right)\right)$$

- **Problem 379: Result more than twice size of optimal antiderivative.**

$$\int\text{Cos}[e+f\,x]^2\left(a+b\,\text{Sin}[e+f\,x]^2\right)^p\,dx$$

Optimal (type 6, 90 leaves, 3 steps) :

$$\frac{1}{f}\text{AppellF1}\left[\frac{1}{2},-\frac{1}{2},-p,\frac{3}{2},\text{Sin}[e+f\,x]^2,-\frac{b\,\text{Sin}[e+f\,x]^2}{a}\right]\sqrt{\text{Cos}[e+f\,x]^2}\,\left(a+b\,\text{Sin}[e+f\,x]^2\right)^p\left(1+\frac{b\,\text{Sin}[e+f\,x]^2}{a}\right)^{-p}\text{Tan}[e+f\,x]$$

Result (type 6, 195 leaves) :

$$\left(3\,a\,\text{AppellF1}\left[\frac{1}{2},-\frac{1}{2},-p,\frac{3}{2},\text{Sin}[e+f\,x]^2,-\frac{b\,\text{Sin}[e+f\,x]^2}{a}\right]\left(a+b\,\text{Sin}[e+f\,x]^2\right)^p\,\text{Sin}[2\,(e+f\,x)]\right)\Big/\left(2\,f\left(3\,a\,\text{AppellF1}\left[\frac{1}{2},-\frac{1}{2},-p,\frac{3}{2},\text{Sin}[e+f\,x]^2,-\frac{b\,\text{Sin}[e+f\,x]^2}{a}\right]+\left(2\,b\,p\,\text{AppellF1}\left[\frac{3}{2},-\frac{1}{2},1-p,\frac{5}{2},\text{Sin}[e+f\,x]^2,-\frac{b\,\text{Sin}[e+f\,x]^2}{a}\right]-a\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{2},-p,\frac{5}{2},\text{Sin}[e+f\,x]^2,-\frac{b\,\text{Sin}[e+f\,x]^2}{a}\right]\right)\text{Sin}[e+f\,x]^2\right)\right)$$

- **Problem 381: Unable to integrate problem.**

$$\int\text{Sec}[e+f\,x]^2\left(a+b\,\text{Sin}[e+f\,x]^2\right)^p\,dx$$

Optimal (type 6, 90 leaves, 3 steps) :

$$\frac{1}{f}\text{AppellF1}\left[\frac{1}{2},\frac{3}{2},-p,\frac{3}{2},\text{Sin}[e+f\,x]^2,-\frac{b\,\text{Sin}[e+f\,x]^2}{a}\right]\sqrt{\text{Cos}[e+f\,x]^2}\,\left(a+b\,\text{Sin}[e+f\,x]^2\right)^p\left(1+\frac{b\,\text{Sin}[e+f\,x]^2}{a}\right)^{-p}\text{Tan}[e+f\,x]$$

Result (type 8, 25 leaves) :

$$\int\text{Sec}[e+f\,x]^2\left(a+b\,\text{Sin}[e+f\,x]^2\right)^p\,dx$$

- **Problem 382: Unable to integrate problem.**

$$\int\text{Sec}[e+f\,x]^4\left(a+b\,\text{Sin}[e+f\,x]^2\right)^p\,dx$$

Optimal (type 6, 90 leaves, 3 steps) :

$$\frac{1}{f}\text{AppellF1}\left[\frac{1}{2},\frac{5}{2},-p,\frac{3}{2},\text{Sin}[e+f x]^2,-\frac{b\,\text{Sin}[e+f x]^2}{a}\right]\sqrt{\text{Cos}[e+f x]^2}\left(a+b\,\text{Sin}[e+f x]^2\right)^p\left(1+\frac{b\,\text{Sin}[e+f x]^2}{a}\right)^{-p}\text{Tan}[e+f x]$$

Result (type 8, 25 leaves):

$$\int \text{Sec}[e+f x]^4\left(a+b\,\text{Sin}[e+f x]^2\right)^p\,dx$$

- **Problem 383: Result is not expressed in closed-form.**

$$\int\frac{\text{Cos}[c+d x]^5}{a+b\,\text{Sin}[c+d x]^3}\,dx$$

Optimal (type 3, 219 leaves, 11 steps):

$$\frac{\left(a^{4/3}-b^{4/3}\right)\text{ArcTan}\left[\frac{a^{1/3}-2 b^{1/3}\text{Sin}[c+d x]}{\sqrt{3}\,a^{1/3}}\right]}{\sqrt{3}\,a^{2/3}b^{5/3}d}+\frac{\left(a^{4/3}+b^{4/3}\right)\text{Log}\left[a^{1/3}+b^{1/3}\text{Sin}[c+d x]\right]}{3 a^{2/3}b^{5/3}d}-$$
$$\frac{\left(a^{4/3}+b^{4/3}\right)\text{Log}\left[a^{2/3}-a^{1/3}b^{1/3}\text{Sin}[c+d x]+b^{2/3}\text{Sin}[c+d x]^2\right]}{6 a^{2/3}b^{5/3}d}-\frac{2\,\text{Log}\left[a+b\,\text{Sin}[c+d x]^3\right]}{3 b d}+\frac{\text{Sin}[c+d x]^2}{2 b d}$$

Result (type 7, 230 leaves):

$$\frac{1}{12 b d}\Bigg(-3\,\text{Cos}[2(c+d x)]+24\,\text{Log}\left[\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\right]-4\,\text{RootSum}\Big[a+3 a\,\#1^2+8 b\,\#1^3+3 a\,\#1^4+a\,\#1^6\,\&,$$
$$\Big(-b\,\text{Log}\left[-\#1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right]+4 a\,\text{Log}\left[-\#1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right]\#1+8 b\,\text{Log}\left[-\#1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right]\#1^2+2 a\,\text{Log}\left[-\#1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right]$$
$$\#1^3+b\,\text{Log}\left[-\#1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right]\#1^4+2 a\,\text{Log}\left[-\#1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right]\#1^5\Big)\Big/\left(a\,\#1+4 b\,\#1^2+2 a\,\#1^3+a\,\#1^5\right)\,\&\Big]\Bigg)$$

- **Problem 384: Result is not expressed in closed-form.**

$$\int\frac{\text{Cos}[c+d x]^3}{a+b\,\text{Sin}[c+d x]^3}\,dx$$

Optimal (type 3, 167 leaves, 9 steps):

$$-\frac{\text{ArcTan}\left[\frac{a^{1/3}-2 b^{1/3}\text{Sin}[c+d x]}{\sqrt{3}\,a^{1/3}}\right]}{\sqrt{3}\,a^{2/3}b^{1/3}d}+\frac{\text{Log}\left[a^{1/3}+b^{1/3}\text{Sin}[c+d x]\right]}{3 a^{2/3}b^{1/3}d}-\frac{\text{Log}\left[a^{2/3}-a^{1/3}b^{1/3}\text{Sin}[c+d x]+b^{2/3}\text{Sin}[c+d x]^2\right]}{6 a^{2/3}b^{1/3}d}-\frac{\text{Log}\left[a+b\,\text{Sin}[c+d x]^3\right]}{3 b d}$$

Result (type 7, 216 leaves):

$$-\frac{1}{3\,b\,d}\left(-3\,\text{Log}\left[\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]+\text{RootSum}\left[a+3\,a\,\text{\#1}^2+8\,b\,\text{\#1}^3+3\,a\,\text{\#1}^4+a\,\text{\#1}^6\,\&,\right.\right.$$
$$\left(-b\,\text{Log}\left[-\text{\#1}+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right]+a\,\text{Log}\left[-\text{\#1}+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\,\text{\#1}+4\,b\,\text{Log}\left[-\text{\#1}+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\,\text{\#1}^2+2\,a\,\text{Log}\left[-\text{\#1}+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\,\text{\#1}^3+\right.$$
$$\left.\left.\left.b\,\text{Log}\left[-\text{\#1}+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\,\text{\#1}^4+a\,\text{Log}\left[-\text{\#1}+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\,\text{\#1}^5\right)\Big/\left(a\,\text{\#1}+4\,b\,\text{\#1}^2+2\,a\,\text{\#1}^3+a\,\text{\#1}^5\right)\,\&\right]\right)$$

- **Problem 386: Result is not expressed in closed-form.**

$$\int\frac{\text{Sec}[c+d\,x]}{a+b\,\text{Sin}[c+d\,x]^3}\,dx$$

Optimal (type 3, 290 leaves, 11 steps) :

$$-\frac{b^{1/3}\left(a^{4/3}-b^{4/3}\right)\text{ArcTan}\left[\frac{a^{1/3}-2\,b^{1/3}\,\text{Sin}[c+d\,x]}{\sqrt{3}\,a^{1/3}}\right]}{\sqrt{3}\,a^{2/3}\left(a^2-b^2\right)d}-\frac{\text{Log}[1-\text{Sin}[c+d\,x]]}{2\,(a+b)\,d}+\frac{\text{Log}[1+\text{Sin}[c+d\,x]]}{2\,(a-b)\,d}-$$
$$\frac{b^{1/3}\left(a^{4/3}+b^{4/3}\right)\text{Log}\left[a^{1/3}+b^{1/3}\,\text{Sin}[c+d\,x]\right]}{3\,a^{2/3}\left(a^2-b^2\right)d}+\frac{b^{1/3}\left(a^{4/3}+b^{4/3}\right)\text{Log}\left[a^{2/3}-a^{1/3}\,b^{1/3}\,\text{Sin}[c+d\,x]+b^{2/3}\,\text{Sin}[c+d\,x]^2\right]}{6\,a^{2/3}\left(a^2-b^2\right)d}-\frac{b\,\text{Log}\left[a+b\,\text{Sin}[c+d\,x]^3\right]}{3\left(a^2-b^2\right)d}$$

Result (type 7, 288 leaves) :

$$\frac{1}{3\,(a-b)\,(a+b)\,d}$$
$$\left(3\left(b\,\text{Log}\left[\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]+(-a+b)\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]+(a+b)\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\right)-\right.$$
$$b\,\text{RootSum}\left[a+3\,a\,\text{\#1}^2+8\,b\,\text{\#1}^3+3\,a\,\text{\#1}^4+a\,\text{\#1}^6\,\&,\right.$$
$$\left(b\,\text{Log}\left[-\text{\#1}+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right]-a\,\text{Log}\left[-\text{\#1}+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\,\text{\#1}+4\,b\,\text{Log}\left[-\text{\#1}+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\,\text{\#1}^2+4\,a\,\text{Log}\left[-\text{\#1}+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\,\text{\#1}^3-\right.$$
$$\left.\left.\left.b\,\text{Log}\left[-\text{\#1}+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\,\text{\#1}^4+a\,\text{Log}\left[-\text{\#1}+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\,\text{\#1}^5\right)\Big/\left(a\,\text{\#1}+4\,b\,\text{\#1}^2+2\,a\,\text{\#1}^3+a\,\text{\#1}^5\right)\,\&\right]\right)$$

- **Problem 387: Result is not expressed in closed-form.**

$$\int\frac{\text{Sec}[c+d\,x]^3}{a+b\,\text{Sin}[c+d\,x]^3}\,dx$$

Optimal (type 3, 385 leaves, 11 steps) :

$$-\frac{b^{5/3}\left(2a^2-3a^{4/3}b^{2/3}+b^2\right)\text{ArcTan}\left[\frac{a^{1/3}-2b^{1/3}\text{Sin}[c+dx]}{\sqrt{3}\,a^{1/3}}\right]}{\sqrt{3}\,a^{2/3}\left(a^2-b^2\right)^2 d}-\frac{(a+4b)\,\text{Log}[1-\text{Sin}[c+dx]]}{4\,(a+b)^2 d}+\frac{(a-4b)\,\text{Log}[1+\text{Sin}[c+dx]]}{4\,(a-b)^2 d}+$$
$$\frac{b^{5/3}\left(2a^2+3a^{4/3}b^{2/3}+b^2\right)\text{Log}\left[a^{1/3}+b^{1/3}\text{Sin}[c+dx]\right]}{3a^{2/3}\left(a^2-b^2\right)^2 d}-\frac{b^{5/3}\left(2a^2+3a^{4/3}b^{2/3}+b^2\right)\text{Log}\left[a^{2/3}-a^{1/3}b^{1/3}\text{Sin}[c+dx]+b^{2/3}\text{Sin}[c+dx]^2\right]}{6a^{2/3}\left(a^2-b^2\right)^2 d}+$$
$$\frac{b\left(a^2+2b^2\right)\text{Log}\left[a+b\,\text{Sin}[c+dx]^3\right]}{3\left(a^2-b^2\right)^2 d}+\frac{1}{4\,(a+b)\,d\,(1-\text{Sin}[c+dx])}-\frac{1}{4\,(a-b)\,d\,(1+\text{Sin}[c+dx])}$$

Result (type 7, 535 leaves):

$$\frac{1}{12d}\left(-\frac{6\,(a+4b)\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+dx)\right]-\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right]}{(a+b)^2}+\frac{6\,(a-4b)\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+dx)\right]+\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right]}{(a-b)^2}+\right.$$
$$\frac{1}{\left(a^2-b^2\right)^2}4b\left(-3\left(a^2+2b^2\right)\text{Log}\left[\text{Sec}\left[\frac{1}{2}(c+dx)\right]^2\right]+\text{RootSum}\left[a+3a\,\#1^2+8b\,\#1^3+3a\,\#1^4+a\,\#1^6\,\&,\right.\right.$$
$$\frac{1}{a\,\#1+4b\,\#1^2+2a\,\#1^3+a\,\#1^5}\left(2a^2b\,\text{Log}\left[-\#1+\text{Tan}\left[\frac{1}{2}(c+dx)\right]\right]+b^3\,\text{Log}\left[-\#1+\text{Tan}\left[\frac{1}{2}(c+dx)\right]\right]+a^3\,\text{Log}\left[-\#1+\text{Tan}\left[\frac{1}{2}(c+dx)\right]\right]\#1-\right.$$
$$4ab^2\,\text{Log}\left[-\#1+\text{Tan}\left[\frac{1}{2}(c+dx)\right]\right]\#1+4a^2b\,\text{Log}\left[-\#1+\text{Tan}\left[\frac{1}{2}(c+dx)\right]\right]\#1^2+8b^3\,\text{Log}\left[-\#1+\text{Tan}\left[\frac{1}{2}(c+dx)\right]\right]\#1^2+$$
$$2a^3\,\text{Log}\left[-\#1+\text{Tan}\left[\frac{1}{2}(c+dx)\right]\right]\#1^3+10ab^2\,\text{Log}\left[-\#1+\text{Tan}\left[\frac{1}{2}(c+dx)\right]\right]\#1^3-2a^2b\,\text{Log}\left[-\#1+\text{Tan}\left[\frac{1}{2}(c+dx)\right]\right]\#1^4-$$
$$\left.\left.\left.b^3\,\text{Log}\left[-\#1+\text{Tan}\left[\frac{1}{2}(c+dx)\right]\right]\#1^4+a^3\,\text{Log}\left[-\#1+\text{Tan}\left[\frac{1}{2}(c+dx)\right]\right]\#1^5+2ab^2\,\text{Log}\left[-\#1+\text{Tan}\left[\frac{1}{2}(c+dx)\right]\right]\#1^5\right)\&\right]\right)+$$
$$\left.\frac{3}{(a+b)\left(\text{Cos}\left[\frac{1}{2}(c+dx)\right]-\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right)^2}-\frac{3}{(a-b)\left(\text{Cos}\left[\frac{1}{2}(c+dx)\right]+\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right)^2}\right)$$

- **Problem 388: Result is not expressed in closed-form.**

$$\int\frac{\text{Cos}[c+dx]^4}{a+b\,\text{Sin}[c+dx]^3}\,dx$$

Optimal (type 3, 764 leaves, 38 steps):

$$-\frac{2\,(-1)^{2/3}\,a^{2/3}\,\text{ArcTan}\left[\frac{(-1)^{1/3}\,b^{1/3}-a^{1/3}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]}{\sqrt{a^{2/3}-(-1)^{2/3}\,b^{2/3}}}\right]}{3\,\sqrt{a^{2/3}-(-1)^{2/3}\,b^{2/3}}\,b^{4/3}\,d}+\frac{2\,\text{ArcTan}\left[\frac{b^{1/3}+a^{1/3}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]}{\sqrt{a^{2/3}-b^{2/3}}}\right]}{3\,a^{2/3}\,\sqrt{a^{2/3}-b^{2/3}}\,d}+\frac{2\,a^{2/3}\,\text{ArcTan}\left[\frac{b^{1/3}+a^{1/3}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]}{\sqrt{a^{2/3}-b^{2/3}}}\right]}{3\,\sqrt{a^{2/3}-b^{2/3}}\,b^{4/3}\,d}-$$

$$\frac{4\,\text{ArcTan}\left[\frac{b^{1/3}+a^{1/3}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]}{\sqrt{a^{2/3}-b^{2/3}}}\right]}{3\,\sqrt{a^{2/3}-b^{2/3}}\,b^{2/3}\,d}+\frac{2\,\text{ArcTan}\left[\frac{(-1)^{2/3}\,b^{1/3}+a^{1/3}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]}{\sqrt{a^{2/3}+(-1)^{1/3}\,b^{2/3}}}\right]}{3\,a^{2/3}\,\sqrt{a^{2/3}+(-1)^{1/3}\,b^{2/3}}\,d}-\frac{2\,(-1)^{1/3}\,a^{2/3}\,\text{ArcTan}\left[\frac{(-1)^{2/3}\,b^{1/3}+a^{1/3}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]}{\sqrt{a^{2/3}+(-1)^{1/3}\,b^{2/3}}}\right]}{3\,\sqrt{a^{2/3}+(-1)^{1/3}\,b^{2/3}}\,b^{4/3}\,d}-$$

$$\frac{2\,\text{ArcTan}\left[\frac{(-1)^{1/3}\,\left(b^{1/3}+(-1)^{2/3}\,a^{1/3}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right)}{\sqrt{a^{2/3}-(-1)^{2/3}\,b^{2/3}}}\right]}{3\,a^{2/3}\,\sqrt{a^{2/3}-(-1)^{2/3}\,b^{2/3}}\,d}+\frac{4\,\text{ArcTanh}\left[\frac{b^{1/3}-(-1)^{1/3}\,a^{1/3}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]}{\sqrt{-(-1)^{2/3}\,a^{2/3}+b^{2/3}}}\right]}{3\,\sqrt{-(-1)^{2/3}\,a^{2/3}+b^{2/3}}\,b^{2/3}\,d}+\frac{4\,\text{ArcTanh}\left[\frac{b^{1/3}+(-1)^{2/3}\,a^{1/3}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]}{\sqrt{(-1)^{1/3}\,a^{2/3}+b^{2/3}}}\right]}{3\,\sqrt{(-1)^{1/3}\,a^{2/3}+b^{2/3}}\,b^{2/3}\,d}-\frac{\text{Cos}[c+d\,x]}{b\,d}$$

Result (type 7, 300 leaves) :

$$-\frac{1}{3\,b\,d}\Bigg(3\,\text{Cos}[c+d\,x]+i\,\text{RootSum}\Big[-i\,b+3\,i\,b\,\#1^2+8\,a\,\#1^3-3\,i\,b\,\#1^4+i\,b\,\#1^6\,\&,$$
$$\Big(2\,b\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\right]-i\,b\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\right]-2\,i\,a\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\right]\,\#1-$$
$$a\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\right]\,\#1+2\,i\,a\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\right]\,\#1^3+a\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\right]\,\#1^3+$$
$$2\,b\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\right]\,\#1^4-i\,b\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\right]\,\#1^4\Big)\Big/\left(b\,\#1-4\,i\,a\,\#1^2-2\,b\,\#1^3+b\,\#1^5\right)\,\&\Big]\Bigg)$$

- **Problem 389: Result is not expressed in closed-form.**

$$\int\frac{\text{Cos}[c+d\,x]^2}{a+b\,\text{Sin}[c+d\,x]^3}\,dx$$

Optimal (type 3, 484 leaves, 24 steps) :

$$\frac{2\,\text{ArcTan}\left[\frac{b^{1/3}+a^{1/3}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]}{\sqrt{a^{2/3}-b^{2/3}}}\right]}{3\,a^{2/3}\,\sqrt{a^{2/3}-b^{2/3}}\,d}-\frac{2\,\text{ArcTan}\left[\frac{b^{1/3}+a^{1/3}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]}{\sqrt{a^{2/3}-b^{2/3}}}\right]}{3\,\sqrt{a^{2/3}-b^{2/3}}\,b^{2/3}\,d}+\frac{2\,\text{ArcTan}\left[\frac{(-1)^{2/3}\,b^{1/3}+a^{1/3}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]}{\sqrt{a^{2/3}+(-1)^{1/3}\,b^{2/3}}}\right]}{3\,a^{2/3}\,\sqrt{a^{2/3}+(-1)^{1/3}\,b^{2/3}}\,d}-$$

$$\frac{2\,\text{ArcTan}\left[\frac{(-1)^{1/3}\,\left(b^{1/3}+(-1)^{2/3}\,a^{1/3}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right)}{\sqrt{a^{2/3}-(-1)^{2/3}\,b^{2/3}}}\right]}{3\,a^{2/3}\,\sqrt{a^{2/3}-(-1)^{2/3}\,b^{2/3}}\,d}+\frac{2\,\text{ArcTanh}\left[\frac{b^{1/3}-(-1)^{1/3}\,a^{1/3}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]}{\sqrt{-(-1)^{2/3}\,a^{2/3}+b^{2/3}}}\right]}{3\,\sqrt{-(-1)^{2/3}\,a^{2/3}+b^{2/3}}\,b^{2/3}\,d}+\frac{2\,\text{ArcTanh}\left[\frac{b^{1/3}+(-1)^{2/3}\,a^{1/3}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]}{\sqrt{(-1)^{1/3}\,a^{2/3}+b^{2/3}}}\right]}{3\,\sqrt{(-1)^{1/3}\,a^{2/3}+b^{2/3}}\,b^{2/3}\,d}$$

Result (type 7, 231 leaves) :

$$-\frac{1}{6\,d}\,i\,\text{RootSum}\Big[-i\,b+3\,i\,b\,\#1^2+8\,a\,\#1^3-3\,i\,b\,\#1^4+i\,b\,\#1^6\,\&,\ \Big(2\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]-i\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]+4\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]\,\#1^2-2\,i\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]\,\#1^2+2\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]\,\#1^4-i\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]\,\#1^4\Big)\Big/\big(b\,\#1-4\,i\,a\,\#1^2-2\,b\,\#1^3+b\,\#1^5\big)\,\&\Big]$$

- **Problem 390: Result is not expressed in closed-form.**

$$\int \frac{1}{a+b\,\text{Sin}[c+d\,x]^3}\,dx$$

Optimal (type 3, 245 leaves, 11 steps):

$$\frac{2\,\text{ArcTan}\Big[\frac{b^{1/3}+a^{1/3}\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{\sqrt{a^{2/3}-b^{2/3}}}\Big]}{3\,a^{2/3}\,\sqrt{a^{2/3}-b^{2/3}}\,d}+\frac{2\,\text{ArcTan}\Big[\frac{(-1)^{2/3}\,b^{1/3}+a^{1/3}\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{\sqrt{a^{2/3}+(-1)^{1/3}\,b^{2/3}}}\Big]}{3\,a^{2/3}\,\sqrt{a^{2/3}+(-1)^{1/3}\,b^{2/3}}\,d}-\frac{2\,\text{ArcTan}\Big[\frac{(-1)^{1/3}\left(b^{1/3}+(-1)^{2/3}\,a^{1/3}\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)}{\sqrt{a^{2/3}-(-1)^{2/3}\,b^{2/3}}}\Big]}{3\,a^{2/3}\,\sqrt{a^{2/3}-(-1)^{2/3}\,b^{2/3}}\,d}$$

Result (type 7, 126 leaves):

$$-\frac{1}{3\,d}2\,i\,\text{RootSum}\Big[-i\,b+3\,i\,b\,\#1^2+8\,a\,\#1^3-3\,i\,b\,\#1^4+i\,b\,\#1^6\,\&,\ \frac{2\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]\,\#1-i\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]\,\#1}{b-4\,i\,a\,\#1-2\,b\,\#1^2+b\,\#1^4}\,\&\Big]$$

- **Problem 391: Result is not expressed in closed-form.**

$$\int \frac{\text{Sec}[c+d\,x]^2}{a+b\,\text{Sin}[c+d\,x]^3}\,dx$$

Optimal (type 3, 299 leaves, ? steps):

$$\frac{2\,(-1)^{2/3}\,b^{2/3}\,\text{ArcTan}\Big[\frac{(-1)^{1/3}\,b^{1/3}-a^{1/3}\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{\sqrt{a^{2/3}-(-1)^{2/3}\,b^{2/3}}}\Big]}{3\,a^{2/3}\,\left(a^{2/3}-(-1)^{2/3}\,b^{2/3}\right)^{3/2}\,d}-\frac{2\,b^{2/3}\,\text{ArcTan}\Big[\frac{b^{1/3}+a^{1/3}\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{\sqrt{a^{2/3}-b^{2/3}}}\Big]}{3\,a^{2/3}\,\left(a^{2/3}-b^{2/3}\right)^{3/2}\,d}+\frac{2\,(-1)^{1/3}\,b^{2/3}\,\text{ArcTan}\Big[\frac{(-1)^{2/3}\,b^{1/3}+a^{1/3}\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{\sqrt{a^{2/3}+(-1)^{1/3}\,b^{2/3}}}\Big]}{3\,a^{2/3}\,\left(a^{2/3}+(-1)^{1/3}\,b^{2/3}\right)^{3/2}\,d}+\frac{\text{Sec}[c+d\,x]\,(b-a\,\text{Sin}[c+d\,x])}{\left(-a^2+b^2\right)\,d}$$

Result (type 7, 432 leaves):

$$\Big(-6\,b+6\,b\,\text{Cos}[c+d\,x]-$$
$$i\,b\,\text{Cos}[c+d\,x]\,\text{RootSum}\Big[-i\,b+3\,i\,b\,\#1^2+8\,a\,\#1^3-3\,i\,b\,\#1^4+i\,b\,\#1^6\,\&,\ \frac{1}{b\,\#1-4\,i\,a\,\#1^2-2\,b\,\#1^3+b\,\#1^5}\Big(2\,b\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]-$$
$$i\,b\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]+4\,i\,a\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]\,\#1+2\,a\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]\,\#1-$$
$$12\,b\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]\,\#1^2+6\,i\,b\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]\,\#1^2-4\,i\,a\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]\,\#1^3-$$
$$2\,a\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]\,\#1^3+2\,b\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]\,\#1^4-i\,b\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]\,\#1^4\Big)\,\&\Big]+$$
$$6\,a\,\text{Sin}[c+d\,x]\Big)\Big/\Big(6\,(a-b)\,(a+b)\,d\,\Big(\text{Cos}\Big[\frac{1}{2}\,(c+d\,x)\Big]-\text{Sin}\Big[\frac{1}{2}\,(c+d\,x)\Big]\Big)\,\Big(\text{Cos}\Big[\frac{1}{2}\,(c+d\,x)\Big]+\text{Sin}\Big[\frac{1}{2}\,(c+d\,x)\Big]\Big)\Big)$$

- **Problem 392: Result is not expressed in closed-form.**

$$\int\frac{\text{Sec}[c+d\,x]^4}{a+b\,\text{Sin}[c+d\,x]^3}\,dx$$

Optimal (type 3, 1093 leaves, ? steps):

$$-\frac{2\,(-1)^{2/3}\,a^{2/3}\,b^{8/3}\,\text{ArcTan}\Big[\frac{(-1)^{1/3}\,b^{1/3}-a^{1/3}\,\text{Tan}[\frac{1}{2}\,(c+d\,x)]}{\sqrt{a^{2/3}-(-1)^{2/3}\,b^{2/3}}}\Big]}{\sqrt{a^{2/3}-(-1)^{2/3}\,b^{2/3}}\,\left(a^2-b^2\right)^2\,d}-\frac{2\,b^2\,\left(2\,a^2+b^2\right)\,\text{ArcTan}\Big[\frac{(-1)^{1/3}\,b^{1/3}-a^{1/3}\,\text{Tan}[\frac{1}{2}\,(c+d\,x)]}{\sqrt{a^{2/3}-(-1)^{2/3}\,b^{2/3}}}\Big]}{3\,a^{2/3}\,\sqrt{a^{2/3}-(-1)^{2/3}\,b^{2/3}}\,\left(a^2-b^2\right)^2\,d}+\frac{2\,a^{2/3}\,b^{8/3}\,\text{ArcTan}\Big[\frac{b^{1/3}+a^{1/3}\,\text{Tan}[\frac{1}{2}\,(c+d\,x)]}{\sqrt{a^{2/3}-b^{2/3}}}\Big]}{\sqrt{a^{2/3}-b^{2/3}}\,\left(a^2-b^2\right)^2\,d}+$$

$$\frac{2\,b^2\,\left(2\,a^2+b^2\right)\,\text{ArcTan}\Big[\frac{b^{1/3}+a^{1/3}\,\text{Tan}[\frac{1}{2}\,(c+d\,x)]}{\sqrt{a^{2/3}-b^{2/3}}}\Big]}{3\,a^{2/3}\,\sqrt{a^{2/3}-b^{2/3}}\,\left(a^2-b^2\right)^2\,d}+\frac{2\,b^{4/3}\,\left(a^2+2\,b^2\right)\,\text{ArcTan}\Big[\frac{b^{1/3}+a^{1/3}\,\text{Tan}[\frac{1}{2}\,(c+d\,x)]}{\sqrt{a^{2/3}-b^{2/3}}}\Big]}{3\,\sqrt{a^{2/3}-b^{2/3}}\,\left(a^2-b^2\right)^2\,d}-\frac{2\,(-1)^{1/3}\,a^{2/3}\,b^{8/3}\,\text{ArcTan}\Big[\frac{(-1)^{2/3}\,b^{1/3}+a^{1/3}\,\text{Tan}[\frac{1}{2}\,(c+d\,x)]}{\sqrt{a^{2/3}+(-1)^{1/3}\,b^{2/3}}}\Big]}{\sqrt{a^{2/3}+(-1)^{1/3}\,b^{2/3}}\,\left(a^2-b^2\right)^2\,d}+$$

$$\frac{2\,b^2\,\left(2\,a^2+b^2\right)\,\text{ArcTan}\Big[\frac{(-1)^{2/3}\,b^{1/3}+a^{1/3}\,\text{Tan}[\frac{1}{2}\,(c+d\,x)]}{\sqrt{a^{2/3}+(-1)^{1/3}\,b^{2/3}}}\Big]}{3\,a^{2/3}\,\sqrt{a^{2/3}+(-1)^{1/3}\,b^{2/3}}\,\left(a^2-b^2\right)^2\,d}-\frac{2\,b^{4/3}\,\left(a^2+2\,b^2\right)\,\text{ArcTanh}\Big[\frac{b^{1/3}-(-1)^{1/3}\,a^{1/3}\,\text{Tan}[\frac{1}{2}\,(c+d\,x)]}{\sqrt{-(-1)^{2/3}\,a^{2/3}+b^{2/3}}}\Big]}{3\,\sqrt{-(-1)^{2/3}\,a^{2/3}+b^{2/3}}\,\left(a^2-b^2\right)^2\,d}-$$

$$\frac{2\,b^{4/3}\,\left(a^2+2\,b^2\right)\,\text{ArcTanh}\Big[\frac{b^{1/3}+(-1)^{2/3}\,a^{1/3}\,\text{Tan}[\frac{1}{2}\,(c+d\,x)]}{\sqrt{(-1)^{1/3}\,a^{2/3}+b^{2/3}}}\Big]}{3\,\sqrt{(-1)^{1/3}\,a^{2/3}+b^{2/3}}\,\left(a^2-b^2\right)^2\,d}+\frac{\text{Cos}[c+d\,x]}{12\,(a+b)\,d\,(1-\text{Sin}[c+d\,x])^2}+\frac{\text{Cos}[c+d\,x]}{12\,(a+b)\,d\,(1-\text{Sin}[c+d\,x])}+$$

$$\frac{(a+4\,b)\,\text{Cos}[c+d\,x]}{4\,(a+b)^2\,d\,(1-\text{Sin}[c+d\,x])}-\frac{\text{Cos}[c+d\,x]}{12\,(a-b)\,d\,(1+\text{Sin}[c+d\,x])^2}-\frac{(a-4\,b)\,\text{Cos}[c+d\,x]}{4\,(a-b)^2\,d\,(1+\text{Sin}[c+d\,x])}-\frac{\text{Cos}[c+d\,x]}{12\,(a-b)\,d\,(1+\text{Sin}[c+d\,x])}$$

Result (type 7, 679 leaves) :

$$\frac{1}{24\,(a-b)^2\,(a+b)^2\,d}\Bigg(4\,i\,b^2\,\text{RootSum}\Big[-i\,b+3\,i\,b\,\#1^2+8\,a\,\#1^3-3\,i\,b\,\#1^4+i\,b\,\#1^6\,\&,\,\frac{1}{b\,\#1-4\,i\,a\,\#1^2-2\,b\,\#1^3+b\,\#1^5}\Big(2\,a^2\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]+4\,b^2\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]-i\,a^2\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]-2\,i\,b^2\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]+12\,i\,a\,b\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]\,\#1+6\,a\,b\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]\,\#1-20\,a^2\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]\,\#1^2-16\,b^2\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]\,\#1^2+10\,i\,a^2\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]\,\#1^2+8\,i\,b^2\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]\,\#1^2-12\,i\,a\,b\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]\,\#1^3-6\,a\,b\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]\,\#1^3+2\,a^2\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]\,\#1^4+4\,b^2\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]\,\#1^4-i\,a^2\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]\,\#1^4-2\,i\,b^2\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]\,\#1^4\Big)\,\&\Big]+\text{Sec}[c+d\,x]^3\,\big(4\,a^2\,b+32\,b^3-3\,b\,(5\,a^2+13\,b^2)\,\text{Cos}[c+d\,x]+12\,b\,(a^2+2\,b^2)\,\text{Cos}[2\,(c+d\,x)]-5\,a^2\,b\,\text{Cos}[3\,(c+d\,x)]-13\,b^3\,\text{Cos}[3\,(c+d\,x)]+12\,a^3\,\text{Sin}[c+d\,x]-30\,a\,b^2\,\text{Sin}[c+d\,x]+4\,a^3\,\text{Sin}[3\,(c+d\,x)]-22\,a\,b^2\,\text{Sin}[3\,(c+d\,x)]\big)\Bigg)$$

- **Problem 393: Result is not expressed in closed-form.**

$$\int \frac{\text{Cos}[c+d\,x]^7}{\left(a+b\,\text{Sin}[c+d\,x]^3\right)^2}\,dx$$

Optimal (type 3, 288 leaves, 10 steps):

$$-\frac{2\,\left(2\,a^2+3\,a^{4/3}\,b^{2/3}+b^2\right)\,\text{ArcTan}\Big[\frac{a^{1/3}-2\,b^{1/3}\,\text{Sin}[c+d\,x]}{\sqrt{3}\,a^{1/3}}\Big]}{3\,\sqrt{3}\,a^{5/3}\,b^{7/3}\,d}+\frac{2\,\left(2\,a^2-3\,a^{4/3}\,b^{2/3}+b^2\right)\,\text{Log}\big[a^{1/3}+b^{1/3}\,\text{Sin}[c+d\,x]\big]}{9\,a^{5/3}\,b^{7/3}\,d}-\frac{\left(2\,a^2-3\,a^{4/3}\,b^{2/3}+b^2\right)\,\text{Log}\big[a^{2/3}-a^{1/3}\,b^{1/3}\,\text{Sin}[c+d\,x]+b^{2/3}\,\text{Sin}[c+d\,x]^2\big]}{9\,a^{5/3}\,b^{7/3}\,d}-\frac{\text{Sin}[c+d\,x]}{b^2\,d}-\frac{\text{Sin}[c+d\,x]\,\left(a^2-b^2+3\,a\,b\,\text{Sin}[c+d\,x]+3\,b^2\,\text{Sin}[c+d\,x]^2\right)}{3\,a\,b^2\,d\,\left(a+b\,\text{Sin}[c+d\,x]^3\right)}$$

Result (type 7, 490 leaves):

$$-\frac{1}{9 b^2 d}\Bigg(\frac{1}{a}\text{RootSum}\Big[-i b+3 i b \#1^2+8 a \#1^3-3 i b \#1^4+i b \#1^6\&,$$

$$\frac{1}{b \#1-4 i a \#1^2-2 b \#1^3+b \#1^5}\Bigg(-6 a b \text{ArcTan}\Big[\frac{\text{Sin}[c+d x]}{\text{Cos}[c+d x]-\#1}\Big]+3 i a b \text{Log}\big[1-2 \text{Cos}[c+d x] \#1+\#1^2\big]+8 i a^2 \text{ArcTan}\Big[\frac{\text{Sin}[c+d x]}{\text{Cos}[c+d x]-\#1}\Big]$$

$$\#1+4 i b^2 \text{ArcTan}\Big[\frac{\text{Sin}[c+d x]}{\text{Cos}[c+d x]-\#1}\Big] \#1+4 a^2 \text{Log}\big[1-2 \text{Cos}[c+d x] \#1+\#1^2\big] \#1+2 b^2 \text{Log}\big[1-2 \text{Cos}[c+d x] \#1+\#1^2\big] \#1+$$

$$8 i a^2 \text{ArcTan}\Big[\frac{\text{Sin}[c+d x]}{\text{Cos}[c+d x]-\#1}\Big] \#1^3+4 i b^2 \text{ArcTan}\Big[\frac{\text{Sin}[c+d x]}{\text{Cos}[c+d x]-\#1}\Big] \#1^3+4 a^2 \text{Log}\big[1-2 \text{Cos}[c+d x] \#1+\#1^2\big] \#1^3+$$

$$2 b^2 \text{Log}\big[1-2 \text{Cos}[c+d x] \#1+\#1^2\big] \#1^3+6 a b \text{ArcTan}\Big[\frac{\text{Sin}[c+d x]}{\text{Cos}[c+d x]-\#1}\Big] \#1^4-3 i a b \text{Log}\big[1-2 \text{Cos}[c+d x] \#1+\#1^2\big] \#1^4\Bigg)\&\Big]+$$

$$9 \text{Sin}[c+d x]-\frac{6 \left(3 a b+3 a b \text{Cos}[2 (c+d x)]-2 \left(a^2-b^2\right) \text{Sin}[c+d x]\right)}{a (4 a+3 b \text{Sin}[c+d x]-b \text{Sin}[3 (c+d x)])}\Bigg)$$

- **Problem 394: Result is not expressed in closed-form.**

$$\int \frac{\text{Cos}[c+d x]^5}{\left(a+b \text{Sin}[c+d x]^3\right)^2} \, dx$$

Optimal (type 3, 238 leaves, 8 steps):

$$-\frac{2 \left(a^{4/3}+b^{4/3}\right) \text{ArcTan}\Big[\frac{a^{1/3}-2 b^{1/3} \text{Sin}[c+d x]}{\sqrt{3}\, a^{1/3}}\Big]}{3 \sqrt{3}\, a^{5/3} b^{5/3} d}-\frac{2 \left(a^{4/3}-b^{4/3}\right) \text{Log}\big[a^{1/3}+b^{1/3} \text{Sin}[c+d x]\big]}{9 a^{5/3} b^{5/3} d}+$$

$$\frac{\left(a^{4/3}-b^{4/3}\right) \text{Log}\big[a^{2/3}-a^{1/3} b^{1/3} \text{Sin}[c+d x]+b^{2/3} \text{Sin}[c+d x]^2\big]}{9 a^{5/3} b^{5/3} d}+\frac{\text{Sin}[c+d x] \left(b-a \text{Sin}[c+d x]-2 b \text{Sin}[c+d x]^2\right)}{3 a b d \left(a+b \text{Sin}[c+d x]^3\right)}$$

Result (type 7, 346 leaves):

$$\frac{1}{9 a b d}\Bigg(i\, \text{RootSum}\Big[-i b+3 i b \#1^2+8 a \#1^3-3 i b \#1^4+i b \#1^6\&,$$

$$\Bigg(-2 i a \text{ArcTan}\Big[\frac{\text{Sin}[c+d x]}{\text{Cos}[c+d x]-\#1}\Big]-a \text{Log}\big[1-2 \text{Cos}[c+d x] \#1+\#1^2\big]-4 b \text{ArcTan}\Big[\frac{\text{Sin}[c+d x]}{\text{Cos}[c+d x]-\#1}\Big] \#1+2 i b \text{Log}\big[1-2 \text{Cos}[c+d x] \#1+\#1^2\big]$$

$$\#1-4 b \text{ArcTan}\Big[\frac{\text{Sin}[c+d x]}{\text{Cos}[c+d x]-\#1}\Big] \#1^3+2 i b \text{Log}\big[1-2 \text{Cos}[c+d x] \#1+\#1^2\big] \#1^3+2 i a \text{ArcTan}\Big[\frac{\text{Sin}[c+d x]}{\text{Cos}[c+d x]-\#1}\Big] \#1^4+$$

$$a \text{Log}\big[1-2 \text{Cos}[c+d x] \#1+\#1^2\big] \#1^4\Bigg) \Big/ \left(b \#1-4 i a \#1^2-2 b \#1^3+b \#1^5\right)\&\Big]+\frac{6 (3 a+a \text{Cos}[2 (c+d x)]+2 b \text{Sin}[c+d x])}{4 a+3 b \text{Sin}[c+d x]-b \text{Sin}[3 (c+d x)]}\Bigg)$$

- **Problem 395: Result is not expressed in closed-form.**

$$\int \frac{\text{Cos}[c+d x]^3}{\left(a+b \text{Sin}[c+d x]^3\right)^2} \, dx$$

Optimal (type 3, 183 leaves, 9 steps) :

$$-\frac{2\,\text{ArcTan}\left[\frac{a^{1/3}-2\,b^{1/3}\,\text{Sin}[c+d\,x]}{\sqrt{3}\,a^{1/3}}\right]}{3\,\sqrt{3}\,a^{5/3}\,b^{1/3}\,d}+\frac{2\,\text{Log}\left[a^{1/3}+b^{1/3}\,\text{Sin}[c+d\,x]\right]}{9\,a^{5/3}\,b^{1/3}\,d}-\frac{\text{Log}\left[a^{2/3}-a^{1/3}\,b^{1/3}\,\text{Sin}[c+d\,x]+b^{2/3}\,\text{Sin}[c+d\,x]^2\right]}{9\,a^{5/3}\,b^{1/3}\,d}+\frac{a+b\,\text{Sin}[c+d\,x]}{3\,a\,b\,d\,\left(a+b\,\text{Sin}[c+d\,x]^3\right)}$$

Result (type 7, 221 leaves) :

$$\frac{1}{9\,a\,d}2\left(-i\,\text{RootSum}\left[-i\,b+3\,i\,b\,\#1^2+8\,a\,\#1^3-3\,i\,b\,\#1^4+i\,b\,\#1^6\,\&,\right.\right.$$
$$\left(2\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\right]-i\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\right]+2\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\right]\#1^2-i\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\right]\#1^2\right)\Big/$$
$$\left.\left.\left(b-4\,i\,a\,\#1-2\,b\,\#1^2+b\,\#1^4\right)\,\&\right]+\frac{6\,(a+b\,\text{Sin}[c+d\,x])}{b\,(4\,a+3\,b\,\text{Sin}[c+d\,x]-b\,\text{Sin}[3\,(c+d\,x)])}\right)$$

- **Problem 397: Result is not expressed in closed-form.**

$$\int\frac{\text{Sec}[c+d\,x]}{\left(a+b\,\text{Sin}[c+d\,x]^3\right)^2}\,dx$$

Optimal (type 3, 587 leaves, 18 steps) :

$$-\frac{b^{1/3}\,\left(a^{4/3}-2\,b^{4/3}\right)\,\text{ArcTan}\left[\frac{a^{1/3}-2\,b^{1/3}\,\text{Sin}[c+d\,x]}{\sqrt{3}\,a^{1/3}}\right]}{3\,\sqrt{3}\,a^{5/3}\,\left(a^2-b^2\right)\,d}-\frac{b^{1/3}\,\left(a^2-2\,a^{2/3}\,b^{4/3}+b^2\right)\,\text{ArcTan}\left[\frac{a^{1/3}-2\,b^{1/3}\,\text{Sin}[c+d\,x]}{\sqrt{3}\,a^{1/3}}\right]}{\sqrt{3}\,a^{1/3}\,\left(a^2-b^2\right)^2\,d}-$$
$$\frac{\text{Log}[1-\text{Sin}[c+d\,x]]}{2\,(a+b)^2\,d}+\frac{\text{Log}[1+\text{Sin}[c+d\,x]]}{2\,(a-b)^2\,d}-\frac{b^{1/3}\,\left(a^{4/3}+2\,b^{4/3}\right)\,\text{Log}\left[a^{1/3}+b^{1/3}\,\text{Sin}[c+d\,x]\right]}{9\,a^{5/3}\,\left(a^2-b^2\right)\,d}-$$
$$\frac{b^{1/3}\,\left(a^2+2\,a^{2/3}\,b^{4/3}+b^2\right)\,\text{Log}\left[a^{1/3}+b^{1/3}\,\text{Sin}[c+d\,x]\right]}{3\,a^{1/3}\,\left(a^2-b^2\right)^2\,d}+\frac{b^{1/3}\,\left(a^{4/3}+2\,b^{4/3}\right)\,\text{Log}\left[a^{2/3}-a^{1/3}\,b^{1/3}\,\text{Sin}[c+d\,x]+b^{2/3}\,\text{Sin}[c+d\,x]^2\right]}{18\,a^{5/3}\,\left(a^2-b^2\right)\,d}+$$
$$\frac{b^{1/3}\,\left(a^2+2\,a^{2/3}\,b^{4/3}+b^2\right)\,\text{Log}\left[a^{2/3}-a^{1/3}\,b^{1/3}\,\text{Sin}[c+d\,x]+b^{2/3}\,\text{Sin}[c+d\,x]^2\right]}{6\,a^{1/3}\,\left(a^2-b^2\right)^2\,d}-$$
$$\frac{2\,a\,b\,\text{Log}\left[a+b\,\text{Sin}[c+d\,x]^3\right]}{3\,\left(a^2-b^2\right)^2\,d}+\frac{b\,(a-\text{Sin}[c+d\,x]\,(b-a\,\text{Sin}[c+d\,x]))}{3\,a\,\left(a^2-b^2\right)\,d\,\left(a+b\,\text{Sin}[c+d\,x]^3\right)}$$

Result (type 7, 478 leaves) :

$$\frac{1}{9\,d}\left(-\frac{9\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]}{(a+b)^2}+\frac{9\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]}{(a-b)^2}+\right.$$

$$\frac{1}{a\,(a^2-b^2)^2}\,2\,b\left(9\,a^2\,\text{Log}\left[\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]-\text{RootSum}\left[a+3\,a\,\#1^2+8\,b\,\#1^3+3\,a\,\#1^4+a\,\#1^6\,\&,\right.\right.$$

$$\frac{1}{a\,\#1+4\,b\,\#1^2+2\,a\,\#1^3+a\,\#1^5}\left(4\,a^2\,b\,\text{Log}\left[-\#1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right]-b^3\,\text{Log}\left[-\#1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right]-a^3\,\text{Log}\left[-\#1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\#1-\right.$$

$$2\,a\,b^2\,\text{Log}\left[-\#1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\#1+12\,a^2\,b\,\text{Log}\left[-\#1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\#1^2+10\,a^3\,\text{Log}\left[-\#1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\#1^3+$$

$$2\,a\,b^2\,\text{Log}\left[-\#1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\#1^3-4\,a^2\,b\,\text{Log}\left[-\#1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\#1^4+b^3\,\text{Log}\left[-\#1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\#1^4+$$

$$\left.\left.\left.3\,a^3\,\text{Log}\left[-\#1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\#1^5\right)\&\right]\right)-\frac{6\,b\,(-3\,a+a\,\text{Cos}[2\,(c+d\,x)]+2\,b\,\text{Sin}[c+d\,x])}{a\,(a-b)\,(a+b)\,(4\,a+3\,b\,\text{Sin}[c+d\,x]-b\,\text{Sin}[3\,(c+d\,x)])}\right)$$

- **Problem 398: Result is not expressed in closed-form.**

$$\int\frac{\text{Sec}[c+d\,x]^3}{\left(a+b\,\text{Sin}[c+d\,x]^3\right)^2}\,dx$$

Optimal (type 3, 747 leaves, 18 steps):

$$-\frac{b^{5/3}\left(4\,a^2-3\,a^{4/3}\,b^{2/3}+2\,b^2\right)\text{ArcTan}\left[\frac{a^{1/3}-2\,b^{1/3}\,\text{Sin}[c+d\,x]}{\sqrt{3}\,a^{1/3}}\right]}{3\,\sqrt{3}\,a^{5/3}\,(a^2-b^2)^2\,d}-$$

$$\frac{b^{5/3}\left(4\,a^{8/3}-9\,a^2\,b^{2/3}+8\,a^{2/3}\,b^2-3\,b^{8/3}\right)\text{ArcTan}\left[\frac{a^{1/3}-2\,b^{1/3}\,\text{Sin}[c+d\,x]}{\sqrt{3}\,a^{1/3}}\right]}{\sqrt{3}\,a^{1/3}\,(a^2-b^2)^3\,d}-\frac{(a+7\,b)\,\text{Log}[1-\text{Sin}[c+d\,x]]}{4\,(a+b)^3\,d}+\frac{(a-7\,b)\,\text{Log}[1+\text{Sin}[c+d\,x]]}{4\,(a-b)^3\,d}+$$

$$\frac{b^{5/3}\left(4\,a^2+3\,a^{4/3}\,b^{2/3}+2\,b^2\right)\text{Log}\left[a^{1/3}+b^{1/3}\,\text{Sin}[c+d\,x]\right]}{9\,a^{5/3}\,(a^2-b^2)^2\,d}+\frac{b^{5/3}\left(3\,b^{2/3}\,(3\,a^2+b^2)+4\,a^{2/3}\,(a^2+2\,b^2)\right)\text{Log}\left[a^{1/3}+b^{1/3}\,\text{Sin}[c+d\,x]\right]}{3\,a^{1/3}\,(a^2-b^2)^3\,d}-$$

$$\frac{b^{5/3}\left(4\,a^2+3\,a^{4/3}\,b^{2/3}+2\,b^2\right)\text{Log}\left[a^{2/3}-a^{1/3}\,b^{1/3}\,\text{Sin}[c+d\,x]+b^{2/3}\,\text{Sin}[c+d\,x]^2\right]}{18\,a^{5/3}\,(a^2-b^2)^2\,d}-$$

$$\frac{b^{5/3}\left(3\,b^{2/3}\,(3\,a^2+b^2)+4\,a^{2/3}\,(a^2+2\,b^2)\right)\text{Log}\left[a^{2/3}-a^{1/3}\,b^{1/3}\,\text{Sin}[c+d\,x]+b^{2/3}\,\text{Sin}[c+d\,x]^2\right]}{6\,a^{1/3}\,(a^2-b^2)^3\,d}+\frac{2\,a\,b\,(a^2+5\,b^2)\,\text{Log}\left[a+b\,\text{Sin}[c+d\,x]^3\right]}{3\,(a^2-b^2)^3\,d}+$$

$$\frac{1}{4\,(a+b)^2\,d\,(1-\text{Sin}[c+d\,x])}-\frac{1}{4\,(a-b)^2\,d\,(1+\text{Sin}[c+d\,x])}-\frac{b\,\left(a\,(a^2+2\,b^2)-b\,\text{Sin}[c+d\,x]\,(2\,a^2+b^2-3\,a\,b\,\text{Sin}[c+d\,x])\right)}{3\,a\,(a^2-b^2)^2\,d\,\left(a+b\,\text{Sin}[c+d\,x]^3\right)}$$

Result (type 7, 773 leaves):

$$\frac{(-a-7\,b)\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]}{2\,(a+b)^3\,d}+$$

$$\frac{(a-7\,b)\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]}{2\,(a-b)^3\,d}+\frac{1}{9\,a\,\left(a^2-b^2\right)^3\,d}\,2\,b\,\left(-9\,a^2\,\left(a^2+5\,b^2\right)\,\text{Log}\left[\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]+\right.$$

$$\text{RootSum}\left[a+3\,a\,\#1^2+8\,b\,\#1^3+3\,a\,\#1^4+a\,\#1^6\,\&,\ \frac{1}{a\,\#1+4\,b\,\#1^2+2\,a\,\#1^3+a\,\#1^5}\,\left(8\,a^4\,b\,\text{Log}\left[-\#1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right]+\right.\right.$$

$$11\,a^2\,b^3\,\text{Log}\left[-\#1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right]-b^5\,\text{Log}\left[-\#1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right]+3\,a^5\,\text{Log}\left[-\#1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\,\#1-$$

$$15\,a^3\,b^2\,\text{Log}\left[-\#1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\,\#1-6\,a\,b^4\,\text{Log}\left[-\#1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\,\#1+12\,a^4\,b\,\text{Log}\left[-\#1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\,\#1^2+$$

$$60\,a^2\,b^3\,\text{Log}\left[-\#1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\,\#1^2+6\,a^5\,\text{Log}\left[-\#1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\,\#1^3+60\,a^3\,b^2\,\text{Log}\left[-\#1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\,\#1^3+$$

$$6\,a\,b^4\,\text{Log}\left[-\#1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\,\#1^3-8\,a^4\,b\,\text{Log}\left[-\#1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\,\#1^4-11\,a^2\,b^3\,\text{Log}\left[-\#1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\,\#1^4+$$

$$\left.\left.\left.b^5\,\text{Log}\left[-\#1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\,\#1^4+3\,a^5\,\text{Log}\left[-\#1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\,\#1^5+15\,a^3\,b^2\,\text{Log}\left[-\#1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\,\#1^5\right)\,\&\right]\right)+$$

$$\frac{1}{4\,(a+b)^2\,d\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}-\frac{1}{4\,(a-b)^2\,d\,\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}-$$

$$\frac{2\,\left(-2\,a^3\,b-7\,a\,b^3+3\,a\,b^3\,\text{Cos}[2\,(c+d\,x)]+4\,a^2\,b^2\,\text{Sin}[c+d\,x]+2\,b^4\,\text{Sin}[c+d\,x]\right)}{3\,a\,(a-b)^2\,(a+b)^2\,d\,(-4\,a-3\,b\,\text{Sin}[c+d\,x]+b\,\text{Sin}[3\,(c+d\,x)])}$$

- **Problem 404: Result is not expressed in closed-form.**

$$\int\frac{\text{Cos}[c+d\,x]^7}{a-b\,\text{Sin}[c+d\,x]^4}\,dx$$

Optimal (type 3, 131 leaves, 6 steps):

$$\frac{\left(\sqrt{a}+\sqrt{b}\right)^3\,\text{ArcTan}\left[\frac{b^{1/4}\,\text{Sin}[c+d\,x]}{a^{1/4}}\right]}{2\,a^{3/4}\,b^{7/4}\,d}-\frac{\left(\sqrt{a}-\sqrt{b}\right)^3\,\text{ArcTanh}\left[\frac{b^{1/4}\,\text{Sin}[c+d\,x]}{a^{1/4}}\right]}{2\,a^{3/4}\,b^{7/4}\,d}-\frac{3\,\text{Sin}[c+d\,x]}{b\,d}+\frac{\text{Sin}[c+d\,x]^3}{3\,b\,d}$$

Result (type 7, 524 leaves):

$$\frac{1}{24\,b\,d}\left(3\,\text{RootSum}\left[b-4\,b\,\#1^2-16\,a\,\#1^4+6\,b\,\#1^4-4\,b\,\#1^6+b\,\#1^8\,\&,\ \frac{1}{-b\,\#1-8\,a\,\#1^3+3\,b\,\#1^3-3\,b\,\#1^5+b\,\#1^7}\left(-2\,a\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\right]-6\,b\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\right]+i\,a\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\right]+3\,i\,b\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\right]-22\,a\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\right]\#1^2-2\,b\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\right]\#1^2+11\,i\,a\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\right]\#1^2+i\,b\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\right]\#1^2-22\,a\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\right]\#1^4-2\,b\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\right]\#1^4+11\,i\,a\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\right]\#1^4+i\,b\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\right]\#1^4-2\,a\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\right]\#1^6-6\,b\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\right]\#1^6+i\,a\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\right]\#1^6+3\,i\,b\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\right]\#1^6\right)\&\right]-2\,(33\,\text{Sin}[c+d\,x]+\text{Sin}[3\,(c+d\,x)])\right)$$

Problem 405: Result is not expressed in closed-form.

$$\int\frac{\text{Cos}[c+d\,x]^5}{a-b\,\text{Sin}[c+d\,x]^4}\,dx$$

Optimal (type 3, 113 leaves, 6 steps):

$$\frac{\left(\sqrt{a}+\sqrt{b}\right)^2\text{ArcTan}\left[\frac{b^{1/4}\,\text{Sin}[c+d\,x]}{a^{1/4}}\right]}{2\,a^{3/4}\,b^{5/4}\,d}+\frac{\left(a-2\,\sqrt{a}\,\sqrt{b}+b\right)\text{ArcTanh}\left[\frac{b^{1/4}\,\text{Sin}[c+d\,x]}{a^{1/4}}\right]}{2\,a^{3/4}\,b^{5/4}\,d}-\frac{\text{Sin}[c+d\,x]}{b\,d}$$

Result (type 7, 411 leaves):

$$-\frac{1}{4\,b\,d}\left(\text{RootSum}\left[b-4\,b\,\#1^2-16\,a\,\#1^4+6\,b\,\#1^4-4\,b\,\#1^6+b\,\#1^8\,\&,\ \frac{1}{-b\,\#1-8\,a\,\#1^3+3\,b\,\#1^3-3\,b\,\#1^5+b\,\#1^7}\left(2\,b\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\right]-i\,b\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\right]+4\,a\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\right]\#1^2+2\,b\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\right]\#1^2-2\,i\,a\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\right]\#1^2-i\,b\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\right]\#1^2+4\,a\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\right]\#1^4+2\,b\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\right]\#1^4-2\,i\,a\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\right]\#1^4-i\,b\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\right]\#1^4+2\,b\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\right]\#1^6-i\,b\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\right]\#1^6\right)\&\right]+4\,\text{Sin}[c+d\,x]\right)$$

Problem 406: Result is not expressed in closed-form.

$$\int\frac{\text{Cos}[c+d\,x]^3}{a-b\,\text{Sin}[c+d\,x]^4}\,dx$$

Optimal (type 3, 95 leaves, 4 steps):

$$\frac{\left(\sqrt{a}+\sqrt{b}\right)\text{ArcTan}\left[\frac{b^{1/4}\,\text{Sin}[c+d\,x]}{a^{1/4}}\right]}{2\,a^{3/4}\,b^{3/4}\,d}-\frac{\left(\sqrt{a}-\sqrt{b}\right)\text{ArcTanh}\left[\frac{b^{1/4}\,\text{Sin}[c+d\,x]}{a^{1/4}}\right]}{2\,a^{3/4}\,b^{3/4}\,d}$$

Result (type 7, 283 leaves):

$$-\frac{1}{8\,d}\text{RootSum}\Big[b-4\,b\,\#1^2-16\,a\,\#1^4+6\,b\,\#1^4-4\,b\,\#1^6+b\,\#1^8\,\&,$$
$$\Big(2\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\right]-i\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\right]+6\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\right]\#1^2-$$
$$3\,i\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\right]\#1^2+6\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\right]\#1^4-3\,i\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\right]\#1^4+$$
$$2\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\right]\#1^6-i\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\right]\#1^6\Big)\Big/\left(-b\,\#1-8\,a\,\#1^3+3\,b\,\#1^3-3\,b\,\#1^5+b\,\#1^7\right)\,\&\Big]$$

Problem 408: Result is not expressed in closed-form.

$$\int\frac{\text{Sec}[c+d\,x]}{a-b\,\text{Sin}[c+d\,x]^4}\,dx$$

Optimal (type 3, 117 leaves, 7 steps):

$$\frac{b^{1/4}\,\text{ArcTan}\left[\frac{b^{1/4}\,\text{Sin}[c+d\,x]}{a^{1/4}}\right]}{2\,a^{3/4}\left(\sqrt{a}+\sqrt{b}\right)d}+\frac{\text{ArcTanh}[\text{Sin}[c+d\,x]]}{(a-b)\,d}-\frac{b^{1/4}\,\text{ArcTanh}\left[\frac{b^{1/4}\,\text{Sin}[c+d\,x]}{a^{1/4}}\right]}{2\,a^{3/4}\left(\sqrt{a}-\sqrt{b}\right)d}$$

Result (type 7, 342 leaves):

$$\frac{1}{8\,a\,d-8\,b\,d}\Big(-8\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]+$$
$$8\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]-b\,\text{RootSum}\Big[b-4\,b\,\#1^2-16\,a\,\#1^4+6\,b\,\#1^4-4\,b\,\#1^6+b\,\#1^8\,\&,$$
$$\Big(2\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\right]-i\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\right]-10\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\right]\#1^2+$$
$$5\,i\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\right]\#1^2-10\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\right]\#1^4+5\,i\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\right]\#1^4+$$
$$2\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\right]\#1^6-i\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\right]\#1^6\Big)\Big/\left(-b\,\#1-8\,a\,\#1^3+3\,b\,\#1^3-3\,b\,\#1^5+b\,\#1^7\right)\,\&\Big]\Big)$$

Problem 409: Result is not expressed in closed-form.

$$\int\frac{\text{Sec}[c+d\,x]^3}{a-b\,\text{Sin}[c+d\,x]^4}\,dx$$

Optimal (type 3, 175 leaves, 7 steps):

$$\frac{b^{3/4}\,\text{ArcTan}\left[\frac{b^{1/4}\,\text{Sin}[c+d\,x]}{a^{1/4}}\right]}{2\,a^{3/4}\left(\sqrt{a}+\sqrt{b}\right)^2 d}+\frac{(a-5\,b)\,\text{ArcTanh}[\text{Sin}[c+d\,x]]}{2\,(a-b)^2\,d}+$$

$$\frac{b^{3/4}\,\text{ArcTanh}\left[\frac{b^{1/4}\,\text{Sin}[c+d\,x]}{a^{1/4}}\right]}{2\,a^{3/4}\left(\sqrt{a}-\sqrt{b}\right)^2 d}+\frac{1}{4\,(a-b)\,d\,(1-\text{Sin}[c+d\,x])}-\frac{1}{4\,(a-b)\,d\,(1+\text{Sin}[c+d\,x])}$$

Result (type 7, 529 leaves) :

$$\frac{1}{4\,(a-b)^2\,d}\left(-2\,(a-5\,b)\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]+\right.$$

$$2\,(a-5\,b)\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]+b\,\text{RootSum}\Big[b-4\,b\,\#1^2-16\,a\,\#1^4+6\,b\,\#1^4-4\,b\,\#1^6+b\,\#1^8\,\&,$$

$$\frac{1}{-b\,\#1-8\,a\,\#1^3+3\,b\,\#1^3-3\,b\,\#1^5+b\,\#1^7}\left(2\,b\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\right]-i\,b\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\right]-4\,a\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\right]\right.$$

$$\#1^2-6\,b\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\right]\#1^2+2\,i\,a\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\right]\#1^2+3\,i\,b\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\right]\#1^2-$$

$$4\,a\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\right]\#1^4-6\,b\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\right]\#1^4+2\,i\,a\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\right]\#1^4+$$

$$\left.3\,i\,b\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\right]\#1^4+2\,b\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\right]\#1^6-i\,b\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\right]\#1^6\right)\&\Big]+$$

$$\left.\frac{a-b}{\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}+\frac{-a+b}{\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}\right)$$

- **Problem 410: Result is not expressed in closed-form.**

$$\int\frac{\text{Sec}[c+d\,x]^5}{a-b\,\text{Sin}[c+d\,x]^4}\,dx$$

Optimal (type 3, 249 leaves, 7 steps) :

$$\frac{b^{5/4}\,\text{ArcTan}\left[\frac{b^{1/4}\,\text{Sin}[c+d\,x]}{a^{1/4}}\right]}{2\,a^{3/4}\left(\sqrt{a}+\sqrt{b}\right)^3 d}+\frac{\left(3\,a^2-6\,a\,b+35\,b^2\right)\text{ArcTanh}[\text{Sin}[c+d\,x]]}{8\,(a-b)^3\,d}-\frac{b^{5/4}\,\text{ArcTanh}\left[\frac{b^{1/4}\,\text{Sin}[c+d\,x]}{a^{1/4}}\right]}{2\,a^{3/4}\left(\sqrt{a}-\sqrt{b}\right)^3 d}+$$

$$\frac{1}{16\,(a-b)\,d\,(1-\text{Sin}[c+d\,x])^2}+\frac{3\,a-11\,b}{16\,(a-b)^2\,d\,(1-\text{Sin}[c+d\,x])}-\frac{1}{16\,(a-b)\,d\,(1+\text{Sin}[c+d\,x])^2}-\frac{3\,a-11\,b}{16\,(a-b)^2\,d\,(1+\text{Sin}[c+d\,x])}$$

Result (type 7, 731 leaves) :

$$\frac{1}{16\,(a-b)^3\,d}\Bigg(-2\,(3a^2-6ab+35b^2)\,\text{Log}\Big[\text{Cos}\Big[\tfrac{1}{2}(c+dx)\Big]-\text{Sin}\Big[\tfrac{1}{2}(c+dx)\Big]\Big]+2\,(3a^2-6ab+35b^2)\,\text{Log}\Big[\text{Cos}\Big[\tfrac{1}{2}(c+dx)\Big]+\text{Sin}\Big[\tfrac{1}{2}(c+dx)\Big]\Big]-$$

$$2b^2\,\text{RootSum}\Big[b-4b\,\#1^2-16a\,\#1^4+6b\,\#1^4-4b\,\#1^6+b\,\#1^8\,\&,\ \frac{1}{-b\,\#1-8a\,\#1^3+3b\,\#1^3-3b\,\#1^5+b\,\#1^7}$$

$$\Big(2a\,\text{ArcTan}\Big[\frac{\text{Sin}[c+dx]}{\text{Cos}[c+dx]-\#1}\Big]+6b\,\text{ArcTan}\Big[\frac{\text{Sin}[c+dx]}{\text{Cos}[c+dx]-\#1}\Big]-i\,a\,\text{Log}\big[1-2\,\text{Cos}[c+dx]\,\#1+\#1^2\big]-3\,i\,b\,\text{Log}\big[1-2\,\text{Cos}[c+dx]\,\#1+\#1^2\big]-$$

$$26a\,\text{ArcTan}\Big[\frac{\text{Sin}[c+dx]}{\text{Cos}[c+dx]-\#1}\Big]\#1^2-14b\,\text{ArcTan}\Big[\frac{\text{Sin}[c+dx]}{\text{Cos}[c+dx]-\#1}\Big]\#1^2+13\,i\,a\,\text{Log}\big[1-2\,\text{Cos}[c+dx]\,\#1+\#1^2\big]\#1^2+$$

$$7\,i\,b\,\text{Log}\big[1-2\,\text{Cos}[c+dx]\,\#1+\#1^2\big]\#1^2-26a\,\text{ArcTan}\Big[\frac{\text{Sin}[c+dx]}{\text{Cos}[c+dx]-\#1}\Big]\#1^4-14b\,\text{ArcTan}\Big[\frac{\text{Sin}[c+dx]}{\text{Cos}[c+dx]-\#1}\Big]\#1^4+$$

$$13\,i\,a\,\text{Log}\big[1-2\,\text{Cos}[c+dx]\,\#1+\#1^2\big]\#1^4+7\,i\,b\,\text{Log}\big[1-2\,\text{Cos}[c+dx]\,\#1+\#1^2\big]\#1^4+2a\,\text{ArcTan}\Big[\frac{\text{Sin}[c+dx]}{\text{Cos}[c+dx]-\#1}\Big]\#1^6+$$

$$6b\,\text{ArcTan}\Big[\frac{\text{Sin}[c+dx]}{\text{Cos}[c+dx]-\#1}\Big]\#1^6-i\,a\,\text{Log}\big[1-2\,\text{Cos}[c+dx]\,\#1+\#1^2\big]\#1^6-3\,i\,b\,\text{Log}\big[1-2\,\text{Cos}[c+dx]\,\#1+\#1^2\big]\#1^6\Big)\,\&\Big]+$$

$$\frac{(a-b)^2}{\left(\text{Cos}\left[\frac{1}{2}(c+dx)\right]-\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right)^4}+\frac{(3a-11b)\,(a-b)}{\left(\text{Cos}\left[\frac{1}{2}(c+dx)\right]-\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right)^2}-$$

$$\frac{(a-b)^2}{\left(\text{Cos}\left[\frac{1}{2}(c+dx)\right]+\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right)^4}+$$

$$\frac{(a-b)\,(-3a+11b)}{\left(\text{Cos}\left[\frac{1}{2}(c+dx)\right]+\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right)^2}\Bigg)$$

- **Problem 420: Unable to integrate problem.**

$$\int \text{Cos}[e+fx]^5\,\left(a+b\,\text{Sin}[e+fx]^4\right)^p\,dx$$

Optimal (type 5, 197 leaves, 8 steps) :

$$\frac{\text{Sin}[e+fx]\,\left(a+b\,\text{Sin}[e+fx]^4\right)^{1+p}}{b\,f\,(5+4p)}-\frac{1}{b\,f\,(5+4p)}$$

$$(a-b\,(5+4p))\,\text{Hypergeometric2F1}\Big[\frac{1}{4},\,-p,\,\frac{5}{4},\,-\frac{b\,\text{Sin}[e+fx]^4}{a}\Big]\,\text{Sin}[e+fx]\,\left(a+b\,\text{Sin}[e+fx]^4\right)^p\left(1+\frac{b\,\text{Sin}[e+fx]^4}{a}\right)^{-p}-$$

$$\frac{2\,\text{Hypergeometric2F1}\left[\frac{3}{4},\,-p,\,\frac{7}{4},\,-\frac{b\,\text{Sin}[e+fx]^4}{a}\right]\,\text{Sin}[e+fx]^3\,\left(a+b\,\text{Sin}[e+fx]^4\right)^p\left(1+\frac{b\,\text{Sin}[e+fx]^4}{a}\right)^{-p}}{3f}$$

Result (type 8, 25 leaves) :

$$\int \operatorname{Cos}[e+f x]^5 \left(a+b \operatorname{Sin}[e+f x]^4\right)^p dx$$

Problem 421: Unable to integrate problem.

$$\int \operatorname{Cos}[e+f x]^3 \left(a+b \operatorname{Sin}[e+f x]^4\right)^p dx$$

Optimal (type 5, 140 leaves, 7 steps):

$$\frac{\text{Hypergeometric2F1}\left[\frac{1}{4},-p,\frac{5}{4},-\frac{b \operatorname{Sin}[e+f x]^4}{a}\right] \operatorname{Sin}[e+f x] \left(a+b \operatorname{Sin}[e+f x]^4\right)^p \left(1+\frac{b \operatorname{Sin}[e+f x]^4}{a}\right)^{-p}}{f}-\frac{\text{Hypergeometric2F1}\left[\frac{3}{4},-p,\frac{7}{4},-\frac{b \operatorname{Sin}[e+f x]^4}{a}\right] \operatorname{Sin}[e+f x]^3 \left(a+b \operatorname{Sin}[e+f x]^4\right)^p \left(1+\frac{b \operatorname{Sin}[e+f x]^4}{a}\right)^{-p}}{3 f}$$

Result (type 8, 25 leaves):

$$\int \operatorname{Cos}[e+f x]^3 \left(a+b \operatorname{Sin}[e+f x]^4\right)^p dx$$

Problem 423: Unable to integrate problem.

$$\int \operatorname{Sec}[e+f x] \left(a+b \operatorname{Sin}[e+f x]^4\right)^p dx$$

Optimal (type 6, 158 leaves, 7 steps):

$$\frac{\text{AppellF1}\left[\frac{1}{4},1,-p,\frac{5}{4},\operatorname{Sin}[e+f x]^4,-\frac{b \operatorname{Sin}[e+f x]^4}{a}\right] \operatorname{Sin}[e+f x] \left(a+b \operatorname{Sin}[e+f x]^4\right)^p \left(1+\frac{b \operatorname{Sin}[e+f x]^4}{a}\right)^{-p}}{f}+\frac{1}{3 f}\text{AppellF1}\left[\frac{3}{4},1,-p,\frac{7}{4},\operatorname{Sin}[e+f x]^4,-\frac{b \operatorname{Sin}[e+f x]^4}{a}\right] \operatorname{Sin}[e+f x]^3 \left(a+b \operatorname{Sin}[e+f x]^4\right)^p \left(1+\frac{b \operatorname{Sin}[e+f x]^4}{a}\right)^{-p}$$

Result (type 8, 23 leaves):

$$\int \operatorname{Sec}[e+f x] \left(a+b \operatorname{Sin}[e+f x]^4\right)^p dx$$

Problem 424: Unable to integrate problem.

$$\int \operatorname{Sec}[e+f x]^3 \left(a+b \operatorname{Sin}[e+f x]^4\right)^p dx$$

Optimal (type 6, 239 leaves, 9 steps):

$$\frac{\text{AppellF1}\left[\frac{1}{4},2,-p,\frac{5}{4},\text{Sin}[e+f x]^4,-\frac{b\,\text{Sin}[e+f x]^4}{a}\right]\text{Sin}[e+f x]\left(a+b\,\text{Sin}[e+f x]^4\right)^p\left(1+\frac{b\,\text{Sin}[e+f x]^4}{a}\right)^{-p}}{f}+\frac{1}{3 f}$$
$$2\,\text{AppellF1}\left[\frac{3}{4},2,-p,\frac{7}{4},\text{Sin}[e+f x]^4,-\frac{b\,\text{Sin}[e+f x]^4}{a}\right]\text{Sin}[e+f x]^3\left(a+b\,\text{Sin}[e+f x]^4\right)^p\left(1+\frac{b\,\text{Sin}[e+f x]^4}{a}\right)^{-p}+$$
$$\frac{1}{5 f}\text{AppellF1}\left[\frac{5}{4},2,-p,\frac{9}{4},\text{Sin}[e+f x]^4,-\frac{b\,\text{Sin}[e+f x]^4}{a}\right]\text{Sin}[e+f x]^5\left(a+b\,\text{Sin}[e+f x]^4\right)^p\left(1+\frac{b\,\text{Sin}[e+f x]^4}{a}\right)^{-p}$$

Result (type 8, 25 leaves) :

$$\int \text{Sec}[e+f x]^3\left(a+b\,\text{Sin}[e+f x]^4\right)^p\,dx$$

- **Problem 431: Unable to integrate problem.**

$$\int \text{Cos}[e+f x]^5\left(a+b\,\text{Sin}[e+f x]^n\right)^p\,dx$$

Optimal (type 5, 226 leaves, 9 steps) :

$$\frac{\text{Hypergeometric2F1}\left[\frac{1}{n},-p,1+\frac{1}{n},-\frac{b\,\text{Sin}[e+f x]^n}{a}\right]\text{Sin}[e+f x]\left(a+b\,\text{Sin}[e+f x]^n\right)^p\left(1+\frac{b\,\text{Sin}[e+f x]^n}{a}\right)^{-p}}{f}-$$
$$\frac{2\,\text{Hypergeometric2F1}\left[\frac{3}{n},-p,\frac{3+n}{n},-\frac{b\,\text{Sin}[e+f x]^n}{a}\right]\text{Sin}[e+f x]^3\left(a+b\,\text{Sin}[e+f x]^n\right)^p\left(1+\frac{b\,\text{Sin}[e+f x]^n}{a}\right)^{-p}}{3 f}+$$
$$\frac{\text{Hypergeometric2F1}\left[\frac{5}{n},-p,\frac{5+n}{n},-\frac{b\,\text{Sin}[e+f x]^n}{a}\right]\text{Sin}[e+f x]^5\left(a+b\,\text{Sin}[e+f x]^n\right)^p\left(1+\frac{b\,\text{Sin}[e+f x]^n}{a}\right)^{-p}}{5 f}$$

Result (type 8, 25 leaves) :

$$\int \text{Cos}[e+f x]^5\left(a+b\,\text{Sin}[e+f x]^n\right)^p\,dx$$

- **Problem 432: Unable to integrate problem.**

$$\int \text{Cos}[e+f x]^3\left(a+b\,\text{Sin}[e+f x]^n\right)^p\,dx$$

Optimal (type 5, 148 leaves, 7 steps) :

$$\frac{\text{Hypergeometric2F1}\left[\frac{1}{n},-p,1+\frac{1}{n},-\frac{b\,\text{Sin}[e+f x]^n}{a}\right]\text{Sin}[e+f x]\left(a+b\,\text{Sin}[e+f x]^n\right)^p\left(1+\frac{b\,\text{Sin}[e+f x]^n}{a}\right)^{-p}}{f}-$$
$$\frac{\text{Hypergeometric2F1}\left[\frac{3}{n},-p,\frac{3+n}{n},-\frac{b\,\text{Sin}[e+f x]^n}{a}\right]\text{Sin}[e+f x]^3\left(a+b\,\text{Sin}[e+f x]^n\right)^p\left(1+\frac{b\,\text{Sin}[e+f x]^n}{a}\right)^{-p}}{3 f}$$

Result (type 8, 25 leaves) :

$$\int \text{Cos}[e+f x]^3\left(a+b\,\text{Sin}[e+f x]^n\right)^p\,dx$$

Problem 474: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Tan}[e+f x]^2}{\sqrt{a-a\,\text{Sin}[e+f x]^2}}\,dx$$

Optimal (type 3, 62 leaves, 4 steps):

$$-\frac{\text{ArcTanh}[\text{Sin}[e+f x]]\,\text{Cos}[e+f x]}{2 f \sqrt{a\,\text{Cos}[e+f x]^2}}+\frac{\text{Tan}[e+f x]}{2 f \sqrt{a\,\text{Cos}[e+f x]^2}}$$

Result (type 3, 142 leaves):

$$\frac{1}{4 f \sqrt{a\,\text{Cos}[e+f x]^2}}\text{Sec}[e+f x]\left(\text{Log}\left[\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right]+\text{Cos}[2(e+f x)]\left(\text{Log}\left[\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right]-\text{Log}\left[\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right]\right)-\text{Log}\left[\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right]+2\,\text{Sin}[e+f x]\right)$$

Problem 483: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Tan}[e+f x]^2}{\left(a-a\,\text{Sin}[e+f x]^2\right)^{3/2}}\,dx$$

Optimal (type 3, 106 leaves, 5 steps):

$$-\frac{\text{ArcTanh}[\text{Sin}[e+f x]]\,\text{Cos}[e+f x]}{8 a f \sqrt{a\,\text{Cos}[e+f x]^2}}-\frac{\text{Tan}[e+f x]}{8 a f \sqrt{a\,\text{Cos}[e+f x]^2}}+\frac{\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]}{4 a f \sqrt{a\,\text{Cos}[e+f x]^2}}$$

Result (type 3, 213 leaves):

$$\frac{1}{64 f \left(a\,\text{Cos}[e+f x]^2\right)^{3/2}}\text{Sec}[e+f x]\left(3\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right]+4\,\text{Cos}[2(e+f x)]\left(\text{Log}\left[\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right]-\text{Log}\left[\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right]\right)+\text{Cos}[4(e+f x)]\left(\text{Log}\left[\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right]-\text{Log}\left[\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right]\right)-3\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right]+14\,\text{Sin}[e+f x]-2\,\text{Sin}[3(e+f x)]\right)$$

Problem 543: Result more than twice size of optimal antiderivative.

$$\int \left(a+b\,\text{Sin}[e+f x]^2\right)^p\,(d\,\text{Tan}[e+f x])^m\,dx$$

Optimal (type 6, 120 leaves, 3 steps):

$$\frac{1}{d f (1+m)}\text{AppellF1}\left[\frac{1+m}{2}, \frac{1+m}{2}, -p, \frac{3+m}{2}, \text{Sin}[e+f x]^2, -\frac{b \text{Sin}[e+f x]^2}{a}\right]$$
$$\left(\text{Cos}[e+f x]^2\right)^{\frac{1+m}{2}} \left(a+b \text{Sin}[e+f x]^2\right)^p \left(1+\frac{b \text{Sin}[e+f x]^2}{a}\right)^{-p} (d \text{Tan}[e+f x])^{1+m}$$

Result (type 6, 260 leaves):

$$\left(a (3+m) \text{AppellF1}\left[\frac{1+m}{2}, \frac{1+m}{2}, -p, \frac{3+m}{2}, \text{Sin}[e+f x]^2, -\frac{b \text{Sin}[e+f x]^2}{a}\right] \left(a+b \text{Sin}[e+f x]^2\right)^p \text{Tan}[e+f x] (d \text{Tan}[e+f x])^m\right) \Big/$$
$$\left(f (1+m) \left(a (3+m) \text{AppellF1}\left[\frac{1+m}{2}, \frac{1+m}{2}, -p, \frac{3+m}{2}, \text{Sin}[e+f x]^2, -\frac{b \text{Sin}[e+f x]^2}{a}\right] + \right.\right.$$
$$\left(2 b p \text{AppellF1}\left[\frac{3+m}{2}, \frac{1+m}{2}, 1-p, \frac{5+m}{2}, \text{Sin}[e+f x]^2, -\frac{b \text{Sin}[e+f x]^2}{a}\right] + \right.$$
$$\left.\left.\left. a (1+m) \text{AppellF1}\left[\frac{3+m}{2}, \frac{3+m}{2}, -p, \frac{5+m}{2}, \text{Sin}[e+f x]^2, -\frac{b \text{Sin}[e+f x]^2}{a}\right]\right) \text{Sin}[e+f x]^2\right)\right)$$

- **Problem 547: Unable to integrate problem.**

$$\int \text{Cot}[c+d x]^3 \left(a+b \text{Sin}[c+d x]^2\right)^p \, dx$$

Optimal (type 5, 95 leaves, 3 steps):

$$-\frac{\text{Csc}[c+d x]^2 \left(a+b \text{Sin}[c+d x]^2\right)^{1+p}}{2 a d} + \frac{(a-b p) \text{Hypergeometric2F1}\left[1, 1+p, 2+p, 1+\frac{b \text{Sin}[c+d x]^2}{a}\right] \left(a+b \text{Sin}[c+d x]^2\right)^{1+p}}{2 a^2 d (1+p)}$$

Result (type 8, 25 leaves):

$$\int \text{Cot}[c+d x]^3 \left(a+b \text{Sin}[c+d x]^2\right)^p \, dx$$

- **Problem 552: Result is not expressed in closed-form.**

$$\int \frac{\text{Cot}[x]^3}{a+b \text{Sin}[x]^3} \, dx$$

Optimal (type 3, 153 leaves, 11 steps):

$$\frac{b^{2/3} \text{ArcTan}\left[\frac{a^{1/3}-2 b^{1/3} \text{Sin}[x]}{\sqrt{3} a^{1/3}}\right]}{\sqrt{3} a^{5/3}} - \frac{\text{Csc}[x]^2}{2 a} - \frac{\text{Log}[\text{Sin}[x]]}{a} -$$
$$\frac{b^{2/3} \text{Log}\left[a^{1/3}+b^{1/3} \text{Sin}[x]\right]}{3 a^{5/3}} + \frac{b^{2/3} \text{Log}\left[a^{2/3}-a^{1/3} b^{1/3} \text{Sin}[x]+b^{2/3} \text{Sin}[x]^2\right]}{6 a^{5/3}} + \frac{\text{Log}\left[a+b \text{Sin}[x]^3\right]}{3 a}$$

Result (type 7, 210 leaves):

$$\frac{1}{24\,a}\Bigg(8\,\text{RootSum}\Big[a+3\,a\,\#1^2+8\,b\,\#1^3+3\,a\,\#1^4+a\,\#1^6\,\&,\ \Big(-b\,\text{Log}\Big[-\#1+\text{Tan}\Big[\frac{x}{2}\Big]\Big]+a\,\text{Log}\Big[-\#1+\text{Tan}\Big[\frac{x}{2}\Big]\Big]\,\#1+4\,b\,\text{Log}\Big[-\#1+\text{Tan}\Big[\frac{x}{2}\Big]\Big]\,\#1^2+2\,a\,\text{Log}\Big[-\#1+\text{Tan}\Big[\frac{x}{2}\Big]\Big]\,\#1^3+b\,\text{Log}\Big[-\#1+\text{Tan}\Big[\frac{x}{2}\Big]\Big]\,\#1^4+a\,\text{Log}\Big[-\#1+\text{Tan}\Big[\frac{x}{2}\Big]\Big]\,\#1^5\Big)\Big/\left(a\,\#1+4\,b\,\#1^2+2\,a\,\#1^3+a\,\#1^5\right)\,\&\Big]-3\left(\text{Csc}\Big[\frac{x}{2}\Big]^2+8\left(\text{Log}\Big[\text{Sec}\Big[\frac{x}{2}\Big]^2\Big]+\text{Log}[\text{Sin}[x]]\right)+\text{Sec}\Big[\frac{x}{2}\Big]^2\right)\Bigg)$$

- **Problem 554: Result more than twice size of optimal antiderivative.**

$$\int\frac{\text{Cot}[x]}{\sqrt{a+b\,\text{Sin}[x]^3}}\,dx$$

Optimal (type 3, 28 leaves, 4 steps):

$$-\frac{2\,\text{ArcTanh}\Big[\frac{\sqrt{a+b\,\text{Sin}[x]^3}}{\sqrt{a}}\Big]}{3\,\sqrt{a}}$$

Result (type 3, 66 leaves):

$$-\frac{2\,\sqrt{b}\,\text{ArcSinh}\Big[\frac{\sqrt{a}\,\text{Csc}[x]^{3/2}}{\sqrt{b}}\Big]\,\sqrt{\frac{b+a\,\text{Csc}[x]^3}{b}}}{3\,\sqrt{a}\,\text{Csc}[x]^{3/2}\,\sqrt{a+b\,\text{Sin}[x]^3}}$$

- **Problem 555: Result more than twice size of optimal antiderivative.**

$$\int\text{Cot}[c+d\,x]\,\sqrt{a+b\,\text{Sin}[c+d\,x]^4}\,dx$$

Optimal (type 3, 59 leaves, 5 steps):

$$-\frac{\sqrt{a}\,\text{ArcTanh}\Big[\frac{\sqrt{a+b\,\text{Sin}[c+d\,x]^4}}{\sqrt{a}}\Big]}{2\,d}+\frac{\sqrt{a+b\,\text{Sin}[c+d\,x]^4}}{2\,d}$$

Result (type 3, 166 leaves):

$$\Big(\sqrt{\text{Cos}[c+d\,x]^4\,\left(a+2\,a\,\text{Tan}[c+d\,x]^2+(a+b)\,\text{Tan}[c+d\,x]^4\right)}\,\Big(\sqrt{a}\,\Big(\text{Log}\big[\text{Tan}[c+d\,x]^2\big]-\text{Log}\Big[a+a\,\text{Tan}[c+d\,x]^2+\sqrt{a}\,\sqrt{a\,\text{Sec}[c+d\,x]^4+b\,\text{Tan}[c+d\,x]^4}\Big]\Big)\,\text{Sec}[c+d\,x]^2+\sqrt{a\,\text{Sec}[c+d\,x]^4+b\,\text{Tan}[c+d\,x]^4}\Big)\Big)\Big/\left(2\,d\,\sqrt{a\,\text{Sec}[c+d\,x]^4+b\,\text{Tan}[c+d\,x]^4}\right)$$

- **Problem 556: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int\frac{\text{Tan}[c+d\,x]^3}{\sqrt{a+b\,\text{Sin}[c+d\,x]^4}}\,dx$$

Optimal (type 3, 89 leaves, 4 steps):

$$-\frac{a\,\text{ArcTanh}\left[\frac{a+b\,\text{Sin}[c+d\,x]^2}{\sqrt{a+b}\,\sqrt{a+b\,\text{Sin}[c+d\,x]^4}}\right]}{2\,(a+b)^{3/2}\,d}+\frac{\text{Sec}[c+d\,x]^2\,\sqrt{a+b\,\text{Sin}[c+d\,x]^4}}{2\,(a+b)\,d}$$

Result (type 4, 63 448 leaves): Display of huge result suppressed!

- **Problem 557: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int \frac{\text{Tan}[c+d\,x]}{\sqrt{a+b\,\text{Sin}[c+d\,x]^4}}\,dx$$

Optimal (type 3, 51 leaves, 3 steps):

$$\frac{\text{ArcTanh}\left[\frac{a+b\,\text{Sin}[c+d\,x]^2}{\sqrt{a+b}\,\sqrt{a+b\,\text{Sin}[c+d\,x]^4}}\right]}{2\,\sqrt{a+b}\,d}$$

Result (type 4, 39 909 leaves): Display of huge result suppressed!

- **Problem 558: Result more than twice size of optimal antiderivative.**

$$\int \frac{\text{Cot}[c+d\,x]}{\sqrt{a+b\,\text{Sin}[c+d\,x]^4}}\,dx$$

Optimal (type 3, 35 leaves, 4 steps):

$$-\frac{\text{ArcTanh}\left[\frac{\sqrt{a+b\,\text{Sin}[c+d\,x]^4}}{\sqrt{a}}\right]}{2\,\sqrt{a}\,d}$$

Result (type 3, 142 leaves):

$$\left(\sqrt{8\,a+3\,b-4\,b\,\text{Cos}[2\,(c+d\,x)]+b\,\text{Cos}[4\,(c+d\,x)]}\,\left(\text{Log}\left[\text{Tan}[c+d\,x]^2\right]-\text{Log}\left[a+a\,\text{Tan}[c+d\,x]^2+\sqrt{a}\,\sqrt{a\,\text{Sec}[c+d\,x]^4+b\,\text{Tan}[c+d\,x]^4}\right]\right)\right.$$
$$\left.\text{Sec}[c+d\,x]^2\right)\Big/\left(4\,\sqrt{2}\,\sqrt{a}\,d\,\sqrt{a+2\,a\,\text{Tan}[c+d\,x]^2+(a+b)\,\text{Tan}[c+d\,x]^4}\right)$$

- **Problem 559: Result more than twice size of optimal antiderivative.**

$$\int \frac{\text{Cot}[c+d\,x]^3}{\sqrt{a+b\,\text{Sin}[c+d\,x]^4}}\,dx$$

Optimal (type 3, 70 leaves, 5 steps):

$$\frac{\text{ArcTanh}\left[\frac{\sqrt{a+b\,\text{Sin}[c+d\,x]^4}}{\sqrt{a}}\right]}{2\,\sqrt{a}\,d}-\frac{\text{Csc}[c+d\,x]^2\,\sqrt{a+b\,\text{Sin}[c+d\,x]^4}}{2\,a\,d}$$

Result (type 3, 185 leaves):

$$-\left(\sqrt{8a+3b-4b\,\mathrm{Cos}[2\,(c+d\,x)]+b\,\mathrm{Cos}[4\,(c+d\,x)]}\right.$$
$$\left(\sqrt{a}\,\left(\mathrm{Log}\left[\mathrm{Tan}[c+d\,x]^2\right]-\mathrm{Log}\left[a+a\,\mathrm{Tan}[c+d\,x]^2+\sqrt{a}\,\sqrt{a\,\mathrm{Sec}[c+d\,x]^4+b\,\mathrm{Tan}[c+d\,x]^4}\,\right]\right)\mathrm{Sec}[c+d\,x]^2+\right.$$
$$\left.\left.\mathrm{Csc}[c+d\,x]^2\sqrt{a+2a\,\mathrm{Tan}[c+d\,x]^2+(a+b)\,\mathrm{Tan}[c+d\,x]^4}\right)\right)\Big/\left(4\sqrt{2}\,a\,d\,\sqrt{a+2a\,\mathrm{Tan}[c+d\,x]^2+(a+b)\,\mathrm{Tan}[c+d\,x]^4}\right)$$

Problem 561: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{\mathrm{Tan}[c+d\,x]^2}{\sqrt{a+b\,\mathrm{Sin}[c+d\,x]^4}}\,dx$$

Optimal (type 4, 411 leaves, 4 steps):

$$\frac{\mathrm{Cos}[c+d\,x]\,\mathrm{Sin}[c+d\,x]\,\left(a+2a\,\mathrm{Tan}[c+d\,x]^2+(a+b)\,\mathrm{Tan}[c+d\,x]^4\right)}{\sqrt{a+b}\,d\,\sqrt{a+b\,\mathrm{Sin}[c+d\,x]^4}\,\left(\sqrt{a}+\sqrt{a+b}\,\mathrm{Tan}[c+d\,x]^2\right)}-$$
$$\left(a^{1/4}\,\mathrm{Cos}[c+d\,x]^2\,\mathrm{EllipticE}\left[2\,\mathrm{ArcTan}\left[\frac{(a+b)^{1/4}\,\mathrm{Tan}[c+d\,x]}{a^{1/4}}\right],\frac{1}{2}\left(1-\frac{\sqrt{a}}{\sqrt{a+b}}\right)\right]\right.$$
$$\left.\left(\sqrt{a}+\sqrt{a+b}\,\mathrm{Tan}[c+d\,x]^2\right)\sqrt{\frac{a+2a\,\mathrm{Tan}[c+d\,x]^2+(a+b)\,\mathrm{Tan}[c+d\,x]^4}{\left(\sqrt{a}+\sqrt{a+b}\,\mathrm{Tan}[c+d\,x]^2\right)^2}}\right)\Big/\left((a+b)^{3/4}\,d\,\sqrt{a+b\,\mathrm{Sin}[c+d\,x]^4}\right)+$$
$$\left(a^{1/4}\,\mathrm{Cos}[c+d\,x]^2\,\mathrm{EllipticF}\left[2\,\mathrm{ArcTan}\left[\frac{(a+b)^{1/4}\,\mathrm{Tan}[c+d\,x]}{a^{1/4}}\right],\frac{1}{2}\left(1-\frac{\sqrt{a}}{\sqrt{a+b}}\right)\right]\left(\sqrt{a}+\sqrt{a+b}\,\mathrm{Tan}[c+d\,x]^2\right)\right.$$
$$\left.\sqrt{\frac{a+2a\,\mathrm{Tan}[c+d\,x]^2+(a+b)\,\mathrm{Tan}[c+d\,x]^4}{\left(\sqrt{a}+\sqrt{a+b}\,\mathrm{Tan}[c+d\,x]^2\right)^2}}\right)\Big/\left(2\,(a+b)^{3/4}\,d\,\sqrt{a+b\,\mathrm{Sin}[c+d\,x]^4}\right)$$

Result (type 4, 291 leaves):

$$-\left(2\,i\,\sqrt{2}\,\sqrt{a}\,\mathrm{Cos}[c+d\,x]^2\left(\mathrm{EllipticE}\left[i\,\mathrm{ArcSinh}\left[\sqrt{1-\frac{i\sqrt{b}}{\sqrt{a}}}\,\mathrm{Tan}[c+d\,x]\right],\frac{\sqrt{a}+i\sqrt{b}}{\sqrt{a}-i\sqrt{b}}\right]-\mathrm{EllipticF}\left[i\,\mathrm{ArcSinh}\left[\sqrt{1-\frac{i\sqrt{b}}{\sqrt{a}}}\,\mathrm{Tan}[c+d\,x]\right],\frac{\sqrt{a}+i\sqrt{b}}{\sqrt{a}-i\sqrt{b}}\right]\right)\sqrt{1+\left(1-\frac{i\sqrt{b}}{\sqrt{a}}\right)\mathrm{Tan}[c+d\,x]^2}\,\sqrt{1+\left(1+\frac{i\sqrt{b}}{\sqrt{a}}\right)\mathrm{Tan}[c+d\,x]^2}\right)\Big/\left(\left(\sqrt{a}+i\sqrt{b}\right)\sqrt{1-\frac{i\sqrt{b}}{\sqrt{a}}}\,d\,\sqrt{8\,a+3\,b-4\,b\,\mathrm{Cos}[2\,(c+d\,x)]+b\,\mathrm{Cos}[4\,(c+d\,x)]}\right)$$

Problem 562: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{1}{\sqrt{a+b\,\mathrm{Sin}[c+d\,x]^4}}\,dx$$

Optimal (type 4, 162 leaves, 2 steps):

$$\left(\mathrm{Cos}[c+d\,x]^2\,\mathrm{EllipticF}\left[2\,\mathrm{ArcTan}\left[\frac{(a+b)^{1/4}\,\mathrm{Tan}[c+d\,x]}{a^{1/4}}\right],\frac{1}{2}\left(1-\frac{\sqrt{a}}{\sqrt{a+b}}\right)\right]\left(\sqrt{a}+\sqrt{a+b}\,\mathrm{Tan}[c+d\,x]^2\right)\sqrt{\frac{a+2\,a\,\mathrm{Tan}[c+d\,x]^2+(a+b)\,\mathrm{Tan}[c+d\,x]^4}{\left(\sqrt{a}+\sqrt{a+b}\,\mathrm{Tan}[c+d\,x]^2\right)^2}}\right)\Big/\left(2\,a^{1/4}\,(a+b)^{1/4}\,d\,\sqrt{a+b\,\mathrm{Sin}[c+d\,x]^4}\right)$$

Result (type 4, 195 leaves):

$$-\left(2\,i\,\mathrm{Cos}[c+d\,x]^2\,\mathrm{EllipticF}\left[i\,\mathrm{ArcSinh}\left[\sqrt{1-\frac{i\sqrt{b}}{\sqrt{a}}}\,\mathrm{Tan}[c+d\,x]\right],\frac{\sqrt{a}+i\sqrt{b}}{\sqrt{a}-i\sqrt{b}}\right]\sqrt{1+\left(1+\frac{i\sqrt{b}}{\sqrt{a}}\right)\mathrm{Tan}[c+d\,x]^2}\,\sqrt{2+\left(2-\frac{2\,i\sqrt{b}}{\sqrt{a}}\right)\mathrm{Tan}[c+d\,x]^2}\right)\Big/\left(\sqrt{1-\frac{i\sqrt{b}}{\sqrt{a}}}\,d\,\sqrt{8\,a+3\,b-4\,b\,\mathrm{Cos}[2\,(c+d\,x)]+b\,\mathrm{Cos}[4\,(c+d\,x)]}\right)$$

Problem 563: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{\text{Cot}[c+d\,x]^2}{\sqrt{a+b\,\text{Sin}[c+d\,x]^4}}\,dx$$

Optimal (type 4, 477 leaves, 6 steps):

$$-\frac{\text{Cos}[c+d\,x]^2\,\text{Cot}[c+d\,x]\,\left(a+2\,a\,\text{Tan}[c+d\,x]^2+(a+b)\,\text{Tan}[c+d\,x]^4\right)}{a\,d\,\sqrt{a+b\,\text{Sin}[c+d\,x]^4}}+$$

$$\frac{\sqrt{a+b}\,\text{Cos}[c+d\,x]\,\text{Sin}[c+d\,x]\,\left(a+2\,a\,\text{Tan}[c+d\,x]^2+(a+b)\,\text{Tan}[c+d\,x]^4\right)}{a\,d\,\sqrt{a+b\,\text{Sin}[c+d\,x]^4}\,\left(\sqrt{a}+\sqrt{a+b}\,\text{Tan}[c+d\,x]^2\right)}-$$

$$\left((a+b)^{1/4}\,\text{Cos}[c+d\,x]^2\,\text{EllipticE}\left[2\,\text{ArcTan}\left[\frac{(a+b)^{1/4}\,\text{Tan}[c+d\,x]}{a^{1/4}}\right],\,\frac{1}{2}\left(1-\frac{\sqrt{a}}{\sqrt{a+b}}\right)\right]\right.$$

$$\left.\left(\sqrt{a}+\sqrt{a+b}\,\text{Tan}[c+d\,x]^2\right)\sqrt{\frac{a+2\,a\,\text{Tan}[c+d\,x]^2+(a+b)\,\text{Tan}[c+d\,x]^4}{\left(\sqrt{a}+\sqrt{a+b}\,\text{Tan}[c+d\,x]^2\right)^2}}\right)\Big/\left(a^{3/4}\,d\,\sqrt{a+b\,\text{Sin}[c+d\,x]^4}\right)+$$

$$\left((a+b)^{1/4}\,\text{Cos}[c+d\,x]^2\,\text{EllipticF}\left[2\,\text{ArcTan}\left[\frac{(a+b)^{1/4}\,\text{Tan}[c+d\,x]}{a^{1/4}}\right],\,\frac{1}{2}\left(1-\frac{\sqrt{a}}{\sqrt{a+b}}\right)\right]\left(\sqrt{a}+\sqrt{a+b}\,\text{Tan}[c+d\,x]^2\right)\right.$$

$$\left.\sqrt{\frac{a+2\,a\,\text{Tan}[c+d\,x]^2+(a+b)\,\text{Tan}[c+d\,x]^4}{\left(\sqrt{a}+\sqrt{a+b}\,\text{Tan}[c+d\,x]^2\right)^2}}\right)\Big/\left(2\,a^{3/4}\,d\,\sqrt{a+b\,\text{Sin}[c+d\,x]^4}\right)$$

Result (type 4, 378 leaves):

$$-\frac{\sqrt{8 a+3 b-4 b \operatorname{Cos}[2 (c+d x)]+b \operatorname{Cos}[4 (c+d x)]} \operatorname{Cot}[c+d x]}{2 \sqrt{2} a d}-\left(\operatorname{Cos}[c+d x]^4 \left(a \operatorname{Sec}[c+d x]^4 \operatorname{Tan}[c+d x]+b \operatorname{Tan}[c+d x]^5+1\right/\left(\sqrt{1-\frac{i \sqrt{b}}{\sqrt{a}}}\right)\left(i a+\sqrt{a} \sqrt{b}\right)\right.$$

$$\left(\operatorname{EllipticE}\left[i \operatorname{ArcSinh}\left[\sqrt{1-\frac{i \sqrt{b}}{\sqrt{a}}} \operatorname{Tan}[c+d x]\right], \frac{\sqrt{a}+i \sqrt{b}}{\sqrt{a}-i \sqrt{b}}\right]-\operatorname{EllipticF}\left[i \operatorname{ArcSinh}\left[\sqrt{1-\frac{i \sqrt{b}}{\sqrt{a}}} \operatorname{Tan}[c+d x]\right], \frac{\sqrt{a}+i \sqrt{b}}{\sqrt{a}-i \sqrt{b}}\right]\right)$$

$$\left.\left.\operatorname{Sec}[c+d x]^2 \sqrt{1+\left(1-\frac{i \sqrt{b}}{\sqrt{a}}\right) \operatorname{Tan}[c+d x]^2} \sqrt{1+\left(1+\frac{i \sqrt{b}}{\sqrt{a}}\right) \operatorname{Tan}[c+d x]^2}\right)\right) \Big/$$

$$\left(a d \sqrt{\operatorname{Cos}[c+d x]^4 \left(a+2 a \operatorname{Tan}[c+d x]^2+(a+b) \operatorname{Tan}[c+d x]^4\right)}\right)$$

- **Problem 565: Result more than twice size of optimal antiderivative.**

$$\int \left(a+b \operatorname{Sin}[c+d x]^4\right)^p \operatorname{Tan}[c+d x]^3 \, dx$$

Optimal (type 6, 279 leaves, 11 steps):

$$-\frac{(a+b+2 b p) \operatorname{Hypergeometric2F1}\left[1, 1+p, 2+p, \frac{a+b \operatorname{Sin}[c+d x]^4}{a+b}\right] \left(a+b \operatorname{Sin}[c+d x]^4\right)^{1+p}}{4 (a+b)^2 d (1+p)}+\frac{\operatorname{Sec}[c+d x]^2 \left(a+b \operatorname{Sin}[c+d x]^4\right)^{1+p}}{2 (a+b) d}-\frac{1}{2 (a+b) d}$$

$$(a+b+2 b p) \operatorname{AppellF1}\left[\frac{1}{2}, 1, -p, \frac{3}{2}, \operatorname{Sin}[c+d x]^4, -\frac{b \operatorname{Sin}[c+d x]^4}{a}\right] \operatorname{Sin}[c+d x]^2 \left(a+b \operatorname{Sin}[c+d x]^4\right)^p \left(1+\frac{b \operatorname{Sin}[c+d x]^4}{a}\right)^{-p}+$$

$$\frac{1}{2 (a+b) d} b (1+2 p) \operatorname{Hypergeometric2F1}\left[\frac{1}{2}, -p, \frac{3}{2}, -\frac{b \operatorname{Sin}[c+d x]^4}{a}\right] \operatorname{Sin}[c+d x]^2 \left(a+b \operatorname{Sin}[c+d x]^4\right)^p \left(1+\frac{b \operatorname{Sin}[c+d x]^4}{a}\right)^{-p}$$

Result (type 6, 2007 leaves):

$$-\left(\left(\left(\left((1-2 p) \operatorname{AppellF1}\left[-2 p, -p, -p, 1-2 p, -\frac{(a+b) \operatorname{Sec}[c+d x]^2}{-b+\sqrt{-a b}}, \frac{(a+b) \operatorname{Sec}[c+d x]^2}{b+\sqrt{-a b}}\right]+\right.\right.\right.\right.$$

$$\left.2 p \operatorname{AppellF1}\left[1-2 p, -p, -p, 2-2 p, -\frac{(a+b) \operatorname{Sec}[c+d x]^2}{-b+\sqrt{-a b}}, \frac{(a+b) \operatorname{Sec}[c+d x]^2}{b+\sqrt{-a b}}\right] \operatorname{Sec}[c+d x]^2\right)$$

$$\left(a+b \operatorname{Sin}[c+d x]^4\right)^p \operatorname{Tan}[c+d x]^3 \left(\frac{-a+\sqrt{-a b}-(a+b) \operatorname{Tan}[c+d x]^2}{b+\sqrt{-a b}}\right)^{-p} \left(\frac{a+\sqrt{-a b}+(a+b) \operatorname{Tan}[c+d x]^2}{-b+\sqrt{-a b}}\right)^{-p}$$

$$\left(\cos[c+d x]^4 \left(a+2 a \tan[c+d x]^2+(a+b) \tan[c+d x]^4\right)\right)^p\Bigg) \Bigg/ \Bigg(4 d p (-1+2 p)$$

$$\Bigg(\frac{1}{2\left(-b+\sqrt{-a b}\right)(-1+2 p)} (a+b) \operatorname{Sec}[c+d x]^2 \Bigg((1-2 p) \operatorname{AppellF1}\Big[-2 p,-p,-p,1-2 p,-\frac{(a+b) \operatorname{Sec}[c+d x]^2}{-b+\sqrt{-a b}}, \frac{(a+b) \operatorname{Sec}[c+d x]^2}{b+\sqrt{-a b}}\Big]+$$

$$2 p \operatorname{AppellF1}\Big[1-2 p,-p,-p,2-2 p,-\frac{(a+b) \operatorname{Sec}[c+d x]^2}{-b+\sqrt{-a b}}, \frac{(a+b) \operatorname{Sec}[c+d x]^2}{b+\sqrt{-a b}}\Big] \operatorname{Sec}[c+d x]^2\Bigg)$$

$$\operatorname{Tan}[c+d x] \left(\frac{-a+\sqrt{-a b}-(a+b) \operatorname{Tan}[c+d x]^2}{b+\sqrt{-a b}}\right)^{-p} \left(\frac{a+\sqrt{-a b}+(a+b) \operatorname{Tan}[c+d x]^2}{-b+\sqrt{-a b}}\right)^{-1-p}$$

$$\left(\cos[c+d x]^4 \left(a+2 a \tan[c+d x]^2+(a+b) \tan[c+d x]^4\right)\right)^p-\frac{1}{2\left(b+\sqrt{-a b}\right)(-1+2 p)}$$

$$(a+b) \operatorname{Sec}[c+d x]^2 \Bigg((1-2 p) \operatorname{AppellF1}\Big[-2 p,-p,-p,1-2 p,-\frac{(a+b) \operatorname{Sec}[c+d x]^2}{-b+\sqrt{-a b}}, \frac{(a+b) \operatorname{Sec}[c+d x]^2}{b+\sqrt{-a b}}\Big]+2 p \operatorname{AppellF1}\Big[1-2 p,$$

$$-p,-p,2-2 p,-\frac{(a+b) \operatorname{Sec}[c+d x]^2}{-b+\sqrt{-a b}}, \frac{(a+b) \operatorname{Sec}[c+d x]^2}{b+\sqrt{-a b}}\Big] \operatorname{Sec}[c+d x]^2\Bigg) \operatorname{Tan}[c+d x] \left(\frac{-a+\sqrt{-a b}-(a+b) \operatorname{Tan}[c+d x]^2}{b+\sqrt{-a b}}\right)^{-1-p}$$

$$\left(\frac{a+\sqrt{-a b}+(a+b) \operatorname{Tan}[c+d x]^2}{-b+\sqrt{-a b}}\right)^{-p} \left(\cos[c+d x]^4 \left(a+2 a \tan[c+d x]^2+(a+b) \tan[c+d x]^4\right)\right)^p-\frac{1}{4 p (-1+2 p)}$$

$$\left(\frac{-a+\sqrt{-a b}-(a+b) \operatorname{Tan}[c+d x]^2}{b+\sqrt{-a b}}\right)^{-p} \left(\frac{a+\sqrt{-a b}+(a+b) \operatorname{Tan}[c+d x]^2}{-b+\sqrt{-a b}}\right)^{-p} \left(\cos[c+d x]^4 \left(a+2 a \tan[c+d x]^2+(a+b) \tan[c+d x]^4\right)\right)^p$$

$$\Bigg(4 p \operatorname{AppellF1}\Big[1-2 p,-p,-p,2-2 p,-\frac{(a+b) \operatorname{Sec}[c+d x]^2}{-b+\sqrt{-a b}}, \frac{(a+b) \operatorname{Sec}[c+d x]^2}{b+\sqrt{-a b}}\Big] \operatorname{Sec}[c+d x]^2 \operatorname{Tan}[c+d x]+$$

$$(1-2 p) \Bigg(-\Bigg(4 (a+b) p^2 \operatorname{AppellF1}\Big[1-2 p,1-p,-p,2-2 p,-\frac{(a+b) \operatorname{Sec}[c+d x]^2}{-b+\sqrt{-a b}}, \frac{(a+b) \operatorname{Sec}[c+d x]^2}{b+\sqrt{-a b}}\Big]$$

$$\operatorname{Sec}[c+d x]^2 \operatorname{Tan}[c+d x]\Bigg) \Bigg/ \left(\left(-b+\sqrt{-a b}\right)(1-2 p)\right)+\frac{1}{\left(b+\sqrt{-a b}\right)(1-2 p)}$$

$$4 (a+b) p^2 \operatorname{AppellF1}\Big[1-2 p,-p,1-p,2-2 p,-\frac{(a+b) \operatorname{Sec}[c+d x]^2}{-b+\sqrt{-a b}}, \frac{(a+b) \operatorname{Sec}[c+d x]^2}{b+\sqrt{-a b}}\Big] \operatorname{Sec}[c+d x]^2 \operatorname{Tan}[c+d x]\Bigg)+$$

$$2\,p\,\mathrm{Sec}[c+d\,x]^2\left(\left(2\,(a+b)\,(1-2\,p)\,p\,\mathrm{AppellF1}\left[2-2\,p,1-p,-p,3-2\,p,-\frac{(a+b)\,\mathrm{Sec}[c+d\,x]^2}{-b+\sqrt{-a\,b}},\frac{(a+b)\,\mathrm{Sec}[c+d\,x]^2}{b+\sqrt{-a\,b}}\right]\right.\right.$$

$$\left.\mathrm{Sec}[c+d\,x]^2\,\mathrm{Tan}[c+d\,x]\right)\Big/\left(\left(-b+\sqrt{-a\,b}\right)(2-2\,p)\right)-\frac{1}{\left(b+\sqrt{-a\,b}\right)(2-2\,p)}2\,(a+b)\,(1-2\,p)\,p\,\mathrm{AppellF1}\Big[$$

$$\left.\left.2-2\,p,-p,1-p,3-2\,p,-\frac{(a+b)\,\mathrm{Sec}[c+d\,x]^2}{-b+\sqrt{-a\,b}},\frac{(a+b)\,\mathrm{Sec}[c+d\,x]^2}{b+\sqrt{-a\,b}}\right]\mathrm{Sec}[c+d\,x]^2\,\mathrm{Tan}[c+d\,x]\right)\right)-$$

$$\frac{1}{4\,(-1+2\,p)}\left((1-2\,p)\,\mathrm{AppellF1}\left[-2\,p,-p,-p,1-2\,p,-\frac{(a+b)\,\mathrm{Sec}[c+d\,x]^2}{-b+\sqrt{-a\,b}},\frac{(a+b)\,\mathrm{Sec}[c+d\,x]^2}{b+\sqrt{-a\,b}}\right]+2\,p\,\mathrm{AppellF1}\Big[\right.$$

$$\left.1-2\,p,-p,-p,2-2\,p,-\frac{(a+b)\,\mathrm{Sec}[c+d\,x]^2}{-b+\sqrt{-a\,b}},\frac{(a+b)\,\mathrm{Sec}[c+d\,x]^2}{b+\sqrt{-a\,b}}\right]\mathrm{Sec}[c+d\,x]^2\Big)\left(\frac{-a+\sqrt{-a\,b}-(a+b)\,\mathrm{Tan}[c+d\,x]^2}{b+\sqrt{-a\,b}}\right)^{-p}$$

$$\left(\frac{a+\sqrt{-a\,b}+(a+b)\,\mathrm{Tan}[c+d\,x]^2}{-b+\sqrt{-a\,b}}\right)^{-p}\left(\mathrm{Cos}[c+d\,x]^4\left(a+2\,a\,\mathrm{Tan}[c+d\,x]^2+(a+b)\,\mathrm{Tan}[c+d\,x]^4\right)\right)^{-1+p}$$

$$\left(\mathrm{Cos}[c+d\,x]^4\left(4\,a\,\mathrm{Sec}[c+d\,x]^2\,\mathrm{Tan}[c+d\,x]+4\,(a+b)\,\mathrm{Sec}[c+d\,x]^2\,\mathrm{Tan}[c+d\,x]^3\right)-\right.$$

$$\left.\left.\left.4\,\mathrm{Cos}[c+d\,x]^3\,\mathrm{Sin}[c+d\,x]\left(a+2\,a\,\mathrm{Tan}[c+d\,x]^2+(a+b)\,\mathrm{Tan}[c+d\,x]^4\right)\right)\right)\right)$$

- **Problem 566: Result more than twice size of optimal antiderivative.**

$$\int\left(a+b\,\mathrm{Sin}[c+d\,x]^4\right)^p\,\mathrm{Tan}[c+d\,x]\,dx$$

Optimal (type 6, 141 leaves, 7 steps):

$$\frac{\mathrm{Hypergeometric2F1}\left[1,1+p,2+p,\frac{a+b\,\mathrm{Sin}[c+d\,x]^4}{a+b}\right]\left(a+b\,\mathrm{Sin}[c+d\,x]^4\right)^{1+p}}{4\,(a+b)\,d\,(1+p)}+\frac{1}{2\,d}$$

$$\mathrm{AppellF1}\left[\frac{1}{2},1,-p,\frac{3}{2},\mathrm{Sin}[c+d\,x]^4,-\frac{b\,\mathrm{Sin}[c+d\,x]^4}{a}\right]\mathrm{Sin}[c+d\,x]^2\left(a+b\,\mathrm{Sin}[c+d\,x]^4\right)^p\left(1+\frac{b\,\mathrm{Sin}[c+d\,x]^4}{a}\right)^{-p}$$

Result (type 6, 466 leaves):

$$-\left(\left(\left(-b+\sqrt{-a\,b}\right)\left(b+\sqrt{-a\,b}\right)(-1+2\,p)\,\text{AppellF1}\left[-2\,p,\,-p,\,-p,\,1-2\,p,\,-\frac{(a+b)\,\text{Sec}[c+d\,x]^2}{-b+\sqrt{-a\,b}},\,\frac{(a+b)\,\text{Sec}[c+d\,x]^2}{b+\sqrt{-a\,b}}\right]\right.\right.$$

$$\left.\text{Cos}[c+d\,x]\,\text{Sin}[c+d\,x]\,\left(a+b\,\text{Sin}[c+d\,x]^4\right)^p\left(-a+\sqrt{-a\,b}-(a+b)\,\text{Tan}[c+d\,x]^2\right)\left(a+\sqrt{-a\,b}+(a+b)\,\text{Tan}[c+d\,x]^2\right)\right)\Big/$$

$$\left(2\,(a+b)^2\,d\,p\,\left(b\,(-1+2\,p)\,\text{AppellF1}\left[-2\,p,\,-p,\,-p,\,1-2\,p,\,-\frac{(a+b)\,\text{Sec}[c+d\,x]^2}{-b+\sqrt{-a\,b}},\,\frac{(a+b)\,\text{Sec}[c+d\,x]^2}{b+\sqrt{-a\,b}}\right]\text{Sin}[2\,(c+d\,x)]+\right.\right.$$

$$2\,p\,\left(\left(b+\sqrt{-a\,b}\right)\text{AppellF1}\left[1-2\,p,\,1-p,\,-p,\,2-2\,p,\,-\frac{(a+b)\,\text{Sec}[c+d\,x]^2}{-b+\sqrt{-a\,b}},\,\frac{(a+b)\,\text{Sec}[c+d\,x]^2}{b+\sqrt{-a\,b}}\right]+\left(b-\sqrt{-a\,b}\right)\text{AppellF1}\left[1-2\,p,\right.\right.$$

$$\left.\left.\left.\left.-p,\,1-p,\,2-2\,p,\,-\frac{(a+b)\,\text{Sec}[c+d\,x]^2}{-b+\sqrt{-a\,b}},\,\frac{(a+b)\,\text{Sec}[c+d\,x]^2}{b+\sqrt{-a\,b}}\right]\right)\text{Tan}[c+d\,x]\right)\left(a+2\,a\,\text{Tan}[c+d\,x]^2+(a+b)\,\text{Tan}[c+d\,x]^4\right)\right)\right)$$

- **Problem 568: Unable to integrate problem.**

$$\int \text{Cot}[c+d\,x]^3\,\left(a+b\,\text{Sin}[c+d\,x]^4\right)^p\,dx$$

Optimal (type 5, 127 leaves, 6 steps):

$$\frac{\text{Hypergeometric2F1}\left[1,\,1+p,\,2+p,\,1+\frac{b\,\text{Sin}[c+d\,x]^4}{a}\right]\left(a+b\,\text{Sin}[c+d\,x]^4\right)^{1+p}}{4\,a\,d\,(1+p)}-$$

$$\frac{\text{Csc}[c+d\,x]^2\,\text{Hypergeometric2F1}\left[-\frac{1}{2},\,-p,\,\frac{1}{2},\,-\frac{b\,\text{Sin}[c+d\,x]^4}{a}\right]\left(a+b\,\text{Sin}[c+d\,x]^4\right)^p\left(1+\frac{b\,\text{Sin}[c+d\,x]^4}{a}\right)^{-p}}{2\,d}$$

Result (type 8, 25 leaves):

$$\int \text{Cot}[c+d\,x]^3\,\left(a+b\,\text{Sin}[c+d\,x]^4\right)^p\,dx$$

- **Problem 574: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int \left(a+b\,\text{Sin}[c+d\,x]^n\right)^3\,\text{Tan}[c+d\,x]^m\,dx$$

Optimal (type 5, 306 leaves, 10 steps):

$$\frac{a^3\,\text{Hypergeometric2F1}\left[1,\,\frac{1+m}{2},\,\frac{3+m}{2},\,-\text{Tan}[c+d\,x]^2\right]\text{Tan}[c+d\,x]^{1+m}}{d\,(1+m)}+\frac{1}{d\,(1+m+n)}$$

$$3\,a^2\,b\,\left(\text{Cos}[c+d\,x]^2\right)^{\frac{1+m}{2}}\,\text{Hypergeometric2F1}\left[\frac{1+m}{2},\,\frac{1}{2}\,(1+m+n),\,\frac{1}{2}\,(3+m+n),\,\text{Sin}[c+d\,x]^2\right]\text{Sin}[c+d\,x]^n\,\text{Tan}[c+d\,x]^{1+m}+\frac{1}{d\,(1+m+2\,n)}$$

$$3\,a\,b^2\,\left(\text{Cos}[c+d\,x]^2\right)^{\frac{1+m}{2}}\,\text{Hypergeometric2F1}\left[\frac{1+m}{2},\,\frac{1}{2}\,(1+m+2\,n),\,\frac{1}{2}\,(3+m+2\,n),\,\text{Sin}[c+d\,x]^2\right]\text{Sin}[c+d\,x]^{2\,n}\,\text{Tan}[c+d\,x]^{1+m}+$$

$$\frac{1}{d\,(1+m+3\,n)}b^3\,\left(\text{Cos}[c+d\,x]^2\right)^{\frac{1+m}{2}}\,\text{Hypergeometric2F1}\left[\frac{1+m}{2},\,\frac{1}{2}\,(1+m+3\,n),\,\frac{1}{2}\,(3+m+3\,n),\,\text{Sin}[c+d\,x]^2\right]\text{Sin}[c+d\,x]^{3\,n}\,\text{Tan}[c+d\,x]^{1+m}$$

Result (type 6, 13 001 leaves) :

$$\Bigg(\Bigg(\Bigg(\Bigg(a^3\ (3+m)\ \text{AppellF1}\Big[\frac{1+m}{2},\ m,\ 1,\ \frac{3+m}{2},\ \text{Tan}\Big[\frac{1}{2}\ (c+d\,x)\Big]^2,\ -\text{Tan}\Big[\frac{1}{2}\ (c+d\,x)\Big]^2\Big]\ \text{Tan}\Big[\frac{1}{2}\ (c+d\,x)\Big]\ \Bigg(-\frac{\text{Tan}\big[\frac{1}{2}\ (c+d\,x)\big]}{-1+\text{Tan}\big[\frac{1}{2}\ (c+d\,x)\big]^2}\Bigg)^m\Bigg)\Bigg/$$

$$\Bigg((1+m)\ \Big(1+\text{Tan}\Big[\frac{1}{2}\ (c+d\,x)\Big]^2\Big)\ \Bigg((3+m)\ \text{AppellF1}\Big[\frac{1+m}{2},\ m,\ 1,\ \frac{3+m}{2},\ \text{Tan}\Big[\frac{1}{2}\ (c+d\,x)\Big]^2,\ -\text{Tan}\Big[\frac{1}{2}\ (c+d\,x)\Big]^2\Big]-$$

$$2\ \Bigg(\text{AppellF1}\Big[\frac{3+m}{2},\ m,\ 2,\ \frac{5+m}{2},\ \text{Tan}\Big[\frac{1}{2}\ (c+d\,x)\Big]^2,\ -\text{Tan}\Big[\frac{1}{2}\ (c+d\,x)\Big]^2\Big]-$$

$$m\,\text{AppellF1}\Big[\frac{3+m}{2},\ 1+m,\ 1,\ \frac{5+m}{2},\ \text{Tan}\Big[\frac{1}{2}\ (c+d\,x)\Big]^2,\ -\text{Tan}\Big[\frac{1}{2}\ (c+d\,x)\Big]^2\Big]\Bigg)\ \text{Tan}\Big[\frac{1}{2}\ (c+d\,x)\Big]^2\Bigg)\Bigg)+$$

$$\Bigg(3\times 2^n\ a^2\ b\ (3+m+n)\ \text{AppellF1}\Big[\frac{1}{2}\ (1+m+n),\ m,\ 1+n,\ \frac{1}{2}\ (3+m+n),\ \text{Tan}\Big[\frac{1}{2}\ (c+d\,x)\Big]^2,\ -\text{Tan}\Big[\frac{1}{2}\ (c+d\,x)\Big]^2\Big]$$

$$\text{Tan}\Big[\frac{1}{2}\ (c+d\,x)\Big]\ \Bigg(-\frac{\text{Tan}\big[\frac{1}{2}\ (c+d\,x)\big]}{-1+\text{Tan}\big[\frac{1}{2}\ (c+d\,x)\big]^2}\Bigg)^m\ \Bigg(\frac{\text{Tan}\big[\frac{1}{2}\ (c+d\,x)\big]}{1+\text{Tan}\big[\frac{1}{2}\ (c+d\,x)\big]^2}\Bigg)^n\Bigg)\Bigg/$$

$$\Bigg((1+m+n)\ \Big(1+\text{Tan}\Big[\frac{1}{2}\ (c+d\,x)\Big]^2\Big)\ \Bigg((3+m+n)\ \text{AppellF1}\Big[\frac{1}{2}\ (1+m+n),\ m,\ 1+n,\ \frac{1}{2}\ (3+m+n),\ \text{Tan}\Big[\frac{1}{2}\ (c+d\,x)\Big]^2,\ -\text{Tan}\Big[\frac{1}{2}\ (c+d\,x)\Big]^2\Big]-$$

$$2\ \Bigg((1+n)\ \text{AppellF1}\Big[\frac{1}{2}\ (3+m+n),\ m,\ 2+n,\ \frac{1}{2}\ (5+m+n),\ \text{Tan}\Big[\frac{1}{2}\ (c+d\,x)\Big]^2,\ -\text{Tan}\Big[\frac{1}{2}\ (c+d\,x)\Big]^2\Big]-$$

$$m\,\text{AppellF1}\Big[\frac{1}{2}\ (3+m+n),\ 1+m,\ 1+n,\ \frac{1}{2}\ (5+m+n),\ \text{Tan}\Big[\frac{1}{2}\ (c+d\,x)\Big]^2,\ -\text{Tan}\Big[\frac{1}{2}\ (c+d\,x)\Big]^2\Big]\Bigg)\ \text{Tan}\Big[\frac{1}{2}\ (c+d\,x)\Big]^2\Bigg)\Bigg)+$$

$$\Bigg(3\times 2^{2\,n}\ a\ b^2\ (3+m+2\,n)\ \text{AppellF1}\Big[\frac{1}{2}\ (1+m+2\,n),\ m,\ 1+2\,n,\ \frac{1}{2}\ (3+m+2\,n),\ \text{Tan}\Big[\frac{1}{2}\ (c+d\,x)\Big]^2,\ -\text{Tan}\Big[\frac{1}{2}\ (c+d\,x)\Big]^2\Big]$$

$$\text{Tan}\Big[\frac{1}{2}\ (c+d\,x)\Big]\ \Bigg(-\frac{\text{Tan}\big[\frac{1}{2}\ (c+d\,x)\big]}{-1+\text{Tan}\big[\frac{1}{2}\ (c+d\,x)\big]^2}\Bigg)^m\ \Bigg(\frac{\text{Tan}\big[\frac{1}{2}\ (c+d\,x)\big]}{1+\text{Tan}\big[\frac{1}{2}\ (c+d\,x)\big]^2}\Bigg)^{2\,n}\Bigg)\Bigg/\ \Bigg((1+m+2\,n)\ \Big(1+\text{Tan}\Big[\frac{1}{2}\ (c+d\,x)\Big]^2\Big)$$

$$\Bigg((3+m+2\,n)\ \text{AppellF1}\Big[\frac{1}{2}\ (1+m+2\,n),\ m,\ 1+2\,n,\ \frac{1}{2}\ (3+m+2\,n),\ \text{Tan}\Big[\frac{1}{2}\ (c+d\,x)\Big]^2,\ -\text{Tan}\Big[\frac{1}{2}\ (c+d\,x)\Big]^2\Big]-$$

$$2\ \Bigg((1+2\,n)\ \text{AppellF1}\Big[\frac{1}{2}\ (3+m+2\,n),\ m,\ 2\ (1+n),\ \frac{1}{2}\ (5+m+2\,n),\ \text{Tan}\Big[\frac{1}{2}\ (c+d\,x)\Big]^2,\ -\text{Tan}\Big[\frac{1}{2}\ (c+d\,x)\Big]^2\Big]-$$

$$m\,\text{AppellF1}\Big[\frac{1}{2}\ (3+m+2\,n),\ 1+m,\ 1+2\,n,\ \frac{1}{2}\ (5+m+2\,n),\ \text{Tan}\Big[\frac{1}{2}\ (c+d\,x)\Big]^2,\ -\text{Tan}\Big[\frac{1}{2}\ (c+d\,x)\Big]^2\Big]\Bigg)\ \text{Tan}\Big[\frac{1}{2}\ (c+d\,x)\Big]^2\Bigg)\Bigg)+$$

$$\Bigg(2^{3\,n}\ b^3\ (3+m+3\,n)\ \text{AppellF1}\Big[\frac{1}{2}\ (1+m+3\,n),\ m,\ 1+3\,n,\ \frac{1}{2}\ (3+m+3\,n),\ \text{Tan}\Big[\frac{1}{2}\ (c+d\,x)\Big]^2,\ -\text{Tan}\Big[\frac{1}{2}\ (c+d\,x)\Big]^2\Big]$$

$$\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]\left(-\frac{\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{-1+\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}\right)^m\left(\frac{\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{1+\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}\right)^{3n}\Bigg)\Bigg/\left((1+m+3n)\left(1+\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right.$$

$$\left((3+m+3n)\,\mathrm{AppellF1}\left[\frac{1}{2}(1+m+3n),m,1+3n,\frac{1}{2}(3+m+3n),\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]-\right.$$

$$2\left((1+3n)\,\mathrm{AppellF1}\left[\frac{1}{2}(3+m+3n),m,2+3n,\frac{1}{2}(5+m+3n),\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]-\right.$$

$$\left.\left.\left.m\,\mathrm{AppellF1}\left[\frac{1}{2}(3+m+3n),1+m,1+3n,\frac{1}{2}(5+m+3n),\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)\right)$$

$$\left(a^3\,\mathrm{Tan}[c+d\,x]^m+3a^2b\,\mathrm{Sin}[c+d\,x]^n\,\mathrm{Tan}[c+d\,x]^m+3ab^2\,\mathrm{Sin}[c+d\,x]^{2n}\,\mathrm{Tan}[c+d\,x]^m+b^3\,\mathrm{Sin}[c+d\,x]^{3n}\,\mathrm{Tan}[c+d\,x]^m\right)\Bigg)\Bigg/$$

$$\left(d\left(-\left(a^3(3+m)\,\mathrm{AppellF1}\left[\frac{1+m}{2},m,1,\frac{3+m}{2},\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\right.\right.\right.$$

$$\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\left(-\frac{\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{-1+\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}\right)^m\Bigg)\Bigg/\left((1+m)\left(1+\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)^2\right.$$

$$\left((3+m)\,\mathrm{AppellF1}\left[\frac{1+m}{2},m,1,\frac{3+m}{2},\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]-2\left(\mathrm{AppellF1}\left[\frac{3+m}{2},m,2,\frac{5+m}{2},\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\right.\right.\right.$$

$$\left.\left.\left.-\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]-m\,\mathrm{AppellF1}\left[\frac{3+m}{2},1+m,1,\frac{5+m}{2},\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)+$$

$$\left(a^3(3+m)\,\mathrm{AppellF1}\left[\frac{1+m}{2},m,1,\frac{3+m}{2},\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\left(-\frac{\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{-1+\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}\right)^m\right)\Bigg/$$

$$\left(2(1+m)\left(1+\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right.$$

$$\left((3+m)\,\mathrm{AppellF1}\left[\frac{1+m}{2},m,1,\frac{3+m}{2},\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]-2\left(\mathrm{AppellF1}\left[\frac{3+m}{2},m,2,\frac{5+m}{2},\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\right.\right.\right.$$

$$\left.\left.\left.-\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]-m\,\mathrm{AppellF1}\left[\frac{3+m}{2},1+m,1,\frac{5+m}{2},\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)+$$

$$\left(a^3(3+m)\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]\left(-1/(3+m)(1+m)\,\mathrm{AppellF1}\left[1+\frac{1+m}{2},m,2,1+\frac{3+m}{2},\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right.\right.$$

$$\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{2}(c+d x)\right]+1/(3+m) m (1+m) \text{AppellF1}\left[1+\frac{1+m}{2},1+m,1,1+\frac{3+m}{2},\right.$$

$$\left.\left.\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right] \text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{2}(c+d x)\right]\right)\right)\left(-\frac{\text{Tan}\left[\frac{1}{2}(c+d x)\right]}{-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\right)^m\Bigg)\Big/$$

$$\left((1+m)\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\left((3+m) \text{AppellF1}\left[\frac{1+m}{2},m,1,\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]-\right.\right.$$

$$2\left(\text{AppellF1}\left[\frac{3+m}{2},m,2,\frac{5+m}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]-\right.$$

$$\left.\left.\left.m \text{AppellF1}\left[\frac{3+m}{2},1+m,1,\frac{5+m}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right) \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\right)-$$

$$\left(3\times 2^n a^2 b (3+m+n) \text{AppellF1}\left[\frac{1}{2}(1+m+n),m,1+n,\frac{1}{2}(3+m+n),\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right.$$

$$\left.\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\left(-\frac{\text{Tan}\left[\frac{1}{2}(c+d x)\right]}{-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\right)^m\left(\frac{\text{Tan}\left[\frac{1}{2}(c+d x)\right]}{1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\right)^n\right)\Big/$$

$$\left((1+m+n)\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^2\left((3+m+n) \text{AppellF1}\left[\frac{1}{2}(1+m+n),m,1+n,\frac{1}{2}(3+m+n),\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]-\right.\right.$$

$$2\left((1+n) \text{AppellF1}\left[\frac{1}{2}(3+m+n),m,2+n,\frac{1}{2}(5+m+n),\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]-\right.$$

$$\left.\left.\left.m \text{AppellF1}\left[\frac{1}{2}(3+m+n),1+m,1+n,\frac{1}{2}(5+m+n),\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right) \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\right)+$$

$$\left(3\times 2^{-1+n} a^2 b (3+m+n) \text{AppellF1}\left[\frac{1}{2}(1+m+n),m,1+n,\frac{1}{2}(3+m+n),\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right.$$

$$\left.\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\left(-\frac{\text{Tan}\left[\frac{1}{2}(c+d x)\right]}{-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\right)^m\left(\frac{\text{Tan}\left[\frac{1}{2}(c+d x)\right]}{1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\right)^n\right)\Big/$$

$$\left((1+m+n)\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\left((3+m+n) \text{AppellF1}\left[\frac{1}{2}(1+m+n),m,1+n,\frac{1}{2}(3+m+n),\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]-\right.\right.$$

$$2\left((1+n) \text{AppellF1}\left[\frac{1}{2}(3+m+n),m,2+n,\frac{1}{2}(5+m+n),\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]-\right.$$

$$\left.\left.\left.m \text{AppellF1}\left[\frac{1}{2}(3+m+n),1+m,1+n,\frac{1}{2}(5+m+n),\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right) \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\right)+$$

$$\left(3\times 2^{n} a^{2} b\,(3+m+n)\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]\left(-\frac{1}{3+m+n}(1+n)\,(1+m+n)\,\mathrm{AppellF1}\left[1+\frac{1}{2}(1+m+n),\,m,\,2+n,\,1+\frac{1}{2}(3+m+n),\right.\right.\right.$$

$$\left.\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^{2},\,-\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^{2}\right]\mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]^{2}\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]+\frac{1}{3+m+n}$$

$$m\,(1+m+n)\,\mathrm{AppellF1}\left[1+\frac{1}{2}(1+m+n),\,1+m,\,1+n,\,1+\frac{1}{2}(3+m+n),\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^{2},\,-\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^{2}\right]$$

$$\left.\left.\mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]^{2}\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)\left(-\frac{\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{-1+\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^{2}}\right)^{m}\left(\frac{\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{1+\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^{2}}\right)^{n}\right)\Big/$$

$$\left((1+m+n)\left(1+\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^{2}\right)\left((3+m+n)\,\mathrm{AppellF1}\left[\frac{1}{2}(1+m+n),\,m,\,1+n,\,\frac{1}{2}(3+m+n),\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^{2},\,-\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^{2}\right]-\right.\right.$$

$$2\left((1+n)\,\mathrm{AppellF1}\left[\frac{1}{2}(3+m+n),\,m,\,2+n,\,\frac{1}{2}(5+m+n),\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^{2},\,-\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^{2}\right]-\right.$$

$$\left.\left.\left.m\,\mathrm{AppellF1}\left[\frac{1}{2}(3+m+n),\,1+m,\,1+n,\,\frac{1}{2}(5+m+n),\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^{2},\,-\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^{2}\right]\right)\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^{2}\right)\right)-$$

$$\left(3\times 2^{2n} a\,b^{2}\,(3+m+2n)\,\mathrm{AppellF1}\left[\frac{1}{2}(1+m+2n),\,m,\,1+2n,\,\frac{1}{2}(3+m+2n),\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^{2},\,-\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^{2}\right]\right.$$

$$\left.\mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]^{2}\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^{2}\left(-\frac{\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{-1+\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^{2}}\right)^{m}\left(\frac{\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{1+\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^{2}}\right)^{2n}\right)\Big/$$

$$\left((1+m+2n)\left(1+\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^{2}\right)^{2}\left((3+m+2n)\,\mathrm{AppellF1}\left[\frac{1}{2}(1+m+2n),\,m,\,1+2n,\,\frac{1}{2}(3+m+2n),\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^{2},\right.\right.\right.$$

$$\left.-\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^{2}\right]-2\left((1+2n)\,\mathrm{AppellF1}\left[\frac{1}{2}(3+m+2n),\,m,\,2\,(1+n),\,\frac{1}{2}(5+m+2n),\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^{2},\,-\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^{2}\right]-\right.$$

$$\left.\left.\left.m\,\mathrm{AppellF1}\left[\frac{1}{2}(3+m+2n),\,1+m,\,1+2n,\,\frac{1}{2}(5+m+2n),\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^{2},\,-\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^{2}\right]\right)\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^{2}\right)\right)+$$

$$\left(3\times 2^{-1+2n} a\,b^{2}\,(3+m+2n)\,\mathrm{AppellF1}\left[\frac{1}{2}(1+m+2n),\,m,\,1+2n,\,\frac{1}{2}(3+m+2n),\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^{2},\,-\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^{2}\right]\right.$$

$$\left.\mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]^{2}\left(-\frac{\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{-1+\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^{2}}\right)^{m}\left(\frac{\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{1+\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^{2}}\right)^{2n}\right)\Big/\left((1+m+2n)\left(1+\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^{2}\right)\right.$$

$$\left((3+m+2n)\,\mathrm{AppellF1}\left[\frac{1}{2}(1+m+2n),\,m,\,1+2n,\,\frac{1}{2}(3+m+2n),\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^{2},\,-\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^{2}\right]-\right.$$

$$2\,\Big((1+2\,n)\,\text{AppellF1}\Big[\frac{1}{2}\,(3+m+2\,n),\,m,\,2\,(1+n),\,\frac{1}{2}\,(5+m+2\,n),\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]-$$

$$m\,\text{AppellF1}\Big[\frac{1}{2}\,(3+m+2\,n),\,1+m,\,1+2\,n,\,\frac{1}{2}\,(5+m+2\,n),\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big)\Big)+$$

$$\Big(3\times 2^{2\,n}\,a\,b^2\,(3+m+2\,n)\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]\,\Big(-\frac{1}{3+m+2\,n}(1+2\,n)\,(1+m+2\,n)\,\text{AppellF1}\Big[1+\frac{1}{2}\,(1+m+2\,n),\,m,\,2+2\,n,$$

$$1+\frac{1}{2}\,(3+m+2\,n),\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]+\frac{1}{3+m+2\,n}m\,(1+m+2\,n)\,\text{AppellF1}\Big[$$

$$1+\frac{1}{2}\,(1+m+2\,n),\,1+m,\,1+2\,n,\,1+\frac{1}{2}\,(3+m+2\,n),\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]\Big)$$

$$\left(-\frac{\text{Tan}\big[\frac{1}{2}\,(c+d\,x)\big]}{-1+\text{Tan}\big[\frac{1}{2}\,(c+d\,x)\big]^2}\right)^m\,\left(\frac{\text{Tan}\big[\frac{1}{2}\,(c+d\,x)\big]}{1+\text{Tan}\big[\frac{1}{2}\,(c+d\,x)\big]^2}\right)^{2\,n}\Big)\Big/\,\Big((1+m+2\,n)\,\Big(1+\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big)$$

$$\Big((3+m+2\,n)\,\text{AppellF1}\Big[\frac{1}{2}\,(1+m+2\,n),\,m,\,1+2\,n,\,\frac{1}{2}\,(3+m+2\,n),\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]-$$

$$2\,\Big((1+2\,n)\,\text{AppellF1}\Big[\frac{1}{2}\,(3+m+2\,n),\,m,\,2\,(1+n),\,\frac{1}{2}\,(5+m+2\,n),\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]-$$

$$m\,\text{AppellF1}\Big[\frac{1}{2}\,(3+m+2\,n),\,1+m,\,1+2\,n,\,\frac{1}{2}\,(5+m+2\,n),\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big)\Big)-$$

$$\Big(2^{3\,n}\,b^3\,(3+m+3\,n)\,\text{AppellF1}\Big[\frac{1}{2}\,(1+m+3\,n),\,m,\,1+3\,n,\,\frac{1}{2}\,(3+m+3\,n),\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]$$

$$\text{Sec}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\,\left(-\frac{\text{Tan}\big[\frac{1}{2}\,(c+d\,x)\big]}{-1+\text{Tan}\big[\frac{1}{2}\,(c+d\,x)\big]^2}\right)^m\,\left(\frac{\text{Tan}\big[\frac{1}{2}\,(c+d\,x)\big]}{1+\text{Tan}\big[\frac{1}{2}\,(c+d\,x)\big]^2}\right)^{3\,n}\Big)\Big/$$

$$\Big((1+m+3\,n)\,\Big(1+\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big)^2\,\Big((3+m+3\,n)\,\text{AppellF1}\Big[\frac{1}{2}\,(1+m+3\,n),\,m,\,1+3\,n,\,\frac{1}{2}\,(3+m+3\,n),\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,$$

$$-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]-2\,\Big((1+3\,n)\,\text{AppellF1}\Big[\frac{1}{2}\,(3+m+3\,n),\,m,\,2+3\,n,\,\frac{1}{2}\,(5+m+3\,n),\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]-$$

$$m\,\text{AppellF1}\Big[\frac{1}{2}\,(3+m+3\,n),\,1+m,\,1+3\,n,\,\frac{1}{2}\,(5+m+3\,n),\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big)\Big)+$$

$$\Big(2^{-1+3\,n}\,b^3\,(3+m+3\,n)\,\text{AppellF1}\Big[\frac{1}{2}\,(1+m+3\,n),\,m,\,1+3\,n,\,\frac{1}{2}\,(3+m+3\,n),\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]$$

$$\mathrm{Sec}\left[\frac{1}{2}(c+dx)\right]^2 \left(-\frac{\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]}{-1+\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2}\right)^m \left(\frac{\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]}{1+\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2}\right)^{3n}\Bigg) \Big/ \left((1+m+3n)\left(1+\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)\right.$$

$$\Bigg((3+m+3n)\,\mathrm{AppellF1}\left[\frac{1}{2}(1+m+3n), m, 1+3n, \frac{1}{2}(3+m+3n), \mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2, -\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right] -$$

$$2\Bigg((1+3n)\,\mathrm{AppellF1}\left[\frac{1}{2}(3+m+3n), m, 2+3n, \frac{1}{2}(5+m+3n), \mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2, -\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right] -$$

$$m\,\mathrm{AppellF1}\left[\frac{1}{2}(3+m+3n), 1+m, 1+3n, \frac{1}{2}(5+m+3n), \mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2, -\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\Bigg)\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2\Bigg)\Bigg) +$$

$$\Bigg(2^{3n} b^3 (3+m+3n)\,\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]\Bigg(-\frac{1}{3+m+3n}(1+3n)(1+m+3n)\,\mathrm{AppellF1}\left[1+\frac{1}{2}(1+m+3n), m, 2+3n, 1+\frac{1}{2}(3+m+3n),\right.$$

$$\left.\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2, -\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\mathrm{Sec}\left[\frac{1}{2}(c+dx)\right]^2\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right] + \frac{1}{3+m+3n}m(1+m+3n)\,\mathrm{AppellF1}\left[1+\frac{1}{2}(1+m+3n),\right.$$

$$\left.1+m, 1+3n, 1+\frac{1}{2}(3+m+3n), \mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2, -\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\mathrm{Sec}\left[\frac{1}{2}(c+dx)\right]^2\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]\Bigg)$$

$$\left(-\frac{\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]}{-1+\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2}\right)^m \left(\frac{\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]}{1+\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2}\right)^{3n}\Bigg) \Big/ \left((1+m+3n)\left(1+\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)\right.$$

$$\Bigg((3+m+3n)\,\mathrm{AppellF1}\left[\frac{1}{2}(1+m+3n), m, 1+3n, \frac{1}{2}(3+m+3n), \mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2, -\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right] -$$

$$2\Bigg((1+3n)\,\mathrm{AppellF1}\left[\frac{1}{2}(3+m+3n), m, 2+3n, \frac{1}{2}(5+m+3n), \mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2, -\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right] -$$

$$m\,\mathrm{AppellF1}\left[\frac{1}{2}(3+m+3n), 1+m, 1+3n, \frac{1}{2}(5+m+3n), \mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2, -\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\Bigg)\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2\Bigg)\Bigg) +$$

$$\Bigg(a^3 m (3+m)\,\mathrm{AppellF1}\left[\frac{1+m}{2}, m, 1, \frac{3+m}{2}, \mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2, -\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]\left(-\frac{\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]}{-1+\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2}\right)^{-1+m}$$

$$\left(\frac{\mathrm{Sec}\left[\frac{1}{2}(c+dx)\right]^2\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2}{\left(-1+\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)^2} - \frac{\mathrm{Sec}\left[\frac{1}{2}(c+dx)\right]^2}{2\left(-1+\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)}\right)\Bigg) \Big/$$

$$\left((1+m)\left(1+\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)\left((3+m)\,\mathrm{AppellF1}\left[\frac{1+m}{2}, m, 1, \frac{3+m}{2}, \mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2, -\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right] -\right.\right.$$

$$2\left(\mathrm{AppellF1}\left[\frac{3+m}{2}, m, 2, \frac{5+m}{2}, \mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2, -\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right] -\right.$$

$$m\,\text{AppellF1}\left[\frac{3+m}{2}, 1+m, 1, \frac{5+m}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right) \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big)\Big) +$$

$$\Big(3\times 2^n a^2 b\, m\,(3+m+n)\,\text{AppellF1}\left[\frac{1}{2}(1+m+n), m, 1+n, \frac{1}{2}(3+m+n), \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right] \text{Tan}\left[\frac{1}{2}(c+d x)\right]$$

$$\left(-\frac{\text{Tan}\left[\frac{1}{2}(c+d x)\right]}{-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\right)^{-1+m} \left(\frac{\text{Tan}\left[\frac{1}{2}(c+d x)\right]}{1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\right)^n \left(\frac{\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^2} - \frac{\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2}{2\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)}\right)\Big) \Big/$$

$$\Big((1+m+n)\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right) \Big((3+m+n)\,\text{AppellF1}\left[\frac{1}{2}(1+m+n), m, 1+n, \frac{1}{2}(3+m+n), \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right] -$$

$$2\Big((1+n)\,\text{AppellF1}\left[\frac{1}{2}(3+m+n), m, 2+n, \frac{1}{2}(5+m+n), \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right] -$$

$$m\,\text{AppellF1}\left[\frac{1}{2}(3+m+n), 1+m, 1+n, \frac{1}{2}(5+m+n), \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\Big) \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big)\Big) +$$

$$\Big(3\times 2^{2n} a\, b^2 m\,(3+m+2n)\,\text{AppellF1}\left[\frac{1}{2}(1+m+2n), m, 1+2n, \frac{1}{2}(3+m+2n), \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]$$

$$\text{Tan}\left[\frac{1}{2}(c+d x)\right] \left(-\frac{\text{Tan}\left[\frac{1}{2}(c+d x)\right]}{-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\right)^{-1+m} \left(\frac{\text{Tan}\left[\frac{1}{2}(c+d x)\right]}{1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\right)^{2n}$$

$$\left(\frac{\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^2} - \frac{\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2}{2\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)}\right)\Big) \Big/ \Big((1+m+2n)\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)$$

$$\Big((3+m+2n)\,\text{AppellF1}\left[\frac{1}{2}(1+m+2n), m, 1+2n, \frac{1}{2}(3+m+2n), \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right] -$$

$$2\Big((1+2n)\,\text{AppellF1}\left[\frac{1}{2}(3+m+2n), m, 2(1+n), \frac{1}{2}(5+m+2n), \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right] -$$

$$m\,\text{AppellF1}\left[\frac{1}{2}(3+m+2n), 1+m, 1+2n, \frac{1}{2}(5+m+2n), \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\Big) \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big)\Big) +$$

$$\Big(2^{3n} b^3 m\,(3+m+3n)\,\text{AppellF1}\left[\frac{1}{2}(1+m+3n), m, 1+3n, \frac{1}{2}(3+m+3n), \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right] \text{Tan}\left[\frac{1}{2}(c+d x)\right]$$

$$\left(-\frac{\text{Tan}\left[\frac{1}{2}(c+d x)\right]}{-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\right)^{-1+m} \left(\frac{\text{Tan}\left[\frac{1}{2}(c+d x)\right]}{1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\right)^{3n} \left(\frac{\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^2} - \frac{\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2}{2\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)}\right)\Big) \Big/$$

$$\left((1+m+3n)\left(1+\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)\left((3+m+3n)\operatorname{AppellF1}\left[\frac{1}{2}(1+m+3n),m,1+3n,\frac{1}{2}(3+m+3n),\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]-2\left((1+3n)\operatorname{AppellF1}\left[\frac{1}{2}(3+m+3n),m,2+3n,\frac{1}{2}(5+m+3n),\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]-m\operatorname{AppellF1}\left[\frac{1}{2}(3+m+3n),1+m,1+3n,\frac{1}{2}(5+m+3n),\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\right)\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)\right)+$$

$$\left(3\times 2^n a^2 b\, n\,(3+m+n)\operatorname{AppellF1}\left[\frac{1}{2}(1+m+n),m,1+n,\frac{1}{2}(3+m+n),\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]\left(-\frac{\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]}{-1+\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2}\right)^m\left(\frac{\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]}{1+\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2}\right)^{-1+n}\left(-\frac{\operatorname{Sec}\left[\frac{1}{2}(c+dx)\right]^2\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2}{\left(1+\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)^2}+\frac{\operatorname{Sec}\left[\frac{1}{2}(c+dx)\right]^2}{2\left(1+\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)}\right)\right)\Big/$$

$$\left((1+m+n)\left(1+\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)\left((3+m+n)\operatorname{AppellF1}\left[\frac{1}{2}(1+m+n),m,1+n,\frac{1}{2}(3+m+n),\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]-2\left((1+n)\operatorname{AppellF1}\left[\frac{1}{2}(3+m+n),m,2+n,\frac{1}{2}(5+m+n),\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]-m\operatorname{AppellF1}\left[\frac{1}{2}(3+m+n),1+m,1+n,\frac{1}{2}(5+m+n),\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\right)\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)\right)+$$

$$\left(3\times 2^{1+2n} a\, b^2 n\,(3+m+2n)\operatorname{AppellF1}\left[\frac{1}{2}(1+m+2n),m,1+2n,\frac{1}{2}(3+m+2n),\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]\left(-\frac{\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]}{-1+\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2}\right)^m\left(\frac{\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]}{1+\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2}\right)^{-1+2n}\left(-\frac{\operatorname{Sec}\left[\frac{1}{2}(c+dx)\right]^2\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2}{\left(1+\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)^2}+\frac{\operatorname{Sec}\left[\frac{1}{2}(c+dx)\right]^2}{2\left(1+\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)}\right)\right)\Big/\left((1+m+2n)\left(1+\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)\right.$$

$$\left.\left((3+m+2n)\operatorname{AppellF1}\left[\frac{1}{2}(1+m+2n),m,1+2n,\frac{1}{2}(3+m+2n),\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]-2\left((1+2n)\operatorname{AppellF1}\left[\frac{1}{2}(3+m+2n),m,2(1+n),\frac{1}{2}(5+m+2n),\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]-m\operatorname{AppellF1}\left[\frac{1}{2}(3+m+2n),1+m,1+2n,\frac{1}{2}(5+m+2n),\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\right)\operatorname{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)\right)+$$

$$\left(3\times 2^{3n} b^3 n (3+m+3n) \text{AppellF1}\left[\frac{1}{2}(1+m+3n), m, 1+3n, \frac{1}{2}(3+m+3n), \text{Tan}\left[\frac{1}{2}(c+dx)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right] \text{Tan}\left[\frac{1}{2}(c+dx)\right]\right.$$

$$\left(-\frac{\text{Tan}\left[\frac{1}{2}(c+dx)\right]}{-1+\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2}\right)^m \left(\frac{\text{Tan}\left[\frac{1}{2}(c+dx)\right]}{1+\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2}\right)^{-1+3n} \left.\left(-\frac{\text{Sec}\left[\frac{1}{2}(c+dx)\right]^2 \text{Tan}\left[\frac{1}{2}(c+dx)\right]^2}{\left(1+\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)^2}+\frac{\text{Sec}\left[\frac{1}{2}(c+dx)\right]^2}{2\left(1+\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)}\right)\right)\Big/$$

$$\left((1+m+3n)\left(1+\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)\left((3+m+3n) \text{AppellF1}\left[\frac{1}{2}(1+m+3n), m, 1+3n, \frac{1}{2}(3+m+3n), \text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,\right.\right.\right.$$

$$\left.-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right] - 2\left((1+3n) \text{AppellF1}\left[\frac{1}{2}(3+m+3n), m, 2+3n, \frac{1}{2}(5+m+3n), \text{Tan}\left[\frac{1}{2}(c+dx)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right] -\right.$$

$$\left.\left.\left. m \text{AppellF1}\left[\frac{1}{2}(3+m+3n), 1+m, 1+3n, \frac{1}{2}(5+m+3n), \text{Tan}\left[\frac{1}{2}(c+dx)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\right) \text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)\right) -$$

$$\left(a^3 (3+m) \text{AppellF1}\left[\frac{1+m}{2}, m, 1, \frac{3+m}{2}, \text{Tan}\left[\frac{1}{2}(c+dx)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right] \text{Tan}\left[\frac{1}{2}(c+dx)\right] \left(-\frac{\text{Tan}\left[\frac{1}{2}(c+dx)\right]}{-1+\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2}\right)^m\right.$$

$$\left(-2\left(\text{AppellF1}\left[\frac{3+m}{2}, m, 2, \frac{5+m}{2}, \text{Tan}\left[\frac{1}{2}(c+dx)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right] -\right.\right.$$

$$\left. m \text{AppellF1}\left[\frac{3+m}{2}, 1+m, 1, \frac{5+m}{2}, \text{Tan}\left[\frac{1}{2}(c+dx)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\right) \text{Sec}\left[\frac{1}{2}(c+dx)\right]^2 \text{Tan}\left[\frac{1}{2}(c+dx)\right] +$$

$$(3+m)\left(-\frac{1}{3+m}(1+m) \text{AppellF1}\left[1+\frac{1+m}{2}, m, 2, 1+\frac{3+m}{2}, \text{Tan}\left[\frac{1}{2}(c+dx)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right] \text{Sec}\left[\frac{1}{2}(c+dx)\right]^2 \text{Tan}\left[\frac{1}{2}(c+dx)\right] +\right.$$

$$\left.\frac{1}{3+m} m (1+m) \text{AppellF1}\left[1+\frac{1+m}{2}, 1+m, 1, 1+\frac{3+m}{2}, \text{Tan}\left[\frac{1}{2}(c+dx)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right] \text{Sec}\left[\frac{1}{2}(c+dx)\right]^2 \text{Tan}\left[\frac{1}{2}(c+dx)\right]\right) -$$

$$2 \text{Tan}\left[\frac{1}{2}(c+dx)\right]^2 \left(-\frac{1}{5+m} 2 (3+m) \text{AppellF1}\left[1+\frac{3+m}{2}, m, 3, 1+\frac{5+m}{2}, \text{Tan}\left[\frac{1}{2}(c+dx)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right] \text{Sec}\left[\frac{1}{2}(c+dx)\right]^2 \text{Tan}\left[\right.\right.$$

$$\left.\frac{1}{2}(c+dx)\right] + \frac{1}{5+m} m (3+m) \text{AppellF1}\left[1+\frac{3+m}{2}, 1+m, 2, 1+\frac{5+m}{2}, \text{Tan}\left[\frac{1}{2}(c+dx)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right] \text{Sec}\left[\frac{1}{2}(c+dx)\right]^2$$

$$\text{Tan}\left[\frac{1}{2}(c+dx)\right] - m\left(-\frac{1}{5+m}(3+m) \text{AppellF1}\left[1+\frac{3+m}{2}, 1+m, 2, 1+\frac{5+m}{2}, \text{Tan}\left[\frac{1}{2}(c+dx)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\right.$$

$$\text{Sec}\left[\frac{1}{2}(c+dx)\right]^2 \text{Tan}\left[\frac{1}{2}(c+dx)\right] + \frac{1}{5+m}(1+m)(3+m) \text{AppellF1}\left[1+\frac{3+m}{2}, 2+m, 1, 1+\frac{5+m}{2},\right.$$

$$\left.\left.\left.\left.\left.\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right] \text{Sec}\left[\frac{1}{2}(c+dx)\right]^2 \text{Tan}\left[\frac{1}{2}(c+dx)\right]\right)\right)\right)\right)\Big/ \left((1+m)\left(1+\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)\right.$$

$$\left((3+m) \text{AppellF1}\left[\frac{1+m}{2}, m, 1, \frac{3+m}{2}, \text{Tan}\left[\frac{1}{2}(c+dx)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right] - 2\left(\text{AppellF1}\left[\frac{3+m}{2}, m, 2, \frac{5+m}{2}, \text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,\right.\right.\right.$$

$$-\text{Tan}[\frac{1}{2}(c+d\,x)]^2] - m\,\text{AppellF1}[\frac{3+m}{2}, 1+m, 1, \frac{5+m}{2}, \text{Tan}[\frac{1}{2}(c+d\,x)]^2, -\text{Tan}[\frac{1}{2}(c+d\,x)]^2]) \text{Tan}[\frac{1}{2}(c+d\,x)]^2)^2) -$$

$$(3\times 2^n a^2 b\,(3+m+n)\,\text{AppellF1}[\frac{1}{2}(1+m+n), m, 1+n, \frac{1}{2}(3+m+n), \text{Tan}[\frac{1}{2}(c+d\,x)]^2, -\text{Tan}[\frac{1}{2}(c+d\,x)]^2]$$

$$\text{Tan}[\frac{1}{2}(c+d\,x)]\,(-\frac{\text{Tan}[\frac{1}{2}(c+d\,x)]}{-1+\text{Tan}[\frac{1}{2}(c+d\,x)]^2})^m (\frac{\text{Tan}[\frac{1}{2}(c+d\,x)]}{1+\text{Tan}[\frac{1}{2}(c+d\,x)]^2})^n$$

$$(-2\,((1+n)\,\text{AppellF1}[\frac{1}{2}(3+m+n), m, 2+n, \frac{1}{2}(5+m+n), \text{Tan}[\frac{1}{2}(c+d\,x)]^2, -\text{Tan}[\frac{1}{2}(c+d\,x)]^2] -$$

$$m\,\text{AppellF1}[\frac{1}{2}(3+m+n), 1+m, 1+n, \frac{1}{2}(5+m+n), \text{Tan}[\frac{1}{2}(c+d\,x)]^2, -\text{Tan}[\frac{1}{2}(c+d\,x)]^2]) \text{Sec}[\frac{1}{2}(c+d\,x)]^2\,\text{Tan}[\frac{1}{2}(c+d\,x)] +$$

$$(3+m+n)\,(-\frac{1}{3+m+n}(1+n)\,(1+m+n)\,\text{AppellF1}[1+\frac{1}{2}(1+m+n), m, 2+n, 1+\frac{1}{2}(3+m+n), \text{Tan}[\frac{1}{2}(c+d\,x)]^2,$$

$$-\text{Tan}[\frac{1}{2}(c+d\,x)]^2]\,\text{Sec}[\frac{1}{2}(c+d\,x)]^2\,\text{Tan}[\frac{1}{2}(c+d\,x)] + \frac{1}{3+m+n}m\,(1+m+n)\,\text{AppellF1}[1+\frac{1}{2}(1+m+n), 1+$$

$$m, 1+n, 1+\frac{1}{2}(3+m+n), \text{Tan}[\frac{1}{2}(c+d\,x)]^2, -\text{Tan}[\frac{1}{2}(c+d\,x)]^2]\,\text{Sec}[\frac{1}{2}(c+d\,x)]^2\,\text{Tan}[\frac{1}{2}(c+d\,x)]) -$$

$$2\,\text{Tan}[\frac{1}{2}(c+d\,x)]^2\,((1+n)\,(-\frac{1}{5+m+n}(2+n)\,(3+m+n)\,\text{AppellF1}[1+\frac{1}{2}(3+m+n), m, 3+n, 1+\frac{1}{2}(5+m+n),$$

$$\text{Tan}[\frac{1}{2}(c+d\,x)]^2, -\text{Tan}[\frac{1}{2}(c+d\,x)]^2]\,\text{Sec}[\frac{1}{2}(c+d\,x)]^2\,\text{Tan}[\frac{1}{2}(c+d\,x)] + \frac{1}{5+m+n}m\,(3+m+n)\,\text{AppellF1}[1+\frac{1}{2}(3+m+n),$$

$$1+m, 2+n, 1+\frac{1}{2}(5+m+n), \text{Tan}[\frac{1}{2}(c+d\,x)]^2, -\text{Tan}[\frac{1}{2}(c+d\,x)]^2]\,\text{Sec}[\frac{1}{2}(c+d\,x)]^2\,\text{Tan}[\frac{1}{2}(c+d\,x)]) -$$

$$m\,(-\frac{1}{5+m+n}(1+n)\,(3+m+n)\,\text{AppellF1}[1+\frac{1}{2}(3+m+n), 1+m, 2+n, 1+\frac{1}{2}(5+m+n), \text{Tan}[\frac{1}{2}(c+d\,x)]^2,$$

$$-\text{Tan}[\frac{1}{2}(c+d\,x)]^2]\,\text{Sec}[\frac{1}{2}(c+d\,x)]^2\,\text{Tan}[\frac{1}{2}(c+d\,x)] + \frac{1}{5+m+n}(1+m)\,(3+m+n)\,\text{AppellF1}[1+\frac{1}{2}(3+m+n),$$

$$2+m, 1+n, 1+\frac{1}{2}(5+m+n), \text{Tan}[\frac{1}{2}(c+d\,x)]^2, -\text{Tan}[\frac{1}{2}(c+d\,x)]^2]\,\text{Sec}[\frac{1}{2}(c+d\,x)]^2\,\text{Tan}[\frac{1}{2}(c+d\,x)])))) /$$

$$((1+m+n)\,(1+\text{Tan}[\frac{1}{2}(c+d\,x)]^2)\,((3+m+n)\,\text{AppellF1}[\frac{1}{2}(1+m+n), m, 1+n, \frac{1}{2}(3+m+n), \text{Tan}[\frac{1}{2}(c+d\,x)]^2, -\text{Tan}[\frac{1}{2}(c+d\,x)]^2] -$$

$$2\,((1+n)\,\text{AppellF1}[\frac{1}{2}(3+m+n), m, 2+n, \frac{1}{2}(5+m+n), \text{Tan}[\frac{1}{2}(c+d\,x)]^2, -\text{Tan}[\frac{1}{2}(c+d\,x)]^2] - m$$

$$\text{AppellF1}[\frac{1}{2}(3+m+n), 1+m, 1+n, \frac{1}{2}(5+m+n), \text{Tan}[\frac{1}{2}(c+d\,x)]^2, -\text{Tan}[\frac{1}{2}(c+d\,x)]^2]) \text{Tan}[\frac{1}{2}(c+d\,x)]^2)^2) -$$

$$\Big(3\times 2^{2n}\, a\, b^2\, (3+m+2n)\, \text{AppellF1}\Big[\frac{1}{2}(1+m+2n), m, 1+2n, \frac{1}{2}(3+m+2n), \text{Tan}\Big[\frac{1}{2}(c+dx)\Big]^2, -\text{Tan}\Big[\frac{1}{2}(c+dx)\Big]^2\Big]$$

$$\text{Tan}\Big[\frac{1}{2}(c+dx)\Big]\left(-\frac{\text{Tan}\left[\frac{1}{2}(c+dx)\right]}{-1+\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2}\right)^m\left(\frac{\text{Tan}\left[\frac{1}{2}(c+dx)\right]}{1+\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2}\right)^{2n}$$

$$\Big(-2\Big((1+2n)\,\text{AppellF1}\Big[\frac{1}{2}(3+m+2n), m, 2(1+n), \frac{1}{2}(5+m+2n), \text{Tan}\Big[\frac{1}{2}(c+dx)\Big]^2, -\text{Tan}\Big[\frac{1}{2}(c+dx)\Big]^2\Big] -$$

$$m\,\text{AppellF1}\Big[\frac{1}{2}(3+m+2n), 1+m, 1+2n, \frac{1}{2}(5+m+2n), \text{Tan}\Big[\frac{1}{2}(c+dx)\Big]^2, -\text{Tan}\Big[\frac{1}{2}(c+dx)\Big]^2\Big]\Big)\,\text{Sec}\Big[\frac{1}{2}(c+dx)\Big]^2$$

$$\text{Tan}\Big[\frac{1}{2}(c+dx)\Big] + (3+m+2n)\Big(-\frac{1}{3+m+2n}(1+2n)(1+m+2n)\,\text{AppellF1}\Big[1+\frac{1}{2}(1+m+2n), m, 2+2n, 1+\frac{1}{2}(3+m+2n),$$

$$\text{Tan}\Big[\frac{1}{2}(c+dx)\Big]^2, -\text{Tan}\Big[\frac{1}{2}(c+dx)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{2}(c+dx)\Big]^2\,\text{Tan}\Big[\frac{1}{2}(c+dx)\Big] + \frac{1}{3+m+2n} m(1+m+2n)\,\text{AppellF1}\Big[1+$$

$$\frac{1}{2}(1+m+2n), 1+m, 1+2n, 1+\frac{1}{2}(3+m+2n), \text{Tan}\Big[\frac{1}{2}(c+dx)\Big]^2, -\text{Tan}\Big[\frac{1}{2}(c+dx)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{2}(c+dx)\Big]^2\,\text{Tan}\Big[\frac{1}{2}(c+dx)\Big]\Big) -$$

$$2\,\text{Tan}\Big[\frac{1}{2}(c+dx)\Big]^2\Big((1+2n)\Big(-\frac{1}{5+m+2n}2(1+n)(3+m+2n)\,\text{AppellF1}\Big[1+\frac{1}{2}(3+m+2n), m, 1+2(1+n), 1+\frac{1}{2}(5+m+2n),$$

$$\text{Tan}\Big[\frac{1}{2}(c+dx)\Big]^2, -\text{Tan}\Big[\frac{1}{2}(c+dx)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{2}(c+dx)\Big]^2\,\text{Tan}\Big[\frac{1}{2}(c+dx)\Big] + \frac{1}{5+m+2n} m(3+m+2n)\,\text{AppellF1}\Big[1+\frac{1}{2}(3+m+$$

$$2n), 1+m, 2(1+n), 1+\frac{1}{2}(5+m+2n), \text{Tan}\Big[\frac{1}{2}(c+dx)\Big]^2, -\text{Tan}\Big[\frac{1}{2}(c+dx)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{2}(c+dx)\Big]^2\,\text{Tan}\Big[\frac{1}{2}(c+dx)\Big]\Big) -$$

$$m\Big(-\frac{1}{5+m+2n}(1+2n)(3+m+2n)\,\text{AppellF1}\Big[1+\frac{1}{2}(3+m+2n), 1+m, 2+2n, 1+\frac{1}{2}(5+m+2n), \text{Tan}\Big[\frac{1}{2}(c+dx)\Big]^2,$$

$$-\text{Tan}\Big[\frac{1}{2}(c+dx)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{2}(c+dx)\Big]^2\,\text{Tan}\Big[\frac{1}{2}(c+dx)\Big] + \frac{1}{5+m+2n}(1+m)(3+m+2n)\,\text{AppellF1}\Big[1+\frac{1}{2}(3+m+2n),$$

$$2+m, 1+2n, 1+\frac{1}{2}(5+m+2n), \text{Tan}\Big[\frac{1}{2}(c+dx)\Big]^2, -\text{Tan}\Big[\frac{1}{2}(c+dx)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{2}(c+dx)\Big]^2\,\text{Tan}\Big[\frac{1}{2}(c+dx)\Big]\Big)\Big)\Big)\Big)\Big/$$

$$\Big((1+m+2n)\Big(1+\text{Tan}\Big[\frac{1}{2}(c+dx)\Big]^2\Big)\Big((3+m+2n)\,\text{AppellF1}\Big[\frac{1}{2}(1+m+2n), m, 1+2n, \frac{1}{2}(3+m+2n), \text{Tan}\Big[\frac{1}{2}(c+dx)\Big]^2,$$

$$-\text{Tan}\Big[\frac{1}{2}(c+dx)\Big]^2\Big] - 2\Big((1+2n)\,\text{AppellF1}\Big[\frac{1}{2}(3+m+2n), m, 2(1+n), \frac{1}{2}(5+m+2n), \text{Tan}\Big[\frac{1}{2}(c+dx)\Big]^2, -\text{Tan}\Big[\frac{1}{2}(c+dx)\Big]^2\Big] -$$

$$m\,\text{AppellF1}\Big[\frac{1}{2}(3+m+2n), 1+m, 1+2n, \frac{1}{2}(5+m+2n), \text{Tan}\Big[\frac{1}{2}(c+dx)\Big]^2, -\text{Tan}\Big[\frac{1}{2}(c+dx)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{2}(c+dx)\Big]^2\Big)^2\Big) -$$

$$\Big(2^{3n}\, b^3\, (3+m+3n)\, \text{AppellF1}\Big[\frac{1}{2}(1+m+3n),\, m,\, 1+3n,\, \frac{1}{2}(3+m+3n),\, \text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2,\, -\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2\Big]$$

$$\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]\left(-\frac{\text{Tan}\big[\frac{1}{2}(c+d x)\big]}{-1+\text{Tan}\big[\frac{1}{2}(c+d x)\big]^2}\right)^m\left(\frac{\text{Tan}\big[\frac{1}{2}(c+d x)\big]}{1+\text{Tan}\big[\frac{1}{2}(c+d x)\big]^2}\right)^{3n}$$

$$\Big(-2\Big((1+3n)\,\text{AppellF1}\Big[\frac{1}{2}(3+m+3n),\, m,\, 2+3n,\, \frac{1}{2}(5+m+3n),\, \text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2,\, -\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2\Big]-$$

$$m\,\text{AppellF1}\Big[\frac{1}{2}(3+m+3n),\, 1+m,\, 1+3n,\, \frac{1}{2}(5+m+3n),\, \text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2,\, -\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2\Big]\Big)\,\text{Sec}\Big[\frac{1}{2}(c+d x)\Big]^2$$

$$\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]+(3+m+3n)\Big(-\frac{1}{3+m+3n}(1+3n)(1+m+3n)\,\text{AppellF1}\Big[1+\frac{1}{2}(1+m+3n),\, m,\, 2+3n,\, 1+\frac{1}{2}(3+m+3n),$$

$$\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2,\, -\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{2}(c+d x)\Big]^2\,\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]+\frac{1}{3+m+3n}m(1+m+3n)\,\text{AppellF1}\Big[1+$$

$$\frac{1}{2}(1+m+3n),\, 1+m,\, 1+3n,\, 1+\frac{1}{2}(3+m+3n),\, \text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2,\, -\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{2}(c+d x)\Big]^2\,\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]\Big)-$$

$$2\,\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2\Big((1+3n)\Big(-\frac{1}{5+m+3n}(2+3n)(3+m+3n)\,\text{AppellF1}\Big[1+\frac{1}{2}(3+m+3n),\, m,\, 3+3n,\, 1+\frac{1}{2}(5+m+3n),$$

$$\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2,\, -\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{2}(c+d x)\Big]^2\,\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]+\frac{1}{5+m+3n}m(3+m+3n)\,\text{AppellF1}\Big[1+\frac{1}{2}(3+m+$$

$$3n),\, 1+m,\, 2+3n,\, 1+\frac{1}{2}(5+m+3n),\, \text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2,\, -\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{2}(c+d x)\Big]^2\,\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]\Big)-$$

$$m\Big(-\frac{1}{5+m+3n}(1+3n)(3+m+3n)\,\text{AppellF1}\Big[1+\frac{1}{2}(3+m+3n),\, 1+m,\, 2+3n,\, 1+\frac{1}{2}(5+m+3n),\, \text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2,$$

$$-\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{2}(c+d x)\Big]^2\,\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]+\frac{1}{5+m+3n}(1+m)(3+m+3n)\,\text{AppellF1}\Big[1+\frac{1}{2}(3+m+3n),$$

$$2+m,\, 1+3n,\, 1+\frac{1}{2}(5+m+3n),\, \text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2,\, -\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{2}(c+d x)\Big]^2\,\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]\Big)\Big)\Big)\Big)\Big/$$

$$\Big((1+m+3n)\Big(1+\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2\Big)\Big((3+m+3n)\,\text{AppellF1}\Big[\frac{1}{2}(1+m+3n),\, m,\, 1+3n,\, \frac{1}{2}(3+m+3n),\, \text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2,$$

$$-\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2\Big]-2\Big((1+3n)\,\text{AppellF1}\Big[\frac{1}{2}(3+m+3n),\, m,\, 2+3n,\, \frac{1}{2}(5+m+3n),\, \text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2,\, -\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2\Big]-m$$

$$\text{AppellF1}\Big[\frac{1}{2}(3+m+3n),\, 1+m,\, 1+3n,\, \frac{1}{2}(5+m+3n),\, \text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2,\, -\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2\Big)^2\Big)\Big)$$

Problem 575: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int (a + b\,\mathrm{Sin}[c + d\,x]^n)^2\,\mathrm{Tan}[c + d\,x]^m\,dx$$

Optimal (type 5, 215 leaves, 8 steps):

$$\frac{a^2\,\mathrm{Hypergeometric2F1}\left[1, \frac{1+m}{2}, \frac{3+m}{2}, -\mathrm{Tan}[c+d\,x]^2\right]\mathrm{Tan}[c+d\,x]^{1+m}}{d\,(1+m)} + \frac{1}{d\,(1+m+n)}$$
$$2\,a\,b\,\left(\mathrm{Cos}[c+d\,x]^2\right)^{\frac{1+m}{2}}\,\mathrm{Hypergeometric2F1}\left[\frac{1+m}{2}, \frac{1}{2}(1+m+n), \frac{1}{2}(3+m+n), \mathrm{Sin}[c+d\,x]^2\right]\mathrm{Sin}[c+d\,x]^n\,\mathrm{Tan}[c+d\,x]^{1+m} + \frac{1}{d\,(1+m+2\,n)}$$
$$b^2\,\left(\mathrm{Cos}[c+d\,x]^2\right)^{\frac{1+m}{2}}\,\mathrm{Hypergeometric2F1}\left[\frac{1+m}{2}, \frac{1}{2}(1+m+2\,n), \frac{1}{2}(3+m+2\,n), \mathrm{Sin}[c+d\,x]^2\right]\mathrm{Sin}[c+d\,x]^{2\,n}\,\mathrm{Tan}[c+d\,x]^{1+m}$$

Result (type 6, 8343 leaves):

$$\left(2^{1+m}\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]\left(-\frac{\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{-1+\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}\right)^m\left(\left(a^2\,(3+m)\,\mathrm{AppellF1}\left[\frac{1+m}{2}, m, 1, \frac{3+m}{2}, \mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2, -\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\Big/\right.\right.$$
$$\left((1+m)\left((3+m)\,\mathrm{AppellF1}\left[\frac{1+m}{2}, m, 1, \frac{3+m}{2}, \mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2, -\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right] - 2\left(\mathrm{AppellF1}\left[\frac{3+m}{2}, m, 2, \frac{5+m}{2}, \mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\right.\right.\right.\right.$$
$$\left.\left.\left.\left.-\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right] - m\,\mathrm{AppellF1}\left[\frac{3+m}{2}, 1+m, 1, \frac{5+m}{2}, \mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2, -\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right) +$$
$$\left(2^{1+n}\,a\,b\,(3+m+n)\,\mathrm{AppellF1}\left[\frac{1}{2}(1+m+n), m, 1+n, \frac{1}{2}(3+m+n), \mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2, -\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\left(\frac{\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{1+\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}\right)^n\right)\Big/$$
$$\left((1+m+n)\left((3+m+n)\,\mathrm{AppellF1}\left[\frac{1}{2}(1+m+n), m, 1+n, \frac{1}{2}(3+m+n), \mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2, -\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right] -\right.\right.$$
$$2\left((1+n)\,\mathrm{AppellF1}\left[\frac{1}{2}(3+m+n), m, 2+n, \frac{1}{2}(5+m+n), \mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2, -\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right] -\right.$$
$$\left.\left.\left.m\,\mathrm{AppellF1}\left[\frac{1}{2}(3+m+n), 1+m, 1+n, \frac{1}{2}(5+m+n), \mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2, -\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right) +$$
$$\left(4^n\,b^2\,(3+m+2\,n)\,\mathrm{AppellF1}\left[\frac{1}{2}(1+m+2\,n), m, 1+2\,n, \frac{1}{2}(3+m+2\,n), \mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2, -\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\left(\frac{\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{1+\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}\right)^{2\,n}\right)\Big/$$
$$\left((1+m+2\,n)\left((3+m+2\,n)\,\mathrm{AppellF1}\left[\frac{1}{2}(1+m+2\,n), m, 1+2\,n, \frac{1}{2}(3+m+2\,n), \mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2, -\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right] -\right.\right.$$
$$2\left((1+2\,n)\,\mathrm{AppellF1}\left[\frac{1}{2}(3+m+2\,n), m, 2\,(1+n), \frac{1}{2}(5+m+2\,n), \mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2, -\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right] -\right.$$

$$m\,\text{AppellF1}\left[\frac{1}{2}(3+m+2n),1+m,1+2n,\frac{1}{2}(5+m+2n),\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\Bigg)\Bigg)\Bigg)$$

$$\left(a^2\,\text{Tan}[c+dx]^m+2ab\,\text{Sin}[c+dx]^n\,\text{Tan}[c+dx]^m+b^2\,\text{Sin}[c+dx]^{2n}\,\text{Tan}[c+dx]^m\right)\Big/\Bigg(d$$

$$\left(1+\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)$$

$$\Bigg(-\frac{1}{\left(1+\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)^2}2^{1+m}\,\text{Sec}\left[\frac{1}{2}(c+dx)\right]^2\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\left(-\frac{\text{Tan}\left[\frac{1}{2}(c+dx)\right]}{-1+\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2}\right)^m$$

$$\Bigg(\Bigg(a^2(3+m)\,\text{AppellF1}\left[\frac{1+m}{2},m,1,\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\Bigg)\Big/\Bigg((1+m)$$

$$\Bigg((3+m)\,\text{AppellF1}\left[\frac{1+m}{2},m,1,\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]-2\Bigg(\text{AppellF1}\left[\frac{3+m}{2},m,2,\frac{5+m}{2},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,\right.$$

$$\left.-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]-m\,\text{AppellF1}\left[\frac{3+m}{2},1+m,1,\frac{5+m}{2},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\Bigg)\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\Bigg)\Bigg)+$$

$$\Bigg(2^{1+n}ab(3+m+n)\,\text{AppellF1}\left[\frac{1}{2}(1+m+n),m,1+n,\frac{1}{2}(3+m+n),\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\left(\frac{\text{Tan}\left[\frac{1}{2}(c+dx)\right]}{1+\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2}\right)^n\Bigg)\Big/$$

$$\Bigg((1+m+n)\Bigg((3+m+n)\,\text{AppellF1}\left[\frac{1}{2}(1+m+n),m,1+n,\frac{1}{2}(3+m+n),\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]-2$$

$$\Bigg((1+n)\,\text{AppellF1}\left[\frac{1}{2}(3+m+n),m,2+n,\frac{1}{2}(5+m+n),\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]-m\,\text{AppellF1}\left[\frac{1}{2}(3+m+n),\right.$$

$$\left.1+m,1+n,\frac{1}{2}(5+m+n),\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\Bigg)\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\Bigg)\Bigg)+\Bigg(4^n b^2(3+m+2n)$$

$$\text{AppellF1}\left[\frac{1}{2}(1+m+2n),m,1+2n,\frac{1}{2}(3+m+2n),\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\left(\frac{\text{Tan}\left[\frac{1}{2}(c+dx)\right]}{1+\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2}\right)^{2n}\Bigg)\Big/$$

$$\Bigg((1+m+2n)\Bigg((3+m+2n)\,\text{AppellF1}\left[\frac{1}{2}(1+m+2n),m,1+2n,\frac{1}{2}(3+m+2n),\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]-2$$

$$\Bigg((1+2n)\,\text{AppellF1}\left[\frac{1}{2}(3+m+2n),m,2(1+n),\frac{1}{2}(5+m+2n),\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]-$$

$$m\,\text{AppellF1}\left[\frac{1}{2}(3+m+2n),1+m,1+2n,\frac{1}{2}(5+m+2n),\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\Big)\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big)\Big)\Big)+$$

$$\frac{1}{1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\,2^m\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\left(-\frac{\text{Tan}\left[\frac{1}{2}(c+d x)\right]}{-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\right)^m\Big(\Big(a^2(3+m)\,\text{AppellF1}\Big[\frac{1+m}{2},m,1,\frac{3+m}{2},$$

$$\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]\Big)\Big/\Big((1+m)$$

$$\Big((3+m)\,\text{AppellF1}\left[\frac{1+m}{2},m,1,\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]-2\Big(\text{AppellF1}\Big[\frac{3+m}{2},m,2,\frac{5+m}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,$$

$$-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]-m\,\text{AppellF1}\left[\frac{3+m}{2},1+m,1,\frac{5+m}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\Big)\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big)\Big)+$$

$$\Big(2^{1+n}\,a\,b\,(3+m+n)\,\text{AppellF1}\left[\frac{1}{2}(1+m+n),m,1+n,\frac{1}{2}(3+m+n),\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\left(\frac{\text{Tan}\left[\frac{1}{2}(c+d x)\right]}{1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\right)^n\Big)\Big/$$

$$\Big((1+m+n)\,\Big((3+m+n)\,\text{AppellF1}\left[\frac{1}{2}(1+m+n),m,1+n,\frac{1}{2}(3+m+n),\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]-$$

$$2\Big((1+n)\,\text{AppellF1}\left[\frac{1}{2}(3+m+n),m,2+n,\frac{1}{2}(5+m+n),\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]-m\,\text{AppellF1}\Big[\frac{1}{2}(3+m+n),$$

$$1+m,1+n,\frac{1}{2}(5+m+n),\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]\Big)\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big)\Big)+\Big(4^n\,b^2\,(3+m+2n)$$

$$\text{AppellF1}\left[\frac{1}{2}(1+m+2n),m,1+2n,\frac{1}{2}(3+m+2n),\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\left(\frac{\text{Tan}\left[\frac{1}{2}(c+d x)\right]}{1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\right)^{2n}\Big)\Big/$$

$$\Big((1+m+2n)\,\Big((3+m+2n)\,\text{AppellF1}\left[\frac{1}{2}(1+m+2n),m,1+2n,\frac{1}{2}(3+m+2n),\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]-$$

$$2\Big((1+2n)\,\text{AppellF1}\left[\frac{1}{2}(3+m+2n),m,2(1+n),\frac{1}{2}(5+m+2n),\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]-$$

$$m\,\text{AppellF1}\left[\frac{1}{2}(3+m+2n),1+m,1+2n,\frac{1}{2}(5+m+2n),\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\Big)\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big)\Big)\Big)+$$

$$\frac{1}{1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\,2^{1+m}\,m\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]\left(-\frac{\text{Tan}\left[\frac{1}{2}(c+d x)\right]}{-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\right)^{-1+m}\left(\frac{\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^2}-\frac{\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2}{2\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)}\right)$$

$$\left(\left(a^2\,(3+m)\,\text{AppellF1}\left[\frac{1+m}{2},\,m,\,1,\,\frac{3+m}{2},\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]\right)\Big/\left((1+m)\right.\right.$$

$$\left((3+m)\,\text{AppellF1}\left[\frac{1+m}{2},\,m,\,1,\,\frac{3+m}{2},\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]-2\,\left(\text{AppellF1}\left[\frac{3+m}{2},\,m,\,2,\,\frac{5+m}{2},\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\right.\right.$$

$$\left.\left.\left.-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]-m\,\text{AppellF1}\left[\frac{3+m}{2},\,1+m,\,1,\,\frac{5+m}{2},\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]\right)\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)\right)+$$

$$\left(2^{1+n}\,a\,b\,(3+m+n)\,\text{AppellF1}\left[\frac{1}{2}\,(1+m+n),\,m,\,1+n,\,\frac{1}{2}\,(3+m+n),\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]\,\left(\frac{\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]}{1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\right)^n\right)\Big/$$

$$\left((1+m+n)\,\left((3+m+n)\,\text{AppellF1}\left[\frac{1}{2}\,(1+m+n),\,m,\,1+n,\,\frac{1}{2}\,(3+m+n),\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]-\right.\right.$$

$$2\,\left((1+n)\,\text{AppellF1}\left[\frac{1}{2}\,(3+m+n),\,m,\,2+n,\,\frac{1}{2}\,(5+m+n),\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]-m\,\text{AppellF1}\left[\frac{1}{2}\,(3+m+n),\right.\right.$$

$$\left.\left.\left.\left.1+m,\,1+n,\,\frac{1}{2}\,(5+m+n),\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]\right)\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)\right)+\left(4^n\,b^2\,(3+m+2\,n)\right.$$

$$\left.\text{AppellF1}\left[\frac{1}{2}\,(1+m+2\,n),\,m,\,1+2\,n,\,\frac{1}{2}\,(3+m+2\,n),\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]\,\left(\frac{\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]}{1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\right)^{2\,n}\right)\Big/$$

$$\left((1+2\,n+m)\,\left((3+m+2\,n)\,\text{AppellF1}\left[\frac{1}{2}\,(1+m+2\,n),\,m,\,1+2\,n,\,\frac{1}{2}\,(3+m+2\,n),\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]-\right.\right.$$

$$2\,\left((1+2\,n)\,\text{AppellF1}\left[\frac{1}{2}\,(3+m+2\,n),\,m,\,2\,(1+n),\,\frac{1}{2}\,(5+m+2\,n),\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]-\right.$$

$$\left.\left.\left.m\,\text{AppellF1}\left[\frac{1}{2}\,(3+m+2\,n),\,1+m,\,1+2\,n,\,\frac{1}{2}\,(5+m+2\,n),\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]\right)\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)\right)+$$

$$\frac{1}{1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\,2^{1+m}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\,\left(-\frac{\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]}{-1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\right)^m\,\left(\left(a^2\,(3+m)\,\left(-1/(3+m)\,(1+m)\,\text{AppellF1}\left[1+\frac{1+m}{2},\right.\right.\right.\right.$$

$$m,\,2,\,1+\frac{3+m}{2},\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\Big]\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]+1/(3+m)\,m\,(1+m)\,\text{AppellF1}\Big[$$

$$\left.\left.1+\frac{1+m}{2},\,1+m,\,1,\,1+\frac{3+m}{2},\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\right)\Big/\left((1+m)\right.$$

$$\left((3+m)\,\text{AppellF1}\left[\frac{1+m}{2},\,m,\,1,\,\frac{3+m}{2},\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]-2\,\left(\text{AppellF1}\left[\frac{3+m}{2},\,m,\,2,\,\frac{5+m}{2},\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\right.\right.$$

$$-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]-m\,\text{AppellF1}\left[\frac{3+m}{2},1+m,1,\frac{5+m}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\Big)\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big)\Big)+$$

$$\Big(2^{1+n}\,a\,b\,(3+m+n)\,\Big(-\frac{1}{3+m+n}(1+n)(1+m+n)\,\text{AppellF1}\Big[1+\frac{1}{2}(1+m+n),m,2+n,1+\frac{1}{2}(3+m+n),\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,$$

$$-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]+\frac{1}{3+m+n}m(1+m+n)\,\text{AppellF1}\Big[1+\frac{1}{2}(1+m+n),1+m,1+n,$$

$$1+\frac{1}{2}(3+m+n),\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]\Big)\left(\frac{\text{Tan}\left[\frac{1}{2}(c+d x)\right]}{1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\right)^n\Big)\Big/$$

$$\Big((1+m+n)\Big((3+m+n)\,\text{AppellF1}\left[\frac{1}{2}(1+m+n),m,1+n,\frac{1}{2}(3+m+n),\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]-$$

$$2\Big((1+n)\,\text{AppellF1}\left[\frac{1}{2}(3+m+n),m,2+n,\frac{1}{2}(5+m+n),\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]-$$

$$m\,\text{AppellF1}\left[\frac{1}{2}(3+m+n),1+m,1+n,\frac{1}{2}(5+m+n),\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\Big)\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big)\Big)+$$

$$\Big(4^n\,b^2\,(3+m+2n)\,\Big(-\frac{1}{3+m+2n}(1+2n)(1+m+2n)\,\text{AppellF1}\Big[1+\frac{1}{2}(1+m+2n),m,2+2n,1+\frac{1}{2}(3+m+2n),\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,$$

$$-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]+\frac{1}{3+m+2n}m(1+m+2n)\,\text{AppellF1}\Big[1+\frac{1}{2}(1+m+2n),1+m,1+2n,$$

$$1+\frac{1}{2}(3+m+2n),\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]\Big)\left(\frac{\text{Tan}\left[\frac{1}{2}(c+d x)\right]}{1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\right)^{2n}\Big)\Big/$$

$$\Big((1+m+2n)\Big((3+m+2n)\,\text{AppellF1}\left[\frac{1}{2}(1+m+2n),m,1+2n,\frac{1}{2}(3+m+2n),\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]-$$

$$2\Big((1+2n)\,\text{AppellF1}\left[\frac{1}{2}(3+m+2n),m,2(1+n),\frac{1}{2}(5+m+2n),\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]-$$

$$m\,\text{AppellF1}\left[\frac{1}{2}(3+m+2n),1+m,1+2n,\frac{1}{2}(5+m+2n),\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\Big)\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big)\Big)+$$

$$\Big(2^{1+n}\,a\,b\,n\,(3+m+n)\,\text{AppellF1}\left[\frac{1}{2}(1+m+n),m,1+n,\frac{1}{2}(3+m+n),\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]$$

$$\left(\frac{\text{Tan}\left[\frac{1}{2}(c+d x)\right]}{1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\right)^{-1+n}\left(-\frac{\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^2}+\frac{\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2}{2\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)}\right)\Big)\Big/$$

$$\left((1+m+n)\left((3+m+n)\,\text{AppellF1}\left[\frac{1}{2}(1+m+n),m,1+n,\frac{1}{2}(3+m+n),\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]-2\left((1+n)\,\text{AppellF1}\left[\frac{1}{2}(3+m+n),m,2+n,\frac{1}{2}(5+m+n),\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]-m\,\text{AppellF1}\left[\frac{1}{2}(3+m+n),1+m,1+n,\frac{1}{2}(5+m+n),\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\right)+$$

$$\left(2^{1+2n}\,b^2\,n\,(3+m+2n)\,\text{AppellF1}\left[\frac{1}{2}(1+m+2n),m,1+2n,\frac{1}{2}(3+m+2n),\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\left(\frac{\text{Tan}\left[\frac{1}{2}(c+d x)\right]}{1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\right)^{-1+2n}\left(-\frac{\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^2}+\frac{\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2}{2\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)}\right)\right)\Big/$$

$$\left((1+m+2n)\left((3+m+2n)\,\text{AppellF1}\left[\frac{1}{2}(1+m+2n),m,1+2n,\frac{1}{2}(3+m+2n),\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]-2\left((1+2n)\,\text{AppellF1}\left[\frac{1}{2}(3+m+2n),m,2(1+n),\frac{1}{2}(5+m+2n),\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]-m\,\text{AppellF1}\left[\frac{1}{2}(3+m+2n),1+m,1+2n,\frac{1}{2}(5+m+2n),\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\right)-$$

$$\left(a^2\,(3+m)\,\text{AppellF1}\left[\frac{1+m}{2},m,1,\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\left(-2\left(\text{AppellF1}\left[\frac{3+m}{2},m,2,\frac{5+m}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]-m\,\text{AppellF1}\left[\frac{3+m}{2},1+m,1,\frac{5+m}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right)\right.\right.$$

$$\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]+(3+m)\left(-\frac{1}{3+m}(1+m)\,\text{AppellF1}\left[1+\frac{1+m}{2},m,2,1+\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]+\frac{1}{3+m}m\,(1+m)\,\text{AppellF1}\left[1+\frac{1+m}{2},1+m,1,1+\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right)-2\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2$$

$$\left(-\frac{1}{5+m}2\,(3+m)\,\text{AppellF1}\left[1+\frac{3+m}{2},m,3,1+\frac{5+m}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]+\frac{1}{5+m}m\,(3+m)\,\text{AppellF1}\left[1+\frac{3+m}{2},1+m,2,1+\frac{5+m}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\right.$$

$$\text{Tan}\left[\frac{1}{2}(c+d x)\right]-m\left(-\frac{1}{5+m}(3+m)\,\text{AppellF1}\left[1+\frac{3+m}{2},1+m,2,1+\frac{5+m}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right.$$

$$\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]+\frac{1}{5+m}(1+m)\,(3+m)\,\text{AppellF1}\left[1+\frac{3+m}{2},2+m,1,1+\frac{5+m}{2},\right.$$

$$\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]\,\mathrm{Sec}\left[\frac{1}{2}(c+d x)\right]^2\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]\Big]\Big)\Big)\Big)\Big)\Big/\Big((1+m)$$

$$\Big((3+m)\,\mathrm{AppellF1}\Big[\frac{1+m}{2},m,1,\frac{3+m}{2},\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]-2\Big(\mathrm{AppellF1}\Big[\frac{3+m}{2},m,2,\frac{5+m}{2},\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2,$$

$$-\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]-m\,\mathrm{AppellF1}\Big[\frac{3+m}{2},1+m,1,\frac{5+m}{2},\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]\Big)\,\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big)^2\Big)-$$

$$\Big(2^{1+n}\,a\,b\,(3+m+n)\,\mathrm{AppellF1}\Big[\frac{1}{2}(1+m+n),m,1+n,\frac{1}{2}(3+m+n),\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]$$

$$\left(\frac{\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]}{1+\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\right)^n\Big(-2\Big((1+n)\,\mathrm{AppellF1}\Big[\frac{1}{2}(3+m+n),m,2+n,\frac{1}{2}(5+m+n),\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]-$$

$$m\,\mathrm{AppellF1}\Big[\frac{1}{2}(3+m+n),1+m,1+n,\frac{1}{2}(5+m+n),\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]\Big)\,\mathrm{Sec}\left[\frac{1}{2}(c+d x)\right]^2\mathrm{Tan}\Big[$$

$$\frac{1}{2}(c+d x)\Big]+(3+m+n)\Big(-\frac{1}{3+m+n}(1+n)(1+m+n)\,\mathrm{AppellF1}\Big[1+\frac{1}{2}(1+m+n),m,2+n,1+\frac{1}{2}(3+m+n),\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2,$$

$$-\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]\,\mathrm{Sec}\left[\frac{1}{2}(c+d x)\right]^2\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]+\frac{1}{3+m+n}m\,(1+m+n)\,\mathrm{AppellF1}\Big[1+\frac{1}{2}(1+m+n),$$

$$1+m,1+n,1+\frac{1}{2}(3+m+n),\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]\,\mathrm{Sec}\left[\frac{1}{2}(c+d x)\right]^2\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]\Big)-$$

$$2\,\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big((1+n)\Big(-\frac{1}{5+m+n}(2+n)(3+m+n)\,\mathrm{AppellF1}\Big[1+\frac{1}{2}(3+m+n),m,3+n,1+\frac{1}{2}(5+m+n),\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2,$$

$$-\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]\,\mathrm{Sec}\left[\frac{1}{2}(c+d x)\right]^2\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]+\frac{1}{5+m+n}m\,(3+m+n)\,\mathrm{AppellF1}\Big[1+\frac{1}{2}(3+m+n),$$

$$1+m,2+n,1+\frac{1}{2}(5+m+n),\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]\,\mathrm{Sec}\left[\frac{1}{2}(c+d x)\right]^2\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]\Big)-$$

$$m\Big(-\frac{1}{5+m+n}(1+n)(3+m+n)\,\mathrm{AppellF1}\Big[1+\frac{1}{2}(3+m+n),1+m,2+n,1+\frac{1}{2}(5+m+n),\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2,$$

$$-\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]\,\mathrm{Sec}\left[\frac{1}{2}(c+d x)\right]^2\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]+\frac{1}{5+m+n}(1+m)(3+m+n)\,\mathrm{AppellF1}\Big[1+\frac{1}{2}(3+m+n),2+m,$$

$$1+n,1+\frac{1}{2}(5+m+n),\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]\,\mathrm{Sec}\left[\frac{1}{2}(c+d x)\right]^2\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]\Big)\Big)\Big)\Big)\Big)\Big/$$

$$\Big((1+m+n)\Big((3+m+n)\,\mathrm{AppellF1}\Big[\frac{1}{2}(1+m+n),m,1+n,\frac{1}{2}(3+m+n),\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]-$$

$$2\Big((1+n)\,\mathrm{AppellF1}\Big[\frac{1}{2}(3+m+n),m,2+n,\frac{1}{2}(5+m+n),\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]-$$

$$m\,\text{AppellF1}\Big[\frac{1}{2}(3+m+n),1+m,1+n,\frac{1}{2}(5+m+n),\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2\Big)^2\Big)-$$

$$\Big(4^n b^2 (3+m+2n)\,\text{AppellF1}\Big[\frac{1}{2}(1+m+2n),m,1+2n,\frac{1}{2}(3+m+2n),\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2\Big]\left(\frac{\text{Tan}\big[\frac{1}{2}(c+d x)\big]}{1+\text{Tan}\big[\frac{1}{2}(c+d x)\big]^2}\right)^{2n}$$

$$\Big(-2\Big((1+2n)\,\text{AppellF1}\Big[\frac{1}{2}(3+m+2n),m,2(1+n),\frac{1}{2}(5+m+2n),\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2\Big]-m\,\text{AppellF1}\Big[$$

$$\frac{1}{2}(3+m+2n),1+m,1+2n,\frac{1}{2}(5+m+2n),\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2\Big]\Big)\,\text{Sec}\Big[\frac{1}{2}(c+d x)\Big]^2\,\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]+$$

$$(3+m+2n)\Big(-\frac{1}{3+m+2n}(1+2n)(1+m+2n)\,\text{AppellF1}\Big[1+\frac{1}{2}(1+m+2n),m,2+2n,1+\frac{1}{2}(3+m+2n),\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2,$$

$$-\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{2}(c+d x)\Big]^2\,\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]+\frac{1}{3+m+2n}m(1+m+2n)\,\text{AppellF1}\Big[1+\frac{1}{2}(1+m+2n),1+m,$$

$$1+2n,1+\frac{1}{2}(3+m+2n),\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{2}(c+d x)\Big]^2\,\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]\Big)-2\,\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2$$

$$\Big((1+2n)\Big(-\frac{1}{5+m+2n}2(1+n)(3+m+2n)\,\text{AppellF1}\Big[1+\frac{1}{2}(3+m+2n),m,1+2(1+n),1+\frac{1}{2}(5+m+2n),\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2,$$

$$-\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{2}(c+d x)\Big]^2\,\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]+\frac{1}{5+m+2n}m(3+m+2n)\,\text{AppellF1}\Big[1+\frac{1}{2}(3+m+2n),1+m,$$

$$2(1+n),1+\frac{1}{2}(5+m+2n),\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{2}(c+d x)\Big]^2\,\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]\Big)-$$

$$m\Big(-\frac{1}{5+m+2n}(1+2n)(3+m+2n)\,\text{AppellF1}\Big[1+\frac{1}{2}(3+m+2n),1+m,2+2n,1+\frac{1}{2}(5+m+2n),\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2,$$

$$-\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{2}(c+d x)\Big]^2\,\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]+\frac{1}{5+m+2n}(1+m)(3+m+2n)\,\text{AppellF1}\Big[1+\frac{1}{2}(3+m+2n),$$

$$2+m,1+2n,1+\frac{1}{2}(5+m+2n),\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{2}(c+d x)\Big]^2\,\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]\Big)\Big)\Big)\Big)\Big)\Big/$$

$$\Big((1+m+2n)\Big((3+m+2n)\,\text{AppellF1}\Big[\frac{1}{2}(1+m+2n),m,1+2n,\frac{1}{2}(3+m+2n),\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2\Big]-$$

$$2\Big((1+2n)\,\text{AppellF1}\Big[\frac{1}{2}(3+m+2n),m,2(1+n),\frac{1}{2}(5+m+2n),\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2\Big]-$$

$$m\,\text{AppellF1}\Big[\frac{1}{2}(3+m+2n),1+m,1+2n,\frac{1}{2}(5+m+2n),\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2\Big)^2\Big)\Big)\Big)\Big)$$

- **Problem 576: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int (a+b\,\text{Sin}[c+d\,x]^n)\,\text{Tan}[c+d\,x]^m\,dx$$

Optimal (type 5, 124 leaves, 6 steps):

$$\frac{a\,\text{Hypergeometric2F1}\left[1,\frac{1+m}{2},\frac{3+m}{2},-\text{Tan}[c+d\,x]^2\right]\text{Tan}[c+d\,x]^{1+m}}{d\,(1+m)}+\frac{1}{d\,(1+m+n)}$$
$$b\,\left(\text{Cos}[c+d\,x]^2\right)^{\frac{1+m}{2}}\text{Hypergeometric2F1}\left[\frac{1+m}{2},\frac{1}{2}(1+m+n),\frac{1}{2}(3+m+n),\text{Sin}[c+d\,x]^2\right]\text{Sin}[c+d\,x]^n\,\text{Tan}[c+d\,x]^{1+m}$$

Result (type 6, 5184 leaves):

$$\left(2^{1+m}\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\left(-\frac{\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{-1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}\right)^m\left(\left(a\,(3+m)\,\text{AppellF1}\left[\frac{1+m}{2},m,1,\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\Big/\right.\right.$$
$$\left((1+m)\left((3+m)\,\text{AppellF1}\left[\frac{1+m}{2},m,1,\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]-2\left(\text{AppellF1}\left[\frac{3+m}{2},m,2,\frac{5+m}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\right.\right.\right.\right.$$
$$\left.\left.\left.\left.-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]-m\,\text{AppellF1}\left[\frac{3+m}{2},1+m,1,\frac{5+m}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)+$$
$$\left(2^n\,b\,(3+m+n)\,\text{AppellF1}\left[\frac{1}{2}(1+m+n),m,1+n,\frac{1}{2}(3+m+n),\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\left(\frac{\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}\right)^n\right)\Big/$$
$$\left((1+m+n)\left((3+m+n)\,\text{AppellF1}\left[\frac{1}{2}(1+m+n),m,1+n,\frac{1}{2}(3+m+n),\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]-\right.\right.$$
$$2\left((1+n)\,\text{AppellF1}\left[\frac{1}{2}(3+m+n),m,2+n,\frac{1}{2}(5+m+n),\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]-\right.$$
$$\left.\left.\left.\left.m\,\text{AppellF1}\left[\frac{1}{2}(3+m+n),1+m,1+n,\frac{1}{2}(5+m+n),\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)\right)$$
$$\left.(a\,\text{Tan}[c+d\,x]^m+b\,\text{Sin}[c+d\,x]^n\,\text{Tan}[c+d\,x]^m)\right)\Big/\left(d\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right.$$
$$\left(-\frac{1}{\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)^2}2^{1+m}\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\left(-\frac{\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{-1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}\right)^m\right.$$
$$\left(\left(a\,(3+m)\,\text{AppellF1}\left[\frac{1+m}{2},m,1,\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\Big/\left((1+m)\right.\right.$$
$$\left((3+m)\,\text{AppellF1}\left[\frac{1+m}{2},m,1,\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]-2\left(\text{AppellF1}\left[\frac{3+m}{2},m,2,\frac{5+m}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\right.\right.\right.$$

$$-\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]-m\,\mathrm{AppellF1}\left[\frac{3+m}{2},1+m,1,\frac{5+m}{2},\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\Big)\,\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big)\Big)+$$

$$\Big(2^n\,b\,(3+m+n)\,\mathrm{AppellF1}\left[\frac{1}{2}(1+m+n),m,1+n,\frac{1}{2}(3+m+n),\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\left(\frac{\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]}{1+\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\right)^n\Big)\Big/$$

$$\Big((1+m+n)\,\Big((3+m+n)\,\mathrm{AppellF1}\left[\frac{1}{2}(1+m+n),m,1+n,\frac{1}{2}(3+m+n),\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]-2$$

$$\Big((1+n)\,\mathrm{AppellF1}\left[\frac{1}{2}(3+m+n),m,2+n,\frac{1}{2}(5+m+n),\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]-m\,\mathrm{AppellF1}\Big[\frac{1}{2}(3+m+n),$$

$$1+m,1+n,\frac{1}{2}(5+m+n),\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]\Big)\,\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big)\Big)\Big)+\frac{1}{1+\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\,2^m$$

$$\mathrm{Sec}\left[\frac{1}{2}(c+d x)\right]^2\left(-\frac{\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]}{-1+\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\right)^m\Big(\Big(a\,(3+m)\,\mathrm{AppellF1}\left[\frac{1+m}{2},m,1,\frac{3+m}{2},\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\Big)\Big/\Big((1+m)$$

$$\Big((3+m)\,\mathrm{AppellF1}\left[\frac{1+m}{2},m,1,\frac{3+m}{2},\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]-2\Big(\mathrm{AppellF1}\Big[\frac{3+m}{2},m,2,\frac{5+m}{2},\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2,$$

$$-\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]-m\,\mathrm{AppellF1}\left[\frac{3+m}{2},1+m,1,\frac{5+m}{2},\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\Big)\,\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big)\Big)+$$

$$\Big(2^n\,b\,(3+m+n)\,\mathrm{AppellF1}\left[\frac{1}{2}(1+m+n),m,1+n,\frac{1}{2}(3+m+n),\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\left(\frac{\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]}{1+\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\right)^n\Big)\Big/$$

$$\Big((1+m+n)\,\Big((3+m+n)\,\mathrm{AppellF1}\left[\frac{1}{2}(1+m+n),m,1+n,\frac{1}{2}(3+m+n),\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]-$$

$$2\,\Big((1+n)\,\mathrm{AppellF1}\left[\frac{1}{2}(3+m+n),m,2+n,\frac{1}{2}(5+m+n),\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]-$$

$$m\,\mathrm{AppellF1}\left[\frac{1}{2}(3+m+n),1+m,1+n,\frac{1}{2}(5+m+n),\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\Big)\,\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big)\Big)\Big)+$$

$$\frac{1}{1+\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\,2^{1+m}\,m\,\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]\left(-\frac{\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]}{-1+\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\right)^{-1+m}\left(\frac{\mathrm{Sec}\left[\frac{1}{2}(c+d x)\right]^2\,\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{\left(-1+\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^2}-\frac{\mathrm{Sec}\left[\frac{1}{2}(c+d x)\right]^2}{2\left(-1+\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)}\right)$$

$$\Big(\Big(a\,(3+m)\,\mathrm{AppellF1}\left[\frac{1+m}{2},m,1,\frac{3+m}{2},\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\Big)\Big/\Big((1+m)$$

$$\Big((3+m)\,\mathrm{AppellF1}\left[\frac{1+m}{2},m,1,\frac{3+m}{2},\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]-2\Big(\mathrm{AppellF1}\Big[\frac{3+m}{2},m,2,\frac{5+m}{2},\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2,$$

$$-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]-m\,\text{AppellF1}\left[\frac{3+m}{2},1+m,1,\frac{5+m}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big)\Big)+$$

$$\Big(2^n b(3+m+n)\,\text{AppellF1}\left[\frac{1}{2}(1+m+n),m,1+n,\frac{1}{2}(3+m+n),\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\left(\frac{\text{Tan}\left[\frac{1}{2}(c+d x)\right]}{1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\right)^n\Big)\Big/$$

$$\Big((1+m+n)\Big((3+m+n)\,\text{AppellF1}\left[\frac{1}{2}(1+m+n),m,1+n,\frac{1}{2}(3+m+n),\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]-$$

$$2\Big((1+n)\,\text{AppellF1}\left[\frac{1}{2}(3+m+n),m,2+n,\frac{1}{2}(5+m+n),\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]-$$

$$m\,\text{AppellF1}\left[\frac{1}{2}(3+m+n),1+m,1+n,\frac{1}{2}(5+m+n),\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\Big)\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big)\Big)\Big)+$$

$$\frac{1}{1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}2^{1+m}\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]\left(-\frac{\text{Tan}\left[\frac{1}{2}(c+d x)\right]}{-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\right)^m\Big(\Big(a(3+m)\Big(-1/(3+m)(1+m)\,\text{AppellF1}\Big[1+\frac{1+m}{2},$$

$$m,2,1+\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]+1/(3+m)m(1+m)\,\text{AppellF1}\Big[$$

$$1+\frac{1+m}{2},1+m,1,1+\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]\Big)\Big)\Big/\Big((1+m)$$

$$\Big((3+m)\,\text{AppellF1}\left[\frac{1+m}{2},m,1,\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]-2\Big(\text{AppellF1}\Big[\frac{3+m}{2},m,2,\frac{5+m}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,$$

$$-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]-m\,\text{AppellF1}\left[\frac{3+m}{2},1+m,1,\frac{5+m}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\Big)\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big)\Big)+$$

$$\Big(2^n b(3+m+n)\Big(-\frac{1}{3+m+n}(1+n)(1+m+n)\,\text{AppellF1}\Big[1+\frac{1}{2}(1+m+n),m,2+n,1+\frac{1}{2}(3+m+n),\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,$$

$$-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]+\frac{1}{3+m+n}m(1+m+n)\,\text{AppellF1}\Big[1+\frac{1}{2}(1+m+n),1+m,1+n,$$

$$1+\frac{1}{2}(3+m+n),\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]\Big)\left(\frac{\text{Tan}\left[\frac{1}{2}(c+d x)\right]}{1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\right)^n\Big)\Big/$$

$$\Big((1+m+n)\Big((3+m+n)\,\text{AppellF1}\left[\frac{1}{2}(1+m+n),m,1+n,\frac{1}{2}(3+m+n),\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]-$$

$$2\Big((1+n)\,\text{AppellF1}\left[\frac{1}{2}(3+m+n),m,2+n,\frac{1}{2}(5+m+n),\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]-$$

$$m\,\text{AppellF1}\left[\frac{1}{2}(3+m+n),1+m,1+n,\frac{1}{2}(5+m+n),\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\Big)\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big)\Big)+$$

$$\Bigg(2^n b\, n\, (3+m+n)\, \text{AppellF1}\Big[\frac{1}{2}(1+m+n), m, 1+n, \frac{1}{2}(3+m+n), \text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2, -\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2\Big]$$

$$\left(\frac{\text{Tan}\left[\frac{1}{2}(c+d x)\right]}{1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\right)^{-1+n} \left(-\frac{\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^2}+\frac{\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2}{2\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)}\right)\Bigg)\Bigg/$$

$$\Bigg((1+m+n)\, \Bigg((3+m+n)\, \text{AppellF1}\Big[\frac{1}{2}(1+m+n), m, 1+n, \frac{1}{2}(3+m+n), \text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2, -\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2\Big] -$$

$$2\, \Bigg((1+n)\, \text{AppellF1}\Big[\frac{1}{2}(3+m+n), m, 2+n, \frac{1}{2}(5+m+n), \text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2, -\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2\Big] -$$

$$m\, \text{AppellF1}\Big[\frac{1}{2}(3+m+n), 1+m, 1+n, \frac{1}{2}(5+m+n), \text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2, -\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2\Big]\Bigg)\, \text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2\Bigg)\Bigg) -$$

$$\Bigg(a\, (3+m)\, \text{AppellF1}\Big[\frac{1+m}{2}, m, 1, \frac{3+m}{2}, \text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2, -\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2\Big]\, \Bigg(-2\, \Bigg(\text{AppellF1}\Big[\frac{3+m}{2}, m, 2, \frac{5+m}{2},$$

$$\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2, -\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2\Big] - m\, \text{AppellF1}\Big[\frac{3+m}{2}, 1+m, 1, \frac{5+m}{2}, \text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2, -\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2\Big]\Bigg)$$

$$\text{Sec}\Big[\frac{1}{2}(c+d x)\Big]^2\, \text{Tan}\Big[\frac{1}{2}(c+d x)\Big] + (3+m)\, \Bigg(-\frac{1}{3+m}(1+m)\, \text{AppellF1}\Big[1+\frac{1+m}{2}, m, 2, 1+\frac{3+m}{2}, \text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2,$$

$$-\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2\Big]\, \text{Sec}\Big[\frac{1}{2}(c+d x)\Big]^2\, \text{Tan}\Big[\frac{1}{2}(c+d x)\Big] + \frac{1}{3+m} m\, (1+m)\, \text{AppellF1}\Big[1+\frac{1+m}{2}, 1+m, 1,$$

$$1+\frac{3+m}{2}, \text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2, -\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2\Big]\, \text{Sec}\Big[\frac{1}{2}(c+d x)\Big]^2\, \text{Tan}\Big[\frac{1}{2}(c+d x)\Big]\Bigg) - 2\, \text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2$$

$$\Bigg(-\frac{1}{5+m} 2\, (3+m)\, \text{AppellF1}\Big[1+\frac{3+m}{2}, m, 3, 1+\frac{5+m}{2}, \text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2, -\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2\Big]\, \text{Sec}\Big[\frac{1}{2}(c+d x)\Big]^2\, \text{Tan}\Big[\frac{1}{2}(c+d x)\Big] +$$

$$\frac{1}{5+m} m\, (3+m)\, \text{AppellF1}\Big[1+\frac{3+m}{2}, 1+m, 2, 1+\frac{5+m}{2}, \text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2, -\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2\Big]\, \text{Sec}\Big[\frac{1}{2}(c+d x)\Big]^2$$

$$\text{Tan}\Big[\frac{1}{2}(c+d x)\Big] - m\, \Bigg(-\frac{1}{5+m}(3+m)\, \text{AppellF1}\Big[1+\frac{3+m}{2}, 1+m, 2, 1+\frac{5+m}{2}, \text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2, -\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2\Big]$$

$$\text{Sec}\Big[\frac{1}{2}(c+d x)\Big]^2\, \text{Tan}\Big[\frac{1}{2}(c+d x)\Big] + \frac{1}{5+m}(1+m)\, (3+m)\, \text{AppellF1}\Big[1+\frac{3+m}{2}, 2+m, 1, 1+\frac{5+m}{2},$$

$$\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2, -\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2\Big]\, \text{Sec}\Big[\frac{1}{2}(c+d x)\Big]^2\, \text{Tan}\Big[\frac{1}{2}(c+d x)\Big]\Bigg)\Bigg)\Bigg)\Bigg)\Bigg)\Bigg/\, \Bigg((1+m)$$

$$\Bigg((3+m)\, \text{AppellF1}\Big[\frac{1+m}{2}, m, 1, \frac{3+m}{2}, \text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2, -\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2\Big] - 2\, \Bigg(\text{AppellF1}\Big[\frac{3+m}{2}, m, 2, \frac{5+m}{2}, \text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2,$$

$$-\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2\Big] - m\, \text{AppellF1}\Big[\frac{3+m}{2}, 1+m, 1, \frac{5+m}{2}, \text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2, -\text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2\Big]\Bigg)\, \text{Tan}\Big[\frac{1}{2}(c+d x)\Big]^2\Bigg)^2 -$$

$$\Big(2^n\, b\, (3+m+n)\, \text{AppellF1}\Big[\frac{1}{2}(1+m+n),\, m,\, 1+n,\, \frac{1}{2}(3+m+n),\, \text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2,\, -\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2\Big] \left(\frac{\text{Tan}\big[\frac{1}{2}(c+d\,x)\big]}{1+\text{Tan}\big[\frac{1}{2}(c+d\,x)\big]^2}\right)^n$$

$$\Big(-2\Big((1+n)\, \text{AppellF1}\Big[\frac{1}{2}(3+m+n),\, m,\, 2+n,\, \frac{1}{2}(5+m+n),\, \text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2,\, -\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2\Big] - m\, \text{AppellF1}\Big[\frac{1}{2}(3+m+n),$$

$$1+m,\, 1+n,\, \frac{1}{2}(5+m+n),\, \text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2,\, -\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2\Big]\Big)\, \text{Sec}\Big[\frac{1}{2}(c+d\,x)\Big]^2\, \text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big] +$$

$$(3+m+n)\, \Big(-\frac{1}{3+m+n}(1+n)\, (1+m+n)\, \text{AppellF1}\Big[1+\frac{1}{2}(1+m+n),\, m,\, 2+n,\, 1+\frac{1}{2}(3+m+n),\, \text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2,$$

$$-\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2\Big]\, \text{Sec}\Big[\frac{1}{2}(c+d\,x)\Big]^2\, \text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big] + \frac{1}{3+m+n} m\, (1+m+n)\, \text{AppellF1}\Big[1+\frac{1}{2}(1+m+n),$$

$$1+m,\, 1+n,\, 1+\frac{1}{2}(3+m+n),\, \text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2,\, -\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2\Big]\, \text{Sec}\Big[\frac{1}{2}(c+d\,x)\Big]^2\, \text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]\Big) -$$

$$2\, \text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2\, \Big((1+n)\, \Big(-\frac{1}{5+m+n}(2+n)\, (3+m+n)\, \text{AppellF1}\Big[1+\frac{1}{2}(3+m+n),\, m,\, 3+n,\, 1+\frac{1}{2}(5+m+n),\, \text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2,$$

$$-\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2\Big]\, \text{Sec}\Big[\frac{1}{2}(c+d\,x)\Big]^2\, \text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big] + \frac{1}{5+m+n} m\, (3+m+n)\, \text{AppellF1}\Big[1+\frac{1}{2}(3+m+n),$$

$$1+m,\, 2+n,\, 1+\frac{1}{2}(5+m+n),\, \text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2,\, -\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2\Big]\, \text{Sec}\Big[\frac{1}{2}(c+d\,x)\Big]^2\, \text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]\Big) -$$

$$m\, \Big(-\frac{1}{5+m+n}(1+n)\, (3+m+n)\, \text{AppellF1}\Big[1+\frac{1}{2}(3+m+n),\, 1+m,\, 2+n,\, 1+\frac{1}{2}(5+m+n),\, \text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2,$$

$$-\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2\Big]\, \text{Sec}\Big[\frac{1}{2}(c+d\,x)\Big]^2\, \text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big] + \frac{1}{5+m+n}(1+m)\, (3+m+n)\, \text{AppellF1}\Big[1+\frac{1}{2}(3+m+n),\, 2+m,$$

$$1+n,\, 1+\frac{1}{2}(5+m+n),\, \text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2,\, -\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2\Big]\, \text{Sec}\Big[\frac{1}{2}(c+d\,x)\Big]^2\, \text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]\Big)\Big)\Big)\Big)\Big) \Big/$$

$$\Big((1+m+n)\, \Big((3+m+n)\, \text{AppellF1}\Big[\frac{1}{2}(1+m+n),\, m,\, 1+n,\, \frac{1}{2}(3+m+n),\, \text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2,\, -\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2\Big] -$$

$$2\, \Big((1+n)\, \text{AppellF1}\Big[\frac{1}{2}(3+m+n),\, m,\, 2+n,\, \frac{1}{2}(5+m+n),\, \text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2,\, -\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2\Big] -$$

$$m\, \text{AppellF1}\Big[\frac{1}{2}(3+m+n),\, 1+m,\, 1+n,\, \frac{1}{2}(5+m+n),\, \text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2,\, -\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2\Big]\Big)\, \text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2\Big)^2\Big)\Big)\Big)\Big)$$

- **Problem 585: Unable to integrate problem.**

$$\int \text{Cot}[c+d\,x]^3\, (a+b\, \text{Sin}[c+d\,x]^n)^p\, dx$$

Optimal (type 5, 136 leaves, 7 steps):

$$\frac{\text{Hypergeometric2F1}\left[1,\ 1+p,\ 2+p,\ 1+\frac{b\,\text{Sin}[c+d\,x]^n}{a}\right]\ (a+b\,\text{Sin}[c+d\,x]^n)^{1+p}}{a\,d\,n\,(1+p)}-$$

$$\frac{\text{Csc}[c+d\,x]^2\ \text{Hypergeometric2F1}\left[-\frac{2}{n},\ -p,\ -\frac{2-n}{n},\ -\frac{b\,\text{Sin}[c+d\,x]^n}{a}\right]\ (a+b\,\text{Sin}[c+d\,x]^n)^p\ \left(1+\frac{b\,\text{Sin}[c+d\,x]^n}{a}\right)^{-p}}{2\,d}$$

Result (type 8, 25 leaves):

$$\int \text{Cot}[c+d\,x]^3\ (a+b\,\text{Sin}[c+d\,x]^n)^p\,dx$$

Problem 591: Result unnecessarily involves higher level functions.

$$\int \frac{a+b\,\text{Sin}[e+f\,x]^2}{(g\,\text{Cos}[e+f\,x])^{5/2}\,\sqrt{d\,\text{Sin}[e+f\,x]}}\,dx$$

Optimal (type 4, 107 leaves, 7 steps):

$$\frac{2\,(a+b)\,\sqrt{d\,\text{Sin}[e+f\,x]}}{3\,d\,f\,g\,(g\,\text{Cos}[e+f\,x])^{3/2}}+\frac{(2\,a-b)\ \text{EllipticF}\left[e-\frac{\pi}{4}+f\,x,\ 2\right]\ \sqrt{\text{Sin}[2\,e+2\,f\,x]}}{3\,f\,g^2\,\sqrt{g\,\text{Cos}[e+f\,x]}\ \sqrt{d\,\text{Sin}[e+f\,x]}}$$

Result (type 5, 120 leaves):

$$\left(2\left(-2\,(2\,a-b)\ \text{Cos}[e+f\,x]^2\ \text{Hypergeometric2F1}\left[-\frac{1}{4},\ \frac{1}{4},\ \frac{5}{4},\ \text{Cos}[e+f\,x]^2\right]+\left(a+b+(2\,a-b)\ \text{Cos}[e+f\,x]^2\right)\ \left(\text{Sin}[e+f\,x]^2\right)^{1/4}\right)\ \text{Tan}[e+f\,x]\right)\Big/$$
$$\left(3\,f\,g^2\,\sqrt{g\,\text{Cos}[e+f\,x]}\ \sqrt{d\,\text{Sin}[e+f\,x]}\ \left(\text{Sin}[e+f\,x]^2\right)^{1/4}\right)$$

Problem 592: Result more than twice size of optimal antiderivative.

$$\int (c\,\text{Cos}[e+f\,x])^m\ (d\,\text{Sin}[e+f\,x])^n\ \left(a+b\,\text{Sin}[e+f\,x]^2\right)^p\,dx$$

Optimal (type 6, 137 leaves, 3 steps):

$$\frac{1}{d\,f\,(1+n)}c\ \text{AppellF1}\left[\frac{1+n}{2},\ \frac{1-m}{2},\ -p,\ \frac{3+n}{2},\ \text{Sin}[e+f\,x]^2,\ -\frac{b\,\text{Sin}[e+f\,x]^2}{a}\right]$$
$$(c\,\text{Cos}[e+f\,x])^{-1+m}\ \left(\text{Cos}[e+f\,x]^2\right)^{\frac{1-m}{2}}\ (d\,\text{Sin}[e+f\,x])^{1+n}\ \left(a+b\,\text{Sin}[e+f\,x]^2\right)^p\ \left(1+\frac{b\,\text{Sin}[e+f\,x]^2}{a}\right)^{-p}$$

Result (type 6, 279 leaves):

$$\left(a\,(3+n)\,\text{AppellF1}\left[\frac{1+n}{2},\frac{1-m}{2},-p,\frac{3+n}{2},\text{Sin}[e+f\,x]^2,-\frac{b\,\text{Sin}[e+f\,x]^2}{a}\right]\right.$$
$$\left.(c\,\text{Cos}[e+f\,x])^m\,(d\,\text{Sin}[e+f\,x])^n\left(a+b\,\text{Sin}[e+f\,x]^2\right)^p\,\text{Tan}[e+f\,x]\right)\Big/$$
$$\left(f\,(1+n)\left(a\,(3+n)\,\text{AppellF1}\left[\frac{1+n}{2},\frac{1-m}{2},-p,\frac{3+n}{2},\text{Sin}[e+f\,x]^2,-\frac{b\,\text{Sin}[e+f\,x]^2}{a}\right]+\left(2\,b\,p\,\text{AppellF1}\left[\frac{3+n}{2},\frac{1-m}{2},1-p,\frac{5+n}{2},\right.\right.\right.\right.$$
$$\left.\left.\left.\left.\text{Sin}[e+f\,x]^2,-\frac{b\,\text{Sin}[e+f\,x]^2}{a}\right]-a\,(-1+m)\,\text{AppellF1}\left[\frac{3+n}{2},\frac{3-m}{2},-p,\frac{5+n}{2},\text{Sin}[e+f\,x]^2,-\frac{b\,\text{Sin}[e+f\,x]^2}{a}\right]\right)\text{Sin}[e+f\,x]^2\right)\right)$$

- **Problem 593: Result more than twice size of optimal antiderivative.**

$$\int\sqrt{a+(c\,\text{Cos}[e+f\,x]+b\,\text{Sin}[e+f\,x])^2}\,dx$$

Optimal (type 4, 79 leaves, 3 steps) :

$$\frac{\text{EllipticE}\left[e+f\,x+\text{ArcTan}[b,c],-\frac{b^2+c^2}{a}\right]\sqrt{a+(c\,\text{Cos}[e+f\,x]+b\,\text{Sin}[e+f\,x])^2}}{f\sqrt{1+\frac{(c\,\text{Cos}[e+f\,x]+b\,\text{Sin}[e+f\,x])^2}{a}}}$$

Result (type 4, 325 leaves) :

$$-\left(\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{\frac{\sqrt{(b^2+c^2)^2}+(b^2-c^2)\,\text{Cos}[2\,(e+f\,x)]-2\,b\,c\,\text{Sin}[2\,(e+f\,x)]}{\sqrt{(b^2+c^2)^2}}}}{\sqrt{2}}\right],\ \frac{2\sqrt{(b^2+c^2)^2}}{2\,a+b^2+c^2+\sqrt{(b^2+c^2)^2}}\right]\right.$$

$$\left.\sqrt{2\,a+b^2+c^2+(-b^2+c^2)\,\text{Cos}[2\,(e+f\,x)]+2\,b\,c\,\text{Sin}[2\,(e+f\,x)]}\ \left(2\,b\,c\,\text{Cos}[2\,(e+f\,x)]+(b^2-c^2)\,\text{Sin}[2\,(e+f\,x)]\right)\right)\Big/$$

$$\left(\sqrt{2}\ \sqrt{(b^2+c^2)^2}\ f\ \sqrt{\frac{2\,a+b^2+c^2+(-b^2+c^2)\,\text{Cos}[2\,(e+f\,x)]+2\,b\,c\,\text{Sin}[2\,(e+f\,x)]}{2\,a+b^2+c^2+\sqrt{(b^2+c^2)^2}}}\ \sqrt{\frac{(2\,b\,c\,\text{Cos}[2\,(e+f\,x)]+(b^2-c^2)\,\text{Sin}[2\,(e+f\,x)])^2}{(b^2+c^2)^2}}\right)$$

- **Problem 594: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.**

$$\int\frac{1}{\sqrt{a+(c\,\text{Cos}[e+f\,x]+b\,\text{Sin}[e+f\,x])^2}}\,dx$$

Optimal (type 4, 79 leaves, 3 steps) :

$$\frac{\text{EllipticF}\left[e+f\,x+\text{ArcTan}[b,c],\ -\frac{b^2+c^2}{a}\right]\sqrt{1+\frac{(c\,\text{Cos}[e+f\,x]+b\,\text{Sin}[e+f\,x])^2}{a}}}{f\sqrt{a+(c\,\text{Cos}[e+f\,x]+b\,\text{Sin}[e+f\,x])^2}}$$

Result (type 6, 529 leaves) :

$$\frac{1}{b\,c\,\sqrt{\frac{\left(b^2+c^2\right)^2}{b^2\,c^2}}\,f}\sqrt{2}\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2},\frac{1}{2},\frac{3}{2},\frac{2\,a+b^2+c^2+b\,c\,\sqrt{\frac{\left(b^2+c^2\right)^2}{b^2\,c^2}}\,\text{Sin}\left[2\,(e+f\,x)+\text{ArcTan}\left[\frac{-b^2+c^2}{2\,b\,c}\right]\right]}{2\,a+b^2+c^2-b\,c\,\sqrt{\frac{\left(b^2+c^2\right)^2}{b^2\,c^2}}},\right.$$

$$\left.\frac{2\,a+b^2+c^2+b\,c\,\sqrt{\frac{\left(b^2+c^2\right)^2}{b^2\,c^2}}\,\text{Sin}\left[2\,(e+f\,x)+\text{ArcTan}\left[\frac{-b^2+c^2}{2\,b\,c}\right]\right]}{2\,a+b^2+c^2+b\,c\,\sqrt{\frac{\left(b^2+c^2\right)^2}{b^2\,c^2}}}\right]\,\text{Sec}\left[2\,(e+f\,x)+\text{ArcTan}\left[\frac{-b^2+c^2}{2\,b\,c}\right]\right]$$

$$\sqrt{-\frac{b\,c\,\sqrt{\frac{\left(b^2+c^2\right)^2}{b^2\,c^2}}\,\left(-1+\text{Sin}\left[2\,(e+f\,x)+\text{ArcTan}\left[\frac{-b^2+c^2}{2\,b\,c}\right]\right]\right)}{2\,a+b^2+c^2+b\,c\,\sqrt{\frac{\left(b^2+c^2\right)^2}{b^2\,c^2}}}}\;\sqrt{-\frac{b\,c\,\sqrt{\frac{\left(b^2+c^2\right)^2}{b^2\,c^2}}\,\left(1+\text{Sin}\left[2\,(e+f\,x)+\text{ArcTan}\left[\frac{-b^2+c^2}{2\,b\,c}\right]\right]\right)}{2\,a+b^2+c^2-b\,c\,\sqrt{\frac{\left(b^2+c^2\right)^2}{b^2\,c^2}}}}$$

$$\sqrt{2\,a+b^2+c^2+b\,c\,\sqrt{\frac{\left(b^2+c^2\right)^2}{b^2\,c^2}}\,\text{Sin}\left[2\,(e+f\,x)+\text{ArcTan}\left[\frac{-b^2+c^2}{2\,b\,c}\right]\right]}$$

Test results for the 9 problems in "4.1.8 (a+b sin)^m (c+d trig)^n.m"

- **Problem 2: Result more than twice size of optimal antiderivative.**

$$\int\frac{A+B\,\text{Cos}[x]}{1+\text{Sin}[x]}\,dx$$

Optimal (type 3, 19 leaves, 5 steps):

$$B\,\text{Log}[1+\text{Sin}[x]]-\frac{A\,\text{Cos}[x]}{1+\text{Sin}[x]}$$

Result (type 3, 42 leaves):

$$2\,B\,\text{Log}\left[\text{Cos}\left[\frac{x}{2}\right]+\text{Sin}\left[\frac{x}{2}\right]\right]+\frac{2\,A\,\text{Sin}\left[\frac{x}{2}\right]}{\text{Cos}\left[\frac{x}{2}\right]+\text{Sin}\left[\frac{x}{2}\right]}$$

Test results for the 19 problems in "4.1.9 trig^m (a+b sin^n+c sin^(2 n))^p.m"

- **Problem 1: Result unnecessarily involves imaginary or complex numbers.**

$$\int \frac{\text{Sin}[x]^4}{a+b\,\text{Sin}[x]+c\,\text{Sin}[x]^2}\,dx$$

Optimal (type 3, 323 leaves, 12 steps):

$$\frac{x}{2c}+\frac{\left(b^2-a c\right)x}{c^3}-\frac{\sqrt{2}\left(b^3-2abc-\frac{b^4-4ab^2c+2a^2c^2}{\sqrt{b^2-4ac}}\right)\text{ArcTan}\left[\frac{2c+\left(b-\sqrt{b^2-4ac}\right)\text{Tan}\left[\frac{x}{2}\right]}{\sqrt{2}\sqrt{b^2-2c(a+c)-b\sqrt{b^2-4ac}}}\right]}{c^3\sqrt{b^2-2c(a+c)-b\sqrt{b^2-4ac}}}-$$

$$\frac{\sqrt{2}\left(b^3-2abc+\frac{b^4-4ab^2c+2a^2c^2}{\sqrt{b^2-4ac}}\right)\text{ArcTan}\left[\frac{2c+\left(b+\sqrt{b^2-4ac}\right)\text{Tan}\left[\frac{x}{2}\right]}{\sqrt{2}\sqrt{b^2-2c(a+c)+b\sqrt{b^2-4ac}}}\right]}{c^3\sqrt{b^2-2c(a+c)+b\sqrt{b^2-4ac}}}+\frac{b\,\text{Cos}[x]}{c^2}-\frac{\text{Cos}[x]\,\text{Sin}[x]}{2c}$$

Result (type 3, 410 leaves):

$$\frac{1}{4\,c^3}\left(4\,b^2\,x+2\,c\,(-2\,a+c)\,x-\left(4\left(\mathrm{i}\,b^4-4\,\mathrm{i}\,a\,b^2\,c+2\,\mathrm{i}\,a^2\,c^2+b^3\sqrt{-b^2+4\,a\,c}-2\,a\,b\,c\sqrt{-b^2+4\,a\,c}\right)\mathrm{ArcTan}\left[\frac{2\,c+\left(b-\mathrm{i}\sqrt{-b^2+4\,a\,c}\right)\mathrm{Tan}\left[\frac{x}{2}\right]}{\sqrt{2}\sqrt{b^2-2\,c\,(a+c)-\mathrm{i}\,b\sqrt{-b^2+4\,a\,c}}}\right]\right)\Big/\left(\sqrt{-\frac{b^2}{2}+2\,a\,c}\sqrt{b^2-2\,c\,(a+c)-\mathrm{i}\,b\sqrt{-b^2+4\,a\,c}}\right)-\left(4\left(-\mathrm{i}\,b^4+4\,\mathrm{i}\,a\,b^2\,c-2\,\mathrm{i}\,a^2\,c^2+b^3\sqrt{-b^2+4\,a\,c}-2\,a\,b\,c\sqrt{-b^2+4\,a\,c}\right)\mathrm{ArcTan}\left[\frac{2\,c+\left(b+\mathrm{i}\sqrt{-b^2+4\,a\,c}\right)\mathrm{Tan}\left[\frac{x}{2}\right]}{\sqrt{2}\sqrt{b^2-2\,c\,(a+c)+\mathrm{i}\,b\sqrt{-b^2+4\,a\,c}}}\right]\right)\Big/\left(\sqrt{-\frac{b^2}{2}+2\,a\,c}\sqrt{b^2-2\,c\,(a+c)+\mathrm{i}\,b\sqrt{-b^2+4\,a\,c}}\right)+4\,b\,c\,\mathrm{Cos}[x]-c^2\,\mathrm{Sin}[2\,x]\right)$$

- **Problem 2: Result unnecessarily involves imaginary or complex numbers.**

$$\int\frac{\mathrm{Sin}[x]^3}{a+b\,\mathrm{Sin}[x]+c\,\mathrm{Sin}[x]^2}\,dx$$

Optimal (type 3, 298 leaves, 10 steps):

$$-\frac{b\,x}{c^2}+\frac{\sqrt{2}\,b\left(b-\frac{a\,c}{b}-\frac{b^2}{\sqrt{b^2-4\,a\,c}}+\frac{3\,a\,c}{\sqrt{b^2-4\,a\,c}}\right)\mathrm{ArcTan}\left[\frac{2\,c+\left(b-\sqrt{b^2-4\,a\,c}\right)\mathrm{Tan}\left[\frac{x}{2}\right]}{\sqrt{2}\sqrt{b^2-2\,c\,(a+c)-b\sqrt{b^2-4\,a\,c}}}\right]}{c^2\sqrt{b^2-2\,c\,(a+c)-b\sqrt{b^2-4\,a\,c}}}+$$

$$\frac{\sqrt{2}\,b\left(b-\frac{a\,c}{b}+\frac{b^2}{\sqrt{b^2-4\,a\,c}}-\frac{3\,a\,c}{\sqrt{b^2-4\,a\,c}}\right)\mathrm{ArcTan}\left[\frac{2\,c+\left(b+\sqrt{b^2-4\,a\,c}\right)\mathrm{Tan}\left[\frac{x}{2}\right]}{\sqrt{2}\sqrt{b^2-2\,c\,(a+c)+b\sqrt{b^2-4\,a\,c}}}\right]}{c^2\sqrt{b^2-2\,c\,(a+c)+b\sqrt{b^2-4\,a\,c}}}-\frac{\mathrm{Cos}[x]}{c}$$

Result (type 3, 358 leaves):

$$\frac{1}{c^2}\left(-b\,x+\frac{\left(i\,b^3-3\,i\,a\,b\,c+b^2\sqrt{-b^2+4\,a\,c}-a\,c\sqrt{-b^2+4\,a\,c}\right)\text{ArcTan}\left[\frac{2\,c+\left(b-i\sqrt{-b^2+4\,a\,c}\right)\text{Tan}\left[\frac{x}{2}\right]}{\sqrt{2}\sqrt{b^2-2\,c\,(a+c)-i\,b\sqrt{-b^2+4\,a\,c}}}\right]}{\sqrt{-\frac{b^2}{2}+2\,a\,c}\sqrt{b^2-2\,c\,(a+c)-i\,b\sqrt{-b^2+4\,a\,c}}}+\frac{\left(-i\,b^3+3\,i\,a\,b\,c+b^2\sqrt{-b^2+4\,a\,c}-a\,c\sqrt{-b^2+4\,a\,c}\right)\text{ArcTan}\left[\frac{2\,c+\left(b+i\sqrt{-b^2+4\,a\,c}\right)\text{Tan}\left[\frac{x}{2}\right]}{\sqrt{2}\sqrt{b^2-2\,c\,(a+c)+i\,b\sqrt{-b^2+4\,a\,c}}}\right]}{\sqrt{-\frac{b^2}{2}+2\,a\,c}\sqrt{b^2-2\,c\,(a+c)+i\,b\sqrt{-b^2+4\,a\,c}}}-c\,\text{Cos}[x]\right)$$

Problem 3: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{\text{Sin}[x]^2}{a+b\,\text{Sin}[x]+c\,\text{Sin}[x]^2}\,dx$$

Optimal (type 3, 253 leaves, 9 steps):

$$\frac{x}{c}-\frac{\sqrt{2}\left(b-\frac{b^2-2\,a\,c}{\sqrt{b^2-4\,a\,c}}\right)\text{ArcTan}\left[\frac{2\,c+\left(b-\sqrt{b^2-4\,a\,c}\right)\text{Tan}\left[\frac{x}{2}\right]}{\sqrt{2}\sqrt{b^2-2\,c\,(a+c)-b\sqrt{b^2-4\,a\,c}}}\right]}{c\sqrt{b^2-2\,c\,(a+c)-b\sqrt{b^2-4\,a\,c}}}-\frac{\sqrt{2}\left(b+\frac{b^2-2\,a\,c}{\sqrt{b^2-4\,a\,c}}\right)\text{ArcTan}\left[\frac{2\,c+\left(b+\sqrt{b^2-4\,a\,c}\right)\text{Tan}\left[\frac{x}{2}\right]}{\sqrt{2}\sqrt{b^2-2\,c\,(a+c)+b\sqrt{b^2-4\,a\,c}}}\right]}{c\sqrt{b^2-2\,c\,(a+c)+b\sqrt{b^2-4\,a\,c}}}$$

Result (type 3, 310 leaves):

$$\frac{1}{c}\left(x-\frac{\left(i\,b^2-2\,i\,a\,c+b\sqrt{-b^2+4\,a\,c}\right)\text{ArcTan}\left[\frac{2\,c+\left(b-i\sqrt{-b^2+4\,a\,c}\right)\text{Tan}\left[\frac{x}{2}\right]}{\sqrt{2}\sqrt{b^2-2\,c\,(a+c)-i\,b\sqrt{-b^2+4\,a\,c}}}\right]}{\sqrt{-\frac{b^2}{2}+2\,a\,c}\sqrt{b^2-2\,c\,(a+c)-i\,b\sqrt{-b^2+4\,a\,c}}}-\frac{\left(-i\,b^2+2\,i\,a\,c+b\sqrt{-b^2+4\,a\,c}\right)\text{ArcTan}\left[\frac{2\,c+\left(b+i\sqrt{-b^2+4\,a\,c}\right)\text{Tan}\left[\frac{x}{2}\right]}{\sqrt{2}\sqrt{b^2-2\,c\,(a+c)+i\,b\sqrt{-b^2+4\,a\,c}}}\right]}{\sqrt{-\frac{b^2}{2}+2\,a\,c}\sqrt{b^2-2\,c\,(a+c)+i\,b\sqrt{-b^2+4\,a\,c}}}\right)$$

Problem 4: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{\text{Sin}[x]}{a+b\,\text{Sin}[x]+c\,\text{Sin}[x]^2}\,dx$$

Optimal (type 3, 226 leaves, 8 steps):

$$\frac{\sqrt{2}\left(1-\frac{b}{\sqrt{b^2-4\,a\,c}}\right)\text{ArcTan}\left[\frac{2\,c+\left(b-\sqrt{b^2-4\,a\,c}\right)\text{Tan}\left[\frac{x}{2}\right]}{\sqrt{2}\,\sqrt{b^2-2\,c\,(a+c)-b\,\sqrt{b^2-4\,a\,c}}}\right]}{\sqrt{b^2-2\,c\,(a+c)-b\,\sqrt{b^2-4\,a\,c}}}+\frac{\sqrt{2}\left(1+\frac{b}{\sqrt{b^2-4\,a\,c}}\right)\text{ArcTan}\left[\frac{2\,c+\left(b+\sqrt{b^2-4\,a\,c}\right)\text{Tan}\left[\frac{x}{2}\right]}{\sqrt{2}\,\sqrt{b^2-2\,c\,(a+c)+b\,\sqrt{b^2-4\,a\,c}}}\right]}{\sqrt{b^2-2\,c\,(a+c)+b\,\sqrt{b^2-4\,a\,c}}}$$

Result (type 3, 268 leaves):

$$\frac{\frac{\left(i\,b+\sqrt{-b^2+4\,a\,c}\right)\text{ArcTan}\left[\frac{2\,c+\left(b-i\,\sqrt{-b^2+4\,a\,c}\right)\text{Tan}\left[\frac{x}{2}\right]}{\sqrt{2}\,\sqrt{b^2-2\,c\,(a+c)-i\,b\,\sqrt{-b^2+4\,a\,c}}}\right]}{\sqrt{b^2-2\,c\,(a+c)-i\,b\,\sqrt{-b^2+4\,a\,c}}}+\frac{\left(-i\,b+\sqrt{-b^2+4\,a\,c}\right)\text{ArcTan}\left[\frac{2\,c+\left(b+i\,\sqrt{-b^2+4\,a\,c}\right)\text{Tan}\left[\frac{x}{2}\right]}{\sqrt{2}\,\sqrt{b^2-2\,c\,(a+c)+i\,b\,\sqrt{-b^2+4\,a\,c}}}\right]}{\sqrt{b^2-2\,c\,(a+c)+i\,b\,\sqrt{-b^2+4\,a\,c}}}}{\sqrt{-\frac{b^2}{2}+2\,a\,c}}$$

- **Problem 5: Result unnecessarily involves imaginary or complex numbers.**

$$\int\frac{1}{a+b\,\text{Sin}[x]+c\,\text{Sin}[x]^2}\,dx$$

Optimal (type 3, 221 leaves, 7 steps):

$$\frac{2\,\sqrt{2}\,c\,\text{ArcTan}\left[\frac{2\,c+\left(b-\sqrt{b^2-4\,a\,c}\right)\text{Tan}\left[\frac{x}{2}\right]}{\sqrt{2}\,\sqrt{b^2-2\,c\,(a+c)-b\,\sqrt{b^2-4\,a\,c}}}\right]}{\sqrt{b^2-4\,a\,c}\,\sqrt{b^2-2\,c\,(a+c)-b\,\sqrt{b^2-4\,a\,c}}}-\frac{2\,\sqrt{2}\,c\,\text{ArcTan}\left[\frac{2\,c+\left(b+\sqrt{b^2-4\,a\,c}\right)\text{Tan}\left[\frac{x}{2}\right]}{\sqrt{2}\,\sqrt{b^2-2\,c\,(a+c)+b\,\sqrt{b^2-4\,a\,c}}}\right]}{\sqrt{b^2-4\,a\,c}\,\sqrt{b^2-2\,c\,(a+c)+b\,\sqrt{b^2-4\,a\,c}}}$$

Result (type 3, 233 leaves):

$$-\frac{2\,i\,c\left(\frac{\text{ArcTan}\left[\frac{2\,c+\left(b-i\,\sqrt{-b^2+4\,a\,c}\right)\text{Tan}\left[\frac{x}{2}\right]}{\sqrt{2}\,\sqrt{b^2-2\,c\,(a+c)-i\,b\,\sqrt{-b^2+4\,a\,c}}}\right]}{\sqrt{b^2-2\,c\,(a+c)-i\,b\,\sqrt{-b^2+4\,a\,c}}}-\frac{\text{ArcTan}\left[\frac{2\,c+\left(b+i\,\sqrt{-b^2+4\,a\,c}\right)\text{Tan}\left[\frac{x}{2}\right]}{\sqrt{2}\,\sqrt{b^2-2\,c\,(a+c)+i\,b\,\sqrt{-b^2+4\,a\,c}}}\right]}{\sqrt{b^2-2\,c\,(a+c)+i\,b\,\sqrt{-b^2+4\,a\,c}}}\right)}{\sqrt{-\frac{b^2}{2}+2\,a\,c}}$$

- **Problem 6: Result unnecessarily involves imaginary or complex numbers.**

$$\int\frac{\text{Csc}[x]}{a+b\,\text{Sin}[x]+c\,\text{Sin}[x]^2}\,dx$$

Optimal (type 3, 244 leaves, 10 steps):

$$-\frac{\sqrt{2}\, c \left(1+\frac{b}{\sqrt{b^2-4 a c}}\right) \text{ArcTan}\left[\frac{2 c+\left(b-\sqrt{b^2-4 a c}\right) \text{Tan}\left[\frac{x}{2}\right]}{\sqrt{2} \sqrt{b^2-2 c (a+c)-b \sqrt{b^2-4 a c}}}\right]}{a \sqrt{b^2-2 c (a+c)-b \sqrt{b^2-4 a c}}}-\frac{\sqrt{2}\, c \left(1-\frac{b}{\sqrt{b^2-4 a c}}\right) \text{ArcTan}\left[\frac{2 c+\left(b+\sqrt{b^2-4 a c}\right) \text{Tan}\left[\frac{x}{2}\right]}{\sqrt{2} \sqrt{b^2-2 c (a+c)+b \sqrt{b^2-4 a c}}}\right]}{a \sqrt{b^2-2 c (a+c)+b \sqrt{b^2-4 a c}}}-\frac{\text{ArcTanh}[\text{Cos}[x]]}{a}$$

Result (type 3, 306 leaves) :

$$-\frac{1}{a}\left(\frac{c \left(-i b+\sqrt{-b^2+4 a c}\right) \text{ArcTan}\left[\frac{2 c+\left(b-i \sqrt{-b^2+4 a c}\right) \text{Tan}\left[\frac{x}{2}\right]}{\sqrt{2} \sqrt{b^2-2 c (a+c)-i b \sqrt{-b^2+4 a c}}}\right]}{\sqrt{-\frac{b^2}{2}+2 a c} \sqrt{b^2-2 c (a+c)-i b \sqrt{-b^2+4 a c}}}+\frac{c \left(i b+\sqrt{-b^2+4 a c}\right) \text{ArcTan}\left[\frac{2 c+\left(b+i \sqrt{-b^2+4 a c}\right) \text{Tan}\left[\frac{x}{2}\right]}{\sqrt{2} \sqrt{b^2-2 c (a+c)+i b \sqrt{-b^2+4 a c}}}\right]}{\sqrt{-\frac{b^2}{2}+2 a c} \sqrt{b^2-2 c (a+c)+i b \sqrt{-b^2+4 a c}}}+\text{Log}\left[\text{Cos}\left[\frac{x}{2}\right]\right]-\text{Log}\left[\text{Sin}\left[\frac{x}{2}\right]\right]\right)$$

Problem 7: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{\text{Csc}[x]^2}{a+b\, \text{Sin}[x]+c\, \text{Sin}[x]^2}\, dx$$

Optimal (type 3, 271 leaves, 12 steps) :

$$\frac{\sqrt{2}\, b\, c \left(1+\frac{b^2-2 a c}{b \sqrt{b^2-4 a c}}\right) \text{ArcTan}\left[\frac{2 c+\left(b-\sqrt{b^2-4 a c}\right) \text{Tan}\left[\frac{x}{2}\right]}{\sqrt{2} \sqrt{b^2-2 c (a+c)-b \sqrt{b^2-4 a c}}}\right]}{a^2 \sqrt{b^2-2 c (a+c)-b \sqrt{b^2-4 a c}}}+\frac{\sqrt{2}\, b\, c \left(1-\frac{b^2-2 a c}{b \sqrt{b^2-4 a c}}\right) \text{ArcTan}\left[\frac{2 c+\left(b+\sqrt{b^2-4 a c}\right) \text{Tan}\left[\frac{x}{2}\right]}{\sqrt{2} \sqrt{b^2-2 c (a+c)+b \sqrt{b^2-4 a c}}}\right]}{a^2 \sqrt{b^2-2 c (a+c)+b \sqrt{b^2-4 a c}}}+\frac{b\, \text{ArcTanh}[\text{Cos}[x]]}{a^2}-\frac{\text{Cot}[x]}{a}$$

Result (type 3, 388 leaves) :

$$\left(\text{Csc}[x]^2\,(-2\,a-c+c\,\text{Cos}[2\,x]-2\,b\,\text{Sin}[x])\,\left(-\frac{2\,c\,\left(-i\,b^2+2\,i\,a\,c+b\,\sqrt{-b^2+4\,a\,c}\right)\,\text{ArcTan}\left[\frac{2\,c+\left(b-i\,\sqrt{-b^2+4\,a\,c}\right)\,\text{Tan}\left[\frac{x}{2}\right]}{\sqrt{2}\,\sqrt{b^2-2\,c\,(a+c)-i\,b\,\sqrt{-b^2+4\,a\,c}}}\right]}{\sqrt{-\frac{b^2}{2}+2\,a\,c}\,\sqrt{b^2-2\,c\,(a+c)-i\,b\,\sqrt{-b^2+4\,a\,c}}}+\right.\right.$$

$$\frac{2\,i\,c\,\left(-b^2+2\,a\,c+i\,b\,\sqrt{-b^2+4\,a\,c}\right)\,\text{ArcTan}\left[\frac{2\,c+\left(b+i\,\sqrt{-b^2+4\,a\,c}\right)\,\text{Tan}\left[\frac{x}{2}\right]}{\sqrt{2}\,\sqrt{b^2-2\,c\,(a+c)+i\,b\,\sqrt{-b^2+4\,a\,c}}}\right]}{\sqrt{-\frac{b^2}{2}+2\,a\,c}\,\sqrt{b^2-2\,c\,(a+c)+i\,b\,\sqrt{-b^2+4\,a\,c}}}+a\,\text{Cot}\left[\frac{x}{2}\right]-$$

$$\left.\left.2\,b\,\text{Log}\left[\text{Cos}\left[\frac{x}{2}\right]\right]+2\,b\,\text{Log}\left[\text{Sin}\left[\frac{x}{2}\right]\right]-a\,\text{Tan}\left[\frac{x}{2}\right]\right)\right)\Big/\left(4\,a^2\,\left(c+b\,\text{Csc}[x]+a\,\text{Csc}[x]^2\right)\right)$$

- **Problem 8: Result unnecessarily involves imaginary or complex numbers.**

$$\int\frac{\text{Csc}[x]^3}{a+b\,\text{Sin}[x]+c\,\text{Sin}[x]^2}\,dx$$

Optimal (type 3, 331 leaves, 14 steps):

$$-\frac{\sqrt{2}\,c\,\left(b^3-3\,a\,b\,c+\sqrt{b^2-4\,a\,c}\,\left(b^2-a\,c\right)\right)\,\text{ArcTan}\left[\frac{2\,c+\left(b-\sqrt{b^2-4\,a\,c}\right)\,\text{Tan}\left[\frac{x}{2}\right]}{\sqrt{2}\,\sqrt{b^2-2\,c\,(a+c)-b\,\sqrt{b^2-4\,a\,c}}}\right]}{a^3\,\sqrt{b^2-4\,a\,c}\,\sqrt{b^2-2\,c\,(a+c)-b\,\sqrt{b^2-4\,a\,c}}}+$$

$$\frac{\sqrt{2}\,c\,\left(b^3-3\,a\,b\,c-\sqrt{b^2-4\,a\,c}\,\left(b^2-a\,c\right)\right)\,\text{ArcTan}\left[\frac{2\,c+\left(b+\sqrt{b^2-4\,a\,c}\right)\,\text{Tan}\left[\frac{x}{2}\right]}{\sqrt{2}\,\sqrt{b^2-2\,c\,(a+c)+b\,\sqrt{b^2-4\,a\,c}}}\right]}{a^3\,\sqrt{b^2-4\,a\,c}\,\sqrt{b^2-2\,c\,(a+c)+b\,\sqrt{b^2-4\,a\,c}}}-$$

$$\frac{\text{ArcTanh}[\text{Cos}[x]]}{2\,a}-\frac{\left(b^2-a\,c\right)\,\text{ArcTanh}[\text{Cos}[x]]}{a^3}+\frac{b\,\text{Cot}[x]}{a^2}-\frac{\text{Cot}[x]\,\text{Csc}[x]}{2\,a}$$

Result (type 3, 481 leaves) :

$$\frac{1}{16\, a^3 \left(c+b\, \text{Csc}[x]+a\, \text{Csc}[x]^2\right)}\text{Csc}[x]^2\, (-2\, a-c+c\, \text{Cos}[2\, x]-2\, b\, \text{Sin}[x]) \left(\frac{8\, c \left(-i\, b^3+3\, i\, a\, b\, c+b^2 \sqrt{-b^2+4\, a\, c}-a\, c \sqrt{-b^2+4\, a\, c}\right) \text{ArcTan}\left[\frac{2\, c+\left(b-i \sqrt{-b^2+4\, a\, c}\right) \text{Tan}\left[\frac{x}{2}\right]}{\sqrt{2} \sqrt{b^2-2\, c\, (a+c)-i\, b \sqrt{-b^2+4\, a\, c}}}\right]}{\sqrt{-\frac{b^2}{2}+2\, a\, c} \sqrt{b^2-2\, c\, (a+c)-i\, b \sqrt{-b^2+4\, a\, c}}}+\frac{8\, c \left(i\, b^3-3\, i\, a\, b\, c+b^2 \sqrt{-b^2+4\, a\, c}-a\, c \sqrt{-b^2+4\, a\, c}\right) \text{ArcTan}\left[\frac{2\, c+\left(b+i \sqrt{-b^2+4\, a\, c}\right) \text{Tan}\left[\frac{x}{2}\right]}{\sqrt{2} \sqrt{b^2-2\, c\, (a+c)+i\, b \sqrt{-b^2+4\, a\, c}}}\right]}{\sqrt{-\frac{b^2}{2}+2\, a\, c} \sqrt{b^2-2\, c\, (a+c)+i\, b \sqrt{-b^2+4\, a\, c}}}-4\, a\, b\, \text{Cot}\left[\frac{x}{2}\right]+a^2\, \text{Csc}\left[\frac{x}{2}\right]^2+4 \left(a^2+2\, b^2-2\, a\, c\right) \text{Log}\left[\text{Cos}\left[\frac{x}{2}\right]\right]-4 \left(a^2+2\, b^2-2\, a\, c\right) \text{Log}\left[\text{Sin}\left[\frac{x}{2}\right]\right]-a^2\, \text{Sec}\left[\frac{x}{2}\right]^2+4\, a\, b\, \text{Tan}\left[\frac{x}{2}\right]\right)$$

- **Problem 10: Result unnecessarily involves imaginary or complex numbers.**

$$\int \frac{\text{Cos}[x]^2}{a+b\, \text{Sin}[x]+c\, \text{Sin}[x]^2}\, dx$$

Optimal (type 3, 230 leaves, 9 steps) :

$$-\frac{x}{c}-\frac{\sqrt{2} \sqrt{b^2-2\, c\, (a+c)-b \sqrt{b^2-4\, a\, c}}\; \text{ArcTan}\left[\frac{2\, c+\left(b-\sqrt{b^2-4\, a\, c}\right) \text{Tan}\left[\frac{x}{2}\right]}{\sqrt{2} \sqrt{b^2-2\, c\, (a+c)-b \sqrt{b^2-4\, a\, c}}}\right]}{c \sqrt{b^2-4\, a\, c}}+\frac{\sqrt{2} \sqrt{b^2-2\, c\, (a+c)+b \sqrt{b^2-4\, a\, c}}\; \text{ArcTan}\left[\frac{2\, c+\left(b+\sqrt{b^2-4\, a\, c}\right) \text{Tan}\left[\frac{x}{2}\right]}{\sqrt{2} \sqrt{b^2-2\, c\, (a+c)+b \sqrt{b^2-4\, a\, c}}}\right]}{c \sqrt{b^2-4\, a\, c}}$$

Result (type 3, 314 leaves):

$$\frac{1}{c}\left(-x+\frac{\left(i b^2-2 i c (a+c)+b \sqrt{-b^2+4 a c}\right) \text{ArcTan}\left[\frac{2 c+\left(b-i \sqrt{-b^2+4 a c}\right) \text{Tan}\left[\frac{x}{2}\right]}{\sqrt{2} \sqrt{b^2-2 c (a+c)-i b \sqrt{-b^2+4 a c}}}\right]}{\sqrt{-\frac{b^2}{2}+2 a c} \sqrt{b^2-2 c (a+c)-i b \sqrt{-b^2+4 a c}}}+\frac{\left(-i b^2+2 i c (a+c)+b \sqrt{-b^2+4 a c}\right) \text{ArcTan}\left[\frac{2 c+\left(b+i \sqrt{-b^2+4 a c}\right) \text{Tan}\left[\frac{x}{2}\right]}{\sqrt{2} \sqrt{b^2-2 c (a+c)+i b \sqrt{-b^2+4 a c}}}\right]}{\sqrt{-\frac{b^2}{2}+2 a c} \sqrt{b^2-2 c (a+c)+i b \sqrt{-b^2+4 a c}}}\right)$$

- **Problem 13: Result unnecessarily involves imaginary or complex numbers.**

$$\int \frac{\text{Sec}[x]^2}{a+b \text{Sin}[x]+c \text{Sin}[x]^2} \, dx$$

Optimal (type 3, 324 leaves, 11 steps):

$$-\frac{\sqrt{2} b c \left(1+\frac{b^2-2 c (a+c)}{b \sqrt{b^2-4 a c}}\right) \text{ArcTan}\left[\frac{2 c+\left(b-\sqrt{b^2-4 a c}\right) \text{Tan}\left[\frac{x}{2}\right]}{\sqrt{2} \sqrt{b^2-2 c (a+c)-b \sqrt{b^2-4 a c}}}\right]}{(a-b+c) (a+b+c) \sqrt{b^2-2 c (a+c)-b \sqrt{b^2-4 a c}}}-\frac{\sqrt{2} b c \left(1-\frac{b^2-2 c (a+c)}{b \sqrt{b^2-4 a c}}\right) \text{ArcTan}\left[\frac{2 c+\left(b+\sqrt{b^2-4 a c}\right) \text{Tan}\left[\frac{x}{2}\right]}{\sqrt{2} \sqrt{b^2-2 c (a+c)+b \sqrt{b^2-4 a c}}}\right]}{(a-b+c) (a+b+c) \sqrt{b^2-2 c (a+c)+b \sqrt{b^2-4 a c}}}+\frac{\text{Cos}[x]}{2 (a+b+c) (1-\text{Sin}[x])}-\frac{\text{Cos}[x]}{2 (a-b+c) (1+\text{Sin}[x])}$$

Result (type 3, 407 leaves):

$$-\frac{c\left(-i b^2+2 i c (a+c)+b\sqrt{-b^2+4 a c}\right)\text{ArcTan}\left[\frac{2 c+\left(b-i\sqrt{-b^2+4 a c}\right)\text{Tan}\left[\frac{x}{2}\right]}{\sqrt{2}\sqrt{b^2-2 c (a+c)-i b\sqrt{-b^2+4 a c}}}\right]}{\sqrt{-\frac{b^2}{2}+2 a c}\left(a^2-b^2+2 a c+c^2\right)\sqrt{b^2-2 c (a+c)-i b\sqrt{-b^2+4 a c}}}-$$

$$\frac{c\left(i b^2-2 i c (a+c)+b\sqrt{-b^2+4 a c}\right)\text{ArcTan}\left[\frac{2 c+\left(b+i\sqrt{-b^2+4 a c}\right)\text{Tan}\left[\frac{x}{2}\right]}{\sqrt{2}\sqrt{b^2-2 c (a+c)+i b\sqrt{-b^2+4 a c}}}\right]}{\sqrt{-\frac{b^2}{2}+2 a c}\left(a^2-b^2+2 a c+c^2\right)\sqrt{b^2-2 c (a+c)+i b\sqrt{-b^2+4 a c}}}+\frac{\text{Sin}\left[\frac{x}{2}\right]}{(a+b+c)\left(\text{Cos}\left[\frac{x}{2}\right]-\text{Sin}\left[\frac{x}{2}\right]\right)}+\frac{\text{Sin}\left[\frac{x}{2}\right]}{(a-b+c)\left(\text{Cos}\left[\frac{x}{2}\right]+\text{Sin}\left[\frac{x}{2}\right]\right)}$$

- **Problem 14: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.**

$$\int\frac{\text{Sec}[x]^3}{a+b\,\text{Sin}[x]+c\,\text{Sin}[x]^2}\,dx$$

Optimal (type 3, 206 leaves, 10 steps):

$$-\frac{\left(b^4+2 c^2 (a+c)^2-2 b^2 c (2 a+c)\right)\text{ArcTanh}\left[\frac{b+2 c\,\text{Sin}[x]}{\sqrt{b^2-4 a c}}\right]}{\sqrt{b^2-4 a c}\left(a^2-b^2+2 a c+c^2\right)^2}-\frac{(a+2 b+3 c)\,\text{Log}[1-\text{Sin}[x]]}{4 (a+b+c)^2}+$$

$$\frac{(a-2 b+3 c)\,\text{Log}[1+\text{Sin}[x]]}{4 (a-b+c)^2}+\frac{b\left(b^2-2 c (a+c)\right)\text{Log}\left[a+b\,\text{Sin}[x]+c\,\text{Sin}[x]^2\right]}{2\left(a^2-b^2+2 a c+c^2\right)^2}-\frac{\text{Sec}[x]^2\,(b-(a+c)\,\text{Sin}[x])}{2 (a-b+c)(a+b+c)}$$

Result (type 3, 481 leaves):

$$\frac{1}{4}\left(-\frac{8\,i\,b^3\,x}{(a-b+c)^2\,(a+b+c)^2}+\frac{16\,i\,b\,c\,(a+c)\,x}{(a-b+c)^2\,(a+b+c)^2}+\frac{2\,i\,(a-2\,b+3\,c)\,\mathrm{ArcTan}[\mathrm{Cot}[x]]}{(a-b+c)^2}-\frac{2\,i\,(a+2\,b+3\,c)\,\mathrm{ArcTan}[\mathrm{Cot}[x]]}{(a+b+c)^2}-\right.$$

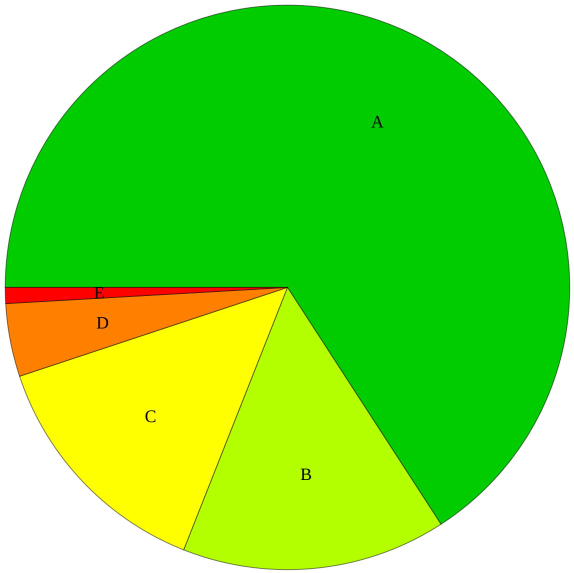
$$\frac{4\,b^4\,\mathrm{ArcTan}\left[\frac{\sqrt{-b^2+4\,a\,c}}{b+2\,c\,\mathrm{Sin}[x]}\right]}{\sqrt{-b^2+4\,a\,c}\,\left(a^2-b^2+2\,a\,c+c^2\right)^2}-\frac{8\,c^2\,(a+c)^2\,\mathrm{ArcTan}\left[\frac{\sqrt{-b^2+4\,a\,c}}{b+2\,c\,\mathrm{Sin}[x]}\right]}{\sqrt{-b^2+4\,a\,c}\,\left(a^2-b^2+2\,a\,c+c^2\right)^2}+\frac{8\,b^2\,c\,(2\,a+c)\,\mathrm{ArcTan}\left[\frac{\sqrt{-b^2+4\,a\,c}}{b+2\,c\,\mathrm{Sin}[x]}\right]}{\sqrt{-b^2+4\,a\,c}\,\left(a^2-b^2+2\,a\,c+c^2\right)^2}+$$

$$\frac{(a-2\,b+3\,c)\,\mathrm{Log}\left[\left(\mathrm{Cos}\left[\frac{x}{2}\right]+\mathrm{Sin}\left[\frac{x}{2}\right]\right)^2\right]}{(a-b+c)^2}-\frac{(a+2\,b+3\,c)\,\mathrm{Log}[1-\mathrm{Sin}[x]]}{(a+b+c)^2}+\frac{2\,b^3\,\mathrm{Log}[2\,a+c-c\,\mathrm{Cos}[2\,x]+2\,b\,\mathrm{Sin}[x]]}{\left(a^2-b^2+2\,a\,c+c^2\right)^2}-$$

$$\left.\frac{4\,b\,c\,(a+c)\,\mathrm{Log}[2\,a+c-c\,\mathrm{Cos}[2\,x]+2\,b\,\mathrm{Sin}[x]]}{\left(a^2-b^2+2\,a\,c+c^2\right)^2}+\frac{1}{(a+b+c)\,\left(\mathrm{Cos}\left[\frac{x}{2}\right]-\mathrm{Sin}\left[\frac{x}{2}\right]\right)^2}-\frac{1}{(a-b+c)\,\left(\mathrm{Cos}\left[\frac{x}{2}\right]+\mathrm{Sin}\left[\frac{x}{2}\right]\right)^2}\right)$$

Summary of Integration Test Results

5809 integration problems



A - 3825 optimal antiderivatives

B - 880 more than twice size of optimal antiderivatives

C - 808 unnecessarily complex antiderivatives

D - 243 unable to integrate problems

E - 53 integration timeouts